

Standards Gap Analysis for Cooperative Intelligent Transportation Systems

Results: Solution Perspective: United States

Document HTG7-3-1-US Version: 2018-12

Standards Harmonisation Working Group Harmonisation Task Group 7









Standards Gap Analysis for Cooperative ITS HTG7-3-1-US Results: Solution Perspective: United States



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1. Introduction

1.1 Background

Advancements in transportation technologies are rapidly transforming the world's strategies for increasing safety; gaining operational, mobility, and cost efficiencies; opening access to underserved communities; and reducing environmental impacts from transportation. Using new forms of short-range communications, vehicles and devices are now capable of broadcasting or receiving data that allow them to sense the movements and status of other surrounding devices. These cooperative exchanges create a three hundred sixty degree awareness that, when further fused with other open data, can enable drivers and other users of the transportation system to receive alerts and warnings regarding the formation of threats and hazards. The alerts and warnings created through these communication technologies provide the opportunity to prevent some crashes, thereby reducing fatalities, injuries, and property damage. The cooperative exchange of data in this manner can also enhance the benefits of automation.

Access to new data sets can also transform network operations and minimize the capital investment costs of infrastructure owners and operators. Broadcast data sets from users within a highly mobile environment can complement or potentially supersede the need for significant roadside equipment on major roads. These new data can also form a more complete representation of conditions on the arterial network, including road weather impacts, effects of traffic signal timing, support for incident and emergency responders, or changes in traveller decisions, among other conditions.

Standards for interfaces in the public interest can play a key role in delivering these benefits to communities that implement cooperative-ITS technologies. Technical standards are developed to address coordination problems and overcome technical barriers that exist when different organizations need to work together while preserving their institutional and proprietary processes. The International Organization for Standards (ISO) defines a standard as, "... a document, established by a consensus of subject matter experts and approved by a recognized body that provides guidance on the design, use or performance of materials, products, processes, services, systems or persons." The end documents, which frequently represent the interests of the experts and parties that gather to develop them, are vetted by experts. Recognized benefits include improved safety, mobility, and sustainability for the travelling public and enhanced interoperability within an open market environment.¹

https://www.nist.gov/services-resources/standards-and-measurements.

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¹ See definitions at: the European Committee for Standardization (CEN):

https://www.cen.eu/work/ENdev/whatisEN/Pages/default.aspx; the International Organization for Standards (ISO): https://www.iso.org/sites/ConsumersStandards/1 standards.html; Wikipedia:

https://en.wikipedia.org/wiki/Technical standard; the National Institute of Standards and Technology (NIST):



1.2 History

In 2011, the United States (US) Department of Transportation (USDOT) and the European Commission (EC) approved a <u>Harmonisation Action Plan</u> to guide EC-US standards development via Harmonisation Task Groups (HTGs). The plan recognises that successful, interoperable, nationwide or regional, cooperative technology implementations are critically dependent upon consistent application of complete, technically sound standards and policies for critical functions, interfaces, and *information flows*². This worldwide need applies to the common services of a cooperative systems environment as well as to global markets for vehicles, devices, and applications. While the envisioned end state appears very similar in many parts of the world, past analyses have been regional and independent in nature and have proceeded with varying levels of coordination. The HTGs allow participating countries to collaborate on technical ITS issues that are of common interest and thus leverage critical expertise and resources while potentially realizing more compatible worldwide solutions.

Transport Certification Australia (TCA) joined the HTG initiatives in January 2014 by bringing security expertise and co-leadership to the sixth HTG (HTG6).³

1.3 HTG7

With the emergence in 2015 of plans in the US, Europe, and Australia to develop pilot *Cooperative Intelligent Transportation Systems* (*C-ITS*)⁴ projects, a new HTG was established to identify how existing standards could support new C-ITS installations (i.e., "standards solutions for C-ITS") and, in doing so, identify the issues in standards that could pose risks for deployers. This seventh HTG (HTG7) began in late 2015 as a joint effort between the EC, the USDOT, and TCA, with the Japan Ministry of Land, Infrastructure, Transport and Tourism (MLIT) joining in 2017.

Specifically, the objective of HTG7 was to identify standards that comprehensively support large-scale C-ITS deployments. HTG7 expects that fulfilling this objective will allow:

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² Terms that are in **bold italics** in this report are defined in a companion report, the **HARTS Reference Compendium** (**HTG7-5**), which defines all of the terms used throughout this report set. Terms defined in the reference compendium are bold faced and italicised within each HARTS report upon their first use.

³ Results of HTG6 are located here: https://ec.europa.eu/digital-single-market/news/harmonized-security-policies-cooperative-intelligent-transport-systems-create-international.

⁴ C-ITS is a subset of ITS that requires the mutual, secure exchange of data between *independent* trusted entities (i.e., parties that have no contractual relationship). In other words, while traditional ITS typically deals with exchanges among system components owned and managed by a single or limited number of entities; these new ITS services expand this scope to include system components (e.g., vehicles) that may be owned and managed by any number of different entities. The scope of the HTG7 analysis included the C-ITS interfaces (i.e., exchanges between parties with no contractual relationship but with security and authentication as the basis for trust) as well as the more traditional "back-office" flows (between contracted parties) that enable the provision of the C-ITS services. This architecture presents a level of connectivity suggesting an "Internet of Things" for transportation.



- Governments, standards organisations, and other interested stakeholders to track issues regarding those interfaces and information flows that are of significant public interest within the C-ITS architecture, facilitating engagement with experts to address them;
- 2. ITS deployment teams, device manufacturers, and application developers to identify candidate standards-based solutions that are available to them for planning, understand the issues associated with those solutions, and mitigate the risks associated with those issues in their deployments. Future ITS deployment teams around the world will have a clearer understanding about which system functions and interfaces are critical for interoperability and where standards are defined (or not yet defined) to support interoperability.

1.4 Globally Harmonised Reference Architecture

To establish a foundation for analysing standards, the international HTG7 team first developed **Harmonised Architecture Reference for Technical** Standards (HARTS). HARTS facilitates understanding of the applicability of standards (ITS standards and other Information and Communications Technology (ICT) standards) for the successful implementation of *C-ITS services*⁵. HARTS provided the framework for the HTG7 team to identify key interfaces that need to be standardised in the public interest and served as the basis for performing the gap and overlap analysis of C-ITS standards for those interfaces.

HARTS is an internationally harmonised reference architecture based on:

- National ITS Architecture Framework (NIAF) from Australia
- EU's Framework Architecture (FRAME) from Europe
- Connected Vehicle Reference Implementation Architecture (CVRIA) from the US
- C-ITS architecture constructs from Japan

The body of work produced by HTG7 includes key resources for industry, such as HARTS and the accompanying HTG7 reports. These tools not only provide a starting point for the ITS community to address the technical and interoperability challenges that face wide-scale ITS deployment; but also provide tactical guidance on standards, solutions, and risks for current or near-term project teams planning and implementing ITS systems. Although the reports are based on a globally harmonised *reference architecture*, they formally recognise and accommodate regional and local approaches to ITS services, solutions, and standards.

1.5 Format of HTG7 Reports

The results summarized in this Executive Summary are presented in greater detail in the HTG7 series of reports:

 Executive Overview (<u>HTG7-1</u>) - A high-level summary of the approach, process and the key results of HTG7.

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⁵ For the purpose of this report, the term "C-ITS service" is intended to include all ITS services encompassed by the HARTS service packages; at the time of publication 34 are available on the HARTS website (http://htg7.org).



- Analysis Methodology (<u>HTG7-2</u>) Presents the HTG7 methodology used to develop HARTS, perform the gap analysis, and develop proposed resolutions.
- Issues and Proposed Resolutions (<u>HTG7-3</u>, this document) Summarises the issues
 identified through HTG7 analysis and proposes actions to resolve the issues. It introduces
 a series of more detailed reports, detailed below, each of which identifies the same set of
 proposed resolutions but adopts a presentation format and includes details relevant to a
 different perspective.
 - Results: Solution Perspective for Deployers (<u>HTG7-3-1-AU</u>, <u>HTG7-3-1-EU</u>, <u>HTG7-3-1-JP</u>, <u>HTG7-3-1-US</u>) Addresses development or implementation teams in their planning and procurement processes. This detailed report lists each solution along with its associated issues and proposed resolutions and is divided into four regional sub-reports, one for each participating region. (The region is reflected by the appended 2-letter region code⁶).
 - Results: Resolution Perspective for Standards Developers (<u>HTG7-3-2</u>) Presents each proposed resolution along with its associated issues and the data
 exchanges affected by these issues. This detailed report can assist standards
 development communities and governments in their planning and work processes.
 - Results: Service Package Perspective (<u>HTG7-3-3-AU</u>, <u>HTG7-3-3-EU</u>, <u>HTG7-3-3-JP</u>, <u>HTG7-3-3-US</u>) Offers road operators the opportunity to evaluate the "readiness" of *service packages*. This detailed report lists each service package, the data exchanges contained within the service package, and the issues associated with each solution for each data exchange. In this respect, this report helps deployers understand the levels of risk due to the standards gaps. The report is divided into 4 regional reports, one for each participating region. (The region is reflected by the appended the 2-letter region code⁶).
- HARTS Website Overview (<u>HTG7-4</u>) Provides an overview of the HARTS public website, available at http://htg7.org. It describes each aspect of the website and provides instructions on how to submit comments about the information on the website.
- HARTS Reference Compendium (HTG7-5) Provides reference material including:
 - A glossary of terms and associated definitions
 - Acronyms and associated meanings
 - Graphic symbols and associated meanings
 - Explanations of key terms and their inter-relationships

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⁶ As defined by ISO 3166-1:2013 Codes for the representation of names of countries and their subdivisions – Part 1: Country codes



1.6 Conventions

While the HTG7 Report set was developed using United Kingdom (UK) English, the HARTS (toolset and website) was developed using US English. Whenever an extract from HARTS is presented within the HTG7 Report set, it will retain its US English spelling.

As noted in footnote 2 on page 2, this report is supplemented by the HARTS Reference Compendium (HTG7-5), which defines all of the terms used throughout this report set. Terms defined in the reference compendium are bold faced and italicised within each HARTS report upon their first use.

1.7 Purpose of this Document

This document, **Results: Solution Perspective: United States** (HTG7-3-1-US), is one of nine detailed reports designed to report the issues found and their proposed resolutions, each from a unique perspective. They are adjuncts to the Summary of Issues and Proposed Resolutions (HTG7-3) report, which summarises the results of the HTG7 analysis, summarises the key issues identified during the analysis, and provides a comprehensive set of proposed and prioritised resolutions. The nine detailed reports offer three different technical perspectives, with two of those perspectives further broken out into the four regions encompassed by the HTG7 analysis. The specific detailed reports are as follows:

- Solution Perspective: Assists implementation teams in understanding the issues surrounding each solution contained within the HARTS analysis; there is one detailed report for each of the four regions covered by the HARTS analysis. The name of each of the four reports will have a two-letter identifier (-AU, -EU, -JP or -US) at the end of the report identifier and the electronic filename.
- **Resolution Perspective:** Provides an overarching view of the work that still needs to be completed to provide a fully interoperable C-ITS environment and is intended primarily for standards development organisations and governmental entities.
- Service Package Perspective: For entities that are deploying C-ITS, such as governmental agencies, product vendors and others that are interesting in the complete end-to-end implementation of an ITS service package; there is one detailed report for each of the four regions covered by the HARTS analysis. The identifier of each of the four reports will have a two-letter identifier (-AU, -EU, -JP or -US) at the end of the report title and the electronic filename.

Please note that each of these detailed reports is extremely large and therefore not intended for printing.

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2. Report Perspective

There is a separate regional report within this detailed report collection for each of the participating regions: Australia, the European Union, Japan and the United States. In accordance with guidance in ISO 42010-2011, "Systems and software engineering — Architecture description", this detailed report is designed to address a specific set of concerns, or perspective, of a specific group of stakeholders.

This detailed report provides the solution perspective for the United States. It provides a table of HARTS analysis results structured to provide insight to project teams within the United States who are tasked with assessing, designing, and deploying standards-based solutions when deploying new, or augmenting existing, service packages.

This detailed report is intended to assist these teams in the implementation of specific solutions. This guidance provides an awareness of the issues and associated risks associated with each potential solution. Once a project team is aware of the issues, they will be better prepared to develop appropriate and effective workarounds.

To assist this type of project team, the results in this detailed report are organised by solution, listing each issue/proposed resolution pair that is applicable to the solution. Under each issue/proposed resolution pair that is applicable to the solution, the detailed report then alphabetically lists each *information triple* (*source*, *destination* and information flow) that uses the solution and is associated with the indicated issue/ proposed resolution pairs. This is summarised in Figure 1.

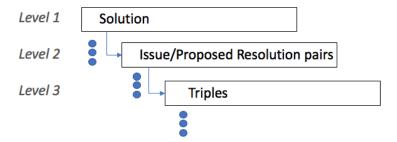


Figure 1: Solution Perspective Overview

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3. Report Structure

As shown in Figure 1 above, there are multiple levels within the detailed report. Each level will consist of one, or possibly two, header rows followed by one or more content rows. Given the multi-level detailed report structure, higher-level sorting fields are typically displayed in header rows (e.g., at the start of the detailed report and when values change) while the lowest-level sorting fields may only appear in content rows. When the header field value is changed, the page header for each subsequent page is changed accordingly. Figure 2 below illustrates the detailed report structure, and each field included in the detailed report is subsequently defined in Table 1.

Level 1	Solution N	lame:	Text			Number of Issues:	5	Total Issue Se	verity:	54
	text									
						I				
Level 2	Issue	Issue Desc	cription	Issue Severity	Proposed Resolution	Resolution Descriptio	n	Timeframe	Applica	ability
	text	text		Ultra	text	text		Urgent	AU, EL	J
Level 3				on Triples using this solu	tion and affected by this issue that w	ould be addressed by this Propos	sed Resolu			
LCVCIS	Source			Destination		Flow				
	Source 1			Destination	on 1	Flow 1				
	Source 1			Destination	on 2	Flow 1				
	Source 2			Destination	on 5	Flow 23				
	Source 3			Destination	on 9	Flow 45				

Figure 2: Solution Perspective Report Structure

The following table contains the field name, its description and its value range for each of the detailed report fields in Chapter 4. They are listed in the table below according to the order in which they appear in the detailed report in Chapter 4. Additionally, the table also shows the sorting criteria used for the detailed report, including the order of sorting fields, the sorting method used, and the sort direction.



Table 1: Solution Perspective Report Field Descriptions

Report		Field Information			Sort Crite	ria
Level	Title	Description	Value Range	Order	Measure	Direction
	Solution Name	The name of the solution expressed as a hyphenated concatenation of the HARTS <i>data profile</i> and the HARTS <i>communication profile</i> that collectively define the solution.		1	Alphabetic	↓
	Number of Issues	A count of the issues that have been assigned to the solution.	Non-negative integer	-	-	-
1	Total Issue Severity	The sum of the severity rating values of all issue instances associated with the solution. The severity rating value for each severity level is assigned below: 1. Low = 1 2. Medium = 3 3. High = 8 4. Ultra = 32		-	-	-
	Solution Description	A summary description of the information flow. NOTE: Only the description text is displayed; the title of this field is not shown.	ASCII	-	-	-
2	Issue	The name of the issue, which will correspond to one of the 43 defined issue types.	ASCII; See HTG7-5 for a complete list of issue types.		Alphabetic	↓
	Issue Description	A textual description of the issue type.	ASCII	_	-	-

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⁷ ASCII (American Standard Code for Information Exchange)

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Report		Field Information			Sort Crite	ria
Level	Title	Description	Value Range	Order	Measure	Direction
	Issue Severity	An indication of how severe the issue is deemed to be. If the severity of the issue needs to be decided when assigning the issue, multiple issues can be created with slightly different names and definitions. For example, "Data may not be fully defined (low)" and "Data not fully defined (medium)".	· · · · · · · · · · · · · · · · · · ·	2	List Order	↓
	Proposed Resolution	The name of the proposed resolution, which will correspond to one of the 112 defined proposed resolutions.		-	-	-
	Resolution Description	A description of the proposed resolution.	ASCII	-	-	-
	Timeframe	The timeframe in which the proposed resolution needs to be addressed in order to eliminate, or mitigate, the associated issues(s) which will facilitate wide-scale deployments of impacted solutions, information triples and service packages.	Near-Term, Medium-	-	-	-
	Applicability	The HARTS region or regions in which the proposed resolution is relevant.	Multiple from the following list (AU, EU, JP, US)	-	-	-
3	Source	The HARTS <i>physical object</i> that is the source of the information in the flow. The combination of the source, destination and the information flow constitute the "information triple".	ASCII	4	Alphabetic	↓

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Report		Sort Criteria				
Level -	Title	Description	Value Range	Order	Measure	Direction
	Destination	The HARTS physical object that is the destination of the information in the flow. The combination of the source, destination and the information flow constitute the "information triple".	ASCII	5	Alphabetic	↓
	FlowName	Name for the information that is exchanged between two physical objects in the <i>physical view</i> of HARTS. Information flows and their communication requirements define the interfaces which formed the basis for the standards analysis conducted by HTG7. The combination of the source, destination and the information flow constitute the "information triple".	ASCII	6	Alphabetic	↓



4. Report Content

The table of results is shown below.

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HTG7-3-1-US: Solution Perspective United States

Wednesday, December 19, 2018 11:46:05 AM

Solution Name:	(None-Data) - Guaranteed Internet (US)	Number of Issues:	2	Total Issue Severity:	35
Solution Name:	(None-Data) - Guaranteed Internet (US)	Number of Issues:	2	Total Issue Severity:	35

This solution is used within the U.S., E.U., and Australia. It combines standards associated with (None-Data) with those for I-I: Guaranteed Internet (US). The (None-Data) standards include an unspecified set of standards at the upper layers. The I-I: Guaranteed Internet (US) standards include lower-layer standards that support secure communications with guaranteed delivery between ITS equipment using X.509 or IEEE 1609.2 security certificates.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Update SIRI for other transport modes	Revise the SIRI application specification to support the exchange of ferry, airline, and intercity rail information between centres.	Near-term	Australia, European Union

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution

Alternate Mode Transportation Center Transportation Information Center alternate mode incident information

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Ultra	C-C: System monitoring	Develop an internationally acceptable ITS application specification for the Service Monitor System to monitor other centers and support systems and to report issues.	Urgent	Australia, European Union, United States
	for this information flow.					

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution

Destination

Flow Name

Data Distribution System Service Monitor System support system status

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not	Performance, functionality, and the upper-	Ultra	Core authorization -	Develop an internationally acceptable standard for the user permission request	Near-term	Australia, European
defined	layers of the OSI stack have not been defined		coordination among centres	coordination information triples contained within the Core Authorization Service Package.		Union, United States
	for this information flow.					

Source Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name

Authorizing Centers Proposed Resolution Flow Name

Other Authorizing Centers permission request coordination

Other Authorizing Centers permission request coordination

olution Name:	(None-Data) - Guaranteed Internet (US)			Number of Issues: 2	otal Issue Severity:	35
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not lefined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - base services	Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Authorizing Center			nter	permission request received		
Authorizing Center		Co	operative ITS Credentials Management	t System user permission sets		
Center		Au	thorizing Center	permission request		
Center		Au	thorizing Center	permission update request		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Private location and address	Develop an internationally acceptable ITS application specification that defines the operation of a Privacy Protection Gateway.	Urgent	Australia, European Union, United States
				by this Issue that would be addressed by the Proposed Resolution		
Source Connected Vehicle Ro	padside Equipment		stination nter	Flow Name protected location and address flow		
Connected Vehicle Ro		Co	operative ITS Credentials Management			
Privacy Protection Ga	iteway	Ce	nter	protected location and address flow		
Privacy Protection Ga	iteway	Co	operative ITS Credentials Management	t System protected location and address flow		

olution Name:	(None-Data) - Guaranteed Internet (US)				Number of Issues:	2	Total Issue Severity:	35
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Security and credentials management - base services	Develop an internationally acceptable stand information, device enrolment information revocations, and misbehaviour report infor and Credentials Management Service Packa	, security credentials, security (mation triples contained withir	credential	Urgent	Australia, European Union, United States
Comme				y this Issue that would be addressed by the Proposed Re				
Source			stination operative ITS Credentials Management S	ivstem	Flow Name device enrollment information			
Center			operative ITS Credentials Management S	•	misbehavior report			
Connected Vehicle Ro	padside Equipment		operative ITS Credentials Management S		device enrollment information			
Connected Vehicle Ro			operative ITS Credentials Management S		misbehavior report			
	entials Management System		nter	•	security credential revocations			
	entials Management System	Ce	nter		security credentials			
Cooperative ITS Crede	entials Management System	Ce	nter		security policy and networking infor	mation		
Cooperative ITS Crede	entials Management System	Co	nnected Vehicle Roadside Equipment		security credential revocations			
Cooperative ITS Crede	entials Management System	Со	nnected Vehicle Roadside Equipment		security credentials			
Cooperative ITS Crede	entials Management System	Co	nnected Vehicle Roadside Equipment		security policy and networking infor	mation		
Cooperative ITS Crede	entials Management System	Da	ta Distribution System		security credential revocations			
Cooperative ITS Crede	entials Management System	Da	ta Distribution System		security credentials			
Cooperative ITS Crede	entials Management System	Da	ta Distribution System		security policy and networking infor	mation		
Cooperative ITS Crede	entials Management System	Ob	ject Registration and Discovery Service		security credential revocations			
Cooperative ITS Crede	entials Management System	Ob	ject Registration and Discovery Service		security credentials			
Cooperative ITS Crede	entials Management System	Ob	ject Registration and Discovery Service		security policy and networking infor	mation		
Cooperative ITS Crede	entials Management System	Se	rvice Monitor System		security credential revocations			
Cooperative ITS Crede	entials Management System	Se	rvice Monitor System		security credentials			
Cooperative ITS Crede	entials Management System	Se	rvice Monitor System		security policy and networking infor	mation		
Cooperative ITS Crede	entials Management System	Wi	de Area Information Disseminator		security credential revocations			
Cooperative ITS Crede	entials Management System	Wi	de Area Information Disseminator		security credentials			
Cooperative ITS Crede	entials Management System	Wi	de Area Information Disseminator		security policy and networking infor	mation		
Data Distribution Syst	rem	Со	operative ITS Credentials Management S	system	device enrollment information			
Data Distribution Syst	rem	Co	operative ITS Credentials Management S	system	misbehavior report			
Object Registration an	nd Discovery Service	Со	operative ITS Credentials Management S	system	device enrollment information			
Object Registration an	nd Discovery Service	Co	operative ITS Credentials Management S	iystem	misbehavior report			
Service Monitor Syste	em	Со	operative ITS Credentials Management S	iystem	device enrollment information			
Service Monitor Syste	em	Co	operative ITS Credentials Management S	iystem	misbehavior report			
Wide Area Information	on Disseminator	Co	operative ITS Credentials Management S	system	device enrollment information			
Wide Area Information	on Disseminator	Co	operative ITS Credentials Management S	system	misbehavior report			

Source Cooperative ITS Credentials Management System Cooperative ITS Credentials Management System Other CCMS Other CCMS Cooperative ITS Credentials Management Other CCMS Coop	Resolution Description Develop internationally acceptable standardised solutions that facilitate Credential Management Systems coordination of enrolment credentialing, authorization credentialing, misbehavior analysis and certificate revocation processes, so that actions undertaken by one CCMS may be properly referenced and/or utilized by other CCMS, and so that relevant information for these activities may be appropriately shared between CCMS. By this Issue that would be addressed by the Proposed Resolution Flow Name authorization coordination
layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected Destination Other CCMS	Management Systems coordination of enrolment credentialing, authorization credentialing, misbehavior analysis and certificate revocation processes, so that actions undertaken by one CCMS may be properly referenced and/or utilized by other CCMS, and so that relevant information for these activities may be appropriately shared between CCMS. If by this Issue that would be addressed by the Proposed Resolution Flow Name authorization coordination
Cooperative ITS Credentials Management System Other CCMS Cooperative ITS Credentials Management System Other CCMS Cooperative ITS Credentials Management Other CCMS Co	Flow Name authorization coordination
Cooperative ITS Credentials Management System Other CCMS Cooperative ITS Credentials Management System Other CCMS Cooperative ITS Credentials Management System Other CCMS Other CCMS Other CCMS Other CCMS Cooperative ITS Credentials Management System Other CCMS Issue Description Issue Severity Proposed Resolution Other CCMS Issue Severity Issue Sever	
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Cooperative ITS Credentials Management System Other CCMS Cooperative ITS Credentials Management ITS Credentials Man	enrollment coordination
Other CCMS Cooperative ITS Credentials Management Its Usue Description Issue Severity Proposed Resolution Information Triples using this solution and affected Destination Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment	misbehavior analysis coordination
Other CCMS Cooperative ITS Credentials Management Other CCMS Cooperative ITS Credentials Management Other CCMS Cooperative ITS Credentials Management Issue Severity Proposed Resolution Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected Destination Center Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment	revocation coordination
Other CCMS Cooperative ITS Credentials Management Cooperative ITS Credentials Management Cooperative ITS Credentials Management Issue Severity Proposed Resolution Secure installation/update of software Information Triples using this solution and affected Destination Center Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment	authorization coordination
Other CCMS Cooperative ITS Credentials Management Let Issue Description La profile not layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected Destination Center Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment	nt System enrollment coordination
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Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected Destination Center Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment	nt System revocation coordination
Information Triples using this solution and affected Source Destination Center Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment	Resolution Description Timeframe Applicability
SourceDestinationCenterConnected Vehicle Roadside EquipmentConnected Vehicle Roadside EquipmentField Support EquipmentField Support EquipmentConnected Vehicle Roadside Equipment	Develop an internationally acceptable standard for the secure installation, update, and validation of software (including application, support, and OS software) on devices. The process should allow a system to determine which devices have been updated and provide a mechanism to define when such updates are allowed, recommended, and required. Australia, Euro
Connected Vehicle Roadside Equipment Field Support Equipment Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment	by this Issue that would be addressed by the Proposed Resolution Flow Name
Field Support Equipment Connected Vehicle Roadside Equipment	RSE application install/upgrade
	RSE application install/upgrade
Issue Description Issue Severity Proposed Resolution	RSE application install/upgrade
	Resolution Description Timeframe Applicability
Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. Urgent Union, United Japan
Information Triples using this solution and affected Source Destination	by this Issue that would be addressed by the Proposed Resolution Flow Name
Map Update System Public Information Device	map updates
	···

olution Name:	(None-Data) - Guaranteed Internet (US)			Number of Issues:	2	Total Issue Severity:	35
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Credentials management system	Implement regional (security) credentials management systems that are intero	perable.	Urgent	Australia, European Union, United State
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name			
Center		Cod	operative ITS Credentials Management S	ystem device enrollment information			
Center		Cod	operative ITS Credentials Management S	ystem misbehavior report			
Connected Vehicle Ro	oadside Equipment	Cod	operative ITS Credentials Management S	ystem device enrollment information			
Connected Vehicle Ro	oadside Equipment	Cod	operative ITS Credentials Management S	ystem misbehavior report			
Cooperative ITS Cred	lentials Management System	Cer	nter	security credential revocations			
Cooperative ITS Cred	lentials Management System	Cer	nter	security credentials			
Cooperative ITS Cred	lentials Management System	Cer	nter	security policy and networking information	n		
Cooperative ITS Cred	lentials Management System	Cor	nnected Vehicle Roadside Equipment	security credential revocations			
Cooperative ITS Cred	lentials Management System	Cor	nnected Vehicle Roadside Equipment	security credentials			
Cooperative ITS Cred	lentials Management System	Cor	nnected Vehicle Roadside Equipment	security policy and networking information	า		
Cooperative ITS Cred	lentials Management System	Dat	ta Distribution System	security credential revocations			
Cooperative ITS Cred	lentials Management System	Dat	ta Distribution System	security credentials			
Cooperative ITS Cred	lentials Management System	Dat	ta Distribution System	security policy and networking information	า		
Cooperative ITS Cred	lentials Management System	Obj	ject Registration and Discovery Service	security credential revocations			
Cooperative ITS Cred	lentials Management System	Obj	ject Registration and Discovery Service	security credentials			
Cooperative ITS Cred	lentials Management System	Obj	ject Registration and Discovery Service	security policy and networking information	า		
Cooperative ITS Cred	lentials Management System	Ser	vice Monitor System	security credential revocations			
Cooperative ITS Cred	lentials Management System	Ser	vice Monitor System	security credentials			
Cooperative ITS Cred	lentials Management System	Ser	vice Monitor System	security policy and networking information	า		
Cooperative ITS Cred	lentials Management System	Wid	de Area Information Disseminator	security credential revocations			
Cooperative ITS Cred	lentials Management System	Wid	de Area Information Disseminator	security credentials			
Cooperative ITS Cred	lentials Management System	Wid	de Area Information Disseminator	security policy and networking information	า		
Data Distribution Sys	tem	Cod	operative ITS Credentials Management S	ystem device enrollment information			
Data Distribution Sys	tem	Cod	operative ITS Credentials Management S	ystem misbehavior report			
Object Registration a	and Discovery Service	Cod	operative ITS Credentials Management S	ystem device enrollment information			
Object Registration a	and Discovery Service	Cod	operative ITS Credentials Management S	ystem misbehavior report			
Service Monitor Syste	em	Cod	operative ITS Credentials Management S	ystem device enrollment information			
Service Monitor Syste	em	Cod	operative ITS Credentials Management S	ystem misbehavior report			
Wide Area Information	on Disseminator	Cod	operative ITS Credentials Management S	ystem device enrollment information			
Wide Area Information	on Disseminator	Cod	operative ITS Credentials Management S	ystem misbehavior report			

Solution Name:	(None-Data) - Guaranteed Internet (US)				Number of Issues:	2	Total Issue Severity:	35
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revoking the privileges of a certificate authorecognized within a region) and of an ITS stamisbehave).	ority (e.g., if an authority is no	longer	Urgent	Australia, European Union, United States
Course				y this Issue that would be addressed by the Proposed Re				
Source Alternate Mode Tran	sportation Center		tination nsportation Information Center		Flow Name alternate mode incident information	n		
Alternate Mode Tran			nsportation Information Center		alternate mode information			
Alternate Mode Tran			nsportation Information Center		alternate mode service demand info)		
Alternate Mode Tran			nsportation Information Center		service request			
Authorizing Center		Cer			permission request received			
Authorizing Center		Cod	operative ITS Credentials Management S	System	user permission sets			
Authorizing Center		Oth	ner Authorizing Centers		permission request coordination			
Center		Aut	horizing Center		permission request			
Center		Aut	horizing Center		permission update request			
Center		Cor	nnected Vehicle Roadside Equipment		RSE application install/upgrade			
Center		Cod	pperative ITS Credentials Management	System	device enrollment information			
Center		Cod	pperative ITS Credentials Management	System	misbehavior report			
Connected Vehicle R	oadside Equipment	Cer	nter		protected location and address flow	1		
Connected Vehicle R	oadside Equipment	Cod	pperative ITS Credentials Management	System	device enrollment information			
Connected Vehicle R	oadside Equipment	Cod	operative ITS Credentials Management :	System	misbehavior report			
Connected Vehicle R	oadside Equipment	Cod	pperative ITS Credentials Management	System	protected location and address flow	1		
Connected Vehicle R	oadside Equipment	Fie	d Support Equipment		RSE application install/upgrade			
Connected Vehicle R	oadside Equipment	Pay	ment Administration Center		access violation notification			
Connected Vehicle R	oadside Equipment	Pay	ment Administration Center		road use history			
Cooperative ITS Cred	entials Management System	Cer	nter		security credential revocations			
Cooperative ITS Cred	entials Management System	Cer	nter		security credentials			
Cooperative ITS Cred	entials Management System	Cer	nter		security policy and networking infor	rmation		
Cooperative ITS Cred	entials Management System	Cor	nnected Vehicle Roadside Equipment		security credential revocations			
Cooperative ITS Cred	entials Management System	Cor	nnected Vehicle Roadside Equipment		security credentials			
Cooperative ITS Cred	entials Management System	Cor	nnected Vehicle Roadside Equipment		security policy and networking infor	rmation		
Cooperative ITS Cred	entials Management System	Dat	a Distribution System		security credential revocations			
Cooperative ITS Cred	entials Management System	Dat	a Distribution System		security credentials			
-	entials Management System		a Distribution System		security policy and networking infor	rmation		
	entials Management System		ect Registration and Discovery Service		security credential revocations			
Cooperative ITS Cred	entials Management System	Obj	ect Registration and Discovery Service		security credentials			

olution Name:	(None-Data) - Guaranteed Internet (US)		Number of Issues: 2 Total Issue Severity: 35
Cooperative ITS Credential	s Management System	Object Registration and Discovery Service	security policy and networking information
Cooperative ITS Credential	s Management System	Other CCMS	authorization coordination
Cooperative ITS Credential	s Management System	Other CCMS	enrollment coordination
Cooperative ITS Credential	s Management System	Other CCMS	misbehavior analysis coordination
Cooperative ITS Credential	s Management System	Other CCMS	revocation coordination
Cooperative ITS Credential	s Management System	Service Monitor System	security credential revocations
Cooperative ITS Credential	s Management System	Service Monitor System	security credentials
Cooperative ITS Credential	s Management System	Service Monitor System	security policy and networking information
Cooperative ITS Credential	s Management System	Wide Area Information Disseminator	security credential revocations
Cooperative ITS Credential	s Management System	Wide Area Information Disseminator	security credentials
Cooperative ITS Credential	s Management System	Wide Area Information Disseminator	security policy and networking information
Data Distribution System		Cooperative ITS Credentials Management System	device enrollment information
Data Distribution System		Cooperative ITS Credentials Management System	misbehavior report
Data Distribution System		Service Monitor System	support system status
DMV		Payment Administration Center	registration
Emissions Management Ce	enter	Payment Administration Center	low emissions zone coordination
Emissions Management Ce	enter	Payment Administration Center	low emissions zone operations information
Field Support Equipment		Connected Vehicle Roadside Equipment	RSE application install/upgrade
Map Update System		Public Information Device	map updates
Object Registration and Dis	scovery Service	Cooperative ITS Credentials Management System	device enrollment information
Object Registration and Dis	scovery Service	Cooperative ITS Credentials Management System	misbehavior report
Other Authorizing Centers		Authorizing Center	permission request coordination
Other CCMS		Cooperative ITS Credentials Management System	authorization coordination
Other CCMS		Cooperative ITS Credentials Management System	enrollment coordination
Other CCMS		Cooperative ITS Credentials Management System	misbehavior analysis coordination
Other CCMS		Cooperative ITS Credentials Management System	revocation coordination
Payment Administration Co	enter	Connected Vehicle Roadside Equipment	road use charges
Payment Administration Co	enter	Connected Vehicle Roadside Equipment	vehicle payment request
Payment Administration Co	enter	DMV	license request
Payment Administration Co	enter	Emissions Management Center	low emissions zone coordination
Payment Administration Co	enter	Enforcement Center	payment violation notification
Payment Administration Co	enter	Parking Management System	vehicle payment request
Payment Administration Co	enter	Public Information Device	traveler payment request
Payment Administration Co	enter	Public Information Device	user account reports
Privacy Protection Gatewa	У	Center	protected location and address flow
Privacy Protection Gatewa	у	Cooperative ITS Credentials Management System	protected location and address flow

olution Name:	(None-Data) - Guaranteed Internet (US)			Number of Issues: 2 To	tal Issue Severit	sy: 35
Public Information De	vice	Pay	yment Administration Center	user account setup		
Public Information De	vice	Tra	nsit Management Center	transit information user request		
Service Monitor Syste	m	Cod	operative ITS Credentials Management	System device enrollment information		
Service Monitor Syste	m	Coo	operative ITS Credentials Management	System misbehavior report		
Wide Area Information	n Disseminator	Cod	operative ITS Credentials Management	System device enrollment information		
Wide Area Information	n Disseminator	Coo	operative ITS Credentials Management	System misbehavior report		
olution Name:	(None-Data) - Guaranteed Internet (X.50	9)		Number of Issues: 1 To	tal Issue Severi	y: 32
				or I-I: Guaranteed Internet (X.509). The (None-Data) standards include an unspecified set of sta	andards at the u	pper layers. The
: Guaranteed Interne	Issue Description		Proposed Resolution	nteed delivery between ITS equipment using mainstream Internet security standards (X.509). Resolution Description	Timeframe	Applicability
Pata profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: System monitoring	Develop an internationally acceptable ITS application specification for the Service Monitor System to monitor other centers and support systems and to report issues.	Urgent	Australia, European Union, United States
Carrier				by this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Data Distribution Syst	em	Ser	vice Monitor System	support system status		
Data Distribution Syst	em	Ser	vice Monitor System	support system status		
	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data Distribution Syst sue ata profile not efined			·		Timeframe Near-term	Applicability Australia, European Union, United States
sue ata profile not efined	Performance, functionality, and the upper-layers of the OSI stack have not been defined	Issue Severity Ultra Information	Proposed Resolution Core authorization - coordination among centres Friples using this solution and affected by	Resolution Description Develop an internationally acceptable standard for the user permission request coordination information triples contained within the Core Authorization Service Package. By this Issue that would be addressed by the Proposed Resolution		Australia, European
sue ata profile not	Performance, functionality, and the upper-layers of the OSI stack have not been defined	Ultra Information 1 Des	Proposed Resolution Core authorization - coordination among centres	Resolution Description Develop an internationally acceptable standard for the user permission request coordination information triples contained within the Core Authorization Service Package.		Australia, European
sue ata profile not efined	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Ultra Information Toes Ott	Proposed Resolution Core authorization - coordination among centres Triples using this solution and affected betination	Resolution Description Develop an internationally acceptable standard for the user permission request coordination information triples contained within the Core Authorization Service Package. By this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
sue ata profile not efined Source Authorizing Center	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information Topes Oth	Proposed Resolution Core authorization - coordination among centres Triples using this solution and affected betination her Authorizing Centers	Resolution Description Develop an internationally acceptable standard for the user permission request coordination information triples contained within the Core Authorization Service Package. By this Issue that would be addressed by the Proposed Resolution Flow Name permission request coordination		Australia, European
sue eta profile not efined Source Authorizing Center Other Authorizing Ce	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information Topes Oth	Proposed Resolution Core authorization - coordination among centres Triples using this solution and affected testination her Authorizing Centers thorizing Center	Resolution Description Develop an internationally acceptable standard for the user permission request coordination information triples contained within the Core Authorization Service Package. By this Issue that would be addressed by the Proposed Resolution Flow Name permission request coordination permission request coordination	Near-term	Australia, European Union, United States
ta profile not fined Source Authorizing Center Other Authorizing Center ta profile not fined	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined	Issue Severity Ultra Information Toes Otto Aut Issue Severity Ultra	Proposed Resolution Core authorization - coordination among centres Triples using this solution and affected bestination her Authorizing Centers thorizing Center Proposed Resolution Core authorization - base services Triples using this solution and affected bestination.	Resolution Description Develop an internationally acceptable standard for the user permission request coordination information triples contained within the Core Authorization Service Package. By this Issue that would be addressed by the Proposed Resolution Flow Name permission request coordination Permission request coordination Resolution Description Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package. By this Issue that would be addressed by the Proposed Resolution	Near-term Timeframe	Australia, European Union, United States Applicability Australia, European
ta profile not fined Source Authorizing Center Other Authorizing Center ue ta profile not	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined	Issue Severity Ultra Information Topes Oth Aut Issue Severity Ultra Information Topes	Proposed Resolution Core authorization - coordination among centres Triples using this solution and affected bestination her Authorizing Centers thorizing Center Proposed Resolution Core authorization - base services	Resolution Description Develop an internationally acceptable standard for the user permission request coordination information triples contained within the Core Authorization Service Package. Dy this Issue that would be addressed by the Proposed Resolution Flow Name permission request coordination Resolution Description Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package.	Near-term Timeframe	Australia, European Union, United States Applicability Australia, European
Source Authorizing Center Other Authorizing Cesta profile not effined Source Source Source Source Source	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined	Issue Severity Ultra Information Toes Oth Aur Issue Severity Ultra Information Toes Cer	Proposed Resolution Core authorization - coordination among centres Triples using this solution and affected bestination her Authorizing Centers Proposed Resolution Core authorization - base services Triples using this solution and affected bestination	Resolution Description Develop an internationally acceptable standard for the user permission request coordination information triples contained within the Core Authorization Service Package. Dy this Issue that would be addressed by the Proposed Resolution Flow Name permission request coordination Resolution Description Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package. Dy this Issue that would be addressed by the Proposed Resolution Flow Name	Near-term Timeframe	Australia, European Union, United States Applicability Australia, European

olution Name:	(None-Data) - Guaranteed Internet (X.50	9)			Number of Issues: 1	Total Issue Severi	ty: 32
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Equipment maintenance coordination	Develop an internationally acceptable ITS a equipment maintenance and status inform	application specification for C-C exchange of ation	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected batination	y this Issue that would be addressed by the Proposed R	esolution Flow Name		
Service Monitor Sys	stem		nter		RSE fault data		
Service Monitor Sys	stem	Ma	int and Constr Management Center		RSE fault data		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Security and credentials management - base services	Develop an internationally acceptable stan information, device enrolment information revocations, and misbehaviour report information and Credentials Management Service Pack	n, security credentials, security credential rmation triples contained within the Security	Urgent	Australia, European Union, United States
Causas				y this Issue that would be addressed by the Proposed R			
Source Cooperative ITS Cre	edentials Management System		stination ject Registration and Discovery Service		Flow Name security credential revocations		
	edentials Management System		ject Registration and Discovery Service		security credentials		
Cooperative ITS Cre	Cooperative ITS Credentials Management System Object Registration and Discovery Servi				security policy and networking information		
Object Registration	and Discovery Service	Co	operative ITS Credentials Management	System	device enrollment information		
Object Registration	and Discovery Service	Co	operative ITS Credentials Management	System	misbehavior report		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Private location and address	Develop an internationally acceptable ITS a operation of a Privacy Protection Gateway.		Urgent	Australia, European Union, United States
Cource				y this Issue that would be addressed by the Proposed R	esolution Flow Name		
Source Connected Vehicle F	Roadside Equipment		nter		protected location and address flow		
	Gateway	Col	nter		protected location and address flow		

Solution Name:	(None-Data) - Guaranteed Internet (X.50	9)		Number of Issues: 1 To	otal Issue Severity:	32
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Object registration and discovery	Investigate mechanisms to register and discover objects within the ITS network.	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Center			ject Registration and Discovery Service	object registration		
Connected Vehicle R	Roadside Equipment	Ob	ject Registration and Discovery Service	object registration		
Data Distribution Sys	stem	Ob	ject Registration and Discovery Service	object registration		
Object Registration	and Discovery Service	Ce	nter	object discovery		
Object Registration	and Discovery Service	Co	nnected Vehicle Roadside Equipment	object discovery		
Object Registration	and Discovery Service	Da	ta Distribution System	object discovery		
Object Registration	and Discovery Service	Wi	de Area Information Disseminator	object discovery		
Wide Area Informati	ion Disseminator	Ob	ject Registration and Discovery Service	object registration		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Secure installation/update of software	Develop an internationally acceptable standard for the secure installation, update, and validation of software (including application, support, and OS software) on devices. The process should allow a system to determine which devices have been updated and provide a mechanism to define when such updates are allowed, recommended, and required.	Urgent	Australia, European Union, United States
		Information ⁻	Triples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		De	stination	Flow Name		
Source Center			stination nnected Vehicle Roadside Equipment	Flow Name RSE application install/upgrade		
	Roadside Equipment	Co				
Center		Co	nnected Vehicle Roadside Equipment	RSE application install/upgrade		
Center Connected Vehicle R		Co	nnected Vehicle Roadside Equipment	RSE application install/upgrade RSE application install/upgrade	Timeframe	Applicability
Center Connected Vehicle R Field Support Equipr	ment	Co Fie Co	nnected Vehicle Roadside Equipment Id Support Equipment nnected Vehicle Roadside Equipment	RSE application install/upgrade RSE application install/upgrade RSE application install/upgrade	Timeframe Urgent	Australia, European
Center Connected Vehicle R Field Support Equipr sue ata profile not	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined	Co Fie Co Issue Severity Ultra	Innected Vehicle Roadside Equipment Id Support Equipment Innected Vehicle Roadside Equipment Proposed Resolution I-F: Data aggregation	RSE application install/upgrade RSE application install/upgrade RSE application install/upgrade RSE application install/upgrade Resolution Description Develop an internationally acceptable ITS application specification for an RSE to aggregate		

Solution Name:	(None-Data) - Guaranteed Internet (X.50	9)	_		Number of Issues:	1	Total Issue Severity:	32
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Distribute maps	Develop an internationally acceptable ITS ap for distributing maps, roadway geometry, ar (e.g., a Map Update System) and field equip	nd intersection geometry betwe		Urgent	Australia, European Union, United States Japan
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Res	solution Flow Name			
Map Update System		Pul	olic Information Device		map updates			
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Credentials management system	Implement regional (security) credentials ma	anagement systems that are int	eroperable.	Urgent	Australia, European Union, United State
Source			riples using this solution and affected by	y this Issue that would be addressed by the Proposed Res	solution Flow Name			
	entials Management System		ject Registration and Discovery Service		security credential revocations			
Cooperative ITS Crede	entials Management System	Ob	ject Registration and Discovery Service		security credentials			
Cooperative ITS Crede	entials Management System	Ob	ject Registration and Discovery Service		security policy and networking informa	ition		
Object Registration ar	nd Discovery Service	Co	operative ITS Credentials Management S	System	device enrollment information			
Object Registration a	nd Discovery Service	Co	operative ITS Credentials Management S	System	misbehavior report			
Solution Name:	(None-Data) - Guaranteed Mobile Intern	et (US)			Number of Issues:	2	Total Issue Severity:	35
Guaranteed Mobile Int	ithin the U.S It combines standards associated wernet (US) standards include lower-layer standard ndpoint may connect to the wide-area-wireless s	ds that support se	ecure communications with guar	anteed delivery between two entities, either o	·			

A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Internet connection method.

Issue Description

Issue Severity

| Proposed Resolution | Resolution Description | Proposed Resolution | Resolution Description | Resolution Desc

issue	issue Description	issue severity	Proposed Resolution	Resolution Description	Timetrame	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Credentials management system	Implement regional (security) credentials management systems that are interoperable.	Urgent	Australia, European Union, United States
				this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Cooperative ITS Cred	dentials Management System	Pe	rsonal Information Device	security credential revocations		
Cooperative ITS Cred	dentials Management System	Pe	rsonal Information Device	security credentials		
Cooperative ITS Cred	dentials Management System	Pe	rsonal Information Device	security policy and networking information		
Cooperative ITS Cred	dentials Management System	Ve	hicle OBE	security credential revocations		
Cooperative ITS Cred	dentials Management System	Ve	hicle OBE	security credentials		
Cooperative ITS Cred	dentials Management System	Ve	hicle OBE	security policy and networking information		
Personal Information	n Device	Со	operative ITS Credentials Management S	ystem device enrollment information		
Personal Information	n Device	Co	operative ITS Credentials Management S	ystem misbehavior report		
Vehicle OBE		Со	operative ITS Credentials Management S	ystem device enrollment information		
Vehicle OBE		Co	operative ITS Credentials Management S	ystem misbehavior report		

Solution Name:	(None-Data) - Guaranteed Mobile Intern	et (US)			Number of Issues: 2	Total Issue Severity	35
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Security and credentials management - base services	Develop an internationally acceptable stand information, device enrolment information revocations, and misbehaviour report infor and Credentials Management Service Packa	, security credentials, security credential mation triples contained within the Security	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Re	esolution Flow Name		
	entials Management System		rsonal Information Device		security credential revocations		
Cooperative ITS Cred	entials Management System	Per	rsonal Information Device		security credentials		
Cooperative ITS Cred	entials Management System	Per	rsonal Information Device		security policy and networking information		
Cooperative ITS Cred	entials Management System	Vel	hicle OBE		security credential revocations		
Cooperative ITS Cred	entials Management System	Vel	hicle OBE		security credentials		
Cooperative ITS Cred	entials Management System	Vel	hicle OBE		security policy and networking information		
Personal Information	Device	Cod	operative ITS Credentials Management S	System	device enrollment information		
Personal Information	Device	Cod	operative ITS Credentials Management	System	misbehavior report		
Vehicle OBE		Cod	operative ITS Credentials Management	System	device enrollment information		
Vehicle OBE		Coo	operative ITS Credentials Management	System	misbehavior report		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust r revoking the privileges of a certificate authorecognized within a region) and of an ITS st misbehave).		Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Re	esolution Flow Name		
	entials Management System		rsonal Information Device		security credential revocations		
Cooperative ITS Cred	entials Management System	Per	rsonal Information Device		security credentials		
Cooperative ITS Cred	entials Management System	Per	rsonal Information Device		security policy and networking information		
Cooperative ITS Cred	entials Management System	Vel	hicle OBE		security credential revocations		
Cooperative ITS Cred	entials Management System	Vel	hicle OBE		security credentials		
Cooperative ITS Crede	entials Management System	Vel	hicle OBE		security policy and networking information		
Emergency Managem	ent Center	Em	ergency Vehicle OBE		occupant information		
Personal Information	Device	Coo	operative ITS Credentials Management S	System	device enrollment information		
Personal Information	Device	Cod	operative ITS Credentials Management	System	misbehavior report		
Vehicle OBE		Coo	operative ITS Credentials Management	System	device enrollment information		
Vehicle OBE		Cod	operative ITS Credentials Management	System	misbehavior report		
Vehicle OBE		Pay	yment Administration Center		vehicle payment request		

This solution is used within the U.S., E.U., and Australia. It combines standards associated with (None-Data) with those for I-M: Guaranteed Mobile Internet (X.509). The (None-Data) standards include an unspecified set of standards at the upper layers. The I-M: Guaranteed Mobile Internet (X.509) standards include lower-layer standards that support secure communications with guaranteed delivery between two entities, either or both of which may be actively moving; based on X.509

Number of Issues:

Total Issue Severity:

35

(None-Data) - Guaranteed Mobile Internet (X.509)

Solution Name:

Solution Name: (None-Data) - Guaranteed Mobile Internet (X.509) Total Issue Severity:					35				
ertificates. A non-mo	obile (if any) endpoint may connect to the wide-ar	ea-wireless servi	ce provider using any Intneret co	onnection method.					
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Object registration and discovery	Investigate mechanisms to register and discover objects within the ITS network.	Near-term	Australia, European Union, United States			
Source			Triples using this solution and affected b stination	by this Issue that would be addressed by the Proposed Resolution Flow Name					
Object Registration a	nd Discovery Service	Per	Personal Information Device object discovery						
Object Registration a	nd Discovery Service	Ve	hicle OBE	object discovery					
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: EU signal priority/preemption	Develop an ITS application specification for a centre to exchange requests and status for signal priority/preemption along a route with a vehicle.	Medium-term	Australia, European Union			
Source			Triples using this solution and affected b stination	by this Issue that would be addressed by the Proposed Resolution Flow Name					
Emergency Managem	nent Center	Em	nergency Vehicle OBE	green wave information					
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to	Urgent	Australia, European Union, United States			
				misbehave).					
Source				by this Issue that would be addressed by the Proposed Resolution					
Source Care Facility		Des	Triples using this solution and affected b stination needs to be stination needs to be still be said to be sai	11					
		Des Em	stination	by this Issue that would be addressed by the Proposed Resolution Flow Name					
Care Facility	nent Center	Des Em	stination nergency Vehicle OBE	by this Issue that would be addressed by the Proposed Resolution Flow Name care facility status					
Care Facility Care Facility		Des Em Em	nergency Vehicle OBE nergency Vehicle OBE	by this Issue that would be addressed by the Proposed Resolution Flow Name care facility status medical records					
Care Facility Care Facility Emergency Managem	BE	Em Em Car	nergency Vehicle OBE nergency Vehicle OBE nergency Vehicle OBE	by this Issue that would be addressed by the Proposed Resolution Flow Name care facility status medical records green wave information					
Care Facility Care Facility Emergency Managem Emergency Vehicle O	BE	Em Em Car	nergency Vehicle OBE nergency Vehicle OBE nergency Vehicle OBE nergency Vehicle OBE	by this Issue that would be addressed by the Proposed Resolution Flow Name care facility status medical records green wave information care facility status request					
Care Facility Care Facility Emergency Managem Emergency Vehicle O Emergency Vehicle O	BE nd Discovery Service	Em Em Car Car	nergency Vehicle OBE nergency Vehicle OBE nergency Vehicle OBE re Facility re Facility	by this Issue that would be addressed by the Proposed Resolution Flow Name care facility status medical records green wave information care facility status request medical records request					

This solution is used within the U.S.. It combines standards associated with (None-Data) with those for I-I: Internet (US). The (None-Data) standards include an unspecified set of standards at the upper layers. The I-I: Internet (US) standards include lower-layer standards that support secure communications between ITS equipment using X.509 or IEEE 1609.2 security certificates.

Data profile not defined appers of the OSI stack have not been defined for this information flow. Performance, functionality, and the upper appers of the OSI stack have not been defined for this information flow.	ution Name:	(None-Data) - Internet (US)			Number of Issues: 2	Total Issue Severity	/: 35
System to monitor other centers and support systems and to report issues.	sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Source Destination Service Monitor System Support system status	•	layers of the OSI stack have not been defined	Ultra	C-C: System monitoring		Urgent	Australia, European Union, United States
Service Issue Description Issue Severity Proposed Resolution Resolution Description Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Ultra C-C-Equipment maintenance coordination Develop an internationally acceptable ITS application specification for C-C exchange of equipment maintenance and status information flow. Information flow. Information flow Develop an internationally acceptable ITS application specification for C-C exchange of equipment maintenance and status information specification for C-C exchange of equipment maintenance and status information specification for C-C exchange of equipment maintenance and status information specification for C-C exchange of equipment maintenance and status information specification for C-C exchange of equipment maintenance and status information flow. Near-term equipment maintenance and status information Near-term equipment maintenance and status information specification for C-C exchange of equipment maintenance and status information specification for C-C exchange of equipment maintenance and status information Near-term Near-term equipment maintenance and status information Near-term equipment maintenance and status information Near-term Near-term equipment maintenance and status information Near-term equipment maintenance and status information Near-term Near-term equipment maintenance and status information Near-term Near-term equipment Near-term Near-term equipment Near-term Near-term equipment Near-term Near-	Source						
Data profile not defined layers of the OSI stack have not been defined for this information flow. Develop an internationally acceptable ITS application specification for C-C exchange of equipment maintenance and status information Destination Develop an internationally acceptable ITS application specification for C-C exchange of equipment maintenance and status information Destination Description Destination Destinati		n Disseminator					
lefined layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Postination Postinatio	sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Source Service Monitor System Wide Area Information Disseminator Service Monitor System Service Monitor System Wide Area Information Disseminator Service Monitor System Service Monito	•	layers of the OSI stack have not been defined	Ultra			Near-term	Australia, European Union, United States
Wide Area Information Disseminator Service Monitor System Resolution Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Ultra C-C: Distribute maps Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre). Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Destination Destination Resolution Description Resolution Description Timeframe Data profile not layers of the OSI stack have not been defined layers.	Source						
Issue Description Data profile not defined Description Description Description Description Description Description Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre). Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Timeframe Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre). Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name Center Timeframe Data profile not legical not legical proposed Resolution Description Description Timeframe Data profile not legical not legical proposed for the OSI stack have not been defined legical profile lod legical profile lod legical proposed reporting legical proposed reports from other local field devices.	Service Monitor System	m	Wide Area Information Disseminator		service maintenance status		
Data profile not defined Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre). Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Performance, functionality acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre). Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name Flow Nam	Wide Area Information	n Disseminator	Ser	rvice Monitor System	service maintenance request		
layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Timeframe Timeframe Description Description Performance, functionality, and the upper-layers of the OSI stack have not been defined defined Description Develop an internationally acceptable ITS application specification for managing exception-based reports from other local field devices. Description defined Develop an internationally acceptable ITS application specification for managing exception-based reports from other local field devices.	sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Source Destination Flow Name Map Update System Center map updates Source Map Update System Center map updates Source Map Update System Resolution Description Resolution Description Timeframe Data profile not defined Performance, functionality, and the upper-layers of the OSI stack have not been defined layers of the OSI stack have not bee	•	layers of the OSI stack have not been defined	Ultra	C-C: Distribute maps	for updating maps, roadway geometry, and intersection geometry among centres (e.g.,	Urgent	Australia, European Union, United States
Map Update System Same Issue Description Issue Severity Proposed Resolution Resolution Description Timeframe	Source						
Data profile not defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Perfor							
Data profile not defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality, and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Performance, functionality and the upper-layers of the OSI stack have not been defined Perfor							
defined layers of the OSI stack have not been defined exception-based reports from other local field devices.	sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
		layers of the OSI stack have not been defined	Ultra	I-F: Exception-based reporting		Urgent	Australia, European Union, United States
Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Source Flow Name	Source						
Border Inspection System Connected Vehicle Roadside Equipment vehicle signage local data		tem					

olution Name:	(None-Data) - Internet (US)				Number of Issues: 2	otal Issue Severi	ty: 35
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Security and credentials management - base services	information, device enrolment information	rmation triples contained within the Security	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed R	Resolution Flow Name		
	dentials Management System		de Area Information Disseminator		security credential revocations		
Cooperative ITS Cre	dentials Management System	Wi	de Area Information Disseminator		security credentials		
Cooperative ITS Cre	dentials Management System	Wi	de Area Information Disseminator		security policy and networking information		
Wide Area Informat	tion Disseminator	Co	operative ITS Credentials Management S	System	device enrollment information		
Wide Area Informat	tion Disseminator	Со	operative ITS Credentials Management S	System	misbehavior report		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Object registration and discovery	Investigate mechanisms to register and dis	scover objects within the ITS network.	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed R	Resolution Flow Name		
Object Registration	and Discovery Service	Wi	de Area Information Disseminator		object discovery		
Wide Area Informat	tion Disseminator	Ob	ject Registration and Discovery Service		object registration		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Develop standard for electronic distribution of traffic regulations		ndard to enable the provision and management proper operation of road users as they cross	Urgent	Australia, European Union, United State
Course	The state of the s			y this Issue that would be addressed by the Proposed R			
Source Transportation Info	rmation Center		tination de Area Information Disseminator		Flow Name traffic-related regulations		
·							
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Credentials management system	Implement regional (security) credentials i	management systems that are interoperable.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed R	Resolution Flow Name		
	dentials Management System		de Area Information Disseminator		security credential revocations		
		Wi	de Area Information Disseminator		security credentials		
	dentials Management System						
Cooperative ITS Cre	dentials Management System dentials Management System	Wi	de Area Information Disseminator		security policy and networking information		
Cooperative ITS Cre	dentials Management System		de Area Information Disseminator operative ITS Credentials Management S	System	security policy and networking information device enrollment information		

Solution Name:	(None-Data) - Internet (US)			Number of Issues:	2	Total Issue Severity:	35
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all le revoking the privileges of a certificate authority (e.g., if an authority is no I recognized within a region) and of an ITS station (e.g., in case an ITS statio misbehave).	onger	Urgent	Australia, European Union, United States
c				this Issue that would be addressed by the Proposed Resolution			
Source Border Inspection Sys	stem		tination mmercial Vehicle Check Equipment	Flow Name inspection results			
Border Inspection Sy			nnected Vehicle Roadside Equipment	border pass/pull-in			
Border Inspection Sys			nnected Vehicle Roadside Equipment	clearance notification			
Border Inspection Sys			nnected Vehicle Roadside Equipment	traveler border clearance status			
Border Inspection Sys			nnected Vehicle Roadside Equipment	vehicle signage local data			
Commercial Vehicle			nnected Vehicle Roadside Equipment	border pass/pull-in			
Commercial Vehicle			nnected Vehicle Roadside Equipment	electronic screening request			
Commercial Vehicle			nnected Vehicle Roadside Equipment	pass/pull-in			
Commercial Vehicle	Check Equipment	Cor	nnected Vehicle Roadside Equipment	screening event record			
Connected Vehicle R	oadside Equipment	Bor	der Inspection System	container manifest			
Connected Vehicle R	oadside Equipment	Bor	der Inspection System	container seal status			
Connected Vehicle R	oadside Equipment	Bor	der Inspection System	local border wait times			
Connected Vehicle R	oadside Equipment	Bor	der Inspection System	tag data			
Connected Vehicle Re	oadside Equipment	Bor	der Inspection System	traveler credentials			
Connected Vehicle R	oadside Equipment	Cor	mmercial Vehicle Check Equipment	border clearance data			
Connected Vehicle R	oadside Equipment	Cor	mmercial Vehicle Check Equipment	electronic lock data			
Connected Vehicle R	oadside Equipment	Cor	mmercial Vehicle Check Equipment	on-board safety data			
Connected Vehicle R	oadside Equipment	Cor	mmercial Vehicle Check Equipment	screening event record			
Connected Vehicle R	oadside Equipment	Cor	nmercial Vehicle Check Equipment	tag data			
Connected Vehicle Re	oadside Equipment	Cor	nmercial Vehicle Check Equipment	unique identifiers			
Connected Vehicle R	oadside Equipment	Tra	ffic Management Center	local border wait times			
Cooperative ITS Cred	lentials Management System	Wid	de Area Information Disseminator	security credential revocations			
Cooperative ITS Cred	lentials Management System	Wid	de Area Information Disseminator	security credentials			
Cooperative ITS Cred	lentials Management System	Wid	de Area Information Disseminator	security policy and networking inform	mation		
Map Update System		Cer	nter	map updates			
Object Registration a	and Discovery Service	Wid	de Area Information Disseminator	object discovery			
Service Monitor Syste	em	Wie	de Area Information Disseminator	service maintenance status			
Transportation Inform	mation Center	Wie	de Area Information Disseminator	traffic-related regulations			
Wide Area Information	on Disseminator	Cod	pperative ITS Credentials Management S	ystem device enrollment information			
Wide Area Information	on Disseminator	Cod	operative ITS Credentials Management S	ystem misbehavior report			

Wide Area Informati Wide Area Informati			ject Registration and Discovery Service vice Monitor System	object registration service maintenance request		
Wide Area Informati			vice Monitor System	support system status		
		361	vice Monitor System			0.5
tion Name:	(None-Data) - Internet (X.509)	ndards associate	d with (None-Data) with those	For I-I: Internet (X.509). The (None-Data) standards include an unspecified set of standards at the	tal Issue Severit	
	ude lower-layer standards that support secure con		-	· · · · · · · · · · · · · · · · · · ·	те аррег тауега.	The Firmternet
е	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ned	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: System monitoring	Develop an internationally acceptable ITS application specification for the Service Monitor System to monitor other centers and support systems and to report issues.	Urgent	Australia, European Union, United State
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Wide Area Informati	on Disseminator		vice Monitor System	support system status		
е	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ned	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United State
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Center			p Update System	map update notification		
Maint and Constr Ma	anagement Center	Ma	p Update System	current infrastructure restrictions		
Map Update System		Ce	nter	intersection geometry		
Map Update System		Ce	nter	map updates		
Map Update System		Otl	ner Map Update Systems	map update coordination		
Map Update System		Pai	rking Management System	parking facility geometry		
Other Map Update S	ystems	Ma	p Update System	map update coordination		
Parking Managemen	t System	Ma	p Update System	parking facility geometry		
Traffic Management	Center	Ma	p Update System	map update notification		
е	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ned	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Develop standard for electronic distribution of traffic regulations	Develop an internationally acceptable standard to enable the provision and management of electronic traffic regulations to enable proper operation of road users as they cross jurisdictional boundaries.	Urgent	Australia, European Union, United State
Source			Friples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Infor	mation Center		de Area Information Disseminator	traffic-related regulations		

ita profile not fined	Issue Description	Issue Severity				
fined	Danfannana firmatianality and the conservation	issue severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Update central map database	Develop an internationally acceptable ITS application specification that defines the rules for updating a central map database, including roadway and intersection geometry, based on real-world data readings from vehicles and transmitted to a map update system.	Medium-term	Australia, European Union, United States, Japan
Source			riples using this solution and affected tination	I by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Road	dside Equipment	Ma	p Update System	vehicle location data for mapping		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	The performance rules are not fully defined for this information flow.	Medium	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected tination	d by this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Cer	nter	intersection geometry		
ution Name:	(None-Data) - Local Broadcast Wireless (-	with those for V-Y- Local Broad	dcast Wireless (US). The (None-Data) standards include an unspecified set of standards at the up	otal Issue Severity	
	standards include lower-layer standards that su				pper layers. The v	-A. LUCAI
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timoframa	
				Resolution Description	Timeframe	Applicability
fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Queue warning	Develop an ITS application specification for providing queue warnings to vehicles from the roadside or other vehicles that is harmonised with DENM.	Urgent	Applicability Australia, European Union, United States
fined	layers of the OSI stack have not been defined	Information T		Develop an ITS application specification for providing queue warnings to vehicles from the		Australia, European
fined	layers of the OSI stack have not been defined for this information flow.	Information T Des	riples using this solution and affected	Develop an ITS application specification for providing queue warnings to vehicles from the roadside or other vehicles that is harmonised with DENM. If by this Issue that would be addressed by the Proposed Resolution		Australia, European
Source	layers of the OSI stack have not been defined for this information flow.	Information T Des	riples using this solution and affected tination	Develop an ITS application specification for providing queue warnings to vehicles from the roadside or other vehicles that is harmonised with DENM. by this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Source Connected Vehicle Road	layers of the OSI stack have not been defined for this information flow.	Information T Des Veh	riples using this solution and affected tination	Develop an ITS application specification for providing queue warnings to vehicles from the roadside or other vehicles that is harmonised with DENM. by this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Source Connected Vehicle Road sue ta profile not fined	layers of the OSI stack have not been defined for this information flow.	Information T Des Veh	riples using this solution and affected tination	Develop an ITS application specification for providing queue warnings to vehicles from the roadside or other vehicles that is harmonised with DENM. If by this Issue that would be addressed by the Proposed Resolution Flow Name queue warning information	Urgent	Australia, European Union, United States Applicability Australia, European
Source Connected Vehicle Road ue ta profile not fined	layers of the OSI stack have not been defined for this information flow. dside Equipment Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined	Information T Des Veh Issue Severity Ultra	riples using this solution and affected tination nicle OBE Proposed Resolution V-L: Distribute maps	Develop an ITS application specification for providing queue warnings to vehicles from the roadside or other vehicles that is harmonised with DENM. By this Issue that would be addressed by the Proposed Resolution Flow Name queue warning information Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry to a vehicle from a local source. By this Issue that would be addressed by the Proposed Resolution	Urgent	Australia, European Union, United States Applicability Australia, European Union, United States
Source Connected Vehicle Road ue ta profile not fined	layers of the OSI stack have not been defined for this information flow. dside Equipment Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Information T Des Ver Issue Severity Ultra Information T Des	riples using this solution and affected tination nicle OBE Proposed Resolution V-L: Distribute maps	Develop an ITS application specification for providing queue warnings to vehicles from the roadside or other vehicles that is harmonised with DENM. By this Issue that would be addressed by the Proposed Resolution Flow Name queue warning information Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry to a vehicle from a local source.	Urgent	Australia, European Union, United States Applicability Australia, European Union, United States,

Solution Name:	(None-Data) - Local Broadcast Wireless (US)		Number of Issues: 2	Total Issue Severity:	35
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Commercial Vehicle (DBE		nnected Vehicle Roadside Equipment	border clearance data		
Commercial Vehicle (DBE	Co	nnected Vehicle Roadside Equipment	container transfer location request		
Commercial Vehicle (DBE	Co	nnected Vehicle Roadside Equipment	electronic lock data		
Commercial Vehicle (DBE	Co	nnected Vehicle Roadside Equipment	on-board safety data		
Commercial Vehicle (DBE	Co	nnected Vehicle Roadside Equipment	screening event record		
Commercial Vehicle (DBE	Co	nnected Vehicle Roadside Equipment	tag data		
Commercial Vehicle (DBE	Co	nnected Vehicle Roadside Equipment	unique identifiers		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	border clearance data request		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	border clearance event		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	border pass/pull-in		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	clearance notification		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	container transfer location		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	electronic lock data request		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	electronic screening request		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	pass/pull-in		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	request tag data		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	screening event record		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	trigger area notification		
Connected Vehicle Ro	padside Equipment	Fre	eight Equipment	container identification request		
Connected Vehicle Ro	padside Equipment	Fre	eight Equipment	container seal interrogation		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	cooperative adaptive cruise control parameters		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	electric charging services inventory		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	emergency acknowledge		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	infrastructure restriction warning notification		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	low emissions zone parameters		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	map updates		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	parking facility geometry		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	queue warning information		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	restricted lane warning		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	restricted lanes parameters		

Sol	lution Name:	(None-Data) - Local Broadcast Wireless (US)			Number of Issues:	2	Total Issue Severity:	35
	Connected Vehicle Roadside E	quipment	Vehicle OBE	road use o	charges			
	Connected Vehicle Roadside E	quipment	Vehicle OBE	traveler b	order clearance status			
	Emergency Vehicle OBE		Freight Equipment	container	seal interrogation			
	Other Vehicle OBEs		Vehicle OBE	emergenc	cy acknowledge			
	Vehicle OBE		Connected Vehicle Roadside Equipment	cooperati	ve adaptive cruise control stat	us		
	Vehicle OBE		Connected Vehicle Roadside Equipment	road use h	history			
	Vehicle OBE		Other Vehicle OBEs	emergenc	cy acknowledge			
Sol	lution Name:	(None-Data) - Local Unicast Wireless (US)			Number of Issues:	2	Total Issue Severity:	35

This solution is used within the U.S.. It combines standards associated with (None-Data) with those for V-X: Local Unicast Wireless (US). The (None-Data) standards include an unspecified set of standards at the upper layers. The V-X: Local Unicast Wireless (US) standards include lower-layer standards that support local-area unicast wireless solutions, such as DSRC technologies, LTE, etc.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Pata profile not lefined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Private location and address	Develop an internationally acceptable ITS application specification that defines the operation of a Privacy Protection Gateway.	Urgent	Australia, European Union, United States
		Information 1	Triples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Personal Information	on Device	Cor	nnected Vehicle Roadside Equipment	private location and address flow		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	private location and address flow		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
rata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between vehicles and remote interested parties (e.g., centres).	Urgent	Australia, European Union, United States

	Information Triples using this solution and affected by this Issue that would be	addressed by the Proposed Resolution	
Source	Destination	Flow Name	
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle route plan	

olution Name:	(None-Data) - Local Unicast Wireless (US)		Number of Issues: 2	Total Issue Severity	: 35
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Incertainty about rust revocation nechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Commercial Vehicle C	DBE	Inte	ermodal Terminal	container transfer location request		
Connected Vehicle Ro	adside Equipment	Vel	nicle OBE	access violation notification		
Connected Vehicle Ro	adside Equipment	Vel	nicle OBE	current charging status		
Freight Equipment		Cor	nnected Vehicle Roadside Equipment	container manifest		
Freight Equipment		Cor	nnected Vehicle Roadside Equipment	container seal status		
Freight Equipment		Cor	nnected Vehicle Roadside Equipment	tag data		
Freight Equipment		Em	ergency Vehicle OBE	container manifest		
Freight Equipment		Em	ergency Vehicle OBE	container seal status		
Intermodal Terminal		Cor	mmercial Vehicle OBE	container transfer location		
Intermodal Terminal		Fre	ight Equipment	container identification request		
Personal Information	Device	Cor	nnected Vehicle Roadside Equipment	private location and address flow		
Personal Information	Device	Cor	nnected Vehicle Roadside Equipment	transit user information		
Personal Information	Device	Tra	nsit Vehicle OBE	transfer request		
Personal Information	Device	Tra	nsit Vehicle OBE	transit user information		
Transit Vehicle OBE		Per	sonal Information Device	transfer status		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	private location and address flow		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	service response		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	traveler credentials		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	vehicle charging profile		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	vehicle payment information		

Solution Name: (None-Data) - Mobile Internet (US) 3 Total Issue Severity: 38

Connected Vehicle Roadside Equipment

This solution is used within the U.S.. It combines standards associated with (None-Data) with those for I-M: Mobile Internet (US). The (None-Data) standards include an unspecified set of standards at the upper layers. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - requests	Develop an internationally acceptable standard for the permission application and permission application receipt information triples contained within the Core Authorization Service Package.	Medium-term	Australia, European Union, United States

vehicle route plan

Vehicle OBE

Solution Name:	(None-Data) - Mobile Internet (US)			Number of Issues: 3 To	otal Issue Severit	38
				by this Issue that would be addressed by the Proposed Resolution		
Source			tination csonal Information Device	Flow Name permission application receipt		
Personal Information	on Device	Cei	nter	permission application		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - base services	Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Personal Information	on Device	Cei	nter	device identification		
Vehicle OBE		Cei	nter	device identification		
	Issue Description		Proposed Resolution	Resolution Description	Timeframe	Applicability
Issue Data profile not defined	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow.				Timeframe Urgent	Australia, European
Issue Data profile not	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Issue Severity Ultra Information	Proposed Resolution V-L: Private location and address	Resolution Description Develop an internationally acceptable ITS application specification that defines the		Australia, European
Issue Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra Information 1 Des	Proposed Resolution V-L: Private location and address Triples using this solution and affected	Resolution Description Develop an internationally acceptable ITS application specification that defines the operation of a Privacy Protection Gateway. by this Issue that would be addressed by the Proposed Resolution		Applicability Australia, European Union, United State

Solution Name:	(None-Data) - Mobile Internet (US)			Number of Issues:	3	Total Issue Severity:	38
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all level revoking the privileges of a certificate authority (e.g., if an authority is no low recognized within a region) and of an ITS station (e.g., in case an ITS station misbehave).	nger	Urgent	Australia, European Union, United State
C				this Issue that would be addressed by the Proposed Resolution			
Source Center			rsonal Information Device	Flow Name permission application receipt			
	Administration Center		mmercial Vehicle OBE	safety inspection record			
Commercial Vehicle			mmercial Vehicle Administration Center	on-board safety data			
Commercial Vehicle			mmercial Vehicle Administration Center	unique identifiers			
Commercial Vehicle (mmercial Vehicle OBE Service Provider	on-board vehicle data			
Commercial Vehicle (et and Freight Management Center	on-board safety data			
Commercial Vehicle (et and Freight Management Center	on-board vehicle data			
Commercial Vehicle (et and Freight Management Center	route deviation alert			
Commercial Vehicle (nsportation Information Center	freight traveler information preference	es		
Emergency Managen			ergency Vehicle OBE	emergency dispatch requests			
Emergency Managen	nent Center		hicle OBE	emergency acknowledge			
Emergency Vehicle O	BE	Em	ergency Management Center	emergency dispatch response			
Enforcement Center		Cor	mmercial Vehicle OBE	commercial vehicle violation notification	on		
Enforcement Center		Vel	nicle OBE	service notification record			
Fleet and Freight Ma	nagement Center	Cor	mmercial Vehicle OBE	route deviation alert			
Fleet and Freight Ma	nagement Center	Cor	mmercial Vehicle OBE	safety inspection record			
Fleet and Freight Ma	nagement Center	Cor	mmercial Vehicle OBE	transport assignment			
Fleet and Freight Ma	nagement Center	Cor	mmercial Vehicle OBE	trigger area			
Fleet and Freight Ma	nagement Center	Cor	mmercial Vehicle OBE	trigger area notification			
Fleet and Freight Ma	nagement Center	Fre	ight Equipment	freight monitoring parameters			
Maint and Constr Ma	nagement Center	Ma	int and Constr Vehicle OBE	maint and constr dispatch information			
Maint and Constr Ma	nagement Center	Vel	nicle OBE	roadway maintenance status			
Maint and Constr Vel	hicle OBE	Ma	int and Constr Management Center	infrastructure conditions data			
Maint and Constr Vel	hicle OBE	Ma	int and Constr Management Center	maint and constr dispatch status			
Maint and Constr Vel	hicle OBE	Ma	int and Constr Management Center	work zone status			
Map Update System		Per	rsonal Information Device	map updates			
Map Update System		Vel	nicle OBE	map updates			
Map Update System		Vel	nicle OBE	parking facility geometry			
Payment Administrat	cion Center	Per	rsonal Information Device	access violation notification			
Payment Administrat	cion Center	Per	rsonal Information Device	traveler payment request			

Sol	lution Name:	(None-Data) - Mobile Internet (US)		Number of Issues:	3	Total Issue Severity:	38
	Payment Administration Cent	er	Personal Information Device	user account reports			
	Payment Administration Cent	er	Vehicle OBE	access violation notification			
	Payment Administration Cent	er	Vehicle OBE	road use charges			
	Payment Administration Cent	er	Vehicle OBE	vehicle payment request			
	Personal Information Device		Center	device identification			
	Personal Information Device		Center	permission application			
	Personal Information Device		Data Distribution System	traveler sourced updates			
	Personal Information Device		Payment Administration Center	user account setup			
	Personal Information Device		Privacy Protection Gateway	private location and address flow			
	Personal Information Device		Service Monitor System	PID status			
	Personal Information Device		Transit Management Center	transfer request			
	Personal Information Device		Transit Management Center	transit information user request			
	Personal Information Device		Transit Management Center	trip confirmation			
	Personal Information Device		Transit Management Center	trip request			
	Personal Information Device		Transportation Information Center	emergency traveler information request			
	Personal Information Device		Transportation Information Center	evacuation assistance request			
	Personal Information Device		Transportation Information Center	freight traveler information preferences			
	Personal Information Device		Transportation Information Center	shelter request			
	Personal Information Device		Transportation Information Center	traveler sourced updates			
	Personal Information Device		Transportation Information Center	trip confirmation			
	Personal Information Device		Transportation Information Center	trip feedback			
	Personal Information Device		Transportation Information Center	trip request			
	Personal Information Device		Transportation Information Center	user account setup			
	Personal Information Device		Transportation Information Center	user profile			
	Traffic Management Center		Vehicle OBE	automated lane control data			
	Traffic Management Center		Vehicle OBE	restricted lane warning			
	Traffic Management Center		Vehicle OBE	restricted lanes application info			
	Traffic Management Center		Vehicle OBE	restricted lanes parameters			
	Transit Management Center		Personal Information Device	transfer status			
	Transit Management Center		Personal Information Device	trip plan			
	Transit Management Center		Transit Vehicle OBE	transfer status			
	Transit Management Center		Transit Vehicle OBE	transit stop locations			
	Transit Vehicle OBE		Transit Management Center	transfer request			
	Transit Vehicle OBE		Transit Management Center	transit traveler request			
	Transit Vehicle OBE		Transit Management Center	transit user information			
	Transportation Information C	enter	Commercial Vehicle OBE	freight-specific traveler information			

olution Name:	(None-Data) - Mobile Internet (US)		Number of Issues: 3	Total Issue Severity:	38
Transportation Ir	formation Center	Personal Information Device	emergency traveler information		
Transportation Ir	formation Center	Personal Information Device	evacuation assistance information		
Transportation Ir	formation Center	Personal Information Device	freight-specific traveler information		
Transportation Ir	formation Center	Personal Information Device	shelter recommendations		
Transportation Ir	formation Center	Personal Information Device	traffic-related regulations		
Transportation Ir	formation Center	Personal Information Device	trip plan		
Transportation Ir	formation Center	Personal Information Device	user profile		
Transportation Ir	formation Center	Vehicle OBE	electric charging services inventory		
Transportation Ir	formation Center	Vehicle OBE	evacuation assistance information		
Transportation Ir	formation Center	Vehicle OBE	shelter recommendations		
Transportation Ir	formation Center	Vehicle OBE	traffic-related regulations		
Transportation Ir	formation Center	Vehicle OBE	trip plan		
Vehicle OBE		Center	device identification		
Vehicle OBE		Data Distribution System	traveler sourced updates		
Vehicle OBE		Payment Administration Center	road use history		
Vehicle OBE		Payment Administration Center	vehicle payment request		
Vehicle OBE		Privacy Protection Gateway	private location and address flow		
Vehicle OBE		Service Monitor System	OBE status		
Vehicle OBE		Transportation Information Center	emergency traveler information request		
Vehicle OBE		Transportation Information Center	evacuation assistance request		
Vehicle OBE		Transportation Information Center	shelter request		
Vehicle OBE		Transportation Information Center	traveler sourced updates		
Vehicle OBE		Transportation Information Center	trip confirmation		
Vehicle OBE		Transportation Information Center	trip feedback		
Vehicle OBE		Transportation Information Center	trip request		
Vehicle OBE		Transportation Information Center	user profile		
ssue	Issue Description	Issue Severity Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra C-V: Fleet management	Develop an ITS application specification for managing fleet vehicles, including managing the location of fleet vehicles such as emergency vehicles and transit vehicles	Medium-term	United States
Source		Information Triples using this solution and affected b Destination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Personal Informa	tion Device	Service Monitor System	PID status		
Vehicle OBE		Service Monitor System	OBE status		

Solution Name:	(None-Data) - Mobile Internet (US)			Number of Issues: 3	otal Issue Severity	: 38
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a vehicle or personal information device).	Urgent	Australia, European Union, United States Japan
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			sonal Information Device	map updates		
Map Update System		Vel	nicle OBE	map updates		
Map Update System		Veh	nicle OBE	parking facility geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Automated lane control data	Develop an internationally acceptable ITS application specification for providing control commands and operating parameters for automated vehicle systems, including platooning operations.	Medium-term	Australia, European Union, United States
				y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Traffic Management (Contor					
Traffic Management C	Center		nicle OBE	automated lane control data		
	Center Issue Description				Timeframe	Applicability
Issue Data profile not		Veh	iicle OBE	automated lane control data	Timeframe Near-term	Applicability Australia, European Union
Issue Data profile not defined	Performance, functionality, and the upper-layers of the OSI stack have not been defined	Issue Severity Ultra Information T	Proposed Resolution C-V: Work zone status riples using this solution and affected by	Resolution Description Develop an ITS application specification for a maintenance and construction vehicle to report and update the status of a work zone to a centre. By this Issue that would be addressed by the Proposed Resolution		Australia, European
Data profile not defined	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information T	Proposed Resolution C-V: Work zone status riples using this solution and affected betination	Resolution Description Develop an ITS application specification for a maintenance and construction vehicle to report and update the status of a work zone to a centre. By this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Data profile not defined	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information T	Proposed Resolution C-V: Work zone status riples using this solution and affected by	Resolution Description Develop an ITS application specification for a maintenance and construction vehicle to report and update the status of a work zone to a centre. By this Issue that would be addressed by the Proposed Resolution		Australia, European
Data profile not defined Source Maint and Constr Veh	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information T Des	Proposed Resolution C-V: Work zone status riples using this solution and affected betination int and Constr Management Center	Resolution Description Develop an ITS application specification for a maintenance and construction vehicle to report and update the status of a work zone to a centre. By this Issue that would be addressed by the Proposed Resolution Flow Name work zone status	Near-term	Australia, European Union
Data profile not defined	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information T	Proposed Resolution C-V: Work zone status riples using this solution and affected betination	Resolution Description Develop an ITS application specification for a maintenance and construction vehicle to report and update the status of a work zone to a centre. By this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Source Maint and Constr Veh Source Data profile not defined	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. icle OBE Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined	Issue Severity Ultra Information T Des Ma Issue Severity Ultra	Proposed Resolution C-V: Work zone status riples using this solution and affected betination int and Constr Management Center Proposed Resolution Develop standard for electronic distribution of traffic regulations riples using this solution and affected between the state of the state o	Resolution Description Develop an ITS application specification for a maintenance and construction vehicle to report and update the status of a work zone to a centre. We this Issue that would be addressed by the Proposed Resolution Flow Name work zone status Resolution Description Develop an internationally acceptable standard to enable the provision and management of electronic traffic regulations to enable proper operation of road users as they cross jurisdictional boundaries. By this Issue that would be addressed by the Proposed Resolution	Near-term Timeframe	Australia, European Union Applicability Australia, European
Data profile not defined Source Maint and Constr Veh Data profile not	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information T Des Ma Issue Severity Ultra Information T Des	Proposed Resolution C-V: Work zone status riples using this solution and affected betination int and Constr Management Center Proposed Resolution Develop standard for electronic distribution of traffic regulations	Resolution Description Develop an ITS application specification for a maintenance and construction vehicle to report and update the status of a work zone to a centre. The proposed Resolution Flow Name Work zone status Resolution Description Develop an internationally acceptable standard to enable the provision and management of electronic traffic regulations to enable proper operation of road users as they cross jurisdictional boundaries.	Near-term Timeframe	Australia, European Union Applicability Australia, European

Solution Name:	(None-Data) - Mobile Internet (US)			Number of Issues: 3 To	otal Issue Severity	38
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Identifier registry does not exist	The standard defines a field which requires a globally unique identifier, but no registration authority exists to assign these values.	Medium	Identifier registry	Implement a centralised identifier registry network that ensures the assignment of globally unique C-ITS identifiers.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Personal Informatio	on Device	Cer	nter	device identification		
Vehicle OBE		Cer	nter	device identification		
Solution Name:	(None-Data) - Mobile Internet (X.509)			Number of Issues: 4 To	otal Issue Severity	46
ለ: Mobile Internet (ኦ		support secure	communications between two er	r I-M: Mobile Internet (X.509). The (None-Data) standards include an unspecified set of standards include an unspecified set of standards, either or both of which may be actively moving; based on X.509 certificates. A non-mo		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - base services	Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Personal Informatio	on Device	Cei	nter	device identification		
Vehicle OBE		Cer	nter	device identification		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - requests	Develop an internationally acceptable standard for the permission application and permission application receipt information triples contained within the Core Authorization Service Package.	Medium-term	Australia, European Union, United States
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Center		Per	rsonal Information Device	permission application receipt		
Personal Informatio	on Device	Cei	nter	permission application		
lssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-X: DENM, IVI, TPEG2, TMC and Contextual Speed Information	Standardise on a single solution for providing traveler information, lane closure information and speed information; currently this information can be sent via DENM, IVI, TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc).	Urgent	Australia, European Union
Source			riples using this solution and affected by tination	/ this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Info	rmation Center		nicle OBE	road weather advisories		
	Page 27 of 264					

Solution Name:	(None-Data) - Mobile Internet (X.509)			Number of Issues: 4	Total Issue Severity	: 46			
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Private location and address	Develop an internationally acceptable ITS application specification that defines the operation of a Privacy Protection Gateway.	Urgent	Australia, European Union, United States			
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name					
Personal Information	on Device	Pri	vacy Protection Gateway	private location and address flow					
Vehicle OBE		Pri	vacy Protection Gateway	private location and address flow					
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
Pata profile not lefined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Fleet management	Develop an ITS application specification for managing fleet vehicles, including managing the location of fleet vehicles such as emergency vehicles and transit vehicles	Medium-term	United States			
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name					
Emergency Vehicle	ОВЕ		nergency Management Center	emergency vehicle tracking data					
Personal Information	on Device	Se	rvice Monitor System	PID status					
Vehicle OBE		Se	rvice Monitor System	OBE status					
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
oata profile not lefined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: EU signal priority/preemption	Develop an ITS application specification for a centre to exchange requests and status for signal priority/preemption along a route with a vehicle.	Medium-term	Australia, European Union			
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name					
Emergency Manage	ment Center	Em	nergency Vehicle OBE	green wave information					
Emergency Vehicle	OBE	Em	nergency Management Center	green wave request					
	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
ssue	1330C Description								
Pata profile not	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Signal operations	Develop an ITS application specification for providing intersection status information to vehicles from a centre for environmental benefits.	Urgent	Australia, European Union			
Data profile not defined Source	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Information ⁻			Urgent	Australia, European Union			

defined byers of the OSI stack have not been defined for this information flow. Contact Con	Data profile not defined Performance, functionality, and the upper defined plant of the Ost stack have not been defined for this information flow. CV-Distribute maps	Data profile not defined Performance, functionality, and the upper- defined William Performance functionality, and the upper- defined William Performance functionality, and the upper- defined for this information flow. Very Update System Very Update System	Solution Name:	(None-Data) - Mobile Internet (X.509)			Number of Issues: 4	otal Issue Severity	: 46
defined by a control of the CSI stack have not been defined or this information flow. Information flow	defined bayers of the COS stack have not been defined for this information flow. Internation flow	defined bytes of the CSI stack have not been defined for this information flow. Information flow Inform	Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Way Updan's System Pensonal Information Device mps updates May Updan's System Vehicle OIE mps updates May Updan's System Vehicle OIE parling facility geometry Vehicle OIE	May Lipidate System May Li	May Lipidaris System Personal Information Device map updates May Lipidaris System Vehicle OSE map updates May Lipidaris System Vehicle OSE map updates May Diplate System Vehicle OSE parking facility asonetry Trails, Management Center Vehicle OSE Trails, Management Center Vehicle OSE State Description Itsue Description Itsue Description Itsue Description Itsue Severity Proposed Resolution Resolution Description Source Itsue Description Itsue Severity Proposed Resolution Resolution Description Itsue Itsue Description Itsue Description Itsue Description Itsue Description Itsue It	•	layers of the OSI stack have not been defined	Ultra	C-V: Distribute maps	for distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a	Urgent	Australia, European Union, United States, Japan
Map Update System Verlice OBE map updates Map Update System Verlice OBE parking facility geometry Map Update System Verlice OBE roadway geometry Map Update System Verlice OBE roadway geometry Map Update System Verlice OBE roadway geometry Traffe Management Center Verlice OBE roadway geometry Verlice OBE roadway geometry Verlice OBE verlice of the Management Center Verlice	May Update System Vehicle OE may updates May Update System Vehicle OE may updates May Update System Vehicle OE parking folling yomen'ry May Update System Vehicle OE parking folling yomen'ry May Update System Vehicle OE roadway genetry Traffic Management Center Vehicle OE vehicle road information Succe Secretary of this information flow. Items of the CV-Automated Iane control of the System of the Siste Description of the CV-Automated Iane control of the Siste OE secretary of this information flow. Items of the Siste OE secretary of the Siste OE secret	May Update System Venicle OEC map updates May Update System Venicle OEC map updates Venicle OEC pursuing facility generity May Update System Venicle OEC pursuing facility generity May Update System Venicle OEC pursuing facility generity May Update System Venicle OEC venicle OEC Venicl	Source						
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Traffic Management Centre Issue Description Issue Severity Proposed Resolution Resolution Description Develop an internationally acceptable ITS application specification for providing control gate of the information flow. Issue Description Ultra C-V: Automated Jane control data Develop an internationally acceptable ITS application specification for providing control gate of the information flow. Issue Description Develop an internationally acceptable ITS application specification for providing control gate of the information flow. Information Traffic using Phis solution and affected by the Naue Individual parameters for automated vehicle systems, including plateoning operations. Vehicle OBE	Traffic Management Lear Vehicle OBE vehicle OBE vehicle Country in Interface Management (Interface Management Country Interface Mana	Traffic Management La profile not la	Map Update System		Ve	hicle OBE	parking facility geometry		
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Traffic Management Center Vehicle OBE automated lane control data Vehicle OBE automated lane control data Vehicle OBE Timeframe Applicability ta profile not layers of the OSI stack have not been defined for traffic regulations Information Troples using this solution and affected by this issue that would be addressed by the Proposed Resolution Transportation Information Center Vehicle OBE Information Device Vehicle OBE Information Device Information Center Vehicle OBE Information Device Information Center Vehicle OBE Information Device Information Device Information Device Information Center Vehicle OBE Information Description It sue Description It sue Severity It sue Severity It sue Description It sue Severity It sue Description It is profile not layers of the OSI stack have not been defined for this information flow. Information Troples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Resolution Description Resolution Description It imeframe Applicability Applicability It imeframe Applicab	Traffic Management Center Vehicle OBE automated lane control data Vehicle OBE Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Ultra Develop standard for electronic distribution of traffic regulations Vehicle OBE Information Triples using this solution and affected by this issue that would be addressed by the Proposed Resolution Personal Information Center Personal Information Device Itansportation Information Center Vehicle OBE Itansportation Information Center Vehicle OBE Itansportation Information Center Vehicle OBE Itansportation Information Center Itansportation Information Center Vehicle OBE Itansportation Information Center Itansportation Information Center Vehicle OBE Itansportation Information Center Vehicle OBE Itansportation Information Center Itansportation Information Center Vehicle OBE Itansportation Information Center Vehicle OBE Itansportation Information Center Itansportation Information Center Vehicle OBE Itansportation Information Description Itansportation Information Center Vehicle OBE Itansportation Information Description Itansportation Information Center Vehicle OBE Itansportation Information Description Itansportation Information Center Vehicle OBE Itansportation Information Information Center Vehicle OBE Itansportation Information Information Center Vehicle OBE Itansportation Information Information Information Center Vehicle OBE Itansportation Information Information Information Information Information Information Inform	Traffic Management Center Vehicle OBE automated lane control data Vehicle OBE Susue Description Susue Severity Proposed Resolution Resolution Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name	Cource						
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Source Destination Destination Flow Name	Source Destination Flow Name	Source Transportation Information Center Transportation Information Center Transportation Information Center Transportation Information Center Vehicle OBE traffic-related regulations Vehicle OBE traffic-related regulations Vehicle OBE traffic-related regulations Timeframe Applicability trapposed Resolution Description trapposed Resolution Description Timeframe Applicability trapposed Resolution Description Timeframe Applicability trapposed Resolution Secription Timeframe Australia, Even Companies of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Destination Flow Name	•	layers of the OSI stack have not been defined	Ultra	electronic distribution of	of electronic traffic regulations to enable proper operation of road users as they cross	Urgent	Australia, European Union, United States
Transportation Information Center Personal Information Device Transportation Information Center Vehicle OBE traffic-related regulations traffic-related regulations Transportation Information Center Vehicle OBE traffic-related regulations Transportation Information Center Vehicle OBE Transportation Description Resolution Description Timeframe Applicability Tapposed Resolution Timeframe Applicability To performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Personal Information Device Transportation Information Security Transportation Information Center Transportation Information Center Vehicle OBE Traffic-related regulations Trimeframe Applicability Australia, Europ Union Flow Name	Transportation Information Center Personal Information Device Personal Information Device Transportation Information Center Vehicle OBE Transportation Description Lesue Description Timeframe Applicability ta profile not fined Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Performance Resolution Timeframe Applicability Australia, Eur Union Flow Name	Transportation Information Center Personal Information Device Transportation Information Center Vehicle OBE Transportation Description Transportation Information Center Vehicle OBE Transportation Description Transportation Information Center Vehicle OBE Transportation Description Resolution Description Timeframe Applicability ta profile not fined of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Personal Information Device Transportation Information Center Vehicle OBE Transportation Description Transportation Information Description Transportation Information Center Vehicle OBE Transportation Description Transportation Description Transportation Information Device Transportation Information Center Vehicle OBE Transportation Description Transportation Information Description Trimeframe Applicability Australia, Et Union Personal Resolution Personal Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name	c.						
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Source Plow Name	Source Plow Name	Source Plow Name	ta profile not	Performance, functionality, and the upper- layers of the OSI stack have not been defined			Develop an ITS application specification for a maintenance and construction vehicle to		Australia, European
			Cource						
				icle OBE					

sue	(None-Data) - Mobile Internet (X.509) Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
						Applicability
a profile not ned	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Update central map database	Develop an internationally acceptable ITS application specification that defines the rules for updating a central map database, including roadway and intersection geometry, based on real-world data readings from vehicles and transmitted to a map update system.	Medium-term	Australia, European Union, United States Japan
				by this Issue that would be addressed by the Proposed Resolution		
Source Vehicle OBE			ptination p Update System	Flow Name vehicle location and motion for mapping		
Verlicle OBL		IVI	p Opuate System	venicie location and motion for mapping		
ıe	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Transit vehicle schedule management	Develop an ITS application specification for managing transit vehicle schedule performance data from transit vehicles to a centre.	Near-term	Australia, European Union
Source			Friples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transit Manageme	nt Center	Tra	nsit Vehicle OBE	transit schedule information		
Transit Vehicle OBE		Tra	nsit Management Center	transit vehicle schedule performance		
ıe	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between vehicles and remote interested parties (e.g., centres).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Vehicle OBE		Da	ta Distribution System	vehicle situation data		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta not defined gh)	Required data elements are not defined.	High	C-V: Fleet management	Develop an ITS application specification for managing fleet vehicles, including managing the location of fleet vehicles such as emergency vehicles and transit vehicles	Medium-term	United States
Source			Triples using this solution and affected butination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Vehicle	OBE		ergency Management Center	emergency vehicle tracking data		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	The performance rules are not fully defined	Medium	C-V: Fleet management	Develop an ITS application specification for managing fleet vehicles, including managing the location of fleet vehicles such as emergency vehicles and transit vehicles	Medium-term	United States
formance not y defined	for this information flow.					
rformance not ly defined edium)	for this information flow.		Friples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		

lution Name:	(None-Data) - Mobile Internet (X.509)			Number of Issues: 4 To	otal Issue Severity:	46
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
formance not y defined edium)	The performance rules are not fully defined for this information flow.	Medium	C-V: Signal operations	Develop an ITS application specification for providing intersection status information to vehicles from a centre for environmental benefits.	Urgent	Australia, European Union
Source			rriples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Managemen	it Center		hicle OBE	intersection status		
ıe	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
formance not y defined edium)	The performance rules are not fully defined for this information flow.	Medium	C-V: Update central map database	Develop an internationally acceptable ITS application specification that defines the rules for updating a central map database, including roadway and intersection geometry, based on real-world data readings from vehicles and transmitted to a map update system.	Medium-term	Australia, European Union, United States Japan
Sourco			Friples using this solution and affected batination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Vehicle OBE			p Update System	vehicle location and motion for mapping		
ıe	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ntifier registry s not exist	The standard defines a field which requires a globally unique identifier, but no registration authority exists to assign these values.	Medium	Identifier registry	Implement a centralised identifier registry network that ensures the assignment of globally unique C-ITS identifiers.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected batination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Personal Informatio	on Device		nter	device identification		
Vehicle OBE		Ce	nter	device identification		
ition Name:	(None-Data) - Mobile SNMPv3			Number of Issues: 3 To	otal Issue Severity:	36
				Pv3. The (None-Data) standards include an unspecified set of standards at the upper layers. T	he I-M: Mobile SNI	MPv3
dards include low le	ver-layer standards that support secure infrastruct Issue Description		Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Ultra	I-F: Highway advisory radio	Develop an internationally acceptable ITS application specification for managing highway advisory radios for secure communications with proper access control.	Medium-term	United States
fined	for this information flow.					
ined				y this Issue that would be addressed by the Proposed Resolution	<u> </u>	
•	for this information flow.	De	Friples using this solution and affected betination sint and Constr Vehicle OBE	y this Issue that would be addressed by the Proposed Resolution Flow Name roadway advisory radio status	11	

olution Name:	(None-Data) - Mobile SNMPv3			Number of Issues: 3	Total Issue Severity:	36
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Fleet management	Develop an ITS application specification for managing fleet vehicles, including managing the location of fleet vehicles such as emergency vehicles and transit vehicles	Medium-term	United States
Source			Triples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Personal Information	on Device	Ser	vice Monitor System	PID status		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
se TLS for SNMP option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			- Friples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equip	ment	Ma	int and Constr Vehicle OBE	roadway advisory radio status		
Maint and Constr V	ehicle OBE	ITS	Roadway Equipment	roadway advisory radio data		
Personal Information	on Device	Ser	vice Monitor System	PID status		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
nvetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equip	ment		int and Constr Vehicle OBE	roadway advisory radio status		
Maint and Constr V	ehicle OBE	ITS	Roadway Equipment	roadway advisory radio data		
Personal Information	on Device	Ser	vice Monitor System	PID status		
olution Name:	(None-Data) - NTCIP Messaging			Number of Issues: 5	Total Issue Severity:	49
				: NTCIP Messaging. The (None-Data) standards include an unspecified set of standards at the	upper layers. The C	-C: NTCIP
essaging standards	include lower-layer standards that support partial	iy secure commui	nications between two centres a	s commonly used in the US.		

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
				Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).		

lution Name: (Non	ne-Data) - NTCIP Messaging		Number of Issues:	5	Total Issue Severity:	49
Course	Informa	tion Triples using this solution and affected by this Issue that would be addressed by the Proposed R				
Source Archived Data Center		Destination Archived Data User Systems	Flow Name archive analysis results			
Archived Data Center		Archived Data User Systems	archive request confirmation			
Archived Data Center		Archived Data User Systems	archived data products			
Archived Data Center		Center	archive requests			
Archived Data Center		Center	archive status			
Archived Data Center		Government Reporting Systems	government reporting system data			
Archived Data User Systems		Archived Data Center	archive analysis requests			
Archived Data User Systems		Archived Data Center	archived data product requests			
Authorizing Center		Center	permission request received			
Authorizing Center		Other Authorizing Centers	permission request coordination			
Border Inspection Administration Ce	Center	Border Inspection System	consolidated agency response			
Border Inspection Administration Ce	Center	Border Inspection System	manifest data			
Border Inspection Administration Ce	Center	Border Inspection System	traveler personal information			
Border Inspection Administration Ce	Center	Fleet and Freight Management Center	clearance notification			
Border Inspection Administration Ce	Center	Freight Distribution and Logistics Center	clearance notification			
Border Inspection Administration Ce	enter	Intermodal Customer System	clearance notification			
Border Inspection System		Border Inspection Administration Center	border security input			
Border Inspection System		Border Inspection Administration Center	inspection results			
Border Inspection System		Commercial Vehicle Administration Center	arrival notification			
Cellular Communications Provider		Transportation Information Center	comm-derived travel time data			
Center		Authorizing Center	permission request			
Center		Authorizing Center	permission update request			
Center		Data Distribution System	operational data			
Center		Data Distribution System	traveler information distribution data			
Center		Maint and Constr Management Center	equipment maintenance request			
Center		Map Update System	map update notification			
Center		Service Monitor System	service maintenance request			
Center		Service Monitor System	system monitoring			
Commercial Vehicle Administration	Center	Border Inspection Administration Center	border clearance status			
Commercial Vehicle Administration	Center	Commercial Vehicle Check Equipment	border agency clearance results			
Commercial Vehicle Administration	Center	Commercial Vehicle Check Equipment	carrier participation report			
Commercial Vehicle Administration	Center	Commercial Vehicle Check Equipment	commercial vehicle permit information	1		
Commercial Vehicle Administration	Center	Commercial Vehicle Check Equipment	credentials information			
Commercial Vehicle Administration	Center	Commercial Vehicle Check Equipment	credentials status information			
Commercial Vehicle Administration	ı Center	Commercial Vehicle Check Equipment	cv driver record			

ution Name:	(None-Data) - NTCIP Messaging		Number of Issues: 5 Total Issue Severity: 49
Commercial Vehicle Admin	istration Center	Commercial Vehicle Check Equipment	safety status information
Commercial Vehicle Admin	istration Center	Commercial Vehicle Check Equipment	targeted list
Commercial Vehicle Admin	istration Center	Commercial Vehicle Check Equipment	transportation border clearance assessment
Commercial Vehicle Admin	istration Center	Commercial Vehicle OBE Service Provider	commercial vehicle permit information
Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	carrier participation report
Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	credentials information
Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	credentials status information
Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	cv driver record
Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	safety status information
Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	border clearance status
Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	citation
Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	compliance review report
Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	credentials information
Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	credentials status information
Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	cv driver record
Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	safety status information
Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	trigger area
Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	trigger area notification
Commercial Vehicle Admin	istration Center	Intermodal Customer System	border clearance status
Commercial Vehicle Admin	istration Center	Other CV Administration Centers	accident report
Commercial Vehicle Admin	istration Center	Other CV Administration Centers	citation
Commercial Vehicle Admin	istration Center	Other CV Administration Centers	commercial vehicle permit information
Commercial Vehicle Admin	istration Center	Other CV Administration Centers	credential fee coordination
Commercial Vehicle Admin	istration Center	Other CV Administration Centers	credentials information
Commercial Vehicle Admin	istration Center	Other CV Administration Centers	credentials status information
Commercial Vehicle Admin	istration Center	Other CV Administration Centers	cv driver record
Commercial Vehicle Admin	istration Center	Other CV Administration Centers	safety status information
Commercial Vehicle Admin	istration Center	Transportation Information Center	commercial vehicle permit information
Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	border clearance event
Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	citation
Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	daily site activity data
Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	on-board safety data
Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	violation notification
Commercial Vehicle Check	Equipment	Commercial Vehicle OBE Service Provider	security credentials
Commercial Vehicle Check	Equipment	Emergency Management Center	commercial vehicle incident notification
Commercial Vehicle Check	Equipment	Enforcement Center	violation notification

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Convected visible Securities Convected Visible Securities Contract of While Securities Contract of While Securities Contract of While Securities Contract of While Securities Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Cont	Commercial Vehicle OBE Se	ervice Provider	Commercial Vehicle Administration Center	commercial vehicle permit information
Constructive Verlack Polysophers Constructive Verlack Po	Connected Vehicle Roadside	e Equipment	Intermodal Terminal	container identification
OV Information Requestor Centers Centers centers Vota Silvito dei Sectem Centers centers Des Distrontino Seguen Centers registrat datato Des Distrontino Seguen Center Centers centers Des Distrontino Seguen Center Data Distribution Systems del Statution data sharing Des Distribution Systems Other Data Distribution Systems verbe Statution data sharing Des Distribution Systems Service Medical Systems despert des Distribution Systems Des Distribution Systems Service Medical Systems despert despert des Distribution Systems Des Distribution Systems Center Medical Systems despert despert des Distribution Systems Des Distribution Systems Center Medical Systems despert despert des Distribution Systems Distribution Systems Center Systems despert despert des Distribution Systems despert despert des Distribution Systems Distribution Systems Center Systems Despert Medical Systems despert despert des Distribution Systems Distribution Systems Center Systems Despert Systems despert Systems Distribution Systems Center Systems des	Connected Vehicle Roadside	e Equipment	Intermodal Terminal	container location
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Date Distribution System Other Data Distribution Systems field situation date sharing Date Data Distribution System Other Data Distribution System certed statement date sharing Date Data Data Data Data Data Data Data	Data Distribution System		Center	operational data
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Izea Destination system Service Monther System Servi	Data Distribution System		Other Data Distribution Systems	traveler situation data sharing
Data Distribution System Freegency Management Center Freegency Managemen	Data Distribution System		Other Data Distribution Systems	vehicle situation data sharing
inegency Management Center Management Center Management Center Management Center Traffic Managemen	Data Distribution System		Service Monitor System	service maintenance request
Emergency Management Center 1 Fallis Management Center 2 Fallis Management Center 3 Fallis Management Center 4 Fallis Management Center 5 Fallis Management	Data Distribution System		Service Monitor System	support system status
Emergency Management Center Emissions Management Center Em	Emergency Management Co	enter	Other Emergency Management Centers	evacuation coordination
inergency Management Center Emergency Management Center Emergency Management Center Emergency Management Center Transportation Information Center Transportation Information Center Transportation Information Emergency Management Center Transportation Information Emergency Management Center Transportation Information Emergency Management Center Transportation Information Center Transportation Info	Emergency Management Co	enter	Public Health System	public health request
Emergency Management Center Emergency Management Center Emissions Management Center Em	Emergency Management Co	enter	Traffic Management Center	emergency traffic control request
Emissions Management Center Transportation Information Center Indifficult Management Center Individual	Emergency Management Co	enter	Traffic Management Center	special vehicle restricted use information
Emissions Management Center Formation formatio	Emergency Management Co	enter	Transportation Information Center	incident information
Emissions Management Center Em	Emergency Management Co	enter	Transportation Information Center	transportation system status
Emissions Management Center 7 fraffic Management Center 9 videarea statistical pollution information 2 videarea statistical pollution information 3 videarea statistical pollution information 4 videarea statistical pollution information 5 videarea statistical pollution information 5 videarea statistical pollution information 4 videarea statistical pollution information 4 videarea statistical pollution information 4 videarea statistical pollution information 6 videarea statistical pollution videarea vide	Emissions Management Cer	nter	Traffic Management Center	low emissions zone coordination
Enissions Management Center Enissions Management Center Iransit Management Center Iransportation Information	Emissions Management Cer	nter	Traffic Management Center	low emissions zone operations information
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Enission Management Center Iransportation Information Center Iransportation Iran	Emissions Management Cer	nter	Transit Management Center	low emissions zone coordination
Emissions Management Center Enforcement Center Enforcement Center Center Center Event Promoters Fleet and Freight Management Center Fleet and Freight Management Center Commercial Vehicle Administration Center Commercial Vehicle Administration Center Fleet and Freight Management Center Fleet and Freight Management Center Commercial Vehicle Administration Center Fleet and Freight Management Center Commercial Vehicle Administration Center Fleet and Freight Management Center Fleet and Freight Management Center Fleet and Freight Management Center Commercial Vehicle Administration Center Fleet and Freight Management Center Fleet and Freight Management Center Fleet and Freight Management Center Commercial Vehicle Administration Center Fleet and Freight Management Center Commercial Vehicle Administration Center Fleet and Freight Management Center Commercial Vehicle Administration Center Commer	Emissions Management Cer	nter	Transit Management Center	low emissions zone operations information
Enforcement Center Event Promoters Fleet and Freight Management Center Fleet and Freight Management Ce	Emissions Management Cer	nter	Transportation Information Center	air quality information
Event Promoters Fleet and Freight Management Center Fleet and Freight Management Center Center Offereight Management Center Center Offerei	Emissions Management Cer	nter	Transportation Information Center	low emissions zone operations information
Fleet and Freight Management Center Fleet and Freight Management Center Commercial Vehicle Administration Center Commer	Enforcement Center		Commercial Vehicle Check Equipment	information on violators
Fleet and Freight Management Center Commercial Vehicle Administration Center credential application Fleet and Freight Management Center credential Application Fleet and Freight Management Center commercial Vehicle Administration Center commer	Event Promoters		Parking Management System	event plans
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Fleet and Freight Management Center on-board safety data Fleet and Freight Management Center request for permit Fleet and Freight Management Center request for permit Fleet and Freight Management Center tax filing Fleet and Freight Management Center town unique identifiers	Fleet and Freight Managem	ent Center	Commercial Vehicle Administration Center	audit data
Fleet and Freight Management Center request for permit Fleet and Freight Management Center tax filing Fleet and Freight Management Center tax filing Fleet and Freight Management Center town commercial Vehicle Administration Center tax filing Fleet and Freight Management Center unique identifiers	Fleet and Freight Managem	ent Center	Commercial Vehicle Administration Center	credential application
Fleet and Freight Management Center Commercial Vehicle Administration Center tax filing Fleet and Freight Management Center Commercial Vehicle Administration Center unique identifiers	Fleet and Freight Managem	ent Center	Commercial Vehicle Administration Center	on-board safety data
Fleet and Freight Management Center Commercial Vehicle Administration Center unique identifiers	Fleet and Freight Managem	ent Center	Commercial Vehicle Administration Center	request for permit
	Fleet and Freight Managem	ent Center	Commercial Vehicle Administration Center	tax filing
Fleet and Freight Management Center Commercial vehicle incident notification commercial vehicle incident notification	Fleet and Freight Managem	ent Center	Commercial Vehicle Administration Center	unique identifiers
	Fleet and Freight Managem	ent Center	Emergency Management Center	commercial vehicle incident notification

Peer and Peerlah Management Center Peerlah Management	lution Name:	(None-Data) - NTCIP Messaging		Number of Issues: 5 Total Issue Severity: 49
Fixed for Fright Management Center Extention of System Destand Customer System Destand Customer System Fixed and Fright Management Center Destand Customer System Contract Customer System Fixed and Fright Management Center Intended Customer System Extended Customer System Fixed and Fright Management Center Intended Customer System Extended Customer System Fixed and Fright Management Center Transport Management Center Intended Customer System Fixed and Fright Management Center Transport Management Center Contractive Customer System Fixed and Fright Management Center Transport Management Center Contractive Customer System Fixed and Fright Management Center Transport Customer Center Transport Customer Center Fixed and Fright Management Center Transport Customer Center Transport Customer Center Fixed and Fright Management Center Transport Customer Center Transport Customer Center Fixed and Fright Management Center Transport Customer Center Transport Customer Center Fixed and Fright Management Center Transport Customer Center Transport Customer Center Fixed and Fright Management Center Transport Customer Center Transport	Fleet and Freight Manage	ment Center	Freight Distribution and Logistics Center	available truck capacity
Reservating this Assignment Central Internation Terminal Consider Minispersor Central Consider Minispersor Central Reservating this Assignment Central reminded Terminal consider profession of consider relatively required Reservating this Assignment Central reminded Terminal reminded Terminal reminded Terminal Reservating this Assignment Central reminded Terminal terminded Terminal reminded Terminal Reservating this Assignment Central responsible Minimization Central redigit terminal responsible formation Reservating this Assignment Central responsible Minimization Central redigit terminal responsible formation Reservating this Minimization of Light Structure of Light Assignment Central redigit structure of Minimization Central regist structu	Fleet and Freight Manage	ment Center	Freight Distribution and Logistics Center	load appointment status
Net and Freight Managemen Centers International Fernancial Fernancial Contractor Managemen Centers	Fleet and Freight Manage	ment Center	Intermodal Customer System	available truck capacity
Net out in risight Management Center Intermodal Termoda Intermodal Termoda Intermodal Termoda Ret out ming Management Center Intermodal Termoda Intermodal Termoda Intermodal Termoda Ret out ming Management Center Transportation Intermodal Center Connection of Intermodal Personal Center Ret out ming Management Center Transportation Intermodal Center Connection of Intermodal Personal Ret out ming Management Center Transportation Intermodal Center Content Center Ret out ming Management Center Transportation Return Intermodal Center Content Center Ret out ming Management Center Personal Return Intermodal Center Content Epital Personal Center Ret out ming Management Center Lead of Interpol Management Center Lead and Interpol Management Center Ret out ming Management Center Lead of Interpol Management Center Lead and Interpol Management Center Ret out ming Management Center Lead and Interpol Management Center Lead and Interpol Management Center Ret out ming Management Center Lead and Interpol Management Center Lead and Interpol Management Center Ret out Ming Management Center Respontation Center Respontation Center Respontation Center <t< td=""><td>Fleet and Freight Manage</td><td>ment Center</td><td>Intermodal Customer System</td><td>booking status</td></t<>	Fleet and Freight Manage	ment Center	Intermodal Customer System	booking status
Five and Freight Management Center Intermodial Taminal Relight Management Center Intermodial Taminal Five and Freight Management Center Intermodial Taminal Intermodial Taminal Intermodial Taminal Five and Freight Management Center Transportation Information Center Multiple Management Center Interport Management Center Interport Management Center policy Project Management Center policy Design Management Center	Fleet and Freight Manage	ment Center	Intermodal Terminal	container delivery request
Fore and Frieght Management Conters Enter and Frieght Management Conters commercial welfers of the formation Conters Fore and Frieght Management Conters Transportation Information Conters the sound Frieght Management Conters commission Studies of the sound Frieght Management Conters the sound Frieght Management Conters commission Studies of the sound Frieght Management Conters commission Studies of the sound Frieght Management Conters commission Studies of the sound Studies of the Studies of th	Fleet and Freight Manage	ment Center	Intermodal Terminal	container pickup confirmation
Fies and right Management Center in Proportion to Internation Center in Proportion Internation Center in Proportion Information Center in Proportion Information Center in President Angelegement Cent	Fleet and Freight Manage	ment Center	Intermodal Terminal	freight transportation status
Files and Freight Management Center Transportation Information Center device weeks Files and Freight Management Center Topotation Information Center oute enealty Freight Contribution and Logistic Center Before and Freight Management Center available loads Freight Contribution and Logistic Center Read of Freight Management Center available loads Freight Distribution and Logistic Center Read of Freight Management Center available load Freight Distribution and Logistic Center Intermodal Center System door and Logistic Center Freight Distribution and Logistic Center Intermodal Center System door and Logistic Center Freight Distribution and Logistic Center On the Freight Distribution and Logistic Center depart travels information preference Freight Distribution and Logistic Center Transportation Information Center depart travels information preference Covernor System Prefer the Stratution and Logistic Center available loads Intermodal Customer System Prefer and Freight Management Center available loads Intermodal Customer System Freight Augustion Information Center available loads Intermodal Terminal Freight Augustion Information and Logistic Center <td>Fleet and Freight Manage</td> <td>ment Center</td> <td>Intermodal Terminal</td> <td>terminal reservation request</td>	Fleet and Freight Manage	ment Center	Intermodal Terminal	terminal reservation request
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Freight Consolitation Station Freight Consolitation Station Freight Control Control Freight Management Center Freight Distribution and Logistics Center Frei	Fleet and Freight Manage	ment Center	Transportation Information Center	freight traveler information preferences
Freight Distribution and Logistics Center Desire Implection Administration Center analiest data Freight Distribution and Logistics Center Feed and Freight Management Center available loads Freight Distribution and Logistics Center the and Freight Management Center bod marking in in Freight Distribution and Logistics Center the control Loutsoner System bod marking systems coordination Freight Distribution and Logistics Center the modal Terminal control Imministration Center long marking Systems coordination Freight Distribution and Logistics Center The modal Center long marking Systems long marking Systems Government Reporting Systems Achder Date Center available Content preper the system of Logistics Center available Content Intermodal Customer System Freight Distribution and Logistics Center available Cand available Cand Intermodal Customer System Freight Distribution and Logistics Center available Cand available Cand Intermodal Terminal Freight Distribution and Logistics Center available Cand available Cand Intermodal Terminal Freight Logistic Center available Cand available Cand Intermodal Termina	Fleet and Freight Manage	ment Center	Transportation Information Center	route request
Freight Distribution and Logistic Center Intermodal Customer System Intermodal	Freight Consolidation State	tion	Fleet and Freight Management Center	container pickup request
Freight Distribution and Logistics Center Freight Distribution and Logis	Freight Distribution and L	ogistics Center	Border Inspection Administration Center	manifest data
Freight Distribution and Logistics Center Freight Distribution and Logis	Freight Distribution and L	ogistics Center	Fleet and Freight Management Center	available loads
Freight Distribution and Legistics Center 10 thermodal Terminal 10 Stribution and Legistics Center 10 Other Freight Distribution and Legistics Centers 10 Isad matching systems coordination 10 Stribution and Legistics Center 10 Transportation Information Center 10 Transportation Information Inf	Freight Distribution and L	ogistics Center	Fleet and Freight Management Center	load matching info
Freight Distribution and Logistics Center 1 Transportation and Logistics Centers 1 Transportation and Logistics Centers 1 Transportation Centers 1 Transportation Centers 1 Transportation Centers 1 Transportation Centers 2 Recenter Reporting Systems 2 Recenter	Freight Distribution and L	ogistics Center	Intermodal Customer System	booking status
Freight Distribution and Logistic Center Government Reporting Systems Archived Data Center Border Inspection Administration Center Intermodal Customer System Border Inspection Administration Center Intermodal Customer System Intermodal Terminal Intermoda	Freight Distribution and L	ogistics Center	Intermodal Terminal	container availability request
Government Reporting Systems Archived Data Center government reporting data receipt Intermodal Customer System Border Inspection Administration Center manifest data Intermodal Customer System Fleet and Freight Management Center available loads Intermodal Customer System Treight Distribution and Logistics Center available loads Intermodal Customer System Treight Distribution and Logistics Center recipit traveler information preferences Intermodal Terminal Connected Vehicle Roadside Equipment container pickup request Intermodal Terminal Fleet and Freight Management Center container pickup request Intermodal Terminal Fleet and Freight Management Center freight transportation status Intermodal Terminal Fleet and Freight Management Center terminal status Intermodal Terminal freight Distribution and Logistics Center terminal reservation Intermodal Terminal freight Distribution and Logistics Center intermodal Terminal status Intermodal Terminal freight Distribution and Logistics Center intermodal Terminal status Intermodal Terminal freight Distribution and Logistics Center intermodal Terminal status Int	Freight Distribution and L	ogistics Center	Other Freight Distribution and Logistics Centers	load matching systems coordination
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Intermodal Customer System freight Management Center freight Distribution and Logistics Center available loads Intermodal Customer System freight Distribution and Logistics Center freight Distribution and Logistics Center freight Center freight traveler information preferences Intermodal Terminal Conternation Freight Management Center container transfer location Intermodal Terminal freight Management Center container pickup request Intermodal Terminal freight Management Center container pickup request Intermodal Terminal freight Management Center freight Management Center intermodal Terminal status Intermodal Terminal freight Management Center container variation intermodal Terminal status Intermodal Terminal freight Management Center container variation intermodal Terminal freight Management Center container variation intermodal Terminal freight variation freight Management Center container variation intermodal Terminal freight variation freight Management Center intermodal Terminal freight variation freight Management Center intermodal Terminal freight variation freight Management Center intermodal Terminal freight variation freight variation freight variation intermodal Terminal freight variation freight variat	Government Reporting Sy	vstems	Archived Data Center	government reporting data receipt
Intermodal Customer System register Transportation and Logistics Center ransportation Center friends (Lottomer System) ransportation Information Center friends (Lottomer System) ransportation Information Center friends (Lottomer System) ransportation Station Information Center friends (Lottomer System) ransportation Station	Intermodal Customer Sys	tem	Border Inspection Administration Center	manifest data
Intermodal Customer System Connected Vehicle Roadside Equipment Center container transfer location container transfer location container pransfer location container pransfer location container pickup request intermodal Terminal contermodal	Intermodal Customer Sys	tem	Fleet and Freight Management Center	available loads
Intermodal Terminal Connected Vehicle Roadside Equipment Center container prickup request container pickup request reight Management Center container pickup request reight transportation status freight transportation status freight transportation status intermodal Terminal Certification of Fleet and Freight Management Center intermodal Terminal Status freight Management Center intermodal Terminal Status freight Management Center intermodal Terminal	Intermodal Customer Sys	tem	Freight Distribution and Logistics Center	available loads
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Intermodal Terminal freminal f	Intermodal Terminal		Connected Vehicle Roadside Equipment	container transfer location
Intermodal Terminal ferminal f	Intermodal Terminal		Fleet and Freight Management Center	container pickup request
Intermodal Terminal Fleet and Freight Management Center container availability status Intermodal Terminal Freight Management Center container minal status Intermodal Terminal Freight Management Center container minal status Maint and Constr Management Center container minal status Maint and Constr Management Center container minal status Maint and Constr Management Center container minal mintenance status Maint and Constr Management Center container minal mintenance status Temporal Terminal Freight Management Center container minal status Maint and Constr Management Center container minal mintenance status Temporal Terminal Freight Management Center container minal status Terminal Constr Management Center container minal status Terminal Center container minal status Terminal Status Term	Intermodal Terminal		Fleet and Freight Management Center	freight transportation status
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Intermodal Terminal Interm	Intermodal Terminal		Fleet and Freight Management Center	terminal reservation
Intermodal Terminal Interm	Intermodal Terminal		Freight Distribution and Logistics Center	container availability status
Intermodal Terminal Interm	Intermodal Terminal		Freight Distribution and Logistics Center	intermodal terminal status
Maint and Constr Management Center Center Center Emergency Management Center road network status assessment	Intermodal Terminal		Traffic Management Center	intermodal freight event information
Maint and Constr Management Center Emergency Management Center road network status assessment	Intermodal Terminal		Transportation Information Center	intermodal terminal status
	Maint and Constr Manage	ement Center	Center	equipment maintenance status
Maint and Constr Management Center roadway maintenance status	Maint and Constr Manage	ement Center	Emergency Management Center	road network status assessment
	Maint and Constr Manage	ement Center	Emergency Management Center	roadway maintenance status

Mort and Control Mongemen Control Machinerica and Control Mongemen Control monitor and Control Mongemen Control monitor and Control Mongemen Control monitor and Control Mongemen Control security and Control Mongemen Control mondem of control	tion Name: (None-Data) - NTCIP Messaging		Number of Issues: 5 Total Issue Severity: 49
Note and Control Management Conteré Faile Management Conteré special management Conteré	Maint and Constr Management Center	Maintenance and Construction Administrative Systems	maint and constr work performance
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Ministrat Order Management Center Tampopution Information Center Content Control Control on Control	Maint and Constr Management Center	Traffic Management Center	work zone information
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With Updated System Particular Management Centers Other CV Administration Centers Commercial Weblick Administration Center clatifor clatifor Other CV Administration Centers Commercial Weblick Administration Center commercial Weblick Administration Center conditional Weblick Administration Center con	Map Update System	Center	map updates
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Other CV Administration Centers Other Data Distribution System Other Data Distributio	Map Update System	Parking Management System	parking facility geometry
Other CV Administration Centers Other CV Administration Center	Other Authorizing Centers	Authorizing Center	permission request coordination
Other CV Administration Centers Other Contents	Other CV Administration Centers	Commercial Vehicle Administration Center	accident report
Other CV Administration Centers Commercial Vehicle Administration Center credentials information Other CV Administration Centers commercial Vehicle Administration Center credentials status information Other CV Administration Centers commercial Vehicle Administration Center credentials status information Other CV Administration Centers commercial Vehicle Administration Center credentials status information Other CV Administration Centers commercial Vehicle Administration Center credentials status information Other Data Distribution Systems commercial Vehicle Administration Center sfeely status information Other Data Distribution Systems commercial Vehicle Administration Center sfeely status information data sharing Other Data Distribution Systems data Distribution Systems vehicle Status information data sharing Other Data Distribution Systems mergency Management Center vehicle Status information data sharing Other Praight Distribution and Logistic Centers free gent Management Center management Center Other Praight Distribution and Logistic Senters free gent Management Center management Center Other Traight Management Centers fraific Management Center device status O	Other CV Administration Centers	Commercial Vehicle Administration Center	citation
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Other CV Administration Centers Other CV Administration Centers Other Data Distribution Systems Other Systems Other Principh Charter Other Freight Distribution and Logistics Centers Other Traffic Management Systems Other Traffic Management Centers Other Transportation Information Centers Other Transportation	Other CV Administration Centers	Commercial Vehicle Administration Center	credentials information
Other Data Distribution Systems Other Emergency Management Centers Other Emergency Management Centers Other Parking Management Centers Other Parking Management Centers Other Parking Management Systems Ot	Other CV Administration Centers	Commercial Vehicle Administration Center	credentials status information
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Other Freight Distribution and Logistics Centers Other Map Update Systems Other Parking Management Systems Other Parking Management Systems Other Parking Management Systems Other Traffic Management Centers Other Transportation Information Ce	Other Data Distribution Systems	Data Distribution System	vehicle situation data sharing
Other Map Update Systems Other Parking Management Systems Other Traffic Management Centers Other Transportation Information Centers Other Tran	Other Emergency Management Centers	Emergency Management Center	evacuation coordination
Other Parking Management Systems Parking Management System parking Management System parking Management Centers Traffic Management Centers Transportation Information Centers Tra	Other Freight Distribution and Logistics Centers	Freight Distribution and Logistics Center	load matching systems coordination
Other Traffic Management Centers Other Transportation Information Cen	Other Map Update Systems	Map Update System	map update coordination
Other Traffic Management Centers Other Traffic Management Centers Other Traffic Management Centers Other Transportation Information Centers Other Transportation	Other Parking Management Systems	Parking Management System	parking coordination
Other Traffic Management Centers Other Transportation Information Centers Transportation Information Centers Other Transportation Information Centers Transportation I	Other Traffic Management Centers	Traffic Management Center	device data
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Other Transportation Information Centers Other Transportation Information Centers Transportation Information Centers Transportation Information Centers Other Transportation Information Centers	Other Transportation Information Centers	Transportation Information Center	incident information
Other Transportation Information Centers Other Transportation Information Centers Transportation Information Centers Transportation Information Centers traffic image meta data	Other Transportation Information Centers	Transportation Information Center	multimodal information
Other Transportation Information Centers Transportation Information Center traffic image meta data	Other Transportation Information Centers	Transportation Information Center	parking information
	Other Transportation Information Centers	Transportation Information Center	road network conditions
Other Transportation Information Centers Transportation Information Center traffic images	Other Transportation Information Centers	Transportation Information Center	traffic image meta data
	Other Transportation Information Centers	Transportation Information Center	traffic images

ution Name:	(None-Data) - NTCIP Messaging		Number of Issues: 5 Total Issue Severity: 49
Other Transportation Infor	mation Centers	Transportation Information Center	transit service information
Parking Management Syste	em	Map Update System	parking facility geometry
Parking Management Syste	em	Other Parking Management Systems	parking coordination
Parking Management Syste	em	Transportation Information Center	parking reservation confirmation
Payment Administration Co	enter	Parking Management System	vehicle payment request
Privacy Protection Gateway	у	Center	protected location and address flow
Security Credentials Registr	ту	Commercial Vehicle Check Equipment	security credentials
Service Monitor System		Center	RSE fault data
Service Monitor System		Center	service maintenance status
Service Monitor System		Data Distribution System	service maintenance status
Service Monitor System		Maint and Constr Management Center	RSE fault data
Service Monitor System		Wide Area Information Disseminator	service maintenance status
Storage Facility Data Acqui	sition System	Maint and Constr Management Center	maintenance materials storage status
Surface Transportation We	ather Service	Traffic Management Center	transportation weather information
Traffic Management Cente	r	Emergency Management Center	emergency traffic control information
Traffic Management Cente	r	Emergency Management Center	incident information
Traffic Management Cente	r	Emergency Management Center	road network conditions
Traffic Management Cente	r	Emissions Management Center	low emissions zone coordination
Traffic Management Cente	r	Enforcement Center	lane violation notification
Traffic Management Cente	r	Intermodal Terminal	intermodal freight traffic confirmation
Traffic Management Cente	r	Maint and Constr Management Center	incident information
Traffic Management Cente	r	Maint and Constr Management Center	road network conditions
Traffic Management Cente	r	Map Update System	map update notification
Traffic Management Cente	r	Media	traffic information for media
Traffic Management Cente	r	Other Traffic Management Centers	device data
Traffic Management Cente	r	Other Traffic Management Centers	device status
Traffic Management Cente	r	Other Traffic Management Centers	road network conditions
Traffic Management Cente	r	Parking Management System	parking demand management request
Traffic Management Cente	r	Parking Management System	parking traffic information
Traffic Management Cente	r	Parking Management System	transportation operational strategies
Traffic Management Cente	r	Transit Management Center	dynamic bus lane status
Traffic Management Cente	r	Transit Management Center	traffic control priority status
Traffic Management Cente	r	Transportation Information Center	incident information
Traffic Management Cente	r	Transportation Information Center	road network conditions
Traffic Management Cente	r	Transportation Information Center	traffic control information
Traffic Management Cente	r	Transportation Information Center	traffic image meta data

Solution Name: (None-Data) - NTCIP Messaging		Number of Issues: 5 Total Issue Severity: 49
Traffic Management Center	Transportation Information Center	traffic images
Traffic Management Center	Wide Area Information Disseminator	traffic information for media
Traffic Regulatory Authority	Transportation Information Center	traffic-related regulations
Transit Management Center	Emissions Management Center	low emissions zone coordination
Transit Management Center	Traffic Management Center	dynamic bus lane request
Transit Management Center	Traffic Management Center	traffic control priority request
Transit Management Center	Transportation Information Center	transit and fare schedules
Transit Management Center	Transportation Information Center	transit schedule adherence information
Transportation Information Center	Emergency Management Center	road network environmental situation data
Transportation Information Center	Fleet and Freight Management Center	freight-specific traveler information
Transportation Information Center	Fleet and Freight Management Center	incident information
Transportation Information Center	Fleet and Freight Management Center	road network conditions
Transportation Information Center	Fleet and Freight Management Center	road network environmental situation data
Transportation Information Center	Fleet and Freight Management Center	route plan
Transportation Information Center	Freight Distribution and Logistics Center	freight-specific traveler information
Transportation Information Center	Intermodal Customer System	freight-specific traveler information
Transportation Information Center	Maint and Constr Management Center	road network environmental situation data
Transportation Information Center	Media	traffic information for media
Transportation Information Center	Media	traveler information for media
Transportation Information Center	Other Transportation Information Centers	incident information
Transportation Information Center	Other Transportation Information Centers	multimodal information
Transportation Information Center	Other Transportation Information Centers	parking information
Transportation Information Center	Other Transportation Information Centers	road network conditions
Transportation Information Center	Other Transportation Information Centers	traffic image meta data
Transportation Information Center	Other Transportation Information Centers	traffic images
Transportation Information Center	Other Transportation Information Centers	transit service information
Transportation Information Center	Parking Management System	parking reservation request
Transportation Information Center	Surface Transportation Weather Service	road network environmental situation data
Transportation Information Center	Traffic Management Center	road network environmental situation data
Transportation Information Center	Wide Area Information Disseminator	traffic information for media
Transportation Information Center	Wide Area Information Disseminator	traffic-related regulations
Transportation Information Center	Wide Area Information Disseminator	traveler information for media
Travel Services Provider System	Transportation Information Center	travel service reservations
Wide Area Information Disseminator	Service Monitor System	service maintenance request
Wide Area Information Disseminator	Service Monitor System	support system status

Data profile not defined				Number of Issues: 5 To	otal Issue Severity	49
•	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: US signal priority/preemption	Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.	Medium-term	United States
Source			riples using this solution and affected be tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management Co	Center	Tra	nsit Management Center	traffic control priority status		
Transit Management C	Center	Tra	ffic Management Center	traffic control priority request		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: System monitoring	Develop an internationally acceptable ITS application specification for the Service Monitor System to monitor other centers and support systems and to report issues.	Urgent	Australia, European Union, United State
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Center		Ser	vice Monitor System	system monitoring		
Data Distribution Syste	em	Ser	vice Monitor System	support system status		
Wide Area Information	n Disseminator	Service Monitor System		support system status		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs, CAMs, sensors, etc.) among various centres.	Urgent	Australia, European Union, United State
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Informa	nation Center		ffic Management Center	road network environmental situation data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: EU emergency traffic control	Update DATEX to support the provision of emergency traffic control information with a complete application specification.	Near-term	Australia, European Union
Carrier				by this Issue that would be addressed by the Proposed Resolution		
Source			tination ffic Management Center	Flow Name emergency traffic control request		
Emergency Manageme	Emergency Management Center Traffic Management Center		ergency Management Center	emergency traffic control information		

Solution Name:	(None-Data) - NTCIP Messaging			Number of Issues: 5 To	otal Issue Severity	: 49
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - coordination among centres	Develop an internationally acceptable standard for the user permission request coordination information triples contained within the Core Authorization Service Package.	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Authorizing Center			ner Authorizing Centers	permission request coordination		
Other Authorizing Ce	enters	Au	thorizing Center	permission request coordination		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - base services	Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package.	Urgent	Australia, European Union, United States
Source			Friples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Authorizing Center		Ce	nter	permission request received		
Center		Au	thorizing Center	permission request		
Center		Au	thorizing Center	permission update request		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: AU weather information	Adopt an existing weather information centre-to-centre data profile for use within the region.	Near-term	Australia, European Union, United States
Source			Friples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Surface Transportation	on Weather Service		offic Management Center	transportation weather information		

Solution Name:	(None-Data) - NTCIP Messaging			Number of Issues: 5	Total Issue Severity	/: 49
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: AU traffic management data	Adopt an existing traffic management centre-to-centre data profile for use within the region.	Urgent	Australia
Source			riples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Other Traffic Manag	gement Centers		ffic Management Center	device data		
Other Traffic Manag	gement Centers	Tra	ffic Management Center	device status		
Other Traffic Manag	gement Centers	Tra	ffic Management Center	road network conditions		
Other Transportation	n Information Centers	Tra	nsportation Information Center	road network conditions		
Traffic Management	Center	Em	ergency Management Center	road network conditions		
Traffic Management	t Center	Ma	int and Constr Management Center	road network conditions		
Traffic Management	: Center	Oth	ner Traffic Management Centers	device data		
Traffic Management	t Center	Oth	ner Traffic Management Centers	device status		
Traffic Management	: Center	Oth	ner Traffic Management Centers	road network conditions		
Traffic Management	Traffic Management Center		nsportation Information Center	road network conditions		
Transportation Infor	rmation Center	Flee	et and Freight Management Center	road network conditions		
Transportation Information Center		Oth	ner Transportation Information Centers	road network conditions		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra	Proposed Resolution C-C: AU incident information	Resolution Description Adopt an existing incident management centre-to-centre data profile for use within the region.	Timeframe	Applicability Australia
Data profile not	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Ultra Information T	C-C: AU incident information	Adopt an existing incident management centre-to-centre data profile for use within the		
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra Information T Des	C-C: AU incident information	Adopt an existing incident management centre-to-centre data profile for use within the region. y this Issue that would be addressed by the Proposed Resolution		
Data profile not defined	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow.	Ultra Information T Des Tra	C-C: AU incident information Friples using this solution and affected be tination	Adopt an existing incident management centre-to-centre data profile for use within the region. y this Issue that would be addressed by the Proposed Resolution Flow Name		
Data profile not defined Source Emergency Manager	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. ment Center anagement Center	Ultra Information T Des Tra Tra	C-C: AU incident information Triples using this solution and affected be tination Insportation Information Center	Adopt an existing incident management centre-to-centre data profile for use within the region. y this Issue that would be addressed by the Proposed Resolution Flow Name incident information		
Source Emergency Manager Maint and Constr Ma	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. ment Center anagement Center	Information T Des Tra Tra	C-C: AU incident information Triples using this solution and affected betination Insportation Information Center Insportation Center	Adopt an existing incident management centre-to-centre data profile for use within the region. y this Issue that would be addressed by the Proposed Resolution Flow Name incident information work zone information		
Source Emergency Manager Maint and Constr Ma	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. ment Center anagement Center anagement Center n Information Centers	Information T Des Tra Tra Tra	C-C: AU incident information Triples using this solution and affected betination Insportation Information Center Iffic Management Center Insportation Information Center	Adopt an existing incident management centre-to-centre data profile for use within the region. y this Issue that would be addressed by the Proposed Resolution Flow Name incident information work zone information work zone information		
Source Emergency Manager Maint and Constr Maint and Const	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. ment Center anagement Center anagement Center Information Centers	Information T Des Tra Tra Tra Tra Em	C-C: AU incident information Triples using this solution and affected betination Insportation Information Center Iffic Management Center Insportation Information Center Insportation Information Center	Adopt an existing incident management centre-to-centre data profile for use within the region. y this Issue that would be addressed by the Proposed Resolution Flow Name incident information work zone information work zone information incident information		
Source Emergency Manager Maint and Constr Maint and Const	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. ment Center anagement Center anagement Center in Information Centers at Center	Information T Des Tra Tra Tra Tra Em Ma	C-C: AU incident information Triples using this solution and affected betination Insportation Information Center Iffic Management Center Insportation Information Center	Adopt an existing incident management centre-to-centre data profile for use within the region. y this Issue that would be addressed by the Proposed Resolution Flow Name incident information work zone information work zone information incident information incident information		
Source Emergency Manager Maint and Constr Ma Maint and Constr Ma Other Transportation Traffic Management Traffic Management	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. ment Center anagement Center anagement Center t Center t Center	Information T Des Tra Tra Tra Em Ma	C-C: AU incident information Triples using this solution and affected betination Insportation Information Center Iffic Management Center Insportation Information	Adopt an existing incident management centre-to-centre data profile for use within the region. y this Issue that would be addressed by the Proposed Resolution Flow Name incident information work zone information work zone information incident information incident information incident information		

olution Name:	(None-Data) - NTCIP Messaging				Number of Issues: 5	Total Issue Severity	49
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Pata profile not lefined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Credentials management system	Implement regional (security) credentials m	nanagement systems that are interoperable.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Re	solution Flow Name		
Commercial Vehicle	Check Equipment		mmercial Vehicle OBE Service Provider		security credentials		
Security Credentials	Registry	Co	mmercial Vehicle Check Equipment		security credentials		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Pata profile not lefined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Equipment maintenance coordination	Develop an internationally acceptable ITS all equipment maintenance and status information		Near-term	Australia, European Union, United States
Carrier				this Issue that would be addressed by the Proposed Re			
Source			stination aint and Constr Management Center		Flow Name equipment maintenance request		
Center			rvice Monitor System		service maintenance request		
Data Distribution Sys	stem	Ser	rvice Monitor System		service maintenance request		
Maint and Constr Ma	anagement Center	Ce	nter		equipment maintenance status		
Service Monitor Syst	em	Ce	nter		RSE fault data		
Service Monitor Syst	rem	Cer	nter		service maintenance status		
Service Monitor Syst	em	Da	ta Distribution System		service maintenance status		
Service Monitor Syst	rem	Ma	aint and Constr Management Center		RSE fault data		
Service Monitor Syst	em	Wi	de Area Information Disseminator		service maintenance status		
Wide Area Informati	on Disseminator	Ser	rvice Monitor System		service maintenance request		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Distribute maps	Develop an internationally acceptable ITS a for updating maps, roadway geometry, and between a Map Update System and a centr	, , ,	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Re	solution Flow Name		
Center		Ma	ap Update System		map update notification		
Maint and Constr Ma	anagement Center	Ma	ap Update System		current infrastructure restrictions		
Map Update System		Ce	nter		map updates		
Map Update System		Otl	her Map Update Systems		map update coordination		
Map Update System		Pai	rking Management System		parking facility geometry		
Other Map Update S	ystems	Ma	ap Update System		map update coordination		
Parking Managemen			ap Update System		parking facility geometry		
Traffic Management	Center	Ma	ap Update System		map update notification		

Solution Name:	(None-Data) - NTCIP Messaging			Number of Issues: 5	otal Issue Severity:	49
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Private location and address	Develop an internationally acceptable ITS application specification that defines the operation of a Privacy Protection Gateway.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Privacy Protection (Gateway		nter	protected location and address flow		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Security and credentials management - base services	Develop an internationally acceptable standard for the security policy and networking information, device enrolment information, security credentials, security credential revocations, and misbehaviour report information triples contained within the Security and Credentials Management Service Package.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Commercial Vehicle	e Check Equipment		mmercial Vehicle OBE Service Provider	security credentials		
Security Credentials Registry		Co	mmercial Vehicle Check Equipment	security credentials		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: CCTV	Develop an internationally acceptable ITS application specification for exchanging CCTV camera data with a management entity that uses the secure centre-to-field protocol.	Medium-term	Australia, European Union, United States
Source			Friples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Other Transportation	on Information Centers	Tra	Insportation Information Center	traffic images		
Traffic Managemen	nt Center	Tra	insportation Information Center	traffic images		
Transportation Info	ormation Center	Otl	ner Transportation Information Centers	traffic images		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Develop standard for electronic distribution of traffic regulations	Develop an internationally acceptable standard to enable the provision and management of electronic traffic regulations to enable proper operation of road users as they cross jurisdictional boundaries.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Regulatory Authority			Insportation Information Center	traffic-related regulations		
Traffic Regulatory A			de Area Information Disseminator	traffic-related regulations		

olution Name:	(None-Data) - NTCIP Messaging			Number of Issues: 5	Total Issue Severity:	49
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not fully efined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	C-C: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs, CAMs, sensors, etc.) among various centres.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center	Tra	offic Management Center	road network environmental situation data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Overlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium	C-C: TCIP/IM/TMDD/ATIS for incident information	Standardise on a single solution for providing incident and incident management information; currently this information is defined within APTA TCIP, IEEE 1512 (IM), ITE TMDD, and SAE ATIS.	Urgent	United States
Source			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Managem	ent Center		ensportation Information Center	incident information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not defined ligh)	Required data elements are not defined.	High	C-C: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs, CAMs, sensors, etc.) among various centres.	Urgent	Australia, European Union, United States
Source			Friples using this solution and affected bestination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center	Tra	offic Management Center	road network environmental situation data		
olution Name:	(None-Data) - OMG DDS			Number of Issues: 4	Total Issue Severity:	46
	thin the U.S It combines standards associated very support secure data sharing between publish			he (None-Data) standards include an unspecified set of standards at the upper layers. The C	C-C: OMG DDS standa	ords include
sue	Issue Description		Proposed Resolution	Resolution Description	Timeframe	Applicability

Solution Name:	(None-Data) - OMG DDS	Number of Issues:	4	Total Issue Severity:	46
This solution is used within th	ne U.S It combines standards associated with (None-Data) with those for C-C: OMG DDS. The (None-Data) standards include an unspecified set of	f standards at the upr	per lavers. The	C-C: OMG DDS standard	s include

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: System monitoring	Develop an internationally acceptable ITS application specification for the Service Monitor System to monitor other centers and support systems and to report issues.	Urgent	Australia, European Union, United States
		Information T	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		

Service Monitor System Data Distribution System Service Monitor System support system status

system monitoring

Center

olution Name:	(None-Data) - OMG DDS				Number of Issues: 4	Total Issue Severity	: 46
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Situation data	Develop an internationally acceptable ITS ap distributing collected situation data (e.g., BSI centres.		f Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Res	olution Flow Name		
Transportation Infor	rmation Center		affic Management Center		road network environmental situation data		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Private location and address	Develop an internationally acceptable ITS ap operation of a Privacy Protection Gateway.	plication specification that defines the	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Res	olution Flow Name		
Privacy Protection G	Gateway		nter		protected location and address flow		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Equipment maintenance coordination	Develop an internationally acceptable ITS ap equipment maintenance and status informat		of Near-term	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Res F	olution Flow Name		
Center		Sei	rvice Monitor System		service maintenance request		
Data Distribution Sy	ystem	Sei	rvice Monitor System		service maintenance request		
Service Monitor Sys	stem	Ce	nter		service maintenance status		
Service Monitor Sys	stem	Da	ta Distribution System		service maintenance status		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Distribute maps	Develop an internationally acceptable ITS ap for updating maps, roadway geometry, and i between a Map Update System and a centre	intersection geometry among centres (e.		Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Res	olution Flow Name		
Center			ap Update System		map update notification		
Map Update System	n	Ce	nter		map updates		
Map Update System	n	Oti	her Map Update Systems		map update coordination		
Map Update System	n	Pa	rking Management System		parking facility geometry		
	Systems	Ma	ap Update System		map update coordination		
Other Map Update S					nauking facility goomatry		
Parking Managemer	nt System	Ma	ap Update System		parking facility geometry		

lution Name:	(None-Data) - OMG DDS			Number of Issues: 4	otal Issue Severity	y: 46
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Security and credentials management - base services	Develop an internationally acceptable standard for the security policy and networking information, device enrolment information, security credentials, security credential revocations, and misbehaviour report information triples contained within the Security and Credentials Management Service Package.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Commercial Vehicle C	heck Equipment		mmercial Vehicle OBE Service Provider	security credentials		
Security Credentials R	egistry	Co	mmercial Vehicle Check Equipment	security credentials		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Develop standard for electronic distribution of traffic regulations	Develop an internationally acceptable standard to enable the provision and management of electronic traffic regulations to enable proper operation of road users as they cross jurisdictional boundaries.	Urgent	Australia, European Union, United State
Cource				y this Issue that would be addressed by the Proposed Resolution		
Source Traffic Regulatory Aut	hority		ansportation Information Center	Flow Name traffic-related regulations		
	,			traine related regulations		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Credentials management system	Implement regional (security) credentials management systems that are interoperable.	Urgent	Australia, European Union, United State
	TOT LITTS HITOTHIALION HOW.					
Source	Tot this information now.			y this Issue that would be addressed by the Proposed Resolution		
Source Commercial Vehicle C		Des	Triples using this solution and affected b stination mmercial Vehicle OBE Service Provider	y this Issue that would be addressed by the Proposed Resolution Flow Name security credentials		
	heck Equipment	Con	stination	Flow Name		
Commercial Vehicle C	heck Equipment	Des Coi Coi	stination mmercial Vehicle OBE Service Provider	Flow Name security credentials	Timeframe	Applicability
Commercial Vehicle C	heck Equipment	Des Coi Coi	stination mmercial Vehicle OBE Service Provider mmercial Vehicle Check Equipment	Flow Name security credentials security credentials	Timeframe Urgent	Australia, European
Commercial Vehicle Commercial Vehicle Commercial Vehicle Commercial Vehicle Commercial Security Credentials Results at a not fully	Inheck Equipment legistry Issue Description Some of the data elements for this	Issue Severity Medium	mmercial Vehicle OBE Service Provider mmercial Vehicle Check Equipment Proposed Resolution C-C: Situation data	Flow Name security credentials security credentials Resolution Description Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs, CAMs, sensors, etc.) among various		Applicability Australia, European Union, United State

olution Name:	(None-Data) - OMG DDS			Nu	imber of Issues:	4	Total Issue Severity:	46
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer ramong multiple ITS subsystems on an as-needed basis in scalable manner than existing approaches. Determine we technologies might be appropriate, and what impacts the would have on ITS standards efforts.	n a more efficient, s where the use of the	secure, and ese	Urgent	Australia, European Union, United States
Carrie				this Issue that would be addressed by the Proposed Resolution				
Source Archived Data Center	er		tination thived Data User Systems	Flow Name archive analys	sis results			
Archived Data Cente	er		chived Data User Systems		est confirmation			
Archived Data Cente	er		chived Data User Systems	archived data				
Archived Data Cente	er		nter	archive reque	ests			
Archived Data Cente	er	Cer	nter	archive status	;			
Archived Data Cente	er	Go	vernment Reporting Systems	government re	reporting system data			
Archived Data User	Systems	Arc	chived Data Center	archive analys	sis requests			
Archived Data User	Systems	Arc	chived Data Center	archived data	product requests			
Border Inspection A	dministration Center	Во	rder Inspection System	consolidated a	agency response			
Border Inspection A	dministration Center	Во	rder Inspection System	manifest data	1			
Border Inspection A	dministration Center	Во	rder Inspection System	traveler perso	onal information			
Border Inspection A	dministration Center	Fle	et and Freight Management Center	clearance noti	ification			
Border Inspection A	dministration Center	Fre	ight Distribution and Logistics Center	clearance noti	ification			
Border Inspection A	dministration Center	Int	ermodal Customer System	clearance noti	ification			
Border Inspection Sy	ystem	Во	rder Inspection Administration Center	border securit	ty input			
Border Inspection Sy	ystem	Во	rder Inspection Administration Center	inspection res	sults			
Border Inspection Sy	ystem	Co	mmercial Vehicle Administration Center	arrival notifica	ation			
Cellular Communica	tions Provider	Tra	insportation Information Center	comm-derived	d travel time data			
Center		Ma	p Update System	map update n	otification			
Center		Ser	vice Monitor System	service mainte	enance request			
Center		Ser	vice Monitor System	system monito	oring			
Commercial Vehicle	Administration Center	Во	rder Inspection Administration Center	border clearar	nce status			
Commercial Vehicle	Administration Center	Co	mmercial Vehicle Check Equipment	border agency	y clearance results			
Commercial Vehicle	Administration Center	Co	mmercial Vehicle Check Equipment	carrier partici	pation report			
Commercial Vehicle	Administration Center	Co	mmercial Vehicle Check Equipment	commercial ve	ehicle permit information	on		
Commercial Vehicle	Administration Center	Co	mmercial Vehicle Check Equipment	credentials inf	formation			
Commercial Vehicle	Administration Center	Co	mmercial Vehicle Check Equipment	credentials sta	atus information			
Commercial Vehicle	Administration Center	Co	mmercial Vehicle Check Equipment	cv driver recor	rd			
Commercial Vehicle	Administration Center	Co	mmercial Vehicle Check Equipment	safety status i	nformation			
Commercial Vehicle	Administration Center	Co	mmercial Vehicle Check Equipment	targeted list				

Commonait valeties Administration Center Commonait valeties Administration Cen	olution Name:	(None-Data) - OMG DDS		Number of Issues: 4 Total Issue Severity: 4	16
Remerical Melalia Administration Center Commonal Melalia	Commercial Vehicle Admin	istration Center	Commercial Vehicle Check Equipment	transportation border clearance assessment	'
Commercial Melicial Association Concern Commer	Commercial Vehicle Admin	istration Center	Commercial Vehicle OBE Service Provider	commercial vehicle permit information	
Commonate Verbice Administration Content Commonate Verbice Commonate Verbice Administration Content Commonate Verbice C	Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	carrier participation report	
Commercial Vehicu Administration Conter Commercial Vehicu Conter Commercial Vehic	Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	credentials information	
Commencial Verbice Administration Content Commencial Verbice Administrat	Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	credentials status information	
Commercial Vehicle Administration Gener Commercial Vehicle Code Ripupace Commercial Vehi	Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	cv driver record	
Commercial Vericle Administration Center Commercial Vericle Center Equipment Commercial	Commercial Vehicle Admin	istration Center	CVO Information Requestor Center	safety status information	
Commercial Vendor Administration Center Rest and Freight Management Center Rest Administration Center Rest Administration Center Rest Rest Administration Center Rest Rest Rest Rest Rest Rest Rest Rest	Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	border clearance status	
Commercial Vehicle Administration Center Feet and Freight Management Center Commercial Vehicle Administration Center Feet and Freight Management Center Commercial Vehicle Administration Center Feet and Freight Management Center Commercial Vehicle Administration Center Feet and Freight Management Center Commercial Vehicle Administration Center Feet and Freight Management Center Feet and Freight Management Center Commercial Vehicle Administration Center Feet and Freight Management Center Gentmencial Vehicle Administration Center Gentmencial Vehicle Center Equipment Gentmencial Vehicle	Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	citation	
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Commercial Vehicle Administration Center Commercial Vehicle Challes Equipment Commercial Vehicle	Commercial Vehicle Admin	istration Center	Fleet and Freight Management Center	credentials information	
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Commercial Vehicle Administration Center Other CV Administration Centers Commercial Vehicle Administration Center Commercial Vehicle Check Equipment Commercial V	Commercial Vehicle Admin	istration Center	Intermodal Customer System	border clearance status	
Commercial Vehicle Administration Center Other CV Administration Centers credential fee coordination Commercial Vehicle Administration Center Other CV Administration Centers credential fee coordination Commercial Vehicle Administration Center Other CV Administration Centers credentials status information Commercial Vehicle Administration Center Other CV Administration Centers commercial Vehicle Administration Center Other CV Administration Centers commercial Vehicle Administration Center Other CV Administration Centers commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Check Equipment Commercial Vehicle Check Eq	Commercial Vehicle Admin	istration Center	Other CV Administration Centers	accident report	
Commercial Vehicle Administration Center Other CV Administration Centers credential fee coordination Commercial Vehicle Administration Center Other CV Administration Centers credentials information Commercial Vehicle Administration Center Other CV Administration Centers credentials status information Commercial Vehicle Administration Center Other CV Administration Centers cv driver record Commercial Vehicle Administration Center Other CV Administration Centers safety status information Commercial Vehicle Administration Center commercial Vehicle Administration Center commercial Vehicle Administration Center commercial Vehicle Administration Center commercial Vehicle Check Equipment Commercial Vehicle Check Equipment Commercial Vehicle Administration Center commercial Vehicle Check Equipment Commercial Vehicle Administration Center commercial Vehicle Check Equipment Commercial Vehicle Check Equipment Commercial Vehicle Check Equipment Commercial Vehicle Check Equipment Center	Commercial Vehicle Admin	istration Center	Other CV Administration Centers	citation	
Commercial Vehicle Administration Center Other CV Administration Centers Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Check Equipment Commercial Vehi	Commercial Vehicle Admin	istration Center	Other CV Administration Centers	commercial vehicle permit information	
Commercial Vehicle Administration Centers Commercial Vehicle Administration Centers Commercial Vehicle Administration Centers Commercial Vehicle Administration Center Commercial Vehicle Check Equipment Commercial Vehicle OBS Service Provider	Commercial Vehicle Admin	istration Center	Other CV Administration Centers	credential fee coordination	
Commercial Vehicle Administration Center Other CV Administration Centers safety status information Commercial Vehicle Administration Center Transportation Information Center commercial Vehicle Administration Center Commercial Vehicle Education State St	Commercial Vehicle Admin	istration Center	Other CV Administration Centers	credentials information	
Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Check Equipment Commercial Vehicle Check Equipmen	Commercial Vehicle Admin	istration Center	Other CV Administration Centers	credentials status information	
Commercial Vehicle Administration Center Commercial Vehicle Check Equipment Commercial Vehicle Obes Service Provider	Commercial Vehicle Admin	istration Center	Other CV Administration Centers	cv driver record	
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Commercial Vehicle Check Equipment Emergency Management Center Commercial Vehicle Check Equipment Commercial Vehicle Chec	Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	border clearance event	
Commercial Vehicle Check Equipment Commercial Vehicle OBE Service Provider Commercial Vehicle OBE Service Provider Commercial Vehicle OBE Service Provider	Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	citation	
Commercial Vehicle Check Equipment Commercial Vehicle OBE Service Provider	Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	daily site activity data	
Commercial Vehicle Check Equipment Commercial Vehicle Check Equipment Emergency Management Center commercial Vehicle Check Equipment Enforcement Center violation notification Commercial Vehicle Check Equipment Enforcement Center violation notification Commercial Vehicle OBE Service Provider Commercial Vehicle Administration Center commercial vehicle permit information	Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	on-board safety data	
Commercial Vehicle Check Equipment Center commercial vehicle incident notification Commercial Vehicle Check Equipment Enforcement Center violation notification Commercial Vehicle OBE Service Provider Commercial Vehicle Administration Center commercial vehicle permit information	Commercial Vehicle Check	Equipment	Commercial Vehicle Administration Center	violation notification	
Commercial Vehicle Check Equipment violation notification Commercial Vehicle OBE Service Provider Commercial Vehicle Administration Center commercial vehicle permit information	Commercial Vehicle Check	Equipment	Commercial Vehicle OBE Service Provider	security credentials	
Commercial Vehicle OBE Service Provider Commercial Vehicle Administration Center commercial vehicle permit information	Commercial Vehicle Check	Equipment	Emergency Management Center	commercial vehicle incident notification	
	Commercial Vehicle Check	Equipment	Enforcement Center	violation notification	
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE Se	rvice Provider	Commercial Vehicle Administration Center	commercial vehicle permit information	
	Connected Vehicle Roadsid	e Equipment	Parking Management System	connected vehicle parking data	

Oct Intelligency (Freen Color Intelligency (Free Color Intelligency (Fre	lution Name: (None-Data) - OMG DDS		Number of Issues: 4 Total Issue Severity: 46
Date Disclaration System One for Disclaration System service particulation System design disclaration System service particulation of System Date Disclaration System Service particulation System service particulation of System Date Disclaration System Service particulation of System service particulation of System Date Disclaration System Service particulation System security System System Date Disclaration System Security System System security System System Date Disclaration System Security System System security System System Disclaration System Security System security System Di	CVO Information Requestor Center	Commercial Vehicle Administration Center	request for data review
Sub- Billionifor System Care Color Month System service Months System	Data Distribution System	Other Data Distribution Systems	field situation data sharing
Dots Dicts Dicts System Server Mercin System general Mercin System general Mercin System Dicts Dicts Dicts System Server Mercin System general Mercin System general Mercin State Dicts part Dicts Dicts System Part Interpret Management Center general Mercin System general Mercin System Discipation Dicts Control Part Management Center desir Mercin System desir Mercin System Discipation Dicts System Tall Management Center description Mercin System description Mercin System Discipation Dicts System Tall Management Center description Mercin System description Mercin System Discipation Dicts System Tall Management Center description Mercin System description Mercin System Discipation Dicts System Tall Management Center description Mercin System description Mercin System Discipation Dicts System Tall Management Center description Mercin System description Mercin System Discipation System Tall Management Center description Mercin System description Mercin System Discipation System Tall Management Center description Mercin System description Mercin System Disc	Data Distribution System	Other Data Distribution Systems	traveler situation data sharing
fixed fixed blooms (speciment Center) Seven blooms (speciment Center) separation (speciment Center)	Data Distribution System	Other Data Distribution Systems	vehicle situation data sharing
Interprise for forgering Contract Enter to forgering Management Contract Contract for Man	Data Distribution System	Service Monitor System	service maintenance request
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Entertor, Management Center Insurance Ce	Emergency Management Center	Other Emergency Management Centers	evacuation coordination
Enteron Management Center 100 personal monatorial center 100 personal monatorial center 100 personal monatorial personal	Emergency Management Center	Public Health System	public health request
invotions foatgreener Center Traffic Management Center own consists of some operations information invisions foatgreener Center Traffic Management Center own centers own centers information Emission foatgreener Center Traffic Management Center own centers own centers statistical polithion information Emission foatgreener Center Traffic Management Center own centers own centers statistical polithion information Emission foatgreener Center Traffic Management Center to own centers own centers Emission foatgreener Center Traffic Management Center to own centers own centers Emission foatgreener Center Traffic Management Center to own centers own centers Emission foatgreener Center Center Center Center Center to own centers own centers Meet and Freight Management Center Center Center Center Center own centers own centers Ret and Freight Management Center Center Centers Center Centers center Centers centers Ret and Freight Management Center Center Centers Center Centers centers centers centers	Emergency Management Center	Traffic Management Center	special vehicle restricted use information
Enisions Management Center Finds Management Center Fin	Emergency Management Center	Transportation Information Center	transportation system status
Finisions Management Center Infinish Management	Emissions Management Center	Traffic Management Center	low emissions zone coordination
Finision Munagement Certer 1 Family Management Certer 2 Family Management Certer 3 Family Management Certer 3 Family Management Certer 3 Family Management Certer 4 Family Management Certer 4 Family Management Certer 5 Family Management Certer 6 Family Management Certer 6 Family Management Certer 7 Family Management Certer 7 Family Management Certer 7 Family Management Certer 7 Family Management Certer 8 Family Management Certer 8 Family Management Certer 9 Family Management C	Emissions Management Center	Traffic Management Center	low emissions zone operations information
Emissions Management Center Finishors Management Center Fi	Emissions Management Center	Traffic Management Center	mobile source emissions data
Emissions Management Center Tester Te	Emissions Management Center	Traffic Management Center	widearea statistical pollution information
Enissions Management Center Enforcement Center Enforcement Center Enforcement Center Enter Americal Vehicle Check Equipment Enter and Freight Management Center Enter and Frei	Emissions Management Center	Transit Management Center	low emissions zone coordination
Enforcement Center Promotiers Prect and Freight Management Center Reet and Freight Management Cente	Emissions Management Center	Transit Management Center	low emissions zone operations information
Feet and Freight Management Center Fleet and Freight Management Ce	Emissions Management Center	Transportation Information Center	low emissions zone operations information
Fleet and Freight Management Center Fleet and Freight Management C	Enforcement Center	Commercial Vehicle Check Equipment	information on violators
Fleet and Freight Management Center Commercial Vehicle Administration Center cedential application Center cedential	Event Promoters	Parking Management System	event plans
Fiet and Freight Management Center Fiet and Freight Management Center Fiet and Freight Management Center Commercial Vehicle Administration Center Commercial Vehicle Incident notification Commercial Veh	Fleet and Freight Management Center	Border Inspection Administration Center	manifest data
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Fleet and Freight Management Center Commercial Vehicle Administration Center unique identifiers Fleet and Freight Management Center Commercial Vehicle Administration Center unique identifiers Fleet and Freight Management Center Commercial vehicle incident notification Fleet and Freight Management Center Commercial vehicle incident notification Fleet and Freight Management Center Commercial vehicle incident notification Fleet and Freight Management Center Commercial vehicle incident notification Fleet and Freight Management Center Commercial vehicle incident notification Fleet and Freight Management Center Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Administration Center Commercial Vehicle Incident notification Fleet and Freight Management Center Commercial Vehicle Administration Center Commercial Vehicle Incident notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Incident Notification Fleet and Freight Management Center Commercial Vehicle Tenter School Vehicle Tenter School Vehicle Tenter Sch	Fleet and Freight Management Center	Commercial Vehicle Administration Center	on-board safety data
Fleet and Freight Management Center Commercial Vehicle Administration Center under Freight Management Center commercial vehicle incident notification commercial	Fleet and Freight Management Center	Commercial Vehicle Administration Center	request for permit
Fleet and Freight Management Center Intermodal Customer System Intermodal Customer System Intermodal Terminal Fleet and Freight Management Center Intermodal Terminal Fleet and Freight Management Center Intermodal Terminal Fleet and Freight Management Center Fleet and Freight Manage	Fleet and Freight Management Center	Commercial Vehicle Administration Center	tax filing
Fleet and Freight Management Center Intermodal Customer System Intermodal Customer System available truck capacity Fleet and Freight Management Center Intermodal Customer System Intermodal Customer System booking status Fleet and Freight Management Center Intermodal Terminal Intermodal Terminal Customer System Intermodal	Fleet and Freight Management Center	Commercial Vehicle Administration Center	unique identifiers
Fleet and Freight Management Center Fleet and Freight Management C	Fleet and Freight Management Center	Emergency Management Center	commercial vehicle incident notification
Fleet and Freight Management Center Intermodal Customer System Intermodal Customer System booking status Fleet and Freight Management Center Intermodal Customer System booking status Fleet and Freight Management Center Intermodal Terminal container delivery request Fleet and Freight Management Center Intermodal Terminal container pickup confirmation Fleet and Freight Management Center Intermodal Terminal termodal Terminal terminal terminal reservation request Fleet and Freight Management Center Transportation Information Center Center Center Transportation Information Center Center Transportation Information Center Center Center Transportation Information Center Cen	Fleet and Freight Management Center	Freight Distribution and Logistics Center	available truck capacity
Fleet and Freight Management Center Intermodal Customer System booking status Fleet and Freight Management Center Intermodal Terminal container delivery request Fleet and Freight Management Center Intermodal Terminal container pickup confirmation Fleet and Freight Management Center Intermodal Terminal terminal terminal terminal reservation request Fleet and Freight Management Center Transportation Information Center commercial vehicle trip information	Fleet and Freight Management Center	Freight Distribution and Logistics Center	load appointment status
Fleet and Freight Management Center Transportation Information Center Transportation Information Center Commercial vehicle trip information	Fleet and Freight Management Center	Intermodal Customer System	available truck capacity
Fleet and Freight Management Center Fleet and Freight Management Center Intermodal Terminal Intermodal Terminal	Fleet and Freight Management Center	Intermodal Customer System	booking status
Fleet and Freight Management Center Fleet and Freight Management Center Transportation Information Center terminal reservation request commercial vehicle trip information	Fleet and Freight Management Center	Intermodal Terminal	container delivery request
Fleet and Freight Management Center Transportation Information Center commercial vehicle trip information	Fleet and Freight Management Center	Intermodal Terminal	container pickup confirmation
	Fleet and Freight Management Center	Intermodal Terminal	terminal reservation request
Fleet and Freight Management Center Transportation Information Center freight traveler information preferences	Fleet and Freight Management Center	Transportation Information Center	commercial vehicle trip information
	Fleet and Freight Management Center	Transportation Information Center	freight traveler information preferences

ution Name: (None-Data) - OMG DDS		Number of Issues: 4 Total Issue Severity: 46
Freight Distribution and Logistics Center	Border Inspection Administration Center	manifest data
Freight Distribution and Logistics Center	Fleet and Freight Management Center	available loads
Freight Distribution and Logistics Center	Fleet and Freight Management Center	load matching info
Freight Distribution and Logistics Center	Intermodal Customer System	booking status
Freight Distribution and Logistics Center	Intermodal Terminal	container availability request
Freight Distribution and Logistics Center	Other Freight Distribution and Logistics Centers	load matching systems coordination
Freight Distribution and Logistics Center	Transportation Information Center	freight traveler information preferences
Government Reporting Systems	Archived Data Center	government reporting data receipt
Intermodal Customer System	Border Inspection Administration Center	manifest data
Intermodal Customer System	Fleet and Freight Management Center	available loads
Intermodal Customer System	Freight Distribution and Logistics Center	available loads
Intermodal Customer System	Transportation Information Center	freight traveler information preferences
Intermodal Terminal	Fleet and Freight Management Center	container pickup request
Intermodal Terminal	Fleet and Freight Management Center	intermodal terminal status
Intermodal Terminal	Fleet and Freight Management Center	terminal reservation
Intermodal Terminal	Freight Distribution and Logistics Center	container availability status
Intermodal Terminal	Freight Distribution and Logistics Center	intermodal terminal status
Intermodal Terminal	Traffic Management Center	intermodal freight event information
Intermodal Terminal	Transportation Information Center	intermodal terminal status
Maint and Constr Management Center	Emergency Management Center	road network status assessment
Maint and Constr Management Center	Emergency Management Center	roadway maintenance status
Maint and Constr Management Center	Maintenance and Construction Administrative Systems	maint and constr work performance
Maint and Constr Management Center	Traffic Management Center	special vehicle restricted use information
Maint and Constr Management Center	Transportation Information Center	roadway maintenance status
Maintenance and Construction Administrative Systems	Maint and Constr Management Center	maint and constr administrative information
Map Update System	Center	map updates
Map Update System	Other Map Update Systems	map update coordination
Map Update System	Parking Management System	parking facility geometry
Other CV Administration Centers	Commercial Vehicle Administration Center	accident report
Other CV Administration Centers	Commercial Vehicle Administration Center	citation
Other CV Administration Centers	Commercial Vehicle Administration Center	commercial vehicle permit information
Other CV Administration Centers	Commercial Vehicle Administration Center	credential fee coordination
Other CV Administration Centers	Commercial Vehicle Administration Center	credentials information
Other CV Administration Centers	Commercial Vehicle Administration Center	credentials status information
Other CV Administration Centers	Commercial Vehicle Administration Center	cv driver record
Other CV Administration Centers	Commercial Vehicle Administration Center	safety status information

olution Name: (None-Data) - OMG DDS		Number of Issues: 4 Total Issue Severity: 46
Other Data Distribution Systems	Data Distribution System	field situation data sharing
Other Data Distribution Systems	Data Distribution System	traveler situation data sharing
Other Data Distribution Systems	Data Distribution System	vehicle situation data sharing
Other Emergency Management Centers	Emergency Management Center	evacuation coordination
Other Freight Distribution and Logistics Centers	Freight Distribution and Logistics Center	load matching systems coordination
Other Map Update Systems	Map Update System	map update coordination
Parking Management System	Map Update System	parking facility geometry
Parking Management System	Transportation Information Center	parking reservation confirmation
Payment Administration Center	Parking Management System	vehicle payment request
Privacy Protection Gateway	Center	protected location and address flow
Security Credentials Registry	Commercial Vehicle Check Equipment	security credentials
Service Monitor System	Center	service maintenance status
Service Monitor System	Data Distribution System	service maintenance status
Storage Facility Data Acquisition System	Maint and Constr Management Center	maintenance materials storage status
Traffic Management Center	Emissions Management Center	low emissions zone coordination
Traffic Management Center	Intermodal Terminal	intermodal freight traffic confirmation
Traffic Management Center	Map Update System	map update notification
Traffic Management Center	Parking Management System	parking demand management request
Traffic Management Center	Parking Management System	parking traffic information
Traffic Management Center	Parking Management System	transportation operational strategies
Traffic Management Center	Transit Management Center	dynamic bus lane status
Traffic Regulatory Authority	Transportation Information Center	traffic-related regulations
Transit Management Center	Emissions Management Center	low emissions zone coordination
Transit Management Center	Traffic Management Center	dynamic bus lane request
Transportation Information Center	Emergency Management Center	road network environmental situation data
Transportation Information Center	Fleet and Freight Management Center	freight-specific traveler information
Transportation Information Center	Fleet and Freight Management Center	road network environmental situation data
Transportation Information Center	Freight Distribution and Logistics Center	freight-specific traveler information
Transportation Information Center	Intermodal Customer System	freight-specific traveler information
Transportation Information Center	Maint and Constr Management Center	road network environmental situation data
Transportation Information Center	Parking Management System	parking reservation request
Transportation Information Center	Surface Transportation Weather Service	road network environmental situation data
Transportation Information Center	Traffic Management Center	road network environmental situation data
Travel Services Provider System	Transportation Information Center	travel service reservations

olution Name:	(None-Data) - OMG DDS			Number of Issues: 4 To	otal Issue Severit	y: 46
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta not defined gh)	Required data elements are not defined.	High	C-C: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs, CAMs, sensors, etc.) among various centres.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected batination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	mation Center	Tra	offic Management Center	road network environmental situation data		
lution Name:	(None-Data) - OMG DDS RPC			Number of Issues: 4 To	otal Issue Severit	y: 41
	vithin the U.S It combines standards associated vandards that support secure remote procedure ca			C. The (None-Data) standards include an unspecified set of standards at the upper layers. The e or a centre over a field communication link	I-F: OMG DDS RI	PC standards
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - base services	Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package.	Urgent	Australia, European Union, United States
Source			Friples using this solution and affected batination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	toadside Equipment		nter	device identification		
ITS Roadway Equipm	nent	Ce	nter	device identification		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Wrong way vehicle detected	Develop an internationally acceptable ITS application specification for providing distributing wrong way vehicle alerts in real-time.	Urgent	Australia, European Union, United States
Source			- Friples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	Roadside Equipment	Oth	her Connected Vehicle Roadside Equipm	ent wrong way vehicle detected		
Other Connected Vel	hicle Roadside Equipment	Со	nnected Vehicle Roadside Equipment	wrong way vehicle detected		
	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ue	issue Description	1				
sue ata profile not efined	Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Private location and address	Develop an internationally acceptable ITS application specification that defines the operation of a Privacy Protection Gateway.	Urgent	Australia, European Union, United States
ata profile not	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Ultra Information	address		Urgent	

olution Name:	(None-Data) - OMG DDS RPC			Number of Issues: 4	otal Issue Severity	: 41
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Speed warning	Develop an internationally acceptable ITS application specification for providing roadway configuration data, current speed limits, warning parameters and thresholds to a speed warning application.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle F	Roadside Equipment		int and Constr Management Center	reduced speed warning status		
Connected Vehicle F	Roadside Equipment	Tra	ffic Management Center	reduced speed warning status		
ITS Roadway Equipn	nent	Co	nnected Vehicle Roadside Equipment	reduced speed warning info		
Maint and Constr M	lanagement Center	Co	nnected Vehicle Roadside Equipment	reduced speed warning info		
Traffic Management	t Center	Co	nnected Vehicle Roadside Equipment	reduced speed warning info		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Exception-based reporting	Develop an internationally acceptable ITS application specification for managing exception-based reports from other local field devices.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipn	nent	Co	nnected Vehicle Roadside Equipment	vehicle signage local data		
Parking Managemer	nt System	Co	nnected Vehicle Roadside Equipment	vehicle signage local data		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Highway advisory radio	Develop an internationally acceptable ITS application specification for managing highway advisory radios for secure communications with proper access control.	Medium-term	United States
Source			Friples using this solution and affected by stination	r this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipm	nent		int and Constr Management Center	roadway advisory radio status		
ITS Roadway Equipn	nent	Tra	ffic Management Center	roadway advisory radio status		
Maint and Constr M	lanagement Center	ITS	Roadway Equipment	roadway advisory radio data		
Traffic Management	t Center	ITS	Roadway Equipment	roadway advisory radio data		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Intersection infringement	Develop an internationally acceptable ITS application specification that defines the rules for providing intersection infringment information within a local environment.	Urgent	United States
				this Issue that would be addressed by the Proposed Resolution		
		Des	stination	Flow Name		
Source Connected Vehicle F	Roadsida Equipment		Roadway Equipment	intersection infringement info		

ution Name:	(None-Data) - OMG DDS RPC			Number of Issues: 4	otal Issue Severi	ty: 41
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Weather information	Develop an internationally acceptable ITS application specification for directing an RSE to provide weather information to vehicles.	Urgent	Australia, European Union, United State
Source			Friples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	toadside Equipment	Tra	insportation Information Center	road weather advisory status		
Transportation Infor	mation Center	Co	nnected Vehicle Roadside Equipment	road weather advisory info		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Secure installation/update of software	Develop an internationally acceptable standard for the secure installation, update, and validation of software (including application, support, and OS software) on devices. The process should allow a system to determine which devices have been updated and provide a mechanism to define when such updates are allowed, recommended, and required.	Urgent	Australia, European Union, United State
Source			Triples using this solution and affected butination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Center			nnected Vehicle Roadside Equipment	RSE application install/upgrade		
Connected Vehicle R	Roadside Equipment	Fie	ld Support Equipment	RSE application install/upgrade		
Field Support Equipr	nent	Co	nnected Vehicle Roadside Equipment	RSE application install/upgrade		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ita profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Data aggregation	Develop an internationally acceptable ITS application specification for an RSE to aggregate collected data and report the information to interested parties (e.g., centres).	Urgent	Australia, European Union, United State
Source			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	Roadside Equipment		Roadway Equipment	environmental situation data		
Connected Vehicle R	Roadside Equipment	Ma	int and Constr Management Center	environmental situation data		
Connected Vehicle R	toadside Equipment	Tra	ffic Management Center	environmental situation data		
Connected Vehicle R	toadside Equipment	Tra	insportation Information Center	environmental situation data		
Data Distribution Sys	stem	Co	nnected Vehicle Roadside Equipment	situation data collection parameters		
Traffic Management	Center	Co	nnected Vehicle Roadside Equipment	situation data collection parameters		

olution Name:	(None-Data) - OMG DDS RPC			Number of Issues: 4	otal Issue Severity	41
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Pata profile not lefined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Application management	Develop an internationally acceptable ITS application specification for generically managing applications (e.g., enabling, monitoring, etc.) within an RSE.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Center		Cor	nnected Vehicle Roadside Equipment	RSE application information		
Center		Cor	nnected Vehicle Roadside Equipment	RSE control commands		
Connected Vehicle Roadside Equipment		Cen	nter	RSE application status		
Connected Vehicle Roadside Equipment		Fiel	d Support Equipment	RSE configuration settings		
Connected Vehicle Roadside Equipment		Fiel	d Support Equipment	RSE control commands		
Connected Vehicle Roadside Equipment		Ma	int and Constr Management Center	vehicle signage application status		
Connected Vehicle Roadside Equipment		Tra	ffic Management Center	intersection management application status		
Connected Vehicle Roadside Equipment		Tra	ffic Management Center	intersection safety application status		
Connected Vehicle Roadside Equipment		Tra	ffic Management Center	queue warning application status		
Connected Vehicle Roadside Equipment		Tra	ffic Management Center	speed management application status		
Connected Vehicle Roadside Equipment		Tra	ffic Management Center	traffic monitoring application status		
Connected Vehicle Ro	padside Equipment	Tra	ffic Management Center	vehicle signage application status		
Connected Vehicle Ro	padside Equipment	Tra	ffic Management Center	work zone application status		
Field Support Equipm	nent	Cor	nnected Vehicle Roadside Equipment	RSE configuration settings		
Field Support Equipment		Cor	nnected Vehicle Roadside Equipment	RSE control commands		
Maint and Constr Ma	nagement Center	Cor	nnected Vehicle Roadside Equipment	vehicle signage application info		
Traffic Management	Center	Cor	nnected Vehicle Roadside Equipment	intersection management application info		
Traffic Management Center		Cor	nnected Vehicle Roadside Equipment	intersection safety application info		
Traffic Management Center		Cor	nnected Vehicle Roadside Equipment	queue warning application information		
Traffic Management Center		Cor	nnected Vehicle Roadside Equipment	speed management application information		
Traffic Management Center		Cor	nnected Vehicle Roadside Equipment	traffic monitoring application info		
Traffic Management Center		Cor	nnected Vehicle Roadside Equipment	vehicle signage application info		
Traffic Management Center		Cor	nnected Vehicle Roadside Equipment	work zone application info		
Tunnel Management	System	Cor	nnected Vehicle Roadside Equipment	vehicle signage application info		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not ifined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Urgent	Australia, European Union, United States, Japan
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nnected Vehicle Roadside Equipment	map updates		
Map Update System		Cor	nnected Vehicle Roadside Equipment	parking facility geometry		

Issue				Number of Issues: 4 To	otal Issue Severity	: 41
	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined			C-V: Update central map database	Develop an internationally acceptable ITS application specification that defines the rules for updating a central map database, including roadway and intersection geometry, based on real-world data readings from vehicles and transmitted to a map update system.	Medium-term	Australia, European Union, United States, Japan
Source			riples using this solution and affected tination	I by this Issue that would be addressed by the Proposed Resolution Flow Name	-	
Connected Vehicle	Roadside Equipment	Ma	p Update System	vehicle location data for mapping		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
cill under evelopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	I-F: Data aggregation	Develop an internationally acceptable ITS application specification for an RSE to aggregate collected data and report the information to interested parties (e.g., centres).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle	Roadside Equipment	ITS Roadway Equipment		environmental situation data		
Connected Vehicle Roadside Equipment		Traffic Management Center		environmental situation data		
Connected Vehicle	Roadside Equipment	Transportation Information Center		environmental situation data		

Solution Name:	(None-Data) - OMG DDS RPC				Number of Issues: 4 Total Issue Severity: 41			
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that namong multiple ITS subsystems on an as-need scalable manner than existing approaches. Due technologies might be appropriate, and what would have on ITS standards efforts.	eded basis in a more efficient Determine where the use of t	t, secure, and these	Urgent	Australia, European Union, United States
				y this Issue that would be addressed by the Proposed Res				
Source			stination nnected Vehicle Roadside Equipment		Flow Name RSE application information			
Center			nnected Vehicle Roadside Equipment		RSE application install/upgrade			
Center			nnected Vehicle Roadside Equipment		RSE control commands			
	e Administration Center		nnected Vehicle Roadside Equipment		trigger area notification			
Commercial Vehicle	e Administration Center		nnected Vehicle Roadside Equipment		trigger control			
Connected Vehicle	Roadside Equipment	Arc	chived Data Center		local situation data			
Connected Vehicle	Roadside Equipment	Ce	nter		device identification			
Connected Vehicle	Roadside Equipment	Ce	nter		protected location and address flow	w		
Connected Vehicle	Roadside Equipment	Ce	nter		RSE application status			
Connected Vehicle	Roadside Equipment	Co	mmercial Vehicle Administration Center		on-board safety data			
Connected Vehicle	Roadside Equipment	Co	mmercial Vehicle Administration Center		roadside data message			
Connected Vehicle	Roadside Equipment	Da	ta Distribution System		local situation data			
Connected Vehicle	Roadside Equipment	Ele	ectric Charging Station		vehicle charging profile			
Connected Vehicle	Roadside Equipment	Em	nergency Management Center		work zone safety application status	S		
Connected Vehicle	Roadside Equipment	Em	nissions Management Center		low emissions zone application stat	tus		
Connected Vehicle	Roadside Equipment	Fie	eld Support Equipment		RSE application install/upgrade			
Connected Vehicle	Roadside Equipment	Fie	eld Support Equipment		RSE configuration settings			
Connected Vehicle	Roadside Equipment	Fie	eld Support Equipment		RSE control commands			
Connected Vehicle	Roadside Equipment	ITS	Roadway Equipment		environmental situation data			
Connected Vehicle	Roadside Equipment	ITS	S Roadway Equipment		intersection infringement info			
Connected Vehicle	Roadside Equipment	ITS	S Roadway Equipment		restricted lanes application status			
Connected Vehicle	Roadside Equipment	ITS	S Roadway Equipment		vehicle entries and exits			
Connected Vehicle	Roadside Equipment	ITS	Roadway Equipment		vehicle occupancy			
Connected Vehicle	Roadside Equipment	ITS	Roadway Equipment		work zone warning notification			
Connected Vehicle	Roadside Equipment	ITS	Roadway Payment Equipment		vehicle entries and exits			
Connected Vehicle	Roadside Equipment	Ma	aint and Constr Management Center		environmental situation data			
Connected Vehicle	Roadside Equipment	Ma	aint and Constr Management Center		reduced speed warning status			
Connected Vehicle	Roadside Equipment	Ma	aint and Constr Management Center		vehicle signage application status			
Connected Vehicle	Roadside Equipment	Ma	aint and Constr Management Center		work zone safety application status	3		
Connected Vehicle	Roadside Equipment	Ma	ap Update System		vehicle location data for mapping			
i .								

Solution Name:	(None-Data) - OMG DDS RPC		Number of Issues: 4 Total Issue Severity: 41
Connected Vehicle Roadsi	de Equipment	Other Connected Vehicle Roadside Equipment	wrong way vehicle detected
Connected Vehicle Roadsid	de Equipment	Parking Management System	connected vehicle parking data
Connected Vehicle Roadsid	de Equipment	Payment Administration Center	access violation notification
Connected Vehicle Roadsi	de Equipment	Payment Administration Center	road use history
Connected Vehicle Roadsid	de Equipment	Payment Administration Center	toll collection application status
Connected Vehicle Roadsid	de Equipment	Payment Administration Center	vehicle payment information
Connected Vehicle Roadsi	de Equipment	Traffic Management Center	automated lane status
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	environmental situation data
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	infrastructure restriction warning status
Connected Vehicle Roadsi	de Equipment	Traffic Management Center	intersection management application status
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	intersection safety application status
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	lighting management application status
Connected Vehicle Roadsi	de Equipment	Traffic Management Center	local border wait times
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	queue warning application status
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	rail crossing application status
Connected Vehicle Roadsi	de Equipment	Traffic Management Center	reduced speed warning status
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	restricted lanes application status
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	speed management application status
Connected Vehicle Roadsi	de Equipment	Traffic Management Center	stop sign gap assist RSE status
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	traffic metering application status
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	traffic monitoring application status
Connected Vehicle Roadsi	de Equipment	Traffic Management Center	vehicle signage application status
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	work zone application status
Connected Vehicle Roadsid	de Equipment	Transit Management Center	transit user guidance application status
Connected Vehicle Roadsi	de Equipment	Transportation Information Center	electric charging station information
Connected Vehicle Roadsid	de Equipment	Transportation Information Center	environmental situation data
Connected Vehicle Roadsid	de Equipment	Transportation Information Center	local situation data
Connected Vehicle Roadsid	de Equipment	Transportation Information Center	road weather advisory status
Connected Vehicle Roadsid	de Equipment	Transportation Information Center	traveler information application status
Data Distribution System		Connected Vehicle Roadside Equipment	local traveler information distribution data
Data Distribution System		Connected Vehicle Roadside Equipment	situation data collection parameters
DMV		ITS Roadway Equipment	registration
Electric Charging Station		Connected Vehicle Roadside Equipment	current charging status
Emergency Management (Center	Connected Vehicle Roadside Equipment	emergency acknowledge
Emergency Management (Center	Connected Vehicle Roadside Equipment	work zone safety application info
Emissions Management Co	enter	Connected Vehicle Roadside Equipment	low emissions zone application info

Solution Name:	(None-Data) - OMG DDS RPC		Number of Issues:	4	Total Issue Severity:	41
Emissions Management Cer	ter	Connected Vehicle Roadside Equipment	vehicle emissions monitoring parameter	'S		
Emissions Management Cer	ter	ITS Roadway Equipment	emissions sensor control			
Field Support Equipment		Connected Vehicle Roadside Equipment	RSE application install/upgrade			
Field Support Equipment		Connected Vehicle Roadside Equipment	RSE configuration settings			
Field Support Equipment		Connected Vehicle Roadside Equipment	RSE control commands			
Field Support Equipment		ITS Roadway Equipment	field equipment software install/upgrade	е		
ITS Roadway Equipment		Center	device identification			
ITS Roadway Equipment		Connected Vehicle Roadside Equipment	infrastructure restriction warning			
ITS Roadway Equipment		Connected Vehicle Roadside Equipment	reduced speed warning info			
ITS Roadway Equipment		Connected Vehicle Roadside Equipment	traffic gap information			
ITS Roadway Equipment		Connected Vehicle Roadside Equipment	vehicle entries and exits			
ITS Roadway Equipment		Connected Vehicle Roadside Equipment	vehicle signage local data			
ITS Roadway Equipment		Connected Vehicle Roadside Equipment	work zone warning notification			
ITS Roadway Equipment		Emissions Management Center	vehicle emissions data			
ITS Roadway Equipment		Maint and Constr Management Center	roadway advisory radio status			
ITS Roadway Equipment		Traffic Management Center	infrastructure restriction warning status			
ITS Roadway Equipment		Traffic Management Center	lane management information			
ITS Roadway Equipment		Traffic Management Center	lane violation notification			
ITS Roadway Equipment		Traffic Management Center	rail crossing blockage notification			
ITS Roadway Equipment		Traffic Management Center	rail crossing status			
ITS Roadway Equipment		Traffic Management Center	roadway advisory radio status			
ITS Roadway Equipment		Traffic Management Center	stop sign gap assist status			
ITS Roadway Payment Equip	oment	Connected Vehicle Roadside Equipment	payment instructions			
ITS Roadway Payment Equip	oment	Connected Vehicle Roadside Equipment	vehicle entries and exits			
Maint and Constr Managem	ent Center	Connected Vehicle Roadside Equipment	reduced speed warning info			
Maint and Constr Managem	ent Center	Connected Vehicle Roadside Equipment	vehicle signage application info			
Maint and Constr Managem	ent Center	Connected Vehicle Roadside Equipment	work zone safety application info			
Maint and Constr Managem	ent Center	ITS Roadway Equipment	roadway advisory radio data			
Map Update System		Connected Vehicle Roadside Equipment	map updates			
Map Update System		Connected Vehicle Roadside Equipment	parking facility geometry			
Other Connected Vehicle Ro	padside Equipment	Connected Vehicle Roadside Equipment	wrong way vehicle detected			
Other Parking Management	Systems	Parking Management System	parking coordination			
Parking Management System	n	Connected Vehicle Roadside Equipment	parking management application info			
Parking Management System	m	Connected Vehicle Roadside Equipment	vehicle signage local data			
Parking Management System	n	Other Parking Management Systems	parking coordination			
Payment Administration Ce	nter	Connected Vehicle Roadside Equipment	road use charges			

Solution Name: (None-Data) - OMG DDS RPC		Number of Issues: 4	Total Issue Severity:	41
Payment Administration Center	Connected Vehicle Roadside Equipment	toll collection application info		
Payment Administration Center	Connected Vehicle Roadside Equipment	vehicle payment request		
Payment Administration Center	ITS Roadway Payment Equipment	payment instructions		
Traffic Management Center	Connected Vehicle Roadside Equipment	automated lane control data		
Traffic Management Center	Connected Vehicle Roadside Equipment	infrastructure restriction warning info		
Traffic Management Center	Connected Vehicle Roadside Equipment	intersection management application info		
Traffic Management Center	Connected Vehicle Roadside Equipment	intersection safety application info		
Traffic Management Center	Connected Vehicle Roadside Equipment	lighting management application info		
Traffic Management Center	Connected Vehicle Roadside Equipment	queue warning application information		
Traffic Management Center	Connected Vehicle Roadside Equipment	rail crossing application info		
Traffic Management Center	Connected Vehicle Roadside Equipment	reduced speed warning info		
Traffic Management Center	Connected Vehicle Roadside Equipment	restricted lanes application info		
Traffic Management Center	Connected Vehicle Roadside Equipment	situation data collection parameters		
Traffic Management Center	Connected Vehicle Roadside Equipment	speed management application information		
Traffic Management Center	Connected Vehicle Roadside Equipment	stop sign gap assist info		
Traffic Management Center	Connected Vehicle Roadside Equipment	traffic metering application info		
Traffic Management Center	Connected Vehicle Roadside Equipment	traffic monitoring application info		
Traffic Management Center	Connected Vehicle Roadside Equipment	vehicle signage application info		
Traffic Management Center	Connected Vehicle Roadside Equipment	work zone application info		
Traffic Management Center	ITS Roadway Equipment	infrastructure restriction warning control		
Traffic Management Center	ITS Roadway Equipment	rail crossing control data		
Traffic Management Center	ITS Roadway Equipment	rail crossing request		
Traffic Management Center	ITS Roadway Equipment	roadway advisory radio data		
Traffic Management Center	ITS Roadway Equipment	stop sign gap assist control		
Transit Management Center	Connected Vehicle Roadside Equipment	transit user guidance application info		
Transportation Information Center	Connected Vehicle Roadside Equipment	electric charging services inventory		
Transportation Information Center	Connected Vehicle Roadside Equipment	road weather advisory info		
Transportation Information Center	Connected Vehicle Roadside Equipment	traveler information application info		
Tunnel Management System	Connected Vehicle Roadside Equipment	vehicle signage application info		
Issue Description	Issue Severity Proposed Resolution	Resolution Description	Timeframe	Applicability
Identifier registry does not exist The standard defines a field which requires globally unique identifier, but no registration authority exists to assign these values.		Implement a centralised identifier registry network that ensures the assignment of globally unique C-ITS identifiers.	Urgent	Australia, European Union, United States
		this Issue that would be addressed by the Proposed Resolution		
Connected Vehicle Roadside Equipment	Destination	Flow Name device identification		
Connected Vehicle Roadside Equipment	Center	device identification		
ITS Roadway Equipment	Center	device identification		

Solution Name:	(None-Data) - SNMPv1	Number of Issues:	3	Total Issue Severity:	43
Solution Name:	(None-Data) - SNMPv1	Number of Issues:	3	Total Issue Severity:	43

This solution is used within the U.S.. It combines standards associated with (None-Data) with those for I-F: SNMPv1. The (None-Data) standards include an unspecified set of standards at the upper layers. The I-F: SNMPv1 standards include lower-layer standards that define how SNMPv1, which does not provide any security, is used within some deployments within the ITS industry. This solution is no longer recommended due to known security vulnerabilities.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ecurity not rovided	The solution does not provide any significant security and a communications link using this solution is easily hacked.	High	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
DMV			Roadway Equipment	registration		
Emissions Manage	ment Center	ITS	Roadway Equipment	emissions sensor control		
ITS Roadway Equip	oment	Cer	nter	device identification		
ITS Roadway Equip	oment	Em	issions Management Center	vehicle emissions data		
ITS Roadway Equip	oment	Ma	int and Constr Management Center	roadway advisory radio status		
ITS Roadway Equip	ment	Tra	ffic Management Center	infrastructure restriction warning status		
ITS Roadway Equip	ment	Tra	ffic Management Center	lane management information		
ITS Roadway Equip	ment	Tra	ffic Management Center	lane violation notification		
ITS Roadway Equip	ment	Tra	ffic Management Center	rail crossing blockage notification		
ITS Roadway Equip	ment	Tra	ffic Management Center	rail crossing status		
ITS Roadway Equip	ment	Tra	ffic Management Center	roadway advisory radio status		
ITS Roadway Equip	ment	Tra	ffic Management Center	stop sign gap assist status		
Maint and Constr	Management Center	ITS	Roadway Equipment	roadway advisory radio data		
Traffic Manageme	nt Center	ITS	Roadway Equipment	infrastructure restriction warning control		
Traffic Manageme	nt Center	ITS	Roadway Equipment	rail crossing control data		
Traffic Manageme	nt Center	ITS	Roadway Equipment	rail crossing request		
Traffic Manageme	nt Center	ITS	Roadway Equipment	roadway advisory radio data		
Traffic Manageme	nt Center	ITS	Roadway Equipment	stop sign gap assist control		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - base services	Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package.	Urgent	Australia, European Union, United State
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equip	ment	Cer	nter	device identification		

olution Name:	(None-Data) - SNMPv1			Number of Issues: 3	otal Issue Severity:	43
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Highway advisory radio	Develop an internationally acceptable ITS application specification for managing highway advisory radios for secure communications with proper access control.	Medium-term	United States
				y this Issue that would be addressed by the Proposed Resolution		
Source Source	and the second s		ination	Flow Name		
ITS Roadway Equipm	nent		int and Constr Management Center	roadway advisory radio status		
ITS Roadway Equipm	nent	Tra	ffic Management Center	roadway advisory radio status		
Maint and Constr Ma	anagement Center	ITS	Roadway Equipment	roadway advisory radio data		
Traffic Management	Center	ITS	Roadway Equipment	roadway advisory radio data		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
dentifier registry does not exist	The standard defines a field which requires a globally unique identifier, but no registration authority exists to assign these values.	Medium	Identifier registry	Implement a centralised identifier registry network that ensures the assignment of globally unique C-ITS identifiers.	Urgent	Australia, European Union, United States
		Information [*]	Triples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		De	stination	Flow Name		
ITS Roadway Equipm	nent	Ce	nter	device identification		

This solution is used within the U.S.. It combines standards associated with (None-Data) with those for I-F: SNMPv1/TLS. The (None-Data) standards include an unspecified set of standards at the upper layers. The I-F: SNMPv1/TLS standards include lower-layer standards that define one way to retrofit basic security into SNMPv1 implementations (mainly in the US); however, this only secures the communications link and does not provide end-application security and is not recommended for new deployments.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, Euro Union, United	•
C				y this Issue that would be addressed by the Proposed Resolution			
Source			stination	Flow Name			
DMV		ITS	Roadway Equipment	registration			
Emissions Manageme	ent Center	ITS	Roadway Equipment	emissions sensor control			
ITS Roadway Equipm	ent	Ce	nter	device identification			
ITS Roadway Equipm	ent	Em	nissions Management Center	vehicle emissions data			
ITS Roadway Equipm	ent	Ma	aint and Constr Management Center	roadway advisory radio status			
ITS Roadway Equipm	ent	Tra	affic Management Center	infrastructure restriction warning status			
ITS Roadway Equipm	ent	Tra	affic Management Center	lane management information			
ITS Roadway Equipm	ent	Tra	affic Management Center	lane violation notification			
ITS Roadway Equipm	ent	Tra	affic Management Center	rail crossing blockage notification			
ITS Roadway Equipm	ent	Tra	affic Management Center	rail crossing status			
ITS Roadway Equipm	ent	Tra	affic Management Center	roadway advisory radio status			

Solution Name:	(None-Data) - SNMPv1/TLS			Number of Issues: 4 To	otal Issue Severity:	41
ITS Roadway Equipm	nent	Tra	affic Management Center	stop sign gap assist status		
Maint and Constr M	anagement Center	ITS	S Roadway Equipment	roadway advisory radio data		
Traffic Management	Center	ITS	S Roadway Equipment	infrastructure restriction warning control		
Traffic Management	Center	ITS	S Roadway Equipment	rail crossing control data		
Traffic Management	Center	ITS	S Roadway Equipment	rail crossing request		
Traffic Management	Center	ITS	S Roadway Equipment	roadway advisory radio data		
Traffic Management	Center	ITS	S Roadway Equipment	stop sign gap assist control		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Ultra	Core authorization - base services	Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package.	Urgent	Australia, European Union, United States
	for this information flow.			identification information triples contained within the core Authorization Service Package.		
Source	for this information flow.			by this Issue that would be addressed by the Proposed Resolution		
Source ITS Roadway Equipm		De	Triples using this solution and affected be stination			
Source ITS Roadway Equipm		De	stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
		De	stination	by this Issue that would be addressed by the Proposed Resolution Flow Name	Timeframe	Applicability
ITS Roadway Equipm	nent	De: Ce	stination	by this Issue that would be addressed by the Proposed Resolution Flow Name device identification	Timeframe Medium-term	Applicability United States
ITS Roadway Equipm ssue Data profile not	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined	Issue Severity Ultra	Proposed Resolution I-F: Highway advisory radio	by this Issue that would be addressed by the Proposed Resolution Flow Name device identification Resolution Description Develop an internationally acceptable ITS application specification for managing highway		
ITS Roadway Equipments	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information	Proposed Resolution I-F: Highway advisory radio Triples using this solution and affected by	by this Issue that would be addressed by the Proposed Resolution Flow Name device identification Resolution Description Develop an internationally acceptable ITS application specification for managing highway advisory radios for secure communications with proper access control. by this Issue that would be addressed by the Proposed Resolution		
ITS Roadway Equipment of the state of the st	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information Dec	Proposed Resolution I-F: Highway advisory radio Triples using this solution and affected bestination	by this Issue that would be addressed by the Proposed Resolution Flow Name device identification Resolution Description Develop an internationally acceptable ITS application specification for managing highway advisory radios for secure communications with proper access control. by this Issue that would be addressed by the Proposed Resolution Flow Name		
ssue Data profile not defined Source ITS Roadway Equipm	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	Issue Severity Ultra Information Decomposition	Proposed Resolution I-F: Highway advisory radio Triples using this solution and affected be stination aint and Constr Management Center	by this Issue that would be addressed by the Proposed Resolution Flow Name device identification Resolution Description Develop an internationally acceptable ITS application specification for managing highway advisory radios for secure communications with proper access control. by this Issue that would be addressed by the Proposed Resolution Flow Name roadway advisory radio status		

Solution Name:	(None-Data) - SNMPv1/TLS			Number of Issues: 4	Total Issue Severity	/: 41
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Cource			riples using this solution and affected back	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Source			Roadway Equipment	registration		
Emissions Manager	nent Center		Roadway Equipment	emissions sensor control		
ITS Roadway Equip			nter	device identification		
ITS Roadway Equip		Em	issions Management Center	vehicle emissions data		
ITS Roadway Equip			int and Constr Management Center	roadway advisory radio status		
ITS Roadway Equip		Tra	ffic Management Center	infrastructure restriction warning status		
ITS Roadway Equipi	ment	Tra	ffic Management Center	lane management information		
ITS Roadway Equip	ment	Tra	ffic Management Center	lane violation notification		
ITS Roadway Equip	ment	Tra	ffic Management Center	rail crossing blockage notification		
ITS Roadway Equip	ment	Tra	ffic Management Center	rail crossing status		
ITS Roadway Equip	ment	Tra	ffic Management Center	roadway advisory radio status		
ITS Roadway Equip	ment	Tra	ffic Management Center	stop sign gap assist status		
Maint and Constr M	lanagement Center	ITS	Roadway Equipment	roadway advisory radio data		
Traffic Managemen	t Center	ITS	Roadway Equipment	infrastructure restriction warning control		
Traffic Managemen	t Center	ITS	Roadway Equipment	rail crossing control data		
Traffic Managemen	t Center	ITS	Roadway Equipment	rail crossing request		
Traffic Managemen	t Center	ITS	Roadway Equipment	roadway advisory radio data		
Traffic Managemen	t Center	ITS	Roadway Equipment	stop sign gap assist control		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
dentifier registry does not exist	The standard defines a field which requires a globally unique identifier, but no registration authority exists to assign these values.	Medium	Identifier registry	Implement a centralised identifier registry network that ensures the assignment of globally unique C-ITS identifiers.	Urgent	Australia, European Union, United States
Course				by this Issue that would be addressed by the Proposed Resolution		
Source ITS Roadway Equip	ment	Ce	tination	Flow Name device identification		

Solution Name: (None-Data) - SNMPv3 4 Total Issue Severity: 39

This solution is used within the U.S.. It combines standards associated with (None-Data) with those for I-F: SNMPv3. The (None-Data) standards include an unspecified set of standards at the upper layers. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

lution Name:	(None-Data) - SNMPv3	1			otal Issue Severi	
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: System monitoring	Develop an internationally acceptable ITS application specification for the Service Monitor System to monitor other centers and support systems and to report issues.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected batination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Center		Sei	vice Monitor System	system monitoring		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Core authorization - base services	Develop an internationally acceptable standard for the user permission sets, permission request, permission update request, permission request received, and device identification information triples contained within the Core Authorization Service Package.	Urgent	Australia, European Union, United States
Source			Friples using this solution and affected batination	ry this Issue that would be addressed by the Proposed Resolution Flow Name		
	Roadside Equipment		nter	device identification		
ITS Roadway Equipr	ment	Ce	nter	device identification		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Wrong way vehicle detected	Develop an internationally acceptable ITS application specification for providing distributing wrong way vehicle alerts in real-time.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected batination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle	Roadside Equipment	Ot	ner Connected Vehicle Roadside Equipm	nent wrong way vehicle detected		
Other Connected V	ehicle Roadside Equipment	Co	nnected Vehicle Roadside Equipment	wrong way vehicle detected		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ita profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Speed warning	Develop an internationally acceptable ITS application specification for providing roadway configuration data, current speed limits, warning parameters and thresholds to a speed warning application.	Urgent	Australia, European Union, United States
			Triples using this solution and affected batination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Source						
Source Connected Vehicle	Roadside Equipment	Ma	int and Constr Management Center	reduced speed warning status		
Connected Vehicle	Roadside Equipment Roadside Equipment		int and Constr Management Center offic Management Center	reduced speed warning status reduced speed warning status		
Connected Vehicle	Roadside Equipment	Tra	-			
Connected Vehicle Connected Vehicle	Roadside Equipment ment	Tra Co	offic Management Center	reduced speed warning status		

ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ned	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Highway advisory radio	Develop an internationally acceptable ITS application specification for managing highway advisory radios for secure communications with proper access control.	Medium-term	United States
Source			Triples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name] [
ITS Roadway Equipm	ent		int and Constr Management Center	roadway advisory radio status		
ITS Roadway Equipm	ent	Tra	ffic Management Center	roadway advisory radio status		
Maint and Constr Ma	anagement Center	ITS	Roadway Equipment	roadway advisory radio data		
Traffic Management	Center	ITS	Roadway Equipment	roadway advisory radio data		
ie	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ned	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Exception-based reporting	Develop an internationally acceptable ITS application specification for managing exception-based reports from other local field devices.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipm	ent	Co	nnected Vehicle Roadside Equipment	vehicle signage local data		
Parking Management	t System	Со	nnected Vehicle Roadside Equipment	vehicle signage local data		
е	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Private location and address	Develop an internationally acceptable ITS application specification that defines the operation of a Privacy Protection Gateway.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	oadside Equipment	Cer		protected location and address flow		
e	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Ultra	V-L: Intersection infringement	Develop an internationally acceptable ITS application specification that defines the rules for providing intersection infringment information within a local environment.	Urgent	United States
a profile not ined	for this information flow.					
			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		

lution Name:	(None-Data) - SNMPv3			Number of Issues: 4 To	otal Issue Severit	ty: 39
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not ifined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Weather information	Develop an internationally acceptable ITS application specification for directing an RSE to provide weather information to vehicles.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	Roadside Equipment	Tra	nsportation Information Center	road weather advisory status		
Transportation Infor	rmation Center	Co	nnected Vehicle Roadside Equipment	road weather advisory info		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Secure installation/update of software	Develop an internationally acceptable standard for the secure installation, update, and validation of software (including application, support, and OS software) on devices. The process should allow a system to determine which devices have been updated and provide a mechanism to define when such updates are allowed, recommended, and required.	Urgent	Australia, European Union, United State
Source			riples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Center			nnected Vehicle Roadside Equipment	RSE application install/upgrade		
Connected Vehicle R	Roadside Equipment	Fie	ld Support Equipment	RSE application install/upgrade		
Field Support Equipr	ment	Co	nnected Vehicle Roadside Equipment	RSE application install/upgrade		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not	Performance, functionality, and the upper-	Ultra	I-F: Data aggregation	Develop an internationally acceptable ITS application specification for an RSE to aggregate	Urgent	Australia, European
efined	layers of the OSI stack have not been defined for this information flow.			collected data and report the information to interested parties (e.g., centres).		Union, United State
efined Source			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		Union, United State
	for this information flow.	Des		y this Issue that would be addressed by the Proposed Resolution		Union, United State
Source	for this information flow.	Des ITS	tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		Union, United State
Source Connected Vehicle R	for this information flow. Roadside Equipment Roadside Equipment	Des ITS Ma	tination Roadway Equipment	y this Issue that would be addressed by the Proposed Resolution Flow Name environmental situation data		Union, United State
Source Connected Vehicle R Connected Vehicle R	for this information flow. Roadside Equipment Roadside Equipment	Des ITS Ma Tra	Roadway Equipment int and Constr Management Center	y this Issue that would be addressed by the Proposed Resolution Flow Name environmental situation data environmental situation data		Union, United State
Source Connected Vehicle R Connected Vehicle R Connected Vehicle R	for this information flow. Roadside Equipment Roadside Equipment Roadside Equipment Roadside Equipment	Des ITS Ma Tra Tra	Roadway Equipment int and Constr Management Center ffic Management Center	y this Issue that would be addressed by the Proposed Resolution Flow Name environmental situation data environmental situation data environmental situation data		Union, United State

olution Name:	(None-Data) - SNMPv3			Number of Issues: 4	otal Issue Severity	3 9
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Pata profile not lefined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Application management	Develop an internationally acceptable ITS application specification for generically managing applications (e.g., enabling, monitoring, etc.) within an RSE.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Center		Co	nnected Vehicle Roadside Equipment	RSE application information		
Center		Co	nnected Vehicle Roadside Equipment	RSE control commands		
Connected Vehicle R	padside Equipment	Ce	nter	RSE application status		
Connected Vehicle Re	padside Equipment	Fie	ld Support Equipment	RSE configuration settings		
Connected Vehicle R	padside Equipment	Fie	ld Support Equipment	RSE control commands		
Connected Vehicle Re	padside Equipment	Ma	int and Constr Management Center	vehicle signage application status		
Connected Vehicle R	padside Equipment	Tra	ffic Management Center	intersection management application status		
Connected Vehicle R	padside Equipment	Tra	ffic Management Center	intersection safety application status		
Connected Vehicle R	padside Equipment	Tra	ffic Management Center	queue warning application status		
Connected Vehicle R	padside Equipment	Tra	ffic Management Center	speed management application status		
Connected Vehicle R	padside Equipment	Tra	ffic Management Center	traffic monitoring application status		
Connected Vehicle R	padside Equipment	Tra	ffic Management Center	vehicle signage application status		
Connected Vehicle Re	padside Equipment	Tra	ffic Management Center	work zone application status		
Field Support Equipm	nent	Co	nnected Vehicle Roadside Equipment	RSE configuration settings		
Field Support Equipm	nent	Со	nnected Vehicle Roadside Equipment	RSE control commands		
Maint and Constr Ma	nagement Center	Co	nnected Vehicle Roadside Equipment	vehicle signage application info		
Traffic Management	Center	Co	nnected Vehicle Roadside Equipment	intersection management application info		
Traffic Management	Center	Co	nnected Vehicle Roadside Equipment	intersection safety application info		
Traffic Management	Center	Co	nnected Vehicle Roadside Equipment	queue warning application information		
Traffic Management	Center	Co	nnected Vehicle Roadside Equipment	speed management application information		
Traffic Management	Center	Co	nnected Vehicle Roadside Equipment	traffic monitoring application info		
Traffic Management	Center	Co	nnected Vehicle Roadside Equipment	vehicle signage application info		
Traffic Management	Center	Co	nnected Vehicle Roadside Equipment	work zone application info		
Tunnel Management	System	Co	nnected Vehicle Roadside Equipment	vehicle signage application info		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Urgent	Australia, European Union, United States Japan
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nnected Vehicle Roadside Equipment	map updates		
Map Update System		Co	nnected Vehicle Roadside Equipment	parking facility geometry		

Solution Name:	(None-Data) - SNMPv3			ı	Number of Issues:	4	Total Issue Severity:	39
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Update central map database	Develop an internationally acceptable ITS application for updating a central map database, including roadw on real-world data readings from vehicles and transm	vay and intersection geo	metry, based	Medium-term	Australia, European Union, United States, Japan
		Information 7	Friples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution				

	Information Triples using this colution and affected by this leave the	instrumental has addressed by the Dressed Desolution
Source	Information Triples using this solution and affected by this Issue the Destination	Flow Name
Connected Vehicle Roadside Equipment	Map Update System	vehicle location data for mapping

Solution Name:	(None-Data) - SNMPv3			Number of Issues: 4	Total Issue Severity:	39
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Center			nnected Vehicle Roadside Equipment	RSE application information		
Center		Cor	nnected Vehicle Roadside Equipment	RSE application install/upgrade		
Center		Cor	nnected Vehicle Roadside Equipment	RSE control commands		
Center		Ser	vice Monitor System	system monitoring		
Commercial Vehicle	Administration Center	Cor	nnected Vehicle Roadside Equipment	trigger area notification		
Commercial Vehicle	Administration Center	Cor	nnected Vehicle Roadside Equipment	trigger control		
Connected Vehicle R	oadside Equipment	Arc	hived Data Center	local situation data		
Connected Vehicle R	oadside Equipment	Cer	nter	device identification		
Connected Vehicle R	oadside Equipment	Cer	nter	protected location and address flow		
Connected Vehicle R	oadside Equipment	Cer	nter	RSE application status		
Connected Vehicle R	oadside Equipment	Cor	mmercial Vehicle Administration Center	on-board safety data		
Connected Vehicle R	oadside Equipment	Cor	mmercial Vehicle Administration Center	roadside data message		
Connected Vehicle R	oadside Equipment	Dat	a Distribution System	local situation data		
Connected Vehicle R	oadside Equipment	Ele	ctric Charging Station	vehicle charging profile		
Connected Vehicle R	oadside Equipment	Em	ergency Management Center	work zone safety application status		
Connected Vehicle R	oadside Equipment	Em	issions Management Center	low emissions zone application status		
Connected Vehicle R	oadside Equipment	Fie	ld Support Equipment	RSE application install/upgrade		
Connected Vehicle R	oadside Equipment	Fie	ld Support Equipment	RSE configuration settings		
Connected Vehicle R	oadside Equipment	Fie	ld Support Equipment	RSE control commands		
Connected Vehicle R	oadside Equipment	ITS	Roadway Equipment	environmental situation data		
Connected Vehicle R	oadside Equipment	ITS	Roadway Equipment	intersection infringement info		
Connected Vehicle R	oadside Equipment	ITS	Roadway Equipment	restricted lanes application status		
Connected Vehicle R	oadside Equipment	ITS	Roadway Equipment	vehicle entries and exits		
Connected Vehicle R	oadside Equipment	ITS	Roadway Equipment	vehicle occupancy		
Connected Vehicle R	oadside Equipment	ITS	Roadway Equipment	work zone warning notification		
Connected Vehicle R			Roadway Payment Equipment	vehicle entries and exits		
Connected Vehicle R			int and Constr Management Center	environmental situation data		
Connected Vehicle R			int and Constr Management Center	reduced speed warning status		
Connected Vehicle R			int and Constr Management Center	vehicle signage application status		
Connected Vehicle R	oadside Equipment	Ma	int and Constr Management Center	work zone safety application status		

Solution Name:	(None-Data) - SNMPv3		Number of Issues:	4	Total Issue Severity:	39
Connected Vehicle Roadsi	de Equipment	Map Update System	vehicle location data for mapping			
Connected Vehicle Roadsid	de Equipment	Other Connected Vehicle Roadside Equipment	wrong way vehicle detected			
Connected Vehicle Roadsid	de Equipment	Parking Management System	connected vehicle parking data			
Connected Vehicle Roadsi	de Equipment	Payment Administration Center	access violation notification			
Connected Vehicle Roadsi	de Equipment	Payment Administration Center	road use history			
Connected Vehicle Roadsid	de Equipment	Payment Administration Center	toll collection application status			
Connected Vehicle Roadsi	de Equipment	Payment Administration Center	vehicle payment information			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	automated lane status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	environmental situation data			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	infrastructure restriction warning status	5		
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	intersection management application st	atus		
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	intersection safety application status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	lighting management application status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	local border wait times			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	queue warning application status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	rail crossing application status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	reduced speed warning status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	restricted lanes application status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	speed management application status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	stop sign gap assist RSE status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	traffic metering application status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	traffic monitoring application status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	vehicle signage application status			
Connected Vehicle Roadsid	de Equipment	Traffic Management Center	work zone application status			
Connected Vehicle Roadsid	de Equipment	Transit Management Center	transit user guidance application status			
Connected Vehicle Roadsid	de Equipment	Transportation Information Center	electric charging station information			
Connected Vehicle Roadsid	de Equipment	Transportation Information Center	environmental situation data			
Connected Vehicle Roadsid	de Equipment	Transportation Information Center	local situation data			
Connected Vehicle Roadsid	de Equipment	Transportation Information Center	road weather advisory status			
Connected Vehicle Roadsid	de Equipment	Transportation Information Center	traveler information application status			
Data Distribution System		Connected Vehicle Roadside Equipment	local traveler information distribution da	ata		
Data Distribution System		Connected Vehicle Roadside Equipment	situation data collection parameters			
DMV		ITS Roadway Equipment	registration			
Electric Charging Station		Connected Vehicle Roadside Equipment	current charging status			
Emergency Management (Center	Connected Vehicle Roadside Equipment	emergency acknowledge			
Emergency Management (Center	Connected Vehicle Roadside Equipment	work zone safety application info			

Solution Name: (None-Data) - SNMPv3		Number of Issues: 4 Total Issue Severity: 39
Emissions Management Center	Connected Vehicle Roadside Equipment	low emissions zone application info
Emissions Management Center	Connected Vehicle Roadside Equipment	vehicle emissions monitoring parameters
Emissions Management Center	ITS Roadway Equipment	emissions sensor control
Field Support Equipment	Connected Vehicle Roadside Equipment	RSE application install/upgrade
Field Support Equipment	Connected Vehicle Roadside Equipment	RSE configuration settings
Field Support Equipment	Connected Vehicle Roadside Equipment	RSE control commands
Field Support Equipment	ITS Roadway Equipment	field equipment software install/upgrade
ITS Roadway Equipment	Center	device identification
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	infrastructure restriction warning
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	reduced speed warning info
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	traffic gap information
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	vehicle entries and exits
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	vehicle signage local data
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	work zone warning notification
ITS Roadway Equipment	Emissions Management Center	vehicle emissions data
ITS Roadway Equipment	Maint and Constr Management Center	roadway advisory radio status
ITS Roadway Equipment	Traffic Management Center	infrastructure restriction warning status
ITS Roadway Equipment	Traffic Management Center	lane management information
ITS Roadway Equipment	Traffic Management Center	lane violation notification
ITS Roadway Equipment	Traffic Management Center	rail crossing blockage notification
ITS Roadway Equipment	Traffic Management Center	rail crossing status
ITS Roadway Equipment	Traffic Management Center	roadway advisory radio status
ITS Roadway Equipment	Traffic Management Center	stop sign gap assist status
ITS Roadway Payment Equipment	Connected Vehicle Roadside Equipment	payment instructions
ITS Roadway Payment Equipment	Connected Vehicle Roadside Equipment	vehicle entries and exits
Maint and Constr Management Center	Connected Vehicle Roadside Equipment	reduced speed warning info
Maint and Constr Management Center	Connected Vehicle Roadside Equipment	vehicle signage application info
Maint and Constr Management Center	Connected Vehicle Roadside Equipment	work zone safety application info
Maint and Constr Management Center	ITS Roadway Equipment	roadway advisory radio data
Map Update System	Connected Vehicle Roadside Equipment	map updates
Map Update System	Connected Vehicle Roadside Equipment	parking facility geometry
Other Connected Vehicle Roadside Equipment	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Other Parking Management Systems	Parking Management System	parking coordination
Parking Management System	Connected Vehicle Roadside Equipment	parking management application info
Parking Management System	Connected Vehicle Roadside Equipment	vehicle signage local data
Parking Management System	Other Parking Management Systems	parking coordination

lution Name:	(None-Data) - SNMPv3		Number of Issues: 4 Total Issue Severity: 39
Payment Administration Cer	nter	Connected Vehicle Roadside Equipment	road use charges
Payment Administration Cer	nter	Connected Vehicle Roadside Equipment	toll collection application info
Payment Administration Cer	nter	Connected Vehicle Roadside Equipment	vehicle payment request
Payment Administration Cer	nter	ITS Roadway Payment Equipment	payment instructions
Traffic Management Center		Connected Vehicle Roadside Equipment	automated lane control data
Traffic Management Center		Connected Vehicle Roadside Equipment	infrastructure restriction warning info
Traffic Management Center		Connected Vehicle Roadside Equipment	intersection management application info
Traffic Management Center		Connected Vehicle Roadside Equipment	intersection safety application info
Traffic Management Center		Connected Vehicle Roadside Equipment	lighting management application info
Traffic Management Center		Connected Vehicle Roadside Equipment	queue warning application information
Traffic Management Center		Connected Vehicle Roadside Equipment	rail crossing application info
Traffic Management Center		Connected Vehicle Roadside Equipment	reduced speed warning info
Traffic Management Center		Connected Vehicle Roadside Equipment	restricted lanes application info
Traffic Management Center		Connected Vehicle Roadside Equipment	situation data collection parameters
Traffic Management Center		Connected Vehicle Roadside Equipment	speed management application information
Traffic Management Center		Connected Vehicle Roadside Equipment	stop sign gap assist info
Traffic Management Center		Connected Vehicle Roadside Equipment	traffic metering application info
Traffic Management Center		Connected Vehicle Roadside Equipment	traffic monitoring application info
Traffic Management Center		Connected Vehicle Roadside Equipment	vehicle signage application info
Traffic Management Center		Connected Vehicle Roadside Equipment	work zone application info
Traffic Management Center		ITS Roadway Equipment	infrastructure restriction warning control
Traffic Management Center		ITS Roadway Equipment	rail crossing control data
Traffic Management Center		ITS Roadway Equipment	rail crossing request
Traffic Management Center		ITS Roadway Equipment	roadway advisory radio data
Traffic Management Center		ITS Roadway Equipment	stop sign gap assist control
Transit Management Center		Connected Vehicle Roadside Equipment	transit user guidance application info
Transportation Information	Center	Connected Vehicle Roadside Equipment	electric charging services inventory
Transportation Information	Center	Connected Vehicle Roadside Equipment	road weather advisory info
Transportation Information	Center	Connected Vehicle Roadside Equipment	traveler information application info
Tunnel Management System		Connected Vehicle Roadside Equipment	vehicle signage application info

Times eptable ITS application specification for an RSE to aggregate Urger	frame Applicability
entable ITS application specification for an RSE to aggregate	
iformation to interested parties (e.g., centres).	nt Australia, Europea Union, United Sta
ne Proposed Resolution Flow Name	
environmental situation data	
environmental situation data	
environmental situation data	
Time	frame Applicability
ier registry network that ensures the assignment of Urger	nt Australia, Europea Union, United Sta
ne Proposed Resolution	
Flow Name device identification	
device identification	
	ue Severity: 35

interoperable with M5 FNTP.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Wrong way vehicle detected	Develop an internationally acceptable ITS application specification for providing distributing wrong way vehicle alerts in real-time.	Urgent	Australia, European Union, United States
		Information 1	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Connected Vehicle Ro	padside Equipment	Vel	hicle OBE	wrong way vehicle detected		
Vehicle OBE		Coi	nnected Vehicle Roadside Equipment	wrong way vehicle detected		

lution Name:	(None-Data) - WAVE WSMP			Number of Issues: 2 T	otal Issue Severity	y: 35	
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
ncertainty about rust revocation nechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States	
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name			
Connected Vehicle R	Roadside Equipment		nicle OBE	traffic gap information			
Connected Vehicle R	Roadside Equipment	Ve	nicle OBE	wrong way vehicle detected			
Other Vehicle OBEs		Ve	nicle OBE	vehicle platoon coordination			
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle platoon coordination			
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	wrong way vehicle detected			
Vehicle OBE		Ot	ner Vehicle OBEs	vehicle platoon coordination			
ution Name:	(None-Data) - Wide Area Broadcast (Upp	per)		Number of Issues: 2 T	otal Issue Severit	y: 33	
	response; security is provided by the upper-layers Issue Description	j	Proposed Resolution	rmation to all wireless devices over an area that covers at least a metropolitan area without a	Timeframe	Applicability	
oiquitous oadcast chnology	With the continual enhancement of broadcast technologies and a mixture of free and subscriber-based systems, it is difficult to identify any single technology that can be used to reliably reach the bulk of drivers in a timely manner.	Low	C-V: Wide-area broadcast subnet and hybrid communications	Standardise one or more mechanisms by which wide-area broadcast messages can be received by a defined minimum percentage of transportation users that are currently operating within a specified geographic area. The required minimum percentage is dependent on the type of information being transmitted and will need to be determined by the expert community. Some alerts (e.g., tornado warnings) will require near 100% reception, while other messages (e.g., road works ahead) may require significantly lower minimum percentages. The minimum percentage may be made up with a variety of technologies using hybrid communications and the ITS station architecture.	Urgent	Australia, European Union, United State	
Source			Friples using this solution and affected be tination	by this Issue that would be addressed by the Proposed Resolution Flow Name			
Transportation Infor	rmation Center		rsonal Information Device	emergency traveler information			
Transportation Infor	rmation Center	Ve	nicle OBE	emergency traveler information			
Wide Area Informati	ion Disseminator	Pe	rsonal Information Device	traffic-related regulations			
Wide Area Informati	ion Disseminator	Ve	nicle OBE	traffic-related regulations			
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
ta profile not ined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	Develop standard for electronic distribution of traffic regulations	Develop an internationally acceptable standard to enable the provision and management of electronic traffic regulations to enable proper operation of road users as they cross jurisdictional boundaries.	Urgent	Australia, European Union, United State	
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name			
	in Disconing to		rsonal Information Device	traffic-related regulations			
Wide Area Informati	ion disseminator		00.101.11.101.11.01.12.01.00				
Wide Area Informati			nicle OBE	traffic-related regulations			

Solution Name:	[Null] - Local Broadcast Wireless (US)	Number of Issues:	1	Total Issue Severity:	3
This solution is used within t	the U.S., It combines standards associated with [Null] with those for V-X; Local Broadcast Wireless (US). The [Null] standards include	de no standards in the upper lavers (i.e	this occurs wh	nere the information flov	w is

This solution is used within the U.S.. It combines standards associated with [Null] with those for V-X: Local Broadcast Wireless (US). The [Null] standards include no standards in the upper layers (i.e., this occurs where the information flow is handled by the lower layers and the communication profile contains all of the standards required to handle the flow). The V-X: Local Broadcast Wireless (US) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
			riples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		

Information Triples using this solution and affected by this issue that would be addressed by the Proposed Resolution

Source

Destination

Flow Name

Connected Vehicle Roadside Equipment Vehicle OBE service advertisement

Solution Name: DDS: ATIS - OMG DDS Number of Issues: 2 Total Issue Severity: 11

This solution is used within the U.S. It combines standards associated with US: ATIS with those for C-C: OMG DDS. The US: ATIS standards include upper-layer standards required to implement traveler information communications. The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (non-critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Medium-term	United States

	mation Triples using this solution and affected by this Issue that would be addressed by the Proposed	
Source	Destination	Flow Name
Fleet and Freight Management Center	Transportation Information Center	route request
Other Transportation Information Centers	Transportation Information Center	multimodal information
Other Transportation Information Centers	Transportation Information Center	parking information
Parking Management System	Traffic Management Center	parking information
Parking Management System	Transit Management Center	parking information
Parking Management System	Transportation Information Center	parking information
Traffic Management Center	Media	traffic information for media
Transportation Information Center	Fleet and Freight Management Center	route plan
Transportation Information Center	Media	traffic information for media
Transportation Information Center	Media	traveler information for media
Transportation Information Center	Other Transportation Information Centers	multimodal information
Transportation Information Center	Other Transportation Information Centers	parking information
Travel Services Provider System	Transportation Information Center	travel service information

Solution Name:	DDS: ATIS - OMG DDS			Number of Issues: 2	Total Issue Severity:	11
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Fleet and Freight Man	agement Center		ansportation Information Center	route request		
Other Transportation	Information Centers	Tra	ansportation Information Center	multimodal information		
Other Transportation	Information Centers	Tra	ansportation Information Center	parking information		
Parking Management	System	Tra	affic Management Center	parking information		
Parking Management	System	Tra	ansit Management Center	parking information		
Parking Management	System	Tra	ansportation Information Center	parking information		
Traffic Management C	Center	Me	edia	traffic information for media		
Transportation Inform	nation Center	Fle	et and Freight Management Center	route plan		
Transportation Inform	nation Center	Me	edia	traffic information for media		
Transportation Inform	nation Center	Me	edia	traveler information for media		
Transportation Inform	nation Center	Ot	her Transportation Information Centers	multimodal information		
Transportation Inform	nation Center	Otl	her Transportation Information Centers	parking information		
Travel Services Provid	er System	Tra	ansportation Information Center	travel service information		

Solution Name: DDS: Incident Management - OMG DDS Total Issue Severity: 11

This solution is used within the U.S. It combines standards associated with US: Incident Management with those for C-C: OMG DDS. The US: Incident Management standards include upper-layer standards required to implement centre-to-centre communications for incident management data. The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (non-critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Medium-term	United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Managen	nent Center		nergency Telecommunications System	incident information for public		
Emergency Managen	nent Center	Ma	aint and Constr Management Center	emergency plan coordination		
Emergency Managen	nent Center	Ma	aint and Constr Management Center	evacuation information		
Emergency Managen	nent Center	Otl	her Emergency Management Centers	emergency plan coordination		
Emergency Managen	nent Center	Ot	her Emergency Management Centers	incident report		
Emergency Managen	nent Center	Ra	il Operations Center	emergency plan coordination		

evacuation information

Rail Operations Center

Emergency Management Center

olution Name:	DDS: Incident Management - OMG DDS		Number of Issues: 2 Total Issue Severity: 11
Emergency Management Ce	nter	Traffic Management Center	emergency plan coordination
Emergency Management Ce	nter	Traffic Management Center	emergency route request
Emergency Management Ce	nter	Traffic Management Center	evacuation information
Emergency Management Ce	nter	Transit Management Center	emergency plan coordination
Emergency Management Ce	nter	Transit Management Center	evacuation information
Emergency Management Ce	nter	Transportation Information Center	evacuation information
Fleet and Freight Managemo	ent Center	Emergency Management Center	hazmat information
Maint and Constr Managem	ent Center	Emergency Management Center	emergency plan coordination
Other Emergency Managem	ent Centers	Emergency Management Center	emergency plan coordination
Other Emergency Managem	ent Centers	Emergency Management Center	incident report
Rail Operations Center		Emergency Management Center	emergency plan coordination
Shelter Provider Center		Emergency Management Center	shelter information
Shelter Provider Center		Transportation Information Center	shelter information
Traffic Management Center		Emergency Management Center	emergency plan coordination
Traffic Management Center		Emergency Management Center	emergency routes
Transit Management Center		Emergency Management Center	emergency plan coordination

Solution Name:	DDS: Incident Management - OMG DDS	3		Number of Issues: 2	Tot	al Issue Severity	: 11
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute damong multiple ITS subsystems on an as-needed basis in a more efficient, secure, a scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such techno would have on ITS standards efforts.	and	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name			
Emergency Manage	ement Center		nergency Telecommunications System	incident information for public			
Emergency Manage	gement Center	Ma	aint and Constr Management Center	emergency plan coordination			
Emergency Manage	gement Center	Ma	aint and Constr Management Center	evacuation information			
Emergency Manage	gement Center	Ot	her Emergency Management Centers	emergency plan coordination			
Emergency Manage	gement Center	Otl	her Emergency Management Centers	incident report			
Emergency Manage	gement Center	Ra	il Operations Center	emergency plan coordination			
Emergency Manage	ement Center	Ra	il Operations Center	evacuation information			
Emergency Manage	gement Center	Tra	affic Management Center	emergency plan coordination			
Emergency Manage	gement Center	Tra	affic Management Center	emergency route request			
Emergency Manage	gement Center	Tra	affic Management Center	evacuation information			
Emergency Manage	gement Center	Tra	ansit Management Center	emergency plan coordination			
Emergency Manage	gement Center	Tra	ansit Management Center	evacuation information			
Emergency Manage	gement Center	Tra	ansportation Information Center	evacuation information			
Fleet and Freight M	Nanagement Center	Em	nergency Management Center	hazmat information			
Maint and Constr N	Management Center	Em	nergency Management Center	emergency plan coordination			
Other Emergency N	Management Centers	Em	nergency Management Center	emergency plan coordination			
Other Emergency N	Management Centers	Em	nergency Management Center	incident report			
Rail Operations Cer	nter	Em	nergency Management Center	emergency plan coordination			
Shelter Provider Ce	enter	Em	nergency Management Center	shelter information			
Shelter Provider Ce	enter	Tra	ansportation Information Center	shelter information			
Traffic Managemer	nt Center	Em	nergency Management Center	emergency plan coordination			
Traffic Managemer	nt Center	Em	nergency Management Center	emergency routes			

Solution Name: DDS: NTCIP CCTV - OMG DDS RPC 11

emergency plan coordination

This solution is used within the U.S. It combines standards associated with US: NTCIP CCTV with those for I-F: OMG DDS RPC. The US: NTCIP CCTV standards include upper-layer standards required to implement centre-to-field CCTV communications (data only). The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Emergency Management Center

Transit Management Center

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Near-term	United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	nt	Ma	aint and Constr Management Center	traffic images		
ITS Roadway Equipme	nt	Tra	offic Management Center	traffic images		
Maint and Constr Mar	agement Center	ITS	Roadway Equipment	video surveillance control		
Traffic Management C	enter	ITS	Roadway Equipment	video surveillance control		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, Europea Union, United Stat
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	nt		aint and Constr Management Center	traffic images		
ITS Roadway Equipme	nt	Tra	affic Management Center	traffic images		
Maint and Constr Mar	agement Center	ITS	Roadway Equipment	video surveillance control		
Traffic Management C	enter	ITS	Roadway Equipment	video surveillance control		
olution Name:	DDS: NTCIP Environmental Sensors - OM	IG DDS RPC		Number of Issues: 2 To	otal Issue Severity	: 11
nis solution is used wi	thin the U.S. It combines standards associated w			or I-F: OMG DDS RPC. The US: NTCIP Environmental Sensors standards include upper-layer st r standards that support secure remote procedure calls between a field device and another fi		· ·

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Near-term	United States
				y this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Connected Vehicle Ro	padside Equipment	Em	issions Management Center	emissions situation data		
Emissions Manageme	nt Center	ITS	Roadway Equipment	air quality sensor control		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	environmental sensor data		
ITS Roadway Equipme	ent	Со	nnected Vehicle Roadside Equipment	ITS roadway equipment information		
ITS Roadway Equipme	ent	Em	issions Management Center	air quality sensor data		
ITS Roadway Equipme	ent	Ma	int and Constr Management Center	environmental sensor data		

environmental sensor data

Traffic Management Center

ITS Roadway Equipment

olution Name:	DDS: NTCIP Environmental Sensors - ON	IG DDS RPC		Number of Issues: 2	Total Issue Severity	11
Maint and Constr Ma	nagement Center	ITS	Roadway Equipment	environmental sensors control		
Traffic Management	Center	ITS	Roadway Equipment	environmental sensors control		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
				y this Issue that would be addressed by the Proposed Resolution		
Source	and the Continuous		stination	Flow Name		
Connected Vehicle Ro			nissions Management Center	emissions situation data		
Emissions Manageme	ent Center	ITS	Roadway Equipment	air quality sensor control		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	environmental sensor data		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	ITS roadway equipment information		
ITS Roadway Equipme	ent	Em	nissions Management Center	air quality sensor data		
ITS Roadway Equipme	ent	Ma	aint and Constr Management Center	environmental sensor data		
ITS Roadway Equipme	ent	Tra	affic Management Center	environmental sensor data		
Maint and Constr Ma	inagement Center	ITS	Roadway Equipment	environmental sensors control		
Traffic Management	Center	ITS	Roadway Equipment	environmental sensors control		

This solution is used within the U.S. It combines standards associated with US: NTCIP Lighting with those for I-F: OMG DDS RPC. The US: NTCIP Lighting standards include upper-layer standards required to implement centre-to-field communications with highway lighting systems. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (non-critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Medium-term	United States
		Information 1	riples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
ITS Roadway Equipme	ent	Tra	ffic Management Center	lighting system status		
Traffic Management (Center	ITS	Roadway Equipment	lighting system control data		

lution Name:	DDS: NTCIP Lighting - OMG DDS RPC			Number of Issues: 2 To	otal Issue Severity:	11
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
nvetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equip	nent	Tra	affic Management Center	lighting system status		
Traffic Managemen	t Center	ITS	S Roadway Equipment	lighting system control data		
lution Name:	DDS: NTCIP Message Sign - OMG DDS RP)C		Number of Issues: 3 To	otal Issue Severity:	43
				MG DDS RPC. The US: NTCIP Message Sign standards include upper-layer standards required to be procedure calls between a field device and another field device or a centre over a field cor	•	e-to-field
sue	Issue Description			Resolution Description	Timeframe	Applicability
ita profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Message signs	Develop an internationally acceptable ITS application specification for managing message signs for secure communications with proper access control.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equip	nent		affic Management Center	roadway warning system status		
Traffic Managemen	t Center	ITS	S Roadway Equipment	roadway warning system control		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ita profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Speed warning	Develop an internationally acceptable ITS application specification for providing roadway configuration data, current speed limits, warning parameters and thresholds to a speed warning application.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equip	nent		affic Management Center	variable speed limit status		
			S Roadway Equipment	variable speed limit control		

Solution Name:	DDS: NTCIP Message Sign - OMG DDS RI	PC			Number of Issues:	3	Total Issue Severity:	43
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (critical flows)	Update data dictionary standards to conform to the for those interfaces where this technology might be updates to standards such as: TMDD, TCIP, J2735, N convert ASN.1 data into the format that is native to	appropriate. This ma ITICP, etc. (i.e., this w	ay include		United States
		Information	Triples using this solution and affected h	y this Issue that would be addressed by the Proposed Resolution				

Info	rmation Triples using this solution and affected by this Issue that would be addressed by the Proposed	
Source	Destination	Flow Name
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	roadway dynamic signage data
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	ITS roadway equipment information
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	roadway dynamic signage status
ITS Roadway Equipment	Maint and Constr Management Center	roadway dynamic signage status
ITS Roadway Equipment	Other ITS Roadway Equipment	dynamic sign coordination
ITS Roadway Equipment	Traffic Management Center	roadway dynamic signage status
ITS Roadway Equipment	Traffic Management Center	roadway warning system status
ITS Roadway Equipment	Traffic Management Center	variable speed limit status
Maint and Constr Management Center	ITS Roadway Equipment	roadway dynamic signage data
Other ITS Roadway Equipment	ITS Roadway Equipment	dynamic sign coordination
Traffic Management Center	ITS Roadway Equipment	lane management control
Traffic Management Center	ITS Roadway Equipment	roadway dynamic signage data
Traffic Management Center	ITS Roadway Equipment	roadway warning system control
Traffic Management Center	ITS Roadway Equipment	variable speed limit control

olution Name:	DDS: NTCIP Message Sign - OMG DDS R	RPC		Number of Issues: 3	Total Issue Severity	/: 43
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
				y this Issue that would be addressed by the Proposed Resolution		
Source Connected Vehic	cle Roadside Equipment		stination S Roadway Equipment	Flow Name roadway dynamic signage data		
ITS Roadway Equ			onnected Vehicle Roadside Equipment	ITS roadway equipment information		
ITS Roadway Equ			onnected Vehicle Roadside Equipment	roadway dynamic signage status		
ITS Roadway Equ	uipment	M	aint and Constr Management Center	roadway dynamic signage status		
ITS Roadway Equ	uipment	Ot	ther ITS Roadway Equipment	dynamic sign coordination		
ITS Roadway Equ	uipment	Tr	affic Management Center	roadway dynamic signage status		
ITS Roadway Equ	uipment	Tr	affic Management Center	roadway warning system status		
ITS Roadway Equ	uipment	Tr	affic Management Center	variable speed limit status		
Maint and Consti	r Management Center	IT:	S Roadway Equipment	roadway dynamic signage data		
Other ITS Roadw	yay Equipment	IT:	S Roadway Equipment	dynamic sign coordination		
Traffic Managem	nent Center	IT:	S Roadway Equipment	lane management control		
Traffic Managem	nent Center	IT:	S Roadway Equipment	roadway dynamic signage data		
Traffic Managem	nent Center	IT:	S Roadway Equipment	roadway warning system control		
Traffic Managem	nent Center	IT:	S Roadway Equipment	variable speed limit control		

Solution Name: DDS: NTCIP Ramp Meters - OMG DDS RPC 11

This solution is used within the U.S. It combines standards associated with US: NTCIP Ramp Meters with those for I-F: OMG DDS RPC. The US: NTCIP Ramp Meters standards include upper-layer standards required to implement centre-to-field ramp

This solution is used within the U.S. It combines standards associated with US: NTCIP Ramp Meters with those for I-F: OMG DDS RPC. The US: NTCIP Ramp Meters standards include upper-layer standards required to implement centre-to-field ramp meter communications. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (non-critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Medium-term	United States

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution						
Source	Destination	Flow Name				
ITS Roadway Equipment	Traffic Management Center	traffic metering status				
Traffic Management Center	ITS Roadway Equipment	traffic metering control				

ution Name:	DDS: NTCIP Ramp Meters - OMG DDS RF					
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
vetted by nmunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipr	nent	Tra	offic Management Center	traffic metering status		
Traffic Managemen	t Center	ITS	Roadway Equipment	traffic metering control		
tion Name:	DDS: NTCIP Signal Priority - OMG DDS			Number of Issues: 3 To	otal Issue Severity	: 43
		_	*	MG DDS. The US: NTCIP Signal Priority standards include upper-layer standards required to imwer-layer standards that support secure data sharing between publishers and subscribers over	•	
ıe	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
a profile not ned	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: US signal priority/preemption	Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.	Medium-term	United States
	Tor this information now.					
Source	Tor this information now.			this Issue that would be addressed by the Proposed Resolution		
Source Traffic Managemen		Des	stination	Flow Name		
Source Traffic Managemen		Des				
Traffic Managemen		Des	stination	Flow Name	Timeframe	Applicability
Traffic Management e a/comm profile	: Center	Des Tra	stination Insit Management Center	Flow Name traffic control priority status	Timeframe Medium-term	Applicability United States
Traffic Management ie a/comm profile ring	Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated	Issue Severity High	Proposed Resolution Updates for data distribution (non-critical flows)	Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)		
Traffic Management ie a/comm profile ring	Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	Issue Severity High Information Topes	Proposed Resolution Updates for data distribution (non-critical flows) Friples using this solution and affected by stination	Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management Tele Tele	Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	Issue Severity High Information Topes	Proposed Resolution Updates for data distribution (non-critical flows)	Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)		
raffic Management ie ca/comm profile ring Source Traffic Management	Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	Issue Severity High Information Topes	Proposed Resolution Updates for data distribution (non-critical flows) Friples using this solution and affected by stination	Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management ue ta/comm profile ring	Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	Issue Severity High Information Toes	Proposed Resolution Updates for data distribution (non-critical flows) Triples using this solution and affected by stination unsit Management Center	Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name traffic control priority status	Medium-term	United States
Traffic Management Je Ta/comm profile ring Source Traffic Management Je vetted by	Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards. Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Issue Severity Information Toes Issue Severity Information Toes Information Toes	Proposed Resolution Updates for data distribution (non-critical flows) Triples using this solution and affected by stination unsit Management Center Proposed Resolution Data distribution technologies	Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name traffic control priority status Resolution Description Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies	Medium-term Timeframe	Applicability Australia, European

Solution Name:	DDS: NTCIP Signal Priority - OMG DDS RPC	Number of Issues:	3	Total Issue Severity:	43
Solution Name:	DDS: NTCIP Signal Priority - OMG DDS RPC	Number of Issues:	3	Total Issue Severity:	43

This solution is used within the U.S. It combines standards associated with US: NTCIP Signal Priority with those for I-F: OMG DDS RPC. The US: NTCIP Signal Priority standards include upper-layer standards required to implement centre-to-field traffic signal control priority communications (e.g., for busses and emergency vehicles). The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

contro over a nela	communication link					
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Signal control	Develop an internationally acceptable ITS application specification for the interface between a traffic signal controller and a roadside station to exchange raw data related to the SPaT, SRM, and SSM using the secure centre-to-field protocol.	Urgent	Australia, European Union, United States
				this Issue that would be addressed by the Proposed Resolution		
Source Connected Vehicle	Roadside Equipment		tination Roadway Equipment	Flow Name signal preemption request		
	Roadside Equipment		Roadway Equipment	signal priority service request		
		1				
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
Course				this Issue that would be addressed by the Proposed Resolution		
Source ITS Roadway Equip	oment		tination ffic Management Center	Flow Name right-of-way request notification		
113 Koauway Equip	ment	110	inic wanagement center	right-of-way request notification		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
•	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Near-term	United States
airing	should) couple the upper-layer standards defined in this solution with the indicated	Information 1	(critical flows)	for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution	Near-term	United States
iring	should) couple the upper-layer standards defined in this solution with the indicated	Information T Des	(critical flows)	for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Near-term	United States
Source Connected Vehicle	should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	Information T Des ITS	(critical flows) Friples using this solution and affected by tination Roadway Equipment	for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name	Near-term	United States
Source Connected Vehicle	should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards. Roadside Equipment Roadside Equipment	Information T Des ITS	(critical flows) Friples using this solution and affected by tination	for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name Signal preemption request	Near-term	United States
Source Connected Vehicle Connected Vehicle ITS Roadway Equip	should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards. Roadside Equipment Roadside Equipment	Information T Des ITS	(critical flows) Friples using this solution and affected by tination Roadway Equipment Roadway Equipment	for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name signal preemption request signal priority service request	Near-term Timeframe	United States Applicability
Connected Vehicle Connected Vehicle	should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards. P. Roadside Equipment P. Roadside Equipment P. Roadside Equipment	Information T Des ITS ITS Tra	(critical flows) Friples using this solution and affected by tination Roadway Equipment Roadway Equipment ffic Management Center	for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name signal preemption request signal priority service request right-of-way request notification		
Source Connected Vehicle Connected Vehicle ITS Roadway Equip sue nvetted by mmunity	should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards. Roadside Equipment Roadside Equipment Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Information Topes ITS ITS ITS ITS Information Topes Information Topes Information Topes Information Topes	(critical flows) Triples using this solution and affected by tination Roadway Equipment Roadway Equipment ffic Management Center Proposed Resolution Data distribution technologies Triples using this solution and affected by	for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name signal preemption request signal priority service request right-of-way request notification Resolution Description Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Timeframe	Applicability Australia, European
Source Connected Vehicle Connected Vehicle ITS Roadway Equip ue evetted by mmunity Source	should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards. Roadside Equipment Roadside Equipment Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Information 7 Des ITS ITS ITS ITS Information 7 Des	(critical flows) Triples using this solution and affected by tination Roadway Equipment Roadway Equipment ffic Management Center Proposed Resolution Data distribution technologies	for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name signal preemption request signal priority service request right-of-way request notification Resolution Description Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Timeframe	Applicability Australia, European
Source Connected Vehicle Connected Vehicle ITS Roadway Equip Sue Its way Equip Source Connected Vehicle	should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards. Roadside Equipment Roadside Equipment Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information Topes ITS ITS ITS ITS Information Topes Information Topes ITS	(critical flows) Triples using this solution and affected by tination Roadway Equipment Roadway Equipment ffic Management Center Proposed Resolution Data distribution technologies Triples using this solution and affected by tination	for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name signal preemption request signal priority service request right-of-way request notification Resolution Description Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts. This Issue that would be addressed by the Proposed Resolution Flow Name	Timeframe	Applicability Australia, European

Solution Name:	DDS: NTCIP Signal System Masters - OMG DDS RPC	Number of Issues:	3	Total Issue Severity:	43
Solution Name:	DDS: NTCIP Signal System Masters - OMG DDS RPC	Number of Issues:	3	Total Issue Severity:	43

This solution is used within the U.S. It combines standards associated with US: NTCIP Signal System Masters with those for I-F: OMG DDS RPC. The US: NTCIP Signal System Masters standards include upper-layer standards required to implement centre-to-field signal-system master communications. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

ommunication link	Issue Description	Jasua Cavanitu	Drawaged Desclution	Desclution Description	Timeframe	Analicability
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
oata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management	Center	ITS	Roadway Equipment	signal control commands		
Traffic Management	Center	ITS	Roadway Equipment	signal control device configuration		
Traffic Management	Center	ITS	Roadway Equipment	signal system configuration		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Near-term	United States
Source			Friples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management	Center	ITS	Roadway Equipment	signal control commands		
Traffic Management	Center	ITS	Roadway Equipment	signal control device configuration		
Traffic Management	Center	ITS	Roadway Equipment	signal system configuration		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
				this Issue that would be addressed by the Proposed Resolution		
Source Traffic Management	Contor		tination Roadway Equipment	Flow Name signal control commands		
Traffic Management			Roadway Equipment	signal control device configuration		
Traffic Management			Roadway Equipment			
rranic ivianagement	Center	113	noauway Equipment	signal system configuration		

Solution Name: DDS: NTCIP Traffic Signal - OMG DDS RPC 4 Total Issue Severity: 46

This solution is used within the U.S. It combines standards associated with US: NTCIP Traffic Signal with those for I-F: OMG DDS RPC. The US: NTCIP Traffic Signal standards include upper-layer standards required to implement centre-to-field traffic signal communications. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Solution Name:	DDS: NTCIP Traffic Signal - OMG DDS RPC	3		Number of Issues: 4	Total Issue Severity	: 46
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protoc		Australia, European Union
Source			riples using this solution and affected b tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipr	ment	Oth	ner ITS Roadway Equipment	signal control data		
ITS Roadway Equipr	ment	Tra	ffic Management Center	signal control status		
Other ITS Roadway	Equipment	ITS	Roadway Equipment	signal control data		
Traffic Managemen	t Center	ITS	Roadway Equipment	signal control plans		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potential convert ASN.1 data into the format that is native to the chosen DDT.)		United States
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
	Roadside Equipment		Roadway Equipment	pedestrian location information		
Connected Vehicle F	Roadside Equipment	ITS	Roadway Equipment	signal service request		
ITS Roadway Equipr	ment	Cor	nnected Vehicle Roadside Equipment	conflict monitor status		
ITS Roadway Equipr	ment	Cor	nnected Vehicle Roadside Equipment	intersection control status		
ITS Roadway Equipr	ment	Cor	nnected Vehicle Roadside Equipment	ITS roadway equipment information		
ITS Roadway Equipr	ment	Cor	nnected Vehicle Roadside Equipment	pedestrian crossing status		
ITS Roadway Equipr	ment	Oth	ner ITS Roadway Equipment	signal control coordination		
ITS Roadway Equipr	ment	Oth	ner ITS Roadway Equipment	signal control data		
ITS Roadway Equipr	ment	Tra	ffic Management Center	pedestrian safety warning status		
ITS Roadway Equipr	ment	Tra	ffic Management Center	signal control status		
Other ITS Roadway	Equipment	ITS	Roadway Equipment	signal control coordination		
Other ITS Roadway	Equipment	ITS	Roadway Equipment	signal control data		
Traffic Managemen	t Center	ITS	Roadway Equipment	pedestrian safety warning control		
Traffic Managemen	t Center	ITS	Roadway Equipment	signal control plans		

Solution Name:	DDS: NTCIP Traffic Signal - OMG DDS RP	C		Number of Issues: 4	Total Issue Severity:	46
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	oadside Equipment	ITS	Roadway Equipment	pedestrian location information		
Connected Vehicle Ro	oadside Equipment	ITS	Roadway Equipment	signal service request		
ITS Roadway Equipmo	ent	Co	nnected Vehicle Roadside Equipment	conflict monitor status		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	intersection control status		
ITS Roadway Equipme	ent	Со	nnected Vehicle Roadside Equipment	ITS roadway equipment information		
ITS Roadway Equipme	ent	Со	nnected Vehicle Roadside Equipment	pedestrian crossing status		
ITS Roadway Equipme	ent	Ot	her ITS Roadway Equipment	signal control coordination		
ITS Roadway Equipme	ent	Otl	her ITS Roadway Equipment	signal control data		
ITS Roadway Equipmo	ent	Tra	affic Management Center	pedestrian safety warning status		
ITS Roadway Equipmo	ent	Tra	affic Management Center	signal control status		
Other ITS Roadway E	quipment	ITS	Roadway Equipment	signal control coordination		
Other ITS Roadway E	quipment	ITS	Roadway Equipment	signal control data		
Traffic Management	Center	ITS	Roadway Equipment	pedestrian safety warning control		
Traffic Management	Center	ITS	Roadway Equipment	signal control plans		

Solution Name: DDS: NTCIP Transportation Sensors - OMG DDS RPC

Other ITS Roadway Equipment

Number of Issues: 2 Total Issue Severity:

roadway detector coordination

11

This solution is used within the U.S. It combines standards associated with US: NTCIP Transportation Sensors with those for I-F: OMG DDS RPC. The US: NTCIP Transportation Sensors standards include upper-layer standards required to implement centre-to-field transportation sensors (e.g., vehicle detectors) communications (e.g., real-time). The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
ata/comm profile airing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Near-term	United States	
		Information ⁻	Triples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution			
Source		Des	stination	Flow Name			
Connected Vehicle Ro	padside Equipment	ITS	Roadway Equipment	traffic situation data			
Connected Vehicle Ro	padside Equipment	Tra	affic Management Center	traffic situation data			
Connected Vehicle Roadside Equipment		Transportation Information Center		traffic situation data			
ITS Roadway Equipme	ent	Maint and Constr Management Center		speed monitoring information			
ITS Roadway Equipme	ent	Ma	aint and Constr Management Center	traffic detector data			

ITS Roadway Equipment

Solution Name:	DDS: NTCIP Transportation Sensors - ON	MG DDS RPC		Number of Issues: 2	Fotal Issue Severity:	11	
ITS Roadway Equip	ment	Tra	affic Management Center	speed monitoring information			
ITS Roadway Equip	ment	Tra	affic Management Center	traffic detector data			
Maint and Constr Management Center		ITS	Roadway Equipment	speed monitoring control	speed monitoring control		
Maint and Constr I	Maint and Constr Management Center		Roadway Equipment	traffic detector control	traffic detector control		
Other ITS Roadway	/ Equipment	ITS	Roadway Equipment	roadway detector coordination	roadway detector coordination		
Traffic Manageme	nt Center	ITS	Roadway Equipment	speed monitoring control			
Traffic Manageme	nt Center	ITS	Roadway Equipment	traffic detector control			
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States	
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name			
	Roadside Equipment		S Roadway Equipment	traffic situation data			
Connected Vehicle	Roadside Equipment		affic Management Center	traffic situation data			
Connected Vehicle	Roadside Equipment	Tra	ansportation Information Center	traffic situation data			
ITS Roadway Equipment		Ma	aint and Constr Management Center	speed monitoring information	speed monitoring information		
ITS Roadway Equipment		Ma	aint and Constr Management Center	traffic detector data	traffic detector data		
ITS Roadway Equipment		Ot	her ITS Roadway Equipment	roadway detector coordination	roadway detector coordination		
ITS Roadway Equip	ITS Roadway Equipment		affic Management Center	speed monitoring information	speed monitoring information		
ITS Roadway Equip	ITS Roadway Equipment		affic Management Center	traffic detector data	traffic detector data		
Maint and Constr I	Maint and Constr Management Center		Roadway Equipment	speed monitoring control	speed monitoring control		
Maint and Constr I	Maint and Constr Management Center		Roadway Equipment	traffic detector control	traffic detector control		
Other ITS Roadway	/ Equipment	ITS	Roadway Equipment	roadway detector coordination	roadway detector coordination		
Traffic Manageme	nt Center	ITS	Roadway Equipment	speed monitoring control	speed monitoring control		
Traffic Manageme	nt Center	ITS	Roadway Equipment	traffic detector control	traffic detector control		

Solution Name: DDS: NTCIP Warning Device - OMG DDS RPC 11

This solution is used within the U.S. It combines standards associated with US: NTCIP Warning Device with those for I-F: OMG DDS RPC. The US: NTCIP Warning Device standards include a composite of upper-layer standards that support monitoring for unsafe traffic activities and displaying warning to drivers. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (non-critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Medium-term	United States

among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Destination Tits Roadway Equipment Tits Roadway	Solution Name:	DDS: NTCIP Warning Device - OMG DDS	RPC		Number of Issues: 2 T	otal Issue Severity:	11		
ITS Roadway Equipment Maint and Constr Management Center To South Management Center To	Source								
ITS Roadway Equipment Maint and Constr Management Center Work zone warning status Issue Issue Description Issue Severity Proposed Resolution Resolution Destination triple.	Emergency Management	Center	ITS Roadway Equipment		work zone warning device control				
Maint and Constr Management Center ITS Roadway Equipment ITS Roadw	ITS Roadway Equipment		Emergency Management Center		work zone warning status				
Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Source Emergency Management Center ITS Roadway Equipment Maint and Constr Management Center ITS Roadway Equipment Maint and Constr Management Center ITS Roadway Equipment Medium Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Postination Flow Name Emergency Management Center ITS Roadway Equipment Maint and Constr Management Center ITS Roadway Equipment Maint and Constr Management Center ITS Roadway Equipment Work zone warning device control	ITS Roadway Equipment		Ma	int and Constr Management Center	work zone warning status				
The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Source	Maint and Constr Manag	ement Center	ITS Roadway Equipment		work zone warning device control				
standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination TIS Roadway Equipment Emergency Management Center ITS Roadway Equipment Emergency Management Center Work zone warning status Maint and Constr Management Center ITS Roadway Equipment Maint and Constr Management Center ITS Roadway Equipment Maint and Constr Management Center Work zone warning device control Work zone warning device control Work zone warning status Maint and Constr Management Center Work zone warning device control Work zone warning device control	ssue	ssue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability		
SourceDestinationFlow NameEmergency Management CenterITS Roadway Equipmentwork zone warning device controlITS Roadway EquipmentEmergency Management Centerwork zone warning statusITS Roadway EquipmentMaint and Constr Management Centerwork zone warning statusMaint and Constr Management CenterITS Roadway Equipmentwork zone warning device control	community s	tandards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Medium	Data distribution technologies	among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies	Urgent	Australia, European Union, United State		
ITS Roadway Equipment work zone warning status ITS Roadway Equipment Maint and Constr Management Center work zone warning status Maint and Constr Management Center work zone warning status ITS Roadway Equipment Center work zone warning device control	Source								
ITS Roadway Equipment Work zone warning status Maint and Constr Management Center work zone warning device control	Emergency Management Center		ITS Roadway Equipment		work zone warning device control				
Maint and Constr Management Center ITS Roadway Equipment work zone warning device control	ITS Roadway Equipment		Emergency Management Center		work zone warning status				
	ITS Roadway Equipment		Maint and Constr Management Center		work zone warning status				
Number of Lance (normal particular and particular a	Maint and Constr Manag	ement Center	ITS	Roadway Equipment	work zone warning device control				
folution Name: DDS: SAE J3067 (J2735 SE) - OMG DDS INUMBER OF ISSUES: 2 Total Issue Severity: 11	Solution Name:	DDS: SAE J3067 (J2735 SE) - OMG DDS			Number of Issues: 2 T	otal Issue Severity:	11		

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (non-critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Medium-term	United States
				this Issue that would be addressed by the Proposed Resolution		
Source			stination	Flow Name		
Commercial Vehicle C	Check Equipment	Co	mmercial Vehicle Administration Center	driver log		
Commercial Vehicle C	DBE Service Provider	Co	mmercial Vehicle Check Equipment	driver log		
Commercial Vehicle C	DBE Service Provider	Fle	et and Freight Management Center	driver log		
Commercial Vehicle C	DBE Service Provider	Otl	ner CVOBE Service Provider	driver log		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle Administration Center	driver log		
Fleet and Freight Man	nagement Center	Co	mmercial Vehicle Administration Center	driver log		
Other CVOBE Service	Provider	Co	mmercial Vehicle OBE Service Provider	driver log		

sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
nvetted by emmunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			- Friples using this solution and affected by stination	r this Issue that would be addressed by the Proposed Resolution Flow Name		
Commercial Vehicle C	Check Equipment		mmercial Vehicle Administration Center	driver log		
Commercial Vehicle C	DBE Service Provider	Co	mmercial Vehicle Check Equipment	driver log		
Commercial Vehicle C	DBE Service Provider	Fle	et and Freight Management Center	driver log		
Commercial Vehicle C	DBE Service Provider	Otl	ner CVOBE Service Provider	driver log		
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle Administration Center	driver log		
Fleet and Freight Mar	nagement Center	Co	mmercial Vehicle Administration Center	driver log		
Other CVOBE Service	Provider	Co	mmercial Vehicle OBE Service Provider	driver log		
						44
s solution is used wormation flows that I another field device		vith US: SAE J3067		MG DDS RPC. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upp OMG DDS RPC standards include lower-layer standards that support secure remote proceduResolution Description		ment V2X
s solution is used wormation flows that I another field devices I ata/comm profile	ithin the U.S. It combines standards associated w do not yet have fully standardized messages, fun ce or a centre over a field communication link	vith US: SAE J3067 actionality or perf	ormance charcateristics. The I-F:	MG DDS RPC. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upposed DDS RPC standards include lower-layer standards that support secure remote procedum. Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the	per-layers to imple ure calls between a	ment V2X field device
armation flows that I another field devices ata/comm profile airing	ithin the U.S. It combines standards associated we do not yet have fully standardized messages, funce or a centre over a field communication link Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated	Issue Severity High	Proposed Resolution Updates for data distribution (non-critical flows) Triples using this solution and affected by	MG DDS RPC. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upposed DDS RPC standards include lower-layer standards that support secure remote procedure. Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	per-layers to imple ure calls between a Timeframe	ment V2X field device Applicability
s solution is used wormation flows that another field devices	ithin the U.S. It combines standards associated we do not yet have fully standardized messages, funce or a centre over a field communication link Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	Information Des	Proposed Resolution Updates for data distribution (non-critical flows)	MG DDS RPC. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upposed DDS RPC standards include lower-layer standards that support secure remote procedure. Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	per-layers to imple ure calls between a Timeframe	ment V2X field device Applicability
solution is used w rmation flows that another field device ue ta/comm profile iring	ithin the U.S. It combines standards associated we do not yet have fully standardized messages, funce or a centre over a field communication link Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	Information Des	Proposed Resolution Updates for data distribution (non-critical flows) Triples using this solution and affected by stination	MG DDS RPC. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upposed DDS RPC standards include lower-layer standards that support secure remote procedure. Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name	per-layers to imple ure calls between a Timeframe	ment V2X field device Applicability
s solution is used wormation flows that another field devices the star of the solution of the star of the solution of the star of the solution	ithin the U.S. It combines standards associated we do not yet have fully standardized messages, funce or a centre over a field communication link Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	Issue Severity High Information Des	Proposed Resolution Updates for data distribution (non-critical flows) Friples using this solution and affected by stination rking Management System	MG DDS RPC. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upposed DDS RPC standards include lower-layer standards that support secure remote procedution. Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name Commercial vehicle identification	Timeframe Medium-term	ment V2X field device Applicability United States
solution is used w rmation flows that another field device ta/comm profile iring Source Connected Vehicle Ro	ithin the U.S. It combines standards associated we do not yet have fully standardized messages, funce or a centre over a field communication link Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards. Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Information Information Information Information Information Information Information	Proposed Resolution Updates for data distribution (non-critical flows) Triples using this solution and affected by stination rking Management System Proposed Resolution Data distribution technologies	MG DDS RPC. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upp OMG DDS RPC standards include lower-layer standards that support secure remote procedus. Resolution Description Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.) This Issue that would be addressed by the Proposed Resolution Flow Name commercial vehicle identification Resolution Description Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies	Timeframe Timeframe Timeframe	Applicability Applicability Applicability Applicability Australia, European

This solution is used within the U.S. It combines standards associated with US: SAE Other J2735 with those for I-F: OMG DDS. The US: SAE Other J2735 standards include upper-layer standards required to implement V2X information flows that do

Solution Name: not yet have fully speci ield communication lin		cs. The I-F: OMG	DDS standards include lower-laye	Number of Issues: 4 Ter standards that support secure data distribution services between a field device and another	otal Issue Severity	
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (non-critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Medium-term	United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nnected Vehicle Roadside Equipment	intersection geometry		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nnected Vehicle Roadside Equipment	intersection geometry		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected by stination	r this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Со	nnected Vehicle Roadside Equipment	intersection geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not ully defined medium)	The performance rules are not fully defined for this information flow.	Medium	I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Urgent	Australia, European Union, United States, Japan
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nnected Vehicle Roadside Equipment	intersection geometry		
olution Name:	DDS: SAE Signal Control Massages OM			Number of Issues: 3	ntal Issue Severity	. 12

Solution Name: DDS: SAE Signal Control Messages - OMG DDS RPC

This solution is used within the U.S. It combines standards associated with US: SAE Signal Control Messages with those for I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer standards required to implement

signal control information flows. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

olution Name:	DDS: SAE Signal Control Messages - OMO	G DDS RPC		Number of Issues: 3	otal Issue Severit	ty: 43
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata/comm profile airing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Develop ITS-wide reference data model	Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Co	nnected Vehicle Roadside Equipment	roadway geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Urgent	Australia, European Union, United States Japan
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Co	nnected Vehicle Roadside Equipment	roadway geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
nvetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nnected Vehicle Roadside Equipment	roadway geometry		
lution Name:	DDS: TCIP - OMG DDS			Number of Issues: 4	otal Issue Severit	ty: 44

standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra		Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.	Medium-term	United States			
	Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution								

Transit Management Center Traffic Management Center traffic control priority request

Solution Name:	DDS: TCIP - OMG DDS			Number of Issues: 4	Total Issue Severity:	44	
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Near-term	United States	
Course				y this Issue that would be addressed by the Proposed Resolution			
Source Alternate Mode Trans	sportation Center		usit Management Center	Flow Name multimodal service data			
Alternate Mode Trans			insit Management Center	service information response			
Alternate Mode Trans	sportation Center	Tra	insportation Information Center	multimodal service data			
Emergency Managem	ent Center	Tra	nsit Management Center	emergency transit service request			
Other Transit Manage	ement Centers	Tra	nsit Management Center	transit service coordination			
Other Transportation	Information Centers	Tra	Insportation Information Center	transit service information			
Traffic Management (Center	Tra	nsit Management Center	transit service change request			
Traffic Management (Center	Tra	insportation Information Center	transit service change request			
Transit Management	Transit Management Center		ernate Mode Transportation Center	service information request			
Transit Management	Center	Alt	ernate Mode Transportation Center	transit multimodal information			
Transit Management	Center	Em	ergency Management Center	emergency transit service response			
Transit Management	Center	Em	issions Management Center	transit and fare schedules			
Transit Management	Center	Otl	ner Transit Management Centers	transit service coordination			
Transit Management	Center	Pai	rking Management System	transit schedule adherence information			
Transit Management	Center	Pai	rking Management System	transit schedule information			
Transit Management	Center	Tra	ffic Management Center	traffic control priority request			
Transit Management	Center	Tra	fic Management Center transit system data				
Transit Management	Center	Tra	Transportation Information Center demand responsive transit plan				
Transit Management	Center	Tra	insportation Information Center	emergency transit schedule information			
Transit Management	Center	Tra	Insportation Information Center	transit and fare schedules			
Transit Management	Center		Insportation Information Center	transit incident information	transit incident information		
Transit Management	Transit Management Center		Insportation Information Center	transit schedule adherence information	transit schedule adherence information		
Transit Management Center			Insportation Information Center	transit trip plan			
Transportation Inform			ernate Mode Transportation Center	service information request			
Transportation Inform			ner Transportation Information Centers	transit service information			
Transportation Inform	Transportation Information Center		nsit Management Center	demand responsive transit request			
Transportation Information Center			nsit Management Center	transit service change request			

Solution Name:	ame: DDS: TCIP - OMG DDS Total Issue Severity:		44				
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	among multiple ITS subsystems on an as-no scalable manner than existing approaches.	might offer mechanisms to distribute data eeded basis in a more efficient, secure, and Determine where the use of these nat impacts the adoption of such technologies	Urgent	Australia, European Union, United States
Carriera				this Issue that would be addressed by the Proposed R			
Source Alternate Mode Tran	sportation Center		tination nsit Management Center		Flow Name multimodal service data		
Alternate Mode Tran			nsit Management Center		service information response		
Alternate Mode Tran			nsportation Information Center		multimodal service data		
Emergency Managen			nsit Management Center		emergency transit service request		
Other Transit Manag			nsit Management Center		transit service coordination		
Other Transportation	Information Centers	Tra	nsportation Information Center		transit service information		
Traffic Management	Center	Tra	nsit Management Center		transit service change request		
Traffic Management	Center	Tra	nsportation Information Center		transit service change request		
Transit Management	Center	Alte	ernate Mode Transportation Center		service information request		
Transit Management	Center	Alte	ernate Mode Transportation Center		transit multimodal information		
Transit Management	Center	Em	ergency Management Center		emergency transit service response		
Transit Management	Center	Em	issions Management Center		transit and fare schedules		
Transit Management	Center	Oth	ner Transit Management Centers		transit service coordination		
Transit Management	Center	Par	king Management System		transit schedule adherence information		
Transit Management	Center	Par	king Management System		transit schedule information		
Transit Management	Center	Tra	ffic Management Center		traffic control priority request		
Transit Management	Center	Tra	ffic Management Center		transit system data		
Transit Management	Center	Tra	nsportation Information Center		demand responsive transit plan		
Transit Management	Center	Tra	nsportation Information Center		emergency transit schedule information		
Transit Management	Center	Tra	nsportation Information Center		transit and fare schedules		
Transit Management	Center	Tra	nsportation Information Center		transit incident information		
Transit Management	Center	Tra	nsportation Information Center		transit schedule adherence information		
Transit Management	Center	Tra	nsportation Information Center		transit trip plan		
Transportation Inform	mation Center	Alte	ernate Mode Transportation Center		service information request		
Transportation Inform	mation Center	Oth	er Transportation Information Centers		transit service information		
Transportation Inform	mation Center	n Center Transit Management Center demand responsive transit request					
Transportation Inform	nation Center	Tra	nsit Management Center		transit service change request		

olution Name:	DDS: TCIP - OMG DDS				Number of Issues: 4		Total Issue Severity:	44
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Data not defined in tandard format				Medium-term	United States			
				y this Issue that would be addressed by the Proposed Resolution				
Source		Des	tination	Flow Nan	ne			
Alternate Mode Transportation Center		Transit Management Center		multimo	dal service data			
Alternate Mode Trans	sportation Center	Tra	nsit Management Center	service in	nformation response			
Alternate Mode Trans	sportation Center	Tra	nsportation Information Center	multimo	dal service data			
Emergency Management Center		Tra	Transit Management Center		emergency transit service request			
Other Transit Management Centers		Tra	Transit Management Center		transit service coordination			
Other Transportation Information Centers		Tra	Transportation Information Center tra		transit service information			
Traffic Management Center		Tra	Transit Management Center to		transit service change request			
Traffic Management Center		Tra	Transportation Information Center t		transit service change request			

service information request

transit multimodal information

emergency transit service response

tion Name: DDS: TMDD - OMG DDS		Number of Issues: 3 Total Issue Severity: 43
Transportation Information Center	Transit Management Center	transit service change request
Transportation Information Center	Transit Management Center	demand responsive transit request
Transportation Information Center	Other Transportation Information Centers	transit service information
Transportation Information Center	Alternate Mode Transportation Center	service information request
Transit Management Center	Transportation Information Center	transit trip plan
Transit Management Center	Transportation Information Center	transit schedule adherence information
Transit Management Center	Transportation Information Center	transit incident information
Transit Management Center	Transportation Information Center	transit and fare schedules
Transit Management Center	Transportation Information Center	emergency transit schedule information
Transit Management Center	Transportation Information Center	demand responsive transit plan
Transit Management Center	Traffic Management Center	transit system data
Transit Management Center	Traffic Management Center	traffic control priority request
Transit Management Center	Parking Management System	transit schedule information
Transit Management Center	Parking Management System	transit schedule adherence information
Transit Management Center	Other Transit Management Centers	transit service coordination
Transit Management Center	Emissions Management Center	transit and fare schedules

Alternate Mode Transportation Center

Alternate Mode Transportation Center

Emergency Management Center

This solution is used within the U.S. It combines standards associated with US: TMDD with those for C-C: OMG DDS. The US: TMDD standards include upper-layer standards required to implement centre-to-centre communications with traffic management systems. The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

Transit Management Center

Transit Management Center

Transit Management Center

for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Pentor Destination Name Center Maint and Constr Management Center Cente	Performance, functionality, and the upperayers of the OSI stack have not been defined or this information flow. Center Security Security Contents Cerformance, functionality, and the upperayers of the OSI stack have not been defined	Information Toes Tra Em Issue Severity	C-C: EU emergency traffic control Triples using this solution and affected by stination Iffic Management Center Itergency Management Center	Update DATEX to support the provision of emergency traffic control information with complete application specification. By this Issue that would be addressed by the Proposed Resolution Flow Name emergency traffic control request		Australia, European
Information Toples using this soultion and affected by this issue that would be addressed by the Proposed Resolution Source	eyers of the OSI stack have not been defined or this information flow. Center ter Ssue Description Performance, functionality, and the upperayers of the OSI stack have not been defined	Information T Des Tra Em	control Triples using this solution and affected by stination Iffic Management Center Itergency Management Center	complete application specification. by this Issue that would be addressed by the Proposed Resolution Flow Name emergency traffic control request	Near-term	
Source Flow Name Flow Name	ssue Description Performance, functionality, and the upperayers of the OSI stack have not been defined	Des Tra Em	etination Iffic Management Center Iergency Management Center	Flow Name emergency traffic control request		
Traffic Management Center Size Severity Proposed Resolution Resolution Description Severity Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Ultra C-C: Equipment maintenance and status information flow. Develop an internationally acceptable ITS application specification for C-C exchange of layers of the OSI stack have not been defined for this information flow. Ultra C-C: Equipment maintenance and status information for C-C exchange of layers of the OSI stack have not been defined for this information flow. Ultra C-C: Equipment maintenance and status information for C-C exchange of layers of the OSI stack have not been defined for this information friples using this solution and affected by this issue that would be addressed by the Proposed Resolution Flow Name	ssue Description Performance, functionality, and the upperayers of the OSI stack have not been defined	Issue Severity	ergency Management Center			
Issue Description Issue Severity Proposed Resolution Resolution Description Develop an internationally acceptable ITS application specification for C-C exchange of equipment maintenance and status information Information Flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Postination Flow Name Center Maint and Constr Management Center Maint and Constr Management Center Center Source Issue Description Issue Severity Proposed Resolution Resolution Description Resolution Description Resolution Description Resolution Description Resolution Description Resolution Description Timeframe Applicability Applicability Applicability Applicability Destination Timeframe Applicability Applicability Applicability Destination Flow Name Applicability Applicability Destination Flow Name Applicability Applicability Applicability Applicability Applicability Destination Flow Name	Performance, functionality, and the upperayers of the OSI stack have not been defined	Issue Severity		emergency traffic control information		
Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Develop an internationally acceptable ITS application specification for C-C exchange of equipment maintenance and status information for C-C exchange of union, United States	Performance, functionality, and the upperayers of the OSI stack have not been defined		Proposed Resolution			
layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Performance Flow Name Center Maint and Constr Management Center Center Center Center Resolution Description Issue Description Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Resolution Description Adopt an existing weather information centre-to-centre data profile for use within the region. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name Union, United States	ayers of the OSI stack have not been defined	Liltra		Resolution Description	Timeframe	Applicability
Source Center Maint and Constr Management Center Maint and Constr Management Center Center Maint and Constr Management Center Ce	or this information flow.	Oltra			of Near-term	Australia, European Union, United States
Center Maint and Constr Management Center equipment maintenance request Maint and Constr Management Center equipment maintenance status Source Issue Description Issue Severity Proposed Resolution Resolution Description Resolution Description Information Centre-to-centre data profile for use within the region. Maint and Constr Management Center equipment maintenance request Equipment maintenance status Timeframe Applicability Adopt an existing weather information centre-to-centre data profile for use within the region. Near-term Union, United States Source Destination Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name						
Issue Description Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Source Timeframe Applicability Adopt an existing weather information centre-to-centre data profile for use within the region. Near-term Union, United States Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Players of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Players of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name						
Performance, functionality, and the upper-layers of the OSI stack have not been defined for this information flow. C-C: AU weather information region. Adopt an existing weather information centre-to-centre data profile for use within the layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Flow Name	ement Center	Cer	nter	equipment maintenance status		
layers of the OSI stack have not been defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Destination Destination Destination Tegion. Union, United States Union, United States Union, United States Union, United States Flow Name	ssue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Source Plow Name Flow Name	ayers of the OSI stack have not been defined	Ultra	C-C: AU weather information		ne Near-term	Australia, European Union, United States
Surface Transportation Weather Service Traffic Management Center transportation weather information						
	Veather Service	Tra	ffic Management Center	transportation weather information		
	ss e e o	erformance, functionality, and the upper- yers of the OSI stack have not been defined r this information flow.	ment Center Ceresue Description Issue Severity erformance, functionality, and the upper- yers of the OSI stack have not been defined r this information flow. Information Toes	Maint and Constr Management Center Center Sue Description Issue Severity Proposed Resolution Proposed Resolution Ultra C-C: AU weather information of the OSI stack have not been defined or this information flow. Information Triples using this solution and affected be Destination	Maint and Constr Management Center equipment maintenance request ment Center equipment maintenance status sue Description Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Proposed Resolution Resolution Description Adopt an existing weather information centre-to-centre data profile for use within the region. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Plow Name	Maint and Constr Management Center equipment maintenance request sue Description Issue Severity Proposed Resolution Resolution Description Ultra C-C: AU weather information region. C-C: AU weather information Proposed Resolution Proposed Resolu

Solution Name:	DDS: TMDD - OMG DDS				Number of Issues: 3	otal Issue Severity	43
Issue	Issue Description	Issue Severity Prop	osed Resolution	Resolution Description		Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.		ates for data distribution cal flows)	for those interfaces where this technology	, J2735, NTICP, etc. (i.e., this would potentially	Near-term	United States
Source		Information Triples ι Destination		y this Issue that would be addressed by the Proposed R	esolution Flow Name		
Border Inspection Sys	tem		nagement Center		border wait times data		
Border Inspection Sys	tem	Transporta	ation Information Center		border crossing status information		
Center		Archived D	Data Center		center archive data		
Center		Data Distri	bution System		operational data		
Center		Data Distri	bution System		traveler information distribution data		
Center		Maint and	Constr Management Center		equipment maintenance request		
Commercial Vehicle A	dministration Center	Fleet and F	Freight Management Center		route restrictions		
Commercial Vehicle A	dministration Center	Other CV A	Administration Centers		route restrictions		
Commercial Vehicle A	dministration Center	Transporta	ation Information Center		route restrictions		
Data Distribution Syst	em	Center			operational data		
Data Distribution Syst	em	Center			regional situation data		
Emergency Managem	ent Center	Traffic Ma	nagement Center		emergency traffic control request		
Emergency Managem	ent Center	Traffic Ma	nagement Center		incident information		
Emergency Managem	ent Center	Transporta	ation Information Center		incident information		
Emissions Manageme	nt Center	Transporta	ation Information Center		air quality information		
Fleet and Freight Mar	nagement Center	Commerci	al Vehicle Administration Center		route restrictions		
Maint and Constr Ma	nagement Center	Center			equipment maintenance status		
Maint and Constr Ma	nagement Center	Commerci	al Vehicle Administration Center		current infrastructure restrictions		
Maint and Constr Ma	nagement Center	Emergency	y Management Center		road weather information		
Maint and Constr Mai	nagement Center	Map Upda	te System		current infrastructure restrictions		
Maint and Constr Ma	nagement Center	Surface Tra	ansportation Weather Service		road weather information		
Maint and Constr Ma	nagement Center	Traffic Ma	nagement Center		current infrastructure restrictions		
Maint and Constr Ma	nagement Center	Traffic Ma	nagement Center		environmental conditions data		
Maint and Constr Ma	nagement Center	Traffic Ma	nagement Center		equipment maintenance status		
Maint and Constr Ma	nagement Center	Traffic Ma	nagement Center		work zone information		
Maint and Constr Ma	nagement Center	Transit Ma	nagement Center		current infrastructure restrictions		
Maint and Constr Ma	nagement Center	Transporta	ation Information Center		current infrastructure restrictions		
Maint and Constr Ma	nagement Center	Transporta	ation Information Center		environmental conditions data		
Maint and Constr Ma	nagement Center	Transporta	ation Information Center		maint and constr work plans		
Maint and Constr Ma	nagement Center	Transporta	ation Information Center		road weather information		

lution Name:	DDS: TMDD - OMG DDS		Number of Issues:	3	Total Issue Severity:	43
Maint and Constr Managem	ent Center	Transportation Information Center	work zone information			
Other CV Administration Cer	nters	Commercial Vehicle Administration Center	route restrictions			
Other Traffic Management (Centers	Traffic Management Center	device control request			
Other Traffic Management (Centers	Traffic Management Center	device data			
Other Traffic Management (Centers	Traffic Management Center	device status			
Other Traffic Management C	Centers	Traffic Management Center	incident information			
Other Traffic Management (Centers	Traffic Management Center	road network conditions			
Other Traffic Management C	Centers	Traffic Management Center	traffic image meta data			
Other Traffic Management (Centers	Traffic Management Center	traffic images			
Other Transportation Inform	nation Centers	Transportation Information Center	emergency traveler information			
Other Transportation Inform	nation Centers	Transportation Information Center	incident information			
Other Transportation Inform	nation Centers	Transportation Information Center	road network conditions			
Other Transportation Inform	nation Centers	Transportation Information Center	traffic image meta data			
Other Transportation Inform	nation Centers	Transportation Information Center	traffic images			
Service Monitor System		Center	RSE fault data			
Service Monitor System		Maint and Constr Management Center	RSE fault data			
Surface Transportation Wea	ther Service	Emergency Management Center	transportation weather information			
Surface Transportation Wea	ther Service	Maint and Constr Management Center	transportation weather information			
Surface Transportation Wea	ther Service	Traffic Management Center	transportation weather information			
Surface Transportation Wea	ther Service	Transportation Information Center	transportation weather information			
Traffic Management Center		Emergency Management Center	emergency traffic control information			
Traffic Management Center		Emergency Management Center	incident information			
Traffic Management Center		Emergency Management Center	road network conditions			
Traffic Management Center		Emissions Management Center	road network conditions			
Traffic Management Center		Fleet and Freight Management Center	road network conditions			
Traffic Management Center		Fleet and Freight Management Center	route restrictions			
Traffic Management Center		Maint and Constr Management Center	equipment maintenance request			
Traffic Management Center		Maint and Constr Management Center	field equipment status			
Traffic Management Center		Maint and Constr Management Center	incident information			
Traffic Management Center		Maint and Constr Management Center	road network conditions			
Traffic Management Center		Other Traffic Management Centers	device control request			
Traffic Management Center		Other Traffic Management Centers	device data			
Traffic Management Center		Other Traffic Management Centers	device status			
Traffic Management Center		Other Traffic Management Centers	incident information			
Traffic Management Center		Other Traffic Management Centers	road network conditions			
Traffic Management Center		Other Traffic Management Centers	traffic image meta data			

Trail Changement Certoer Trail Management Certoer Incident information Trail Changement Certoer Trail Management Certoer Incompanie Certoer Incident information Certoer Trail Changement Certoer Trail Management Certoer Incompanie Certoer Incompanie Certoer Incompanie Certoer Trail Management Certoer Trail Management Certoer Information Certoer Trail Management Certoer Trail Manage	olution Name:	DDS: TMDD - OMG DDS		Number of Issues:	3	Total Issue Severity:	43
Traffic Management Center Trails Management Ce	Traffic Management Center		Other Traffic Management Centers	traffic images			
Traffic Management Center transportation Information Center regional shaston data transportation Information Center regional shaston data transportation Information Center regional shaston data transportation Information Center transportation Information Center traffic Center Information Traffic Management Center traffic Center Information Traffic Management Center traffic Center Information Traffic Management Center traffic Center Information Center traffic Center Information Information Information Center traffic Management Center traffic Center Information Center Transportation Information Center	Traffic Management Center		Transit Management Center	incident information			
Traific Management Center Transportation Information Center regional situation data Traific Management Center Transportation Information Center traific control Information Center traific insequent data Traific Management Center Transportation Information Center traific insequent data Transportation Information Center Transportation Information Center traific insequent Center regional situation data Transportation Information Center Engency Management Center crand reverws Conditions Transportation Information Center Engency Management Center crand weather advisories Transportation Information Center Engency Management Center crand weather advisories Transportation Information Center Engency Management Center crand weather advisories Transportation Information Center Indicate Transportation Information Center Indicate Transportation Information Center Center Indicate Information Information Center Indicate Information Center Indicate Information Information Center Indicate Information Information Center Indicate Information Information Center Indicate Information Center Information	Traffic Management Center		Transit Management Center	road network conditions			
Traffic Management Center Transportation information Center Transportation	Traffic Management Center		Transportation Information Center	incident information			
Traffic Management Center Transportation Information Center Emergency Management Center Transportation Information Center Transportation Infor	Traffic Management Center		Transportation Information Center	regional situation data			
Traffic Management Center Transportation Information Center Transportation	Traffic Management Center		Transportation Information Center	road network conditions			
Transportation Information Center Transp	Traffic Management Center		Transportation Information Center	traffic control information			
Transportation Information Center Transp	Traffic Management Center		Transportation Information Center	traffic image meta data			
Transportation information Center Emergency Management Center road network conditions Transportation information Center Emergency Management Center road network conditions Transportation information Center Emergency Management Center road weather advisories Transportation information Center Emissions Management Center corridor operational strategies Transportation information Center incident information Center incident information Transportation information Center incident information Transportation information Center incident information Transportation information Center road weather advisories Transportation information Center road weather advi	Traffic Management Center		Transportation Information Center	traffic images			
Transportation Information Center Emergency Management Center road weather advisories Transportation Information Center Emissions Management Center corridor operational strategies Transportation Information Center Emissions Management Center Incident Information Transportation Information Center Incident Information Center Incident Information Transportation Information Center Piet and Freight Management Center road network conditions Transportation Information Center road weather advisories Transportation Information Center Release of Freight Management Center road weather advisories Transportation Information Center Release of Freight Management Center road weather advisories Transportation Information Center road weather advisories Transportation Information Center Release of Freight Management Center road weather advisories Transportation Information Center road weather advisories Transportation I	Transportation Information (enter	Archived Data Center	regional situation data			
Transportation Information Center Transportation Information	Transportation Information (enter	Emergency Management Center	corridor operational strategies			
Transportation Information Center Transp	Transportation Information (enter	Emergency Management Center	road network conditions			
Transportation Information Center Fleet and Freight Management Center road network conditions ransportation Information Center road network conditions ransportation Information Center road weather advisories weather advisories road weather adviso	Transportation Information (enter	Emergency Management Center	road weather advisories			
Transportation Information Center Fleet and Freight Management Center road network conditions Transportation Information Center Transportatio	Transportation Information C	enter	Emissions Management Center	corridor operational strategies			
Transportation Information Center Fleet and Freight Management Center Cransportation Information Center Cran	Transportation Information (enter	Fleet and Freight Management Center	incident information			
Transportation Information Center Transportation Information Center Other Transportation Information Centers Other Transportation Information Centers incident information Transportation Information Center Other Transportation Information Centers incident information Transportation Information Center Other Transportation Information Centers road network conditions Transportation Information Center Other Transportation Information Centers traffic image meta data Transportation Information Center Other Transportation Information Centers traffic images Transportation Information Center Tran	Transportation Information C	enter	Fleet and Freight Management Center	road network conditions			
Transportation Information Center Other Transportation Information Centers emergency traveler information Transportation Information Center Other Transportation Information Centers incident information Transportation Information Center Other Transportation Information Centers road network conditions Transportation Information Center Other Transportation Information Centers traffic image meta data Transportation Information Center Other Transportation Information Centers traffic images Transportation Information Center Transportation Information Center corridor operational strategies Transportation Information Center Transportation Information Center regional situation data Transportation Information Center Transportation Information Center corridor operational strategies	Transportation Information (enter	Fleet and Freight Management Center	road weather advisories			
Transportation Information Center Transportation Information Center Other Transportation Information Centers road network conditions Transportation Information Center Transportation Information Centers traffic image meta data Transportation Information Center Other Transportation Information Centers traffic images Transportation Information Center Trans	Transportation Information (Center	Maint and Constr Management Center	corridor operational strategies			
Transportation Information Center Other Transportation Information Centers traffic image meta data Transportation Information Center Other Transportation Information Centers traffic images Transportation Information Center Transportation Information Centers traffic images Transportation Information Center Corridor operational strategies Transportation Information Center regional situation data Transportation Information Center Center regional strategies	Transportation Information (enter	Other Transportation Information Centers	emergency traveler information			
Transportation Information Center Other Transportation Information Centers traffic image meta data traffic images traffic image meta data traffic image meta data traffic images traffic image meta data traffic images traffic image meta data	Transportation Information (Center	Other Transportation Information Centers	incident information			
Transportation Information Center	Transportation Information (enter	Other Transportation Information Centers	road network conditions			
Transportation Information Center Corridor operational strategies Transportation Information Center Traffic Management Center regional situation data Transportation Information Center Corridor operational strategies Transportation Information Center Corridor operational strategies	Transportation Information (Center	Other Transportation Information Centers	traffic image meta data			
Transportation Information Center Transportation Information Center regional situation data Transportation Information Center Center corridor operational strategies	Transportation Information (enter	Other Transportation Information Centers	traffic images			
Transportation Information Center Transit Management Center corridor operational strategies	Transportation Information (Center	Traffic Management Center	corridor operational strategies			
	Transportation Information (enter	Traffic Management Center	regional situation data			
Towns Management Control	Transportation Information (Senter	Transit Management Center	corridor operational strategies			
runner Management System Maint and Constr Management Center field equipment status	Tunnel Management System		Maint and Constr Management Center	field equipment status			

olution Name:	DDS: TMDD - OMG DDS			Number of Issues: 3 Total Issue Severity: 43		43		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Invetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies			Urgent	Australia, European Union, United States	
Course				this Issue that would be addressed by the Proposed Resolution				
Source Border Inspection Sys	stem		tination Iffic Management Center	Flow Nai	wait times data			
Border Inspection Sys			Insportation Information Center		crossing status information			
Center			chived Data Center		archive data			
Center		Dai	ta Distribution System	operatio	ional data			
Center		Dai	ta Distribution System	traveler	r information distribution data	ta		
Center		Ma	int and Constr Management Center	equipmo	nent maintenance request			
Commercial Vehicle	Administration Center	Fle	et and Freight Management Center	route re	estrictions			
Commercial Vehicle A	Administration Center	Oth	ner CV Administration Centers	route re	estrictions			
Commercial Vehicle A	Administration Center	Tra	Insportation Information Center	route re	estrictions			
Data Distribution Sys	tem	Cei	nter	operatio	ional data			
Data Distribution Sys	tem	Cer	nter	regional	al situation data			
Emergency Managem	nent Center	Tra	ffic Management Center	emerge	ency traffic control request			
Emergency Managem	nent Center	Tra	ffic Management Center	incident	t information			
Emergency Managem	nent Center	Tra	insportation Information Center	incident	t information			
Emissions Manageme	ent Center	Tra	insportation Information Center	air quali	lity information			
Fleet and Freight Mar	nagement Center	Cor	mmercial Vehicle Administration Center	route re	estrictions			
Maint and Constr Ma	nagement Center	Cer	nter	equipme	nent maintenance status			
Maint and Constr Ma	nagement Center	Cor	mmercial Vehicle Administration Center	current	t infrastructure restrictions			
Maint and Constr Ma	nagement Center	Em	ergency Management Center	road we	eather information			
Maint and Constr Ma	nagement Center	Ma	p Update System	current	t infrastructure restrictions			
Maint and Constr Ma	nagement Center	Sur	face Transportation Weather Service	road we	eather information			
Maint and Constr Ma	nagement Center	Tra	ffic Management Center	current	t infrastructure restrictions			
Maint and Constr Ma	nagement Center	Tra	ffic Management Center	environ	nmental conditions data			
Maint and Constr Ma	nagement Center	Tra	ffic Management Center	equipme	nent maintenance status			
Maint and Constr Ma	nagement Center	Tra	ffic Management Center	work zo	one information			
Maint and Constr Ma	nagement Center	Tra	nsit Management Center	current	t infrastructure restrictions			
Maint and Constr Ma	nagement Center	Tra	insportation Information Center	current	t infrastructure restrictions			
Maint and Constr Ma	nagement Center		insportation Information Center	environ	nmental conditions data			
Maint and Constr Ma	nagement Center	Tra	insportation Information Center	maint a	and constr work plans			
Maint and Constr Ma	nagement Center	Tra	insportation Information Center	road we	eather information			

Oble of Crif deviate Indexes Comment Indexes Comment Indexes Comment Indexes Oble of Time Standards Crizaci Yould Management Center device of the Automation Contract device of the Automation Contract Other Time Standards Crizaci Yould Management Center device of the Automation Contract device of the Automation Contract Other Time Standards Crizaci Trail to Management Center Intel Contract Intel C	ution Name: DDS: TMDD - OMG DDS		Number of Issues: 3 Total Issue Severity: 43
One year faile Management Centres Environment Centres device Central Management Centres device Central Management Centres Other yaniff, Monagement Centres Enfil Management Centres device Management Centres Other Yaniff, Monagement Centres Test Management Centres index Management Centres Other Yaniff, Monagement Centres Test Management Centres centre Management Centres Other Yaniff, Monagement Centres Test Management Centres centre Management Centres Other Yaniff, Monagement Centres Test Management Centres centre Management Centres Other Yaniff, Monagement Centres Test Management Centres centre Management Centres Other Yaniff, Monagement Centres Test Management Centres centre Monagement Centres Other Yaniff, Monagement Centres Test Monagement Centres centres Cent	Maint and Constr Management Center	Transportation Information Center	work zone information
Ober 1 raffe Management Cortex Taffe Management Cortex device data Ober 1 raffe Management Cortex Taffe Management Cortex concent of management Cortex Ober 1 raffe Management Cortex traffe Management Cortex concent of management Cortex Ober 1 raffe Management Cortex traffe Management Cortex traffe Management Cortex Ober 1 raffe Management Cortex traffe Management Cortex traffe Management Cortex Ober 1 raffe Management Cortex transportation followated Cortex traffe Management Cortex Ober 1 raffe Management Cortex transportation followated Cortex concent of management cortex Ober 1 ransportation followated Cortex transportation followated Cortex concent for management cortex Ober 1 ransportation followated Cortex transportation followated Cortex traffe for management for formation Cortex Ober 1 ransportation followated Cortex traffe formation Cortex traffe formation Cortex Ober 2 ransportation followated Cortex traffe formation Cortex traffe formation Cortex Ober 3 ransportation followated Cortex traffe formation Cortex traffe formation Cortex Ober 3 ransportation followated Cortex traffe formation Cortex traffe formation Cortex	Other CV Administration Centers	Commercial Vehicle Administration Center	route restrictions
Chris Trafe Management Castors Trafe Management Castors close in Management Castors close in Management Castors Other Traff & Management Castors Traff Management Castors control Manageme	Other Traffic Management Centers	Traffic Management Center	device control request
Table Management Centers Table Management Ce	Other Traffic Management Centers	Traffic Management Center	device data
Christ Traffer Management Centers Traffer Management Centers Intelle Management Centers	Other Traffic Management Centers	Traffic Management Center	device status
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Other Transportation Information Centers Transportation Information Centers load network conditions Other Transportation Information Centers transportation Information Centers trailing control transportation Information Centers trailing control Service Monitor System Center Annion Annion SEE fault data Service Monitor System Maint and Constr Management Center transportation weather information Surface Transportation Weather Service Maint and Constr Management Center transportation weather information Surface Transportation Weather Service Trailing Management Center transportation weather information Surface Transportation Weather Service Trailing Management Center transportation weather information Surface Transportation Weather Service Trailing Management Center transportation weather information Trailing Management Center Institute Transportation Meather Service transportation Information Center Trailing Management Center Institute Transportation Meather Service road network conditions Trailing Management Center Center Service Trailing Management Center road network conditions Trailing Management Center Anni and Constr Management Center road networ	Other Transportation Information Centers	Transportation Information Center	emergency traveler information
Other Transportation Information Centers Transportation Information Centers staffic image meta data Other Transportation Information Centers Transportation Information Centers staffic image Societies Ministries Systems Center See Fault data Surface Transportation Weather Service Maint and Constr Management Center transportation weather Information Surface Transportation Weather Service Intellegate Transportation Weather Service transportation weather Information Surface Transportation Weather Service Transportation Information Center transportation weather Information Surface Transportation Weather Service Transportation Information Center transportation weather Information Surface Transportation Weather Service Transportation Information Center transportation weather Information Transfer Amagement Center transportation Weather Service transportation Weather Information Transfer Amagement Center transportation Weather Service transportation Weather Information Transfer Amagement Center transportation weather Information transportation Weather Information Transfer Amagement Center transportation weather Information transportation Weather Information Transfer Amageme	Other Transportation Information Centers	Transportation Information Center	incident information
Other Transportation Information Centers Fransportation Information Centers Center Center All Center All Maint and Center Management Center Surface Transportation Weather Service Maint and Center Management Center Transportation Weather Service	Other Transportation Information Centers	Transportation Information Center	road network conditions
Service Monitor System Maint and Constr Management Center Script Manage	Other Transportation Information Centers	Transportation Information Center	traffic image meta data
Service Monitor System Maint and Constr Management Center transportation Weather Service Service Meansportation Weather Service Maint and Constr Management Center transportation Weather Service Maint and Constr Management Center transportation Weather Service Maint and Constr Management Center transportation Weather Service Management Center transportation Weather Management Center transportation Weather Management Center development Management Center (Service Management Center Manage	Other Transportation Information Centers	Transportation Information Center	traffic images
Surface Transportation Weather Service Maint and Constr Management Center transportation Weather Service Transportation Meather Service Transportation Meather Service Transportation Information Center Transportation Weather Service Transportation Information Center Transportation Meather Service Transportation Meather Service Transportation Meather Service Transportation Information Center Transportation Meather Service Transportation Weather Service Transporta	Service Monitor System	Center	RSE fault data
Surface Transportation Weather Service Transportation Weather Service Transportation Weather Service Transportation Weather Service Transportation Meather Service Transportation	Service Monitor System	Maint and Constr Management Center	RSE fault data
Surface Transportation Weather Service Transportation Weather	Surface Transportation Weather Service	Emergency Management Center	transportation weather information
Surface Transportation Weather Service transportation weather information Transportation Weather Service transportation was described by the Service Service Content of Content Service Content	Surface Transportation Weather Service	Maint and Constr Management Center	transportation weather information
Traffic Management Center Emergency Management Center Emergency Management Center Incident information incident in	Surface Transportation Weather Service	Traffic Management Center	transportation weather information
Traffic Management Center Incident Information Traffic Management Center Incident Information Traffic Management Center Incident Incident Information Traffic Management Center Incident Incident Incident Information Traffic Management Center Incident Information Traffic Management Center Incident Incident Incident Information Traffic Management Center Incident Incident Informat	Surface Transportation Weather Service	Transportation Information Center	transportation weather information
Traffic Management Center from the Management Ce	Traffic Management Center	Emergency Management Center	emergency traffic control information
Traffic Management Center Fleet and Freight Management Center road network conditions Traffic Management Center Fleet and Freight Management Center route restrictions Traffic Management Center Maint and Constr Management Center equipment maintenance request Traffic Management Center Maint and Constr Management Center fleet equipment status Traffic Management Center Maint and Constr Management Center fleet equipment status Traffic Management Center National Maint and Constr Management Center fleet equipment status Traffic Management Center National Maint and Constr Management Center fleet equipment indirent information Traffic Management Center National Maint and Constr Management Center fleet equipment indirent information Traffic Management Center Other Traffic Management Centers device control request Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information	Traffic Management Center	Emergency Management Center	incident information
Traffic Management Center Maint and Constr Management Center Traffic Management Center	Traffic Management Center	Emergency Management Center	road network conditions
Traffic Management Center Traffic Management Center Traffic Management Center Maint and Constr Management Center Maint and Constr Management Center Traffic Management Center Maint and Constr Management Center Maint and Constr Management Center Maint and Constr Management Center Traffic Management Center Traffic Management Center Maint and Constr Management Center Traffic Management Center Traffic Management Center Traffic Management Center Traffic Management Center Other Traffic Management Centers device control request Traffic Management Center Traffic Management Center Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Other Traffic Management Centers other Traffic Ma	Traffic Management Center	Emissions Management Center	road network conditions
Traffic Management Center Traffic Management Center Maint and Constr Management Center Traffic Management Center Maint and Constr Management Center Maint and Constr Management Center Traffic Management Center Other Traffic Management Centers Maint and Constr Management Centers Maint and Constr Management Center Maint and Constr M	Traffic Management Center	Fleet and Freight Management Center	road network conditions
Traffic Management Center Traffic Management Center Maint and Constr Management Center incident information Traffic Management Center Other Traffic Management Centers Other Traffic Management Centers Traffic Management Center Traffic Management Center Traffic Management Center Other Traffic Management Centers Other Traffic Management Centers Traffic Management Center Other Traffic Management Centers Traffic Management Center Other Traffic Management Centers Other Traff	Traffic Management Center	Fleet and Freight Management Center	route restrictions
Traffic Management Center Traffic Management Center Maint and Constr Management Center Maint and Constr Management Center Traffic Management Center Traffic Management Center Other Traffic Management Centers device control request Traffic Management Center Traffic Management Center Other Traffic Management Centers device data Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Traffic Management Center Other Traffic Management Centers other Traffic Management Centers Traffic Management Center Other Traffic Management Centers other Traffic Man	Traffic Management Center	Maint and Constr Management Center	equipment maintenance request
Traffic Management Center Other Traffic Management Center device control request Traffic Management Center Other Traffic Management Centers device data Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers road network conditions	Traffic Management Center	Maint and Constr Management Center	field equipment status
Traffic Management Center Other Traffic Management Centers device control request Traffic Management Center device data Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information	Traffic Management Center	Maint and Constr Management Center	incident information
Traffic Management Center Other Traffic Management Centers device data Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers road network conditions	Traffic Management Center	Maint and Constr Management Center	road network conditions
Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers road network conditions	Traffic Management Center	Other Traffic Management Centers	device control request
Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center other other or oad network conditions	Traffic Management Center	Other Traffic Management Centers	device data
Traffic Management Center Other Traffic Management Centers road network conditions	Traffic Management Center	Other Traffic Management Centers	device status
	Traffic Management Center	Other Traffic Management Centers	incident information
Traffic Management Center Other Traffic Management Centers traffic image meta data	Traffic Management Center	Other Traffic Management Centers	road network conditions
	Traffic Management Center	Other Traffic Management Centers	traffic image meta data

DDS: TMDD - OMG DDS		Number of Issues:	3	Total Issue Severity:	43	
Traffic Management Center	Other Traffic Management Centers	traffic images				
Traffic Management Center	Transit Management Center	incident information				
Traffic Management Center	Transit Management Center	road network conditions				
Traffic Management Center	Transportation Information Center	incident information				
Traffic Management Center	Transportation Information Center	regional situation data				
Traffic Management Center	Transportation Information Center	road network conditions				
Traffic Management Center	Transportation Information Center	traffic control information				
Traffic Management Center	Transportation Information Center	traffic image meta data				
Traffic Management Center	Transportation Information Center	traffic images				
Transportation Information Center	Archived Data Center	regional situation data				
Transportation Information Center	Emergency Management Center	corridor operational strategies				
Transportation Information Center	Emergency Management Center	road network conditions				
Transportation Information Center	Emergency Management Center	road weather advisories				
Transportation Information Center	Emissions Management Center	corridor operational strategies				
Transportation Information Center	Fleet and Freight Management Center	incident information				
Transportation Information Center	Fleet and Freight Management Center	road network conditions				
Transportation Information Center	Fleet and Freight Management Center	road weather advisories				
Transportation Information Center	Maint and Constr Management Center	corridor operational strategies				
Transportation Information Center	Other Transportation Information Centers	emergency traveler information				
Transportation Information Center	Other Transportation Information Centers	incident information				
Transportation Information Center	Other Transportation Information Centers	road network conditions				
Transportation Information Center	Other Transportation Information Centers	traffic image meta data				
Transportation Information Center	Other Transportation Information Centers	traffic images				
Transportation Information Center	Traffic Management Center	corridor operational strategies				
Transportation Information Center	Traffic Management Center	regional situation data				
Transportation Information Center	Transit Management Center	corridor operational strategies				
Tunnel Management System	Maint and Constr Management Center	field equipment status				

Solution Name: DDS: UBL - OMG DDS 2 Total Issue Severity: 11

This solution is used within the U.S. It combines standards associated with US: UBL with those for C-C: OMG DDS. The US: UBL standards include upper-layer standards required to implement shipment related information flows. The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (non-critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: J3067; ATIS; Incident management; UBL; some J2735; some NTCIP. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Medium-term	United States

lution Name:	DDS: UBL - OMG DDS			Number of Issues: 2 To	otal Issue Severity:	11
Source			Friples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Fleet and Freight Mana	agement Center	Fre	ight Distribution and Logistics Center	freight transportation status		
Freight Distribution an	d Logistics Center	Int	ermodal Customer System	freight transportation status		
Freight Distribution an	d Logistics Center	Int	ermodal Terminal	freight transportation status		
Intermodal Customer S	System	Fre	ight Distribution and Logistics Center	freight transport booking		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
nvetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, Europear Union, United State
Course				this Issue that would be addressed by the Proposed Resolution		
Source Fleet and Freight Mana	agement Center		itination ight Distribution and Logistics Center	Flow Name freight transportation status		
Freight Distribution an			ermodal Customer System	freight transportation status		
Freight Distribution an	d Logistics Center	Int	ermodal Terminal	freight transportation status		
Intermodal Customer S	System	Fre	eight Distribution and Logistics Center	freight transport booking		
olution Name:	EU: Probe Data - Mobile Internet (X.509)	1		Number of Issues: 1 To	otal Issue Severity:	3
is solution is used wit	thin the U.S., E.U., and Australia. It combines sta	andards associate 9) standards inclu	de lower-layer standards that sup	e for I-M: Mobile Internet (X.509). The EU: Probe Data standards include upper-layer standard poort secure communications between two entities, either or both of which may be actively innection method.		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not ully defined	The performance rules are not fully defined for this information flow.	Medium	C-V: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between vehicles and remote interested parties (e.g., centres).	Urgent	Australia, Europear Union, United State

Is	sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
fu	erformance not Illy defined nedium)	The performance rules are not fully defined for this information flow.	Medium	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between vehicles and remote interested parties (e.g., centres).		Urgent	Australia, Euro Union, United	
					this Issue that would be addressed by the Proposed Resolution			
	Source		Des	tination	Flow Name			
	Vehicle OBE Transportation Information Center		nsportation Information Center	vehicle situation data				

Number of Issues: Total Issue Severity: **Solution Name:** EU: TPEG2 - Internet (X.509)

This solution is used within the E.U., and Australia. It combines standards associated with EU: TPEG2 with those for I-I: Internet (X.509). The EU: TPEG2 standards include upper-layer standards required to support multi-modal information services.. The I-I: Internet (X.509) standards include lower-layer standards that support secure communications between two entities, based on X.509 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Intneret connection method.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-V: Secure communications	Develop one or more internationally acceptable, secure, centre-vehicle communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States

Soli	ution Name:	EU: TPEG2 - Internet (X.509)		Number of Issues:	1	Total Issue Severity:	3
	Source	Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolutio Destination		e			
	Traffic Management Center	Media traffic	ic info	ormation for media			
	Transportation Information Co	nter Media traffic	ic info	ormation for media			
	Transportation Information Co	nter Media travel	eler in	formation for media			
	Transportation Information Co	nter Wide Area Information Disseminator travel	eler in	formation for media			

Solution Name: F-F: Highway-Rail Field Interface - Internet (US)

This solution is used within the U.S. It combines upper layer standards that for the interface between the rail subsystem and the highway subsystem at a highway rail intersection with lower-layer standards that support standard Internet-based

nks.								
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability		
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to	Urgent	Australia, European Union, United States		
				misbehave).				

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution			
Source	Destination	Flow Name	
Connected Vehicle Roadside Equipment	Wayside Equipment	rail crossing blockage notification	
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	arriving train information	
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	track status	
ITS Roadway Equipment	Wayside Equipment	rail crossing blockage notification	
Multi-Modal Crossing	Connected Vehicle Roadside Equipment	multimodal crossing status	
Multi-Modal Crossing	ITS Roadway Equipment	multimodal crossing status	
Wayside Equipment	Connected Vehicle Roadside Equipment	arriving train information	
Wayside Equipment	Connected Vehicle Roadside Equipment	track status	
Wayside Equipment	ITS Roadway Equipment	arriving train information	
Wayside Equipment	ITS Roadway Equipment	track status	

Solution Name: F-F: Highway-Rail Field Interface - OMG DDS RPC 1 Total Issue Severity: 3

This solution is used within the U.S.. It combines standards associated with F-F: Highway-Rail Field Interface with those for I-F: OMG DDS RPC. The F-F: Highway-Rail Field Interface standards include upper layer standards that for the interface between the rail subsystem and the highway subsystem at a highway rail intersection. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

centre over a new communication link						
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.		Australia, European Union, United States
		Information	Triples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		De	stination	Flow Name		
Connected Vehicle Roadside Equipment Wayside Equipment		ayside Equipment	rail crossing blockage notification			
Connected Vehicle Roadside Equipment Wayside Equipment		avside Equipment	rail crossing operational status			

Solution Name:	F-F: Highway-Rail Field Interface - OMG DDS RPC			Number of Issues:	1	Total Issue Severity:	3	
ITS Roadway Equipment		Connected Vehicle Roadside Equipment	track stati	us				
ITS Roadway Equipment		Wayside Equipment	rail crossii	ng blockage notification				
ITS Roadway Equipment		Wayside Equipment	rail crossii	ng operational status				
Multi-Modal Crossing		Connected Vehicle Roadside Equipment	multimod	lal crossing status				
Multi-Modal Crossing		ITS Roadway Equipment	multimod	lal crossing status				
Wayside Equipment		Connected Vehicle Roadside Equipment	track state	us				
Wayside Equipment		ITS Roadway Equipment	track state	us				

Solution Name: F-F: Highway-Rail Field Interface - SNMPv3 1 Total Issue Severity: 1

This solution is used within the U.S.. It combines standards associated with F-F: Highway-Rail Field Interface with those for I-F: SNMPv3. The F-F: Highway-Rail Field Interface standards include upper layer standards that for the interface between the rail subsystem and the highway subsystem at a highway rail intersection. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.		Australia, European Union, United States
		Information 7	Friples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution		
Source			stination	Flow Name		
Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment Wayside Equipment Wayside Equipment		ayside Equipment	rail crossing blockage notification			
		ayside Equipment	rail crossing operational status			

Source	Destination	Flow Name
Connected Vehicle Roadside Equipment	Wayside Equipment	rail crossing blockage notification
Connected Vehicle Roadside Equipment	Wayside Equipment	rail crossing operational status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	track status
ITS Roadway Equipment	Wayside Equipment	rail crossing blockage notification
ITS Roadway Equipment	Wayside Equipment	rail crossing operational status
Multi-Modal Crossing	Connected Vehicle Roadside Equipment	multimodal crossing status
Multi-Modal Crossing	ITS Roadway Equipment	multimodal crossing status
Wayside Equipment	Connected Vehicle Roadside Equipment	track status
Wayside Equipment	ITS Roadway Equipment	track status

Solution Name: Flow-Specific Data - Mobile Internet (US) 7 Total Issue Severity: 6

This solution is used within the U.S.. It combines standards associated with Flow-Specific Data with those for I-M: Mobile Internet (US). The Flow-Specific Data standards include a placeholder for upper-layer standards necessary to complete a solution for a generic support information flow. Prior to implementation, specific upper-layer standards need to be identified to tailor the flow to meet the specific data exchange needs.. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States

Solution Name:	Flow-Specific Data - Mobile Internet (US))			Number of Issues: 2	Total Issue Severity:	6
Course				this Issue that would be addressed by the Proposed Re			
Source Data Distribution Syste	em		tination sonal Information Device		Flow Name data publication		
Data Distribution Syste			sonal Information Device		data query publication		
Data Distribution Syste			nicle OBE		data publication		
Data Distribution Syste			nicle OBE		data query publication		
Personal Information D			a Distribution System		data provision		
Personal Information E			a Distribution System		data query		
Personal Information E			a Distribution System		data subscription		
Vehicle OBE	Serie		a Distribution System		data provision		
Vehicle OBE			a Distribution System				
Vehicle OBE			a Distribution System		data query data subscription		
		1			uata subscription		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	Develop ITS-wide reference data model	Develop an internationally representative IT better data sharing across disparate enterprentities, working groups, and standards dev	rise systems with data defined by different		Australia, European Union, United State
				this Issue that would be addressed by the Proposed Re			
Source Data Distribution Syste	am		tination sonal Information Device		Flow Name data publication		
Data Distribution Syste			sonal Information Device		data query publication		
Data Distribution Syste			nicle OBE		data publication		
					·		
Data Distribution Syste			nicle OBE		data query publication		
Personal Information D			a Distribution System		data provision		
Personal Information D			a Distribution System		data query		
Personal Information E	Device		a Distribution System		data subscription		
Vehicle OBE			a Distribution System		data provision		
Vehicle OBE			a Distribution System		data query		
Vehicle OBE		Dat	a Distribution System		data subscription		

Solution Name: Flow-Specific Data - NTCIP Messaging 9

This solution is used within the U.S. and Australia. It combines standards associated with Flow-Specific Data with those for C-C: NTCIP Messaging. The Flow-Specific Data standards include a placeholder for upper-layer standards necessary to complete a solution for a generic support information flow. Prior to implementation, specific upper-layer standards need to be identified to tailor the flow to meet the specific data exchange needs.. The C-C: NTCIP Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the US.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer	Urgent	Australia, European Union, United States
				standards will need to be updated to document data in appropriate format(s).		

Solution Name:	Flow-Specific Data - NTCIP Messaging		Number of Issues: 3	otal Issue Severity:	9
Comme			d by this Issue that would be addressed by the Proposed Resolution		
Source		Destination Data Distribution System	Flow Name data provision		
Center		Data Distribution System	data query		
Center		Data Distribution System	data subscription		
Data Distribution Syste	em	Center	data publication		
Data Distribution Syste		Center	data query publication		
Data Distribution Syste		Other Data Distribution Systems	data provision		
Data Distribution Syste		Other Data Distribution Systems	data publication		
Data Distribution Syste		Other Data Distribution Systems	data query		
Data Distribution Syste		Other Data Distribution Systems	data query publication		
Data Distribution Syste		Other Data Distribution Systems	data subscription		
Other Data Distributio		Data Distribution System	data provision		
Other Data Distributio		Data Distribution System	data publication		
Other Data Distributio		Data Distribution System	data query		
Other Data Distributio	n Systems	Data Distribution System	data query publication		
Other Data Distribution	n Systems	Data Distribution System	data subscription		
Other Data Distributio	iii Systems		data subscription		
Issue	Issue Description	Issue Severity Proposed Resolution	Resolution Description	Timeframe	Applicability
Issue				Urgent	Applicability Australia, Europ Union, United S
Data not fully defined (medium)	Issue Description Some of the data elements for this	Issue Severity Proposed Resolution Medium Develop ITS-wide reference data model Information Triples using this solution and affected	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution	Urgent	Australia, Euro _l
Data not fully defined (medium) Source	Issue Description Some of the data elements for this	Issue Severity Proposed Resolution Medium Develop ITS-wide reference data model Information Triples using this solution and affected Destination	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center	Issue Description Some of the data elements for this	Issue Severity Proposed Resolution Medium Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center	Issue Description Some of the data elements for this	Issue Severity Proposed Resolution Medium Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Center	Some of the data elements for this information flow are not fully defined.	Issue Severity Proposed Resolution Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Center Data Distribution System	Some of the data elements for this information flow are not fully defined.	Issue Severity Proposed Resolution Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data publication	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Center Data Distribution Syste	Issue Description Some of the data elements for this information flow are not fully defined.	Issue Severity Proposed Resolution Medium Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center Center	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data publication data query publication	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Center Data Distribution Syste	Issue Description Some of the data elements for this information flow are not fully defined.	Issue Severity Proposed Resolution Medium Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center Center Other Data Distribution Systems	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data publication data query publication data provision	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Data Distribution Syste Data Distribution Syste Data Distribution Syste	Issue Description Some of the data elements for this information flow are not fully defined. em em em em	Issue Severity Proposed Resolution Medium Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center Center Other Data Distribution Systems Other Data Distribution Systems	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data publication data publication data provision data provision data publication	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Data Distribution Syste	Issue Description Some of the data elements for this information flow are not fully defined. em em em em em	Issue Severity Proposed Resolution Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center Center Other Data Distribution Systems Other Data Distribution Systems Other Data Distribution Systems	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data publication data query publication data provision data provision data publication data publication data query	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Data Distribution Syste	Issue Description Some of the data elements for this information flow are not fully defined. em em em em em em em em em	Issue Severity Proposed Resolution Medium Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center Center Other Data Distribution Systems Other Data Distribution Systems	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data publication data publication data provision data provision data publication	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Data Distribution Syste	Issue Description Some of the data elements for this information flow are not fully defined. em em em em em em em em em	Issue Severity Proposed Resolution Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center Center Other Data Distribution Systems	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data publication data query publication data provision data publication data query publication data query data query publication data query	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Center Data Distribution Syste	Issue Description Some of the data elements for this information flow are not fully defined. em em em em em em em em em e	Issue Severity Proposed Resolution Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center Center Other Data Distribution Systems	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data query publication data provision data provision data publication data publication data query data query publication data query data query publication	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Center Data Distribution Syste Other Data Distribution	Issue Description Some of the data elements for this information flow are not fully defined. em em em em em em em em em e	Issue Severity Proposed Resolution Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center Center Other Data Distribution Systems Data Distribution Systems	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data publication data provision data provision data query publication data query data query data query data query data query data query publication data provision data provision data provision data provision data provision data provision data publication	Urgent	Australia, Euro _l
Data not fully defined (medium) Source Center Center Data Distribution Syste Other Data Distribution Syste Other Data Distribution	Issue Description Some of the data elements for this information flow are not fully defined. em em em em em em em em em e	Issue Severity Proposed Resolution Develop ITS-wide reference data model Information Triples using this solution and affected Destination Data Distribution System Data Distribution System Data Distribution System Center Center Other Data Distribution Systems Data Distribution Systems Data Distribution System	Resolution Description Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations. d by this Issue that would be addressed by the Proposed Resolution Flow Name data provision data query data subscription data publication data provision data provision data query publication data query data query publication data query data query publication data provision	Urgent	Australia, Euro _l

Solution Name:	Flow-Specific Data - NTCIP Messaging			Number of Issues: 3	otal Issue Severity	9
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Dialogs are not fully defined (medium)	The specific dialogs for exchanging this data have not been fully defined.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
c				y this Issue that would be addressed by the Proposed Resolution		
Source Center			stination ta Distribution System	Flow Name data provision		
Center			ta Distribution System	data query		
Center			ta Distribution System	data subscription		
Data Distribution Syst	em	Cer	nter	data publication		
Data Distribution Syst	em	Cer	nter	data query publication		
Data Distribution Syst	em	Oth	her Data Distribution Systems	data provision		
Data Distribution Syst	em	Oth	her Data Distribution Systems	data publication		
Data Distribution Syst	em	Oth	her Data Distribution Systems	data query		
Data Distribution Syst	em	Oth	her Data Distribution Systems	data query publication		
Data Distribution Syst	em	Oth	her Data Distribution Systems	data subscription		
Other Data Distribution	n Systems	Da	ta Distribution System	data provision		
Other Data Distribution	n Systems	Da	ta Distribution System	data publication		
Other Data Distribution	n Systems	Da	ta Distribution System	data query		
Other Data Distribution	on Systems	Da	ta Distribution System	data query publication		
Other Data Distribution	n Systems	Da	ta Distribution System	data subscription		

Solution Name: Flow-Specific Data - OMG DDS

Total Issue Severity: 6

This solution is used within the LLS. It combines standards associated with Flow-Specific Data with those for C-C: OMG DDS. The Flow-Specific Data standards include a placeholder for upper-layer standards necessary to complete a solution for a

This solution is used within the U.S.. It combines standards associated with Flow-Specific Data with those for C-C: OMG DDS. The Flow-Specific Data standards include a placeholder for upper-layer standards necessary to complete a solution for a generic support information flow. Prior to implementation, specific upper-layer standards need to be identified to tailor the flow to meet the specific data exchange needs.. The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

ecure data sharing between publishers and subscribers over a traditional internet link										
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability				
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	Develop ITS-wide reference data model	Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations.	Urgent	Australia, European Union, United States				
				by this Issue that would be addressed by the Proposed Resolution						
Source		De	stination	Flow Name						
Center		Da	ta Distribution System	data provision						
Center		Da	ta Distribution System	data query						
Center		Da	ta Distribution System	data subscription						
Data Distribution Sys	stem	Ce	nter	data publication						
Data Distribution Sys	stem	Ce	nter	data query publication						
Data Distribution Sys	stem	Ot	her Data Distribution Systems	data provision						

olution Name:	Flow-Specific Data - OMG DDS		Number of Issues: 2 Total Issue Severity: 6	
Data Distribution System	1	Other Data Distribution Systems	data publication	
Data Distribution System	ı	Other Data Distribution Systems	data query	
Data Distribution System	1	Other Data Distribution Systems	data query publication	
Data Distribution System	1	Other Data Distribution Systems	data subscription	
Data Distribution System	1	Personal Information Device	data publication	
Data Distribution System	n	Personal Information Device	data query publication	
Data Distribution System	1	Vehicle OBE	data publication	
Data Distribution System	1	Vehicle OBE	data query publication	
Other Data Distribution	Systems	Data Distribution System	data provision	
Other Data Distribution	Systems	Data Distribution System	data publication	
Other Data Distribution	Systems	Data Distribution System	data query	
Other Data Distribution	Systems	Data Distribution System	data query publication	
Other Data Distribution	Systems	Data Distribution System	data subscription	
Personal Information De	evice	Data Distribution System	data provision	
Personal Information De	evice	Data Distribution System	data query	
Personal Information De	evice	Data Distribution System	data subscription	
Vehicle OBE		Data Distribution System	data provision	
Vehicle OBE		Data Distribution System	data query	
Vehicle OBE		Data Distribution System	data subscription	

Solution Name:	Flow-Specific Data - OMG DDS			Number of Issues: 2	otal Issue Severity	6
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Center			ta Distribution System	data provision		
Center			ta Distribution System	data query		
Center		Da	ta Distribution System	data subscription		
Data Distribution Sy	stem	Cei	nter	data publication		
Data Distribution Sy	stem	Cei	nter	data query publication		
Data Distribution Sy	stem	Otl	her Data Distribution Systems	data provision		
Data Distribution Sy	stem	Otl	her Data Distribution Systems	data publication		
Data Distribution Sy	stem	Otl	her Data Distribution Systems	data query		
Data Distribution Sy	stem	Otl	her Data Distribution Systems	data query publication		
Data Distribution Sy	stem	Otl	her Data Distribution Systems	data subscription		
Data Distribution Sy	stem	Per	rsonal Information Device	data publication		
Data Distribution Sy	stem	Per	rsonal Information Device	data query publication		
Data Distribution Sy	stem	Ve	hicle OBE	data publication		
Data Distribution Sy	stem	Ve	hicle OBE	data query publication		
Other Data Distribut	tion Systems	Da	ta Distribution System	data provision		
Other Data Distribut	tion Systems	Da	ta Distribution System	data publication		
Other Data Distribut	tion Systems	Da	ta Distribution System	data query		
Other Data Distribut	tion Systems	Da	ta Distribution System	data query publication		
Other Data Distribut	tion Systems	Da	ta Distribution System	data subscription		
Personal Informatio	n Device	Da	ta Distribution System	data provision		
Personal Informatio	n Device	Da	ta Distribution System	data query		
Personal Informatio	n Device	Da	ta Distribution System	data subscription		
Vehicle OBE		Da	ta Distribution System	data provision		
Vehicle OBE		Da	ta Distribution System	data query		
Vehicle OBE		Da	ta Distribution System	data subscription		

Solution Name: Flow-Specific Data - OMG DDS RPC 2 Total Issue Severity: 6

This solution is used within the U.S.. It combines standards associated with Flow-Specific Data with those for I-F: OMG DDS RPC. The Flow-Specific Data standards include a placeholder for upper-layer standards necessary to complete a solution for a generic support information flow. Prior to implementation, specific upper-layer standards need to be identified to tailor the flow to meet the specific data exchange needs.. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Solution Name:	Flow-Specific Data - OMG DDS RPC			Number of Issues: 2 T	otal Issue Severity:	6
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	Develop ITS-wide reference data model	Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment	Da	ta Distribution System	data provision		
Connected Vehicle Ro	padside Equipment	Da	ta Distribution System	data query		
Connected Vehicle Ro	padside Equipment	Da	ta Distribution System	data subscription		
Data Distribution Sys	tem	Co	Connected Vehicle Roadside Equipment data publication			
Data Distribution Sys	tem	Connected Vehicle Roadside Equipment		data query publication		
lssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
				this Issue that would be addressed by the Proposed Resolution		
Source Connected Vehicle Ro	padside Equipment		ta Distribution System	Flow Name data provision		
Connected Vehicle Ro			ta Distribution System	data query		
Connected Vehicle Ro			ta Distribution System	data subscription		
Data Distribution Sys	tem	Co	nnected Vehicle Roadside Equipment	data publication		
Data Distribution Sys	tem	Co	nnected Vehicle Roadside Equipment	data query publication		
Solution Name:	Flow-Specific Data - SNMPv3			Number of Issues: 2 T	otal Issue Severity:	4
This solution is used w generic support inforn	rithin the U.S It combines standards associated nation flow. Prior to implementation, specific up	per-layer standard	ls need to be identified to tailor t	B. The Flow-Specific Data standards include a placeholder for upper-layer standards necessary he flow to meet the specific data exchange needs The I-F: SNMPv3 standards include lower entations are strongly encouraged to use the TLS for SNMP security option for this solution to	to complete a solut	t support

sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
se TLS for SNMP ption	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	oadside Equipment		ta Distribution System	data provision		
Connected Vehicle R	oadside Equipment	Da	ta Distribution System	data query		
Connected Vehicle R	oadside Equipment	Da	ta Distribution System	data subscription		
Data Distribution Sys	tem	Co	nnected Vehicle Roadside Equipment	data publication		
Data Distribution Sys	tem	Co	nnected Vehicle Roadside Equipment	data query publication		

olution Name:	Flow-Specific Data - SNMPv3				Number of Issues:	2	Total Issue Severity:	4	
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability	
Data not fully Jefined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	Develop ITS-wide reference data model	Develop an internationally representative ITS-wide better data sharing across disparate enterprise systematics, working groups, and standards development	ems with data defined b			Australia, Eur Union, United	•
Source			Friples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Nan	ne				
Connected Vehicle Roa	adside Equipment	Da	ta Distribution System	data pro	vision				
Connected Vehicle Roa	adside Equipment	Da	ta Distribution System	data que	ry				
Connected Vehicle Roa	adside Equipment	Da	ta Distribution System	data sub:	scription				
Data Distribution Syste	em	Col	nnected Vehicle Roadside Equipment	data pub	lication				
Data Distribution Syste	em	Cor	nnected Vehicle Roadside Equipment	data que	ry publication				

This solution is used within the U.S.. It combines standards associated with Flow-Specific Data with those for Apache Kafka. The Flow-Specific Data standards include a placeholder for upper-layer standards necessary to complete a solution for a generic support information flow. Prior to implementation, specific upper-layer standards need to be identified to tailor the flow to meet the specific data exchange needs.. The Apache Kafka standards include lower-layer open source code that supports data distribution of specific types of data.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Open source software	This is open-source software rather than a documented interface specification standardized through a formal and open process.	Low	_	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States

1 1		TI TI
	Information Triples using this solution and affected by this Issue that would be a	
Source	Destination	Flow Name
Center	Data Distribution System	data provision
Center	Data Distribution System	data query
Center	Data Distribution System	data subscription
Connected Vehicle Roadside Equipment	Data Distribution System	data provision
Connected Vehicle Roadside Equipment	Data Distribution System	data query
Connected Vehicle Roadside Equipment	Data Distribution System	data subscription
Data Distribution System	Center	data publication
Data Distribution System	Center	data query publication
Data Distribution System	Connected Vehicle Roadside Equipment	data publication
Data Distribution System	Connected Vehicle Roadside Equipment	data query publication
Data Distribution System	Other Data Distribution Systems	data provision
Data Distribution System	Other Data Distribution Systems	data publication
Data Distribution System	Other Data Distribution Systems	data query
Data Distribution System	Other Data Distribution Systems	data query publication
Data Distribution System	Other Data Distribution Systems	data subscription
Data Distribution System	Personal Information Device	data publication

lution Name:	Flow-Specific Data - Apache Kafka		Number of Issues: 3 Total Issue Severity: 7
Data Distribution System		Personal Information Device	data query publication
Data Distribution System		Vehicle OBE	data publication
Data Distribution System		Vehicle OBE	data query publication
Other Data Distribution Syste	ems	Data Distribution System	data provision
Other Data Distribution Syste	ems	Data Distribution System	data publication
Other Data Distribution Syste	ems	Data Distribution System	data query
Other Data Distribution Syste	ems	Data Distribution System	data query publication
Other Data Distribution Syste	ems	Data Distribution System	data subscription
Personal Information Device		Data Distribution System	data provision
Personal Information Device		Data Distribution System	data query
Personal Information Device		Data Distribution System	data subscription
Vehicle OBE		Data Distribution System	data provision
Vehicle OBE		Data Distribution System	data query
Vehicle OBE		Data Distribution System	data subscription

olution Name:	Flow-Specific Data - Apache Kafka			Number of Issues: 3	Total Issue Severity	7
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	Develop ITS-wide reference data model	Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Center		Da	ta Distribution System	data provision		
Center		Da	ta Distribution System	data query		
Center		Da	ta Distribution System	data subscription		
Connected Vehicle Ro	oadside Equipment	Da	ta Distribution System	data provision		
Connected Vehicle Ro	oadside Equipment	Da	ta Distribution System	data query		
Connected Vehicle Ro	padside Equipment	Da	ta Distribution System	data subscription		
Data Distribution Sys	tem	Cer	nter	data publication		
Data Distribution Syst	tem	Cer	nter	data query publication		
Data Distribution Sys	tem	Co	nnected Vehicle Roadside Equipment	data publication		
Data Distribution Sys	tem	Co	nnected Vehicle Roadside Equipment	data query publication		
Data Distribution Sys	tem	Otl	ner Data Distribution Systems	data provision		
Data Distribution Syst	tem	Otl	ner Data Distribution Systems	data publication		
Data Distribution Sys	tem	Oti	ner Data Distribution Systems	data query		
Data Distribution Sys	tem	Otl	ner Data Distribution Systems	data query publication		
Data Distribution Sys	tem	Otl	ner Data Distribution Systems	data subscription		
Data Distribution Sys	tem	Per	sonal Information Device	data publication		
Data Distribution Sys	tem	Per	sonal Information Device	data query publication		
Data Distribution Syst	tem	Ve	nicle OBE	data publication		
Data Distribution Sys	tem	Ve	nicle OBE	data query publication		
Other Data Distribution	on Systems	Da	ta Distribution System	data provision		
Other Data Distribution	on Systems	Da	ta Distribution System	data publication		
Other Data Distribution	on Systems	Da	ta Distribution System	data query		
Other Data Distribution	on Systems	Da	ta Distribution System	data query publication		
Other Data Distribution	on Systems	Da	ta Distribution System	data subscription		
Personal Information	Device	Da	ta Distribution System	data provision		
Personal Information	Device	Da	ta Distribution System	data query		
Personal Information	Device	Da	ta Distribution System	data subscription		
Vehicle OBE		Da	ta Distribution System	data provision		
Vehicle OBE		Da	ta Distribution System	data query		
Vehicle OBE		Da	ta Distribution System	data subscription		

Solution Name:	Flow-Specific Data - Apache Kafka			Number of Issue	s: 3	Total Issue Severity	7
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to among multiple ITS subsystems on an as-needed basis in a more effici scalable manner than existing approaches. Determine where the use technologies might be appropriate, and what impacts the adoption of would have on ITS standards efforts.	ent, secure, and of these	Urgent	Australia, Europea Union, United Stat
		Information 1	- Triples using this solution and affected by	r this Issue that would be addressed by the Proposed Resolution			
Source			stination	Flow Name			
Center			ta Distribution System	data provision			
Center			ta Distribution System	data query			
Center			ta Distribution System	data subscription			
Connected Vehicle F			ta Distribution System	data provision			
Connected Vehicle F			ta Distribution System	data query			
Connected Vehicle F			ta Distribution System	data subscription			
Data Distribution Sys			nter	data publication			
Data Distribution Sys			nter	data query publication			
Data Distribution Sys			nnected Vehicle Roadside Equipment	data publication			
Data Distribution Sys	tem	Co	nnected Vehicle Roadside Equipment	data query publication			
Data Distribution Sys	tem	Otl	her Data Distribution Systems	data provision			
Data Distribution Sys	stem	Otl	her Data Distribution Systems	data publication			
Data Distribution Sys	tem	Otl	her Data Distribution Systems	data query			
Data Distribution Sys	stem	Otl	her Data Distribution Systems	data query publication			
Data Distribution Sys	stem	Otl	her Data Distribution Systems	data subscription			
Data Distribution Sys	stem	Pei	rsonal Information Device	data publication			
Data Distribution Sys	stem	Pei	rsonal Information Device	data query publication			
Data Distribution Sys	stem	Ve	hicle OBE	data publication			
Data Distribution Sys	stem	Ve	hicle OBE	data query publication			
Other Data Distribut	ion Systems	Da	ta Distribution System	data provision			
Other Data Distribut	ion Systems	Da	ta Distribution System	data publication			
Other Data Distribut	ion Systems	Da	ta Distribution System	data query			
Other Data Distribut	ion Systems	Da	ta Distribution System	data query publication			
Other Data Distribut	ion Systems	Da	ta Distribution System	data subscription			
Personal Informatio	n Device	Da	ta Distribution System	data provision			
Personal Informatio	n Device	Da	ta Distribution System	data query			
Personal Informatio	n Device	Da	ta Distribution System	data subscription			
Vehicle OBE		Da	ta Distribution System	data provision			
Vehicle OBE		Da	ta Distribution System	data query			
Vehicle OBE		Da	ta Distribution System	data subscription			

Solution Name:	Flow-Specific Data - Apache Kafka	Number of Issues:	3	Total Issue Severity:	7
Solution Name:	ISO: Equipment Identification - Local Unicast Wireless (US)	Number of Issues:	1	Total Issue Severity:	3

This solution is used within the U.S.. It combines standards associated with ISO: Equipment Identification with those for V-X: Local Unicast Wireless (US). The ISO: Equipment Identification standards include upper-layer standards required to implement equipment identification flows. The V-X: Local Unicast Wireless (US) standards include lower-layer standards that support local-area unicast wireless solutions, such as DSRC technologies, LTE, etc.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
				y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Freight Fauinment		Co	nected Vehicle Roadside Equipment	container identification		

container identification

location and time

Solution Name: ISO: Equipment Identification - NTCIP Messaging 1 Total Issue Severity: 3

This solution is used within the U.S. It combines standards associated with ISO: Equipment Identification with those for C-C: NTCIP Messaging. The ISO: Equipment Identification standards include upper-layer standards required to implement equipment identification flows. The C-C: NTCIP Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the US.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States

Source Destination Flow Name

Connected Vehicle Roadside Equipment Intermodal Terminal container identification

Vehicle OBE

Intermodal Terminal

Solution Name: Location/Time reference - Positioning 1 Total Issue Severity: 3

This solution is used within the U.S., E.U., and Australia. It combines standards associated with Location/Time reference with those for Positioning. The Location/Time reference standards include upper-layer standards required to obtain location and time information from a satellite-positioning-system-based geolocation receiver. The Positioning standards include lower-layer standards that support communications between connected ITS equipment and geolocation equipment such as a GPS receiver.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ecurity inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	Secure and accurate location and time standards	Develop/adopt an internationally acceptable standard/solution for synchronising and continuously maintaining location and time information throughout the ITS environment in a secure and reliable manner with sufficient accuracy (including leap seconds) and confidence.	Urgent	Australia, European Union, United States
		Information 1	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Field Location and Tim	ne Data Source	Co	nnected Vehicle Roadside Equipment	location and time		
Personal Location and	Time Data Source	Per	sonal Information Device	location and time		

Freight Equipment

Vehicle Location and Time Data Source

Solution Name:	NTP - UDP/IP	Number of Issues:	1	Total Issue Severity:	3				
Solution Name:	NTP - UDP/IP	Number of Issues:	1	Total Issue Severity:	3				
This solution is used within the U.S It combines standards associated with NTP with those for I-I: UDP/IP. The NTP standards include standards required to reliably set time information in a subsystem. The I-I: UDP/IP standards include lower-layer									
standards that support the N	letwork Time Protocol that allows NTP servers to provide time synchronization services to other NTP servers and clients.								

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	Secure and accurate location and time standards	Develop/adopt an internationally acceptable standard/solution for synchronising and continuously maintaining location and time information throughout the ITS environment in a secure and reliable manner with sufficient accuracy (including leap seconds) and confidence.	Urgent	Australia, Euro Union, United S
	-	Information ⁻	Triples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Network Time Source		Ce	nter	time		
Network Time Source		Da	ta Distribution System	time		
Network Time Source		Sei	rvice Monitor System	time		
Service Monitor Syste	m	Ce	nter	time local form		
Service Monitor Syste	m	Da	ta Distribution System	time local form		

Total Issue Severity: Number of Issues: **Solution Name:** TMC - Internet (US) This solution is used within the U.S.. It combines standards associated with TMC with those for I-I: Internet (US). The TMC standards include upper-layer standards required to support multi-modal information services to the vehicle.. The I-I:

Internet (US) standards include lower-layer standards that support secure communications between ITS equipment using X.509 or IEEE 1609.2 security certificates.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-V: Secure communications	Develop one or more internationally acceptable, secure, centre-vehicle communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).		Australia, European Union, United States

Transportation Information Center Wide Area Information Disseminator broadcast traveler information

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States

Wide Area Information Disseminator Transportation Information Center broadcast traveler information

Solution Name:	TMC - Internet (US)			Number of Issues: 3 To	otal Issue Severity	9
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not fully defined (medium)	The performance rules are not fully defined for this information flow.	Medium	C-C: WAID	Develop an internationally acceptable ITS application specification for providing information from a centre to a WAID for wide-area dissemination.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center		de Area Information Disseminator	broadcast traveler information		
Solution Name:	TMC - Wide Area Broadcast (Upper)			Number of Issues: 3 To	otal Issue Severity	r 7
his solution is used w ervices to the vehicle	rithin the U.S., E.U., and Australia. It combines sta	ls include lower-l		Vide Area Broadcast (Upper). The TMC standards include upper-layer standards required to su entity broadcasting information to all wireless devices over an area that covers at least a met	pport multi-mod	al information
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-V: Secure communications	Develop one or more internationally acceptable, secure, centre-vehicle communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	mation Center	Per	sonal Information Device	broadcast traveler information		
Transportation Inform	mation Center	Vel	nicle OBE	broadcast traveler information		
Wide Area Information	on Disseminator	Per	sonal Information Device	wide area broadcast traveler information		
Wide Area Information	on Disseminator	Vehicle OBE		broadcast traveler information		
Wide Area Information	on Disseminator	Vel	nicle OBE	wide area broadcast traveler information		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Ubiquitous broadcast technology	With the continual enhancement of broadcast technologies and a mixture of free and subscriber-based systems, it is difficult to identify any single technology that can be used to reliably reach the bulk of drivers in a timely manner.	Low	C-V: Wide-area broadcast subnet and hybrid communications	Standardise one or more mechanisms by which wide-area broadcast messages can be received by a defined minimum percentage of transportation users that are currently operating within a specified geographic area. The required minimum percentage is dependent on the type of information being transmitted and will need to be determined by the expert community. Some alerts (e.g., tornado warnings) will require near 100% reception, while other messages (e.g., road works ahead) may require significantly lower minimum percentages. The minimum percentage may be made up with a variety of technologies using hybrid communications and the ITS station architecture.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center	Per	sonal Information Device	broadcast traveler information		
Transportation Inform	nation Center	Vel	nicle OBE	broadcast traveler information		
Wide Area Information	on Disseminator	Per	sonal Information Device	wide area broadcast traveler information		
Wide Area Information	on Disseminator	Vel	nicle OBE	broadcast traveler information		
	on Disseminator	Val	nicle OBE	wide area broadcast traveler information		

olution Name:	TMC - Wide Area Broadcast (Upper)			Number of Issues: 3 To	tal Issue Severit	y: 7	
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
Performance not ully defined medium)	The performance rules are not fully defined for this information flow.	Medium	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union	
Source			riples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name			
Transportation Inform	nation Center	Ve	nicle OBE	broadcast traveler information			
Wide Area Information Disseminator		Ve	Vehicle OBE broadcast traveler information				
olution Name:	TPEG2 - Guaranteed Internet (X.509)			Number of Issues: 2 To	tal Issue Severit	y: 6	
				Guaranteed Internet (X.509). The TPEG2 standards include upper-layer standards required to some with guaranteed delivery between ITS equipment using mainstream Internet security stand		odal information	
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
ecurity inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-V: Secure communications	Develop one or more internationally acceptable, secure, centre-vehicle communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States	
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name			
Traffic Management	Center		de Area Information Disseminator	traffic information for media			
Transportation Inform	nation Center	Wi	de Area Information Disseminator	broadcast traveler information			
Transportation Inform	nation Center	Wi	de Area Information Disseminator	traffic information for media			
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
erformance not ully defined nedium)	The performance rules are not fully defined for this information flow.	Medium	C-C: WAID	Develop an internationally acceptable ITS application specification for providing information from a centre to a WAID for wide-area dissemination.	Urgent	Australia, European Union, United State	
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name			
Transportation Inform	nation Center		de Area Information Disseminator	broadcast traveler information			
olution Name:	TPEG2 - Local Broadcast Wireless (US)			Number of Issues: 4 To	tal Issue Severit	y: 12	

This solution is used within the U.S.. It combines standards associated with TPEG2 with those for V-X: Local Broadcast Wireless (US). The TPEG2 standards include upper-layer standards required to support multi-modal information services.. The V-X: Local Broadcast Wireless (US) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-V: Secure communications	Develop one or more internationally acceptable, secure, centre-vehicle communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States

Solution Name:	TPEG2 - Local Broadcast Wireless (US)			Number of Issues: 4 To	otal Issue Severity:	12
Comme				y this Issue that would be addressed by the Proposed Resolution		
Source Connected Vehicle Ro	padsida Equipment		tination hicle OBE	Flow Name lane closure information		
connected venicle no	vausiue Equipment	Ve	nicle ODL	latic closure information		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	lane closure information		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Overlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium	V-X: DENM, IVI, TPEG2, TMC and Contextual Speed Information	Standardise on a single solution for providing traveler information, lane closure information and speed information; currently this information can be sent via DENM, IVI, TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc).	Urgent	Australia, European Union
Source			Triples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution		
Connected Vehicle Ro	padside Equipment		hicle OBE			
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not fully defined	The performance rules are not fully defined for this information flow.	Medium	V-L: US traveler information	Develop an ITS application specification for providing in-vehicle signage and other traveler information to the vehicle from the roadside. This will also need to address issues such as when and how to locally generate traveler information messages and how to sign these messages.	Urgent	United States
(medium)				and the second s		
(medium) Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		

Solution Name: TPEG2 - Mobile Internet (US) Total Issue Severity: 47

This solution is used within the U.S.. It combines standards associated with TPEG2 with those for I-M: Mobile Internet (US). The TPEG2 standards include upper-layer standards required to support multi-modal information services.. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

Source Emergency Management Cent Fleet and Freight Management Maint and Constr Management Maint and Constr Management	nmunications security for the information le, which potentially jeopardizes C-ITS rations.	Des Em	C-V: Secure communications Triples using this solution and affected by tination ergency Vehicle OBE	Develop one or more internationally acceptable, secure, centre-vehicle communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s). By this Issue that would be addressed by the Proposed Resolution Flow Name Suggested route	Urgent	Australia, European Union, United States
Emergency Management Cent Fleet and Freight Management Maint and Constr Managemen Maint and Constr Managemen	ent Center	Des Em	tination	Flow Name		
Emergency Management Cent Fleet and Freight Management Maint and Constr Management Maint and Constr Management	ent Center	Em				
Fleet and Freight Management Maint and Constr Managemen Maint and Constr Managemen	ent Center		ergency vernere obt			
Maint and Constr Managemen Maint and Constr Managemen				road weather advisories		
Maint and Constr Managemen	Personal Information Device			road weather advisories		
_	aint and Constr Management Center Vehicle OBE		road weather advisories			
Maint and Constr Management Center Vehicle OBE		work zone information				
Traffic Management Center Vehicle OBE			lane closure information			
Traffic Management Center Vehicle OBE			speed management information			
Traffic Management Center Vehicle OBE			vehicle signage data			
Transportation Information Ce	Center	Veh	nicle OBE	road weather advisories		
ie Issue	e Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ned layers	formance, functionality, and the upperers of the OSI stack have not been defined this information flow.	Ultra	V-X: DENM, IVI, TPEG2, TMC and Contextual Speed Information	Standardise on a single solution for providing traveler information, lane closure information and speed information; currently this information can be sent via DENM, IVI, TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc).	Urgent	Australia, European Union
				by this Issue that would be addressed by the Proposed Resolution		
Source Transportation Information Ce	Santa.		tination nicle OBE	Flow Name road weather advisories		

	TPEG2 - Mobile Internet (US)	1.			tal Issue Severit	
e	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ertainty about revocation hanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United State
ource			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Managem	ent Center		ergency Vehicle OBE	suggested route		
leet and Freight Man	agement Center	Cor	mmercial Vehicle OBE	road weather advisories		
Maint and Constr Management Center		Per	sonal Information Device	road weather advisories		
laint and Constr Mar	nagement Center	Vel	nicle OBE	road weather advisories		
aint and Constr Mar	nagement Center	Vel	nicle OBE	work zone information		
Traffic Management Center		Vel	nicle OBE	lane closure information		
Traffic Management Center		Vel	nicle OBE	speed management information		
Traffic Management Center		Vehicle OBE		vehicle signage data		
ransportation Inform	nation Center	Vel	nicle OBE	road weather advisories		
2	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
lap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium	V-X: DENM, IVI, TPEG2, TMC and Contextual Speed Information	Standardise on a single solution for providing traveler information, lane closure information and speed information; currently this information can be sent via DENM, IVI, TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc).	Urgent	Australia, European Union
ource			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Fraffic Management (Center		nicle OBE	lane closure information		
		Janua Carravitus	Dranged Pasalution	Resolution Description	Timeframe	Applicability
2	Issue Description	Issue Severity	Proposed Resolution	nesolution Description	Timename	
e rlap of standards		Medium	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.		Australia, Europear Union
	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this	Medium Information 1	C-V: In-vehicle signage			Australia, Europear

lution Name:	TPEG2 - Mobile Internet (US)			Number of Issues: 6 To	tal Issue Severity:	47
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
formance not y defined edium)	The performance rules are not fully defined for this information flow.	Medium	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union
Source			Triples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management (Center		nicle OBE	lane closure information		
e	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
case not sidered in design dium)	While the indicated standards nominally address the information flow, the design may not meet practical constraints because this particular use case was not the focus of the design effort.	Medium	C-V: Weather information	Update the international ITS application specification to address road weather advisories.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center		nicle OBE	road weather advisories		
e	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
case not sidered in design dium)	While the indicated standards nominally address the information flow, the design may not meet practical constraints because this particular use case was not the focus of the design effort.	Medium	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management (Center		nicle OBE	vehicle signage data		
tion Name:	TPEG2 - Mobile Internet (X.509)			Number of Issues: 5 To	otal Issue Severity:	44
solution is used wi ces The I-M: Mo	thin the U.S., E.U., and Australia. It combines sta	er standards that	support secure communications	Mobile Internet (X.509). The TPEG2 standards include upper-layer standards required to supplet between two entities, either or both of which may be actively moving; based on X.509 certification.	oort multi-modal i	nformation
ie	Issue Description	 	Proposed Resolution	Resolution Description	Timeframe	Applicability
urity inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS	Medium	C-V: Secure communications	Develop one or more internationally acceptable, secure, centre-vehicle communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as	Urgent	Australia, European Union, United States

traveler information

traveler information

Personal Information Device

Vehicle OBE

Data Distribution System

Data Distribution System

	TPEG2 - Mobile Internet (X.509)			Number of Issues: 5 To	otal Issue Severity:	44	
Emergency Manageme	ent Center	Em	ergency Vehicle OBE	suggested route			
Maint and Constr Mana	agement Center	Vel	nicle OBE	work zone information			
Traffic Management Ce	enter	Per	sonal Information Device	traffic demand management information			
Traffic Management Ce	enter	Vel	nicle OBE	lane closure information	lane closure information		
Traffic Management Ce	enter	Vel	nicle OBE	traffic demand management information			
Traffic Management Ce	enter	Veh	nicle OBE	vehicle signage data			
Transportation Informa	ation Center	Vel	nicle OBE	road weather advisories			
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
eata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-X: DENM, IVI, TPEG2, TMC and Contextual Speed Information	Standardise on a single solution for providing traveler information, lane closure information and speed information; currently this information can be sent via DENM, IVI, TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc).	Urgent	Australia, European Union	
				y this Issue that would be addressed by the Proposed Resolution			
Transportation Information Center			tination nicle OBE	Flow Name road weather advisories			
Transportation mornic	ation center	۷۵۱	incic ODE	Todd Weather advisories			
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
verlap of standards	Issue Description Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Issue Severity Medium	C-V: In-vehicle signage	Resolution Description Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.		Australia, European Union	
verlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this	Medium Information 1	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. y this Issue that would be addressed by the Proposed Resolution		Australia, European	
verlap of standards Source	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium Information 1 Des	C-V: In-vehicle signage Triples using this solution and affected be tination	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. y this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European	
verlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium Information 1 Des	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. y this Issue that would be addressed by the Proposed Resolution		Australia, European	
verlap of standards Source Traffic Management Ce	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium Information T Des Vel	C-V: In-vehicle signage Triples using this solution and affected be tination	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. y this Issue that would be addressed by the Proposed Resolution Flow Name	Urgent	Australia, European	
Source Traffic Management Ce	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium Information T Des Vel	C-V: In-vehicle signage Triples using this solution and affected be tination and affected be tination.	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. y this Issue that would be addressed by the Proposed Resolution Flow Name vehicle signage data	Urgent	Australia, European Union	
Source Traffic Management Ce sue verlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow. Issue Description Multiple standards have been developed to address this information and it is unclear which standard should be used to address this	Information To Des Vel Issue Severity Medium	C-V: In-vehicle signage Triples using this solution and affected betination nicle OBE Proposed Resolution V-X: DENM, IVI, TPEG2, TMC and Contextual Speed Information	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. This Issue that would be addressed by the Proposed Resolution Flow Name vehicle signage data Resolution Description Standardise on a single solution for providing traveler information, lane closure information and speed information; currently this information can be sent via DENM, IVI, TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special	Urgent	Australia, European Union Applicability Australia, European	

Solution Name:	TPEG2 - Mobile Internet (X.509)			Number of Issues: 5 To	tal Issue Severity:	44
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not fully defined (medium)	The performance rules are not fully defined for this information flow.	Medium	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management Center		Vehicle OBE		lane closure information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use case not considered in design (medium)	While the indicated standards nominally address the information flow, the design may not meet practical constraints because this particular use case was not the focus of the design effort.	Medium	C-V: Weather information	Update the international ITS application specification to address road weather advisories.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center	Vel	nicle OBE	road weather advisories		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use case not considered in design (medium)	While the indicated standards nominally address the information flow, the design may not meet practical constraints because this particular use case was not the focus of the design effort.	Medium	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management C	Center		nicle OBE	vehicle signage data		
Solution Name:	TPEG2 - NTCIP Messaging			Number of Issues: 2 To	tal Issue Severity:	6
	thin the U.S. and Australia. It combines standard			P Messaging. The TPEG2 standards include upper-layer standards required to support multi-movo centres as commonly used in the US.	odal information so	ervices The

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
				Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).		

olution Name:	TPEG2 - NTCIP Messaging			Number of Issues: 2 To	otal Issue Severity:	6
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	Transportation Information Center		de Area Information Disseminator	broadcast traveler information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-V: Secure communications	Develop one or more internationally acceptable, secure, centre-vehicle communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).		Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center		de Area Information Disseminator	broadcast traveler information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not fully defined medium)	The performance rules are not fully defined for this information flow.	Medium	C-C: WAID	Develop an internationally acceptable ITS application specification for providing information from a centre to a WAID for wide-area dissemination.		Australia, European Union, United State
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center	Wi	de Area Information Disseminator	broadcast traveler information		
olution Name:	TPEG2 - Wide Area Broadcast (Upper)			Number of Issues: 3 To	otal Issue Severity:	7

Solution Name: TPEG2 - Wide Area Broadcast (Upper) 3 Total Issue Severity: 7

This solution is used within the U.S., E.U., and Australia. It combines standards associated with TPEG2 with those for C-X: Wide Area Broadcast (Upper). The TPEG2 standards include upper-layer standards required to support multi-modal

information services.. The C-X: Wide Area Broadcast (Upper) standards include lower-layer standards include lower-layer standards include lower-layer standards that support one entity broadcasting information to all wireless devices over an area that covers at least a metropolitan area without any expectation of acknowledgement or response; security is provided by the upper-layers.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-V: Secure communications	Develop one or more internationally accept standards and define rules on when to use e support for authentication, authorization, conneeded. Once the application layer standards standards will need to be updated to docum	each one. The standard(s) should include onfidentiality, and non-repudiation, as d(s) are developed, most ITS Information Layer	Urgent	Australia, Europear Union, United State
Carrier				y this Issue that would be addressed by the Proposed Re			
Source		Des	tination		Flow Name		
Transportation Inform	nation Center	Per	rsonal Information Device		broadcast traveler information		
Transportation Inform	nation Center	Vel	nicle OBE		broadcast traveler information		
Wide Area Informatio	on Disseminator	Per	sonal Information Device		wide area broadcast traveler information		
Wide Area Informatio	on Disseminator	Vel	nicle OBE		broadcast traveler information		
			nicle OBE		wide area broadcast traveler information		

Solution Name:	TPEG2 - Wide Area Broadcast (Upper)			Number of Issues: 3 To	tal Issue Severit	y: 7
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Ubiquitous broadcast technology	With the continual enhancement of broadcast technologies and a mixture of free and subscriber-based systems, it is difficult to identify any single technology that can be used to reliably reach the bulk of drivers in a timely manner.	Low	C-V: Wide-area broadcast subnet and hybrid communications	Standardise one or more mechanisms by which wide-area broadcast messages can be received by a defined minimum percentage of transportation users that are currently operating within a specified geographic area. The required minimum percentage is dependent on the type of information being transmitted and will need to be determined by the expert community. Some alerts (e.g., tornado warnings) will require near 100% reception, while other messages (e.g., road works ahead) may require significantly lower minimum percentages. The minimum percentage may be made up with a variety of technologies using hybrid communications and the ITS station architecture.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected stination	d by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Information Center		Personal Information Device		broadcast traveler information		
Transportation Information Center		Vehicle OBE		broadcast traveler information		
Wide Area Information Disseminator		Personal Information Device		wide area broadcast traveler information		
Wide Area Information Disseminator		Vehicle OBE		broadcast traveler information		
Wide Area Information Disseminator		Vehicle OBE		wide area broadcast traveler information		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not Illy defined nedium)	The performance rules are not fully defined for this information flow.	Medium	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union
Source				by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Information Center		Destination Vehicle OBE		broadcast traveler information		
Wide Area Information Disseminator		Vehicle OBE		broadcast traveler information		
olution Name:	US: ATIS - Internet (US)			Number of Issues: 2 To	tal Issue Severit	y : 6
	within the U.S It combines standards associated within the U.S It combines standards that support secu			ne US: ATIS standards include upper-layer standards required to implement traveler information ng X.509 or IEEE 1609.2 security certificates.	communications	. The I-I:

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution					
Source	Destination	Flow Name			
Traffic Management Center	Wide Area Information Disseminator	traffic information for media			
Transportation Information Center	Wide Area Information Disseminator	traffic information for media			
Transportation Information Center	Wide Area Information Disseminator	traveler information for media			

olution Name:	US: ATIS - Internet (US)			Number of Issues: 2	Total Issue Severity:	6
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Overlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium	C-C: TCIP/IM/TMDD/ATIS for incident information	Standardise on a single solution for providing incident and incident management information; currently this information is defined within APTA TCIP, IEEE 1512 (IM), ITE TMDD, and SAE ATIS.	Urgent	United States
		Information 1	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Traffic Management C	enter	Wi	de Area Information Disseminator	traffic information for media		

Solution Name: US: ATIS - Mobile Internet (US)

Total Issue Severity: 3

This solution is used within the U.S.. It combines standards associated with US: ATIS with those for I-M: Mobile Internet (US). The US: ATIS standards include upper-layer standards required to implement traveler information communications. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

endpoint may connec	to the wide-area-wireless service provider using	any intheret conf	lection method.			
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
		Information 1	riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Data Distribution Sys	tem	Per	sonal Information Device	traveler information		
Data Distribution Sys	tem	Vel	nicle OBE	traveler information		

Data Distribution System	Personal Information Device	traveler information
Data Distribution System	Vehicle OBE	traveler information
Personal Information Device	Data Distribution System	traveler request
Personal Information Device	Transportation Information Center	traveler request
Transportation Information Center	Personal Information Device	interactive traveler information
Transportation Information Center	Vehicle OBE	interactive traveler information
Vehicle OBE	Data Distribution System	traveler request
Vehicle OBF	Transportation Information Center	traveler request

Solution Name: US: ATIS - NTCIP Messaging 2 Total Issue Severity: 6

This solution is used within the U.S.. It combines standards associated with US: ATIS with those for C-C: NTCIP Messaging. The US: ATIS standards include upper-layer standards required to implement traveler information communications. The C-C: NTCIP Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the US.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
				Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).		

ion Name:	US: ATIS - NTCIP Messaging			Number of Issues: 2	Total Issue Severity	: 6
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Fleet and Freight Mai	nagement Center		ansportation Information Center	route request		
Other Transportation			ansportation Information Center	multimodal information		
Other Transportation			ansportation Information Center	parking information		
Parking Management			affic Management Center	parking information		
Parking Management			ansit Management Center	parking information		
Parking Management			ansportation Information Center	parking information		
Traffic Management			edia	traffic information for media		
Transportation Inforr		Fle	eet and Freight Management Center	route plan		
Transportation Inforr			edia	traffic information for media		
Transportation Inforr		M	edia	traveler information for media		
Transportation Inforr		Ot	her Transportation Information Centers	multimodal information		
Transportation Inforr			ther Transportation Information Centers	parking information		
Travel Services Provio			ansportation Information Center	travel service information		
ue	Issue Description	1	Proposed Resolution	Resolution Description	Timeframe	Applicability
erlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium	C-C: TCIP/IM/TMDD/ATIS for incident information	Standardise on a single solution for providing incident and incident management information; currently this information is defined within APTA TCIP, IEEE 1512 (IM), ITE TMDD, and SAE ATIS.	Urgent	United States
				this Issue that would be addressed by the Proposed Resolution		
Source Traffic Management	Center		stination edia	Flow Name traffic information for media		
Transportation Inform			ther Transportation Information Centers	multimodal information		
·			•			
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this	Medium	C-C: ATIS/TMDD/TCIP for parking information	Standardise on a single solution for providing parking information; currently this information is defined within ATIS, TMDD, and TCIP (using alternative approaches).	Urgent	United States
	specific information flow.					
Source	specific information flow.			this Issue that would be addressed by the Proposed Resolution Flow Name		
Source Other Transportation		Des	Triples using this solution and affected by stination ansportation Information Center	this Issue that would be addressed by the Proposed Resolution Flow Name parking information		
	n Information Centers	Des Tra	stination	Flow Name		
Other Transportation	n Information Centers t System	Des Tra Tra	stination ansportation Information Center	Flow Name parking information		
Other Transportation Parking Management	n Information Centers t System t System	Des Tra Tra Tra	ansportation Information Center affic Management Center	Flow Name parking information parking information		

This solution is used within the U.S.. It combines standards associated with US: ATIS with those for C-C: OMG DDS. The US: ATIS standards include upper-layer standards required to implement traveler information communications. The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

United States	Urgent	gle solution for providing incident and incident management tly this information is defined within APTA TCIP, IEEE 1512 (IM), ITE 5.	C-C: TCIP/IM/TMDD/ATIS for incident information		Issue Description	
		ddressed by the Proposed Resolution		Medium	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	verlap of standards
		Flow Name	Triples using this solution and affected b stination			Source
		traffic information for media	Media		Center	Traffic Management C
		multimodal information	her Transportation Information Centers	Ot	nation Center	Transportation Inform
Applicability	Timeframe	ion	Proposed Resolution	Issue Severity	Issue Description	ssue
United States	Urgent	gle solution for providing parking information; currently this ed within ATIS, TMDD, and TCIP (using alternative approaches).	C-C: ATIS/TMDD/TCIP for parking information	Medium	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Overlap of standards
		ddressed by the Proposed Resolution Flow Name	Triples using this solution and affected b stination			Source
		parking information	ansportation Information Center		Information Centers	Other Transportation
		parking information	affic Management Center	Tra	System	Parking Management
		parking information	ansit Management Center	Tra	System	Parking Management
		parking information	Transportation Information Center		System	Parking Management
		parking information		Ot	nation Center	Transportation Inform
		parking information parking information	ansit Management Center	Tra Tra	System System	Parking Management Parking Management

Solution Name:	US: ATIS - OMG DDS			Number of Issues: 2 T	otal Issue Severity	6
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Fleet and Freight Man	nagement Center		ansportation Information Center	route request		
Other Transportation	Information Centers	Tra	ansportation Information Center	multimodal information		
Other Transportation	Information Centers	Tra	ansportation Information Center	parking information		
Parking Management	System	Tra	affic Management Center	parking information		
Parking Management	System	Tra	ansit Management Center	parking information		
Parking Management	System	Tra	ansportation Information Center	parking information		
Traffic Management (Center	Me	edia	traffic information for media		
Transportation Inform	nation Center	Fle	et and Freight Management Center	route plan		
Transportation Inform	nation Center	Me	edia	traffic information for media		
Transportation Inform	nation Center	Me	edia	traveler information for media		
Transportation Inform	nation Center	Otl	her Transportation Information Centers	multimodal information		
Transportation Inform	nation Center	Otl	her Transportation Information Centers	parking information		
Travel Services Provid	ler System	Tra	ansportation Information Center	travel service information		

Solution Name: US: Incident Management - Guaranteed Mobile Internet (US), with WAVE alternative

This solution is used within the U.S.. It combines standards associated with US: Incident Management with those for V-X: Guaranteed Mobile Internet (US), with WAVE alternative. The US: Incident Management standards include upper-layer standards required to implement centre-to-centre communications for incident management data. The V-X: Guaranteed Mobile Internet (US), with WAVE alternative standards include lower-layer standards that support secure communications with guaranteed delivery between two entities, either or both of which may be actively moving; based on X.509 or 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method. This set of standards includes WAVE as one alternative, which may be used in remote areas without cell coverage.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
trust revocation	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States

Number of Issues:

Number of Issues:

1

Total Issue Severity:

Total Issue Severity:

3

Source	Information Triples using this solution and affected by this issue that woul Destination	Flow Name
Emergency Vehicle OBE	Other EV OBEs	decision support information
Other EV OBEs	Emergency Vehicle OBE	decision support information

Solution Name: US: Incident Management - Guaranteed Mobile Internet (X.509)

This solution is used within the U.S.. It combines standards associated with US: Incident Management with those for I-M: Guaranteed Mobile Internet (X.509). The US: Incident Management standards include upper-layer standards required to implement centre-to-centre communications for incident management data. The I-M: Guaranteed Mobile Internet (X.509) standards include lower-layer standards that support secure communications with guaranteed delivery between two entities, either or both of which may be actively moving; based on X.509 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

Solution Name:	US: Incident Management - Guaranteed	Mobile Internet (X.509)		Number of Issues:	1 To	otal Issue Severity:	3
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe A	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation revoking the privileges of a certificate authority (e.g. recognized within a region) and of an ITS station (e.g misbehave).	, if an authority is no longer			Australia, European Jnion, United States
_				this Issue that would be addressed by the Proposed Resolution				
Source		Des	tination	Flow Name				
Emergency Vehicle OI	BE .	Car	e Facility	patient sta	atus			
Solution Name:	US: Incident Management - Mobile Inter	net (US)			Number of Issues:	1 To	otal Issue Severity:	3

This solution is used within the U.S.. It combines standards associated with US: Incident Management with those for I-M: Mobile Internet (US). The US: Incident Management standards include upper-layer standards required to implement centre-to-centre communications for incident management data. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, Europea Union, United Stat
		Information T	Friples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Emergency Managem	ent Center	Em	ergency Vehicle OBE	decision support information		
Emergency Vehicle Of	BE	Em	ergency Management Center	incident status		
Fleet and Freight Mar	agement Center	Cor	mmercial Vehicle OBE	hazmat information		

Solution Name: US: Incident Management - NTCIP Messaging 2 Total Issue Severity: 6

This solution is used within the U.S.. It combines standards associated with US: Incident Management with those for C-C: NTCIP Messaging. The US: Incident Management standards include upper-layer standards required to implement centre-to-centre communications for incident management data. The C-C: NTCIP Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the US.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States
		Information 1	Triples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Emergency Managem	ent Center	Em	nergency Telecommunications System	incident information for public		
Emergency Managem	ent Center	Ma	aint and Constr Management Center	emergency plan coordination		
Emergency Managem	ent Center	Ma	aint and Constr Management Center	evacuation information		
Emergency Managem	ent Center	Otl	her Emergency Management Centers	emergency plan coordination		
Emergency Managem	ent Center	Ot	her Emergency Management Centers	incident report		

Solution Name:	US: Incident Management - NTCIP Messa	ging			Number of Issues: 2	Total Issue Severity:	6
Emergency Manageme	ent Center	Rai	Operations Center		emergency plan coordination		
Emergency Manageme	ent Center	Rai	Operations Center		evacuation information		
Emergency Manageme	ent Center	She	lter Provider Center		evacuation information		
Emergency Manageme	ent Center	Tra	ffic Management Center		emergency plan coordination		
Emergency Manageme	ent Center	Tra	ffic Management Center		emergency route request		
Emergency Manageme	ent Center	Tra	ffic Management Center		evacuation information		
Emergency Manageme	ent Center	Tra	nsit Management Center		emergency plan coordination		
Emergency Manageme	ent Center	Tra	nsit Management Center		evacuation information		
Emergency Manageme	ent Center	Tra	nsportation Information Center		evacuation information		
Fleet and Freight Man	agement Center	Em	ergency Management Center		hazmat information		
Maint and Constr Man	agement Center	Em	ergency Management Center		emergency plan coordination		
Other Emergency Mar	agement Centers	Em	ergency Management Center		emergency plan coordination		
Other Emergency Mar	agement Centers	Em	ergency Management Center		incident report		
Rail Operations Center		Em	ergency Management Center		emergency plan coordination		
Shelter Provider Cente	r	Em	ergency Management Center		shelter information		
Shelter Provider Cente	r	Tra	nsportation Information Center		shelter information		
Traffic Management C	enter	Em	ergency Management Center		emergency plan coordination		
Traffic Management C	enter	Em	ergency Management Center		emergency routes		
Transit Management (Center	Em	ergency Management Center		emergency plan coordination		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Overlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium	C-C: TCIP/IM/TMDD/ATIS for incident information	Standardise on a single solution for providing information; currently this information is dependent on the standard standard services of the stand	ng incident and incident management efined within APTA TCIP, IEEE 1512 (IM), ITE	Urgent	United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Re	esolution Flow Name		
Emergency Manageme	ent Center		ner Emergency Management Centers		incident report		
Other Emergency Mar	agement Centers		ergency Management Center		incident report		
olution Name:	US: Incident Management - OMG DDS				Number of Issues: 2	Total Issue Severity:	6
nis solution is used wi	thin the U.S It combines standards associated wildent management data. The C-C: OMG DDS sta			_	andards include upper-layer standards require		

Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Overlap of standards Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.		C-C: TCIP/IM/TMDD/ATIS for incident information	Standardise on a single solution for providing incident and incident management information; currently this information is defined within APTA TCIP, IEEE 1512 (IM), ITE TMDD, and SAE ATIS.	Urgent	United States

Solu	tion Name:	US: Incident Management - OMG DDS			Number of Issues: 2	Total Issue Severity	7: 6
	Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
	Emergency Manageme	ent Center		her Emergency Management Centers	incident report		
	Other Emergency Man	agement Centers	Em	nergency Management Center	incident report		
Issu	ie	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	retted by nmunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
	Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
	Emergency Manageme	ent Center		nergency Telecommunications System	incident information for public		
	Emergency Manageme	ent Center	Ma	aint and Constr Management Center	emergency plan coordination		
	Emergency Manageme	ent Center	Ma	aint and Constr Management Center	evacuation information		
	Emergency Manageme	ent Center	Oth	her Emergency Management Centers	emergency plan coordination		
	Emergency Manageme	ent Center	Oth	her Emergency Management Centers	incident report		
	Emergency Manageme	ent Center	Rai	il Operations Center	emergency plan coordination		
	Emergency Manageme	ent Center	Rai	il Operations Center	evacuation information		
	Emergency Manageme	ent Center	Tra	affic Management Center	emergency plan coordination		
	Emergency Manageme	ent Center	Tra	affic Management Center	emergency route request		
	Emergency Manageme	ent Center	Tra	affic Management Center	evacuation information		
	Emergency Manageme	ent Center	Tra	ansit Management Center	emergency plan coordination		
	Emergency Manageme	ent Center	Tra	ansit Management Center	evacuation information		
	Emergency Manageme	ent Center	Tra	ansportation Information Center	evacuation information		
	Fleet and Freight Mana	agement Center	Em	nergency Management Center	hazmat information		
	Maint and Constr Man	agement Center	Em	nergency Management Center	emergency plan coordination		
	Other Emergency Man	agement Centers	Em	nergency Management Center	emergency plan coordination		
	Other Emergency Man	agement Centers	Em	nergency Management Center	incident report		
	Rail Operations Center		Em	nergency Management Center	emergency plan coordination		
	Shelter Provider Cente	r	Em	nergency Management Center	shelter information		
	Shelter Provider Cente	r	Tra	ansportation Information Center	shelter information		
	Traffic Management Co	enter	Em	nergency Management Center	emergency plan coordination		
	Traffic Management Co	enter	Em	nergency Management Center	emergency routes		
	Transit Management C	enter	Em	nergency Management Center	emergency plan coordination		

Solution Name:

US: Incident Management - OMG DDS RPC

Total Issue Severity: 3

This solution is used within the U.S. It combines standards associated with US: Incident Management standards include upper layer standards required to implement centre to

This solution is used within the U.S.. It combines standards associated with US: Incident Management with those for I-F: OMG DDS RPC. The US: Incident Management standards include upper-layer standards required to implement centre-to-centre communications for incident management data. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Solution Name:	US: Incident Management - OMG DDS R	PC			Number of Issues:	1	Total Issue Severity:	3
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might of among multiple ITS subsystems on an as-needed ba scalable manner than existing approaches. Determine technologies might be appropriate, and what impact would have on ITS standards efforts.	sis in a more efficient, s ne where the use of the	secure, and ese		Australia, European Union, United States
				y this Issue that would be addressed by the Proposed Resolution				
Source		Des	stination	Flow Nan	ne			
ITS Roadway Payme	ent Equipment	Tra	ffic Management Center	incident	report			
Solution Name:	US: Incident Management - SNMPv3				Number of Issues:	1	Total Issue Severity:	1

Maint and Constr Vehicle OBE

video surveillance control

This solution is used within the U.S.. It combines standards associated with US: Incident Management with those for I-F: SNMPv3. The US: Incident Management standards include upper-layer standards required to implement centre-to-centre communications for incident management data. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States			
	Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution								

ITS Roadway Payment Equipment Traffic Management Center incident report

ITS Roadway Equipment

Number of Issues: **Total Issue Severity: Solution Name:** US: NTCIP CCTV - Mobile SNMPv3

This solution is used within the U.S.. It combines standards associated with US: NTCIP CCTV with those for I-M: Mobile SNMPv3. The US: NTCIP CCTV standards include upper-layer standards required to implement centre-to-field CCTV communications (data only). The I-M: Mobile SNMPv3 standards include lower-layer standards that support secure infrastructure-to-mobile communications using simple network management protocol (SNMPv3).

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution						
Source		Des	tination	Flow Name		
ITS Roadway Equipm	ent	Ma	int and Constr Vehicle OBE	traffic images		

Solution Name:	US: NTCIP CCTV - Mobile SNMPv3			Number of Issues: 2	otal Issue Severity:	4
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source				this Issue that would be addressed by the Proposed Resolution		
Source ITS Roadway Equ	inment		stination aint and Constr Vehicle OBE	Flow Name traffic images		
Maint and Constr			Roadway Equipment	video surveillance control		
Solution Name:	US: NTCIP CCTV - OMG DDS RPC			Number of Issues: 1 T	otal Issue Severity:	3
				RPC. The US: NTCIP CCTV standards include upper-layer standards required to implement center procedure calls between a field device and another field device or a centre over a field communication.		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies	Urgent	Australia, European Union, United States

community	communities, but has not necessarily been accepted for use within the context of this information triple.	scalable manne technologies n	e ITS subsystems on an as-needed basis in a more efficient, secure, and er than existing approaches. Determine where the use of these night be appropriate, and what impacts the adoption of such technologies ITS standards efforts.	Union, United	States
		Information Triples using this solution and affected by this Issue that wou	ld be addressed by the Proposed Resolution		
Source		Destination	Flow Name		
ITS Roadway Equipme	ent	Maint and Constr Management Center	traffic images		
ITS Roadway Equipme	ent	Traffic Management Center	traffic images		
Maint and Constr Mar	nagement Center	ITS Roadway Equipment	video surveillance control		
Traffic Management (Center	ITS Roadway Equipment	video surveillance control		

Solution Name:

US: NTCIP CCTV - SNMPv1

Total Issue Severity: 8

This solution is used within the U.S.. It combines standards associated with US: NTCIP CCTV with those for I-F: SNMPv1. The US: NTCIP CCTV standards include upper-layer standards required to implement centre-to-field CCTV communications

(data only). The I-F: SNMPv1 standards include lower-layer standards that define how SNMPv1, which does not provide any security, is used within some deployments within the ITS industry. This solution is no longer recommended due to known security vulnerabilities.

sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ecurity not rovided	The solution does not provide any significant security and a communications link using this solution is easily hacked.	High	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, Europea Union, United Sta
		Information 7	Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
ITS Roadway Equipme	nent	Ma	aint and Constr Management Center	traffic images		
ITS Roadway Equipme			aint and Constr Management Center affic Management Center	traffic images traffic images		
,	nent	Tra	Ü	· ·		

Solution Name: US: NTCIP CCTV - SNMPv1/TLS 2 Total Issue Severity: 6

This solution is used within the U.S.. It combines standards associated with US: NTCIP CCTV with those for I-F: SNMPv1/TLS. The US: NTCIP CCTV standards include upper-layer standards required to implement centre-to-field CCTV communications (data only). The I-F: SNMPv1/TLS standards include lower-layer standards that define one way to retrofit basic security into SNMPv1 implementations (mainly in the US); however, this only secures the communications link and does not provide end-application security and is not recommended for new deployments.

The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name ITS Roadway Equipment Traffic Management Center Traffic Manage	Issue		Issue Severity Proposed Resolution		Resolution Description	Timeframe	Applicability
communications security for the information triple, which potentially jeopardizes C-ITS operations. Information Triples using this solution and affected by this issue that would be addressed by the Proposed Resolution Play Name	ssue	issue Description	issue Severity	Proposed Resolution	Resolution Description	Timetrame	Applicability
Source Destination Flow Name ITS Roadway Equipment Maint and Constr Management Center traffic images ITS Roadway Equipment Traffic Management Center traffic images Maint and Constr Management Center traffic images Maint and Constr Management Center ITS Roadway Equipment video surveillance control Traffic Management Center ITS Roadway Equipment video surveillance control Sue Issue Description Issue Severity Proposed Resolution Resolution Description Integrame Applicability Integrame Applicability Medium I-F: Secure communications standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name	Security inadequate	communications security for the information triple, which potentially jeopardizes C-ITS	Medium	I-F: Secure communications	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as	Urgent	Australia, European Union, United State
ITS Roadway Equipment Maint and Constr Management Center ITS Roadway Equipment ITS Roadw	Source						
Maint and Constr Management Center ITS Roadway Equipment ITS Roadw	ITS Roadway Equipme	ent	Ma	int and Constr Management Center	traffic images		
Traffic Management Center ITS Roadway Equipment ITS Roadway Equipm	ITS Roadway Equipme	ent	Tra	ffic Management Center	traffic images		
Issue Description Issue Severity Proposed Resolution Resolution Description Timeframe Applicability The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Postination Timeframe Applicability Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Plow Name	Maint and Constr Mar	nagement Center	ITS	Roadway Equipment	video surveillance control		
The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Source Develop one or more internationally acceptable, secure, centre-to-field communication standards (s) should include standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Urgent Union, United Standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name	Traffic Management (Center	ITS	Roadway Equipment	video surveillance control		
standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Source Source Standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Union, United support for authentication, authorization, confidentiality, and non-repudiation, as needed. Flow Name	Issue	Jesus Description	Inner Committee				
Source Flow Name		issue Description	issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this		-	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as		Applicability Australia, European Union, United State
ITS Roadway Equipment traffic images	Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Medium Information 1	I-F: Secure communications Triples using this solution and affected b	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. y this Issue that would be addressed by the Proposed Resolution		Australia, European
	Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Medium Information 1	I-F: Secure communications Triples using this solution and affected b	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. y this Issue that would be addressed by the Proposed Resolution		Australia, European
ITS Roadway Equipment Traffic Management Center traffic images	Jource	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium Information 1 Des	I-F: Secure communications Triples using this solution and affected be stination	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. y this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Maint and Constr Management Center ITS Roadway Equipment video surveillance control	Jnvetted by community Source ITS Roadway Equipme	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium Information 1 Des	I-F: Secure communications Triples using this solution and affected betination aint and Constr Management Center	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. y this Issue that would be addressed by the Proposed Resolution Flow Name traffic images		Australia, European

Solution Name: US: NTCIP CCTV - SNMPv3 2 Total Issue Severity: 4

ITS Roadway Equipment

This solution is used within the U.S.. It combines standards associated with US: NTCIP CCTV with those for I-F: SNMPv3. The US: NTCIP CCTV standards include upper-layer standards required to implement centre-to-field CCTV communications (data only). The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Update data to	Data has been defined for SNMPv1, but needs	Medium	I-F: CCTV	Develop an internationally acceptable ITS application specification for exchanging CCTV	Medium-term	Australia, European
SNMPv3	to be updated to SNMPv3 format.			camera data with a management entity that uses the secure centre-to-field protocol.		Union, United States

video surveillance control

	Information Triples using this solution and affected by this Issue that would	d be addressed by the Proposed Resolution	
Source	Destination	Flow Name	
ITS Roadway Equipment	Maint and Constr Management Center	traffic images	
ITS Roadway Equipment	Traffic Management Center	traffic images	
Maint and Constr Management Center	ITS Roadway Equipment	video surveillance control	
Traffic Management Center	ITS Roadway Equipment	video surveillance control	

Traffic Management Center

olution Name:	US: NTCIP CCTV - SNMPv3			Number of Issues: 2	otal Issue Severity	: 4
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jse TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, Europea Union, United Stat
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipr	ment	Ma	int and Constr Management Center	traffic images		
ITS Roadway Equipr	ment	Tra	offic Management Center	traffic images		
Maint and Constr M	lanagement Center	ITS	Roadway Equipment	video surveillance control		
Traffic Managemen	t Center	ITS	Roadway Equipment	video surveillance control		
olution Name:	US: NTCIP Environmental Sensors - Loca	l Broadcast Wirel	ess (US)	Number of Issues: 2 T	otal Issue Severity:	: 4
				for V-X: Local Broadcast Wireless (US). The US: NTCIP Environmental Sensors standards includes) standards include lower-layer standards that support local-area broadcast wireless solution		·
implement centre- E/5G, etc.	-to-field weather and environmental sensor comm	unications. The V	/-X: Local Broadcast Wireless (US	S) standards include lower-layer standards that support local-area broadcast wireless solution	is, such as DSRC tec	chnologies,
implement centre-				Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to		Applicability Australia, Europea
implement centre- E/5G, etc. ssue Incertainty about rust revocation	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	Issue Severity Medium	Proposed Resolution Misbehavior detection and security revocation mechanism	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Timeframe	chnologies,
implement centre- E/5G, etc. ssue Incertainty about rust revocation	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	Issue Severity Medium Information 1	Proposed Resolution Misbehavior detection and security revocation mechanism	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to	Timeframe	Applicability Australia, Europea
implement centre- E/5G, etc. Ssue Incertainty about rust revocation nechanism	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Issue Severity Medium Information T	Proposed Resolution Misbehavior detection and security revocation mechanism Friples using this solution and affected by	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). By this Issue that would be addressed by the Proposed Resolution	Timeframe	Applicability Australia, Europea
implement centre-E/5G, etc. Ssue Uncertainty about rust revocation nechanism Source	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. Roadside Equipment	Issue Severity Medium Information T Des Ma	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected betatination	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). By this Issue that would be addressed by the Proposed Resolution Flow Name	Timeframe	Applicability Australia, Europea
implement centre- E/5G, etc. Incertainty about rust revocation nechanism Source Connected Vehicle F	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. Roadside Equipment	Issue Severity Medium Information T Des Ma	Proposed Resolution Misbehavior detection and security revocation mechanism Friples using this solution and affected betination aint and Constr Vehicle OBE	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). By this Issue that would be addressed by the Proposed Resolution Flow Name environmental sensor data	Timeframe	Applicability Australia, Europea
implement centre-E/5G, etc. SSUE Uncertainty about rust revocation nechanism Source Connected Vehicle F	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. Roadside Equipment ehicle OBE	Issue Severity Medium Information T Des Ma Cor	Proposed Resolution Misbehavior detection and security revocation mechanism Friples using this solution and affected bestination aint and Constr Vehicle OBE	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). By this Issue that would be addressed by the Proposed Resolution Flow Name environmental sensor data	Timeframe Urgent	Applicability Australia, Europea Union, United Stat
implement centre-E/5G, etc. Ssue Uncertainty about rust revocation nechanism Source Connected Vehicle F Maint and Constr Version	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. Roadside Equipment ehicle OBE Issue Description The standard is missing accuracy requirements for some of its data, which may	Issue Severity Medium Information T Des Ma Con Issue Severity Low	Proposed Resolution Misbehavior detection and security revocation mechanism Friples using this solution and affected betination aint and Constr Vehicle OBE Innected Vehicle Roadside Equipment Proposed Resolution I-F: Update ESS (non-critical)	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). Py this Issue that would be addressed by the Proposed Resolution Flow Name environmental sensor data Resolution Description Update NTCIP 1204 to enable the representation of accuracy of sensor data so that external systems are able to determine if the data is accurate enough.	Timeframe Timeframe Timeframe	Applicability Australia, Europea Union, United State Applicability
implement centre-E/5G, etc. Sisue Uncertainty about rust revocation nechanism Source Connected Vehicle F Maint and Constr Versions Sisue Sisue Source Connected Vehicle F Maint and Constr Versions Source Couracy of data	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. Roadside Equipment ehicle OBE Issue Description The standard is missing accuracy requirements for some of its data, which may	Issue Severity Medium Information Topes Ma Con Issue Severity Low	Proposed Resolution Misbehavior detection and security revocation mechanism Priples using this solution and affected betination aint and Constr Vehicle OBE mected Vehicle Roadside Equipment Proposed Resolution I-F: Update ESS (non-critical)	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). By this Issue that would be addressed by the Proposed Resolution Flow Name environmental sensor data Resolution Description Update NTCIP 1204 to enable the representation of accuracy of sensor data so that external systems are able to determine if the data is accurate enough.	Timeframe Timeframe Timeframe	Applicability Australia, Europea Union, United Sta

Solution Name: US: NTCIP Environmental Sensors - Mobile Internet (US)

This solution is used within the U.S.. It combines standards associated with US: NTCIP Environmental Sensors with those for I-M: Mobile Internet (US). The US: NTCIP Environmental Sensors standards include upper-layer standards required to

implement centre-to-field weather and environmental sensor communications. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Internet connection method.

olution Name:	US: NTCIP Environmental Sensors - Mobi	ile Internet (US)		Number of Issues: 2	Total Issue Severity:	4
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Maint and Constr Ma	anagement Center	Ma	int and Constr Vehicle OBE	environmental sensors control		
Maint and Constr Ma	anagement Center	Ma	aint and Constr Vehicle OBE	maint and constr vehicle system control		
Maint and Constr Ve	hicle OBE	Ma	int and Constr Management Center	environmental sensor data		
Maint and Constr Ve	hicle OBE	Ma	aint and Constr Management Center	maint and constr vehicle operational data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Accuracy of data	The standard is missing accuracy requirements for some of its data, which may result in anomalous behaviour.	Low	I-F: Update ESS (non-critical)	Update NTCIP 1204 to enable the representation of accuracy of sensor data so that external systems are able to determine if the data is accurate enough.	Medium-term	United States
				y this Issue that would be addressed by the Proposed Resolution		
Source	hicle OBE		stination wint and Constr Management Center	Flow Name environmental sensor data		

Solution Name: US: NTCIP Environmental Sensors - Mobile SNMPv1/TLS Number of Issues: 2 Total Issue Severity: 4

This solution is used within the U.S.. It combines standards associated with US: NTCIP Environmental Sensors with those for I-M: Mobile SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer standards required to implement centre-to-field weather and environmental sensor communications. The I-M: Mobile SNMPv1/TLS standards include lower-layer standards that define one way to retrofit basic security to SNMPv1 implementations (mainly in the US) for mobile use

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ecurity inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
		Information 1	riples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Maint and Constr Management Center		Ma	int and Constr Vehicle OBE	environmental sensors control		
Maint and Constr Veh	iicle OBE	Maint and Constr Management Center		environmental sensor data		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ccuracy of data	The standard is missing accuracy requirements for some of its data, which may result in anomalous behaviour.	Low	I-F: Update ESS (non-critical)	Update NTCIP 1204 to enable the representation of accuracy of sensor data so that external systems are able to determine if the data is accurate enough.	Medium-term	United States
		Information 1	riples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Maint and Constr Vehicle OBE		Maint and Constr Management Center		environmental sensor data		

Solution Name:	US: NTCIP Environmental Sensors - Mobile SNMPv3	Number of Issues:	3	Total Issue Severity:	5
Solution Name:	US: NTCIP Environmental Sensors - Mobile SNMPv3	Number of Issues:	3	Total Issue Severity:	5

This solution is used within the U.S.. It combines standards associated with US: NTCIP Environmental Sensors with those for I-M: Mobile SNMPv3. The US: NTCIP Environmental Sensors standards include upper-layer standards required to implement centre-to-field weather and environmental sensor communications. The I-M: Mobile SNMPv3 standards include lower-layer standards that support secure infrastructure-to-mobile communications using simple network management protocol (SNMPv3).

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Friples using this solution and affected bettination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Maint and Constr Management Center		Ma	int and Constr Vehicle OBE	environmental sensors control		
Maint and Constr N	Management Center	Ma	int and Constr Vehicle OBE	maint and constr vehicle system control		
Maint and Constr \	Vehicle OBE	Ma	int and Constr Management Center	environmental sensor data		
Maint and Constr \	Vehicle OBE	Ma	int and Constr Management Center	maint and constr vehicle operational data		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Accuracy of data	The standard is missing accuracy requirements for some of its data, which may result in anomalous behaviour.	Low	I-F: Update ESS (non-critical)	Update NTCIP 1204 to enable the representation of accuracy of sensor data so that external systems are able to determine if the data is accurate enough.	Medium-term	United States
Source			Triples using this solution and affected b stination	ry this Issue that would be addressed by the Proposed Resolution Flow Name		
Source Maint and Constr \	Vehicle OBE	Des				
Maint and Constr \	Vehicle OBE Issue Description	Des	tination	Flow Name	Timeframe	Applicability
		Des Ma	stination int and Constr Management Center	Flow Name environmental sensor data	Timeframe Urgent	Applicability Australia, European Union, United States
Issue Unvetted by community	Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Issue Severity Medium Information T	Proposed Resolution I-F: Secure communications Triples using this solution and affected by	Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.		Australia, European
Issue Unvetted by community Source	Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Issue Severity Medium Information T	Proposed Resolution I-F: Secure communications	Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.		Australia, European
Issue Unvetted by community Source Maint and Constr N	Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Issue Severity Medium Information T Des Ma	Proposed Resolution I-F: Secure communications Triples using this solution and affected betination	Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Issue Unvetted by community Source Maint and Constr N	Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. Management Center Management Center	Issue Severity Medium Information T Des Ma Ma	Proposed Resolution I-F: Secure communications Triples using this solution and affected betination int and Constr Vehicle OBE	Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name environmental sensors control		Australia, European

Solution Name: US: NTCIP Environmental Sensors - OMG DDS RPC 4

This solution is used within the U.S.. It combines standards associated with US: NTCIP Environmental Sensors with those for I-F: OMG DDS RPC. The US: NTCIP Environmental Sensors standards include upper-layer standards required to implement centre-to-field weather and environmental sensor communications. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Solution Name:	US: NTCIP Environmental Sensors - OMG	DDS RPC		Number of Issues: 2	otal Issue Severity	4
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Accuracy of data	The standard is missing accuracy requirements for some of its data, which may result in anomalous behaviour.	Low	I-F: Update ESS (non-critical)	Update NTCIP 1204 to enable the representation of accuracy of sensor data so that external systems are able to determine if the data is accurate enough.	Medium-term	United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipm	nent	Co	nnected Vehicle Roadside Equipment	environmental sensor data		
ITS Roadway Equipm	nent	Em	nissions Management Center	air quality sensor data		
ITS Roadway Equipm	nent	Ma	aint and Constr Management Center	environmental sensor data		
ITS Roadway Equipm	nent	Tra	affic Management Center	environmental sensor data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United State
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	Roadside Equipment		nissions Management Center	emissions situation data		
Emissions Managem	nent Center	ITS	Roadway Equipment	air quality sensor control		
ITS Roadway Equipm	nent	Co	nnected Vehicle Roadside Equipment	environmental sensor data		
ITS Roadway Equipm	nent	Em	nissions Management Center	air quality sensor data		
ITS Roadway Equipm	nent	Ma	aint and Constr Management Center	environmental sensor data		
ITS Roadway Equipm	nent	Tra	affic Management Center	environmental sensor data		
Maint and Constr Ma	anagement Center	ITS	Roadway Equipment	environmental sensors control		
Traffic Management	t Center	ITS	Roadway Equipment	environmental sensors control		
	US: NTCIP Environmental Sensors - SNMI			Number of Issues: 2	otal Issue Severity	9

This solution is used within the U.S.. It combines standards associated with US: NTCIP Environmental Sensors with those for I-F: SNMPv1. The US: NTCIP Environmental Sensors standards include upper-layer standards required to implement centre-to-field weather and environmental sensor communications. The I-F: SNMPv1 standards include lower-layer standards that define how SNMPv1, which does not provide any security, is used within some deployments within the ITS industry. This solution is no longer recommended due to known security vulnerabilities.

Security not The solution does not provide any significant High I-F: Secure communications Develop one or more internationally acceptable, secure, centre-to-field communication Urgent Austr	colution is no longer re	ecommended due to known security vulnerabilitie	25.				
provided security and a communications link using this solution is easily hacked. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name Emissions Management Center ITS Roadway Equipment Emissions Management Center Emissions Management Center	Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
SourceDestinationFlow NameEmissions Management CenterITS Roadway Equipmentair quality sensor controlITS Roadway EquipmentEmissions Management Centerair quality sensor data		security and a communications link using this	High	I-F: Secure communications	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as	Urgent	Australia, European Union, United States
Emissions Management Center ITS Roadway Equipment air quality sensor control ITS Roadway Equipment Emissions Management Center air quality sensor data			Information ⁻	Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution		
ITS Roadway Equipment Emissions Management Center air quality sensor data	Source		Des	stination	Flow Name		
	Emissions Manageme	ent Center	ITS	S Roadway Equipment	air quality sensor control		
ITS Roadway Equipment Maint and Constr Management Center environmental sensor data	ITS Roadway Equipm	ent	Em	nissions Management Center	air quality sensor data		
	ITS Roadway Equipm	ent	Ma	aint and Constr Management Center	environmental sensor data		

olution Name:	US: NTCIP Environmental Sensors - SNMI	Pv1		Number of Issues: 2	Total Issue Severity	9
ITS Roadway Equipme	ent	Tra	ffic Management Center	environmental sensor data		
Maint and Constr Ma	nagement Center	ITS	Roadway Equipment	environmental sensors control		
Traffic Management (Center	ITS	Roadway Equipment	environmental sensors control		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
accuracy of data	The standard is missing accuracy requirements for some of its data, which may result in anomalous behaviour.	Low	I-F: Update ESS (non-critical)	Update NTCIP 1204 to enable the representation of accuracy of sensor data so that external systems are able to determine if the data is accurate enough.	Medium-term	United States
				by this Issue that would be addressed by the Proposed Resolution		
Source ITS Roadway Equipme	ant .		tination issions Management Center	Flow Name air quality sensor data		
ITS Roadway Equipme			int and Constr Management Center	environmental sensor data		
ITS Roadway Equipme			ffic Management Center	environmental sensor data		
Tro Head Tray Equipme			vanagement senter			
		vith US: NTCIP En		e for I-F: SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer st	·	implement
iis solution is used w ntre-to-field weathe cures the communic	ithin the U.S It combines standards associated version and environmental sensor communications. The ations link and does not provide end-applications	vith US: NTCIP En e I-F: SNMPv1/TL security and is no	S standards include lower-layer trecommended for new deploy	e for I-F: SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer st standards that define one way to retrofit basic security into SNMPv1 implementations (main yments.	andards required to	implement ver, this only
is solution is used w ntre-to-field weathe	ithin the U.S It combines standards associated v	vith US: NTCIP En e I-F: SNMPv1/TL security and is no	S standards include lower-layer	e for I-F: SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer standards that define one way to retrofit basic security into SNMPv1 implementations (main	andards required to	implement
iis solution is used w ntre-to-field weathe cures the communic	ithin the U.S It combines standards associated version and environmental sensor communications. The ations link and does not provide end-applications	vith US: NTCIP En e I-F: SNMPv1/TL security and is no	S standards include lower-layer trecommended for new deploy	e for I-F: SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer st standards that define one way to retrofit basic security into SNMPv1 implementations (main yments.	andards required to	implement ver, this only
nis solution is used w ntre-to-field weathe cures the communic ssue ecurity inadequate	ithin the U.S It combines standards associated were and environmental sensor communications. The ations link and does not provide end-application sociated were application of the solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS	with US: NTCIP Ene I-F: SNMPv1/TL security and is no Issue Severity Medium	S standards include lower-layer trecommended for new deploy Proposed Resolution I-F: Secure communications Triples using this solution and affected b	refor I-F: SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer standards that define one way to retrofit basic security into SNMPv1 implementations (main ments. Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution	andards required to ally in the US); however	implement ver, this only Applicability Australia, European
is solution is used w ntre-to-field weathe cures the communic	ithin the U.S It combines standards associated were and environmental sensor communications. The ations link and does not provide end-application sociated were also be a sensor communication of the solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	with US: NTCIP Ene I-F: SNMPv1/TL security and is no Issue Severity Medium Information Toes	S standards include lower-layer trecommended for new deploy Proposed Resolution I-F: Secure communications	refor I-F: SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer standards that define one way to retrofit basic security into SNMPv1 implementations (main yments. Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	andards required to ally in the US); however	implement ver, this only Applicability Australia, European
is solution is used w ntre-to-field weathe cures the communic ssue ecurity inadequate Source	ithin the U.S It combines standards associated were and environmental sensor communications. The ations link and does not provide end-application states and environmental sensor communications. Issue Description The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	with US: NTCIP Ene I-F: SNMPv1/TL security and is no Issue Severity Medium Information Toes	S standards include lower-layer trecommended for new deploy Proposed Resolution I-F: Secure communications Triples using this solution and affected betination	refor I-F: SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer standards that define one way to retrofit basic security into SNMPv1 implementations (main yments. Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name	andards required to ally in the US); however	implement ver, this only Applicability Australia, European
is solution is used w ntre-to-field weathe cures the communic ssue ecurity inadequate Source Emissions Manageme	ithin the U.S It combines standards associated were and environmental sensor communications. The ations link and does not provide end-application is a lissue Description The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	with US: NTCIP Ene I-F: SNMPv1/TL security and is no Issue Severity Medium Information Toes ITS	S standards include lower-layer trecommended for new deploy Proposed Resolution I-F: Secure communications Triples using this solution and affected betination Roadway Equipment	refor I-F: SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer standards that define one way to retrofit basic security into SNMPv1 implementations (main ments. Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name air quality sensor control	andards required to ally in the US); however	implement ver, this only Applicability Australia, European
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ssue ecurity inadequate Source Emissions Manageme ITS Roadway Equipme	ithin the U.S It combines standards associated were and environmental sensor communications. The ations link and does not provide end-application is a lissue Description The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	with US: NTCIP Ene I-F: SNMPv1/TL security and is no Issue Severity Medium Information Toes ITS Emetion Main Main Main Main Main Main Main Mai	S standards include lower-layer to recommended for new deploy Proposed Resolution I-F: Secure communications Triples using this solution and affected betination Roadway Equipment issions Management Center int and Constr Management Center	refor I-F: SNMPv1/TLS. The US: NTCIP Environmental Sensors standards include upper-layer standards that define one way to retrofit basic security into SNMPv1 implementations (main yments. Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name air quality sensor control air quality sensor data environmental sensor data	andards required to ally in the US); however	implement ver, this only Applicability Australia, European
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ssue Source Emissions Manageme ITS Roadway Equipme ITS Roadway Equipme ITS Roadway Equipme Maint and Constr Ma	ithin the U.S It combines standards associated were and environmental sensor communications. The ations link and does not provide end-application is a lissue Description The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	with US: NTCIP Ene I-F: SNMPv1/TL security and is no Issue Severity Medium Information To Des ITS Em Ma Tra ITS	S standards include lower-layer to recommended for new deploy Proposed Resolution I-F: Secure communications Triples using this solution and affected betination Roadway Equipment issions Management Center int and Constr Management Center ffic Management Center Roadway Equipment	Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name air quality sensor control air quality sensor data environmental sensor data environmental sensor data environmental sensor control	andards required to ally in the US); however	implement ver, this only Applicability Australia, European

air quality sensor data

environmental sensor data

environmental sensor data

Emissions Management Center

Traffic Management Center

Maint and Constr Management Center

ITS Roadway Equipment

ITS Roadway Equipment

ITS Roadway Equipment

Solution Name:	US: NTCIP Environmental Sensors - SNM	Pv1/TLS			Number of Issues:	3	Total Issue Severity:	7
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, sec standards and define rules on when to use each one support for authentication, authorization, confidentineeded.	. The standard(s) shou	ld include	Urgent	Australia, European Union, United States
		Information ⁻	Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution				
Source		Des	stination	Flow Nam	e			
Emissions Manage	ment Center	ITS	Roadway Equipment	air quality	sensor control			
ITS Roadway Equip	oment	Em	nissions Management Center	air quality	sensor data			
ITS Roadway Equip	oment	Ma	aint and Constr Management Center	environm	ental sensor data			
ITS Roadway Equip	oment	Tra	affic Management Center	environm	ental sensor data			
Maint and Constr I	Management Center	ITS	Roadway Equipment	environm	ental sensors control			
Traffic Manageme	nt Center	ITS	Roadway Equipment	environm	ental sensors control			

Solution Name: US: NTCIP Environmental Sensors - SNMPv3

Number of Issues: 3 Total Issue Severity:

This solution is used within the U.S.. It combines standards associated with US: NTCIP Environmental Sensors with those for I-F: SNMPv3. The US: NTCIP Environmental Sensors standards include upper-layer standards required to implement centre-to-field weather and environmental sensor communications. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Update data to SNMPv3	Data has been defined for SNMPv1, but needs to be updated to SNMPv3 format.	Medium	I-F: Environmental sensor stations	Develop an internationally acceptable ITS application specification for managing environmental sensor stations for secure communications with proper access control.		Australia, European Union, United State
Source			Friples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle	Roadside Equipment	Em	issions Management Center	emissions situation data		
Emissions Manager	ment Center	ITS	Roadway Equipment	air quality sensor control		

ITS Roadway Equipment Connected Vehicle Roadside Equipment environmental sensor data

ITS Roadway Equipment Connected Vehicle Roadside Equipment ITS roadway equipment information

 ITS Roadway Equipment
 Emissions Management Center
 air quality sensor data

 ITS Roadway Equipment
 Maint and Constr Management Center
 environmental sensor data

Traffic Management Center ITS Roadway Equipment environmental sensors control

olution Name:	US: NTCIP Environmental Sensors - SNMI	Pv3		Number of Issues: 3	Total Issue Severity	5
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
lse TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, Europea Union, United Stat
Source			Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Re	oadside Equipment		nissions Management Center	emissions situation data		
Emissions Manageme	ent Center	ITS	Roadway Equipment	air quality sensor control		
ITS Roadway Equipm	ent	Со	nnected Vehicle Roadside Equipment	environmental sensor data		
ITS Roadway Equipm	ent	Co	nnected Vehicle Roadside Equipment	ITS roadway equipment information		
ITS Roadway Equipm	ent	Em	nissions Management Center	air quality sensor data		
ITS Roadway Equipm	ent	Ma	aint and Constr Management Center	environmental sensor data		
ITS Roadway Equipm	ent	Tra	affic Management Center	environmental sensor data		
Maint and Constr Ma	anagement Center	ITS	Roadway Equipment	environmental sensors control		
Traffic Management	Center	ITS	Roadway Equipment	environmental sensors control		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
curacy of data	The standard is missing accuracy requirements for some of its data, which may result in anomalous behaviour.	Low	I-F: Update ESS (non-critical)	Update NTCIP 1204 to enable the representation of accuracy of sensor data so that external systems are able to determine if the data is accurate enough.	Medium-term	United States
Course			Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution		
Source ITS Roadway Equipm	ent		nnected Vehicle Roadside Equipment	Flow Name environmental sensor data		
ITS Roadway Equipm	ent	Em	nissions Management Center	air quality sensor data		
ITS Roadway Equipm	ent	Ma	aint and Constr Management Center	environmental sensor data		
ITS Roadway Equipm	ent	Tra	affic Management Center	environmental sensor data		
lution Name:	US: NTCIP Environmental Sensors - WAV	E CAIRAD: -2		Number of Issues: 2	Total Issue Severity	4

centre-to-field weather and environmental sensor communications. The V-X: WAVE SNMPv3 standards include lower-layer standards that support connectionless, ultra-low latency vehicle-to-any communications within ~300m using the SNMPv3 over UDP/IP over the 5.9GHz spectrum.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium		Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
		Information 7	riples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		

Connected Vehicle Roadside Equipment Maint and Constr Vehicle OBE environmental sensor data Maint and Constr Vehicle OBE Connected Vehicle Roadside Equipment environmental sensor data

Solution Name:	US: NTCIP Environmental Sensors - WAV	E SNMPv3			Number of Issues:	2	Total Issue Severity:	4	
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability	
Accuracy of data	The standard is missing accuracy requirements for some of its data, which may result in anomalous behaviour.	Low	I-F: Update ESS (non-critical)	Update NTCIP 1204 to enable the representation of accuracy of sensor data so that external systems are able to determine if the data is accurate enough.		Medium-term	United States		
		Information T	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution					
Source		Des	tination	Flow Name					
Connected Vehicle Ro	Connected Vehicle Roadside Equipment Maint and Constr Vehicle OBE		environme	environmental sensor data					
Maint and Constr Vehi	Maint and Constr Vehicle OBE Connected Vehicle Roadside Equipment		environme	ental sensor data					

US: NTCIP Generic Objects - OMG DDS RPC Number of Issues: Total Issue Severity: 11 **Solution Name:**

This solution is used within the U.S.. It combines standards associated with US: NTCIP Generic Objects with those for I-F: OMG DDS RPC. The US: NTCIP Generic Objects standards include upper-layer standards required to implement centre-to-field communications for generic-device functionality. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Maint and Constr Management Center

Maint and Constr Management Center

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	Updates for data distribution (critical flows)	Update data dictionary standards to conform to the chosen Data Distribution Technology for those interfaces where this technology might be appropriate. This may include updates to standards such as: TMDD, TCIP, J2735, NTICP, etc. (i.e., this would potentially convert ASN.1 data into the format that is native to the chosen DDT.)	Near-term	United States
C				y this Issue that would be addressed by the Proposed Resolution		
Source Source Nahiola Ba	andeida Environant		stination	Flow Name		
Connected Vehicle Ro	adside Equipment	FIE	ld Support Equipment	RSE status		
Connected Vehicle Ro	padside Equipment	Sei	rvice Monitor System	RSE status		
Field Support Equipm	ent	Co	nnected Vehicle Roadside Equipment	RSE status		
Field Support Equipm	ent	ITS	Roadway Equipment	field equipment commands		
Field Support Equipm	ent	ITS	Roadway Equipment	field equipment configuration settings		
ITS Roadway Equipme	ent	Fie	ld Support Equipment	field equipment status		

field device status

field equipment status

ITS Roadway Equipment

ITS Roadway Equipment

olution Name: ssue	US: NTCIP Generic Objects - OMG DDS I	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution		
	Roadside Equipment		eld Support Equipment	Flow Name RSE status		
Connected Vehicle	Roadside Equipment	Se	rvice Monitor System	RSE status		
Field Support Equi	pment	Со	onnected Vehicle Roadside Equipment	RSE status		
Field Support Equi	pment	ITS	S Roadway Equipment	field equipment commands		
Field Support Equi	pment	ITS	S Roadway Equipment	field equipment configuration settings		
ITS Roadway Equip	oment	Fie	eld Support Equipment	field equipment status		
ITS Roadway Equip	oment	Ma	aint and Constr Management Center	field device status		
ITS Roadway Equip	oment	Ma	aint and Constr Management Center	field equipment status		
olution Name:	US: NTCIP Generic Objects - SNMPv1			Number of Issues: 1 T	otal Issue Severity	8

longer recommended due to known security vulnerabilities.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability						
Security not provided	The solution does not provide any significant security and a communications link using this solution is easily hacked.	High	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States						
		Information	Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution								
Source		De	stination	Flow Name								
ITS Roadway Equ	uipment	M	aint and Constr Management Center	field device status								
ITS Roadway Egu	uipment	M	aint and Constr Management Center	field equipment status								

Number of Issues: Total Issue Severity: **Solution Name:** US: NTCIP Generic Objects - SNMPv1/TLS

This solution is used within the U.S.. It combines standards associated with US: NTCIP Generic Objects with those for I-F: SNMPv1/TLS. The US: NTCIP Generic Objects standards include upper-layer standards required to implement centre-to-field communications for generic-device functionality. The I-F: SNMPv1/TLS standards include lower-layer standards that define one way to retrofit basic security into SNMPv1 implementations (mainly in the US); however, this only secures the communications link and does not provide end-application security and is not recommended for new deployments.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States

Solution Name:	US: NTCIP Generic Objects - SNMPv1/TL	S		Number of Issues: 2	Total Issue Severity:	6
Source ITS Roadway Equipr ITS Roadway Equipr		Des Ma	Triples using this solution and affected be tination int and Constr Management Center int and Constr Management Center	by this Issue that would be addressed by the Proposed Resolution Flow Name field device status field equipment status		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	ude Union, United Sta	
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipr	ment		int and Constr Management Center	field device status		
ITS Roadway Equipment		Ma	int and Constr Management Center	field equipment status		
Solution Name:	US: NTCIP Generic Objects - SNMPv3			Number of Issues: 2	Total Issue Severity:	4
This solution is used v	within the U.S It combines standards associated	with US: NTCIP Ge	eneric Objects with those for I-F:	: SNMPv3. The US: NTCIP Generic Objects standards include upper-layer standards required to	o implement centre-t	co-field

This solution is used within the U.S.. It combines standards associated with US: NTCIP Generic Objects with those for I-F: SNMPv3. The US: NTCIP Generic Objects standards include upper-layer standards required to implement centre-to-field communications for generic-device functionality. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

	·		Proposed Resolution	Resolution Description	rimeirame	Applicability
Update data to SNMPv3	Data has been defined for SNMPv1, but needs to be updated to SNMPv3 format.	Medium	Develop ITS-wide reference data model	Develop an internationally representative ITS-wide reference data model that will enable better data sharing across disparate enterprise systems with data defined by different entities, working groups, and standards development organisations.	Urgent	Australia, European Union, United States
		Information ⁻	Triples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Connected Vehicle R	oadside Equipment	Fie	ld Support Equipment	RSE status		
Connected Vehicle R	oadside Equipment	Sei	rvice Monitor System	RSE status		
Field Support Equipn	nent	Со	nnected Vehicle Roadside Equipment	RSE status		
Field Support Equipn	nent	ITS	Roadway Equipment	field equipment commands		
Field Support Equipn	nent	ITS	Roadway Equipment	field equipment configuration settings		
ITS Roadway Equipm	ent	Fie	ld Support Equipment	field equipment status		
ITS Roadway Equipm	ent	Ma	aint and Constr Management Center	field device status		
ITS Roadway Equipm	ent	Ma	aint and Constr Management Center	field equipment status		

olution Name:	US: NTCIP Generic Objects - SNMPv3			Number of Issues: 2	Total Issue Severity:	4
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jse TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
				y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Connected Vehicle Ro	adside Equipment	Fie	d Support Equipment	RSE status		
Connected Vehicle Ro	adside Equipment	Ser	vice Monitor System	RSE status		
Field Support Equipm	ent	Cor	nnected Vehicle Roadside Equipment	RSE status		
Field Support Equipm	ent	ITS	Roadway Equipment	field equipment commands		
Field Support Equipm	ent	ITS	Roadway Equipment	field equipment configuration settings		
ITS Roadway Equipme	ent	Fie	d Support Equipment	field equipment status		
ITS Roadway Equipme	ent	Ma	int and Constr Management Center	field device status		
ITS Roadway Equipme	ent	Ma	int and Constr Management Center	field equipment status		
olution Name:	US: NTCIP Lighting - OMG DDS RPC			Number of Issues: 1	Total Issue Severity:	3

communications with highway lighting systems. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Source Flow Name						
ITS Roadway Equip	pment		ffic Management Center	lighting system status		

lighting system control data

Number of Issues: Total Issue Severity: **Solution Name:** US: NTCIP Lighting - SNMPv1

ITS Roadway Equipment

This solution is used within the U.S.. It combines standards associated with US: NTCIP Lighting with those for I-F: SNMPv1. The US: NTCIP Lighting standards include upper-layer standards required to implement centre-to-field communications with highway lighting systems. The I-F: SNMPv1 standards include lower-layer standards that define how SNMPv1, which does not provide any security, is used within some deployments within the ITS industry. This solution is no longer recommended due to known security vulnerabilities.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security not provided	The solution does not provide any significant security and a communications link using this solution is easily hacked.	High	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States

	Information Triples using this solution and affected by this Issue that w	rould be addressed by the Proposed Resolution	
Source	Destination	Flow Name	
ITS Roadway Equipment	Traffic Management Center	lighting system status	
Traffic Management Center	ITS Roadway Equipment	lighting system control data	

Traffic Management Center

Solution Name:	US: NTCIP Lighting - SNMPv1	Number of Issues:	1	Total Issue Severity:	8						
Solution Name:	US: NTCIP Lighting - SNMPv1/TLS	Number of Issues:	2	Total Issue Severity:	6						
	This solution is used within the U.S It combines standards associated with US: NTCIP Lighting with those for I-F: SNMPv1/TLS. The US: NTCIP Lighting standards include upper-layer standards required to implement centre-to-field communications										

This solution is used within the U.S.. It combines standards associated with US: NTCIP Lighting with those for I-F: SNMPv1/TLS. The US: NTCIP Lighting standards include upper-layer standards required to implement centre-to-field communications with highway lighting systems. The I-F: SNMPv1/TLS standards include lower-layer standards that define one way to retrofit basic security into SNMPv1 implementations (mainly in the US); however, this only secures the communications link and does not provide end-application security and is not recommended for new deployments.

Issue	Issue Description	Jesus Soverity	Proposed Resolution	Resolution Description	Timeframe	Applicability
			· ·		Tillellallie	
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
		Information 1	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Destination		Flow Name		
ITS Roadway Equipment		Traffic Management Center		lighting system status		
Traffic Management Center		ITS	Roadway Equipment	lighting system control data		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as	Urgent	Australia, European Union, United States
	accepted for use within the context of this information triple.			needed.		
	accepted for use within the context of this	Information 1	riples using this solution and affected by			
Source	accepted for use within the context of this		Triples using this solution and affected by tination	needed.		
Source ITS Roadway Equipme	accepted for use within the context of this information triple.	Des		needed. y this Issue that would be addressed by the Proposed Resolution		

Solution Name: US: NTCIP Lighting - SNMPv3 1 Total Issue Severity: 1

This solution is used within the U.S.. It combines standards associated with US: NTCIP Lighting with those for I-F: SNMPv3. The US: NTCIP Lighting standards include upper-layer standards required to implement centre-to-field communications with highway lighting systems. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Option mechanisms. The only defined mechanism standards and define rules on when to use each one. The standard(s) should include	Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
one based on TLS.		mechanisms. The only defined mechanism that meets the requirements for C-ITS is the	Low	I-F: Secure communications	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as	Urgent	Australia, European Union, United States

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution
Source
ITS Roadway Equipment
Traffic Management Center
ITS Roadway Equipment

Total Issue Severity:

7

Solution Name: US: NTCIP Message Sign - Mobile SNMPv3 Number of Issues:

This solution is used within the U.S.. It combines standards associated with US: NTCIP Message Sign with those for I-M: Mobile SNMPv3. The US: NTCIP Message Sign standards include upper-layer standards required to implement centre-to-field message sign communications. The I-M: Mobile SNMPv3 standards include lower-layer standards that support secure infrastructure-to-mobile communications using simple network management protocol (SNMPv3).

olution Name:	US: NTCIP Message Sign - Mobile SNMPv	3		Number of Issues: 3	otal Issue Severity:	7
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jpdate data to NMPv3	Data has been defined for SNMPv1, but needs to be updated to SNMPv3 format.	Medium	I-F: Message signs	Develop an internationally acceptable ITS application specification for managing message signs for secure communications with proper access control.	Urgent	Australia, European Union, United State
Source			Friples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipr	nent		int and Constr Vehicle OBE	roadway dynamic signage status		
Maint and Constr Vo	ehicle OBE	ITS	Roadway Equipment	roadway dynamic signage data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
Source			Friples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipment			int and Constr Vehicle OBE	roadway dynamic signage status		
Maint and Constr Vo	ehicle OBE	ITS	Roadway Equipment	roadway dynamic signage data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Invetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
Source			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipr	nent		int and Constr Vehicle OBE	roadway dynamic signage status		
Maint and Constr Vo	ehicle OBE	ITS	Roadway Equipment	roadway dynamic signage data		
olution Name:	US: NTCIP Message Sign - OMG DDS RPC			Number of Issues: 2 To	otal Issue Severity:	35
is solution is used v	within the U.S It combines standards associated v	vith US: NTCIP M		MG DDS RPC. The US: NTCIP Message Sign standards include upper-layer standards required to procedure calls between a field device and another field device or a centre over a field core.	o implement centr	
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Pata profile not	Performance, functionality, and the upper-	Ultra	I-F: Message signs	Develop an internationally acceptable ITS application specification for managing message	Urgent	Australia, Europear

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Message signs	Develop an internationally acceptable ITS application specification for managing message signs for secure communications with proper access control.	Urgent	Australia, European Union, United State			
Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution									
Source	Source Destination		Flow Name						
ITS Roadway Equipr	ITS Roadway Equipment Traffic Management Center		roadway warning system status						
Traffic Managemen	Center	ITS	Roadway Equipment	roadway warning system control					

				Number of Issues: 2 T	otal Issue Severity:	35
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Speed warning	Develop an internationally acceptable ITS application specification for providing roadway configuration data, current speed limits, warning parameters and thresholds to a speed warning application.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipment		Tra	ffic Management Center	variable speed limit status		
Traffic Management Center		ITS	Roadway Equipment	variable speed limit control		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Invetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	adside Equipment		Roadway Equipment	roadway dynamic signage data		
ITS Roadway Equipme	ent	Cor	nnected Vehicle Roadside Equipment	roadway dynamic signage status		
ITS Roadway Equipme	ent	Ma	int and Constr Management Center	roadway dynamic signage status		
ITS Roadway Equipme	ent	Oth	ner ITS Roadway Equipment	dynamic sign coordination		
ITS Roadway Equipme	ent	Tra	ffic Management Center	roadway dynamic signage status		
ITS Roadway Equipme	ent	Tra	ffic Management Center	roadway warning system status		
ITS Roadway Equipme	ent	Tra	ffic Management Center	variable speed limit status		
Maint and Constr Ma	nagement Center	ITS	Roadway Equipment	roadway dynamic signage data		
Other ITS Roadway Ed	uipment	ITS	Roadway Equipment	dynamic sign coordination		
Traffic Management (Center	ITS	Roadway Equipment	lane management control		
Traffic Management (Center	ITS	Roadway Equipment	roadway dynamic signage data		
Traffic Management (Center	ITS	Roadway Equipment	roadway warning system control		
Traffic Management (Center	ITS	Roadway Equipment	variable speed limit control		

Solution Name:

US: NTCIP Message Sign - SNMPv1

Total Issue Severity: 40

This solution is used within the U.S.. It combines standards associated with US: NTCIP Message Sign with those for I-F: SNMPv1. The US: NTCIP Message Sign standards include upper-layer standards required to implement centre-to-field message

sign communications. The I-F: SNMPv1 standards include lower-layer standards that define how SNMPv1, which does not provide any security, is used within some deployments within the ITS industry. This solution is no longer recommended due to known security vulnerabilities.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security not provided	The solution does not provide any significant security and a communications link using this solution is easily hacked.	High	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States

Solution Name:	US: NTCIP Message Sign - SNMPv1			Number of Issues: 2 To	otal Issue Severity:	40		
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name				
ITS Roadway Equip	ment	Ma	int and Constr Management Center	roadway dynamic signage status				
ITS Roadway Equip	ment	Tra	offic Management Center	roadway dynamic signage status				
ITS Roadway Equip	ment	Tra	offic Management Center	roadway warning system status				
ITS Roadway Equip	ment	Tra	offic Management Center	variable speed limit status				
Maint and Constr N	lanagement Center	ITS	Roadway Equipment	roadway dynamic signage data				
Traffic Managemen	it Center	ITS	Roadway Equipment	lane management control				
Traffic Managemen	t Center	ITS	Roadway Equipment	roadway dynamic signage data				
Traffic Managemen	t Center	ITS	Roadway Equipment	roadway warning system control				
Traffic Managemen	it Center	ITS	Roadway Equipment	variable speed limit control				
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability		
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Speed warning	Develop an internationally acceptable ITS application specification for providing roadway configuration data, current speed limits, warning parameters and thresholds to a speed warning application.	Urgent	Australia, Europear Union, United State		
Source			Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name				
ITS Roadway Equip	ment		offic Management Center	variable speed limit status				
Traffic Managemen	t Center	ITS	Roadway Equipment	variable speed limit control				
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability		
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Message signs	Develop an internationally acceptable ITS application specification for managing message signs for secure communications with proper access control.	Urgent	Australia, Europear Union, United State		
Carra				by this Issue that would be addressed by the Proposed Resolution				
Source ITS Roadway Equip	ment		stination Iffic Management Center	Flow Name roadway warning system status				
Traffic Managemen			Roadway Equipment	roadway warning system control				
Solution Name:	US: NTCIP Message Sign - SNMPv1/TLS			Number of Issues: 3 To	otal Issue Severity:	38		
his solution is used v	within the U.S It combines standards associated v	lower-layer stand	dards that define one way to ret	NMPv1/TLS. The US: NTCIP Message Sign standards include upper-layer standards required to crofit basic security into SNMPv1 implementations (mainly in the US); however, this only secure	implement centre-	to-field		
Issue	*		Proposed Resolution	Resolution Description	Timeframe	Applicability		

Traffic Management Center

Issue		es not provide end-application security and is not recommended for new deployments.								
135de Description 135de Severity 110posed Resolution Resolution Description	Timeframe	Applicability								
Security inadequate Communications security for the information triple, which potentially jeopardizes C-ITS operations. Medium I-F: Secure communications I-F: Secure communications Develop one or more internationally acceptable standards and define rules on when to use each support for authentication, authorization, connected.	ch one. The standard(s) should include	Australia, European Union, United States								
Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolu										
Source Destination Flor	ow Name									
ITS Roadway Equipment Maint and Constr Management Center ro	padway dynamic signage status									

roadway dynamic signage status

ITS Roadway Equipment

Solution Name:	US: NTCIP Message Sign - SNMPv1/TLS			Number of Issues: 3	Total Issue Severity:	38
ITS Roadway Equipm	nent	Tra	ffic Management Center	roadway warning system status		
ITS Roadway Equipm	nent	Tra	ffic Management Center	variable speed limit status		
Maint and Constr Ma	anagement Center	ITS	Roadway Equipment	roadway dynamic signage data		
Traffic Management	t Center	ITS Roadway Equipment		lane management control		
Traffic Management Center		ITS	Roadway Equipment	roadway dynamic signage data		
Traffic Management	t Center	ITS	Roadway Equipment	roadway warning system control		
Traffic Management	t Center	ITS	Roadway Equipment	variable speed limit control		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Message signs	Develop an internationally acceptable ITS application specification for managing message signs for secure communications with proper access control.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected latination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipment		Tra	ffic Management Center	roadway warning system status		
Traffic Management Center		ITS Roadway Equipment		roadway warning system control		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Ultra	I-F: Speed warning	Develop an internationally acceptable ITS application specification for providing roadway configuration data, current speed limits, warning parameters and thresholds to a speed warning application.	Urgent	Australia, European Union, United States
zeimed	for this information flow.			warring apprecation.		
	for this information flow.			by this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
	nent	Des Tra		by this Issue that would be addressed by the Proposed Resolution		

The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. F. Secure communities with the context of this information triple. Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standards(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Fow Name	olution Name:	US: NTCIP Message Sign - SNMPv1/TLS				Number of Issues:	3	Total Issue Severity:	38
standards that is accepted within some community standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. Information Triples using this solution and affected by this issue that would be addressed by the Proposed Resolution Flow Name	Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Source Destination Flow Name ITS Roadway Equipment Maint and Constr Management Center roadway dynamic signage status ITS Roadway Equipment Traffic Management Center roadway dynamic signage status ITS Roadway Equipment Traffic Management Center roadway warning system status ITS Roadway Equipment Traffic Management Center variable speed limit status Maint and Constr Management Center ITS Roadway Equipment roadway dynamic signage data Traffic Management Center ITS Roadway Equipment lane management control Traffic Management Center ITS Roadway Equipment roadway dynamic signage data Traffic Management Center ITS Roadway Equipment roadway dynamic signage data Traffic Management Center ITS Roadway Equipment roadway dynamic signage data Traffic Management Center ITS Roadway Equipment roadway warning system control Traffic Management Center ITS Roadway Equipment variable speed limit control	Unvetted by community	standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Medium	I-F: Secure communications	standards and define rules on when to use each of support for authentication, authorization, confident	one. The standard(s) shoul	d include	Urgent	Australia, Europea Union, United Stat
ITS Roadway Equipment									
ITS Roadway Equipment									
ITS Roadway Equipment Traffic Management Center Traffic Management Cen									
ITS Roadway Equipment Maint and Constr Management Center Traffic Management Center ITS Roadway Equipment Traffic Management Center ITS Roadway Equipment I	ITS Roadway Equipm	nent	Tra	affic Management Center	roadv	vay dynamic signage status			
Maint and Constr Management Center Traffic M	ITS Roadway Equipm	nent	Tra	affic Management Center	roadv	vay warning system status			
Traffic Management Center Traffic Management Ce	ITS Roadway Equipm	nent	Tra	affic Management Center	variab	ole speed limit status			
Traffic Management Center Traffic Management	Maint and Constr Ma	anagement Center	ITS	S Roadway Equipment	roadv	vay dynamic signage data			
Traffic Management Center Traffic Management Center Traffic Management Center Traffic Management Center ITS Roadway Equipment ITS Roadway Equipment variable speed limit control Number of Issues: 3 Total Issue Severity: Insumption is used within the U.S It combines standards associated with US: NTCIP Message Sign with those for I-F: SNMPv3. The US: NTCIP Message Sign standards include upper-layer standards required to implement centre-to-field may not communications. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly	Traffic Management	Center	ITS	S Roadway Equipment	lane n	management control			
Traffic Management Center US: NTCIP Message Sign - SNMPv3 It combines standards associated with US: NTCIP Message Sign with those for I-F: SNMPv3. The US: NTCIP Message Sign standards include upper-layer standards required to implement centre-to-field magnifications. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly	Traffic Management	Center	ITS	S Roadway Equipment	roadw	vay dynamic signage data			
Duttion Name: US: NTCIP Message Sign - SNMPv3 It combines standards associated with US: NTCIP Message Sign with those for I-F: SNMPv3. The US: NTCIP Message Sign standards include upper-layer standards required to implement centre-to-field magnifications. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly	Traffic Management	Center	ITS	S Roadway Equipment	roadw	vay warning system control			
nis solution is used within the U.S It combines standards associated with US: NTCIP Message Sign with those for I-F: SNMPv3. The US: NTCIP Message Sign standards include upper-layer standards required to implement centre-to-field magnifications. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly	Traffic Management	Center	ITS	S Roadway Equipment	variab	ole speed limit control			
gn communications. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly	olution Name:	US: NTCIP Message Sign - SNMPv3				Number of Issues:	3	Total Issue Severity:	36
	This solution is used v	vithin the U.S It combines standards associated. The I-F: SNMPv3 standards include lower-layer	standards that sup	port secure centre-to-field and	9 9	ude upper-layer standards	required to ir	nplement centre-to-fie	eld message

sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Speed warning	Develop an internationally acceptable ITS application specification for providing roadway configuration data, current speed limits, warning parameters and thresholds to a speed warning application.	Urgent	Australia, European Union, United States
Source			mation Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Flow Name			
ITS Roadway Equipment		Traffic Management Center		variable speed limit status		
Traffic Management Center		ITS Roadway Equipment		variable speed limit control		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Message signs	Develop an internationally acceptable ITS application specification for managing message signs for secure communications with proper access control.	Urgent	Australia, European Union, United States
		Information 1	- Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
ITS Roadway Equipment Traffic Management Center		Tra	ffic Management Center	roadway warning system status		
Traffic Management Center		ITS Roadway Equipment		roadway warning system control		

Solution Name:	US: NTCIP Message Sign - SNMPv3				otal Issue Severity:	36
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
'	Data has been defined for SNMPv1, but needs to be updated to SNMPv3 format.	Medium	I-F: Message signs	Develop an internationally acceptable ITS application specification for managing message signs for secure communications with proper access control.		Australia, European Union, United States

Source Info	ormation Triples using this solution and affected by this Issue that would be addressed by the Proposed Destination	d Resolution Flow Name
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	roadway dynamic signage data
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	ITS roadway equipment information
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	roadway dynamic signage status
ITS Roadway Equipment	Maint and Constr Management Center	roadway dynamic signage status
ITS Roadway Equipment	Other ITS Roadway Equipment	dynamic sign coordination
ITS Roadway Equipment	Traffic Management Center	roadway dynamic signage status
ITS Roadway Equipment	Traffic Management Center	roadway warning system status
ITS Roadway Equipment	Traffic Management Center	variable speed limit status
Maint and Constr Management Center	ITS Roadway Equipment	roadway dynamic signage data
Other ITS Roadway Equipment	ITS Roadway Equipment	dynamic sign coordination
Traffic Management Center	ITS Roadway Equipment	lane management control
Traffic Management Center	ITS Roadway Equipment	roadway dynamic signage data
Traffic Management Center	ITS Roadway Equipment	roadway warning system control
Traffic Management Center	ITS Roadway Equipment	variable speed limit control

Solution Name:	US: NTCIP Message Sign - SNMPv3			Number of Issues: 3	Total Issue Severit	y : 36
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
				by this Issue that would be addressed by the Proposed Resolution		
Source		De	stination	Flow Name		
Connected Vehicle R	Roadside Equipment	ITS	S Roadway Equipment	roadway dynamic signage data		
ITS Roadway Equipm	nent	Co	nnected Vehicle Roadside Equipment	ITS roadway equipment information		
ITS Roadway Equipm	nent	Co	nnected Vehicle Roadside Equipment	roadway dynamic signage status		
ITS Roadway Equipm	nent	Ma	aint and Constr Management Center	roadway dynamic signage status		
ITS Roadway Equipm	nent	Ot	her ITS Roadway Equipment	dynamic sign coordination		
ITS Roadway Equipm	nent	Tra	affic Management Center	roadway dynamic signage status		
ITS Roadway Equipm	nent	Tra	affic Management Center	roadway warning system status		
ITS Roadway Equipm	nent	Tra	affic Management Center	variable speed limit status		
Maint and Constr M	anagement Center	ITS	Roadway Equipment	roadway dynamic signage data		
Other ITS Roadway I	Equipment	ITS	Roadway Equipment	dynamic sign coordination		
Traffic Management	Center	ITS	Roadway Equipment	lane management control		
Traffic Management	Center	ITS	Roadway Equipment	roadway dynamic signage data		
Traffic Management	Center	ITS	Roadway Equipment	roadway warning system control		
Traffic Management	Center	ITS	Roadway Equipment	variable speed limit control		

Solution Name: US: NTCIP Ramp Meters - OMG DDS RPC

Total Issue Severity:

3

Number of Issues:

This solution is used within the U.S.. It combines standards associated with US: NTCIP Ramp Meters with those for I-F: OMG DDS RPC. The US: NTCIP Ramp Meters standards include upper-layer standards required to implement centre-to-field ramp meter communications. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	_	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States

	Information Triples using this solution and affected by this Issue that	would be addressed by the Proposed Resolution	
Source	Destination	Flow Name	
ITS Roadway Equipment	Traffic Management Center	traffic metering status	
Traffic Management Center	ITS Roadway Equipment	traffic metering control	

Solution Name: US: NTCIP Ramp Meters - SNMPv1

Number of Issues: Total Issue Severity: 8

This solution is used within the U.S.. It combines standards associated with US: NTCIP Ramp Meters with those for I-F: SNMPv1. The US: NTCIP Ramp Meters standards include upper-layer standards required to implement centre-to-field ramp meter communications. The I-F: SNMPv1 standards include lower-layer standards that define how SNMPv1, which does not provide any security, is used within some deployments within the ITS industry. This solution is no longer recommended due to known security vulnerabilities.

olution Name:	US: NTCIP Ramp Meters - SNMPv1			Number of Issues: 1	otal Issue Severi	ty: 8
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security not provided	The solution does not provide any significant security and a communications link using this solution is easily hacked.	High	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected bestination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipm	nent	Tra	affic Management Center	traffic metering status		
Traffic Management	Center	ITS	Roadway Equipment	traffic metering control		
olution Name:	US: NTCIP Ramp Meters - SNMPv1/TLS			Number of Issues: 2 T	otal Issue Severi	ty: 6
eter communication		ayer standards th	•	NMPv1/TLS. The US: NTCIP Ramp Meters standards include upper-layer standards required to a sic security into SNMPv1 implementations (mainly in the US); however, this only secures the	•	-
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ecurity inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
	communications security for the information triple, which potentially jeopardizes C-ITS	Information ⁻	Triples using this solution and affected b	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution	Urgent	Australia, European Union, United States
Source ITS Roadway Equipm	communications security for the information triple, which potentially jeopardizes C-ITS operations.	Information [*] Des		standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	
Source	communications security for the information triple, which potentially jeopardizes C-ITS operations.	Information Des Tra	Triples using this solution and affected t	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name	Urgent	
Source ITS Roadway Equipm Traffic Management	communications security for the information triple, which potentially jeopardizes C-ITS operations.	Information Des Tra	Triples using this solution and affected be stination affic Management Center	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name traffic metering status	Urgent	
ITS Roadway Equipm	communications security for the information triple, which potentially jeopardizes C-ITS operations.	Information Des Tra	Triples using this solution and affected bestination affic Management Center Roadway Equipment	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name traffic metering status traffic metering control		Union, United States
Source ITS Roadway Equipm Traffic Management Issue Unvetted by community	communications security for the information triple, which potentially jeopardizes C-ITS operations. Center Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Information Trail ITS Issue Severity Medium	Triples using this solution and affected bestination affic Management Center Roadway Equipment Proposed Resolution I-F: Secure communications	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name traffic metering status traffic metering control Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Timeframe	Applicability Australia, European
Source ITS Roadway Equipm Traffic Management Issue Unvetted by	communications security for the information triple, which potentially jeopardizes C-ITS operations. The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information Des	Triples using this solution and affected bestination affic Management Center B Roadway Equipment Proposed Resolution I-F: Secure communications	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name traffic metering status traffic metering control Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Timeframe	Applicability Australia, European

This solution is used within the U.S.. It combines standards associated with US: NTCIP Ramp Meters with those for I-F: SNMPv3. The US: NTCIP Ramp Meters standards include upper-layer standards required to implement centre-to-field ramp meter communications. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Number of Issues:

Total Issue Severity:

1

US: NTCIP Ramp Meters - SNMPv3

Solution Name:

Solution Name:	US: NTCIP Ramp Meters - SNMPv3			Number of Issues: 1 To	otal Issue Severity:	1
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	ent		offic Management Center	traffic metering status		
Traffic Management (Center	ITS	Roadway Equipment	traffic metering control		
Solution Name:	US: NTCIP Signal Priority - NTCIP Messag	ing		Number of Issues: 3	otal Issue Severity:	43
			-	TCIP Messaging. The US: NTCIP Signal Priority standards include upper-layer standards required include lower-layer standards that support partially secure communications between two	•	
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States
		Information 7	Friples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source			stination	Flow Name		
Traffic Management (zenter	Ira	nsit Management Center	traffic control priority status		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: US signal priority/preemption	Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.	Medium-term	United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management (Center		nsit Management Center	traffic control priority status		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	C-C: US signal priority/preemption	Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.	Medium-term	United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management (Center		ansit Management Center	traffic control priority status		

Solution Name:	US: NTCIP Signal Priority - OMG DDS	Number of Issues:	2	Total Issue Severity:	35
Solution Name:	US: NTCIP Signal Priority - OMG DDS	Number of Issues:	2	Total Issue Severity:	35

This solution is used within the U.S.. It combines standards associated with US: NTCIP Signal Priority with those for C-C: OMG DDS. The US: NTCIP Signal Priority standards include upper-layer standards required to implement centre-to-field traffic signal control priority communications (e.g., for busses and emergency vehicles). The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: US signal priority/preemption	Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.	Medium-term	United States
Source			Triples using this solution and affected bation	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Managemen	t Center	Tra	nnsit Management Center	traffic control priority status		

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	_	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States

	Information Triples using this solution and affected by this Issue that wou	ıld be addressed by the Proposed Resolution	
Source	Destination	Flow Name	
Traffic Management Center	Transit Management Center	traffic control priority status	

Solution Name: US: NTCIP Signal Priority - OMG DDS RPC 2 Total Issue Severity: 35

This solution is used within the U.S.. It combines standards associated with US: NTCIP Signal Priority with those for I-F: OMG DDS RPC. The US: NTCIP Signal Priority standards include upper-layer standards required to implement centre-to-field traffic signal control priority communications (e.g., for busses and emergency vehicles). The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

a centre over a field	communication link					
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Signal control	Develop an internationally acceptable ITS application specification for the interface between a traffic signal controller and a roadside station to exchange raw data related to the SPaT, SRM, and SSM using the secure centre-to-field protocol.	Urgent	Australia, European Union, United States
		Information ⁻	Triples using this solution and affected	by this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Connected Vehicle	Roadside Equipment	ITS	Roadway Equipment	signal preemption request		
Connected Vehicle	Roadside Equipment	ITS	Roadway Equipment	signal priority service request		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
		Information ⁻	Triples using this solution and affected	d by this Issue that would be addressed by the Proposed Resolution		
Source			stination	Flow Name		
ITS Roadway Equip	ment	Tra	affic Management Center	right-of-way request notification		

olution Name:	US: NTCIP Signal Priority - OMG DDS RPC	-			otal Issue Severity	
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle F	Roadside Equipment		Roadway Equipment	signal preemption request		
Connected Vehicle F	Roadside Equipment	ITS	Roadway Equipment	signal priority service request		
ITS Roadway Equipn	ment	Tra	offic Management Center	right-of-way request notification		
gnal control priority		vehicles). The I-F	: SNMPv1 standards include lower	Number of Issues: 2 IMPv1. The US: NTCIP Signal Priority standards include upper-layer standards required to imper-layer standards that define how SNMPv1, which does not provide any security, is used with	•	o-field traffic
nis solution is used v	within the U.S It combines standards associated v		•	IMPv1. The US: NTCIP Signal Priority standards include upper-layer standards required to imp	plement centre-to	o-field traffic
nis solution is used was a solution is used was a solution is used was a solution is solution. This solution is used was a solution is used was a solution is used was a solution in the solution is used was a solution in the solution is used was a solution in the solution is used was a solution is used was a solution in the solution is used was a solution in the solution in the solution in the solution is used was a solution in the solution in the solution in the solution is used was a solution in the solution in the solution in the solution in the solution is used was a solution in the solution in the solution in the solution in the solution is used was a solution in the solution is used with the solution in the solu	within the U.S It combines standards associated to communications (e.g., for busses and emergency ation is no longer recommended due to known second lissue Description The solution does not provide any significant	vehicles). The I-F urity vulnerabiliti	: SNMPv1 standards include lower	IMPv1. The US: NTCIP Signal Priority standards include upper-layer standards required to imper-layer standards that define how SNMPv1, which does not provide any security, is used wit Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication	plement centre-to	Applicability Australia, European
nis solution is used very solution.	within the U.S It combines standards associated to communications (e.g., for busses and emergency ation is no longer recommended due to known seconds lissue Description	vehicles). The I-F urity vulnerabiliti Issue Severity	: SNMPv1 standards include lowers. Proposed Resolution	IMPv1. The US: NTCIP Signal Priority standards include upper-layer standards required to imper-layer standards that define how SNMPv1, which does not provide any security, is used wit Resolution Description	plement centre-to thin some deploym Timeframe	a-field traffic nents within the Applicability
nis solution is used v gnal control priority	within the U.S It combines standards associated to communications (e.g., for busses and emergency ution is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is no longer recommended due to known secondards associated to communication is not provide any significant secondards associated to communication is not provide any significant secondards associated to communication is not provide any significant secondards associated to communication is not provide any significant secondards.	vehicles). The I-Furity vulnerabiliti Issue Severity High	Proposed Resolution I-F: Secure communications	IMPv1. The US: NTCIP Signal Priority standards include upper-layer standards required to imper-layer standards that define how SNMPv1, which does not provide any security, is used with the standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as	plement centre-to thin some deploym Timeframe	Applicability Australia, European
nis solution is used version of the solution is used version of the solution is used version of the solution o	within the U.S It combines standards associated to communications (e.g., for busses and emergency ution is no longer recommended due to known secondary secondary secondary significant security and a communications link using this solution is easily hacked.	Information Description The I-Formation of the I-	: SNMPv1 standards include lowers. Proposed Resolution I-F: Secure communications Triples using this solution and affected by	IMPv1. The US: NTCIP Signal Priority standards include upper-layer standards required to imper-layer standards that define how SNMPv1, which does not provide any security, is used with the standards and security is used with the standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	plement centre-to thin some deploym Timeframe	Applicability Australia, European
sis solution is used we gnal control priority industry. This solutions is used we gnal control priority. This solutions is used we grade in the solution is used with the solution the solution	within the U.S It combines standards associated to communications (e.g., for busses and emergency ution is no longer recommended due to known secondary secondary secondary significant security and a communications link using this solution is easily hacked.	Information Description The I-Formation of the I-	: SNMPv1 standards include lowers. Proposed Resolution I-F: Secure communications Friples using this solution and affected by stination	IMPv1. The US: NTCIP Signal Priority standards include upper-layer standards required to imper-layer standards that define how SNMPv1, which does not provide any security, is used with the security of the s	plement centre-to thin some deploym Timeframe	Applicability Australia, European
nis solution is used very gnal control priority industry. This solution is used very solution in the solution is used very solution.	within the U.S It combines standards associated to communications (e.g., for busses and emergency ation is no longer recommended due to known secondary secondary secondary significant security and a communications link using this solution is easily hacked.	vehicles). The I-Furity vulnerabiliti Issue Severity High Information Des	Proposed Resolution I-F: Secure communications Triples using this solution and affected by stination offic Management Center	IMPv1. The US: NTCIP Signal Priority standards include upper-layer standards required to imper-layer standards that define how SNMPv1, which does not provide any security, is used with the secure of the standards and security of the standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. It is issue that would be addressed by the Proposed Resolution Flow Name right-of-way request notification	Timeframe Urgent	Applicability Australia, European Union, United States
ssue Source ITS Roadway Equipments Sata profile not	within the U.S It combines standards associated to communications (e.g., for busses and emergency ution is no longer recommended due to known secondary security and a communications link using this solution is easily hacked. Issue Description Issue Description Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined	Information Information Information Information Information Information Information	Proposed Resolution I-F: Secure communications Friples using this solution and affected by stination offic Management Center Proposed Resolution I-F: EU signal operations	IMPv1. The US: NTCIP Signal Priority standards include upper-layer standards required to imper-layer standards that define how SNMPv1, which does not provide any security, is used with the Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. This Issue that would be addressed by the Proposed Resolution Flow Name right-of-way request notification Resolution Description Develop an ITS application specification for exchanging configuration, plans, status, and	Timeframe Timeframe Timeframe	Applicability Applicability Australia, European Union, United States Applicability Australia, European European Union, United States

Solution Name: US: NTCIP Signal Priority - SNMPv1/TLS

Total Issue Severity: 38

Total Issue Severity: 38

This solution is used within the U.S.. It combines standards associated with US: NTCIP Signal Priority with those for I-F: SNMPv1/TLS. The US: NTCIP Signal Priority standards include upper-layer standards required to implement centre-to-field traffic signal control priority communications (e.g., for busses and emergency vehicles). The I-F: SNMPv1/TLS standards include lower-layer standards that define one way to retrofit basic security into SNMPv1 implementations (mainly in the US); however, this only secures the communications link and does not provide end-application security and is not recommended for new deployments.

Solution Name:	US: NTCIP Signal Priority - SNMPv1/TLS	1			otal Issue Severi	
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected l stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	ent	Tra	affic Management Center	right-of-way request notification		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
Source			Triples using this solution and affected l stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	ent	Tra	affic Management Center	right-of-way request notification		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Invetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected bactering this solution	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipment			affic Management Center	right-of-way request notification		
				Number of Issues: 3	otal Issue Severit	ty: 36

signal control priority communications (e.g., for busses and emergency vehicles). The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Signal control	Develop an internationally acceptable ITS application specification for the interface between a traffic signal controller and a roadside station to exchange raw data related to the SPaT, SRM, and SSM using the secure centre-to-field protocol.	Urgent	Australia, European Union, United States
				this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Connected Vehicle Roadside Equipment		ITS Roadway Equipment		signal preemption request		
Connected Vehicle Ro	Connected Vehicle Roadside Equipment		Roadway Equipment	signal priority service request		

olution Name:	US: NTCIP Signal Priority - SNMPv3			Number of Issues: 3	otal Issue Severity	36
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipm	ent		offic Management Center	right-of-way request notification		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
odate data to IMPv3	Data has been defined for SNMPv1, but needs to be updated to SNMPv3 format.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
Source			Triples using this solution and affected bation	by this Issue that would be addressed by the Proposed Resolution Flow Name		
			Roadway Equipment	signal preemption request		
Connected Vehicle Roadside Equipment			Roadway Equipment	signal priority service request		
ITS Roadway Equipm	ent	Tra	offic Management Center	right-of-way request notification		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
se TLS for SNMP ption	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Roadside Equipment			Roadway Equipment	signal preemption request		
Connected Vehicle Roadside Equipment		ITS	Roadway Equipment	signal priority service request		
ITS Roadway Equipment		Tra	affic Management Center	right-of-way request notification		
lution Name:	US: NTCIP Signal System Masters - OMG	DDS RPC		Number of Issues: 2 T	otal Issue Severity	35
				for I-F: OMG DDS RPC. The US: NTCIP Signal System Masters standards include upper-layer standards secure remote procedure calls between a field device and another field device or		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
Source			Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management	Center		Roadway Equipment	signal control commands		
			, , , , ,			

signal control device configuration

signal system configuration

ITS Roadway Equipment

ITS Roadway Equipment

Traffic Management Center

Traffic Management Center

olution Name:	US: NTCIP Signal System Masters - OMG	DDS RPC		Number of Issues: 2	Total Issue Severity:	35
lssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management Center			Roadway Equipment	signal control commands		
Traffic Management Center Traffic Management Center		ITS Roadway Equipment		signal control device configuration		
		ITS	Roadway Equipment	signal system configuration		
Solution Name: US: NTCIP Signal System Masters - SNMPv1				Number of Issues: 2	Total Issue Severity:	40
field signal-syste		7	•	for I-F: SNMPv1. The US: NTCIP Signal System Masters standards include upper-layer standards inc		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
		1	1.5.6			

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ecurity not rovided	The solution does not provide any significant security and a communications link using this solution is easily hacked.	High	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected l	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management Center		ITS Roadway Equipment		signal control commands		
Traffic Management Center		ITS Roadway Equipment		signal control device configuration		
Traffic Management Center		ITS Roadway Equipment		signal system configuration		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
				by this Issue that would be addressed by the Proposed Resolution		
Source Traffic Management Center		Destination ITS Roadway Equipment		Flow Name signal control commands		
		ITS Roadway Equipment		signal control device configuration		
Traffic Management	Traffic Management Center Traffic Management Center		Roadway Equipment	signal control device configuration		

This solution is used within the U.S.. It combines standards associated with US: NTCIP Signal System Masters with those for I-F: SNMPv1/TLS. The US: NTCIP Signal System Masters standards include upper-layer standards required to implement centre-to-field signal-system master communications. The I-F: SNMPv1/TLS standards include lower-layer standards that define one way to retrofit basic security into SNMPv1 implementations (mainly in the US); however, this only secures the communications link and does not provide end-application security and is not recommended for new deployments.

olution Name:	US: NTCIP Signal System Masters - SNMI	v1/TLS		Number of Issues: 3	otal Issue Severity	38
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
Source			riples using this solution and affected bitination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management	Center	ITS	Roadway Equipment	signal control commands		
Traffic Management	Center	ITS	Roadway Equipment	signal control device configuration		
Traffic Management	Center	ITS	Roadway Equipment	signal system configuration		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
Source			riples using this solution and affected bitination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management	Center	ITS	Roadway Equipment	signal control commands		
Traffic Management	Center	ITS	Roadway Equipment	signal control device configuration		
Traffic Management	Center	ITS	Roadway Equipment	signal system configuration		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Time of women	Applicability
			Proposed Resolution	Resolution Description	Timeframe	Applicability
nvetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
•	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Medium Information To	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as		Australia, European
mmunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium Information To Dest	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution		Australia, European
Source	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium Information To Dest	I-F: Secure communications riples using this solution and affected by	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Source Traffic Management	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple. Center	Information To Dest	I-F: Secure communications riples using this solution and affected by tination Roadway Equipment	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name Signal control commands		Australia, European

This solution is used within the U.S.. It combines standards associated with US: NTCIP Signal System Masters with those for I-F: SNMPv3. The US: NTCIP Signal System Masters standards include upper-layer standards required to implement centre-to-field signal-system master communications. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra		Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union

					T. I. I. I	26
olution Name:	US: NTCIP Signal System Masters - SNMP				Total Issue Severity:	36
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management C	enter	ITS	Roadway Equipment	signal control commands		
Traffic Management C	enter	ITS	Roadway Equipment	signal control device configuration		
Traffic Management C	enter	ITS	Roadway Equipment	signal system configuration		
lssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Update data to SNMPv3	Data has been defined for SNMPv1, but needs to be updated to SNMPv3 format.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
Source			- Triples using this solution and affected b tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management C	enter	ITS	Roadway Equipment	signal control commands		
Traffic Management C	enter	ITS	Roadway Equipment	signal control device configuration		
Traffic Management C	enter	ITS	Roadway Equipment	signal system configuration		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
lse TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
				by this Issue that would be addressed by the Proposed Resolution		
Source Traffic Management C	enter		stination Roadway Equipment	Flow Name signal control commands		
Traffic Management C			Roadway Equipment	signal control device configuration		
Traffic Management C			Roadway Equipment	signal system configuration		
Trainic Management C	cinci	113	modeway Equipment	Signal System configuration		

This solution is used within the U.S.. It combines standards associated with US: NTCIP Traffic Signal with those for I-F: OMG DDS RPC. The US: NTCIP Traffic Signal standards include upper-layer standards required to implement centre-to-field traffic

signal communications. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
		Information 1	Triples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
ITS Roadway Equipme	ent	Oth	ner ITS Roadway Equipment	signal control data		
ITS Roadway Equipme	ent	Tra	offic Management Center	signal control status		
Other ITS Roadway Ed	quipment	ITS	Roadway Equipment	signal control data		
Traffic Management (Center	ITS	Roadway Equipment	signal control plans		

Solution Name:	US: NTCIP Traffic Signal - OMG DDS RPC			Number of Issues: 5	otal Issue Severit	y: 49
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	I-F: Signal control	Develop an internationally acceptable ITS application specification for the interface between a traffic signal controller and a roadside station to exchange raw data related to the SPaT, SRM, and SSM using the secure centre-to-field protocol.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	ent		nnected Vehicle Roadside Equipment	intersection control status		
lssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
Source			riples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	ent		nnected Vehicle Roadside Equipment	intersection control status		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Dialogs are not fully defined (medium)	The specific dialogs for exchanging this data have not been fully defined.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
Source	A		riples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment		Roadway Equipment	pedestrian location information		
Connected Vehicle Ro	padside Equipment	ITS	Roadway Equipment	signal service request		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	conflict monitor status		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	intersection control status		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	pedestrian crossing status		
ITS Roadway Equipme	ent	Otl	ner ITS Roadway Equipment	signal control coordination		
ITS Roadway Equipme	ent		ner ITS Roadway Equipment	signal control data		
ITS Roadway Equipme			ffic Management Center	pedestrian safety warning status		
ITS Roadway Equipme			ffic Management Center	signal control status		
Other ITS Roadway E			Roadway Equipment	signal control coordination		
Other ITS Roadway E			Roadway Equipment	signal control data		
Traffic Management			Roadway Equipment	pedestrian safety warning control		
Traffic Management	Center	ITS	Roadway Equipment	signal control plans		

Solution Name:	US: NTCIP Traffic Signal - OMG DDS RPC	2		Number of Issues: 5	Total Issue Severity	49
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
				y this Issue that would be addressed by the Proposed Resolution		
Source			stination	Flow Name		
Connected Vehic	cle Roadside Equipment	ITS	S Roadway Equipment	pedestrian location information		
Connected Vehic	cle Roadside Equipment	ITS	S Roadway Equipment	signal service request		
ITS Roadway Equ	uipment	Co	onnected Vehicle Roadside Equipment	conflict monitor status		
ITS Roadway Equ	uipment	Co	onnected Vehicle Roadside Equipment	intersection control status		
ITS Roadway Equ	uipment	Co	onnected Vehicle Roadside Equipment	pedestrian crossing status		
ITS Roadway Equ	uipment	Ot	ther ITS Roadway Equipment	signal control coordination		
ITS Roadway Equ	uipment	Ot	ther ITS Roadway Equipment	signal control data		
ITS Roadway Equ	uipment	Tra	affic Management Center	pedestrian safety warning status		
ITS Roadway Equ	uipment	Tra	affic Management Center	signal control status		
Other ITS Roadw	vay Equipment	ITS	S Roadway Equipment	signal control coordination		
Other ITS Roadw	vay Equipment	ITS	S Roadway Equipment	signal control data		
Traffic Managem	nent Center	ITS	S Roadway Equipment	pedestrian safety warning control		
Traffic Managem	nent Center	ITS	S Roadway Equipment	signal control plans		

Solution Name: US: NTCIP Traffic Signal - SNMPv1 46

This solution is used within the U.S.. It combines standards associated with US: NTCIP Traffic Signal with those for I-F: SNMPv1. The US: NTCIP Traffic Signal standards include upper-layer standards required to implement centre-to-field traffic signal

communications. The I-F: SNMPv1 standards include lower-layer standards that define how SNMPv1, which does not provide any security, is used within some deployments within the ITS industry. This solution is no longer recommended due to known security vulnerabilities.

Issue Description	n	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	es not provide any significant ommunications link using this hacked.	High		Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States

	inceded.		
Source	Information Triples using this solution and affected by this Issue that wou Destination	ld be addressed by the Proposed Resolution Flow Name	
ITS Roadway Equipment	Traffic Management Center	pedestrian safety warning status	
ITS Roadway Equipment	Traffic Management Center	signal control status	
Traffic Management Center	ITS Roadway Equipment	pedestrian safety warning control	
Traffic Management Center	ITS Roadway Equipment	signal control plans	

Solution Name:	US: NTCIP Traffic Signal - SNMPv1		_	Number of Issues: 4	otal Issue Severity:	46
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, Europea Union
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipn	nent	Tra	offic Management Center	signal control status		
Traffic Management Center		ITS	Roadway Equipment	signal control plans		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Dialogs are not fully defined (medium)	The specific dialogs for exchanging this data have not been fully defined.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
Source			Friples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipn	nent	Tra	offic Management Center	pedestrian safety warning status		
ITS Roadway Equipn	nent	Tra	offic Management Center	signal control status		
Traffic Management	: Center	ITS	Roadway Equipment	pedestrian safety warning control		
Traffic Management	t Center	ITS	Roadway Equipment	signal control plans		
Solution Name:	US: NTCIP Traffic Signal - SNMPv1/TLS			Number of Issues: 5 T	otal Issue Severity:	44
his solution is used viignal communication		ayer standards th		NMPv1/TLS. The US: NTCIP Traffic Signal standards include upper-layer standards required to in a sic security into SNMPv1 implementations (mainly in the US); however, this only secures the contract of the US is a security into SNMPv1 implementations (mainly in the US); however, this only secures the contract of the US is a security into SNMPv1 implementations (mainly in the US); however, this only secures the contract of the US is a security into SNMPv1 implementations (mainly in the US); however, this only secures the contract of the US is a security into SNMPv1 implementations (mainly in the US); however, this only secures the contract of the US is a security into SNMPv1 implementation (mainly in the US); however, this only secures the contract of the US is a security into SNMPv1 implementation (mainly in the US); however, this only secures the contract of the US is a security into SNMPv1 implementation (mainly in the US); however, this only secures the contract of the US is a security into SNMPv1 implementation (mainly in the US); however, this only secures the contract of the US is a security into SNMPv1 implementation (mainly in the US); however, the US is a security into SNMPv1 implementation (mainly in the US); however, the US is a security into SNMPv1 implementation (mainly in the US); however, the US is a security into SNMPv1 implementation (mainly in the US); however, the US is a security in the US is a security		

Issue Severity Proposed Resolution

ITS Roadway Equipment

ecurity inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
Source			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	ent	Tra	ffic Management Center	pedestrian safety warning status		
ITS Roadway Equipme	ent	Tra	offic Management Center	signal control status		
Traffic Management (Center	ITS	Roadway Equipment	pedestrian safety warning control		

Resolution Description

Timeframe

signal control plans

Applicability

Issue Description

Issue

Traffic Management Center

olution Name:	US: NTCIP Traffic Signal - SNMPv1/TLS			Number of Issues: 5	otal Issue Severity	: 44
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Pata profile not lefined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: EU signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union
Source			Triples using this solution and affected baction	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	nt		affic Management Center	signal control status		
Traffic Management C	enter	ITS	Roadway Equipment	signal control plans		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
pialogs are not fully efined (medium)	The specific dialogs for exchanging this data have not been fully defined.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
		Information ⁻	Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution		
Source			stination	Flow Name		
ITS Roadway Equipme			affic Management Center	pedestrian safety warning status		
ITS Roadway Equipme			affic Management Center	signal control status		
Traffic Management C	enter	ITS	Roadway Equipment	pedestrian safety warning control		
Traffic Management C	enter	ITS	Roadway Equipment	signal control plans		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Invetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source				by this Issue that would be addressed by the Proposed Resolution Flow Name		
Source ITS Roadway Equipme	nt		stination affic Management Center	pedestrian safety warning status		
ITS Roadway Equipme			affic Management Center	signal control status		
Traffic Management C	enter	ITS	Roadway Equipment	pedestrian safety warning control		
Traffic Management C	enter	ITS	Roadway Equipment	signal control plans		
olution Name:	US: NTCIP Traffic Signal - SNMPv3			Number of Issues: 6 To	otal Issue Severity	: 50

use the TLS for SNMP security option for this solution to ensure adequate security.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra		Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	Australia, European Union

Sol	ution Name:	US: NTCIP Traffic Signal - SNMPv3			Number of Issues: 6 To	otal Issue Severity:	50
	Source			Friples using this solution and affected bistination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
	ITS Roadway Equipment ITS Roadway Equipment Other ITS Roadway Equipment		Oth	ner ITS Roadway Equipment	signal control data		
			Tra	offic Management Center	signal control status		
			ITS Roadway Equipment		signal control data		
	Traffic Management Ce	enter	ITS	Roadway Equipment	signal control plans		
Iss	sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
		Data has been defined for SNMPv1, but needs to be updated to SNMPv3 format.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
	Source			Triples using this solution and affected bestination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
	Connected Vehicle Roa	dside Fauinment	ITS	Roadway Equipment	nedestrian location information		

Source	formation Triples using this solution and affected by this Issue that would be addressed by the Propose Destination	Flow Name
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	pedestrian location information
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	signal service request
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	conflict monitor status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	intersection control status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	ITS roadway equipment information
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	pedestrian crossing status
ITS Roadway Equipment	Other ITS Roadway Equipment	signal control coordination
ITS Roadway Equipment	Other ITS Roadway Equipment	signal control data
ITS Roadway Equipment	Traffic Management Center	pedestrian safety warning status
ITS Roadway Equipment	Traffic Management Center	signal control status
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control coordination
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control data
Traffic Management Center	ITS Roadway Equipment	pedestrian safety warning control
Traffic Management Center	ITS Roadway Equipment	signal control plans

olution Name:	US: NTCIP Traffic Signal - SNMPv3			Number of Issues: 6	otal Issue Severity:	50
lssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment		Roadway Equipment	pedestrian location information		
Connected Vehicle Ro	padside Equipment	ITS	Roadway Equipment	signal service request		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	conflict monitor status		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	intersection control status		
ITS Roadway Equipm	ent	Co	nnected Vehicle Roadside Equipment	ITS roadway equipment information		
ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	pedestrian crossing status		
ITS Roadway Equipme	ent	Otl	her ITS Roadway Equipment	signal control coordination		
ITS Roadway Equipme	ent	Otl	her ITS Roadway Equipment	signal control data		
ITS Roadway Equipme	ent	Tra	offic Management Center	pedestrian safety warning status		
ITS Roadway Equipme	ent	Tra	offic Management Center	signal control status		
Other ITS Roadway E	quipment	ITS	Roadway Equipment	signal control coordination		
Other ITS Roadway E	quipment	ITS	Roadway Equipment	signal control data		
Traffic Management	Center	ITS	Roadway Equipment	pedestrian safety warning control		
Traffic Management	Center	ITS	Roadway Equipment	signal control plans		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not fully efined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	I-F: Signal control	Develop an internationally acceptable ITS application specification for the interface between a traffic signal controller and a roadside station to exchange raw data related to the SPaT, SRM, and SSM using the secure centre-to-field protocol.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	ent		nnected Vehicle Roadside Equipment	intersection control status		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
nta not fully fined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Source						
Source ITS Roadway Equipme	ent	Co	nnected Vehicle Roadside Equipment	intersection control status		

Sol	ution Name:	US: NTCIP Traffic Signal - SNMPv3			Number of	f Issues: 6	Total Issue Severity:	50
Iss	ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
	alogs are not fully fined (medium)	The specific dialogs for exchanging this data have not been fully defined.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration commands for signal control and signal systems using the secure		Urgent .	United States
					y this Issue that would be addressed by the Proposed Resolution			
	Source			tination	Flow Name			
	Connected Vehicle Roa	adside Equipment	ITS	Roadway Equipment	pedestrian location info	ormation		
	Connected Vehicle Roa	adside Equipment	ITS	Roadway Equipment	signal service request			
	ITS Roadway Equipme	nt	Cor	nnected Vehicle Roadside Equipment	conflict monitor status			
	ITS Roadway Equipme	nt	Cor	nnected Vehicle Roadside Equipment	intersection control stat	tus		
	ITS Roadway Equipme	nt	Cor	nnected Vehicle Roadside Equipment	ITS roadway equipment	tinformation		
	ITS Roadway Equipme	nt	Cor	nnected Vehicle Roadside Equipment	pedestrian crossing state	tus		
	ITS Roadway Equipme	nt	Oth	ner ITS Roadway Equipment	signal control coordinati	tion		
	ITS Roadway Equipme	nt	Oth	ner ITS Roadway Equipment	signal control data			
	ITS Roadway Equipme	nt	Tra	ffic Management Center	pedestrian safety warnin	ing status		
	ITS Roadway Equipme	nt	Tra	ffic Management Center	signal control status			
ŀ	Other ITS Roadway Eq	uipment	ITS	Roadway Equipment	signal control coordinati	tion		
	Other ITS Roadway Eq	uipment	ITS	Roadway Equipment	signal control data			
	Traffic Management C	enter	ITS	Roadway Equipment	pedestrian safety warnin	ing control		
	Traffic Management C	enter	ITS	Roadway Equipment	signal control plans			

Solution Name: US: NTCIP Transportation Sensors - Mobile SNMPv3

Number of Issues:

Total Issue Severity:

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This solution is used within the U.S.. It combines standards associated with US: NTCIP Transportation Sensors with those for I-M: Mobile SNMPv3. The US: NTCIP Transportation Sensors standards include upper-layer standards required to implement centre-to-field transportation sensors (e.g., vehicle detectors) communications (e.g., real-time). The I-M: Mobile SNMPv3 standards include lower-layer standards that support secure infrastructure-to-mobile communications using simple network management protocol (SNMPv3).

Use TLS for SNMP Option The standard allows for multiple security mechanisms. The only defined mechanism The standard allows for multiple security mechanisms. The only defined mechanism The standard allows for multiple security mechanisms. The only defined mechanism The standard allows for multiple security mechanisms. The only defined mechanism The standard allows for multiple security mechanisms. The only defined mechanism The standard allows for multiple security mechanisms. The only defined mechanism	Applicability	Timeframe	Resolution Description	Proposed Resolution	Issue Severity	Issue Description	Issue
one based on TLS. Support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Australia, European Union, United States	Urgent	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as	I-F: Secure communications	Low	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the	

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution								
Source	Destination	Flow Name						
ITS Roadway Equipment	Maint and Constr Vehicle OBE	traffic detector data						
Maint and Constr Vehicle OBE	ITS Roadway Equipment	traffic detector control						

Solution Name:	US: NTCIP Transportation Sensors - Mo	DUITE SINIVIE VS		Number of Issues: 2	Total Issue Severit	, ,
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipr	nent	Ma	aint and Constr Vehicle OBE	traffic detector data		
Maint and Constr Vo	ehicle OBE	ITS	Roadway Equipment	traffic detector control		
olution Name:	US: NTCIP Transportation Sensors - ON	/IG DDS RPC		Number of Issues: 2	Total Issue Severit	y : 6
entre-to-field transp evice or a centre ov	ortation sensors (e.g., vehicle detectors) commu er a field communication link	ınications (e.g., rea	l-time). The I-F: OMG DDS RPC	se for I-F: OMG DDS RPC. The US: NTCIP Transportation Sensors standards include upper-layer standards include lower-layer standards that support secure remote procedure calls betwee	n a field device and	another field
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	I-F: Data aggregation	Develop an internationally acceptable ITS application specification for an RSE to aggregat collected data and report the information to interested parties (e.g., centres).	e Urgent	Australia, European Union, United States
] [
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Source Connected Vehicle I	Roadside Equipment	De		by this Issue that would be addressed by the Proposed Resolution		
Connected Vehicle I	Roadside Equipment Issue Description	De	stination	by this Issue that would be addressed by the Proposed Resolution Flow Name	Timeframe	Applicability
Connected Vehicle I		De: ITS	stination 6 Roadway Equipment	by this Issue that would be addressed by the Proposed Resolution Flow Name traffic situation data	Urgent	Applicability Australia, European Union, United States
	Issue Description Some of the data elements for this	Issue Severity Medium Information	Proposed Resolution C-V: Situation data	Resolution Description Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between	Urgent	Australia, European

Solution Name:	US: NTCIP Transportation Sensors - OM	G DDS RPC		Number of Issues: 2 To	otal Issue Severity:	6
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	oadside Equipment		Roadway Equipment	traffic situation data		
Connected Vehicle R	oadside Equipment	Tra	ffic Management Center	traffic situation data		
Connected Vehicle R	oadside Equipment	Tra	nsportation Information Center	traffic situation data		
ITS Roadway Equipm	pent	Ma	int and Constr Management Center	speed monitoring information		
ITS Roadway Equipm	nent	Ma	int and Constr Management Center	traffic detector data		
ITS Roadway Equipm	ent	Oth	ner ITS Roadway Equipment	roadway detector coordination		
ITS Roadway Equipm	ent	Tra	ffic Management Center	speed monitoring information		
ITS Roadway Equipm	ent	Tra	ffic Management Center	traffic detector data		
Maint and Constr Ma	anagement Center	ITS	Roadway Equipment	speed monitoring control		
Maint and Constr Ma	anagement Center	ITS	Roadway Equipment	traffic detector control		
Other ITS Roadway E	quipment	ITS	Roadway Equipment	roadway detector coordination		
Traffic Management	Center	ITS	Roadway Equipment	speed monitoring control		
Traffic Management	Center	ITS	Roadway Equipment	traffic detector control		

Solution Name: US: NTCIP Transportation Sensors - SNMPv1 Total Issue Severity: 8

This solution is used within the U.S.. It combines standards associated with US: NTCIP Transportation Sensors with those for I-F: SNMPv1. The US: NTCIP Transportation Sensors standards include upper-layer standards required to implement centre-to-field transportation sensors (e.g., vehicle detectors) communications (e.g., real-time). The I-F: SNMPv1 standards include lower-layer standards that define how SNMPv1, which does not provide any security, is used within some deployments within the ITS industry. This solution is no longer recommended due to known security vulnerabilities.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security not provided	The solution does not provide any significant security and a communications link using this solution is easily hacked.	High	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	nt	Ma	int and Constr Management Center	speed monitoring information		

Source	Destination	Flow Name	
ITS Roadway Equipment	Maint and Constr Management Center	speed monitoring information	
ITS Roadway Equipment	Maint and Constr Management Center	traffic detector data	
ITS Roadway Equipment	Traffic Management Center	speed monitoring information	
ITS Roadway Equipment	Traffic Management Center	traffic detector data	
Maint and Constr Management Center	ITS Roadway Equipment	speed monitoring control	
Maint and Constr Management Center	ITS Roadway Equipment	traffic detector control	
Traffic Management Center	ITS Roadway Equipment	speed monitoring control	

Solution Name: US: NTCIP Transportation Sensors - SNMPv1/TLS

This solution is used within the U.S.. It combines standards associated with US: NTCIP Transportation Sensors with those for I-F: SNMPv1/TLS. The US: NTCIP Transportation Sensors standards include upper-layer standards required to implement centre-to-field transportation sensors (e.g., vehicle detectors) communications (e.g., real-time). The I-F: SNMPv1/TLS standards include lower-layer standards that define one way to retrofit basic security into SNMPv1 implementations (mainly in the US); however, this only secures the communications link and does not provide end-application security and is not recommended for new deployments.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	ent	Ma	int and Constr Management Center	speed monitoring information		
ITS Roadway Equipme	ent	Ma	int and Constr Management Center	traffic detector data		
ITS Roadway Equipme	ent	Tra	ffic Management Center	speed monitoring information		
ITS Roadway Equipme	ent	Tra	ffic Management Center	traffic detector data		
Maint and Constr Mar	nagement Center	ITS	Roadway Equipment	speed monitoring control		
Maint and Constr Mar	nagement Center	ITS	Roadway Equipment	traffic detector control		
Traffic Management C	Center	ITS	Roadway Equipment	speed monitoring control		
Traffic Management C	Center	ITS	Roadway Equipment	traffic detector control		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
•	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United State
ommunity	standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Information T	riples using this solution and affected b	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution	Urgent	
Source	standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information T Des	riples using this solution and affected b	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name	Urgent	
Source ITS Roadway Equipme	standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information T Des Ma	Friples using this solution and affected be tination int and Constr Management Center	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution	Urgent	
ITS Roadway Equipme	standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information T Des Ma Ma	Friples using this solution and affected be tination int and Constr Management Center int and Constr Management Center	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name speed monitoring information	Urgent	
Source ITS Roadway Equipme	standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information T Des Ma Ma Tra	Friples using this solution and affected be tination int and Constr Management Center	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name speed monitoring information traffic detector data	Urgent	
Source ITS Roadway Equipme ITS Roadway Equipme ITS Roadway Equipme	standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information T Des Ma Ma Tra Tra	Triples using this solution and affected betination int and Constr Management Center int and Constr Management Center ffic Management Center	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name speed monitoring information traffic detector data speed monitoring information	Urgent	
Source ITS Roadway Equipme ITS Roadway Equipme ITS Roadway Equipme ITS Roadway Equipme	standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information T Des Ma Ma Tra Tra ITS	Triples using this solution and affected betination int and Constr Management Center int and Constr Management Center ffic Management Center ffic Management Center Roadway Equipment	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name speed monitoring information traffic detector data speed monitoring information traffic detector data	Urgent	
Source ITS Roadway Equipme ITS Roadway Equipme ITS Roadway Equipme ITS Roadway Equipme Maint and Constr Mar	standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information T Des Ma Ma Tra Tra ITS	Triples using this solution and affected betination int and Constr Management Center int and Constr Management Center ffic Management Center ffic Management Center	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name speed monitoring information traffic detector data speed monitoring information traffic detector data speed monitoring control	Urgent	

Solution Name: US: NTCIP Transportation Sensors - SNMPv3

Number of Issues: 3 Total Issue Severity:

Number of Issues:

2

Total Issue Severity:

6

This solution is used within the U.S.. It combines standards associated with US: NTCIP Transportation Sensors with those for I-F: SNMPv3. The US: NTCIP Transportation Sensors standards include upper-layer standards required to implement centre-to-field transportation sensors (e.g., vehicle detectors) communications (e.g., real-time). The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Solution Name:	US: NTCIP Transportation Sensors - SNM	Pv3		Number of Issues: 3	Total Issue Severity:	7
Issue Issu	e Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
11 '	a has been defined for SNMPv1, but needs be updated to SNMPv3 format.	Medium	-	Develop an internationally acceptable ITS application specification for exchanging transportation sensor station data with a management entity that uses the secure centre to-field protocol.	Urgent	Australia, European Union, United States

	Information Triples using this solution and affected by this Issue that would be addressed by the Propos	
Source	Destination	Flow Name
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	traffic situation data
Connected Vehicle Roadside Equipment	Traffic Management Center	traffic situation data
Connected Vehicle Roadside Equipment	Transportation Information Center	traffic situation data
ITS Roadway Equipment	Maint and Constr Management Center	speed monitoring information
ITS Roadway Equipment	Maint and Constr Management Center	traffic detector data
ITS Roadway Equipment	Other ITS Roadway Equipment	roadway detector coordination
ITS Roadway Equipment	Traffic Management Center	speed monitoring information
ITS Roadway Equipment	Traffic Management Center	traffic detector data
Maint and Constr Management Center	ITS Roadway Equipment	speed monitoring control
Maint and Constr Management Center	ITS Roadway Equipment	traffic detector control
Other ITS Roadway Equipment	ITS Roadway Equipment	roadway detector coordination
Traffic Management Center	ITS Roadway Equipment	speed monitoring control
Traffic Management Center	ITS Roadway Equipment	traffic detector control

ution Name:	US: NTCIP Transportation Sensors - SNN	/IPv3		Number of Issues: 3	otal Issue Severit	y: 7
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
TLS for SNMP ion	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	oadside Equipment		Roadway Equipment	traffic situation data		
Connected Vehicle R	oadside Equipment	Tra	ffic Management Center	traffic situation data		
Connected Vehicle R	oadside Equipment	Tra	nsportation Information Center	traffic situation data		
TS Roadway Equipm	ent	Ma	int and Constr Management Center	speed monitoring information		
rs Roadway Equipm	ent	Ma	int and Constr Management Center	traffic detector data		
TS Roadway Equipm	ent	Oth	ner ITS Roadway Equipment	roadway detector coordination		
ΓS Roadway Equipm	ent	Tra	ffic Management Center	speed monitoring information		
TS Roadway Equipm	ent	Tra	ffic Management Center	traffic detector data		
Naint and Constr Ma	anagement Center	ITS	Roadway Equipment	speed monitoring control		
laint and Constr Ma	nagement Center	ITS	Roadway Equipment	traffic detector control		
ther ITS Roadway E	quipment	ITS	Roadway Equipment	roadway detector coordination		
raffic Management	Center	ITS	Roadway Equipment	speed monitoring control		
Traffic Management	Center	ITS	Roadway Equipment	traffic detector control		
2	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
not fully ned (medium)	Some of the data elements for this information flow are not fully defined.	Medium	I-F: Data aggregation	Develop an internationally acceptable ITS application specification for an RSE to aggregate collected data and report the information to interested parties (e.g., centres).	Urgent	Australia, European Union, United States
				by this Issue that would be addressed by the Proposed Resolution		
Source Connected Vehicle R	oadside Equipment		tination Roadway Equipment	Flow Name traffic situation data		
			, 4. h			
e	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
not fully ned (medium)	Some of the data elements for this information flow are not fully defined.	Medium	C-V: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between vehicles and remote interested parties (e.g., centres).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	padside Equipment		ffic Management Center	traffic situation data		
		110				

Solution Name:

US: NTCIP Warning Device - Mobile Internet (US)

Total Issue Severity: 3

This solution is used within the U.S.. It combines standards associated with US: NTCIP Warning Device with those for I-M: Mobile Internet (US). The US: NTCIP Warning Device standards include a composite of upper-layer standards that support

monitoring for unsafe traffic activities and displaying warning to drivers. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

olution Name:	US: NTCIP Warning Device - Mobile Inte	rnet (US)		Number of Issues: 1	Total Issue Severit	y: 3
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Incertainty about rust revocation nechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected be stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Manage	ment Center	En	nergency Vehicle OBE	work zone warning device control		
Emergency Vehicle	OBE	En	nergency Management Center	work zone warning status		
Maint and Constr M	lanagement Center	M	aint and Constr Vehicle OBE	work zone warning device control		
Maint and Constr Ve	ehicle OBE	M	aint and Constr Management Center	work zone warning status		
olution Name:	US: NTCIP Warning Device - Mobile SNN	1Pv3		Number of Issues: 2 1	Total Issue Severit	y: 4
onitoring for unsafe NMPv3). ssue	e traffic activities and displaying warning to drivers Issue Description	Issue Severity	e SNMPv3 standards include low Proposed Resolution	rer-layer standards that support secure infrastructure-to-mobile communications using simple Resolution Description	e network manage	Applicability
	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	
ption	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the	Information	Triples using this solution and affected b	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution	Urgent	
	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Information De		standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	
ption	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Information De En	Triples using this solution and affected be stination	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name	Urgent	
Source Emergency Manage	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Information De En	Triples using this solution and affected be stination nergency Vehicle OBE	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning device control	Urgent	
Source Emergency Manage Emergency Vehicle (mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Information De En	Triples using this solution and affected be stination hergency Vehicle OBE hergency Management Center	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning device control work zone warning status	Timeframe	
Emergency Manage	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS. ment Center OBE Janagement Center	Information De En En M:	Triples using this solution and affected bestination nergency Vehicle OBE nergency Management Center aint and Constr Vehicle OBE	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning device control work zone warning status work zone warning device control		Applicability Applicability Australia, European Union, United States
Source Emergency Manage Emergency Vehicle (Maint and Constr M ssue Unvetted by community	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS. ment Center OBE lanagement Center Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this	Information De En En Mi Issue Severity Medium	Triples using this solution and affected be stination in the stination in	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning device control work zone warning status work zone warning device control Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution	Timeframe	Applicability Australia, European
Source Emergency Manage Emergency Vehicle (Maint and Constr M Ssue Invetted by community	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS. ment Center OBE lanagement Center Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information De En En Mi Issue Severity Medium	Triples using this solution and affected bestination mergency Vehicle OBE mergency Management Center aint and Constr Vehicle OBE Proposed Resolution I-F: Secure communications Triples using this solution and affected bestination	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning device control work zone warning status work zone warning device control Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. By this Issue that would be addressed by the Proposed Resolution Flow Name	Timeframe	Applicability Australia, European
Source Emergency Manage Emergency Vehicle (Maint and Constr M Ssue Invetted by community	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS. ment Center OBE Ianagement Center Issue Description The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Information De En En Mi Issue Severity Medium Information De En	Triples using this solution and affected be stination in the stination in	standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning device control work zone warning status work zone warning device control Resolution Description Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. by this Issue that would be addressed by the Proposed Resolution	Timeframe	Applicability Australia, European

Solution Name:

US: NTCIP Warning Device - OMG DDS RPC

This solution is used within the U.S.. It combines standards associated with US: NTCIP Warning Device with those for I-F: OMG DDS RPC. The US: NTCIP Warning Device standards include a composite of upper-layer standards that support

monitoring for unsafe traffic activities and displaying warning to drivers. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Solution Name:	US: NTCIP Warning Device - OMG DDS R	PC		Number of Issues: 1	Total Issue Severity:	3
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	r this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Manager	ment Center		Roadway Equipment	work zone warning device control		
ITS Roadway Equipm	nent	Em	nergency Management Center	work zone warning status		
ITS Roadway Equipm	nent	Ma	aint and Constr Management Center	work zone warning status		
Maint and Constr Ma	anagement Center	ITS	Roadway Equipment	work zone warning device control		
Solution Name:	US: NTCIP Warning Device - SNMPv1			Number of Issues: 1	Total Issue Severity:	8
unsafe traffic activitie		v1 standards inc		SNMPv1. The US: NTCIP Warning Device standards include a composite of upper-layer stander lefine how SNMPv1, which does not provide any security, is used within some deployment		_

solution is no longer recommended due to known security vulnerabilities.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security not provided	The solution does not provide any significant security and a communications link using this solution is easily hacked.	High	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
		Information	Triples using this solution and affected l	by this Issue that would be addressed by the Proposed Resolution		
Source		De	stination	Flow Name		
Emergency Mana	agement Center	ITS	S Roadway Equipment	work zone warning device control		
ITS Roadway Equ	ipment	En	nergency Management Center	work zone warning status		
ITS Roadway Equ	ipment	Ma	aint and Constr Management Center	work zone warning status		

work zone warning device control

work zone warning status

work zone warning status

Total Issue Severity: **Solution Name:** US: NTCIP Warning Device - SNMPv1/TLS Number of Issues: 2 6

ITS Roadway Equipment

Emergency Management Center

Maint and Constr Management Center

This solution is used within the U.S.. It combines standards associated with US: NTCIP Warning Device with those for I-F: SNMPv1/TLS. The US: NTCIP Warning Device standards include a composite of upper-layer standards that support monitoring for unsafe traffic activities and displaying warning to drivers. The I-F: SNMPv1/TLS standards include lower-layer standards that define one way to retrofit basic security into SNMPv1 implementations (mainly in the US); however, this only secures

ie communications in	ik and does not provide end-application security	and is not recom	mended for new deployments.			
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Carrier				y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Emergency Manageme	ent Center	ITS	Roadway Equipment	work zone warning device control		

ITS Roadway Equipment Page 182 of 264

Maint and Constr Management Center

ITS Roadway Equipment

olution Name:	US: NTCIP Warning Device - SNMPv1/TLS	S		Number of Issues: 2	otal Issue Severit	y : 6
Maint and Constr M	anagement Center	ITS	Roadway Equipment	work zone warning device control		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
				by this Issue that would be addressed by the Proposed Resolution		
Source	and Control		tination	Flow Name		
Emergency Manage			Roadway Equipment	work zone warning device control		
ITS Roadway Equipn			ergency Management Center	work zone warning status		
ITS Roadway Equipn			int and Constr Management Center	work zone warning status		
Maint and Constr M	anagement Center	ITS	Roadway Equipment	work zone warning device control		
lution Name:	US: NTCIP Warning Device - SNMPv3			Number of Issues: 1	otal Issue Severit	y: 1
safe traffic activitie		Pv3 standards incl rity option for th	ude lower-layer standards that is solution to ensure adeqaute s		gement protocol (SNMPv3);
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Se TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Manage	ment Center	ITS	Roadway Equipment	work zone warning device control		
ITS Roadway Equipn	nent	Em	ergency Management Center	work zone warning status		
ITS Roadway Equipn	nent	Ma	int and Constr Management Center	work zone warning status		
Maint and Constr M	anagement Center	ITS	Roadway Equipment	work zone warning device control		
Maint and Constr Ve	ehicle OBE	Ma	int and Constr Management Center	work zone warning status		
lution Name:	US: SAE Basic Safety Messages - Local Br	nadcast Wireless	(IIS)	Number of Issues: 3	otal Issue Severit	v: 7
is solution is used v	within the U.S It combines standards associated v	with US: SAE Basic	Safety Messages with those for	r V-X: Local Broadcast Wireless (US). The US: SAE Basic Safety Messages standards include up s that support local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc	oer-layer standard	<u>'</u>
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ncertainty about ust revocation echanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
				by this Issue that would be addressed by the Proposed Resolution		
Source Transit Vahisla ORE			tination	Flow Name		
Transit Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	vehicle path prediction		

vehicle path prediction

Personal Information Device

Transit Vehicle OBE

Solution Name:	US: SAE Basic Safety Messages - Local Br	oadcast Wireless	(US)	Number of Issues: 3 To	otal Issue Severity:	7
Transit Vehicle OBE		Vel	nicle OBE	vehicle path prediction		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	vehicle location and motion for surveillance		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
efined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	V-L: Trailer information for vehicle location and motion	Standardise the mechanism for the BSM, CAM, and DENM to accurately convey geometric properties related to articulated vehicles.	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Vehicle OBE		Сог	nnected Vehicle Roadside Equipment	vehicle location and motion for surveillance		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
C				this Issue that would be addressed by the Proposed Resolution		
Source Transit Vehicle OBE			tination nnected Vehicle Roadside Equipment	Flow Name vehicle path prediction		
Transit Vehicle OBE			rsonal Information Device	vehicle path prediction		
Transit Vehicle OBE		Vel	nicle OBE	vehicle path prediction		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	vehicle location and motion for surveillance		
olution Name:	US: SAE Basic Safety Messages - WAVE V	VSMP		Number of Issues: 3 To	otal Issue Severity:	7
ety information flow		er-layer standards		V-X: WAVE WSMP. The US: SAE Basic Safety Messages standards include upper-layer standards ar constant, ultra-low latency vehicle-to-any communications within ~300m using the WAVE		
ssue	Issue Description	The state of the s	Proposed Posolution	Pasalutian Description	Timoframo	Applicability

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States

	missenave).		
Source	Information Triples using this solution and affected by this Issue that would be add Destination	essed by the Proposed Resolution Flow Name	
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion	
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion	
Other Vehicle OBEs	Connected Vehicle Roadside Equipment	vehicle location and motion	
Other Vehicle OBEs	Transit Vehicle OBE	vehicle location and motion	
Other Vehicle OBEs	Vehicle OBE	vehicle control event	
Other Vehicle OBEs	Vehicle OBE	vehicle location and motion	
Transit Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion	
Transit Vehicle OBE	Other Vehicle OBEs	vehicle location and motion	
Transit Vehicle OBE	Personal Information Device	vehicle location and motion	

olution Name:	US: SAE Basic Safety Messages - WAVE W	/SMP		Number of Issues: 3 To	otal Issue Severity:	7
Transit Vehicle OBE		Ve	Phicle OBE	vehicle location and motion		
Vehicle OBE		Co	onnected Vehicle Roadside Equipment	vehicle control event		
Vehicle OBE		Co	onnected Vehicle Roadside Equipment	vehicle location and motion		
Vehicle OBE		Co	onnected Vehicle Roadside Equipment	vehicle location and motion for surveillance		
Vehicle OBE		En	nergency Vehicle OBE	vehicle location and motion		
Vehicle OBE		M	aint and Constr Vehicle OBE	vehicle location and motion		
Vehicle OBE		Ot	ther Vehicle OBEs	vehicle control event		
Vehicle OBE		Ot	ther Vehicle OBEs	vehicle location and motion		
Vehicle OBE		Pe	ersonal Information Device	vehicle location and motion		
Vehicle OBE		Tra	ansit Vehicle OBE	vehicle location and motion		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	V-L: Trailer information for vehicle location and motion	Standardise the mechanism for the BSM, CAM, and DENM to accurately convey geometric properties related to articulated vehicles.		Australia, European Union, United States
				y this Issue that would be addressed by the Proposed Resolution		
Source Emergency Vehicle C	nr.		estination onnected Vehicle Roadside Equipment	Flow Name vehicle location and motion		
	ВЕ					
Other Vehicle OBEs			ehicle OBE	vehicle location and motion		
Transit Vehicle OBE			onnected Vehicle Roadside Equipment	vehicle location and motion		
Vehicle OBE		Co	onnected Vehicle Roadside Equipment	vehicle location and motion		
Vehicle OBE		Co	onnected Vehicle Roadside Equipment	vehicle location and motion for surveillance		
Vehicle OBE		Ot	ther Vehicle OBEs	vehicle location and motion		

Solution Name:	US: SAE Basic Safety Messages - WAVE	WSMP		Number of Issues: 3	Total Issue Severit	y: 7
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
				by this Issue that would be addressed by the Proposed Resolution		
Source Commercial Vehicle	ODF.		stination	Flow Name vehicle location and motion		
			nnected Vehicle Roadside Equipment			
Emergency Vehicle O	BE		nnected Vehicle Roadside Equipment	vehicle location and motion		
Other Vehicle OBEs		Со	nnected Vehicle Roadside Equipment	vehicle location and motion		
Other Vehicle OBEs		Tra	ansit Vehicle OBE	vehicle location and motion		
Other Vehicle OBEs		Ve	hicle OBE	vehicle control event		
Other Vehicle OBEs		Ve	hicle OBE	vehicle location and motion		
Transit Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle location and motion		
Transit Vehicle OBE		Ot	her Vehicle OBEs	vehicle location and motion		
Transit Vehicle OBE		Pe	rsonal Information Device	vehicle location and motion		
Transit Vehicle OBE		Ve	hicle OBE	vehicle location and motion		
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle control event		
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle location and motion		
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle location and motion for surveillance		
Vehicle OBE		Em	nergency Vehicle OBE	vehicle location and motion		
Vehicle OBE		Ma	aint and Constr Vehicle OBE	vehicle location and motion		
Vehicle OBE		Ot	her Vehicle OBEs	vehicle control event		
Vehicle OBE		Ot	her Vehicle OBEs	vehicle location and motion		
Vehicle OBE		Pe	rsonal Information Device	vehicle location and motion		
Vehicle OBE		Tra	ansit Vehicle OBE	vehicle location and motion		

Solution Name: US: SAE J3067 (J2735 SE) - Guaranteed Internet (US) Number of Issues: 1 Total Issue Severity: 3

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for I-I: Guaranteed Internet (US). The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The I-I: Guaranteed Internet (US) standards include lower-layer standards that support secure communications with guaranteed delivery between ITS equipment using X.509 or IEEE 1609.2 security certificates.

Baaranteea denvery 2	200 201 110 Cquipment using 71303 of 1222 100312	3000	uniced delivery services in a equipment danily xisos of telefactors.								
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability					
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).		Australia, European Union, United States					
				y this Issue that would be addressed by the Proposed Resolution							
Source	Source Destination		stination	Flow Name							
Connected Vehicle Roadside Equipment Emergency Management Center		ergency Management Center	emergency notification								
Connected Vehicle Roadside Equipment Emergency Management Center		ergency Management Center	emergency notification relay								

Solution Name:	US: SAE J3067 (J2735 SE) - Guaranteed Mobile Internet (US)	Number of Issues:	2	Total Issue Severity:	4
Solution Name:	US: SAE J3067 (J2735 SE) - Guaranteed Mobile Internet (US)	Number of Issues:	2	Total Issue Severity:	4

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for I-M: Guaranteed Mobile Internet (US). The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The I-M: Guaranteed Mobile Internet (US) standards include lower-layer standards that support secure communications with guaranteed delivery between two entities, either or both of which may be actively moving; based on X.509 or 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Internet connection method.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability			
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States			
	Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution								

Commercial Vehicle OBE Emergency Management Center hazmat spill notification

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
,	The information flow is unclear as to what precisely is needed; the standard may not fully support the needs of the information flow, depending on how it is interpreted.	Low	V-L: Update J2735 for hazmat sensors	Update SAE J2735 to include data concepts for on-board hazmat sensors.	Future	United States

Source Destination

Destination

Destination

Commercial Vehicle OBE Emergency Management Center hazmat spill notification

Solution Name: US: SAE J3067 (J2735 SE) - Internet (US) Total Issue Severity: 3

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for I-I: Internet (US). The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The I-I: Internet (US) standards include lower-layer standards that support secure communications between ITS equipment using X.509 or IEEE 1609.2 security certificates.

Alsos of feet 1003.2 security certificates.								
Issue	Issue Description Issue Severity Proposed Resolution		Resolution Description	Timeframe	Applicability			
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States		

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution
Source
Connected Vehicle Roadside Equipment
Connected Vehicle Roadside Equipment
Connected Vehicle Roadside Equipment
Commercial Vehicle Check Equipment
Commercial Vehicle Check Equipment
freight equipment information

Solution Name: US: SAE J3067 (J2735 SE) - Local Broadcast Wireless (US) Number of Issues: 1 Total Issue Severity:

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for V-X: Local Broadcast Wireless (US). The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The V-X: Local Broadcast Wireless (US) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc.

Solution Name:	US: SAE J3067 (J2735 SE) - Local Broadca	st Wireless (US)			Number of Issues:	1	Total Issue Severity:	3
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation revoking the privileges of a certificate authority (expression) and of an ITS station (expression).	g., if an authority is no lo	onger	Urgent	Australia, Europea Union, United Stat
Source			Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Na				
Commercial Vehicle	ОВЕ	Co	nnected Vehicle Roadside Equipment	freight e	equipment information			
Commercial Vehicle	OBE	En	nergency Vehicle OBE	hazmat	spill notification			
Connected Vehicle R	oadside Equipment	Ve	ehicle OBE	parking	availability			
Other Vehicle OBEs		Ve	hicle OBE	emerge	ncy notification relay			
Transit Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle	profile			
Vehicle OBE		Co	onnected Vehicle Roadside Equipment	emerge	ncy notification relay			
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle	profile			
Vehicle OBE		Co	onnected Vehicle Roadside Equipment	vehicle	reported emissions			
Vehicle OBE		En	nergency Vehicle OBE	emerge	ncy notification relay			
Vehicle OBE		Ot	her Vehicle OBEs	emerge	ncy notification relay			

Solution Name: US: SAE J3067 (J2735 SE) - Local Unicast Wireless (US) Total Issue Severity:

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for V-X: Local Unicast Wireless (US). The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The V-X: Local Unicast Wireless (US) standards include lower-layer standards that support local-area unicast wireless solutions, such as DSRC technologies, LTE, etc.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States

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ource Commercial Vehicle OBE	Information Triples using this solution and affected by this Issue that would be a Destination Connected Vehicle Roadside Equipment	ddressed by the Proposed Resolution Flow Name	
		Flow Name	
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment		
		commercial vehicle identification	
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	driver log	
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle profile	
Commercial Vehicle OBE	Intermodal Terminal	commercial vehicle identification	
Commercial Vehicle OBE	Parking Management System	commercial vehicle identification	
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information	
Freight Equipment	Connected Vehicle Roadside Equipment	container location	
Freight Equipment	Connected Vehicle Roadside Equipment	freight equipment information	
Freight Equipment	Intermodal Terminal	container location	
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information	

Solution Name:	ι	JS: SAE J3067 (J2735 SE) - Local Unicast V	Vireless (US)			Number of Issues:	2	Total Issue Severity:	6
Issue	Issue I	Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Not a standard	is not	ocument may be publicly available but it currently available as a formal standard etails may change prior to adoption as a ard.	Medium	V-L: US work zone information	Develop an ITS application specification for providing within a local area. This should be based on the curre TPEG2, IVI, and DENM and assist in the development	ently defined mecha	nisms in J3067,		United States
					this Issue that would be addressed by the Proposed Resolution				
Source			Des	tination	Flow Name	e			
Connected Vehicle R	loadside Eq	uipment	Veh	nicle OBE	work zone	information			
Maint and Constr Ve	hicle OBE		Veh	nicle OBE	work zone	e information			

Solution Name: US: SAE J3067 (J2735 SE) - Mobile Internet (US) 6

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for I-M: Mobile Internet (US). The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United State
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Commercial Vehicle	OBE	Cor	mmercial Vehicle Administration Center	driver log		
Commercial Vehicle	OBE	Cor	mmercial Vehicle OBE Service Provider	driver log		
Commercial Vehicle	OBE	Fle	et and Freight Management Center	driver log		
Commercial Vehicle	OBE	Fle	et and Freight Management Center	driver to fleet request		
Commercial Vehicle	OBE	Fle	et and Freight Management Center	emergency notification		
Commercial Vehicle	OBE	Fle	et and Freight Management Center	freight equipment information		
Commercial Vehicle	OBE	Fle	et and Freight Management Center	trip log		
Emergency Manager	ment Center	Em	ergency Vehicle OBE	suggested route		
Emergency Vehicle (DBE	Em	ergency Management Center	emergency notification relay		
Fleet and Freight Ma	nagement Center	Cor	mmercial Vehicle OBE	driver log		
Fleet and Freight Ma	nagement Center	Cor	mmercial Vehicle OBE	fleet to driver update		
Freight Equipment		Fle	et and Freight Management Center	freight equipment information		
Maint and Constr Ma	anagement Center	Vel	nicle OBE	current infrastructure restrictions		
Transit Vehicle OBE		Tra	nsit Management Center	transit vehicle emissions		
Transportation Infor	mation Center	Per	rsonal Information Device	current infrastructure restrictions		
Transportation Infor	mation Center	Vel	nicle OBE	current infrastructure restrictions		
Vehicle OBE		Em	ergency Management Center	emergency notification		
Vehicle OBE		Em	ergency Management Center	emergency notification relay		

Solution Name:	US: SAE J3067 (J2735 SE) - Mobile Interne	et (US)			Number of Issues:	2	Total Issue Severity:	6
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Not a standard	The document may be publicly available but it is not currently available as a formal standard and details may change prior to adoption as a standard.	Medium	C-V: Routing of emergency vehicles	Develop an acceptable ITS application specification for routes to emergency vehicles during emergency resp which already claims support for this feature.			Medium-term 2,	Australia, European Union, United States
		Information T	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution				
Source		Des	tination	Flow Name				
Emergency Manageme	ent Center	Em	ergency Vehicle OBE	suggested	route			

Number of Issues:

Number of Issues:

Total Issue Severity:

Total Issue Severity:

3

3

Solution Name: US: SAE J3067 (J2735 SE) - NTCIP Messaging

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for C-C: NTCIP Messaging. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The C-C: NTCIP Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the US.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States

	Information Triples using this solution and affected by this Issue that would be	addressed by the Proposed Resolution	
Source	Destination	Flow Name	
Commercial Vehicle Check Equipment	Commercial Vehicle Administration Center	driver log	
Commercial Vehicle OBE Service Provider	Commercial Vehicle Check Equipment	driver log	
Commercial Vehicle OBE Service Provider	Fleet and Freight Management Center	driver log	
Commercial Vehicle OBE Service Provider	Other CVOBE Service Provider	driver log	
Connected Vehicle Roadside Equipment	Commercial Vehicle Administration Center	driver log	
Connected Vehicle Roadside Equipment	Intermodal Terminal	commercial vehicle identification	
Connected Vehicle Roadside Equipment	Intermodal Terminal	container location	
Fleet and Freight Management Center	Commercial Vehicle Administration Center	driver log	
Other CVOBE Service Provider	Commercial Vehicle OBE Service Provider	driver log	

Solution Name: US: SAE J3067 (J2735 SE) - OMG DDS

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for C-C: OMG DDS. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

Solution Name:	US: SAE J3067 (J2735 SE) - OMG DDS			Number of Issues: 1	Total Issue Severity:	3
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Course				y this Issue that would be addressed by the Proposed Resolution		
Source Commercial Vehicle (Check Equipment		stination mmercial Vehicle Administration Center	Flow Name driver log		
Commercial Vehicle (Cor	mmercial Vehicle Check Equipment	driver log		
Commercial Vehicle (DBE Service Provider	Fle	et and Freight Management Center	driver log		
Commercial Vehicle	DBE Service Provider	Oth	her CVOBE Service Provider	driver log		
Fleet and Freight Ma	nagement Center	Cor	mmercial Vehicle Administration Center	driver log		
Other CVOBE Service	Provider	Cor	mmercial Vehicle OBE Service Provider	driver log		
olution Name:	US: SAE J3067 (J2735 SE) - OMG DDS RP	C		Number of Issues: 1	Fotal Issue Severity:	3
			7 (J2735 SE) with those for I-F: O	MG DDS RPC. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the up		ent V2X

information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
				this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Connected Vehicle F	Roadside Equipment	Cor	mmercial Vehicle Administration Center	driver log		
Connected Vehicle F	Roadside Equipment	Em	ergency Management Center	emergency notification		
Connected Vehicle F	Roadside Equipment	Em	ergency Management Center	emergency notification relay		
Connected Vehicle F	Roadside Equipment	Par	rking Management System	commercial vehicle identification		

Number of Issues: **Total Issue Severity: Solution Name:** US: SAE J3067 (J2735 SE) - SNMPv3 1

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for I-F: SNMPv3. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The I-F: SNMPv3 standards include lower-layer standards that support secure centre-to-field and field-to-field communications using simple network management protocol (SNMPv3); implementations are strongly encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use TLS for SNMP Option	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States

Sol	ution Name:	US: SAE J3067 (J2735 SE) - SNMPv3			Number of Issues:	1	Total Issue Severity:	1
	Source		Information Triples using this solution and affected by this Issue that would be Destination	e addressed by the Proposed Resolution Flow Na				
	Connected Vehicle Roadside E	quipment	Commercial Vehicle Administration Center	driver lo	og			
	Connected Vehicle Roadside E	quipment	Emergency Management Center	emerge	ncy notification			
	Connected Vehicle Roadside E	quipment	Emergency Management Center	emerge	ncy notification relay			
	Connected Vehicle Roadside E	quipment	Parking Management System	comme	rcial vehicle identification			
Sol	ution Name:	US: SAE J3067 (J2735 SE) - WAVE WSMP			Number of Issues:	1	Total Issue Severity:	3

This solution is used within the U.S.. It combines standards associated with US: SAE J3067 (J2735 SE) with those for V-X: WAVE WSMP. The US: SAE J3067 (J2735 SE) standards include a proposed solution for the upper-layers to implement V2X information flows that do not yet have fully standardized messages, functionality or performance charcateristics. The V-X: WAVE WSMP standards include lower-layer standards that support connectionless, near constant, ultra-low latency vehicle-to-any communications within ~300m using the WAVE Short Messaging Protocol (WSMP) over the 5.9GHz spectrum. The broadcast mode is interoperable with M5 FNTP.

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Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, Europear Union, United State
		Information 1	riples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Other Vehicle OBEs		Vel	nicle OBE	emergency notification		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	emergency notification		
Vehicle OBE		Em	ergency Vehicle OBE	emergency notification		
Vehicle OBE		Oth	ner Vehicle OBEs	emergency notification		

Solution Name: US: SAE Other J2735 - Guaranteed Internet (US) 4 Total Issue Severity: 39

This solution is used within the U.S. It combines upper-layer standards required to implement V2X information flows that do not yet have fully specified functionality and performance charcateristics with lower-layer standards that support secure communications with guaranteed delivery between two entities, either or both of which may be actively moving; based on X.509 or 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method. This set of standards includes WAVE as one alternative, which may be used in remote areas without cell coverage.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United States

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution

Source
Destination
Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution
Flow Name

Center

Center

Solution Name:	US: SAE Other J2735 - Guaranteed Intern	net (US)		Number of Issues: 4	otal Issue Severit	:y: 39
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nter	intersection geometry		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Ce	nter	intersection geometry		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not ully defined medium)	The performance rules are not fully defined for this information flow.	Medium	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Ce	nter	intersection geometry		
Solution Name:	US: SAE Other J2735 - Guaranteed Mobi	le Internet (IIS)		Number of Issues: 2 T	otal Issue Severit	v: 4
			r J2735 with those for I-M: Guar	ranteed Mobile Internet (US). The US: SAE Other J2735 standards include upper-layer standard		

information flows that do not yet have fully specified functionality and performance charcateristics. The I-M: Guaranteed Mobile Internet (US) standards include lower-layer standards that support secure communications with guaranteed delivery between two entities, either or both of which may be actively moving; based on X 509 or 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
		Information 7	riples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Fleet and Freight Mai	nagement Center	Co	mmercial Vehicle OBE	road weather advisories		
Maint and Constr Ma	nagement Center	Per	rsonal Information Device	road weather advisories		
Maint and Constr Ma	nagement Center	Ve	nicle OBE	road weather advisories		

Solution Name:	US: SAE Other J2735 - Guaranteed Mobil	le Internet (US)		Number of Issues: 2	otal Issue Severi	ty: 4
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Friples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Fleet and Freight Mar	nagement Center		mmercial Vehicle OBE	road weather advisories		
Maint and Constr Ma	nagement Center	Per	rsonal Information Device	road weather advisories		
Maint and Constr Ma	nagement Center	Vel	hicle OBE	road weather advisories		
Solution Name:	US: SAE Other J2735 - Guaranteed Mobil	ile Internet (US), \	vith WAVE alternative	Number of Issues: 2 T	otal Issue Severi	ty: 4
upport coords	unications with guarantood delivery between two	o antitios aithar a	r both of which may be actively		· a + b a wida araa i	uiralass samina
rovider using any Intr	eret connection method. This set of standards in	ncludes WAVE as o	one alternative, which may be u			
rovider using any Intr	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
rovider using any Intr	eret connection method. This set of standards in	ncludes WAVE as o	one alternative, which may be u	used in remote areas without cell coverage.		
Issue Uncertainty about trust revocation mechanism	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	Issue Severity Medium Information T	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution	Timeframe	Applicability Australia, European
Irovider using any Intr Issue Uncertainty about trust revocation	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Issue Severity Medium Information Toes	Proposed Resolution Misbehavior detection and security revocation mechanism	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Timeframe	Applicability Australia, European
Issue Uncertainty about trust revocation mechanism Source	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Issue Severity Medium Information T Des	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name	Timeframe	Applicability Australia, European
Uncertainty about trust revocation mechanism Source Emergency Vehicle O	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Issue Severity Medium Information Toes Other	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination mer EV OBEs	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning notification	Timeframe	Applicability Australia, European
Uncertainty about trust revocation mechanism Source Emergency Vehicle O Other EV OBES	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Issue Severity Medium Information Toes Other	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination her EV OBEs ergency Vehicle OBE	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning notification	Urgent	Applicability Australia, European Union, United States
Uncertainty about trust revocation mechanism Source Emergency Vehicle O Other EV OBEs Issue Data not defined in standard format	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. Issue Description Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse	Issue Severity Medium Information Toes Oth Em Issue Severity Low	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination her EV OBEs Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning notification Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution	Timeframe Timeframe	Applicability Australia, European Union, United States Applicability Australia, European
Uncertainty about trust revocation mechanism Source Emergency Vehicle O Other EV OBEs Issue Data not defined in	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. Issue Description Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Issue Severity Medium Information T Des Oth Em Issue Severity Low	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination her EV OBEs Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name work zone warning notification Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Timeframe Timeframe	Applicability Australia, European Union, United States Applicability Australia, European

Solution Name:

US: SAE Other J2735 - Internet (US)

This solution is used within the U.S.. It combines standards associated with US: SAE Other J2735 with those for I-I: Internet (US). The US: SAE Other J2735 standards include upper-layer standards required to implement V2X information flows that do not yet have fully specified functionality and performance charcateristics. The I-I: Internet (US) standards include lower-layer standards that support secure communications between ITS equipment using X.509 or IEEE 1609.2 security

certificates.

Solution Name:	US: SAE Other J2735 - Internet (US)			Number of Issues: 4	Total Issue Severit	1 0
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	g Urgent	Australia, European Union, United States
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Infor	mation Center	Wi	de Area Information Disseminator	broadcast traveler information		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	C-C: WAID	Develop an internationally acceptable ITS application specification for providing information from a centre to a WAID for wide-area dissemination.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected l	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Infor	mation Center	Wi	de Area Information Disseminator	broadcast traveler information		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Issue Severity Low	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts		Australia, European
Data not defined in	The definition of data concepts should conform to ISO 14817-1 to promote reuse	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data		Australia, European
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low Information Des	V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected I	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution		Australia, European
Data not defined in standard format Source Transportation Inform	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low Information Des	V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected lestination	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Information Des	V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected listination de Area Information Disseminator	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name broadcast traveler information	Near-term	Australia, European Union, United States
Source Transportation Informat Issue Performance not fully defined (medium)	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS. mation Center Issue Description The performance rules are not fully defined	Information William Information	V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected Istination de Area Information Disseminator Proposed Resolution C-C: WAID	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name broadcast traveler information Resolution Description Develop an internationally acceptable ITS application specification for providing information from a centre to a WAID for wide-area dissemination. by this Issue that would be addressed by the Proposed Resolution	Near-term Timeframe	Australia, European Union, United States Applicability Australia, European
Data not defined in standard format Source Transportation Informat Issue Performance not fully defined	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS. mation Center Issue Description The performance rules are not fully defined for this information flow.	Information William Medium	V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected bestination de Area Information Disseminator Proposed Resolution C-C: WAID	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name broadcast traveler information Resolution Description Develop an internationally acceptable ITS application specification for providing information from a centre to a WAID for wide-area dissemination.	Near-term Timeframe	Australia, European Union, United States Applicability Australia, European

This solution is used within the U.S.. It combines standards associated with US: SAE Other J2735 with those for V-X: Local Broadcast Wireless (US). The US: SAE Other J2735 standards include upper-layer standards required to implement V2X information flows that do not yet have fully specified functionality and performance charcateristics. The V-X: Local Broadcast Wireless (US) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc.

Solution Name:	US: SAE Other J2735 - Local Broadcast W	reless (US)		Number of Issues: 3	Total Issue Severity:	7
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected latination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Commercial Vehicle	OBE	Em	ergency Vehicle OBE	vehicle collision information		
Connected Vehicle F	oadside Equipment	Em	ergency Vehicle OBE	work zone warning notification		
Connected Vehicle F	oadside Equipment	Ma	int and Constr Vehicle OBE	work zone warning notification		
Connected Vehicle F	oadside Equipment	Pe	rsonal Information Device	location correction		
Connected Vehicle F	oadside Equipment	Pe	rsonal Information Device	personal safety warning		
Connected Vehicle F	oadside Equipment	Pe	rsonal Information Device	signal service status		
Connected Vehicle F	oadside Equipment	Tra	nsit Vehicle OBE	restricted lanes application info		
Connected Vehicle F	oadside Equipment	Ve	hicle OBE	arriving train information		
Connected Vehicle F	oadside Equipment	Ve	hicle OBE	lane closure information		
Connected Vehicle F	oadside Equipment	Ve	hicle OBE	location correction		
Connected Vehicle F	oadside Equipment	Ve	hicle OBE	rail crossing warning		
Connected Vehicle F	oadside Equipment	Ve	hicle OBE	restricted lanes application info		
Connected Vehicle F	oadside Equipment	Ve	hicle OBE	road closure information		
Connected Vehicle F	oadside Equipment	Ve	hicle OBE	vehicle situation data parameters		
Emergency Vehicle	DBE	Co	nnected Vehicle Roadside Equipment	work zone warning notification		
Emergency Vehicle	DBE	Pe	rsonal Information Device	personal safety warning		
Maint and Constr Ve	hicle OBE	Co	nnected Vehicle Roadside Equipment	work zone warning notification		
Maint and Constr Ve	hicle OBE	Otl	ner MCV OBEs	work zone warning notification		
Other MCV OBEs		Ma	int and Constr Vehicle OBE	work zone warning notification		
Other Vehicle OBEs		Ve	hicle OBE	vehicle environmental data		
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle environmental data		
Vehicle OBE		Em	ergency Vehicle OBE	vehicle collision information		
Vehicle OBE		Ot	ner Vehicle OBEs	vehicle environmental data		

olution Name:	US: SAE Other J2735 - Local Broadcast V	Wireless (US)		Number of Issues: 3	Total Issue Severi	t y: 7
lssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Commercial Vehicle	OBE	Em	nergency Vehicle OBE	vehicle collision information		
Connected Vehicle R	oadside Equipment	Em	nergency Vehicle OBE	work zone warning notification		
Connected Vehicle R	oadside Equipment	Ma	aint and Constr Vehicle OBE	work zone warning notification		
Connected Vehicle R	loadside Equipment	Pe	rsonal Information Device	location correction		
Connected Vehicle R	oadside Equipment	Pe	rsonal Information Device	personal safety warning		
Connected Vehicle R	loadside Equipment	Pe	rsonal Information Device	signal service status		
Connected Vehicle R	loadside Equipment	Tra	ansit Vehicle OBE	restricted lanes application info		
Connected Vehicle R	loadside Equipment	Ve	hicle OBE	arriving train information		
Connected Vehicle R	loadside Equipment	Ve	hicle OBE	lane closure information		
Connected Vehicle R	loadside Equipment	Ve	hicle OBE	location correction		
Connected Vehicle R	loadside Equipment	Ve	hicle OBE	rail crossing warning		
Connected Vehicle R	loadside Equipment	Ve	hicle OBE	restricted lanes application info		
Connected Vehicle R	loadside Equipment	Ve	hicle OBE	road closure information		
Connected Vehicle R	loadside Equipment	Ve	hicle OBE	vehicle situation data parameters		
Emergency Vehicle C	DBE	Co	nnected Vehicle Roadside Equipment	work zone warning notification		
Emergency Vehicle C	DBE	Pe	rsonal Information Device	personal safety warning		
Maint and Constr Ve	hicle OBE	Co	nnected Vehicle Roadside Equipment	work zone warning notification		
Maint and Constr Ve	hicle OBE	Ot	her MCV OBEs	work zone warning notification		
Other MCV OBEs		Ma	aint and Constr Vehicle OBE	work zone warning notification		
Other Vehicle OBEs		Ve	hicle OBE	vehicle environmental data		
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle environmental data		
Vehicle OBE		Em	nergency Vehicle OBE	vehicle collision information		
Vehicle OBE		Ot	her Vehicle OBEs	vehicle environmental data		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not Illy defined nedium)	The performance rules are not fully defined for this information flow.	Medium	V-L: Environmental data sharing	Develop an internationally acceptable ITS application specification for sharing environmental data from vehicles to other local entities. The effort should consider efforts to date under both J2735 and DENM.	Urgent	Australia, European Union, United States
Cource				by this Issue that would be addressed by the Proposed Resolution		
Source Other Vehicle OBEs			stination Phicle OBE	Flow Name vehicle environmental data		
			nnected Vehicle Roadside Equipment	vehicle environmental data		
Vehicle OBE						

Solution Name:	US: SAE Other J2735 - Local Broadcast V	Vireless (US)		Number of Issues: 3 To	otal Issue Severit	y: 7
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not ully defined medium)	The performance rules are not fully defined for this information flow.	Medium	Secure and accurate location and time standards	Develop/adopt an internationally acceptable standard/solution for synchronising and continuously maintaining location and time information throughout the ITS environment in a secure and reliable manner with sufficient accuracy (including leap seconds) and confidence.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Roadside Equipment		Pe	rsonal Information Device	location correction		
Connected Vehicle	Roadside Equipment	Ve	hicle OBE	location correction		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not Illy defined nedium)	The performance rules are not fully defined for this information flow.	Medium	V-L: US traveler information	Develop an ITS application specification for providing in-vehicle signage and other traveler information to the vehicle from the roadside. This will also need to address issues such as when and how to locally generate traveler information messages and how to sign these messages.	Urgent	United States
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle	Roadside Equipment	Ve	hicle OBE	lane closure information		
Connected Vehicle	Roadside Equipment	Ve	hicle OBE	road closure information		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	The performance rules are not fully defined	Medium	C-V: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between	Urgent	Australia, European Union, United State
ılly defined	for this information flow.			vehicles and remote interested parties (e.g., centres).		
illy defined nedium)	for this information flow.			by this Issue that would be addressed by the Proposed Resolution		
rerformance not ully defined medium) Source Connected Vehicle	for this information flow. Roadside Equipment	De	Triples using this solution and affected bestination hicle OBE	, , , , , , ,		

technologies, LTE, etc.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about crust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
		Information 1	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Personal Information	Device	Coi	nnected Vehicle Roadside Equipment	personal signal service request		
Vehicle OBE		Coi	nnected Vehicle Roadside Equipment	vehicle situation data		

olution Name:	US: SAE Other J2735 - Local Unicast Wire	eless (US)		Number of Issues: 3 To	otal Issue Severity:	7
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Pata not defined in tandard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
				this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Personal Information	Device	Co	nnected Vehicle Roadside Equipment	personal signal service request		
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	vehicle situation data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not illy defined nedium)	The performance rules are not fully defined for this information flow.	Medium	C-V: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between vehicles and remote interested parties (e.g., centres).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
		Co	nnected Vehicle Roadside Equipment	vehicle situation data		

Solution Name: US: SAE Other J2735 - Mobile Internet (US)

Number of Issues: 6 Total Issue Severity: 50

This solution is used within the U.S.. It combines standards associated with US: SAE Other J2735 with those for I-M: Mobile Internet (US). The US: SAE Other J2735 standards include upper-layer standards required to implement V2X information flows that do not yet have fully specified functionality and performance charcateristics. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ecurity inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-V: Secure communications	Develop one or more internationally acceptable, secure, centre-vehicle communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, Europea Union, United Stat
		Information 1	Triples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Commercial Vehicle C	DBE	Fle	et and Freight Management Center	vehicle environmental data		
Data Distribution Syst	tem	Vel	hicle OBE	vehicle situation data parameters		
Emergency Vehicle O	BE	Em	nergency Management Center	emergency vehicle tracking data		
Surface Transportatio	on Weather Service	Vel	hicle OBE	transportation weather information		
Traffic Management (Center	Vel	hicle OBE	intersection status		
Traffic Management (Center	Vel	hicle OBE	lane closure information		
Transportation Inform	nation Center	Vel	hicle OBE	vehicle situation data parameters		
Vehicle OBE		Da	ta Distribution System	vehicle situation data		
Vehicle OBE		Ma	ap Update System	vehicle location and motion for mapping		
Vehicle OBE		Tra	ansportation Information Center	vehicle environmental data		
Vehicle OBE		Tra	ansportation Information Center	vehicle situation data		

Uncertainty about trust revocation mechanism Source Commercial Vehicle OBE Data Distribution System Emergency Vehicle OBE Surface Transportation Weather Service Traffic Management Center Transportation Information Center Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Issue Issue Issue Description Data/comm profile pairing Data/comm profile pairing Data/comm profile pairing Issue Issue Description Data/comm profile pairing			Number of Issues: 6 To	tal Issue Severity	: 50
Source Commercial Vehicle OBE Data Distribution System Emergency Vehicle OBE Surface Transportation Weather Service Traffic Management Center Transportation Information Center Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Obtaa/comm profile pairing Data/comm profile pairing Data/comm profile pairing Data/comm profile Dat	to prevent bad actors Mediu	everity Proposed Resolution	Resolution Description	Timeframe	Applicability
Commercial Vehicle OBE Data Distribution System Emergency Vehicle OBE Surface Transportation Weather Service Traffic Management Center Traffic Management Center Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Issue Description ata/comm profile airing There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards.		m Misbehavior detection a security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Data Distribution System Emergency Vehicle OBE Surface Transportation Weather Service Traffic Management Center Traffic Management Center Transportation Information Center Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description Performance, functionality, and	Inf	ormation Triples using this solution and af Destination	ed by this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Vehicle OBE Surface Transportation Weather Service Traffic Management Center Traffic Management Center Transportation Information Center Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE UR Issue Description Vehicle OBE Vehicle OBE Performance, functionality, and		Fleet and Freight Management Cer	vehicle environmental data		
Surface Transportation Weather Service Traffic Management Center Traffic Management Center Transportation Information Center Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Performance, functionality, and		Vehicle OBE	vehicle situation data parameters		
Traffic Management Center Traffic Management Center Transportation Information Center Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Performance, functionality, and		Emergency Management Center	emergency vehicle tracking data		
Traffic Management Center Transportation Information Center Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description Performance, functionality, and		Vehicle OBE	transportation weather information		
Transportation Information Center Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description Performance, functionality, and		Vehicle OBE	intersection status		
Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description Performance, functionality, and		Vehicle OBE	lane closure information		
Vehicle OBE Vehicle OBE Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description Performance, functionality, and		Vehicle OBE	vehicle situation data parameters		
Vehicle OBE Vehicle OBE Je Sue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Jesue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Jesue Description Performance, functionality, and		Data Distribution System	vehicle situation data		
Vehicle OBE Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description Performance, functionality, and		Map Update System	vehicle location and motion for mapping		
Issue Description There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description Performance, functionality, and		Transportation Information Center	vehicle environmental data		
There are ambiguities as to how should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description Performance, functionality, and		Transportation Information Center	vehicle situation data		
should) couple the upper-layer defined in this solution with the lower-layer standards. Source Vehicle OBE Issue Description Performance, functionality, and	Issue S	everity Proposed Resolution	Resolution Description	Timeframe	Applicability
vehicle OBE Issue Description ta profile not Performance, functionality, and	per-layer standards with the indicated	C-V: Update central map database	Develop an internationally acceptable ITS application specification that defines the rules for updating a central map database, including roadway and intersection geometry, based on real-world data readings from vehicles and transmitted to a map update system.	Medium-term	Australia, European Union, United States, Japan
Vehicle OBE USSUE Description ta profile not Performance, functionality, and	Inf	ormation Triples using this solution and af	ed by this Issue that would be addressed by the Proposed Resolution Flow Name		
ta profile not Performance, functionality, and		Map Update System	vehicle location and motion for mapping		
	Issue S	Severity Proposed Resolution	Resolution Description	Timeframe	Applicability
for this information flow.	have not been defined	C-V: Fleet management	Develop an ITS application specification for managing fleet vehicles, including managing the location of fleet vehicles such as emergency vehicles and transit vehicles	Medium-term	United States
Source		ormation Triples using this solution and af Destination	ed by this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Vehicle OBE		Emergency Management Center	emergency vehicle tracking data		

	US: SAE Other J2735 - Mobile Internet (L				otal Issue Severity	
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Signal operations	Develop an ITS application specification for providing intersection status information to vehicles from a centre for environmental benefits.	Urgent	Australia, European Union
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management	Center	Ve	nicle OBE	intersection status		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata/comm profile airing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	C-V: Fleet management	Develop an ITS application specification for managing fleet vehicles, including managing the location of fleet vehicles such as emergency vehicles and transit vehicles	Medium-term	United States
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Vehicle O	BE	Em	ergency Management Center	emergency vehicle tracking data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata/comm profile airing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management	Center	Ve	nicle OBE	lane closure information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata/comm profile	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated	High	C-V: Signal operations	Develop an ITS application specification for providing intersection status information to vehicles from a centre for environmental benefits.	Urgent	Australia, European Union
	lower-layer standards.					
Source	lower-layer standards.		Triples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		

	US: SAE Other J2735 - Mobile Internet (U					
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata/comm profile airing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	C-V: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between vehicles and remote interested parties (e.g., centres).	Urgent	Australia, European Union, United States
Cource				by this Issue that would be addressed by the Proposed Resolution		
Source Transportation Inform	mation Center		tination nicle OBE	Flow Name vehicle situation data parameters		
Vehicle OBE			nsportation Information Center	vehicle environmental data		
Vehicle OBE			nsportation Information Center	vehicle situation data		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not defined in andard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
	Pl			by this Issue that would be addressed by the Proposed Resolution		
Source Commercial Vehicle	ODE		tination	Flow Name vehicle environmental data		
Data Distribution Sys			et and Freight Management Center	vehicle environmental data vehicle situation data parameters		
Emergency Vehicle O			ergency Management Center	emergency vehicle tracking data		
Surface Transportation			nicle OBE	transportation weather information		
Traffic Management			nicle OBE	intersection status		
Traffic Management			nicle OBE	lane closure information		
Transportation Inform			nicle OBE	vehicle situation data parameters		
Vehicle OBE	nation center		ra Distribution System	vehicle situation data		
Vehicle OBE			p Update System	vehicle location and motion for mapping		
Vehicle OBE			nsportation Information Center	vehicle environmental data		
Vehicle OBE			nsportation Information Center	vehicle situation data		
sue	Issue Description		Proposed Resolution	Resolution Description	Timeframe	Applicability
rformance not lly defined nedium)	The performance rules are not fully defined for this information flow.	Medium	C-V: Fleet management	Develop an ITS application specification for managing fleet vehicles, including managing the location of fleet vehicles such as emergency vehicles and transit vehicles	Medium-term	United States
	PL			by this Issue that would be addressed by the Proposed Resolution		
Source	205		tination	Flow Name		
Emergency Vehicle C	RE	Em	ergency Management Center	emergency vehicle tracking data		

olution Name:	US: SAE Other J2735 - Mobile Internet (US)		Number of Issues: 6 To	otal Issue Severity	50
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not Ily defined nedium)	The performance rules are not fully defined for this information flow.	Medium	C-V: Situation data	Develop an internationally acceptable ITS application specification for the use case of distributing collected situation data (e.g., BSMs/CAMs, sensors, probe data, etc.) between vehicles and remote interested parties (e.g., centres).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected tination	d by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Infor	mation Center		nicle OBE	vehicle situation data parameters		
Vehicle OBE		Tra	nsportation Information Center	vehicle environmental data		
Vehicle OBE		Tra	nsportation Information Center	vehicle situation data		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not lly defined nedium)	The performance rules are not fully defined for this information flow.	Medium	C-V: Signal operations	Develop an ITS application specification for providing intersection status information to vehicles from a centre for environmental benefits.	Urgent	Australia, European Union
Source			riples using this solution and affected tination	d by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management	Center		nicle OBE	intersection status		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
rformance not lly defined	The performance rules are not fully defined for this information flow.	Issue Severity Medium	Proposed Resolution C-V: In-vehicle signage	Resolution Description Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.		Applicability Australia, European Union
erformance not Ily defined nedium)	The performance rules are not fully defined	Medium	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. d by this Issue that would be addressed by the Proposed Resolution		Australia, European
rformance not lly defined	The performance rules are not fully defined for this information flow.	Medium Information Des	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.		Australia, European
rformance not ly defined edium) Source Traffic Management	The performance rules are not fully defined for this information flow.	Medium Information Des	C-V: In-vehicle signage Triples using this solution and affected stination	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. d by this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
	The performance rules are not fully defined for this information flow.	Medium Information Des	C-V: In-vehicle signage Triples using this solution and affected tination hicle OBE	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. d by this Issue that would be addressed by the Proposed Resolution Flow Name Iane closure information	Urgent	Australia, European Union Applicability Australia, European
rformance not ly defined redium) Source Traffic Management sue rformance not ly defined	The performance rules are not fully defined for this information flow. Center Issue Description The performance rules are not fully defined	Information Ve	C-V: In-vehicle signage Friples using this solution and affected tination hicle OBE Proposed Resolution C-V: Update central map database	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre. d by this Issue that would be addressed by the Proposed Resolution Flow Name lane closure information Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for updating a central map database, including roadway and intersection geometry, based	Urgent	Australia, European Union Applicability Australia, European Union, United States,

This solution is used within the U.S.. It combines standards associated with US: SAE Other J2735 with those for I-F: OMG DDS RPC. The US: SAE Other J2735 standards include upper-layer standards required to implement V2X information flows that do not yet have fully specified functionality and performance charcateristics. The I-F: OMG DDS RPC standards include lower-layer standards that support secure remote procedure calls between a field device and another field device or a centre over a field communication link

Total Issue Severity:

Number of Issues:

US: SAE Other J2735 - OMG DDS RPC

Solution Name:

olution Name:	US: SAE Other J2735 - OMG DDS RPC			Number of Issues: 2	Total Issue Severity	: 4
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United State
Course			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Source ITS Roadway Equipme	ent		nnected Vehicle Roadside Equipment	arriving train information		
Wayside Equipment		Со	nnected Vehicle Roadside Equipment	arriving train information		
Wayside Equipment		ITS	Roadway Equipment	arriving train information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Pata not defined in tandard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United State
Source			Friples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
ITS Roadway Equipme	ent		nnected Vehicle Roadside Equipment	arriving train information		
Wayside Equipment		Co	nnected Vehicle Roadside Equipment	arriving train information		
Wayside Equipment		ITS	Roadway Equipment	arriving train information		
Solution Name:	US: SAE Other J2735 - SNMPv3			Number of Issues: 4	Total Issue Severity	: 13

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
(SNMPv3); implementat	tions are strongly encouraged to use the TLS for s	SNMP security op	ption for this solution to ensure a	deqaute security.		
not yet have fully specif	fied functionality and performance charcateristic	s. The I-F: SNMP	v3 standards include lower-layer	standards that support secure centre-to-field and field-to-field communications using simple	network managem	ent protocol

pairing should) couple the upper-layer standards for distributing maps, roadway geometry, and intersection geometry between a centres Union, United Sta	issue	issue Description	issue Severity	Proposed Resolution	Resolution Description	Timetrame	Applicability
lower-layer standards.		should) couple the upper-layer standards defined in this solution with the indicated	High	·		Urgent	Australia, European Union, United States, Japan

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution								
Source	Destination	Flow Name						
Map Update System	Connected Vehicle Roadside Equipment	intersection geometry						

Use TLS for SNMP Option The standard allows for multiple security mechanism. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS. Internation Triples usine that such that seed the requirements for C-ITS is the one based on TLS. Internation Triples usine that such that seed the requirements for C-ITS is the one based on TLS. Internation Triples usine that seed to by this tisse that would be addressed by the recognition, confidentiality, and non-repudation, as needed. Internation Triples usine that seed by this tisse that would be addressed by the recognition of the requirement arriving train information Internation Triples usine that seed by this tisse that would be addressed by the recognition of the requirement arriving train information Internation Triples usine that seed by this tisse that would be addressed by the recognition of the recognition o	Number of Issues: 4 Total Issue Severity: 13				US: SAE Other J2735 - SNMPv3	Solution Name:
Option mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS. International Trajecusing this solution and affected by the boson that would be addressed by the Proposed Resolution and Internation Inter	Timeframe Applicability	Resolution Description	Proposed Resolution	Issue Severity	Issue Description	Issue
ITS Roadway Equipment Wayside Equipment Wayside Equipment Uniformation Wayside Equipment Wayside Equip	one. The standard(s) should include Union, United States	standards and define rules on when to use eac support for authentication, authorization, conf	I-F: Secure communications	Low	mechanisms. The only defined mechanism that meets the requirements for C-ITS is the	
ITS Roadway Equipment Connected Vehicle Roadside Equipment Intersection geometry Wayside Equipment Connected Vehicle Roadside Equipment Intersection geometry Wayside Equipment Trib Roadway Equipment Arriving train information Issue Description Issue Description Issue Severity Proposed Resolution Description Update the format of the standard to conform to IsSO 14817-1 to promote reuse among ITS. Information Triples using this solution and affected by this Issue Addition Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can be standard format of the standard to conform to the rules of ISO 14817-1 so that data can be standard format of the standard to conform to IsO 14817-1 to promote reuse among ITS. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution						Source
Wayside Equipment Wayside Equipment Wayside Equipment ITS Roadway E					ent	
Wayside Equipment ITS Roadway Equipment ITS	section geometry	int	nnected Vehicle Roadside Equipment	Co		Map Update System
Issue Issue Description Issue Severity Proposed Resolution Resolution Description Issue Severity Proposed Resolution Description Issue Severity Proposed Resolution Description Issue Severity Proposed Resolution Description Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Information I	ng train information	arr	nnected Vehicle Roadside Equipment	Со		Wayside Equipment
Data not defined in standard format The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS. Low V-L: Update SAE J2735 to conform to ISO 14817-1 to promote reuse among ITS. Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts Information Triples using this solution and affected by this issue that would be addressed by the Proposed Resolution Flow Name ITS Roadway Equipment Wayside Equipment Wayside Equipment ITS Roadway Equipm	ng train information	arr	Roadway Equipment	ITS		Wayside Equipment
standard format conform to ISO 14817-1 to promote reuse among ITS. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination	Timeframe Applicability	Resolution Description	Proposed Resolution	Issue Severity	Issue Description	Issue
Source Destination Flow Name ITS Roadway Equipment Connected Vehicle Roadside Equipment intersection geometry Wayside Equipment Connected Vehicle Roadside Equipment intersection geometry Wayside Equipment arriving train information Wayside Equipment Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name Arriving train information Timeframe Appears and intersection geometry arriving train information Flow Name Flow Name		-	1	Low	conform to ISO 14817-1 to promote reuse	
Map Update System Wayside Equipment Wayside Equipment Wayside Equipment Wayside Equipment Wayside Equipment Wayside Equipment ITS Roadway Equipment ITS						Source
Wayside Equipment Wayside Equipment Connected Vehicle Roadside Equipment ITS Roadway Equipment arriving train information ITS Roadway Equipment Source Issue Description Issue Severity Proposed Resolution Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Plow Name	ng train information	arr	nnected Vehicle Roadside Equipment	Со	ent	ITS Roadway Equipme
Wayside Equipment ITS Roadway Equipment ITS Roadway Equipment ITS Roadway Equipment Resolution Description Timeframe Apperformance not fully defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Source ITS Roadway Equipment Timeframe Apperformation Apperformance not for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name	ection geometry	int	nnected Vehicle Roadside Equipment	Co		Map Update System
Issue Description Issue Severity Proposed Resolution Performance not ully defined medium Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Issue Description Timeframe Proposed Resolution Description Timeframe Proposed Resolution Specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Plant Timeframe Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Plant Timeframe Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Plant Timeframe Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Plant Timeframe Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Plant Timeframe Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution	ng train information	arr	nnected Vehicle Roadside Equipment	Co		Wayside Equipment
Performance not fully defined (medium) The performance rules are not fully defined for this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name The performance rules are not fully defined for this information that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name	ng train information	arr	Roadway Equipment	ITS		Wayside Equipment
fully defined (medium) for this information flow. for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. Under this information flow. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Destination Destination Destination	Timeframe Applicability	Resolution Description	Proposed Resolution	Issue Severity	Issue Description	lssue
Source Plow Name Flow Name	tersection geometry between a centres Union, United States	for distributing maps, roadway geometry, and	I-F: Distribute maps	Medium		fully defined
						Source
Map Update System Connected Vehicle Roadside Equipment intersection geometry	ection geometry	int	nnected Vehicle Roadside Equipment	Co		Map Update System

Solution Name: US: SAE Other J2735 - WAVE UDP 4

This solution is used within the U.S.. It combines standards associated with US: SAE Other J2735 with those for V-X: WAVE UDP. The US: SAE Other J2735 standards include upper-layer standards required to implement V2X information flows that do not yet have fully specified functionality and performance charcateristics. The V-X: WAVE UDP standards include lower-layer standards that support connectionless vehicle-to-any communications within ~300m using the User Datagram Protocol (UDP) over Internet Protocol version 6 (IPv6) over the 5.9GHz spectrum.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States

olution Name:	US: SAE Other J2735 - WAVE UDP			Number of Issues: 2	Total Issue Severity	: 4
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment		rsonal Information Device	intersection safety warning		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			- Triples using this solution and affected stination	I by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment		rsonal Information Device	intersection safety warning		
				Number of Issues: 3	Total Issue Severity	. 7

~300m using the WAVE Short Messaging Protocol (WSMP) over the 5.9GHz spectrum. The broadcast mode is interoperable with M5 FNTP. Applicability Issue **Issue Description** Issue Severity Proposed Resolution **Resolution Description** Timeframe Australia, European Uncertainty about The mechanisms used to prevent bad actors Misbehavior detection and Conduct a field test to prove out the trust revocation mechanisms at all levels, including Medium Urgent trust revocation from sending authorized messages is security revocation revoking the privileges of a certificate authority (e.g., if an authority is no longer Union, United States mechanism recognized within a region) and of an ITS station (e.g., in case an ITS station starts to unproven. mechanism

	mispena	ave).	
	Information Triples using this solution and affected by this Issue t	hat would be addressed by the Proposed Resolution	
Source	Destination	Flow Name	
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert	
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection safety warning	
Maint and Constr Vehicle OBE	Personal Information Device	personal safety warning	
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert	
Other Vehicle OBEs	Vehicle OBE	intersection infringement info	
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert	
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info	
Vehicle OBE	Other Vehicle OBEs	intersection infringement info	

lution Name:	US: SAE Other J2735 - WAVE WSMP			Number of Issues: 3	Total Issue Severi	ty: 7
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not defined in andard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Commercial Vehicle C	DBE		hicle OBE	special vehicle type alert		
Connected Vehicle Ro	padside Equipment	Ve	hicle OBE	intersection safety warning		
Maint and Constr Veh	nicle OBE	Pe	rsonal Information Device	personal safety warning		
Maint and Constr Veh	nicle OBE	Ve	hicle OBE	special vehicle type alert		
Other Vehicle OBEs		Ve	hicle OBE	intersection infringement info		
Transit Vehicle OBE		Ve	hicle OBE	special vehicle type alert		
Vehicle OBE		Co	nnected Vehicle Roadside Equipment	intersection infringement info		
Vehicle OBE		Ot	her Vehicle OBEs	intersection infringement info		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
rformance not ly defined edium)	The performance rules are not fully defined for this information flow.	Medium	V-L: Intersection infringement	Develop an internationally acceptable ITS application specification that defines the rules for providing intersection infringment information within a local environment.	Urgent	United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padeida Equipment		Stillation	I low Name		
	adside Equipment	Ve	hicle OBE	intersection safety warning		
Other Vehicle OBEs	ausiue Equipment		hicle OBE hicle OBE	intersection safety warning intersection infringement info		
Other Vehicle OBEs Vehicle OBE	ausiue Equipment	Ve				
	ausiue Equipment	Ve Co	hicle OBE	intersection infringement info		
Vehicle OBE	Issue Description	Ve Co	hicle OBE nnected Vehicle Roadside Equipment	intersection infringement info	Timeframe	Applicability
Vehicle OBE Vehicle OBE		Ve Co Otl	hicle OBE nnected Vehicle Roadside Equipment her Vehicle OBEs	intersection infringement info intersection infringement info intersection infringement info	Timeframe Urgent	Applicability Australia, European Union, United States
Vehicle OBE Vehicle OBE ue rformance not ly defined edium)	Issue Description The performance rules are not fully defined	Ve Co Ott Issue Severity Medium	hicle OBE nnected Vehicle Roadside Equipment her Vehicle OBEs Proposed Resolution V-L: Special vehicle alert Triples using this solution and affected by	intersection infringement info intersection infringement info intersection infringement info Resolution Description Develop an internationally acceptable ITS application specification for sending special vehicle alerts.		Australia, European
Vehicle OBE Vehicle OBE ue formance not y defined	Issue Description The performance rules are not fully defined for this information flow.	Ve Co Oti Issue Severity Medium Information	hicle OBE nnected Vehicle Roadside Equipment her Vehicle OBEs Proposed Resolution V-L: Special vehicle alert	intersection infringement info intersection infringement info intersection infringement info Resolution Description Develop an internationally acceptable ITS application specification for sending special vehicle alerts.		Australia, European
Vehicle OBE Vehicle OBE Je formance not y defined edium) Source	Issue Description The performance rules are not fully defined for this information flow.	Issue Severity Medium Information Des	hicle OBE nnected Vehicle Roadside Equipment her Vehicle OBEs Proposed Resolution V-L: Special vehicle alert Triples using this solution and affected by stination	intersection infringement info intersection infringement info intersection infringement info Resolution Description Develop an internationally acceptable ITS application specification for sending special vehicle alerts. y this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European

This solution is used within the U.S.. It combines standards associated with US: SAE Other J2735 with those for C-X: Wide Area Broadcast (Upper). The US: SAE Other J2735 standards include upper-layer standards required to implement V2X information flows that do not yet have fully specified functionality and performance charcateristics. The C-X: Wide Area Broadcast (Upper) standards include lower-layer standards that support one entity broadcasting information to all wireless devices over an area that covers at least a metropolitan area without any expectation of acknowledgement or response; security is provided by the upper-layers.

Number of Issues:

Total Issue Severity:

13

US: SAE Other J2735 - Wide Area Broadcast (Upper)

Solution Name:

olution Name:	US: SAE Other J2735 - Wide Area Broadc	ast (Upper)		Number of Issues: 4	Total Issue Severity	13
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
biquitous roadcast echnology	With the continual enhancement of broadcast technologies and a mixture of free and subscriber-based systems, it is difficult to identify any single technology that can be used to reliably reach the bulk of drivers in a timely manner.	Low	C-V: Wide-area broadcast subnet and hybrid communications	Standardise one or more mechanisms by which wide-area broadcast messages can be received by a defined minimum percentage of transportation users that are currently operating within a specified geographic area. The required minimum percentage is dependent on the type of information being transmitted and will need to be determined by the expert community. Some alerts (e.g., tornado warnings) will require near 100% reception, while other messages (e.g., road works ahead) may require significantly lower minimum percentages. The minimum percentage may be made up with a variety of technologies using hybrid communications and the ITS station architecture.		Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center	Pe	rsonal Information Device	broadcast traveler information		
Transportation Inform	mation Center	Ve	hicle OBE	broadcast traveler information		
Wide Area Information	on Disseminator	Pe	rsonal Information Device	wide area broadcast traveler information		
Wide Area Information	on Disseminator	Ve	hicle OBE	broadcast traveler information		
Wide Area Information	on Disseminator	Ve	hicle OBE	wide area broadcast traveler information		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ita/comm profile iring	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	C-V: Tailoring of TPEG2	Tailor TPEG2 for use within the US for centre-vehicle communications.	Urgent	United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center	Pe	rsonal Information Device	broadcast traveler information		
Transportation Inform	nation Center	Ve	hicle OBE	broadcast traveler information		
Wide Area Information	on Disseminator	Pe	rsonal Information Device	wide area broadcast traveler information		
Wide Area Information	on Disseminator	Ve	hicle OBE	broadcast traveler information		
Wide Area Information	on Disseminator	Ve	hicle OBE	wide area broadcast traveler information		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ita not defined in andard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center	Pe	rsonal Information Device	broadcast traveler information		
Transportation Inform	nation Center	Ve	hicle OBE	broadcast traveler information		
	on Disseminator	Pe	rsonal Information Device	wide area broadcast traveler information		
Wide Area Information						
Wide Area Information		Ve	hicle OBE	broadcast traveler information		

Solution Name:	US: SAE Other J2735 - Wide Area Broado	east (Unner)		Number of Issues: 4 T	otal Issue Severity	: 13
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not fully defined (medium)	The performance rules are not fully defined for this information flow.	Medium	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Transportation Inform	nation Center		hicle OBE	broadcast traveler information		
Wide Area Information	on Disseminator	Ve	hicle OBE	broadcast traveler information		
Solution Name:	US: SAE Safety Awareness Messages - Lo	ocal Broadcast W	ireless (US)	Number of Issues: 3	otal Issue Severity	: 7
				ose for V-X: Local Broadcast Wireless (US). The US: SAE Safety Awareness Messages standards rds include lower-layer standards that support local-area broadcast wireless solutions, such a		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Vehicle O	ВЕ	Pe	rsonal Information Device	personal safety warning		
Emergency Vehicle O	BE	Ve	hicle OBE	emergency vehicle alert		
lssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Still under development	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	V-L: Safety awareness	Develop an ITS application specification for vehicle-to-vehicle safety awareness.	Urgent	Australia, European Union
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Vehicle O	ВЕ		rsonal Information Device	personal safety warning		
Emergency Vehicle O	BE	Ve	hicle OBE	emergency vehicle alert		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in tandard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Vehicle O	BE		rsonal Information Device	personal safety warning		
Emergency Vehicle O	BE	Ve	hicle OBE	emergency vehicle alert		

Solution Name: US: SAE Safety Awareness Messages - WAVE WSMP

Number of Issues: 4 Total Issue Severity: 10

This solution is used within the U.S.. It combines standards associated with US: SAE Safety Awareness Messages with those for V-X: WAVE WSMP. The US: SAE Safety Awareness Messages standards include upper-layer standards required to implement V2V safety situation awareness information flows. The V-X: WAVE WSMP standards include lower-layer standards that support connectionless, near constant, ultra-low latency vehicle-to-any communications within ~300m using the WAVE Short Messaging Protocol (WSMP) over the 5.9GHz spectrum. The broadcast mode is interoperable with M5 FNTP.

olution Name:	US: SAE Safety Awareness Messages - W	VAVE WSMP		Number of Issues: 4	Total Issue Severit	ty: 10
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Incertainty about rust revocation nechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected in the strict of t	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Vehicle C	DBE		nicle OBE	special vehicle type alert		
Other Vehicle OBEs		Ve	hicle OBE	vehicle hazard event		
Vehicle OBE		Otl	ner Vehicle OBEs	vehicle hazard event		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
till under evelopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	V-L: Safety awareness	Develop an ITS application specification for vehicle-to-vehicle safety awareness.	Urgent	Australia, European Union
Source			riples using this solution and affected latination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Vehicle C	DBE		nicle OBE	special vehicle type alert		
Other Vehicle OBEs		Ve	nicle OBE	vehicle hazard event		
Vehicle OBE		Ot	ner Vehicle OBEs	vehicle hazard event		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not defined in andard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Course				by this Issue that would be addressed by the Proposed Resolution		
Source Emergency Vehicle C	DBE		tination nicle OBE	Flow Name special vehicle type alert		
Other Vehicle OBEs		Ve	hicle OBE	vehicle hazard event		
Vehicle OBE		Otl	ner Vehicle OBEs	vehicle hazard event		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not ully defined nedium)	The performance rules are not fully defined for this information flow.	Medium	V-L: Stationary vehicle	Develop an ITS application specification harmonised with DENM for a vehicle to self-report when it is stationary and a potential hazard.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected in the street in	by this Issue that would be addressed by the Proposed Resolution Flow Name		
			nicle OBE	vehicle hazard event		
Other Vehicle OBEs						

This solution is used within the U.S. It combines standards associated with US: SAE Signal Control Messages with those for I-I: Internet (US). The US: SAE Signal Control Messages standards include upper-layer standards required to implement signal control information flows. The I-I: Internet (US) standards include lower-layer standards that support secure communications between ITS equipment using X.509 or IEEE 1609.2 security certificates.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Incertainty about rust revocation nechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Course				by this Issue that would be addressed by the Proposed Resolution		
Connected Vehicle R	oadside Equipment		Roadway Equipment	Flow Name intersection status monitoring		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
itill under levelopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
		Information T	riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Connected Vehicle R	oadside Equipment		tination Roadway Equipment	Flow Name intersection status monitoring		
Connected Vehicle R	oadside Equipment Issue Description				Timeframe	Applicability
Connected Vehicle R Ssue Data not defined in		ITS	Roadway Equipment	intersection status monitoring	Timeframe Near-term	Australia, European
Ssue Data not defined in standard format	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse	Issue Severity Low Information T	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected by	Intersection status monitoring Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution		
Connected Vehicle R Ssue Data not defined in	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Issue Severity Low Information T	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts		Australia, European
Connected Vehicle R Ssue ata not defined in tandard format Source Connected Vehicle R	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Issue Severity Low Information T	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected by tination	Intersection status monitoring Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts By this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Source Connected Vehicle R State Cata not defined in standard format	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS. oadside Equipment	Issue Severity Low Information T Des	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected be tination Roadway Equipment	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name intersection status monitoring	Near-term	Australia, European Union, United States
Connected Vehicle R Source Connected Vehicle R Source Connected Vehicle R Source Connected Vehicle R Source Connected Vehicle R	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS. oadside Equipment Issue Description The performance rules are not fully defined	Issue Severity Low Information T Des ITS Issue Severity Medium	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected be tination Roadway Equipment Proposed Resolution I-F: Signal conflict prevention	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name intersection status monitoring Resolution Description Develop an internationally acceptable ITS application specification for monitoring intersection status information to prevent conflicts between physical displays and	Near-term Timeframe	Australia, European Union, United States Applicability Australia, European

This solution is used within the U.S.. It combines standards associated with US: SAE Signal Control Messages with those for V-X: Local Broadcast Wireless (US). The US: SAE Signal Control Messages standards include upper-layer standards required to implement signal control information flows. The V-X: Local Broadcast Wireless (US) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc.

Solution Name:	US: SAE Signal Control Messages - Local	Broadcast Wirele	ss (US)	Number of Issues: 5	Total Issue Severit	y: 42
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	V-L: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry to a vehicle from a local source.	Urgent	Australia, European Union, United States Japan
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment		nicle OBE	roadway geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment		sonal Information Device	intersection geometry		
Connected Vehicle Ro	padside Equipment	Vel	nicle OBE	intersection geometry		
Connected Vehicle Ro	padside Equipment	Vel	nicle OBE	roadway geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Still under development	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	V-L: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry to a vehicle from a local source.	Urgent	Australia, European Union, United States Japan
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment		sonal Information Device	intersection geometry		
Connected Vehicle Ro	padside Equipment	Vel	nicle OBE	intersection geometry		
Connected Vehicle Ro	oadside Equipment	Vel	nicle OBE	roadway geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in tandard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			riples using this solution and affected tination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment		sonal Information Device	intersection geometry		
Connected Vehicle Re	padside Equipment	Vel	nicle OBE	intersection geometry		
Connected Vehicle Ro	padside Equipment	Vel	nicle OBE	roadway geometry		

lution Name:	US: SAE Signal Control Messages - Local	Broadcast Wirele	ess (US)	Number of Issues: 5	otal Issue Severit	y: 42
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not ully defined medium)	The performance rules are not fully defined for this information flow.	Medium	V-L: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry to a vehicle from a local source.	Urgent	Australia, European Union, United States Japan
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	adside Equipment	Pe	rsonal Information Device	intersection geometry		
Connected Vehicle Ro	adside Equipment	Ve	hicle OBE	intersection geometry		
olution Name:	US: SAE Signal Control Messages - Mobil	le Internet (US)		Number of Issues: 6 T	otal Issue Severit	y : 50
plement signal contr		US) standards inc	lude lower-layer standards that	for I-M: Mobile Internet (US). The US: SAE Signal Control Messages standards include upper-lass support secure communications between two entities, either or both of which may be active theret connection method.		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined	Ultra	C-V: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a	Urgent	Australia, European Union, United States Japan
	for this information flow.			vehicle or personal information device).		
				vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution		
Source Map Update System		Des	stination	vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution Flow Name		
Source Map Update System		Des		vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution		
		Des	stination	vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution Flow Name	Timeframe	Applicability
Map Update System sue ncertainty about ust revocation	for this information flow.	De: Ve	stination hicle OBE	vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution Flow Name roadway geometry	Timeframe Urgent	Applicability Australia, European
Map Update System sue ncertainty about ust revocation echanism	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	Issue Severity Medium	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected	vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution Flow Name roadway geometry Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution		Applicability Australia, European
Map Update System sue ncertainty about ust revocation	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	Issue Severity Medium Information	Proposed Resolution Misbehavior detection and security revocation mechanism	vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution Flow Name roadway geometry Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).		Applicability Australia, European
Map Update System sue ncertainty about ust revocation echanism	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	Issue Severity Medium Information Des	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination	vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution Flow Name roadway geometry Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name		Applicability
Map Update System sue ncertainty about ust revocation echanism Source Map Update System	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	Issue Severity Medium Information Pe	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination rsonal Information Device	vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution Flow Name roadway geometry Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name intersection geometry		Applicability Australia, European
Map Update System sue ncertainty about ust revocation nechanism Source Map Update System Map Update System	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Issue Severity Medium Information Pe Ve	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination rsonal Information Device hicle OBE	vehicle or personal information device). by this Issue that would be addressed by the Proposed Resolution Flow Name roadway geometry Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name intersection geometry intersection geometry		Applicability Australia, European

Solution Name:	US: SAE Signal Control Messages - Mobil	le Internet (US)		Number of Issues: 6	Total Issue Severity:	50
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	C-V: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a vehicle or personal information device).	Urgent	Australia, European Union, United States, Japan
Source			Triples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			rsonal Information Device	intersection geometry		
Map Update System		Ve	hicle OBE	intersection geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data/comm profile pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	C-V: Signal operations	Develop an ITS application specification for providing intersection status information to vehicles from a centre for environmental benefits.	Urgent	Australia, European Union
6				by this Issue that would be addressed by the Proposed Resolution		
Source Traffic Management (Center		stination mmercial Vehicle OBE	Flow Name intersection status		
Traffic Management (nergency Vehicle OBE	intersection status		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
till under levelopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	C-V: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a vehicle or personal information device).	Urgent	Australia, European Union, United States, Japan
Source			Friples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			rsonal Information Device	intersection geometry		
Map Update System		Ve	hicle OBE	intersection geometry		
Map Update System		Ve	hicle OBE	roadway geometry		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
till under evelopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	C-V: Signal operations	Develop an ITS application specification for providing intersection status information to vehicles from a centre for environmental benefits.	Urgent	Australia, European Union
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Jource	Center		nergency Vehicle OBE	intersection status		
Traffic Management (

ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta not defined in ndard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that dat can easily be placed in the CIDCR and understood by all ITS experts		Australia, European Union, United States
c				d by this Issue that would be addressed by the Proposed Resolution	F	
Source Map Update System			stination rsonal Information Device	Flow Name intersection geometry		
Map Update System			hicle OBE	intersection geometry		
Map Update System			hicle OBE	roadway geometry		
Traffic Management	Center		mmercial Vehicle OBE	intersection status		
Traffic Management		Em	nergency Vehicle OBE	intersection status		
ie	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
formance not y defined edium)	The performance rules are not fully defined for this information flow.	Medium	C-V: EU signal priority/preemption	Develop an ITS application specification for a centre to exchange requests and status signal priority/preemption along a route with a vehicle.	for Medium-term	Australia, European Union
				d by this Issue that would be addressed by the Proposed Resolution		
Source Traffic Management	Center	Des	Triples using this solution and affected stination ergency Vehicle OBE	d by this Issue that would be addressed by the Proposed Resolution Flow Name intersection status		
Traffic Management		Des Em	stination nergency Vehicle OBE	Flow Name intersection status	Timofromo	Applicability
Traffic Management	Issue Description	Des Em	Proposed Resolution	Flow Name intersection status Resolution Description	Timeframe	Applicability
Traffic Management Je formance not y defined		Des Em	stination nergency Vehicle OBE	Flow Name intersection status	les Urgent	Applicability Australia, European Union, United States, Japan
e formance not defined dium)	Issue Description The performance rules are not fully defined	Issue Severity Medium	Proposed Resolution C-V: Distribute maps	Resolution Description Develop an internationally acceptable ITS application specification that defines the ru for distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a vehicle or personal information device).	les Urgent	Australia, European Union, United States,
Traffic Management e formance not / defined dium)	Issue Description The performance rules are not fully defined	Issue Severity Medium Information Des	Proposed Resolution C-V: Distribute maps	Resolution Description Develop an internationally acceptable ITS application specification that defines the rufor distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a vehicle or personal information device).	les Urgent	Australia, European Union, United States,
Traffic Management IE formance not y defined edium) Source Map Update System	Issue Description The performance rules are not fully defined	Issue Severity Medium Information Des	Proposed Resolution C-V: Distribute maps Triples using this solution and affected stination	Resolution Description Develop an internationally acceptable ITS application specification that defines the rufor distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a vehicle or personal information device). d by this Issue that would be addressed by the Proposed Resolution Flow Name	les Urgent	Australia, European Union, United States,
Traffic Management Tele formance not y defined edium) Source Map Update System Map Update System	Issue Description The performance rules are not fully defined	Issue Severity Medium Information Des	Proposed Resolution C-V: Distribute maps Triples using this solution and affected stination resonal Information Device	Resolution Description Develop an internationally acceptable ITS application specification that defines the ru for distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a vehicle or personal information device). d by this Issue that would be addressed by the Proposed Resolution Flow Name intersection geometry	les Urgent	Australia, European Union, United States,
Traffic Management ue formance not y defined edium)	Issue Description The performance rules are not fully defined for this information flow.	Issue Severity Medium Information Des	Proposed Resolution C-V: Distribute maps Triples using this solution and affected stination resonal Information Device hicle OBE	Resolution Description Develop an internationally acceptable ITS application specification that defines the rufor distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a vehicle or personal information device). d by this Issue that would be addressed by the Proposed Resolution Flow Name intersection geometry intersection geometry	Timeframe	Australia, European Union, United States, Japan
raffic Management formance not defined dium) Source Map Update System Map Update System formance not defined	Issue Description The performance rules are not fully defined for this information flow. Issue Description The performance rules are not fully defined	Issue Severity Medium Information Des Per Ve Issue Severity Medium	Proposed Resolution C-V: Distribute maps Triples using this solution and affected stination resonal Information Device hicle OBE Proposed Resolution C-V: Signal operations	Resolution Description Develop an internationally acceptable ITS application specification that defines the rufor distributing maps, roadway geometry, and intersection geometry and associated regulations and restrictions over mobile Internet from a centre to user devices (e.g., a vehicle or personal information device). d by this Issue that would be addressed by the Proposed Resolution Flow Name intersection geometry Resolution Description Develop an ITS application specification for providing intersection status information	les Urgent Timeframe	Australia, European Union, United States, Japan Applicability Australia, European

Solution Name:

US: SAE Signal Control Messages - NTCIP Messaging

Total Issue Severity: 42

This colution is used within the U.S. It combines standards associated with US: SAE Signal Control Messages with those for C.C. NTCIP Messaging. The US: SAE Signal Control Messages standards include upper layer standards required to implement

This solution is used within the U.S.. It combines standards associated with US: SAE Signal Control Messages with those for C-C: NTCIP Messaging. The US: SAE Signal Control Messages standards include upper-layer standards required to implement signal control information flows. The C-C: NTCIP Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the US.

olution Name:	US: SAE Signal Control Messages - NTCIP	Messaging		Number of Issues: 5	Total Issue Severity	: 42
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
curity inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
				Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).		
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nter	intersection geometry		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta profile not ined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nter	intersection geometry		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ll under velopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected bistination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nter	intersection geometry		
ıe	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta not defined in ndard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Source			nter	intersection geometry		
Source Map Update System		Ce				

olution Name:	US: SAE Signal Control Messages - NTCIF	Messaging		Number of Issues: 5 T	otal Issue Severit	y: 42
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not ully defined medium)	The performance rules are not fully defined for this information flow.	Medium	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nter	intersection geometry		
lution Name:	US: SAE Signal Control Messages - OMG	DDS		Number of Issues: 5 T	otal Issue Severit	y : 42
		_	_	or C-C: OMG DDS. The US: SAE Signal Control Messages standards include upper-layer standa between publishers and subscribers over a traditional Internet link	rds required to in	nplement signal
sue	Issue Description	_	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	v this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nter	intersection geometry		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ill under evelopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United States
Course				this Issue that would be addressed by the Proposed Resolution		
Source Map Update System			stination nter	Flow Name intersection geometry		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
vetted by mmunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies	Urgent	Australia, European Union, United States
,	accepted for use within the context of this information triple.			would have on ITS standards efforts.		
·	accepted for use within the context of this			would have on ITS standards efforts. this Issue that would be addressed by the Proposed Resolution		
Source Map Update System	accepted for use within the context of this information triple.	De	Triples using this solution and affected by stination	would have on ITS standards efforts.		

Solution Name:						
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in tandard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Cer	nter	intersection geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not ully defined medium)	The performance rules are not fully defined for this information flow.	Medium	C-C: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for updating maps, roadway geometry, and intersection geometry among centres (e.g., between a Map Update System and a centre).	Urgent	Australia, European Union, United States
Source			Friples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nter	intersection geometry		
Solution Name:	US: SAE Signal Control Messages - OMG	DDS RPC		Number of Issues: 5	Fotal Issue Severit	y: 42
		with US: SAE Signa	_	for I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer standards procedure calls between a field device and another field device or a centre over a field of	andards required t	-
ignal control informat		with US: SAE Signa	_	for I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer sta	andards required t	-
ignal control informat Issue Data profile not	ion flows. The I-F: OMG DDS RPC standards inclu	with US: SAE Signa ude lower-layer st	andards that support secure re	for I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer standards procedure calls between a field device and another field device or a centre over a field of	andards required t	k
ignal control informat Issue Data profile not	Issue Description Performance, functionality, and the upper-layers of the OSI stack have not been defined	with US: SAE Signated lower-layer structure Issue Severity Ultra	Proposed Resolution I-F: Distribute maps	for I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer statements procedure calls between a field device and another field device or a centre over a field of Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres	andards required to communication lin	Applicability Australia, European Union, United States,
Issue Data profile not defined	Issue Description Performance, functionality, and the upper-layers of the OSI stack have not been defined	ude lower-layer st Issue Severity Ultra Information	Proposed Resolution I-F: Distribute maps Friples using this solution and affected	for I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer statements procedure calls between a field device and another field device or a centre over a field of Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. by this Issue that would be addressed by the Proposed Resolution	andards required to communication lin	Applicability Australia, European Union, United States,
gnal control informations and control informations. Data profile not defined Source Map Update System	Issue Description Performance, functionality, and the upper-layers of the OSI stack have not been defined	ude lower-layer st Issue Severity Ultra Information	Proposed Resolution I-F: Distribute maps Triples using this solution and affected stination	ror I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer statements procedure calls between a field device and another field device or a centre over a field of the Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. by this Issue that would be addressed by the Proposed Resolution Flow Name	andards required to communication lin	Applicability Australia, European Union, United States,
Issue Data profile not defined Source	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow.	ude lower-layer st Issue Severity Ultra Information Des	Proposed Resolution I-F: Distribute maps Triples using this solution and affected stination nnected Vehicle Roadside Equipment	ror I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer statements procedure calls between a field device and another field device or a centre over a field of the Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. by this Issue that would be addressed by the Proposed Resolution Flow Name roadway geometry	andards required to communication ling Timeframe Urgent	Applicability Australia, European Union, United States, Japan
gnal control informatissue Data profile not defined Source Map Update System Still under development	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Issue Description A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis	Information Information Information Information Information Information Information Information Information	Proposed Resolution I-F: Distribute maps Triples using this solution and affected stination nnected Vehicle Roadside Equipment Proposed Resolution I-F: Distribute maps	ror I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer statements procedure calls between a field device and another field device or a centre over a field of Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. by this Issue that would be addressed by the Proposed Resolution Flow Name roadway geometry Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. by this Issue that would be addressed by the Proposed Resolution	Timeframe Timeframe Timeframe	Applicability Australia, European Union, United States, Japan Applicability Australia, European Union, United States,
gnal control informations in the state of th	Issue Description Performance, functionality, and the upperlayers of the OSI stack have not been defined for this information flow. Issue Description A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis	Information Information Information Des	Proposed Resolution I-F: Distribute maps Triples using this solution and affected stination nnected Vehicle Roadside Equipment Proposed Resolution I-F: Distribute maps	ror I-F: OMG DDS RPC. The US: SAE Signal Control Messages standards include upper-layer statement procedure calls between a field device and another field device or a centre over a field of Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment. by this Issue that would be addressed by the Proposed Resolution Flow Name roadway geometry Resolution Description Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Timeframe Timeframe Timeframe	Applicability Australia, European Union, United States, Japan Applicability Australia, European Union, United States,

Solution Name:	US: SAE Signal Control Messages - OMG	DDS RPC		Number of Issues: 5	otal Issue Severity	/: 42
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Jnvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Co	nnected Vehicle Roadside Equipment	intersection geometry		
Map Update System		Со	nnected Vehicle Roadside Equipment	roadway geometry		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not defined in andard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nnected Vehicle Roadside Equipment	intersection geometry		
Map Update System		Co	nnected Vehicle Roadside Equipment	roadway geometry		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not illy defined nedium)	The performance rules are not fully defined for this information flow.	Medium	I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Urgent	Australia, European Union, United States, Japan
Source			Triples using this solution and affected by stination	/ this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Co	nnected Vehicle Roadside Equipment	intersection geometry		
	US: SAE Signal Control Messages - SNMI	D-2		Number of Issues: 6 T	otal Issue Severity	<i>y</i> : 48

encouraged to use the TLS for SNMP security option for this solution to ensure adequate security.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Urgent	Australia, European Union, United States, Japan
		Information T	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution		
Source		Des	tination	Flow Name		
Map Update System		Cor	nnected Vehicle Roadside Equipment	roadway geometry		

Solution Name:	US: SAE Signal Control Messages - SNMF	Pv3		Number of Issues: 6	otal Issue Severit	ty: 48
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata/comm profile airing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Urgent	Australia, European Union, United States Japan
Source			riples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nnected Vehicle Roadside Equipment	intersection geometry		
Map Update System		Co	nnected Vehicle Roadside Equipment	roadway geometry		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
se TLS for SNMP ption	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, European Union, United States
Saurea				y this Issue that would be addressed by the Proposed Resolution		
Source Map Update System			tination nnected Vehicle Roadside Equipment	Flow Name intersection geometry		
Map Update System			nnected Vehicle Roadside Equipment	roadway geometry		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ill under evelopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Urgent	Australia, European Union, United States Japan
Source			riples using this solution and affected b tination	ry this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System			nnected Vehicle Roadside Equipment	intersection geometry		
Map Update System		Co	nnected Vehicle Roadside Equipment	roadway geometry		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not defined in andard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
		Information 7		ry this Issue that would be addressed by the Proposed Resolution Flow Name		
Source			tination			
Source Map Update System		Des	tination nnected Vehicle Roadside Equipment	intersection geometry		

ution Name:	US: SAE Signal Control Messages - SNMI	Pv3		Number of Issues: 6	otal Issue Severit	y: 48
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
rformance not ly defined edium)	The performance rules are not fully defined for this information flow.	Medium	I-F: Distribute maps	Develop an internationally acceptable ITS application specification that defines the rules for distributing maps, roadway geometry, and intersection geometry between a centres (e.g., a Map Update System) and field equipment.	Urgent	Australia, European Union, United States, Japan
Source			Triples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Map Update System		Co	nnected Vehicle Roadside Equipment	intersection geometry		
ution Name:	US: SAE Signal Control Messages - WAV	E UDP		Number of Issues: 4 T	otal Issue Severit	y: 10
	ows. The V-X: WAVE UDP standards include lowe	_	_	or V-X: WAVE UDP. The US: SAE Signal Control Messages standards include upper-layer stand icle-to-any communications within \sim 300m using the User Datagram Protocol (UDP) over Inte	•	
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
certainty about st revocation echanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Rough	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ll under velopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
Source			Triples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	Roadside Equipment	IT:	S Roadway Equipment	intersection status monitoring		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	The definition of data concepts should	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
a not defined in ndard format	conform to ISO 14817-1 to promote reuse among ITS.		COMOTH to 130 14817			omon, omica states
	conform to ISO 14817-1 to promote reuse			y this Issue that would be addressed by the Proposed Resolution Flow Name		omon, omeca states

Solution Name:	US: SAE Signal Control Messages - WAVI	E UDP		Number of Issues: 4	otal Issue Severit	/ : 10
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
erformance not ully defined nedium)	The performance rules are not fully defined for this information flow.	Medium	I-F: Signal conflict prevention	Develop an internationally acceptable ITS application specification for monitoring intersection status information to prevent conflicts between physical displays and broadcast information.	Urgent	Australia, European Union
Source			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
	Roadside Equipment		Roadway Equipment	intersection status monitoring		
lution Name:	US: SAE Signal Control Messages - WAVI	E WSMP		Number of Issues: 4	otal Issue Severit	/: 10
nal control informa		ude lower-layer st	andards that support connection	or V-X: WAVE WSMP. The US: SAE Signal Control Messages standards include upper-layer stanless, near constant, ultra-low latency vehicle-to-any communications within ~300m using the		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ncertainty about ust revocation echanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
	Roadside Equipment		mmercial Vehicle OBE	intersection status		
Connected Vehicle	Roadside Equipment	Em	nergency Vehicle OBE	intersection status		
Connected Vehicle	Roadside Equipment	ITS	Roadway Equipment	intersection status monitoring		
Connected Vehicle	Roadside Equipment	Pe	rsonal Information Device	intersection status		
Connected Vehicle	Roadside Equipment	Pe	rsonal Information Device	pedestrian safety information		
Connected Vehicle	Roadside Equipment	Tra	ansit Vehicle OBE	intersection status		
Connected Vehicle	Roadside Equipment	Ve	hicle OBE	intersection status		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ill under velopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	V-L: US signal operations	Develop an ITS application specification for the performance requirements related to sending signal control information to vehicles from the roadside.	Urgent	United States
Cource			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle	Roadside Equipment		nergency Vehicle OBE	intersection status		
	Roadside Equipment		ansit Vehicle OBE	intersection status		
	Roadside Equipment	Ve	hicle OBE	intersection status		

2112	US: SAE Signal Control Messages - WAVI		Duomosod Bosolution	Paralytian Description	Timesfrome	Applicability
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ll under velopment	A draft of the standard has been developed by the working group, but it was still under development at the time the HARTS analysis was performed.	Medium	I-F: US signal operations	Develop an ITS application specification for exchanging configuration, plans, status, and commands for signal control and signal systems using the secure centre-to-field protocol.	Urgent	United States
Source			riples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment	ITS	Roadway Equipment	intersection status monitoring		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ta not defined in Indard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment	Coi	nmercial Vehicle OBE	intersection status		
Connected Vehicle Ro	padside Equipment	Em	ergency Vehicle OBE	intersection status		
Connected Vehicle Ro	padside Equipment	ITS	Roadway Equipment	intersection status monitoring		
Connected Vehicle Ro	padside Equipment	Per	sonal Information Device	intersection status		
Connected Vehicle Ro	padside Equipment	Per	sonal Information Device	pedestrian safety information		
Connected Vehicle Ro	padside Equipment	Tra	nsit Vehicle OBE	intersection status		
Connected Vehicle Ro	padside Equipment	Vel	nicle OBE	intersection status		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
rformance not ly defined edium)	The performance rules are not fully defined for this information flow.	Medium	V-L: EU signal operations	Develop an ITS application specification for providing intersection status information to vehicles from the roadside.	Urgent	Australia, European Union
				y this Issue that would be addressed by the Proposed Resolution		
Source Connected Vehicle Ro	padside Equipment		tination mmercial Vehicle OBE	Flow Name intersection status		
Connected Vehicle Ro			ergency Vehicle OBE	intersection status		
Connected Vehicle Ro			nsit Vehicle OBE	intersection status		
Connected Vehicle Ro			nicle OBE	intersection status		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
rformance not ly defined edium)	The performance rules are not fully defined for this information flow.	Medium	I-F: Signal conflict prevention	Develop an internationally acceptable ITS application specification for monitoring intersection status information to prevent conflicts between physical displays and broadcast information.	Urgent	Australia, European Union
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
	padside Equipment		Roadway Equipment	intersection status monitoring		

Solution Name:	US: SAE Signal Preemption - Local Unicast Wireless (US)	Number of Issues:	6	Total Issue Severity:	19
Solution Name:	US: SAE Signal Preemption - Local Unicast Wireless (US)	Number of Issues:	6	Total Issue Severity:	19

This solution is used within the U.S.. It combines standards associated with US: SAE Signal Preemption with those for V-X: Local Unicast Wireless (US). The US: SAE Signal Preemption standards include upper-layer standards required to implement signal preemption and priority information flows. The V-X: Local Unicast Wireless (US) standards include lower-layer standards that support local-area unicast wireless solutions, such as DSRC technologies, LTE, etc.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Guidance document under development	This recommended practice on how to use the related standards is still under development but is not seen as strictly necessary to begin deployment of equipment.	Low	V-L: US signal priority	Develop an ITS application specification for the performance requirements related to preemption and priority for authorised vehicles at a signal.	Urgent	United States
				y this Issue that would be addressed by the Proposed Resolution		
Source			tination	Flow Name		
Commercial Vehicle O	BE	Coi	nnected Vehicle Roadside Equipment	local signal priority request		
Connected Vehicle Roa	adside Equipment	Cor	mmercial Vehicle OBE	signal priority status		
Connected Vehicle Roa	adside Equipment	Em	ergency Vehicle OBE	signal priority status		
Connected Vehicle Roa	adside Equipment	Tra	nsit Vehicle OBE	signal priority status		
Emergency Vehicle OB	BE	Cor	nnected Vehicle Roadside Equipment	local signal preemption request		
Transit Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	local signal priority request		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Performance not defined (high)	The performance rules are not defined for this information flow.	High	V-L: US signal priority	Develop an ITS application specification for the performance requirements related to pre- emption and priority for authorised vehicles at a signal.	Urgent	United States
Source	4		riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		

	Information Triples using this solution and affected by this Issue that would be	pe addressed by the Proposed Resolution
Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	signal priority status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	signal priority status
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	signal priority status
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Transit Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request

olution Name:	US: SAE Signal Preemption - Local Unicas	st Wireless (US)			Number of Issues:	6	Total Issue Severity:	19
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Incertainty about rust revocation nechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust rev revoking the privileges of a certificate authori recognized within a region) and of an ITS statimisbehave).	ity (e.g., if an authority is no l	longer	Urgent	Australia, European Union, United States
Source			riples using this solution and affected by tination	y this Issue that would be addressed by the Proposed Reso	lution ow Name			
Commercial Vehicle (OBE		nnected Vehicle Roadside Equipment		ocal signal priority request			
Connected Vehicle Ro	padside Equipment	Co	mmercial Vehicle OBE	si	ignal priority status			
Connected Vehicle Ro	padside Equipment	Em	ergency Vehicle OBE	Si	ignal priority status			
Connected Vehicle Ro	padside Equipment	Tra	nsit Vehicle OBE	S	ignal priority status			
Emergency Vehicle O	BE	Co	nnected Vehicle Roadside Equipment	lo	ocal signal preemption request			
Transit Vehicle OBE		Co	nnected Vehicle Roadside Equipment	lo	ocal signal priority request			
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
ata not defined in andard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform can easily be placed in the CIDCR and underst		so that data	Near-term	Australia, European Union, United State
Carrier				y this Issue that would be addressed by the Proposed Reso				
Source Commercial Vehicle (OBE		tination nnected Vehicle Roadside Equipment		ow Name ocal signal priority request			
Connected Vehicle Ro	padside Equipment	Со	mmercial Vehicle OBE	Si	ignal priority status			
Connected Vehicle Ro	padside Equipment	Em	ergency Vehicle OBE	si	ignal priority status			
Connected Vehicle Ro	padside Equipment	Tra	nsit Vehicle OBE	S	ignal priority status			
Emergency Vehicle O	ВЕ	Co	nnected Vehicle Roadside Equipment	lo	ocal signal preemption request			
Transit Vehicle OBE		Co	nnected Vehicle Roadside Equipment	lo	ocal signal priority request			
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
erformance not ully defined medium)	The performance rules are not fully defined for this information flow.	Medium	V-L: EU signal priority	Develop an ITS application specification for a priority to authorised vehicles.	traffic signal to provide pre-e	emption or	Urgent	Australia, European Union
Source			riples using this solution and affected by	y this Issue that would be addressed by the Proposed Reso	lution ow Name			
Commercial Vehicle (OBE		nnected Vehicle Roadside Equipment		ocal signal priority request			
Connected Vehicle Ro			mmercial Vehicle OBE		ignal priority status			
Connected Vehicle Ro		Em	ergency Vehicle OBE		ignal priority status			
Connected Vehicle Ro	padside Equipment	Tra	nsit Vehicle OBE	S	ignal priority status			
Emergency Vehicle O	BE	Co	nnected Vehicle Roadside Equipment	lo	ocal signal preemption request			
Transit Vehicle OBE		Со	nnected Vehicle Roadside Equipment	I	ocal signal priority request			

Solution Name:	US: SAE Signal Preemption - Local Unicas	t Wireless (US)			Number of Issues: 6	Total Issue Severity:	19
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Use case not considered in design (medium)	While the indicated standards nominally address the information flow, the design may not meet practical constraints because this particular use case was not the focus of the design effort.	Medium	V-L: EU signal priority	Develop an ITS application specification for a traffic priority to authorised vehicles.	signal to provide pre-emption or	Urgent	Australia, European Union
				this Issue that would be addressed by the Proposed Resolution			
Source		Des	tination	Flow Nam	e		
Emergency Vehicle OF	BE	Cor	nnected Vehicle Roadside Equipment	local sign	al preemption request		

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Solution Name: US: SAE Traveler Info - Local Broadcast Wireless (US) Total Issue Severity:

This solution is used within the U.S.. It combines standards associated with US: SAE Traveler Info with those for V-X: Local Broadcast Wireless (US). The US: SAE Traveler Info standards include upper-layer standards required to implement V2X traveler information flows. The V-X: Local Broadcast Wireless (US) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc.

Uncertainty about trust revocation The mechanisms used to prevent bad actors from sending authorized messages is Medium Misbehavior detection and security revocation revoking the privileges of a certificate authority (e.g., if an authority is no longer	Australia, European Union, United States
mechanism unproven. mechanism recognized within a region) and of an ITS station (e.g., in case an ITS station starts misbehave).	
Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution	
Source Destination Flow Name	
Connected Vehicle Roadside Equipment Personal Information Device local traveler information	
Connected Vehicle Roadside Equipment Transit Vehicle OBE vehicle signage data	
Connected Vehicle Roadside Equipment Vehicle OBE	
Connected Vehicle Roadside Equipment Vehicle OBE reduced speed notification	
Connected Vehicle Roadside Equipment Vehicle OBE speed management information	
Connected Vehicle Roadside Equipment Vehicle OBE vehicle signage data	
Emergency Vehicle OBE Vehicle OBE vehicle signage data	
Maint and Constr Vehicle OBE Vehicle OBE	

Stude Stud	Solution Name:	US: SAE Traveler Info - Local Broadcast V	Vireless (US)		Number of Issues: 3	otal Issue Severity:	12
Critical established a work tem for the subject standards that draft is not available for this critical feature to enable the interface. The draft may be missing due to the work item being new or simply a lack of activity on the work item. Information Troles using this solution and affected by this issue that would be addressed by the Proposed Resolution	Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Source Connected Vehicle Roadside Equipment Vehicle OBE Vehicle Signage data Vehicle Signag		established a work item for the subject standard but a draft is not available for this critical feature to enable the interface. The draft may be missing due to the work item being new or simply a lack of activity on the	High	V-L: TPEG2		Near-term	
Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment Vehicle OBE Vehicle Signage data Ve	Source						
Emergency Vehicle OBE Maint and Constr Vehicle OBE Vehicle Secolution Resolution Description Resolution Description Timeframe Applicability Draft not available (Critical) Brown or standards development organization has established a work item for the subject standards dut a draft is not available for this critical feature to enable the interface. The draft may be missing due to the work item being new or simply a lack of activity on the work item Destination Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name Connected Vehicle Roadside Equipment Personal Information Device Information Device Vehicle OBE Vehi		padside Equipment					
Issue Issu	Connected Vehicle Ro	padside Equipment	Vel	nicle OBE	vehicle signage data		
Issue Description Issue Severity Proposed Resolution Resolution Description Resolution Description Timeframe Applicability The standards development organization has established a work item for the subject standard but a draft is not available for this critical feature to enable the interface. The draft may be missing due to the work item being new or simply a lack of activity on the work item. Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Personal Information Device Connected Vehicle Roadside Equipment Vehicle OBE Resolution Description Resolution Description Poevelop an ITS application specification for providing in-vehicle signage and other traveler information to the vehicle from the roadside. This will also need to address issues such as when and how to locally generate traveler information messages and how to sign these messages. Urgent United States Urgent United States Which States Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution Flow Name Connected Vehicle Roadside Equipment Vehicle OBE Iocal traveler information Connected Vehicle Roadside Equipment Vehicle OBE reduced speed notification	Emergency Vehicle O	BE	Vel	nicle OBE	vehicle signage data		
Draft not available (Critical) The standards development organization has established a work item for the subject standard but a draft is not available for this critical feature to enable the interface. The draft may be missing due to the work item being new or simply a lack of activity on the work item. Source	Maint and Constr Veh	nicle OBE	Vel	nicle OBE	vehicle signage data		
Critical established a work item for the subject standard but a draft is not available for this critical feature to enable the interface. The draft may be missing due to the work item being new or simply a lack of activity on the work item.	Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
SourceDestinationFlow NameConnected Vehicle Roadside EquipmentPersonal Information Devicelocal traveler informationConnected Vehicle Roadside EquipmentVehicle OBElocal traveler informationConnected Vehicle Roadside EquipmentVehicle OBEreduced speed notification		established a work item for the subject standard but a draft is not available for this critical feature to enable the interface. The draft may be missing due to the work item being new or simply a lack of activity on the	High	V-L: US traveler information	information to the vehicle from the roadside. This will also need to address issues such as when and how to locally generate traveler information messages and how to sign these	Urgent	United States
Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment Vehicle OBE Vehicle OBE reduced speed notification	Source						
Connected Vehicle Roadside Equipment Vehicle OBE reduced speed notification	Connected Vehicle Ro	padside Equipment	Per	rsonal Information Device	local traveler information		
	Connected Vehicle Ro	padside Equipment	Vel	hicle OBE	local traveler information		
Connected Vehicle Roadside Equipment Vehicle OBE speed management information	Connected Vehicle Ro	padside Equipment	Vel	nicle OBE	reduced speed notification		
	Connected Vehicle Ro	padside Equipment	Vel	nicle OBE	speed management information		

olution Name:	US: SAE Traveler Info - Local Broadcast V	Nireless (US)		Number of Issues: 3	Total Issue Severit	y: 12
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not defined in tandard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle	Roadside Equipment	Per	rsonal Information Device	local traveler information		
Connected Vehicle	Roadside Equipment	Tra	ansit Vehicle OBE	vehicle signage data		
Connected Vehicle	Roadside Equipment	Vel	hicle OBE	local traveler information		
Connected Vehicle	Roadside Equipment	Vel	hicle OBE	reduced speed notification		
Connected Vehicle	Roadside Equipment	Vel	hicle OBE	speed management information		
Connected Vehicle	Roadside Equipment	Vel	hicle OBE	vehicle signage data		
Emergency Vehicle	OBE	Vel	hicle OBE	vehicle signage data		
Maint and Constr V	/ehicle OBE	Vel	hicle OBE	vehicle signage data		
	US: SAE Traveler Info - Mobile Internet (-			otal Issue Severit	
is solution is used formation flows. T	within the U.S It combines standards associated	with US: SAE Trave ver-layer standard	ls that support secure communi	bbile Internet (US). The US: SAE Traveler Info standards include upper-layer standards required ications between two entities, either or both of which may be actively moving; based on X.509	to implement V2	X traveler
is solution is used formation flows. Ton-mobile (if any) e	within the U.S It combines standards associated the I-M: Mobile Internet (US) standards include low	with US: SAE Trave ver-layer standard ervice provider usin	ls that support secure communi	bbile Internet (US). The US: SAE Traveler Info standards include upper-layer standards required ications between two entities, either or both of which may be actively moving; based on X.509	to implement V2	X traveler
is solution is used formation flows. To n-mobile (if any) exsue the control of th	within the U.S It combines standards associated the I-M: Mobile Internet (US) standards include lowendpoint may connect to the wide-area-wireless se	with US: SAE Trave ver-layer standard ervice provider usin	Is that support secure communing any Intneret connection met	obile Internet (US). The US: SAE Traveler Info standards include upper-layer standards required ications between two entities, either or both of which may be actively moving; based on X.509 thod.	d to implement V2 9 or IEEE 1609.2 ca	Applicability Australia, European
s solution is used ormation flows. To have named to have not been supported by the solution of	within the U.S It combines standards associated the I-M: Mobile Internet (US) standards include lowendpoint may connect to the wide-area-wireless se Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	with US: SAE Trave ver-layer standard ervice provider usin Issue Severity Medium	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected	bile Internet (US). The US: SAE Traveler Info standards include upper-layer standards required ications between two entities, either or both of which may be actively moving; based on X.509 sthod. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution	to implement V2 9 or IEEE 1609.2 ce	Applicability Australia, European
is solution is used ormation flows. Ton-mobile (if any) expenses and continued in the conti	within the U.S It combines standards associated to the I-M: Mobile Internet (US) standards include low endpoint may connect to the wide-area-wireless see Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	with US: SAE Travever-layer standard ervice provider using the Issue Severity Medium Information Toes	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination	bile Internet (US). The US: SAE Traveler Info standards include upper-layer standards required ications between two entities, either or both of which may be actively moving; based on X.509 thod. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name	to implement V2 9 or IEEE 1609.2 ce	X traveler ertificates. A Applicability
is solution is used formation flows. Ton-mobile (if any) essue Uncertainty about rust revocation nechanism	within the U.S It combines standards associated of the I-M: Mobile Internet (US) standards include low endpoint may connect to the wide-area-wireless see Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	with US: SAE Travever-layer standard ervice provider using standard lassue Severity Medium Information Topes Veh	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected	bile Internet (US). The US: SAE Traveler Info standards include upper-layer standards required ications between two entities, either or both of which may be actively moving; based on X.509 sthod. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution	to implement V2 9 or IEEE 1609.2 ce	Applicability Australia, European
is solution is used formation flows. Ton-mobile (if any) existed incertainty about rust revocation nechanism Source Traffic Management	within the U.S It combines standards associated of the I-M: Mobile Internet (US) standards include low endpoint may connect to the wide-area-wireless see Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	with US: SAE Travever-layer standard ervice provider using standard lassue Severity Medium Information Topes Veh	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination hicle OBE	bile Internet (US). The US: SAE Traveler Info standards include upper-layer standards required ications between two entities, either or both of which may be actively moving; based on X.509 sthod. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name speed management information	to implement V2 9 or IEEE 1609.2 ce	Applicability Australia, European
is solution is used formation flows. Ton-mobile (if any) essue Uncertainty about rust revocation nechanism Source Traffic Management Traffic Management Sisue	within the U.S It combines standards associated of the I-M: Mobile Internet (US) standards include low endpoint may connect to the wide-area-wireless see Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. Int Center Issue Description	with US: SAE Travever-layer standard ervice provider using standard lassue Severity Medium Information To Des Verice Verice SAE Travever-layer standard st	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination hicle OBE	bile Internet (US). The US: SAE Traveler Info standards include upper-layer standards required ications between two entities, either or both of which may be actively moving; based on X.509 schod. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name speed management information vehicle signage data	Timeframe Urgent	Applicability Australia, European Union, United States
formation flows. Ton-mobile (if any) essue Uncertainty about rust revocation nechanism Source Traffic Managemen	within the U.S It combines standards associated of the I-M: Mobile Internet (US) standards include low endpoint may connect to the wide-area-wireless search of the may connect to the wide-area-wireless search of the mechanisms used to prevent bad actors from sending authorized messages is unproven. Issue Description Issue Description There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated	with US: SAE Trave ver-layer standard ervice provider usin Issue Severity Medium Information T Des Ver Ver Issue Severity High	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected stination hicle OBE Proposed Resolution V-L: TPEG2	Debile Internet (US). The US: SAE Traveler Info standards include upper-layer standards required ications between two entities, either or both of which may be actively moving; based on X.50s shod. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name speed management information vehicle signage data Resolution Description Develop an ITS application specification for transmission of TPEG2 to a vehicle from a	Timeframe Timeframe Timeframe	Applicability Applicability Applicability Applicability Applicability Applicability Australia, European

should) coup defined in thi lower-layer s Source Traffic Management Center Issue Descrip The standard established a standard but critical featur draft may be	mbiguities as to how to (or if one ple the upper-layer standards his solution with the indicated standards.	Des	Proposed Resolution V-L: US traveler information Friples using this solution and affected betination hicle OBE Proposed Resolution C-V: In-vehicle signage	Develop an ITS application specification for providing in-vehicle signage and other traveler information to the vehicle from the roadside. This will also need to address issues such as when and how to locally generate traveler information messages and how to sign these messages. By this Issue that would be addressed by the Proposed Resolution Flow Name speed management information Resolution Description Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Timeframe Urgent Timeframe Urgent	Applicability United States Applicability Australia, European
should) coup defined in this lower-layer s Source Traffic Management Center Issue Descripe Traft not available Critical) The standard established a standard but critical featur draft may be being new or work item.	iption rds development organization has a work item for the subject at a draft is not available for this ture to enable the interface. The e missing due to the work item	Information To Des	Proposed Resolution	information to the vehicle from the roadside. This will also need to address issues such as when and how to locally generate traveler information messages and how to sign these messages. by this Issue that would be addressed by the Proposed Resolution Flow Name speed management information Resolution Description	Timeframe	Applicability
Traffic Management Center Sue Issue Descrip The standard established a standard but critical featur draft may be being new or work item.	rds development organization has a work item for the subject at a draft is not available for this ure to enable the interface. The e missing due to the work item	Vel	Proposed Resolution	Flow Name speed management information Resolution Description		
Traffic Management Center ue Issue Descrip The standard established a standard but critical featur draft may be being new or work item.	rds development organization has a work item for the subject at a draft is not available for this ure to enable the interface. The e missing due to the work item	Issue Severity	Proposed Resolution	speed management information Resolution Description		
raft not available critical) The standard established a standard but critical featur draft may be being new or work item.	rds development organization has a work item for the subject at a draft is not available for this ure to enable the interface. The e missing due to the work item					
established a standard but critical featur draft may be being new or work item.	a work item for the subject a draft is not available for this ure to enable the interface. The e missing due to the work item	High	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia European
						Union
Traffic Management Center			Friples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
		Vel	hicle OBE	speed management information		
Traffic Management Center		Vel	hicle OBE	vehicle signage data		
ue Issue Descrip	iption	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
established a standard but critical featur draft may be	rds development organization has a work item for the subject at a draft is not available for this ure to enable the interface. The e missing due to the work item or simply a lack of activity on the	High	V-L: TPEG2	Develop an ITS application specification for transmission of TPEG2 to a vehicle from a local broadcast source.	Near-term	Australia, European Union
				by this Issue that would be addressed by the Proposed Resolution		
Source Traffic Management Center			tination hicle OBE	Flow Name vehicle signage data		

Solution Name:	US: SAE Traveler Info - Mobile Internet (US)		Number of Issues: 4	otal Issue Severity	/: 20
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Draft not available (Critical)	The standards development organization has established a work item for the subject standard but a draft is not available for this critical feature to enable the interface. The draft may be missing due to the work item being new or simply a lack of activity on the work item.	High	V-L: US traveler information	Develop an ITS application specification for providing in-vehicle signage and other traveler information to the vehicle from the roadside. This will also need to address issues such as when and how to locally generate traveler information messages and how to sign these messages.	Urgent	United States
Source			Triples using this solution and affected bation	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Traffic Management	Contar	Vehicle OBE				
	Center	VE	NICIE OBE	speed management information		
	Center	Ve	uicie orf	speed management information		
	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Issue Data not defined in					Timeframe Near-term	Applicability Australia, European Union, United States
Issue Data not defined in standard format	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse	Issue Severity Low Information	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected by	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution		Australia, European
Issue Data not defined in standard format Source	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Issue Severity Low Information	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected betination	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Data not defined in standard format Source Traffic Management	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Issue Severity Low Information Des	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected betination hicle OBE	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name speed management information		Australia, European
Issue Data not defined in standard format Source	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Issue Severity Low Information Des	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected betination	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name		Australia, European
Data not defined in standard format Source Traffic Management Traffic Management	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Issue Severity Low Information Des	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected betination hicle OBE	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name speed management information vehicle signage data		Australia, European Union, United States
Data not defined in standard format Source Traffic Management Traffic Management Solution Name: this solution is used water	Issue Description The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS. Center US: SAE VRU Messages - WAVE WSMP within the U.S It combines standards associated was a second concepts.	Issue Severity Low Information Des Ve Ve vith US: SAE VRU r standards that s	Proposed Resolution V-L: Update SAE J2735 to conform to ISO 14817 Triples using this solution and affected to stination hicle OBE hicle OBE Messages with those for V-X: W	Resolution Description Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts by this Issue that would be addressed by the Proposed Resolution Flow Name speed management information vehicle signage data	Near-term otal Issue Severity implement vulner	Australia, European Union, United States /: 4 able road user

Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	revoking the privileges of a certificate aut	revocation mechanisms at all levels, including nority (e.g., if an authority is no longer station (e.g., in case an ITS station starts to	Urgent	Australia, European Union, United States
		Information	Triples using this solution and affected b	y this Issue that would be addressed by the Proposed I	Resolution		
Source		De	stination		Flow Name		
Personal Information	n Device	Co	onnected Vehicle Roadside Equipment		personal location		
Personal Information	n Device	Er	nergency Vehicle OBE		personal location		
Personal Information	n Device	M	aint and Constr Vehicle OBE		personal location		
Personal Information	n Device	Tr	ansit Vehicle OBE		personal location		
Personal Information	n Device	Ve	ehicle OBE		personal location		

his solution is used within the U.S It combines	Information Infor	V-L: Update SAE J2735 to conform to ISO 14817 on Triples using this solution and affected Destination Connected Vehicle Roadside Equipment Emergency Vehicle OBE Maint and Constr Vehicle OBE Transit Vehicle OBE Vehicle OBE Vehicle OBE Veather Info with those for V-X: Lower-layer standards that support ty Proposed Resolution Misbehavior detection and security revocation mechanism	personal location personal location personal location personal location	Timeframe Near-term Total Issue Severit Is required to imp Timeframe Urgent	
conform to ISO 14817-1 among ITS. Source Personal Information Device Diution Name: US: SAE Weather Institute U.S It combines the eather information flows. The V-X: Local Broad Institute Institut	Information Infor	conform to ISO 14817 on Triples using this solution and affected Destination Connected Vehicle Roadside Equipment Emergency Vehicle OBE Maint and Constr Vehicle OBE Transit Vehicle OBE Vehicle OBE Vehicle OBE Veather Info with those for V-X: Lalower-layer standards that support Individual Construction Misbehavior detection and security revocation mechanism on Triples using this solution and affected	can easily be placed in the CIDCR and understood by all ITS experts d by this Issue that would be addressed by the Proposed Resolution Flow Name personal location Rumber of Issues: 3 To coal Broadcast Wireless (US). The US: SAE Weather Info standards include upper-layer standards art local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). d by this Issue that would be addressed by the Proposed Resolution	otal Issue Severit	ity: 12 plement V2X Applicability Australia, European
Personal Information Device US: SAE Weather Information is used within the U.S It combines ather information flows. The V-X: Local Broad sate Issue Description Incertainty about Just revocation echanism Source Connected Vehicle Roadside Equipment Source Issue Description	Info - Local Broadcast Wireless (US) s standards associated with US: SAE W dcast Wireless (US) standards include I Issue Severit o prevent bad actors d messages is Information	Connected Vehicle Roadside Equipment Emergency Vehicle OBE Maint and Constr Vehicle OBE Transit Vehicle OBE Vehicle OBE Vehicle OBE Vehicle OBE Venicle OBE Vehicle OBE Vehicle OBE Misbehavior detection and security revocation mechanism on Triples using this solution and affected	personal location personal location personal location personal location personal location personal location personal location personal location personal location personal location Number of Issues: 3 To ocal Broadcast Wireless (US). The US: SAE Weather Info standards include upper-layer standards out local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). d by this Issue that would be addressed by the Proposed Resolution	Is required to imp	Applicability Australia, European
Personal Information Device Personal Information Device US: SAE Weather Information is used within the U.S It combines ather information flows. The V-X: Local Broad use Issue Description The mechanisms used to from sending authorized unproven. Source Connected Vehicle Roadside Equipment US: SAE Weather Information is used within the U.S It combines at the information flows. The V-X: Local Broad use Issue Description The mechanisms used to from sending authorized unproven.	Info - Local Broadcast Wireless (US) s standards associated with US: SAE W dcast Wireless (US) standards include I Issue Severit o prevent bad actors d messages is Information	Connected Vehicle Roadside Equipment Emergency Vehicle OBE Maint and Constr Vehicle OBE Transit Vehicle OBE Vehicle OBE Vehicle OBE Veather Info with those for V-X: Lelower-layer standards that support Type Proposed Resolution Misbehavior detection and security revocation mechanism on Triples using this solution and affected	personal location Number of Issues: 3 To ocal Broadcast Wireless (US). The US: SAE Weather Info standards include upper-layer standards out local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). d by this Issue that would be addressed by the Proposed Resolution	Is required to imp	Applicability Australia, European
Personal Information Device Personal Information Device Personal Information Device US: SAE Weather In Section Is used within the U.S It combines ather information flows. The V-X: Local Broad Issue Description Incertainty about Just revocation echanism Source Connected Vehicle Roadside Equipment Source Issue Description The mechanisms used to from sending authorized unproven.	Info - Local Broadcast Wireless (US) s standards associated with US: SAE W dcast Wireless (US) standards include I Issue Severit o prevent bad actors d messages is Information	Maint and Constr Vehicle OBE Transit Vehicle OBE Vehicle OBE Veather Info with those for V-X: Lelower-layer standards that support ty Proposed Resolution Misbehavior detection and security revocation mechanism on Triples using this solution and affected	personal location personal location personal location Number of Issues: 3 ocal Broadcast Wireless (US). The US: SAE Weather Info standards include upper-layer standards out local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). d by this Issue that would be addressed by the Proposed Resolution	Is required to imp	Applicability Australia, European
Personal Information Device Personal Information Device US: SAE Weather In Section Is used within the U.S It combines ather information flows. The V-X: Local Broad Issue Description Issue Description The mechanisms used to from sending authorized unproven. Source Connected Vehicle Roadside Equipment Issue Description	Info - Local Broadcast Wireless (US) s standards associated with US: SAE W dcast Wireless (US) standards include I Issue Severit o prevent bad actors d messages is Information	Vehicle OBE Vehicle OBE Veather Info with those for V-X: Lelower-layer standards that supporty Proposed Resolution Misbehavior detection and security revocation mechanism on Triples using this solution and affected	personal location Number of Issues: 3 Topocal Broadcast Wireless (US). The US: SAE Weather Info standards include upper-layer standards ort local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc. Resolution Description	Is required to imp	Applicability Australia, European
Personal Information Device Suttion Name: Substitution Solution is used within the U.S It combines ather information flows. The V-X: Local Broad Substitute Information flows. The W-X: Local Broad Substitute Information flows. The well-anisms used to from sending authorized unproven. Source Connected Vehicle Roadside Equipment Substitution Name: US: SAE Weather Information flows. It combines ather information flows. The V-X: Local Broad Substitution flows. The V-X: Local Broad Substitution flows. The V-X: Local Broad Substitution flows. The W-X: Local Broad	Info - Local Broadcast Wireless (US) s standards associated with US: SAE W dcast Wireless (US) standards include I Issue Severit o prevent bad actors d messages is Information	Vehicle OBE Veather Info with those for V-X: Lelower-layer standards that supporty Proposed Resolution Misbehavior detection and security revocation mechanism on Triples using this solution and affected	Number of Issues: Ocal Broadcast Wireless (US). The US: SAE Weather Info standards include upper-layer standards out local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). d by this Issue that would be addressed by the Proposed Resolution	Is required to imp	Applicability Australia, European
Iution Name: Is solution is used within the U.S It combines ather information flows. The V-X: Local Broad sue Issue Description The mechanisms used to from sending authorized unproven. Source Connected Vehicle Roadside Equipment Issue Description	Info - Local Broadcast Wireless (US) s standards associated with US: SAE W dcast Wireless (US) standards include I Issue Severit o prevent bad actors d messages is	Veather Info with those for V-X: Lower-layer standards that supports Proposed Resolution Misbehavior detection and security revocation mechanism on Triples using this solution and affected	Number of Issues: 3 ocal Broadcast Wireless (US). The US: SAE Weather Info standards include upper-layer standards ort local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). d by this Issue that would be addressed by the Proposed Resolution	Is required to imp	Applicability Australia, European
Issue Description The mechanisms used to from sending authorized unproven. Source Connected Vehicle Roadside Equipment Issue Description The mechanisms used to from sending authorized unproven.	s standards associated with US: SAE W dcast Wireless (US) standards include I Issue Severit o prevent bad actors d messages is	ty Proposed Resolution Misbehavior detection and security revocation mechanism on Triples using this solution and affected	ocal Broadcast Wireless (US). The US: SAE Weather Info standards include upper-layer standards ort local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). d by this Issue that would be addressed by the Proposed Resolution	Is required to imp	Applicability Australia, European
Issue Description The mechanisms used to from sending authorized unproven. Source Connected Vehicle Roadside Equipment Issue Description The mechanisms used to from sending authorized unproven.	Issue Severit o prevent bad actors d messages is Informatio	ty Proposed Resolution Misbehavior detection and security revocation mechanism on Triples using this solution and affected	Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Timeframe	Applicability Australia, European
The mechanisms used to from sending authorized unproven. Source Connected Vehicle Roadside Equipment Issue Description	o prevent bad actors d messages is Information	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). d by this Issue that would be addressed by the Proposed Resolution		Australia, European
from sending authorized unproven. Source Connected Vehicle Roadside Equipment Issue Description	Information	security revocation mechanism on Triples using this solution and affected	revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). d by this Issue that would be addressed by the Proposed Resolution	Urgent	
Connected Vehicle Roadside Equipment Ssue Issue Description	ı				
Connected Vehicle Roadside Equipment Sue Issue Description		Destination			
Issue Description		Vehicle OBE	road weather advisories		
raft not available The standards developm	Issue Severit	ty Proposed Resolution	Resolution Description	Timeframe	Applicability
established a work item standard but a draft is no critical feature to enable draft may be missing dubeing new or simply a la work item.	for the subject not available for this the interface. The set to the work item	V-L: Weather information	Develop an acceptable ITS application specification for providing weather information to vehicles from the roadside or other vehicles. The specification should consider the use of DENM and/or TPEG2 as already implemented in Europe.	Urgent	Australia, European Union, United State
Source		on Triples using this solution and affected Destination	d by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Roadside Equipment		Vehicle OBE	road weather advisories		

olution Name:	US: SAE Weather Info - Local Broadcast V	vireiess (US)		Number of Issues: 3	Total Issue Severit	y: 12
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata not defined in candard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States
Source			riples using this solution and affected b	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Ro	padside Equipment	Vel	nicle OBE	road weather advisories		
lution Name:	US: SAE Weather Info - Mobile Internet (US)		Number of Issues: 4	otal Issue Severit	y: 44
ormation flows. The	ithin the U.S It combines standards associated v	vith US: SAE Wea er-layer standard	s that support secure communic	obile Internet (US). The US: SAE Weather Info standards include upper-layer standards require cations between two entities, either or both of which may be actively moving; based on X.509 hod.		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Pata profile not	Performance, functionality, and the upper-	Ultra	V-X: DENM, IVI, TPEG2, TMC	Standardise on a single solution for providing traveler information, lane closure	Urgent	Australia, European
•	layers of the OSI stack have not been defined for this information flow.	Sici d	and Contextual Speed Information	information and speed information; currently this information can be sent via DENM, IVI, TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc).		Union
efined	layers of the OSI stack have not been defined	Information T	and Contextual Speed Information Triples using this solution and affected by	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc). by this Issue that would be addressed by the Proposed Resolution		Union
•	layers of the OSI stack have not been defined for this information flow.	Information T Des	and Contextual Speed Information	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc).		Union
efined	layers of the OSI stack have not been defined for this information flow.	Information T Des	and Contextual Speed Information Triples using this solution and affected be tination	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc). by this Issue that would be addressed by the Proposed Resolution Flow Name		Union
efined	layers of the OSI stack have not been defined for this information flow.	Information T Des	and Contextual Speed Information Triples using this solution and affected be tination	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc). by this Issue that would be addressed by the Proposed Resolution Flow Name	Timeframe	Applicability
Source Transportation Inform sue ncertainty about ust revocation	layers of the OSI stack have not been defined for this information flow.	Information T Des Vel	and Contextual Speed Information Triples using this solution and affected betination nicle OBE	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc). by this Issue that would be addressed by the Proposed Resolution Flow Name road weather advisories	Timeframe Urgent	
Source Transportation Information Sue Incertainty about Just revocation echanism	layers of the OSI stack have not been defined for this information flow. Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	Information To Des Vel Issue Severity Medium	and Contextual Speed Information Triples using this solution and affected betination nicle OBE Proposed Resolution Misbehavior detection and security revocation mechanism	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc). by this Issue that would be addressed by the Proposed Resolution Flow Name road weather advisories Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution		Applicability Australia, European
Source Transportation Information	layers of the OSI stack have not been defined for this information flow. Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Information T Des Vel Issue Severity Medium Information T Des	and Contextual Speed Information Triples using this solution and affected betination nicle OBE Proposed Resolution Misbehavior detection and security revocation mechanism	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc). by this Issue that would be addressed by the Proposed Resolution Flow Name road weather advisories Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).		Applicability Australia, European
Source Transportation Information Transportation	layers of the OSI stack have not been defined for this information flow. Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Information T Des Vel Issue Severity Medium Information T Des Em	and Contextual Speed Information Triples using this solution and affected betination nicle OBE Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected betination	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc). by this Issue that would be addressed by the Proposed Resolution Flow Name road weather advisories Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name		Applicability Australia, European
Source Transportation Inform sue ncertainty about ust revocation echanism Source Emergency Managem	layers of the OSI stack have not been defined for this information flow. Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. ment Center magement Center	Information T Des Vel Issue Severity Medium Information T Des Em Cor	and Contextual Speed Information Triples using this solution and affected betination nicle OBE Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected betination ergency Vehicle OBE	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc). by this Issue that would be addressed by the Proposed Resolution Flow Name road weather advisories Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name road weather advisories for emergency response		Applicability Australia, European
Source Transportation Inform sue ncertainty about rust revocation nechanism Source Emergency Managem Fleet and Freight Man	layers of the OSI stack have not been defined for this information flow. Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven. The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Information Topes Vel Issue Severity Medium Information Topes Em Cor	and Contextual Speed Information Triples using this solution and affected betination nicle OBE Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected betination ergency Vehicle OBE	TPEG2, TMC, or Contextual Speed Information (speed information only). Use cases need to consider the various environments (e.g., Centre-Vehicle, Roadside-Vehicle, Special Vehicle-Vehicle, etc). by this Issue that would be addressed by the Proposed Resolution Flow Name road weather advisories Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). by this Issue that would be addressed by the Proposed Resolution Flow Name road weather advisories for emergency response road weather advisories		Applicability Australia, European

ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
aft not available itical)	The standards development organization has established a work item for the subject standard but a draft is not available for this critical feature to enable the interface. The draft may be missing due to the work item being new or simply a lack of activity on the work item.	High	C-V: Weather information	Update the international ITS application specification to address road weather advisories.	Urgent	Australia, European Union, United States	
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name			
Transportation Inform	nation Center		hicle OBE	road weather advisories			
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
a not defined in ndard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	V-L: Update SAE J2735 to conform to ISO 14817	Update the format of the standard to conform to the rules of ISO 14817-1 so that data can easily be placed in the CIDCR and understood by all ITS experts	Near-term	Australia, European Union, United States	
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name			
Emergency Managem	nent Center		ergency Vehicle OBE	road weather advisories for emergency response			
Fleet and Freight Mar	nagement Center	Commercial Vehicle OBE		road weather advisories			
Maint and Constr Ma	nagement Center	Per	rsonal Information Device	road weather advisories			
Maint and Constr Ma	nagement Center	Ve	hicle OBE	road weather advisories			
Transportation Inform	nation Center	Ve	hicle OBE	road weather advisories			
ution Name:	US: TCIP - Guaranteed Internet (US)			Number of Issues: 3 To	otal Issue Severit	y: 12	
				net (US). The US: TCIP standards include upper-layer standards required to implement transit-radiately between ITS equipment using X.509 or IEEE 1609.2 security certificates.	elated communi	cations. The I-I:	
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
certainty about st revocation chanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States	

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
				by this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Alternate Mode Tran	sportation Center	Tra	ansit Management Center	multimodal service data		
Alternate Mode Tran	sportation Center	Tra	nnsit Management Center	service information response		
Alternate Mode Tran	sportation Center	Tra	ansportation Information Center	multimodal service data		
Connected Vehicle Re	oadside Equipment	Pu	blic Information Device	transit vehicle information		
Emergency Managen	nent Center	Pu	blic Information Device	alarm acknowledge		
Public Information D	evice	Co	nnected Vehicle Roadside Equipment	transit stop request		
Public Information D	evice	Co	nnected Vehicle Roadside Equipment	transit traveler information		
Public Information D	evice	Em	nergency Management Center	alarm notification		
	202 (20					

Solution Name:	US: TCIP - Guaranteed Internet (US)			Number of Issues: 3	Total Issue Severity:	12		
Public Information De	vice	Tra	ansit Management Center	alarm notification				
Public Information De	vice	Tra	ansit Management Center	transit fare and passenger status				
Public Information De	vice	Tra	ansit Management Center	transit stop request				
Transit Management	Center	Alt	ernate Mode Transportation Center	service information request				
Transit Management	Center	Alt	ernate Mode Transportation Center	transit multimodal information				
Transit Management	Center	Pul	blic Information Device	transit fare information				
Transit Management	Center	Pul	blic Information Device	transit traveler information				
Transportation Inform	nation Center	Alt	ernate Mode Transportation Center	service information request				
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability		
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Tran Management Centre to Transit Vehicle flows such as downloading schedule information		United States		
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name				
Alternate Mode Trans	sportation Center		ansit Management Center	multimodal service data				
Alternate Mode Trans	sportation Center	Tra	ansit Management Center	service information response				
Alternate Mode Trans	sportation Center	Tra	ansportation Information Center	multimodal service data				
Connected Vehicle Ro	adside Equipment	Pul	blic Information Device	transit vehicle information				
Emergency Managem	ent Center	Pul	blic Information Device	alarm acknowledge				
Public Information De	vice	Co	nnected Vehicle Roadside Equipment	transit stop request				
Public Information De	vice	Co	nnected Vehicle Roadside Equipment	transit traveler information				
Public Information De	vice	Em	nergency Management Center	alarm notification				
Public Information De	vice	Tra	ansit Management Center	alarm notification	alarm notification			
Public Information De	vice	Tra	ansit Management Center	transit fare and passenger status				
Public Information De	vice	Tra	ansit Management Center	transit stop request				
Transit Management	Center	Alt	ernate Mode Transportation Center	service information request				
Transit Management	Center	Alt	ernate Mode Transportation Center	transit multimodal information				
Transit Management	Center	Pul	blic Information Device	transit fare information				
Transit Management	Center	Pul	blic Information Device	transit traveler information				
Transportation Inform	nation Center	Alt	ernate Mode Transportation Center	service information request				

Solu	ution Name:	US: TCIP - Guaranteed Internet (US)			Number of Issues: 3	Total Issue Severity:	12
Iss	ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
	coding rules not ined	The standards do not unambiguously define which set of encoding rules to use.	High	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Transit Management Centre to Transit Vehicle flows such as downloading schedule information.	Medium-term	United States
	Source			Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution Flow Name		
	Alternate Mode Trans	portation Center		ansit Management Center	multimodal service data		
	Alternate Mode Trans	portation Center	Tra	ansit Management Center	service information response		
	Alternate Mode Trans	portation Center	Tra	ansportation Information Center	multimodal service data		
	Connected Vehicle Roa	adside Equipment	Pu	blic Information Device	transit vehicle information		
	Emergency Manageme	ent Center	Pu	blic Information Device	alarm acknowledge		
	Public Information Dev	vice	Со	nnected Vehicle Roadside Equipment	transit stop request		
	Public Information Dev	vice	Со	nnected Vehicle Roadside Equipment	transit traveler information		
	Public Information Dev	vice	Em	nergency Management Center	alarm notification		
	Public Information Dev	vice	Tra	ansit Management Center	alarm notification		
	Public Information Dev	vice	Tra	nnsit Management Center	transit fare and passenger status		
	Public Information Dev	vice	Tra	nnsit Management Center	transit stop request		
	Transit Management (Center	Alt	ernate Mode Transportation Center	service information request		
	Transit Management (Center	Alt	ernate Mode Transportation Center	transit multimodal information		
	Transit Management (Center	Pu	blic Information Device	transit fare information		
	Transit Management (Center	Pu	blic Information Device	transit traveler information		
	Transportation Inform	ation Center	Alt	ernate Mode Transportation Center	service information request		

Solution Name: US: TCIP - Local Broadcast Wireless (US)

Number of Issues:

2

Total Issue Severity:

12

This solution is used within the U.S.. It combines standards associated with US: TCIP with those for V-X: Local Broadcast Wireless (US). The US: TCIP standards include upper-layer standards required to implement transit-related communications. The V-X: Local Broadcast Wireless (US) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, LTE/5G, etc.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability				
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States				
		Information [*]	Triples using this solution and affected b	y this Issue that would be addressed by the Proposed Resolution						
Source		De	stination	Flow Name						

	Information Triples using this solution and affected by this Issue that would be a	Idressed by the Proposed Resolution	
Source	Destination	Flow Name	
Connected Vehicle Roadside Equipment	Personal Information Device	transit stop guidance	
Transit Vehicle OBE	Connected Vehicle Roadside Equipment	transit vehicle information	
Transit Vehicle OBE	Personal Information Device	transit vehicle information	

	US: TCIP - Local Broadcast Wireless (US)			Number of Issues: 3	otal Issue Severity:	12
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in tandard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Transit Management Centre to Transit Vehicle flows such as downloading schedule information.	Medium-term	United States
Source			Triples using this solution and affected b stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	oadside Equipment	Pe	rsonal Information Device	transit stop guidance		
Transit Vehicle OBE		Co	nnected Vehicle Roadside Equipment	transit vehicle information		
Transit Vehicle OBE		Pe	rsonal Information Device	transit vehicle information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ncoding rules not lefined	The standards do not unambiguously define which set of encoding rules to use.	High	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Transit Management Centre to Transit Vehicle flows such as downloading schedule information.	Medium-term	United States
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle R	oadside Equipment	Pe	rsonal Information Device	transit stop guidance		
Transit Vehicle OBE		Co	nnected Vehicle Roadside Equipment	transit vehicle information		
Transit Vehicle OBE		Pe	rsonal Information Device	transit vehicle information		
	US: TCIP - Local Unicast Wireless (US)	with LIST TOID with	a those for V. V. Local Unicast Wi		otal Issue Severity:	
				reless (US). The US: TCIP standards include upper-layer standards required to implement tran		
is solution is used w	rithin the U.S It combines standards associated	s that support loc		reless (US). The US: TCIP standards include upper-layer standards required to implement tran		
is solution is used w X: Local Unicast Wir ssue Incertainty about rust revocation	rithin the U.S It combines standards associated eless (US) standards include lower-layer standard	s that support loc	cal-area unicast wireless solution	reless (US). The US: TCIP standards include upper-layer standards required to implement trans, such as DSRC technologies, LTE, etc.	sit-related commur	nications. The
is solution is used w X: Local Unicast Wir ssue Incertainty about rust revocation	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is	Issue Severity Medium	Proposed Resolution Misbehavior detection and security revocation mechanism	reless (US). The US: TCIP standards include upper-layer standards required to implement trans, such as DSRC technologies, LTE, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to	Timeframe	Applicability Australia, European
is solution is used wax: Local Unicast Wiressue Uncertainty about rust revocation nechanism	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Issue Severity Medium Information Des	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected by	reless (US). The US: TCIP standards include upper-layer standards required to implement trans, such as DSRC technologies, LTE, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). By this Issue that would be addressed by the Proposed Resolution	Timeframe	Applicability Australia, European
is solution is used wax: Local Unicast Wirksue Incertainty about rust revocation nechanism Source	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Issue Severity Medium Information Des	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected bestination	reless (US). The US: TCIP standards include upper-layer standards required to implement trans, such as DSRC technologies, LTE, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). By this Issue that would be addressed by the Proposed Resolution Flow Name	Timeframe	Applicability Australia, European
is solution is used with the control of the control	Issue Description The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Issue Severity Medium Information Des	Proposed Resolution Misbehavior detection and security revocation mechanism Triples using this solution and affected bestination ansit Vehicle OBE	reless (US). The US: TCIP standards include upper-layer standards required to implement trans, such as DSRC technologies, LTE, etc. Resolution Description Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave). By this Issue that would be addressed by the Proposed Resolution Flow Name transit stop request	Timeframe	Applicability Australia, European

transit stop request

transit stop request

Transit Vehicle OBE

Transit Vehicle OBE

Connected Vehicle Roadside Equipment

Personal Information Device

Solution Name:	US: TCIP - Local Unicast Wireless (US)				Number of Issues:	3	Total Issue Severity:	12	
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability		
defined which set of encoding rules to use. encoding rules and details		Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Transit Management Centre to Transit Vehicle flows such as downloading schedule information.		Medium-term	United States				
		Information T	riples using this solution and affected by	this Issue that would be addressed by the Proposed Resolution					
Source		Des	tination	Flow Name					
Connected Vehicle Ro	Connected Vehicle Roadside Equipment Transit Vehicle OBE		transit stop request						
Personal Information	Device	Transit Vehicle OBE		transit stop request					

Resolution Description

Timeframe

Applicability

Solution Name: US: TCIP - Mobile Internet (US)

Total Issue Severity: 52

This solution is used within the U.S.. It combines standards associated with US: TCIP with those for I-M: Mobile Internet (US). The US: TCIP standards include upper-layer standards required to implement transit-related communications. The I-M:

Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Interest connection method.

Issue Severity Proposed Resolution

Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States	
Source			Triples using this solution and affected	by this Issue that would be addressed by the Proposed Resolution Flow Name			
Emergency Management Center			ransit Vehicle OBE	alarm acknowledge			
Personal Information Device		Tı	ransit Management Center	transit stop request			
Transit Management	Center	Pe	ersonal Information Device	personal transit information			
Transit Management	Center	T	ransit Vehicle OBE	alarm acknowledge			
Transit Management	Center	Tı	ransit Vehicle OBE	connection protection instructions			
Transit Management	Center	Tı	ransit Vehicle OBE	fare management information			
Transit Management	Center	Tı	ransit Vehicle OBE	transit schedule information			
Transit Management	Center	Tı	ransit Vehicle OBE	transit stop request			
Transit Management Center		Tr	ransit Vehicle OBE	transit traveler information	transit traveler information		
Transit Management Center		Tr	ransit Vehicle OBE	transit vehicle operator information			
Transit Vehicle OBE		Er	mergency Management Center	alarm notification			
Transit Vehicle OBE		Tr	ransit Management Center	alarm notification			
Transit Vehicle OBE	Transit Vehicle OBE		ransit Management Center	demand response passenger and use data	demand response passenger and use data		
Transit Vehicle OBE	Transit Vehicle OBE		ransit Management Center	fare collection data	fare collection data		
Transit Vehicle OBE		Tr	ransit Management Center	transit vehicle conditions			
Transit Vehicle OBE		Tr	ransit Management Center	transit vehicle loading data			
Transit Vehicle OBE	Transit Vehicle OBE		ransit Management Center	transit vehicle location data			
Transit Vehicle OBE		T	ransit Management Center	transit vehicle schedule performance			

Issue

Issue Description

olution Name:	US: TCIP - Mobile Internet (US)			Number of Issues: 5	Total Issue Severity	52	
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
oata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-V: Transit vehicle schedule management	Develop an ITS application specification for managing transit vehicle schedule performance data from transit vehicles to a centre.	Near-term	Australia, European Union	
Cource				y this Issue that would be addressed by the Proposed Resolution Flow Name			
Source Transit Management Center		Destination Transit Vehicle OBE		transit schedule information			
Transit Vehicle OBE		Transit Management Center		transit vehicle schedule performance			
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
Pata/comm profile Pairing	There are ambiguities as to how to (or if one should) couple the upper-layer standards defined in this solution with the indicated lower-layer standards.	High	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Transit Management Centre to Transit Vehicle flows such as downloading schedule information.	Medium-term	United States	
Source			Triples using this solution and affected b	ry this Issue that would be addressed by the Proposed Resolution Flow Name			
Emergency Management Center			ansit Vehicle OBE	alarm acknowledge			
Personal Information Device		Transit Management Center		transit stop request			
Transit Management Center		Personal Information Device		personal transit information			
Transit Management Center		Transit Vehicle OBE		alarm acknowledge			
Transit Management Center		Transit Vehicle OBE		connection protection instructions			
Transit Management Center		Transit Vehicle OBE		fare management information			
Transit Management Center		Transit Vehicle OBE		transit schedule information			
Transit Management Center		Transit Vehicle OBE		transit stop request			
Transit Management Center		Transit Vehicle OBE		transit traveler information			
Transit Management Center		Transit Vehicle OBE		transit vehicle operator information			
Transit Vehicle OBE		Emergency Management Center		alarm notification			
Transit Vehicle OBE		Transit Management Center		alarm notification			
Transit Vehicle OBE		Transit Management Center		demand response passenger and use data			
Transit Vehicle OBE		Transit Management Center		fare collection data			
Transit Vehicle OBE		Transit Management Center		transit vehicle conditions			
Transit Vehicle OBE		Transit Management Center		transit vehicle loading data			
Transit Vehicle OBE		Transit Management Center		transit vehicle location data			
Transit Vehicle OBE		Tra	ansit Management Center	transit vehicle schedule performance			

Solution Name:	US: TCIP - Mobile Internet (US)			Number of Issues: 5	otal Issue Severity:	52
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Transit Management Centre to Transit Vehicle flows such as downloading schedule information.	Medium-term	United States

	nformation Triples using this solution and affected by this Issue that would be addressed by the Propos	ed Resolution
Source	Destination	Flow Name
Emergency Management Center	Transit Vehicle OBE	alarm acknowledge
Personal Information Device	Transit Management Center	transit stop request
Transit Management Center	Personal Information Device	personal transit information
Transit Management Center	Transit Vehicle OBE	alarm acknowledge
Transit Management Center	Transit Vehicle OBE	connection protection instructions
Transit Management Center	Transit Vehicle OBE	fare management information
Transit Management Center	Transit Vehicle OBE	transit schedule information
Transit Management Center	Transit Vehicle OBE	transit stop request
Transit Management Center	Transit Vehicle OBE	transit traveler information
Transit Management Center	Transit Vehicle OBE	transit vehicle operator information
Transit Vehicle OBE	Emergency Management Center	alarm notification
Transit Vehicle OBE	Transit Management Center	alarm notification
Transit Vehicle OBE	Transit Management Center	demand response passenger and use data
Transit Vehicle OBE	Transit Management Center	fare collection data
Transit Vehicle OBE	Transit Management Center	transit vehicle conditions
Transit Vehicle OBE	Transit Management Center	transit vehicle loading data
Transit Vehicle OBE	Transit Management Center	transit vehicle location data
Transit Vehicle OBE	Transit Management Center	transit vehicle schedule performance

olution Name:	US: TCIP - Mobile Internet (US)			Number of Issues: 5	Total Issue Severity:	52
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ncoding rules not efined	The standards do not unambiguously define which set of encoding rules to use.	High	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Tri Management Centre to Transit Vehicle flows such as downloading schedule inform		United States
Carrier				by this Issue that would be addressed by the Proposed Resolution		
Source Emergency Managen	nent Center		ransit Vehicle OBE	Flow Name alarm acknowledge		
Personal Information		Tra	ansit Management Center	transit stop request		
Transit Management	Center		ersonal Information Device	personal transit information		
Transit Management	Center	Tra	ansit Vehicle OBE	alarm acknowledge		
Transit Management	Center	Tra	ransit Vehicle OBE	connection protection instructions		
Transit Management	Center	Tra	ansit Vehicle OBE	fare management information		
Transit Management	Center	Tra	ansit Vehicle OBE	transit schedule information		
Transit Management	Center	Tra	ansit Vehicle OBE	transit stop request		
Transit Management	Center	Tra	ansit Vehicle OBE	transit traveler information		
Transit Management	Center	Tra	ransit Vehicle OBE	transit vehicle operator information		
Transit Vehicle OBE		En	mergency Management Center	alarm notification		
Transit Vehicle OBE		Tra	ransit Management Center	alarm notification		
Transit Vehicle OBE		Tra	ansit Management Center	demand response passenger and use data		
Transit Vehicle OBE		Tra	ansit Management Center	fare collection data		
Transit Vehicle OBE		Tra	ansit Management Center	transit vehicle conditions		
Transit Vehicle OBE		Tra	ansit Management Center	transit vehicle loading data		
Transit Vehicle OBE		Tra	ansit Management Center	transit vehicle location data		
Transit Vehicle OBE		Tra	ansit Management Center	transit vehicle schedule performance		

Solution Name: US: TCIP - NTCIP Messaging

Number of Issues: 4 Total Issue Severity: 44

This solution is used within the U.S.. It combines standards associated with US: TCIP with those for C-C: NTCIP Messaging. The US: TCIP standards include upper-layer standards required to implement transit-related communications. The C-C: NTCIP Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the US.

Transit Management Center

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States
		Information [•]	Triples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution		
Source		Des	stination	Flow Name		
Alternate Mode Trans	portation Center	Tra	ansit Management Center	multimodal service data		

service information response

Alternate Mode Transportation Center

lution Name: US: TCIP - NTCIP Messaging		Number of Issues: 4 Total Issue Severity: 44
Alternate Mode Transportation Center	Transportation Information Center	multimodal service data
Connected Vehicle Roadside Equipment	Public Information Device	transit vehicle information
Emergency Management Center	Transit Management Center	emergency transit service request
Other Transit Management Centers	Transit Management Center	transit service coordination
Other Transportation Information Centers	Transportation Information Center	transit service information
Personal Information Device	Transit Management Center	transit stop request
Public Information Device	Connected Vehicle Roadside Equipment	transit stop request
Public Information Device	Connected Vehicle Roadside Equipment	transit traveler information
Public Information Device	Transit Management Center	transit stop request
Traffic Management Center	Transit Management Center	transit service change request
Traffic Management Center	Transportation Information Center	transit service change request
Transit Management Center	Alternate Mode Transportation Center	service information request
Transit Management Center	Alternate Mode Transportation Center	transit multimodal information
Transit Management Center	Emergency Management Center	emergency transit service response
Transit Management Center	Emissions Management Center	transit and fare schedules
Transit Management Center	Other Transit Management Centers	transit service coordination
Transit Management Center	Parking Management System	transit schedule adherence information
Transit Management Center	Parking Management System	transit schedule information
Transit Management Center	Public Information Device	transit traveler information
Transit Management Center	Traffic Management Center	traffic control priority request
Transit Management Center	Traffic Management Center	transit system data
Transit Management Center	Transit Vehicle OBE	connection protection instructions
Transit Management Center	Transit Vehicle OBE	transit stop request
Transit Management Center	Transportation Information Center	demand responsive transit plan
Transit Management Center	Transportation Information Center	emergency transit schedule information
Transit Management Center	Transportation Information Center	transit and fare schedules
Transit Management Center	Transportation Information Center	transit incident information
Transit Management Center	Transportation Information Center	transit schedule adherence information
Transit Management Center	Transportation Information Center	transit trip plan
Transportation Information Center	Alternate Mode Transportation Center	service information request
Transportation Information Center	Other Transportation Information Centers	transit service information
Transportation Information Center	Transit Management Center	demand responsive transit request
Transportation Information Center	Transit Management Center	transit service change request

Solution Name:	US: TCIP - NTCIP Messaging			Number of Issues: 4	otal Issue Severity:	44
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: US signal priority/preemption	Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.	Medium-term	United States

Information Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution								
Source	Destination	Flow Name						
Transit Management Center	Traffic Management Center	traffic control priority request						

	Solution Name:	US: TCIP - NTCIP Messaging			Number of Issue	es: 4	Total Issue Severity:	44
Sample of Land Dark 17-1 to promote resule and provide exacting reles and beamples. Also provide dailing and exchange rules for Transis and provide exacting reles and samples. Also provide dailing and exchange rules for Transis. Sample of Land Dark 1997 Sampl	Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description		Timeframe	Applicability
Aborate Mone Teraponation Center 1 Transit Management Cent		conform to ISO 14817-1 to promote reuse	Low	1	provide encoding rules and examples. Also provide dialog and exchan	•	Medium-term	United States
Nemon Model Transportation Center 1 Transi Management Center 1 Iransi Manag	Source							
Alternate Mode Transportation Genere Passagement Center Passagement Ce		nsportation Center						
Connected Vehicle Roedside Capisment Linesports Linespo	Alternate Mode Trai	nsportation Center	Tra	insit Management Center	service information response			
Freegon, Management Center Circle Transit Management Center Circle Transit Management Center Circle Transit Management Center Circle Transit Management Center Circle Manag				-				
Other Transit Management Centers Transportation Information Centers Transportation Information Device Transportation Information Device Transportation Device Transportation Device Transit Management Center Transit Management C	Connected Vehicle R	Roadside Equipment	Pul	blic Information Device	transit vehicle information			
Potest Tanspurstation Information Centers Personal Information Centers Personal Information Centers Public Information Device Public Information Center Public Information Cen	Emergency Manager	ment Center	Tra	nsit Management Center	emergency transit service requ	ıest		
Pessonal Information Device Connected Vehicle Roadside Equipment Internit stop request Public Information Device Connected Vehicle Roadside Equipment transit stop request Public Information Device Connected Vehicle Roadside Equipment transit stop request Transit Management Center Transit Management Center Transit Management Center Transit Management	Other Transit Manag	gement Centers	Tra	nsit Management Center	transit service coordination			
Public Information Device Public Information Device Connected Vehicle Roadside Equipment Transit Management Center Transit					transit service information			
Public Information Device Transit Management Center Transit Management	Personal Information	n Device	Tra	nsit Management Center	transit stop request			
Public information Device Transit Management Center Transit Management	Public Information D	Device	Co	nnected Vehicle Roadside Equipment	transit stop request			
Traffic Management Center Traffic Management Center Traffic Management Center Transit Management Center Transit Management Center Alternate Mode Transportation Center Transit Management Center Transit	Public Information D	Device	Co	nnected Vehicle Roadside Equipment	transit traveler information			
Trailit Management Center Trailit Management	Public Information D	Device	Tra	nsit Management Center	transit stop request			
Transit Management Center Alternate Mode Transportation Center transit management Center management Center parking Management Spitem transit management Center public information Device transit management Center transit managem	Traffic Management	: Center	Tra	insit Management Center	transit service change request			
Transit Management Center	Traffic Management	: Center	Tra	Insportation Information Center	transit service change request			
Transit Management Center Emergency Management Center transit or Anagement Center transit Management Center Parking Management System transit schedule adherence information Transit Management Center Parking Management System transit schedule information Transit Management Center Public information Device transit traveler information Transit Management Center Transportation information Center transit stop request Transit Management Center Transportation information Center emergency transit schedule information Transit Management Center transit Management Cent	Transit Managemen	t Center	Alt	ernate Mode Transportation Center	service information request			
Transit Management Center Transit Management	Transit Managemen	t Center	Alt	ernate Mode Transportation Center	transit multimodal information	١		
Transit Management Center Parking Management System transit Schedule adherence information transit Management Center Parking Management System transit Management Center Parking Management System transit Management Center Parking Management System transit Management Center Public Information Device transit Management Center Trans	Transit Managemen	t Center	Em	ergency Management Center	emergency transit service resp	onse		
Transit Management Center Transit Management	Transit Managemen	t Center	Em	issions Management Center	transit and fare schedules			
Transit Management Center Parking Management System transit schedule information Transit Management Center Public Information Device transit traveler information Transit Management Center Transit Mana	Transit Managemen	t Center	Otl	ner Transit Management Centers	transit service coordination			
Transit Management Center Transit Management	Transit Managemen	t Center	Pai	king Management System	transit schedule adherence inf	ormation		
Transit Management Center Transit Management	Transit Managemen	t Center	Pai	king Management System	transit schedule information			
Transit Management Center	Transit Managemen	t Center	Pul	olic Information Device	transit traveler information			
Transit Management Center	Transit Managemen	t Center	Tra	ffic Management Center	traffic control priority request			
Transit Management Center	Transit Managemen	t Center	Tra	ffic Management Center	transit system data			
Transit Management Center	Transit Managemen	t Center	Tra	nsit Vehicle OBE	connection protection instruct	ions		
Transit Management Center	Transit Managemen	t Center	Tra	nsit Vehicle OBE	transit stop request			
Transit Management Center transit and fare schedules Transit Management Center transit incident information Transit Management Center transit incident information Transit Management Center transit schedule adherence information	Transit Managemen	t Center	Tra	insportation Information Center	demand responsive transit pla	n		
Transit Management Center transit incident information Transit Management Center transit schedule adherence information Transit Management Center transit schedule adherence information	Transit Managemen	t Center	Tra	insportation Information Center	emergency transit schedule inf	ormation		
Transit Management Center transit schedule adherence information transit schedule adherence information	Transit Managemen	t Center	Tra	insportation Information Center	transit and fare schedules			
	Transit Managemen	t Center	Tra	insportation Information Center	transit incident information			
Transit Management Center Transportation Information Center transit trip plan	Transit Managemen	t Center	Tra	insportation Information Center	transit schedule adherence inf	ormation		
	Transit Managemen	t Center	Tra	insportation Information Center	transit trip plan			

on Name: US: TCIP - NTCIP Messaging		Number of Issues: 4 Total Issue Severity: 44	
ransportation Information Center	Alternate Mode Transportation Center	service information request	
ransportation Information Center	Other Transportation Information Centers	transit service information	
ransportation Information Center	Transit Management Center	demand responsive transit request	
ransportation Information Center	Transit Management Center	transit service change request	

Solution Name:	US: TCIP - NTCIP Messaging			Number of Issues: 4	Total Issue Severity:	44
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Encoding rules not defined	The standards do not unambiguously define which set of encoding rules to use.	High	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Transit Management Centre to Transit Vehicle flows such as downloading schedule information.	Medium-term	United States
Source			Triples using this solution and affected b tination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Alternate Mode Tran	sportation Center	Tra	nsit Management Center	multimodal service data		
Alternate Mode Tran	sportation Center	Tra	nsit Management Center	service information response		
Alternate Mode Tran	sportation Center	Tra	nsportation Information Center	multimodal service data		
Connected Vehicle R	oadside Equipment	Pul	olic Information Device	transit vehicle information		
Emergency Managen	nent Center	Tra	nsit Management Center	emergency transit service request		
Other Transit Manag	ement Centers	Tra	nsit Management Center	transit service coordination		
Other Transportation	Information Centers	Tra	nsportation Information Center	transit service information		
Personal Information	Device	Tra	nsit Management Center	transit stop request		
Public Information D	evice	Co	nnected Vehicle Roadside Equipment	transit stop request		
Public Information D	evice	Co	nnected Vehicle Roadside Equipment	transit traveler information		
Public Information D	evice	Tra	nsit Management Center	transit stop request		
Traffic Management	Center	Tra	nsit Management Center	transit service change request		
Traffic Management	Center	Tra	nsportation Information Center	transit service change request		
Transit Management	Center	Alt	ernate Mode Transportation Center	service information request		
Transit Management	Center	Alt	ernate Mode Transportation Center	transit multimodal information		
Transit Management	Center	Em	ergency Management Center	emergency transit service response		
Transit Management	Center	Em	issions Management Center	transit and fare schedules		
Transit Management	Center	Otl	ner Transit Management Centers	transit service coordination		
Transit Management	Center	Pai	king Management System	transit schedule adherence information		
Transit Management	Center	Pai	king Management System	transit schedule information		
Transit Management	Center	Pul	olic Information Device	transit traveler information		
Transit Management	Center	Tra	ffic Management Center	traffic control priority request		
Transit Management	Center	Tra	ffic Management Center	transit system data		
Transit Management	Center	Tra	nsit Vehicle OBE	connection protection instructions		
Transit Management	Center	Tra	nsit Vehicle OBE	transit stop request		
Transit Management	Center	Tra	nsportation Information Center	demand responsive transit plan		
Transit Management	Center	Tra	nsportation Information Center	emergency transit schedule information		
Transit Management	Center	Tra	nsportation Information Center	transit and fare schedules		
Transit Management	Center	Tra	nsportation Information Center	transit incident information		
Transit Management	Center	Tra	nsportation Information Center	transit schedule adherence information		
Transit Management	Center	Tra	nsportation Information Center	transit trip plan		

Solution Name: US: TCIP - NTCIP Messaging		Number of Issues: 4 Total Issue Severity: 44
Transportation Information Center	Alternate Mode Transportation Center	service information request
Transportation Information Center	Other Transportation Information Centers	transit service information
Transportation Information Center	Transit Management Center	demand responsive transit request
Transportation Information Center	Transit Management Center	transit service change request
Solution Name: US: TCIP - OMG DDS		Number of Issues: 4 Total Issue Severity: 44

This solution is used within the U.S.. It combines standards associated with US: TCIP with those for C-C: OMG DDS. The US: TCIP standards include upper-layer standards required to implement transit-related communications. The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: US signal priority/preemption	Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.	Medium-term	United States

	Information Triples using this solution and affected by this Issue that would	be addressed by the Proposed Resolution	
Source	Destination	Flow Name	
Transit Management Center	Traffic Management Center	traffic control priority request	

Solution Name:	US: TCIP - OMG DDS			Number of Issues: 4	Total Issue Severity:	44
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Managem	nent Center		ansit Management Center	emergency transit service request		
Other Transit Manage	ement Centers	Tra	ansit Management Center	transit service coordination		
Other Transportation	Information Centers	Tra	ansportation Information Center	transit service information		
Traffic Management	Center	Tra	ansit Management Center	transit service change request		
Traffic Management	Center	Tra	ansportation Information Center	transit service change request		
Transit Management	Center	Em	nergency Management Center	emergency transit service response		
Transit Management	Center	Em	nissions Management Center	transit and fare schedules		
Transit Management	Center	Otl	her Transit Management Centers	transit service coordination		
Transit Management	Center	Pai	rking Management System	transit schedule adherence information		
Transit Management	Center	Pai	rking Management System	transit schedule information		
Transit Management	Center	Tra	affic Management Center	traffic control priority request		
Transit Management	Center	Tra	affic Management Center	transit system data		
Transit Management	Center	Tra	ansportation Information Center	demand responsive transit plan		
Transit Management	Center	Tra	ansportation Information Center	emergency transit schedule information		
Transit Management	Center	Tra	ansportation Information Center	transit and fare schedules		
Transit Management	Center	Tra	ansportation Information Center	transit incident information		
Transit Management	Center	Tra	ansportation Information Center	transit schedule adherence information		
Transit Management	Center	Tra	ansportation Information Center	transit trip plan		
Transportation Inform	nation Center	Otl	her Transportation Information Centers	transit service information		
Transportation Inform	nation Center	Tra	ansit Management Center	demand responsive transit request		
Transportation Inform	nation Center	Tra	ansit Management Center	transit service change request		

Solution Name:	US: TCIP - OMG DDS			Number of Issues: 4	otal Issue Severity:	44
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined in standard format	The definition of data concepts should conform to ISO 14817-1 to promote reuse among ITS.	Low	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 14817-1 and provide encoding rules and examples. Also provide dialog and exchange rules for Transit Management Centre to Transit Vehicle flows such as downloading schedule information.	Medium-term	United States

Inform	nation Triples using this solution and affected by this Issue that would be addressed by the Proposed	Resolution
Source	Destination	Flow Name
Emergency Management Center	Transit Management Center	emergency transit service request
Other Transit Management Centers	Transit Management Center	transit service coordination
Other Transportation Information Centers	Transportation Information Center	transit service information
Traffic Management Center	Transit Management Center	transit service change request
Traffic Management Center	Transportation Information Center	transit service change request
Transit Management Center	Emergency Management Center	emergency transit service response
Transit Management Center	Emissions Management Center	transit and fare schedules
Transit Management Center	Other Transit Management Centers	transit service coordination
Transit Management Center	Parking Management System	transit schedule adherence information
Transit Management Center	Parking Management System	transit schedule information
Transit Management Center	Traffic Management Center	traffic control priority request
Transit Management Center	Traffic Management Center	transit system data
Transit Management Center	Transportation Information Center	demand responsive transit plan
Transit Management Center	Transportation Information Center	emergency transit schedule information
Transit Management Center	Transportation Information Center	transit and fare schedules
Transit Management Center	Transportation Information Center	transit incident information
Transit Management Center	Transportation Information Center	transit schedule adherence information
Transit Management Center	Transportation Information Center	transit trip plan
Transportation Information Center	Other Transportation Information Centers	transit service information
Transportation Information Center	Transit Management Center	demand responsive transit request
Transportation Information Center	Transit Management Center	transit service change request

Solution Name:	US: TCIP - OMG DDS				Number of Issues:	4	Total Issue Severity:	44
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Encoding rules not defined	The standards do not unambiguously define which set of encoding rules to use.	High	C-C: Update TCIP for encoding rules and details	Update the TCIP standard to conform to 1481 provide encoding rules and examples. Also pro Management Centre to Transit Vehicle flows s	ovide dialog and exchange rule			United States
Source			Triples using this solution and affected batination	y this Issue that would be addressed by the Proposed Resol Flo	ution ow Name			
Emergency Managem	nent Center	Tra	ansit Management Center	er	mergency transit service request			
Other Transit Manage	ement Centers	Tra	ansit Management Center	tra	ansit service coordination			
Other Transportation	Information Centers	Tra	ansportation Information Center	tra	ansit service information			
Traffic Management	Center	Tra	ansit Management Center	tra	ansit service change request			
Traffic Management	Center	Tra	ansportation Information Center	tra	ansit service change request			
Transit Management	Center	Em	nergency Management Center	er	mergency transit service response			
Transit Management	Center	Em	nissions Management Center	tra	ansit and fare schedules			
Transit Management	Center	Oth	her Transit Management Centers	tra	ansit service coordination			
Transit Management	Center	Par	rking Management System	tra	ansit schedule adherence informatio	n		
Transit Management	Center	Par	rking Management System	tra	ansit schedule information			
Transit Management	Center	Tra	affic Management Center	tra	affic control priority request			
Transit Management	Center	Tra	affic Management Center	tra	ansit system data			
Transit Management	Center	Tra	ansportation Information Center	de	emand responsive transit plan			
Transit Management	Center	Tra	ansportation Information Center	er	mergency transit schedule informatio	n		
Transit Management	Center	Tra	ansportation Information Center	tra	ansit and fare schedules			
Transit Management	Center	Tra	ansportation Information Center	tra	ansit incident information			
Transit Management	Center	Tra	ansportation Information Center	tra	ansit schedule adherence information	n		
Transit Management	Center	Tra	ansportation Information Center	tra	ansit trip plan			
Transportation Inform	nation Center	Oth	her Transportation Information Centers	tra	ansit service information			
Transportation Inform	nation Center	Tra	ansit Management Center	de	emand responsive transit request			
Transportation Inform	nation Center	Tra	ansit Management Center	tra	ansit service change request			

Solution Name:

US: TMDD - Mobile Internet (US)

Total Issue Severity: 3

This solution is used within the U.S.. It combines standards associated with US: TMDD with those for I-M: Mobile Internet (US). The US: TMDD standards include upper-layer standards required to implement centre-to-centre communications with

traffic management systems. The I-M: Mobile Internet (US) standards include lower-layer standards required to implement centre-to-centre communications with traffic management systems. The I-M: Mobile Internet (US) standards include lower-layer standards that support secure communications between two entities, either or both of which may be actively moving; based on X.509 or IEEE 1609.2 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Internet connection method.

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States

lı	ution Name:	US: TMDD - Mobile Internet (US)			Number of Issues: 1	Total Issue Severity:	3	
	Source	OS. TWOD'S WIGHTE INTERNET (OS)		riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name	otal issue severity.		
	Maint and Constr Mana	gement Center	Veh	nicle OBE	work zone information			
lı	ution Name:	US: TMDD - Mobile SNMPv3			Number of Issues: 2	Total Issue Severity:	4	
					3. The US: TMDD standards include upper-layer standards required to implement centre-to- structure-to-mobile communications using simple network management protocol (SNMPv3		ons with	
SI	ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
	tion	The standard allows for multiple security mechanisms. The only defined mechanism that meets the requirements for C-ITS is the one based on TLS.	Low	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, Europ Union, United S	
	Source			riples using this solution and affected by tination	this Issue that would be addressed by the Proposed Resolution Flow Name			
	ITS Roadway Equipment	t	Mai	int and Constr Vehicle OBE	traffic images			
SI	ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
	mmunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	I-F: Secure communications	Develop one or more internationally acceptable, secure, centre-to-field communication standards and define rules on when to use each one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed.	Urgent	Australia, Europ Union, United S	

accepted for use within the context of this information triple.	support for needed.	r authentication, authorization, confidentiality, and non-repudiation, as	
	Information Triples using this solution and affected by this Issue that	would be addressed by the Proposed Resolution	
Source	Destination	Flow Name	
ITS Roadway Equipment	Maint and Constr Vehicle OBE	traffic images	

Solution Name: US: TMDD - NTCIP Messaging 6 Total Issue Severity: 43

This solution is used within the U.S.. It combines standards associated with US: TMDD with those for C-C: NTCIP Messaging. The US: TMDD standards include upper-layer standards required to implement centre-to-centre communications with traffic management systems. The C-C: NTCIP Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the US.

and management systems. The C-C. NTCIF Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the Os.						
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Border Inspection Sys	stem	Tra	affic Management Center	border wait times data		
Border Inspection Sys	stem	Tra	ansportation Information Center	border crossing status information		

center archive data

Archived Data Center

Center

olution Name:	US: TMDD - NTCIP Messaging		Number of Issues: 6 Total Issue Severity: 43
Center		Data Distribution System	operational data
Center		Data Distribution System	traveler information distribution data
Center		Maint and Constr Management Center	equipment maintenance request
Commercial Vehicle Adminis	stration Center	Fleet and Freight Management Center	route restrictions
Commercial Vehicle Adminis	stration Center	Other CV Administration Centers	route restrictions
Commercial Vehicle Adminis	stration Center	Transportation Information Center	route restrictions
Data Distribution System		Center	operational data
Data Distribution System		Center	regional situation data
Emergency Management Ce	enter	Traffic Management Center	emergency traffic control request
Emergency Management Ce	enter	Traffic Management Center	incident information
Emergency Management Ce	enter	Transportation Information Center	incident information
Emissions Management Cen	nter	Transportation Information Center	air quality information
Fleet and Freight Manageme	ent Center	Commercial Vehicle Administration Center	route restrictions
Maint and Constr Managem	nent Center	Center	equipment maintenance status
Maint and Constr Managem	nent Center	Commercial Vehicle Administration Center	current infrastructure restrictions
Maint and Constr Manageme	nent Center	Emergency Management Center	road weather information
Maint and Constr Manageme	nent Center	Map Update System	current infrastructure restrictions
Maint and Constr Manageme	nent Center	Surface Transportation Weather Service	road weather information
Maint and Constr Managem	nent Center	Traffic Management Center	current infrastructure restrictions
Maint and Constr Manageme	nent Center	Traffic Management Center	environmental conditions data
Maint and Constr Managem	nent Center	Traffic Management Center	equipment maintenance status
Maint and Constr Manageme	nent Center	Traffic Management Center	work zone information
Maint and Constr Manageme	nent Center	Transit Management Center	current infrastructure restrictions
Maint and Constr Manageme	nent Center	Transportation Information Center	current infrastructure restrictions
Maint and Constr Manageme	nent Center	Transportation Information Center	environmental conditions data
Maint and Constr Manageme	nent Center	Transportation Information Center	maint and constr work plans
Maint and Constr Managem	nent Center	Transportation Information Center	road weather information
Maint and Constr Manageme	nent Center	Transportation Information Center	work zone information
Maint and Constr Managem	nent Center	Weather Service	road weather information
Other CV Administration Cer	nters	Commercial Vehicle Administration Center	route restrictions
Other Traffic Management C	Centers	Traffic Management Center	device control request
Other Traffic Management C	Centers	Traffic Management Center	device data
Other Traffic Management C	Centers	Traffic Management Center	device status
Other Traffic Management C	Centers	Traffic Management Center	incident information
Other Traffic Management C	Centers	Traffic Management Center	road network conditions
	Centers	Traffic Management Center	traffic image meta data

One Transported Notamina Creation Tools Recognised Notamina Creation contemport Assert Minimal Creation One Transported Notamina Creation Incomprised Notamina Creation incline regard Assert	lution Name:	US: TMDD - NTCIP Messaging		Number of Issues: 6 Total Issue Severity: 43
Oble Transportation Information Centers Transportation Information Centers Independent Information Centers Independent Information Centers Independent Information Centers Interportation Centers Interportat	Other Traffic Management	t Centers	Traffic Management Center	traffic images
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Field Management Center Field Rein and Constr Management Center Field Rein And Construction Field Rein And Field Rein And Field Rein Field Rein And Field Rein And Field Rein Field Rein And Field Rein Field Rein And Field Rein Field Re	Traffic Management Cente	er	Emergency Management Center	road network conditions
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Traffic Management Center Management Center Management Center Management Center Incident Information Incident Information Traffic Management Center Manageme	Traffic Management Cente	er	Fleet and Freight Management Center	route restrictions
Traffic Management Center Rainer Rain	Traffic Management Cente	er	Maint and Constr Management Center	equipment maintenance request
Traffic Management Center Other Traffic Management Centers Other O	Traffic Management Cente	er	Maint and Constr Management Center	field equipment status
Traffic Management Center Other Traffic Management Centers device data Traffic Management Center Other Traffic Management Centers device data Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Incident	Traffic Management Cente	er	Maint and Constr Management Center	incident information
Traffic Management Center Other Traffic Management Centers device data Traffic Management Center Other Traffic Management Centers device status Traffic Management Center Other Traffic Management Centers incident information Traffic Management Center Other Traffic Management Centers road network conditions Traffic Management Center Other Traffic Management Centers road network conditions Traffic Management Center Other Traffic Management Centers road network conditions Traffic Management Center Road Road Road Road Road Road Road Road	Traffic Management Cente	er	Maint and Constr Management Center	road network conditions
Traffic Management Center device at tau formation device status Traffic Management Center device device status Traffic Management Center device device status device status Traffic Management Center device device status device device status device device status device	Traffic Management Cente	er	Other Traffic Management Centers	device control request
Traffic Management Center Other Traffic Management Centers road network conditions Traffic Management Center Other Traffic Management Centers road network conditions Traffic Management Center Other Traffic Management Centers road network conditions Traffic Management Center Other Traffic Management Centers road network conditions Traffic Management Center Road Road Road Road Road Road Road Road	Traffic Management Cente	er	Other Traffic Management Centers	device data
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Traffic Management Center Other Traffic Management Centers Inficit image meta data Traffic Management Center Inficit Manag	Traffic Management Cente	er	Other Traffic Management Centers	incident information
Traffic Management Center 1 Conter 1 Conter 1 Conter 1 Conter 2 Conter 3 Co	Traffic Management Cente	er	Other Traffic Management Centers	road network conditions
Traffic Management Center Transit Management Center Transit Management Center Transit Management Center Transportation Information Center Tran	Traffic Management Cente	er	Other Traffic Management Centers	traffic image meta data
Traffic Management Center road network conditions Traffic Management Center road network conditions Traffic Management Center road network conditions Traffic Management Center regional situation data Traffic Management Center road network conditions	Traffic Management Cente	er	Other Traffic Management Centers	traffic images
Traffic Management Center	Traffic Management Cente	er	Transit Management Center	incident information
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Traffic Management Center road network conditions Traffic Management Center road network conditions Traffic Management Center traffic control information Transportation Information Center traffic control information	Traffic Management Cente	er	Transportation Information Center	incident information
Traffic Management Center Transportation Information Center traffic control information	Traffic Management Cente	er	Transportation Information Center	regional situation data
	Traffic Management Cente	er	Transportation Information Center	road network conditions
Traffic Management Center traffic image meta data	Traffic Management Cente	er	Transportation Information Center	traffic control information
	Traffic Management Cente	er	Transportation Information Center	traffic image meta data

olution Name:	US: TMDD - NTCIP Messaging			Number of Issues: 6	Total Issue Severit	y: 43
Traffic Managemen		Tra	ansportation Information Center	traffic images		
Transportation Info	ormation Center	Ar	chived Data Center	regional situation data		
Transportation Info	ormation Center	En	nergency Management Center	corridor operational strategies		
Transportation Info	ormation Center	En	nergency Management Center	road network conditions		
Transportation Info	ormation Center	En	nergency Management Center	road weather advisories		
Transportation Info	ormation Center	En	nissions Management Center	corridor operational strategies		
Transportation Info	ormation Center	Fle	eet and Freight Management Center	incident information		
Transportation Info	ormation Center	Fle	eet and Freight Management Center	road network conditions		
Transportation Info	ormation Center	Fle	eet and Freight Management Center	road weather advisories		
Transportation Info	ormation Center	M	aint and Constr Management Center	corridor operational strategies		
Transportation Info	ormation Center	Ot	her Transportation Information Centers	emergency traveler information		
Transportation Info	ormation Center	Ot	her Transportation Information Centers	incident information		
Transportation Info	ormation Center	Ot	her Transportation Information Centers	road network conditions		
Transportation Info	ormation Center	Ot	her Transportation Information Centers	traffic image meta data		
Transportation Info	ormation Center	Ot	her Transportation Information Centers	traffic images		
Transportation Info	ormation Center	Tra	affic Management Center	corridor operational strategies		
Transportation Info	ormation Center	Tra	affic Management Center	regional situation data		
Transportation Info	ormation Center	Tra	ansit Management Center	corridor operational strategies		
Tunnel Managemer	nt System	M	aint and Constr Management Center	field equipment status		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not fined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: AU weather information	Adopt an existing weather information centre-to-centre data profile for use within tregion.	ne Near-term	Australia, European Union, United State
Comme				this Issue that would be addressed by the Proposed Resolution		
Source Surface Transportat	tion Weather Service		stination affic Management Center	Flow Name transportation weather information		
			Ü	·		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata profile not efined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Equipment maintenance coordination	Develop an internationally acceptable ITS application specification for C-C exchange equipment maintenance and status information	of Near-term	Australia, European Union, United State
Course				this Issue that would be addressed by the Proposed Resolution		
Source			stination aint and Constr Management Center	Flow Name equipment maintenance request		
Center				- 4- L		

Solution Name:	US: TMDD - NTCIP Messaging			Number of Issues: 6	Total Issue Severity	: 43
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: EU emergency traffic control	Update DATEX to support the provision of emergency traffic control information with a complete application specification.	Near-term	Australia, Europea Union
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Manageme	ent Center		affic Management Center	emergency traffic control request		
Traffic Management C	enter	En	nergency Management Center	emergency traffic control information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Overlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium	C-C: TCIP/IM/TMDD/ATIS for incident information	Standardise on a single solution for providing incident and incident management information; currently this information is defined within APTA TCIP, IEEE 1512 (IM), ITE TMDD, and SAE ATIS.	Urgent	United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Manageme	ent Center		affic Management Center	incident information		
Emergency Manageme	ent Center	Tra	ansportation Information Center	incident information		
Other Traffic Manager	nent Centers	Tra	affic Management Center	incident information		
Other Transportation I	Information Centers	Tra	ansportation Information Center	incident information		
Traffic Management C	enter	En	nergency Management Center	incident information		
Traffic Management C	enter	Ma	aint and Constr Management Center	incident information		
Traffic Management C	enter	Ot	her Traffic Management Centers	incident information		
Traffic Management C	enter	Tra	ansit Management Center	incident information		
Traffic Management C	enter	Tra	ansportation Information Center	incident information		
Transportation Inform	ation Center	Fle	eet and Freight Management Center	incident information		
Transportation Inform	ation Center	Ot	her Transportation Information Centers	incident information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Pata not fully lefined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	C-C: US signal priority/preemption	Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.	Medium-term	United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Manageme	ent Center	Tra	affic Management Center	emergency traffic control request		
Traffic Management C	enter	En	nergency Management Center	emergency traffic control information		

olution Name:	US: TMDD - NTCIP Messaging			Number of Issues: 6	Total Issue Severity	43
lssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	C-C: TMDD	Updates or additions to the TMDD need to occur to support several use cases including the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans.	Near-term	United States
Source			Triples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Emissions Managem	ent Center	Tra	ansportation Information Center	air quality information		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	C-C: Update TMDD (Mid- term)	Updates or additions to the TMDD need to occur to support several use cases including the addition of: managing the exchange of equipment faults, equipment maintenance requests, and equipment maintenance status.	Medium-term	United States
Source			Triples using this solution and affected b stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Center			aint and Constr Management Center	equipment maintenance request		
Maint and Constr M	anagement Center	Ce	nter	equipment maintenance status		
Service Monitor Syst	em	Ce	nter	RSE fault data		
Service Monitor Syst	rem	Ma	aint and Constr Management Center	RSE fault data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Accuracy of data	The standard is missing accuracy requirements for some of its data, which may result in anomalous behaviour.	Low	C-C: TMDD	Updates or additions to the TMDD need to occur to support several use cases including the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans.	Near-term	United States
Source			Triples using this solution and affected b stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Other Traffic Manag	ement Centers		affic Management Center	device data		
Other Traffic Manag	ement Centers	Tra	affic Management Center	road network conditions		
Other Transportatio	n Information Centers	Tra	ansportation Information Center	road network conditions		
Traffic Management	Center	Em	nergency Management Center	road network conditions		
Traffic Management	Center	Em	nissions Management Center	road network conditions		
Traffic Management	Center	Fle	eet and Freight Management Center	road network conditions		
Traffic Management	Center	Ma	aint and Constr Management Center	road network conditions		
Traffic Management	Center	Ot	her Traffic Management Centers	device data		
Traffic Management	Center	Ot	her Traffic Management Centers	road network conditions		
	Center	Tra	ansit Management Center	road network conditions		
Traffic Management				una di unaki unaki nana diki nana		
Traffic Management		Tra	ansportation Information Center	road network conditions		
	Center		ansportation Information Center nergency Management Center	road network conditions road network conditions		
Traffic Management	Center mation Center	Em				

Solution Name:	US: TMDD - NTCIP Messaging				Number of Issues:	6	Total Issue Severity	: 43
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Inadequate guidance for complex data design	The standard provides a robust design, but there may be more than one way to convey the information contained in this information flow and the standard provides little or no guidance on how to use the defined structures.	Low	C-C: TMDD	Updates or additions to the TMDD need to the addition of: sensor data accuracy; air q status; maintenance and construction wor	uality information; roadway ma	_	Near-term	United States
Source			riples using this solution and affected b	ry this Issue that would be addressed by the Proposed R	esolution Flow Name			
Maint and Constr Mai	nagement Center		nsportation Information Center		maint and constr work plans			
Solution Name:	US: TMDD - OMG DDS				Number of Issues:	6	Total Issue Severity	: 43
	ithin the U.S It combines standards associated the C-C: OMG DDS standards include lower-layer					centre-to-cent	re communications w	rith traffic
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: EU emergency traffic control	Update DATEX to support the provision of complete application specification.	emergency traffic control infor	mation with a	Near-term	Australia, European Union
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed R	esolution Flow Name			
Emergency Managem	ent Center	Tra	ffic Management Center		emergency traffic control request			
Traffic Management (Center	Em	ergency Management Center		emergency traffic control information	on		
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: Equipment maintenance coordination	Develop an internationally acceptable ITS a equipment maintenance and status inform		exchange of	Near-term	Australia, European Union, United States
Source			Triples using this solution and affected b tination	ry this Issue that would be addressed by the Proposed R	esolution Flow Name			
Center		Ma	int and Constr Management Center		equipment maintenance request			
Maint and Constr Mai	nagement Center	Cei	nter		equipment maintenance status			
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Data profile not defined	Performance, functionality, and the upper- layers of the OSI stack have not been defined for this information flow.	Ultra	C-C: AU weather information	Adopt an existing weather information cer region.	tre-to-centre data profile for u	se within the	Near-term	Australia, European Union, United States
Source			riples using this solution and affected b	y this Issue that would be addressed by the Proposed R	esolution Flow Name			
Surface Transportatio	n Weather Service		ffic Management Center		transportation weather information	1		
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	US: TMDD - OMG DDS			Number of Issues: 6	otal Issue Severity	43
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	C-C: Update TMDD (Mid- term)	Updates or additions to the TMDD need to occur to support several use cases including the addition of: managing the exchange of equipment faults, equipment maintenance requests, and equipment maintenance status.	Medium-term	United States
Source			Triples using this solution and affected stination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Center		Ma	aint and Constr Management Center	equipment maintenance request		
Maint and Constr Ma	anagement Center	Ce	nter	equipment maintenance status		
Service Monitor Syst	em	Cer	nter	RSE fault data		
Service Monitor Syst	em	Ma	int and Constr Management Center	RSE fault data		
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not fully defined (medium)	Some of the data elements for this information flow are not fully defined.	Medium	C-C: TMDD	Updates or additions to the TMDD need to occur to support several use cases including the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans.	Near-term	United States
Source			Friples using this solution and affected stination	l by this Issue that would be addressed by the Proposed Resolution Flow Name		
Source Emissions Managem	ent Center	Des				
	ent Center	Des	stination	Flow Name		
	ent Center Issue Description	Des	stination	Flow Name	Timeframe	Applicability
Emissions Managem		Des Tra	stination Insportation Information Center	Flow Name air quality information	Timeframe Medium-term	Applicability United States
ssue Data not fully defined (medium)	Issue Description Some of the data elements for this	Issue Severity Medium Information	Proposed Resolution C-C: US signal priority/preemption Criples using this solution and affected	Resolution Description Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route. Develop this Issue that would be addressed by the Proposed Resolution		
Emissions Managem Issue Data not fully	Issue Description Some of the data elements for this information flow are not fully defined.	Issue Severity Medium Information Toes	Proposed Resolution C-C: US signal priority/preemption	Resolution Description Develop an ITS application specification for centres to exchange requests and status for signal priority/preemption along a route.		

olution Name:	US: TMDD - OMG DDS			Number of Issues: 6	Total Issue Severity	: 43
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Overlap of standards	Multiple standards have been developed to address this information and it is unclear which standard should be used to address this specific information flow.	Medium	C-C: TCIP/IM/TMDD/ATIS for incident information	Standardise on a single solution for providing incident and incident management information; currently this information is defined within APTA TCIP, IEEE 1512 (IM), ITE TMDD, and SAE ATIS.	Urgent	United States
Source			Triples using this solution and affected by stination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Emergency Manageme	ent Center		offic Management Center	incident information		
Emergency Manageme	ent Center	Tra	Insportation Information Center	incident information		
Other Traffic Manager	ment Centers	Tra	offic Management Center	incident information		
Other Transportation I	Information Centers	Tra	Insportation Information Center	incident information		
Traffic Management C	Center	Em	ergency Management Center	incident information		
Traffic Management C	Center	Ma	int and Constr Management Center	incident information		
Traffic Management C	Center	Oth	ner Traffic Management Centers	incident information		
Traffic Management C	Center	Tra	nsit Management Center	incident information		
Traffic Management C	Center	Tra	Insportation Information Center	incident information		
Transportation Inform	nation Center	Fle	et and Freight Management Center	incident information		
Transportation Inform	nation Center	Oth	ner Transportation Information Centers	incident information		
sue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Accuracy of data	The standard is rejected a second		0.0 = 1.100			
ccuracy of udta	The standard is missing accuracy requirements for some of its data, which may result in anomalous behaviour.	Low	C-C: TMDD	Updates or additions to the TMDD need to occur to support several use cases including the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans.	Near-term	United States
·	requirements for some of its data, which may	Information 1	Triples using this solution and affected by	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. y this Issue that would be addressed by the Proposed Resolution	Near-term	United States
Source	requirements for some of its data, which may result in anomalous behaviour.	Information T Des	Friples using this solution and affected by stination	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. y this Issue that would be addressed by the Proposed Resolution Flow Name	Near-term	United States
Source Other Traffic Manager	requirements for some of its data, which may result in anomalous behaviour.	Information T Des Tra	Friples using this solution and affected by stination Iffic Management Center	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. This Issue that would be addressed by the Proposed Resolution Flow Name device data	Near-term	United States
Source Other Traffic Manager Other Traffic Manager	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers	Information 1 Des Tra Tra	Friples using this solution and affected by stination offic Management Center offic Management Center	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. This Issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions	Near-term	United States
Source Other Traffic Manager Other Traffic Manager Other Transportation	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers	Information 1 Des Tra Tra Tra	Friples using this solution and affected by stination offic Management Center offic Management Center ansportation Information Center	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. This Issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions road network conditions	Near-term	United States
Source Other Traffic Manager Other Traffic Manager Other Transportation Traffic Management C	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers Center	Information 1 Des Tra Tra Tra Em	Triples using this solution and affected by stination Iffic Management Center Iffic Management Center Insportation Information Center Insergency Management Center	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. This Issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions road network conditions	Near-term	United States
Other Traffic Manager Other Traffic Manager Other Transportation Traffic Management C Traffic Management C	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers Center	Information 1 Des Tra Tra Tra Em	Triples using this solution and affected by stination Iffic Management Center Iffic Management Center Insportation Information Center Insergency Management Center Insissions Management Center	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. This Issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions road network conditions road network conditions road network conditions	Near-term	United States
Source Other Traffic Manager Other Traffic Manager Other Transportation Traffic Management C	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers Center Center	Information 1 Des Tra Tra Tra Em Em	Triples using this solution and affected by stination Iffic Management Center Iffic Management Center Insportation Information Center Insergency Management Center	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. This Issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions road network conditions	Near-term	United States
Source Other Traffic Manager Other Traffic Manager Other Transportation Traffic Management C Traffic Management C Traffic Management C	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers Center Center Center	Information 1 Des Tra Tra Tra Em Em Fle	Triples using this solution and affected by stination Iffic Management Center Iffic Management Center Insportation Information Center Itergency Management Center Itersions Management Center Itersions Management Center Iter and Freight Management Center	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. This Issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions	Near-term	United States
Source Other Traffic Manager Other Traffic Manager Other Transportation I Traffic Management C Traffic Management C Traffic Management C Traffic Management C	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers Center Center Center Center Center	Information 1 Des Tra Tra Tra Em Em Fle Ma	Triples using this solution and affected by stination Iffic Management Center Iffic Management Center Insportation Information Center Itergency Management Center Itergency Management Center Iterations Management Center Iteration Information Information Center Iteration Information Information Information Center Iteration Information Info	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. / this Issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions	Near-term	United States
Source Other Traffic Manager Other Traffic Manager Other Transportation I Traffic Management C	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers Center Center Center Center Center Center Center Center	Information 1 Des Tra Tra Tra Em Em Fle Ma Ott	Triples using this solution and affected by stination Iffic Management Center Iffic Management Center Insportation Information Center Insportation Management Center Itergency Management Center Iterations Management Center Iteration Information Information Center Iteration Information Information Center Iteration Information Information Center Iteration Information Information Information Center Iteration Information Informa	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. this Issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions device data	Near-term	United States
Source Other Traffic Manager Other Traffic Manager Other Transportation I Traffic Management C	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers Center	Information 1 Des Tra Tra Tra Em Em Fle Ma Ott	Friples using this solution and affected by stination offic Management Center offic Management Center onsportation Information Center overgency Management Centers overgency Management Centers overgency Management Centers overgency Management Centers	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. this Issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions device data road network conditions	Near-term	United States
Source Other Traffic Manager Other Traffic Manager Other Transportation I Traffic Management C	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers Center	Information 1 Des Tra Tra Tra Em Em Fle Ma Oth Oth Tra	Triples using this solution and affected by stination offic Management Center offic Management Center onsportation Information Center overgency Management Center overgency Management Center over and Freight Management Center over the Traffic Management Centers over Traffic Management Centers	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. / this Issue that would be addressed by the Proposed Resolution	Near-term	United States
Source Other Traffic Manager Other Traffic Manager Other Transportation I Traffic Management C	requirements for some of its data, which may result in anomalous behaviour. ment Centers ment Centers Information Centers Center Center	Information 1 Des Tra Tra Tra Em Em Oth Oth Tra Tra Em	Triples using this solution and affected by stination offic Management Center offic Management Center onsportation Information Center overgency Management Center overgency Management Center over and Freight Management Center over the Traffic Management Center over Traffic Management Centers over Traffic Management Center over Traffic Management Center over Traffic Management Center	the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans. It is issue that would be addressed by the Proposed Resolution Flow Name device data road network conditions road network conditions	Near-term	United States

olution Name:	US: TMDD - OMG DDS			N	lumber of Issues:	6	Total Issue Severity:	43
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description			Timeframe	Applicability
Invetted by ommunity	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer among multiple ITS subsystems on an as-needed basis scalable manner than existing approaches. Determine technologies might be appropriate, and what impacts twould have on ITS standards efforts.	in a more efficient, where the use of the	secure, and lese	Urgent	Australia, European Union, United States
Carrea				this Issue that would be addressed by the Proposed Resolution				
Source Border Inspection Sy	vstem		tination ffic Management Center	Flow Name border wait t	times data			
Border Inspection Sy			nsportation Information Center	border cross	sing status information			
Center			hived Data Center	center archiv				
Center		Ma	int and Constr Management Center	equipment n	maintenance request			
Commercial Vehicle	Administration Center	Fle	et and Freight Management Center	route restrict	ctions			
Commercial Vehicle	Administration Center	Oth	ner CV Administration Centers	route restrict	ctions			
Commercial Vehicle	Administration Center	Tra	nsportation Information Center	route restrict	ctions			
Emergency Manage	ment Center	Tra	ffic Management Center	emergency t	traffic control request			
Emergency Manage	ment Center	Tra	ffic Management Center	incident info	ormation			
Emergency Manage	ment Center	Tra	nsportation Information Center	incident info	ormation			
Emissions Managem	nent Center	Tra	nsportation Information Center	air quality in	ıformation			
Fleet and Freight Ma	anagement Center	Cor	mmercial Vehicle Administration Center	route restrict	ctions			
Maint and Constr M	anagement Center	Cei	nter	equipment n	maintenance status			
Maint and Constr M	anagement Center	Cor	mmercial Vehicle Administration Center	current infra	astructure restrictions			
Maint and Constr M	anagement Center	Em	ergency Management Center	road weathe	er information			
Maint and Constr M	anagement Center	Ma	p Update System	current infra	astructure restrictions			
Maint and Constr M	anagement Center	Sur	face Transportation Weather Service	road weathe	er information			
Maint and Constr M	anagement Center	Tra	ffic Management Center	current infra	astructure restrictions			
Maint and Constr M	anagement Center	Tra	ffic Management Center	environment	ital conditions data			
Maint and Constr M	anagement Center	Tra	ffic Management Center	equipment n	maintenance status			
Maint and Constr M	anagement Center	Tra	ffic Management Center	work zone in	ıformation			
Maint and Constr M	anagement Center	Tra	nsit Management Center	current infra	astructure restrictions			
Maint and Constr M	anagement Center	Tra	nsportation Information Center	current infra	astructure restrictions			
Maint and Constr M	anagement Center	Tra	nsportation Information Center	environment	ital conditions data			
Maint and Constr M	anagement Center	Tra	nsportation Information Center	maint and co	onstr work plans			
Maint and Constr M			nsportation Information Center		er information			
Maint and Constr M			nsportation Information Center	work zone in	ıformation			
Other CV Administra		Cor	mmercial Vehicle Administration Center	route restrict	tions			
Other Traffic Manag			ffic Management Center	device contro	ol request			
Other Traffic Manag	gement Centers	Tra	ffic Management Center	device data				

ution Name: US: TMDI	D - OMG DDS		Number of Issues:	6	Total Issue Severity:	43
Other Traffic Management Centers		Traffic Management Center	device status			
Other Traffic Management Centers		Traffic Management Center	incident information			
Other Traffic Management Centers		Traffic Management Center	road network conditions			
Other Traffic Management Centers		Traffic Management Center	traffic image meta data			
Other Traffic Management Centers		Traffic Management Center	traffic images			
Other Transportation Information Centers	rs	Transportation Information Center	emergency traveler information			
Other Transportation Information Centers	s	Transportation Information Center	incident information			
Other Transportation Information Centers	rs	Transportation Information Center	road network conditions			
Other Transportation Information Centers	s	Transportation Information Center	traffic image meta data			
Other Transportation Information Centers	rs	Transportation Information Center	traffic images			
Service Monitor System		Center	RSE fault data			
Service Monitor System		Maint and Constr Management Center	RSE fault data			
Surface Transportation Weather Service		Emergency Management Center	transportation weather information			
Surface Transportation Weather Service		Maint and Constr Management Center	transportation weather information			
Surface Transportation Weather Service		Traffic Management Center	transportation weather information			
Surface Transportation Weather Service		Transportation Information Center	transportation weather information			
Traffic Management Center		Emergency Management Center	emergency traffic control information			
Traffic Management Center		Emergency Management Center	incident information			
Traffic Management Center		Emergency Management Center	road network conditions			
Traffic Management Center		Emissions Management Center	road network conditions			
Traffic Management Center		Fleet and Freight Management Center	road network conditions			
Traffic Management Center		Fleet and Freight Management Center	route restrictions			
Traffic Management Center		Maint and Constr Management Center	equipment maintenance request			
Traffic Management Center		Maint and Constr Management Center	field equipment status			
Traffic Management Center		Maint and Constr Management Center	incident information			
Traffic Management Center		Maint and Constr Management Center	road network conditions			
Traffic Management Center		Other Traffic Management Centers	device control request			
Traffic Management Center		Other Traffic Management Centers	device data			
Traffic Management Center		Other Traffic Management Centers	device status			
Traffic Management Center		Other Traffic Management Centers	incident information			
Traffic Management Center		Other Traffic Management Centers	road network conditions			
Traffic Management Center		Other Traffic Management Centers	traffic image meta data			
Traffic Management Center		Other Traffic Management Centers	traffic images			
Traffic Management Center		Transit Management Center	incident information			
Traffic Management Center		Transit Management Center	road network conditions			
Traffic Management Center		Transportation Information Center	incident information			

Solution Name: US: TMDD - OMG DDS		Number of Issues: 6	Total Issue Severity:	43
Traffic Management Center	Transportation Information Center	regional situation data		
Traffic Management Center	Transportation Information Center	road network conditions		
Traffic Management Center	Transportation Information Center	traffic control information		
Traffic Management Center	Transportation Information Center	traffic image meta data		
Traffic Management Center	Transportation Information Center	traffic images		
Transportation Information Center	Archived Data Center	regional situation data		
Transportation Information Center	Emergency Management Center	corridor operational strategies		
Transportation Information Center	Emergency Management Center	road network conditions		
Transportation Information Center	Emergency Management Center	road weather advisories		
Transportation Information Center	Emissions Management Center	corridor operational strategies		
Transportation Information Center	Fleet and Freight Management Center	incident information		
Transportation Information Center	Fleet and Freight Management Center	road network conditions		
Transportation Information Center	Fleet and Freight Management Center	road weather advisories		
Transportation Information Center	Maint and Constr Management Center	corridor operational strategies		
Transportation Information Center	Other Transportation Information Centers	emergency traveler information		
Transportation Information Center	Other Transportation Information Centers	incident information		
Transportation Information Center	Other Transportation Information Centers	road network conditions		
Transportation Information Center	Other Transportation Information Centers	traffic image meta data		
Transportation Information Center	Other Transportation Information Centers	traffic images		
Transportation Information Center	Traffic Management Center	corridor operational strategies		
Transportation Information Center	Traffic Management Center	regional situation data		
Transportation Information Center	Transit Management Center	corridor operational strategies		
Tunnel Management System	Maint and Constr Management Center	field equipment status		
Issue Description	Issue Severity Proposed Resolution	Resolution Description	Timeframe	Applicability
Inadequate guidance for complex data design The standard provides a robust design, but there may be more than one way to convey the information contained in this information flow and the standard provides little or no guidance on how to use the defined structures.	Low C-C: TMDD	Updates or additions to the TMDD need to occur to support several use cases including the addition of: sensor data accuracy; air quality information; roadway maintenance status; maintenance and construction work plans.	Near-term	United States
Source	Information Triples using this solution and affected by Destination	this Issue that would be addressed by the Proposed Resolution Flow Name		
Maint and Constr Management Center	Transportation Information Center	maint and constr work plans		

Solution Name: US: UBL - NTCIP Messaging 1 Total Issue Severity: 3

This solution is used within the U.S.. It combines standards associated with US: UBL with those for C-C: NTCIP Messaging. The US: UBL standards include upper-layer standards required to implement shipment related information flows. The C-C: NTCIP Messaging standards include lower-layer standards that support partially secure communications between two centres as commonly used in the US.

Solution Name:	US: UBL - NTCIP Messaging			Number of Issues: 1	Fotal Issue Severity:	3
Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Security inadequate	The solution does not provide adequate communications security for the information triple, which potentially jeopardizes C-ITS operations.	Medium	C-C: Secure communications	Develop one or more internationally acceptable, secure, centre-to-centre communication standards and define rules on when to use which one. The standard(s) should include support for authentication, authorization, confidentiality, and non-repudiation, as needed. Once the application layer standard(s) are developed, most ITS Information Layer standards will need to be updated to document data in appropriate format(s).		Australia, European Union, United States
				this Issue that would be addressed by the Proposed Resolution		
Source Fleet and Freight Man	agement Center		stination eight Distribution and Logistics Center	Flow Name freight transportation status		
Fleet and Freight Man			ermodal Customer System	freight transportation status		
Fleet and Freight Man			ermodal Terminal	freight transportation status		
Freight Distribution ar			ermodal Customer System	freight transportation status		
Freight Distribution ar			ermodal Terminal	freight transportation status		
Intermodal Customer	•		et and Freight Management Center	freight transport booking		
Intermodal Customer			et and Freight Management Center	freight transportation status		
Intermodal Customer			eight Distribution and Logistics Center	freight transport booking		
Intermodal Terminal		Fle	et and Freight Management Center	container delivery confirmation		
Intermodal Terminal		Fle	et and Freight Management Center	freight transportation status		

Solution Name:

US: UBL - OMG DDS

Total Issue Severity: 3

This solution is used within the U.S.. It combines standards associated with US: UBL with those for C-C: OMG DDS. The US: UBL standards include upper-layer standards required to implement shipment related information flows. The C-C: OMG DDS standards include lower-layer standards that support secure data sharing between publishers and subscribers over a traditional Internet link

Fleet and Freight Management Center

Freight Distribution and Logistics Center

Fleet and Freight Management Center

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Unvetted by community	The proposed solution uses a suite of standards that is accepted within some communities, but has not necessarily been accepted for use within the context of this information triple.	Medium	Data distribution technologies	Investigate emerging ICT technologies that might offer mechanisms to distribute data among multiple ITS subsystems on an as-needed basis in a more efficient, secure, and scalable manner than existing approaches. Determine where the use of these technologies might be appropriate, and what impacts the adoption of such technologies would have on ITS standards efforts.	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected by stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Fleet and Freight	Management Center	Fre	eight Distribution and Logistics Center	freight transportation status		
Fleet and Freight	Management Center	Int	ermodal Customer System	freight transportation status		
Fleet and Freight	Management Center	Int	ermodal Terminal	freight transportation status		
Freight Distribution	on and Logistics Center	Int	ermodal Customer System	freight transportation status		
Freight Distribution	on and Logistics Center	Int	ermodal Terminal	freight transportation status		
Intermodal Custon	mer System	Fle	et and Freight Management Center	freight transport booking		

freight transportation status

container delivery confirmation

freight transport booking

Intermodal Customer System

Intermodal Customer System

Intermodal Terminal

Solution Name:	US: UBL - OMG DDS	Number of Issues:	1	Total Issue Severity:	3	
Intermodal Terminal	Fleet and Freight Management Center freight tr	ransportation status				

Number of Issues:

2

Total Issue Severity:

4

This solution is used within the U.S.. It combines standards associated with US: WAVE Tolling with those for V-X: Local Unicast Wireless (US). The US: WAVE Tolling standards include upper-layer standards required to implement V2I tolling flows. The V-X: Local Unicast Wireless (US) standards include lower-layer standards that support local-area unicast wireless solutions, such as DSRC technologies, LTE, etc.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Uncertainty about trust revocation mechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected batination	by this Issue that would be addressed by the Proposed Resolution Flow Name		
Personal Information	n Dovice	Cal	and the division of the French and			
T CT30Hal IIII0HHallof			nnected Vehicle Roadside Equipment	service payment information		
ssue	Issue Description			Resolution Description	Timeframe	Applicability
					Timeframe Medium-term	Applicability Australia, European Union, United States
ssue Pata may not be	Issue Description The information flow is unclear as to what precisely is needed; the standard may not fully support the needs of the information	Issue Severity Low Information	Proposed Resolution V-L: Electrical charging	Resolution Description Develop an internationally acceptable ITS application specification, including payment for		Australia, European

Solution Name:

US: WAVE Tolling - WAVE UDP

This colution is used within the U.S. It combines standards assisted with US: WAVE Tolling with those for V.Y. WAVE Tolling standards include when lower tondered a service data implement VOI tolling flows. The V.Y. WAVE

This solution is used within the U.S.. It combines standards associated with US: WAVE Tolling with those for V-X: WAVE UDP. The US: WAVE Tolling standards include upper-layer standards required to implement V2I tolling flows. The V-X: WAVE UDP standards include lower-layer standards that support connectionless vehicle-to-any communications within ~300m using the User Datagram Protocol (UDP) over Internet Protocol version 6 (IPv6) over the 5.9GHz spectrum.

ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability	
Incertainty about rust revocation nechanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States	
		Information 1	riples using this solution and affected by	y this Issue that would be addressed by the Proposed Resolution			
Source		Des	tination	Flow Name			
Connected Vehicle Roadside Equipment		Vel	nicle OBE	vehicle payment request			
Connected Vehicle Roadside Equipment		Vel	nicle OBE	vehicle payment update			
ITS Roadway Payment Equipment		Vel	nicle OBE	vehicle payment request			
ITS Roadway Payment Equipment		Vel	nicle OBE	vehicle payment update	vehicle payment update		
Vehicle OBE		Cor	nnected Vehicle Roadside Equipment	service payment information			
Vehicle OBE		ITS	Roadway Payment Equipment	service payment information			

US: WAVE Tolling - Local Unicast Wireless (US)

Solution Name:

olution Name:	US: WAVE Tolling - WAVE UDP			Number of Issues: 2 T	otal Issue Severity:	4
ssue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data may not be ully defined (low)	The information flow is unclear as to what precisely is needed; the standard may not fully support the needs of the information flow, depending on how it is interpreted.	Low	V-L: Electrical charging	Develop an internationally acceptable ITS application specification, including payment for services, for a vehicle to interface with an RSE as a part of an electric charging application.	Medium-term	Australia, European Union, United States
Source			Triples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
Connected Vehicle Roadside Equipment		Vehicle OBE		vehicle payment request		
Connected Vehicle Roadside Equipment		Vehicle OBE		vehicle payment update		
ITS Roadway Payment Equipment		Vehicle OBE		vehicle payment request		
ITS Roadway Payment Equipment		Vehicle OBE		vehicle payment update		
Vehicle OBE		Со	nnected Vehicle Roadside Equipment	service payment information		
Vehicle OBE		ITS	Roadway Payment Equipment	service payment information		
lution Name:	US: WAVE Tolling - WAVE WSMP			Number of Issues: 2 T	otal Issue Severity:	4
solution is used v	within the U.S. It combines upper-layer standards i	equired to imple	ment V2I tolling flows with lowe	r-layer standards that support vehicle-to-any communications within ~300m using WSMP over	er the 5.9GHz spectr	·um.
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ncertainty about ust revocation echanism	The mechanisms used to prevent bad actors from sending authorized messages is unproven.	Medium	Misbehavior detection and security revocation mechanism	Conduct a field test to prove out the trust revocation mechanisms at all levels, including revoking the privileges of a certificate authority (e.g., if an authority is no longer recognized within a region) and of an ITS station (e.g., in case an ITS station starts to misbehave).	Urgent	Australia, European Union, United States
Source			Triples using this solution and affected b stination	y this Issue that would be addressed by the Proposed Resolution Flow Name		
	Roadside Equipment		hicle OBE	vehicle payment request		
Connected Vehicle F	Roadside Equipment	Ve	hicle OBE	vehicle payment update		
Vehicle OBE		Со	nnected Vehicle Roadside Equipment	service payment information		
Vehicle OBE		ITS	Roadway Payment Equipment	service payment information		
ue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
ata may not be Illy defined (low)	The information flow is unclear as to what precisely is needed; the standard may not fully support the needs of the information flow, depending on how it is interpreted.	Low	V-L: Electrical charging	Develop an internationally acceptable ITS application specification, including payment for services, for a vehicle to interface with an RSE as a part of an electric charging application.	Medium-term	Australia, European Union, United States
				y this Issue that would be addressed by the Proposed Resolution		
Source Connected Vehicle Roadside Equipment			stination hicle OBE	Flow Name vehicle payment request		
Connected Vehicle Roadside Equipment Connected Vehicle Roadside Equipment			hicle OBE	vehicle payment update		
Vehicle OBE			nnected Vehicle Roadside Equipment	service payment information		
		Co	mission venicle nonusine Equipment	Screec payment information		

service payment information

ITS Roadway Payment Equipment

Vehicle OBE