Standards Gap Analysis for Cooperative Intelligent Transportation Systems

Results: Solution Perspective: Australia

Document HTG7-3-1-AU
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Standards Harmonisation Working Group
Harmonisation Task Group 7

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Contents

Contents ii
Figures ii
Tables ii
1. Introduction 1
2. Report Perspective 6
3. Report Structure 7
4. Report Content 11

Figures

Figure 1: Solution Perspective Overview 6
Figure 2: Solution Perspective Report Structure 7

Tables

Table 1: Solution Perspective Report Field Descriptions 8

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]

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

1.2 History

In 2011, the United States (US) Department of Transportation (USDOT) and the European Commission (EC) approved a **Harmonisation Action Plan** 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:

[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.

1. **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 the **Harmonised Architecture Reference for Technical Standards (HARTS).** HARTS facilitates the 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 the 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 (HTG7-1)** - A high-level summary of the approach, process and the key results of HTG7.

[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 (HTG7-2)** - Presents the HTG7 methodology used to develop HARTS, perform the gap analysis, and develop proposed resolutions.
- **Issues and Proposed Resolutions (HTG7-3, 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 (HTG7-3-1-AU, HTG7-3-1-EU, HTG7-3-1-JP, HTG7-3-1-US)** - 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 code[6]).
    - **Results: Resolution Perspective for Standards Developers (HTG7-3-2)** - 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 (HTG7-3-3-AU, HTG7-3-3-EU, HTG7-3-3-JP, HTG7-3-3-US)** - 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 code[6]).
- **HARTS Website Overview (HTG7-4)** - 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

[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: Australia** (HTG7-3-1-AU), 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.

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 Australia. It provides a table of HARTS analysis results structured to provide insight to project teams within Australia 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.

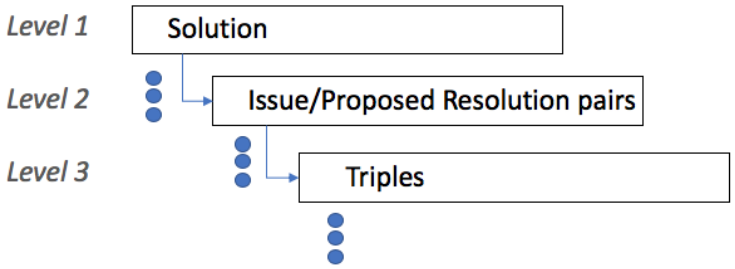

Figure 1: Solution Perspective Overview

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 Name:	Text	Number of Issues:	5	Total Issue Severity:	54
text					

Level 2

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
text	text	Ultra	text	text	Urgent	AU, EU

Level 3

Information Triples using this solution and affected by this issue that would be addressed by this Proposed Resolution		
Source	Destination	Flow
Source 1	Destination 1	Flow 1
Source 1	Destination 2	Flow 1
Source 2	Destination 5	Flow 23
Source 3	Destination 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 Level	Field Information			Sort Criteria		
	Title	Description	Value Range	Order	Measure	Direction
1	**Solution Name**	The name of the solution expressed as a hyphenated concatenation of the HARTS ***data profile*** and the HARTS ***communication profile*** that collectively define the solution.	ASCII[7]	1	Alphabetic	↓
	Number of Issues	A count of the issues that have been assigned to the solution.	Non-negative integer	–	–	–
	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	Non-negative integer	–	–	–
	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.	3	Alphabetic	↓
	Issue Description	A textual description of the issue type.	ASCII	–	–	–

[7] ASCII (American Standard Code for Information Exchange)

Report Level	Field Information			Sort Criteria		
	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)”.	Ordered List (Ultra, High, Medium, Low)	2	List Order	↓
	Proposed Resolution	The name of the proposed resolution, which will correspond to one of the 112 defined proposed resolutions.	ASCII	–	–	–
	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.	Ordered List (Urgent, Near-Term, Medium-Term, Future)	–	–	–
	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 ***physical object*** 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	↓

Report Level	Field Information			Sort Criteria		
	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 ***physical view*** 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-AU: Solution Perspective Australia

Wednesday, December 19, 2018
11:47:46 AM

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

This solution is used within the Australia. It combines standards associated with (None-Data) with those for I-F: AU IFCP. The (None-Data) standards include an unspecified set of standards at the upper layers. The I-F: AU IFCP standards include lower-layer placeholder for an Australian solution identified for development. This may end up being I-F: SNMPv3, but it is currently undefined and just used as a placeholder.

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 would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Center	Connected Vehicle Roadside Equipment	RSE application information
Center	Connected Vehicle Roadside Equipment	RSE application install/upgrade
Center	Connected Vehicle Roadside Equipment	RSE control commands
Connected Vehicle Roadside Equipment	Center	device identification
Connected Vehicle Roadside Equipment	Center	protected location and address flow
Connected Vehicle Roadside Equipment	Center	RSE application status
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE application install/upgrade
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE configuration settings
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE control commands
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	environmental situation data
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection infringement info
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	pedestrian location information
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	roadway dynamic signage data
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	signal preemption request
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	signal priority service request
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	signal service request
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	traffic situation data
Connected Vehicle Roadside Equipment	Maint and Constr Management Center	reduced speed warning status
Connected Vehicle Roadside Equipment	Maint and Constr Management Center	vehicle signage application status
Connected Vehicle Roadside Equipment	Map Update System	vehicle location data for mapping
Connected Vehicle Roadside Equipment	Other Connected Vehicle Roadside Equipment	wrong way vehicle detected
Connected Vehicle Roadside Equipment	Parking Management System	connected vehicle parking data
Connected Vehicle Roadside Equipment	Service Monitor System	RSE status
Connected Vehicle Roadside Equipment	Traffic Management Center	environmental situation data

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

Connected Vehicle Roadside Equipment	Traffic Management Center	intersection management application status
Connected Vehicle Roadside Equipment	Traffic Management Center	intersection safety application status
Connected Vehicle Roadside Equipment	Traffic Management Center	queue warning application status
Connected Vehicle Roadside Equipment	Traffic Management Center	rail crossing application status
Connected Vehicle Roadside Equipment	Traffic Management Center	reduced speed warning status
Connected Vehicle Roadside Equipment	Traffic Management Center	speed management application status
Connected Vehicle Roadside Equipment	Traffic Management Center	stop sign gap assist RSE status
Connected Vehicle Roadside Equipment	Traffic Management Center	traffic monitoring application status
Connected Vehicle Roadside Equipment	Traffic Management Center	traffic situation data
Connected Vehicle Roadside Equipment	Traffic Management Center	vehicle signage application status
Connected Vehicle Roadside Equipment	Traffic Management Center	work zone application status
Connected Vehicle Roadside Equipment	Transportation Information Center	electric charging station information
Connected Vehicle Roadside Equipment	Transportation Information Center	environmental situation data
Connected Vehicle Roadside Equipment	Transportation Information Center	road weather advisory status
Connected Vehicle Roadside Equipment	Transportation Information Center	traveler information application status
Connected Vehicle Roadside Equipment	Wayside Equipment	rail crossing blockage notification
Connected Vehicle Roadside Equipment	Wayside Equipment	rail crossing operational status
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	Connected Vehicle Roadside Equipment	RSE status
ITS Roadway Equipment	Center	device identification
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	arriving train information
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	conflict monitor status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	environmental sensor data
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	intersection control status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	pedestrian crossing status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	reduced speed warning info
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	roadway dynamic signage status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	track status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	traffic gap information
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	vehicle signage local data
ITS Roadway Equipment	Maint and Constr Management Center	roadway advisory radio status
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	Maint and Constr Management Center	traffic images

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

ITS Roadway Equipment	Maint and Constr Management Center	work zone warning status
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	rail crossing blockage notification
ITS Roadway Equipment	Traffic Management Center	rail crossing status
ITS Roadway Equipment	Traffic Management Center	right-of-way request notification
ITS Roadway Equipment	Traffic Management Center	roadway advisory radio status
ITS Roadway Equipment	Traffic Management Center	roadway warning system status
ITS Roadway Equipment	Traffic Management Center	speed monitoring information
ITS Roadway Equipment	Traffic Management Center	stop sign gap assist status
ITS Roadway Equipment	Traffic Management Center	traffic detector data
ITS Roadway Equipment	Traffic Management Center	traffic images
ITS Roadway Equipment	Traffic Management Center	traffic metering status
ITS Roadway Equipment	Wayside Equipment	rail crossing blockage notification
ITS Roadway Equipment	Wayside Equipment	rail crossing operational status
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	ITS Roadway Equipment	roadway advisory radio data
Maint and Constr Management Center	ITS Roadway Equipment	speed monitoring control
Maint and Constr Management Center	ITS Roadway Equipment	traffic detector control
Maint and Constr Management Center	ITS Roadway Equipment	video surveillance control
Map Update System	Connected Vehicle Roadside Equipment	map updates
Map Update System	Connected Vehicle Roadside Equipment	parking facility geometry
Map Update System	Connected Vehicle Roadside Equipment	roadway geometry
Map Update System	Parking Management System	parking facility geometry
Map Update System	Public Information Device	map updates
Multi-Modal Crossing	Connected Vehicle Roadside Equipment	multimodal crossing status
Multi-Modal Crossing	ITS Roadway Equipment	multimodal crossing status
Other Connected Vehicle Roadside Equipment	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control data
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	Map Update System	parking facility geometry
Parking Management System	Traffic Management Center	parking information
Parking Management System	Transit Management Center	parking information
Parking Management System	Transportation Information Center	parking information

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

Payment Administration Center	Connected Vehicle Roadside Equipment	vehicle payment request
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	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	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 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	pedestrian safety 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	roadway warning system control
Traffic Management Center	ITS Roadway Equipment	signal system configuration
Traffic Management Center	ITS Roadway Equipment	speed monitoring control
Traffic Management Center	ITS Roadway Equipment	stop sign gap assist control
Traffic Management Center	ITS Roadway Equipment	traffic detector control
Traffic Management Center	ITS Roadway Equipment	traffic metering control
Traffic Management Center	ITS Roadway Equipment	video surveillance control
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
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:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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

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	Center	device identification
ITS Roadway Equipment	Center	device identification

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

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	Center	protected location and address flow

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 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	Other Connected Vehicle Roadside Equipment	wrong way vehicle detected
Other Connected Vehicle Roadside Equipment	Connected Vehicle Roadside Equipment	wrong way vehicle detected

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	Flow Name
Map Update System	Parking Management System	parking facility geometry
Parking Management System	Map Update System	parking facility geometry

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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

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	ITS Roadway Equipment	roadway dynamic signage data
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	roadway dynamic signage status
ITS Roadway Equipment	Traffic 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 for this information flow.	Ultra	I-F: Multimodal crossing	Develop an internationally acceptable ITS application specification that defines the rules for a centre to inhibit the operation of a multimodal crossing.	Medium-term	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
Multi-Modal Crossing	Connected Vehicle Roadside Equipment	multimodal crossing status
Multi-Modal Crossing	ITS Roadway Equipment	multimodal crossing 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	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

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 Management Center	roadway advisory radio status
ITS Roadway Equipment	Traffic Management Center	roadway advisory radio status
Maint and Constr Management 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
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	Destination	Flow Name
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	signal preemption request
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	signal priority service request
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

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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 enforcement	Develop an internationally acceptable ITS application specification for the use case of allowing a center to remotely control a speed enforcement application within ITS Roadway Equipment.	Future	Australia, European Union

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 Management Center	speed monitoring information
ITS Roadway Equipment	Traffic Management Center	speed monitoring information
Maint and Constr Management Center	ITS Roadway Equipment	speed monitoring control
Traffic Management Center	ITS Roadway Equipment	speed monitoring 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: 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 by this Issue that would be addressed by the Proposed Resolution

Source	Destination	Flow Name
ITS Roadway Equipment	Other ITS Roadway Equipment	signal control data
ITS Roadway Equipment	Traffic Management Center	right-of-way request notification
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control data
Traffic Management Center	ITS Roadway Equipment	signal system configuration

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: 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

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	Connected Vehicle Roadside Equipment	vehicle signage local data
Parking Management System	Connected Vehicle Roadside Equipment	vehicle signage local data

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	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 this Issue that would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Center	Connected Vehicle Roadside Equipment	RSE application install/upgrade
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE application install/upgrade
Field Support Equipment	Connected Vehicle Roadside Equipment	RSE application install/upgrade

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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: 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

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	ITS Roadway Equipment	intersection infringement info

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: 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

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	Transportation Information Center	road weather advisory status
Transportation Information Center	Connected Vehicle Roadside Equipment	road weather advisory info

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, 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
Connected Vehicle Roadside Equipment	Maint and Constr Management Center	reduced speed warning status
Connected Vehicle Roadside Equipment	Traffic Management Center	reduced speed warning status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	reduced speed warning info
Maint and Constr Management Center	Connected Vehicle Roadside Equipment	reduced speed warning info
Traffic Management Center	Connected Vehicle Roadside Equipment	reduced speed warning info

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: Transportation sensor systems	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 Proposed Resolution

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

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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

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 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

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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: 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

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

Source	Destination	Flow Name
Center	Connected Vehicle Roadside Equipment	RSE application information
Center	Connected Vehicle Roadside Equipment	RSE control commands
Connected Vehicle Roadside Equipment	Center	RSE application status
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE configuration settings
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE control commands
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE status
Connected Vehicle Roadside Equipment	Maint and Constr Management Center	vehicle signage application status
Connected Vehicle Roadside Equipment	Service Monitor System	RSE status
Connected Vehicle Roadside Equipment	Traffic Management Center	intersection management application status
Connected Vehicle Roadside Equipment	Traffic Management Center	intersection safety application status
Connected Vehicle Roadside Equipment	Traffic Management Center	queue warning application status
Connected Vehicle Roadside Equipment	Traffic Management Center	speed management application status
Connected Vehicle Roadside Equipment	Traffic Management Center	traffic monitoring application status
Connected Vehicle Roadside Equipment	Traffic Management Center	vehicle signage application status
Connected Vehicle Roadside Equipment	Traffic Management Center	work zone application status
Field Support Equipment	Connected Vehicle Roadside Equipment	RSE configuration settings
Field Support Equipment	Connected Vehicle Roadside Equipment	RSE control commands
Field Support Equipment	Connected Vehicle Roadside Equipment	RSE status
Maint and Constr Management Center	Connected Vehicle Roadside Equipment	vehicle signage application 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	queue warning application information
Traffic Management Center	Connected Vehicle Roadside Equipment	speed management application information
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
Tunnel Management System	Connected Vehicle Roadside Equipment	vehicle signage application info

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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: Environmental sensor stations	Develop an internationally acceptable ITS application specification for managing environmental sensor stations for secure communications with proper access control.	Near-term	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	Connected Vehicle Roadside Equipment	environmental sensor data

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: 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

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	ITS Roadway Equipment	environmental situation data
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	traffic situation data
Connected Vehicle Roadside Equipment	Traffic Management Center	environmental situation data
Connected Vehicle Roadside Equipment	Traffic Management Center	traffic situation data
Connected Vehicle Roadside Equipment	Transportation Information Center	environmental situation data
Traffic Management Center	Connected Vehicle Roadside Equipment	situation data collection parameters

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 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	map updates
Map Update System	Connected Vehicle Roadside Equipment	parking facility geometry
Map Update System	Connected Vehicle Roadside Equipment	roadway geometry
Map Update System	Public 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	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

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	Map Update System	vehicle location data for mapping

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

Issue	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	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

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	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) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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	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	Destination	Flow Name
Center	Connected Vehicle Roadside Equipment	RSE application information
Center	Connected Vehicle Roadside Equipment	RSE application install/upgrade
Center	Connected Vehicle Roadside Equipment	RSE control commands
Connected Vehicle Roadside Equipment	Center	device identification
Connected Vehicle Roadside Equipment	Center	protected location and address flow
Connected Vehicle Roadside Equipment	Center	RSE application status
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE application install/upgrade
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE configuration settings
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE control commands
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	environmental situation data
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	environmental situation data
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection infringement info
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	pedestrian location information
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	roadway dynamic signage data
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	signal preemption request
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	signal priority service request
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	signal service request
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	traffic situation data
Connected Vehicle Roadside Equipment	Maint and Constr Management Center	reduced speed warning status
Connected Vehicle Roadside Equipment	Maint and Constr Management Center	vehicle signage application status
Connected Vehicle Roadside Equipment	Map Update System	vehicle location data for mapping
Connected Vehicle Roadside Equipment	Other Connected Vehicle Roadside Equipment	wrong way vehicle detected
Connected Vehicle Roadside Equipment	Parking Management System	connected vehicle parking data
Connected Vehicle Roadside Equipment	Service Monitor System	RSE status
Connected Vehicle Roadside Equipment	Traffic Management Center	environmental situation data
Connected Vehicle Roadside Equipment	Traffic Management Center	intersection management application status
Connected Vehicle Roadside Equipment	Traffic Management Center	intersection safety application status
Connected Vehicle Roadside Equipment	Traffic Management Center	queue warning application status

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

Connected Vehicle Roadside Equipment	Traffic Management Center	rail crossing application status
Connected Vehicle Roadside Equipment	Traffic Management Center	reduced speed warning status
Connected Vehicle Roadside Equipment	Traffic Management Center	speed management application status
Connected Vehicle Roadside Equipment	Traffic Management Center	stop sign gap assist RSE status
Connected Vehicle Roadside Equipment	Traffic Management Center	traffic monitoring application status
Connected Vehicle Roadside Equipment	Traffic Management Center	traffic situation data
Connected Vehicle Roadside Equipment	Traffic Management Center	vehicle signage application status
Connected Vehicle Roadside Equipment	Traffic Management Center	work zone application status
Connected Vehicle Roadside Equipment	Transportation Information Center	electric charging station information
Connected Vehicle Roadside Equipment	Transportation Information Center	environmental situation data
Connected Vehicle Roadside Equipment	Transportation Information Center	road weather advisory status
Connected Vehicle Roadside Equipment	Transportation Information Center	traveler information application status
Connected Vehicle Roadside Equipment	Wayside Equipment	rail crossing blockage notification
Connected Vehicle Roadside Equipment	Wayside Equipment	rail crossing operational status
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	Connected Vehicle Roadside Equipment	RSE status
ITS Roadway Equipment	Center	device identification
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	arriving train information
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	conflict monitor status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	environmental sensor data
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	intersection control status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	pedestrian crossing status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	reduced speed warning info
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	roadway dynamic signage status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	track status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	traffic gap information
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	vehicle signage local data
ITS Roadway Equipment	Maint and Constr Management Center	roadway advisory radio status
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	Maint and Constr Management Center	traffic images
ITS Roadway Equipment	Maint and Constr Management Center	work zone warning status
ITS Roadway Equipment	Other ITS Roadway Equipment	signal control data
ITS Roadway Equipment	Traffic Management Center	pedestrian safety warning status

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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	right-of-way request notification
ITS Roadway Equipment	Traffic Management Center	roadway advisory radio status
ITS Roadway Equipment	Traffic Management Center	roadway warning system status
ITS Roadway Equipment	Traffic Management Center	speed monitoring information
ITS Roadway Equipment	Traffic Management Center	stop sign gap assist status
ITS Roadway Equipment	Traffic Management Center	traffic detector data
ITS Roadway Equipment	Traffic Management Center	traffic images
ITS Roadway Equipment	Traffic Management Center	traffic metering status
ITS Roadway Equipment	Wayside Equipment	rail crossing blockage notification
ITS Roadway Equipment	Wayside Equipment	rail crossing operational status
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	ITS Roadway Equipment	roadway advisory radio data
Maint and Constr Management Center	ITS Roadway Equipment	speed monitoring control
Maint and Constr Management Center	ITS Roadway Equipment	traffic detector control
Maint and Constr Management Center	ITS Roadway Equipment	video surveillance control
Map Update System	Connected Vehicle Roadside Equipment	map updates
Map Update System	Connected Vehicle Roadside Equipment	map updates
Map Update System	Connected Vehicle Roadside Equipment	parking facility geometry
Map Update System	Connected Vehicle Roadside Equipment	roadway geometry
Map Update System	Parking Management System	parking facility geometry
Map Update System	Public Information Device	map updates
Multi-Modal Crossing	Connected Vehicle Roadside Equipment	multimodal crossing status
Multi-Modal Crossing	ITS Roadway Equipment	multimodal crossing status
Other Connected Vehicle Roadside Equipment	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control data
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	Map Update System	parking facility geometry
Parking Management System	Traffic Management Center	parking information
Parking Management System	Transit Management Center	parking information
Parking Management System	Transportation Information Center	parking information
Payment Administration Center	Connected Vehicle Roadside Equipment	vehicle payment request
Traffic Management Center	Connected Vehicle Roadside Equipment	intersection management application info
Traffic Management Center	Connected Vehicle Roadside Equipment	intersection safety application info

Solution Name:	(None-Data) - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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	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 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	pedestrian safety 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	roadway warning system control
Traffic Management Center	ITS Roadway Equipment	signal system configuration
Traffic Management Center	ITS Roadway Equipment	speed monitoring control
Traffic Management Center	ITS Roadway Equipment	stop sign gap assist control
Traffic Management Center	ITS Roadway Equipment	traffic detector control
Traffic Management Center	ITS Roadway Equipment	traffic metering control
Traffic Management Center	ITS Roadway Equipment	traffic metering control
Traffic Management Center	ITS Roadway Equipment	video surveillance control
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
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

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

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	Center	device identification
ITS Roadway Equipment	Center	device identification

Solution Name:	(None-Data) - BTP/GeoNetworking/G5	Number of Issues:	6	Total Issue Severity:	45

This solution is used within the E.U., and Australia. It combines standards associated with (None-Data) with those for V-X: BTP/GeoNetworking/G5. The (None-Data) standards include an unspecified set of standards at the upper layers. The V-X:

Solution Name:	(None-Data) - BTP/GeoNetworking/G5	Number of Issues:	6	Total Issue Severity:	45

BTP/GeoNetworking/G5 standards include lower-layer standards that support broadcast, near constant, low latency vehicle-to-vehicle and vehicle-to-infrastructure communications using the ETSI GeoNetworking Bundle over the 5.9GHz spectrum.

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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	pedestrian safety information
Connected Vehicle Roadside Equipment	Vehicle OBE	traffic gap information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle payment request
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Personal Information Device	Connected Vehicle Roadside Equipment	personal location
Personal Information Device	Vehicle OBE	personal location
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle road information
Vehicle OBE	Other Vehicle OBEs	vehicle travel time data

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: 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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info

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

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

Source	Destination	Flow Name
Vehicle OBE	Other Vehicle OBEs	vehicle road information

Solution Name:	(None-Data) - BTP/GeoNetworking/G5	Number of Issues:	6	Total Issue Severity:	45

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
Connected Vehicle Roadside Equipment	Personal Information Device	pedestrian safety information
Connected Vehicle Roadside Equipment	Vehicle OBE	traffic gap information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle payment request
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Personal Information Device	Connected Vehicle Roadside Equipment	personal location
Personal Information Device	Vehicle OBE	personal location
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle road information
Vehicle OBE	Other Vehicle OBEs	vehicle travel time data

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	pedestrian safety information
Connected Vehicle Roadside Equipment	Vehicle OBE	traffic gap information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle payment request
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Personal Information Device	Connected Vehicle Roadside Equipment	personal location
Personal Information Device	Vehicle OBE	personal location
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle road information
Vehicle OBE	Other Vehicle OBEs	vehicle travel time data

Solution Name:	(None-Data) - BTP/GeoNetworking/G5	Number of Issues:	6	Total Issue Severity:	45

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Protocol features partly not applicable in the given context	A feature of the protocol is not fully applicable in the given context, e.g. GeoNetworking multi-hop forwarding in 5.9 GHz channels.	Low	V-L: GeoNetworking	Determine how to implement GeoNetworking without unduly flooding the network and, if feasible, prove out concept.	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
Connected Vehicle Roadside Equipment	Personal Information Device	pedestrian safety information
Connected Vehicle Roadside Equipment	Vehicle OBE	traffic gap information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle payment request
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Personal Information Device	Connected Vehicle Roadside Equipment	personal location
Personal Information Device	Vehicle OBE	personal location
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle road information
Vehicle OBE	Other Vehicle OBEs	vehicle travel time data

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	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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info

Solution Name:	(None-Data) - FNTP/M5	Number of Issues:	4	Total Issue Severity:	41

This solution is used within the E.U., and Australia. It combines standards associated with (None-Data) with those for V-X: FNTP/M5. The (None-Data) standards include an unspecified set of standards at the upper layers. The V-X: FNTP/M5 standards include lower-layer standards that support connectionless, broadcast and unicast, near constant, ultra-low latency vehicle-to-any communications within ~300m using Fast Network Transport Profile (FNTP) over the 5 GHz spectrum as allocated within a region. The broadcast mode is interoperable with WAVE WSMP. The M5 radio of this profile can receive ITS G5 frames.

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: 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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info

Solution Name:	(None-Data) - FNTP/M5	Number of Issues:	4	Total Issue Severity:	41

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

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

Source	Destination	Flow Name
Vehicle OBE	Other Vehicle OBEs	vehicle road 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

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	pedestrian safety information
Connected Vehicle Roadside Equipment	Vehicle OBE	traffic gap information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle payment request
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Personal Information Device	Connected Vehicle Roadside Equipment	personal location
Personal Information Device	Vehicle OBE	personal location
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle road information
Vehicle OBE	Other Vehicle OBEs	vehicle travel time data

Solution Name:	(None-Data) - FNTP/M5	Number of Issues:	4	Total Issue Severity:	41

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	pedestrian safety information
Connected Vehicle Roadside Equipment	Vehicle OBE	traffic gap information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle payment request
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Personal Information Device	Connected Vehicle Roadside Equipment	personal location
Personal Information Device	Vehicle OBE	personal location
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle road information
Vehicle OBE	Other Vehicle OBEs	vehicle travel time data

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	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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info

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 inter-city 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

Source	Destination	Flow Name
Alternate Mode Transportation Center	Transportation Information Center	alternate mode incident information

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

Source	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 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

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

Source	Destination	Flow Name
Authorizing Center	Other Authorizing Centers	permission request coordination
Other Authorizing Centers	Authorizing 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

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

Source	Destination	Flow Name
Authorizing Center	Center	permission request received
Authorizing Center	Cooperative ITS Credentials Management System	user permission sets
Center	Authorizing Center	permission request
Center	Authorizing 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	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 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	Center	protected location and address flow
Connected Vehicle Roadside Equipment	Cooperative ITS Credentials Management System	protected location and address flow
Privacy Protection Gateway	Center	protected location and address flow
Privacy Protection Gateway	Cooperative ITS Credentials Management System	protected location and address flow

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
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

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

Source	Destination	Flow Name
Center	Cooperative ITS Credentials Management System	device enrollment information
Center	Cooperative ITS Credentials Management System	misbehavior report
Connected Vehicle Roadside Equipment	Cooperative ITS Credentials Management System	device enrollment information
Connected Vehicle Roadside Equipment	Cooperative ITS Credentials Management System	misbehavior report
Cooperative ITS Credentials Management System	Center	security credential revocations
Cooperative ITS Credentials Management System	Center	security credentials
Cooperative ITS Credentials Management System	Center	security policy and networking information
Cooperative ITS Credentials Management System	Connected Vehicle Roadside Equipment	security credential revocations
Cooperative ITS Credentials Management System	Connected Vehicle Roadside Equipment	security credentials
Cooperative ITS Credentials Management System	Connected Vehicle Roadside Equipment	security policy and networking information
Cooperative ITS Credentials Management System	Data Distribution System	security credential revocations
Cooperative ITS Credentials Management System	Data Distribution System	security credentials
Cooperative ITS Credentials Management System	Data Distribution System	security policy and networking information
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credential revocations
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credentials
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security policy and networking information
Cooperative ITS Credentials Management System	Service Monitor System	security credential revocations
Cooperative ITS Credentials Management System	Service Monitor System	security credentials
Cooperative ITS Credentials Management System	Service Monitor System	security policy and networking information
Cooperative ITS Credentials Management System	Wide Area Information Disseminator	security credential revocations
Cooperative ITS Credentials Management System	Wide Area Information Disseminator	security credentials
Cooperative ITS Credentials 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
Object Registration and Discovery Service	Cooperative ITS Credentials Management System	device enrollment information
Object Registration and Discovery Service	Cooperative ITS Credentials Management System	misbehavior report
Service Monitor System	Cooperative ITS Credentials Management System	device enrollment information
Service Monitor System	Cooperative ITS Credentials Management System	misbehavior report
Wide Area Information Disseminator	Cooperative ITS Credentials Management System	device enrollment information
Wide Area Information Disseminator	Cooperative ITS Credentials Management System	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
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 - coordination among CCMS	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.	Near-term	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
Cooperative ITS Credentials Management System	Other CCMS	authorization coordination
Cooperative ITS Credentials Management System	Other CCMS	enrollment coordination
Cooperative ITS Credentials Management System	Other CCMS	misbehavior analysis coordination
Cooperative ITS Credentials Management System	Other CCMS	revocation 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

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	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 this Issue that would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Center	Connected Vehicle Roadside Equipment	RSE application install/upgrade
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE application install/upgrade
Field Support Equipment	Connected Vehicle Roadside Equipment	RSE application install/upgrade

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

Source	Destination	Flow Name
Map Update System	Public Information Device	map updates

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
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

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

Source	Destination	Flow Name
Center	Cooperative ITS Credentials Management System	device enrollment information
Center	Cooperative ITS Credentials Management System	misbehavior report
Connected Vehicle Roadside Equipment	Cooperative ITS Credentials Management System	device enrollment information
Connected Vehicle Roadside Equipment	Cooperative ITS Credentials Management System	misbehavior report
Cooperative ITS Credentials Management System	Center	security credential revocations
Cooperative ITS Credentials Management System	Center	security credentials
Cooperative ITS Credentials Management System	Center	security policy and networking information
Cooperative ITS Credentials Management System	Connected Vehicle Roadside Equipment	security credential revocations
Cooperative ITS Credentials Management System	Connected Vehicle Roadside Equipment	security credentials
Cooperative ITS Credentials Management System	Connected Vehicle Roadside Equipment	security policy and networking information
Cooperative ITS Credentials Management System	Data Distribution System	security credential revocations
Cooperative ITS Credentials Management System	Data Distribution System	security credentials
Cooperative ITS Credentials Management System	Data Distribution System	security policy and networking information
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credential revocations
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credentials
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security policy and networking information
Cooperative ITS Credentials Management System	Service Monitor System	security credential revocations
Cooperative ITS Credentials Management System	Service Monitor System	security credentials
Cooperative ITS Credentials Management System	Service Monitor System	security policy and networking information
Cooperative ITS Credentials Management System	Wide Area Information Disseminator	security credential revocations
Cooperative ITS Credentials Management System	Wide Area Information Disseminator	security credentials
Cooperative ITS Credentials 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
Object Registration and Discovery Service	Cooperative ITS Credentials Management System	device enrollment information
Object Registration and Discovery Service	Cooperative ITS Credentials Management System	misbehavior report
Service Monitor System	Cooperative ITS Credentials Management System	device enrollment information
Service Monitor System	Cooperative ITS Credentials Management System	misbehavior report
Wide Area Information Disseminator	Cooperative ITS Credentials Management System	device enrollment information
Wide Area Information Disseminator	Cooperative ITS Credentials Management System	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 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
Alternate Mode Transportation Center	Transportation Information Center	alternate mode incident information
Alternate Mode Transportation Center	Transportation Information Center	alternate mode information
Alternate Mode Transportation Center	Transportation Information Center	alternate mode service demand info
Alternate Mode Transportation Center	Transportation Information Center	service request
Authorizing Center	Center	permission request received
Authorizing Center	Cooperative ITS Credentials Management System	user permission sets
Authorizing Center	Other Authorizing Centers	permission request coordination
Center	Authorizing Center	permission request
Center	Authorizing Center	permission update request
Center	Connected Vehicle Roadside Equipment	RSE application install/upgrade
Center	Cooperative ITS Credentials Management System	device enrollment information
Center	Cooperative ITS Credentials Management System	misbehavior report
Connected Vehicle Roadside Equipment	Center	protected location and address flow
Connected Vehicle Roadside Equipment	Cooperative ITS Credentials Management System	device enrollment information
Connected Vehicle Roadside Equipment	Cooperative ITS Credentials Management System	misbehavior report
Connected Vehicle Roadside Equipment	Cooperative ITS Credentials Management System	protected location and address flow
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE application install/upgrade
Connected Vehicle Roadside Equipment	Payment Administration Center	access violation notification
Connected Vehicle Roadside Equipment	Payment Administration Center	road use history
Cooperative ITS Credentials Management System	Center	security credential revocations
Cooperative ITS Credentials Management System	Center	security credentials
Cooperative ITS Credentials Management System	Center	security policy and networking information
Cooperative ITS Credentials Management System	Connected Vehicle Roadside Equipment	security credential revocations
Cooperative ITS Credentials Management System	Connected Vehicle Roadside Equipment	security credentials
Cooperative ITS Credentials Management System	Connected Vehicle Roadside Equipment	security policy and networking information
Cooperative ITS Credentials Management System	Data Distribution System	security credential revocations
Cooperative ITS Credentials Management System	Data Distribution System	security credentials
Cooperative ITS Credentials Management System	Data Distribution System	security policy and networking information
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credential revocations
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credentials

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

Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security policy and networking information
Cooperative ITS Credentials Management System	Other CCMS	authorization coordination
Cooperative ITS Credentials Management System	Other CCMS	enrollment coordination
Cooperative ITS Credentials Management System	Other CCMS	misbehavior analysis coordination
Cooperative ITS Credentials Management System	Other CCMS	revocation coordination
Cooperative ITS Credentials Management System	Service Monitor System	security credential revocations
Cooperative ITS Credentials Management System	Service Monitor System	security credentials
Cooperative ITS Credentials Management System	Service Monitor System	security policy and networking information
Cooperative ITS Credentials Management System	Wide Area Information Disseminator	security credential revocations
Cooperative ITS Credentials Management System	Wide Area Information Disseminator	security credentials
Cooperative ITS Credentials 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 Center	Payment Administration Center	low emissions zone coordination
Emissions Management Center	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 Discovery Service	Cooperative ITS Credentials Management System	device enrollment information
Object Registration and Discovery 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 Center	Connected Vehicle Roadside Equipment	road use charges
Payment Administration Center	Connected Vehicle Roadside Equipment	vehicle payment request
Payment Administration Center	DMV	license request
Payment Administration Center	Emissions Management Center	low emissions zone coordination
Payment Administration Center	Enforcement Center	payment violation notification
Payment Administration Center	Parking Management System	vehicle payment request
Payment Administration Center	Public Information Device	traveler payment request
Payment Administration Center	Public Information Device	user account reports
Privacy Protection Gateway	Center	protected location and address flow
Privacy Protection Gateway	Cooperative ITS Credentials Management System	protected location and address flow

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

Public Information Device	Payment Administration Center	user account setup
Public Information Device	Transit Management Center	transit information user request
Service Monitor System	Cooperative ITS Credentials Management System	device enrollment information
Service Monitor System	Cooperative ITS Credentials Management System	misbehavior report
Wide Area Information Disseminator	Cooperative ITS Credentials Management System	device enrollment information
Wide Area Information Disseminator	Cooperative ITS Credentials Management System	misbehavior report

Solution Name:	(None-Data) - Guaranteed Internet (X.509)	Number of Issues:	1	Total Issue Severity:	32

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 (X.509). The (None-Data) standards include an unspecified set of standards at the upper layers. The I-I: Guaranteed Internet (X.509) standards include lower-layer standards that support secure communications with guaranteed delivery between ITS equipment using mainstream Internet security standards (X.509).

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

Source	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 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

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

Source	Destination	Flow Name
Authorizing Center	Other Authorizing Centers	permission request coordination
Other Authorizing Centers	Authorizing 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

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

Source	Destination	Flow Name
Authorizing Center	Center	permission request received
Center	Authorizing Center	permission request
Center	Authorizing Center	permission update request

Solution Name:	(None-Data) - Guaranteed Internet (X.509)	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	C-C: Equipment maintenance coordination	Develop an internationally acceptable ITS application specification for C-C exchange of equipment maintenance and status information	Near-term	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
Service Monitor System	Center	RSE fault data
Service Monitor System	Maint and Constr Management Center	RSE fault data

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 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

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

Source	Destination	Flow Name
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credential revocations
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credentials
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security policy and networking information
Object Registration and Discovery Service	Cooperative ITS Credentials Management System	device enrollment information
Object Registration and Discovery Service	Cooperative ITS Credentials Management System	misbehavior report

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

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	Center	protected location and address flow
Privacy Protection Gateway	Center	protected location and address flow

Solution Name:	(None-Data) - Guaranteed Internet (X.509)	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	Object registration and discovery	Investigate mechanisms to register and discover objects within the ITS network.	Near-term	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
Center	Object Registration and Discovery Service	object registration
Connected Vehicle Roadside Equipment	Object Registration and Discovery Service	object registration
Data Distribution System	Object Registration and Discovery Service	object registration
Object Registration and Discovery Service	Center	object discovery
Object Registration and Discovery Service	Connected Vehicle Roadside Equipment	object discovery
Object Registration and Discovery Service	Data Distribution System	object discovery
Object Registration and Discovery Service	Wide Area Information Disseminator	object discovery
Wide Area Information Disseminator	Object Registration and Discovery Service	object registration

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	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 this Issue that would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Center	Connected Vehicle Roadside Equipment	RSE application install/upgrade
Connected Vehicle Roadside Equipment	Field Support Equipment	RSE application install/upgrade
Field Support Equipment	Connected Vehicle Roadside Equipment	RSE application install/upgrade

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: 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

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

Source	Destination	Flow Name
Data Distribution System	Connected Vehicle Roadside Equipment	situation data collection parameters

Solution Name:	(None-Data) - Guaranteed Internet (X.509)	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 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 Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Map Update System	Public 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 management systems that are interoperable.	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
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credential revocations
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security credentials
Cooperative ITS Credentials Management System	Object Registration and Discovery Service	security policy and networking information
Object Registration and Discovery Service	Cooperative ITS Credentials Management System	device enrollment information
Object Registration and Discovery Service	Cooperative ITS Credentials Management System	misbehavior report

Solution Name:	(None-Data) - Guaranteed Mobile Internet (X.509)	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-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 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
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

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

Source	Destination	Flow Name
Object Registration and Discovery Service	Personal Information Device	object discovery
Object Registration and Discovery Service	Vehicle 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

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

Source	Destination	Flow Name
Emergency Management Center	Emergency Vehicle OBE	green wave information

Solution Name:	(None-Data) - Guaranteed Mobile Internet (X.509)	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

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

Source	Destination	Flow Name
Care Facility	Emergency Vehicle OBE	care facility status
Care Facility	Emergency Vehicle OBE	medical records
Emergency Management Center	Emergency Vehicle OBE	green wave information
Emergency Vehicle OBE	Care Facility	care facility status request
Emergency Vehicle OBE	Care Facility	medical records request
Object Registration and Discovery Service	Personal Information Device	object discovery
Object Registration and Discovery Service	Vehicle OBE	object discovery

Solution Name:	(None-Data) - Internet (X.509)	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: Internet (X.509). The (None-Data) standards include an unspecified set of standards at the upper layers. The I-I: Internet (X.509) standards include lower-layer standards that support secure communications between ITS equipment using mainstream Internet security standards (X.509).

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

Source	Destination	Flow Name
Wide Area Information Disseminator	Service Monitor System	support system status

Solution Name:	(None-Data) - Internet (X.509)	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	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	Flow Name
Center	Map Update System	map update notification
Maint and Constr Management Center	Map Update System	current infrastructure restrictions
Map Update System	Center	intersection geometry
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 Map Update Systems	Map Update System	map update coordination
Parking Management System	Map Update System	parking facility geometry
Traffic Management Center	Map Update System	map update notification

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 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

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

Source	Destination	Flow Name
Transportation Information Center	Wide Area Information Disseminator	traffic-related regulations

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 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

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	Map Update System	vehicle location data for mapping

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: 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	Flow Name
Map Update System	Center	intersection geometry

Solution Name:	(None-Data) - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total Issue Severity:	44

Solution Name:	(None-Data) - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total Issue Severity:	44

This solution is used within the E.U., and Australia. It combines standards associated with (None-Data) with those for V-X: Local Broadcast Wireless (AU/EU). The (None-Data) standards include an unspecified set of standards at the upper layers. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	Personal Information Device	location correction
Connected Vehicle Roadside Equipment	Vehicle OBE	arriving train information
Connected Vehicle Roadside Equipment	Vehicle OBE	driver display conflict warning
Connected Vehicle Roadside Equipment	Vehicle OBE	local traveler information
Connected Vehicle Roadside Equipment	Vehicle OBE	location correction
Connected Vehicle Roadside Equipment	Vehicle OBE	map updates
Connected Vehicle Roadside Equipment	Vehicle OBE	parking facility geometry
Connected Vehicle Roadside Equipment	Vehicle OBE	rail crossing warning
Connected Vehicle Roadside Equipment	Vehicle OBE	roadway geometry
ITS Roadway Equipment	Maint and Constr Vehicle OBE	roadway advisory radio status
ITS Roadway Equipment	Maint and Constr Vehicle OBE	roadway dynamic signage status
ITS Roadway Equipment	Maint and Constr Vehicle OBE	traffic detector data
ITS Roadway Equipment	Maint and Constr Vehicle OBE	traffic images
Maint and Constr Vehicle OBE	ITS Roadway Equipment	roadway advisory radio data
Maint and Constr Vehicle OBE	ITS Roadway Equipment	roadway dynamic signage data
Maint and Constr Vehicle OBE	ITS Roadway Equipment	traffic detector control
Maint and Constr Vehicle OBE	ITS Roadway Equipment	video surveillance control
Other Vehicle OBEs	Vehicle OBE	vehicle headlight dim request
Other Vehicle OBEs	Vehicle OBE	vehicle road information
Other Vehicle OBEs	Vehicle OBE	vehicle travel time data
Personal Information Device	Connected Vehicle Roadside Equipment	private location and address flow
Vehicle OBE	Connected Vehicle Roadside Equipment	driver display conflict warning
Vehicle OBE	Connected Vehicle Roadside Equipment	driver display snapshots
Vehicle OBE	Connected Vehicle Roadside Equipment	private location and address flow
Vehicle OBE	Connected Vehicle Roadside Equipment	service response
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle profile
Vehicle OBE	Other Vehicle OBEs	vehicle headlight dim request

Solution Name:	(None-Data) - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total 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	V-L: Vehicle headlight dimming	Develop an ITS application specification for a vehicle to request another vehicle to dim its headlights. NOTE: This analysis should consider whether this information flow is still needed or whether existing market products adequately address this issue.	Urgent	European Union

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	vehicle headlight dim request
Vehicle OBE	Other Vehicle OBEs	vehicle headlight dim 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: 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 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	roadway dynamic signage status
Maint and Constr Vehicle OBE	ITS Roadway Equipment	roadway dynamic signage data

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

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	roadway advisory radio status
Maint and Constr Vehicle OBE	ITS Roadway Equipment	roadway advisory radio data

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: 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

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	map updates
Connected Vehicle Roadside Equipment	Vehicle OBE	parking facility geometry
Connected Vehicle Roadside Equipment	Vehicle OBE	roadway geometry

Solution Name:	(None-Data) - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total 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	V-L: Driver display conflicts	Develop an ITS application specification for identifying that a vehicle is displaying the incorrect information to a driver and alerting appropriate entities.	Near-term	Australia, European Union

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	driver display conflict warning
Vehicle OBE	Connected Vehicle Roadside Equipment	driver display conflict warning
Vehicle OBE	Connected Vehicle Roadside Equipment	driver display snapshots

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

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

Source	Destination	Flow Name
Personal Information Device	Connected Vehicle Roadside Equipment	private location and address flow
Vehicle OBE	Connected Vehicle Roadside Equipment	private location and address flow

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: Transportation sensor systems	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 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

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	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 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	location correction
Connected Vehicle Roadside Equipment	Vehicle OBE	location correction

Solution Name:	(None-Data) - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total 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	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

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
Maint and Constr Vehicle OBE	ITS Roadway Equipment	video surveillance 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	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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	vehicle road information

Solution Name:	(None-Data) - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total Issue Severity:	44

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
Connected Vehicle Roadside Equipment	Personal Information Device	local traveler information
Connected Vehicle Roadside Equipment	Personal Information Device	location correction
Connected Vehicle Roadside Equipment	Vehicle OBE	arriving train information
Connected Vehicle Roadside Equipment	Vehicle OBE	driver display conflict warning
Connected Vehicle Roadside Equipment	Vehicle OBE	local traveler information
Connected Vehicle Roadside Equipment	Vehicle OBE	location correction
Connected Vehicle Roadside Equipment	Vehicle OBE	map updates
Connected Vehicle Roadside Equipment	Vehicle OBE	parking facility geometry
Connected Vehicle Roadside Equipment	Vehicle OBE	rail crossing warning
Connected Vehicle Roadside Equipment	Vehicle OBE	roadway geometry
ITS Roadway Equipment	Maint and Constr Vehicle OBE	roadway advisory radio status
ITS Roadway Equipment	Maint and Constr Vehicle OBE	roadway dynamic signage status
ITS Roadway Equipment	Maint and Constr Vehicle OBE	traffic detector data
ITS Roadway Equipment	Maint and Constr Vehicle OBE	traffic images
Maint and Constr Vehicle OBE	ITS Roadway Equipment	roadway advisory radio data
Maint and Constr Vehicle OBE	ITS Roadway Equipment	roadway dynamic signage data
Maint and Constr Vehicle OBE	ITS Roadway Equipment	traffic detector control
Maint and Constr Vehicle OBE	ITS Roadway Equipment	video surveillance control
Other Vehicle OBEs	Vehicle OBE	vehicle headlight dim request
Other Vehicle OBEs	Vehicle OBE	vehicle road information
Other Vehicle OBEs	Vehicle OBE	vehicle travel time data
Personal Information Device	Connected Vehicle Roadside Equipment	private location and address flow
Vehicle OBE	Connected Vehicle Roadside Equipment	driver display conflict warning
Vehicle OBE	Connected Vehicle Roadside Equipment	driver display snapshots
Vehicle OBE	Connected Vehicle Roadside Equipment	private location and address flow
Vehicle OBE	Connected Vehicle Roadside Equipment	service response
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle profile
Vehicle OBE	Other Vehicle OBEs	vehicle headlight dim request

Solution Name:	(None-Data) - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total Issue Severity:	44

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	Personal Information Device	location correction
Connected Vehicle Roadside Equipment	Vehicle OBE	arriving train information
Connected Vehicle Roadside Equipment	Vehicle OBE	driver display conflict warning
Connected Vehicle Roadside Equipment	Vehicle OBE	local traveler information
Connected Vehicle Roadside Equipment	Vehicle OBE	location correction
Connected Vehicle Roadside Equipment	Vehicle OBE	map updates
Connected Vehicle Roadside Equipment	Vehicle OBE	parking facility geometry
Connected Vehicle Roadside Equipment	Vehicle OBE	rail crossing warning
Connected Vehicle Roadside Equipment	Vehicle OBE	roadway geometry
ITS Roadway Equipment	Maint and Constr Vehicle OBE	roadway advisory radio status
ITS Roadway Equipment	Maint and Constr Vehicle OBE	roadway dynamic signage status
ITS Roadway Equipment	Maint and Constr Vehicle OBE	traffic detector data
ITS Roadway Equipment	Maint and Constr Vehicle OBE	traffic images
Maint and Constr Vehicle OBE	ITS Roadway Equipment	roadway advisory radio data
Maint and Constr Vehicle OBE	ITS Roadway Equipment	roadway dynamic signage data
Maint and Constr Vehicle OBE	ITS Roadway Equipment	traffic detector control
Maint and Constr Vehicle OBE	ITS Roadway Equipment	video surveillance control
Other Vehicle OBEs	Vehicle OBE	vehicle headlight dim request
Other Vehicle OBEs	Vehicle OBE	vehicle road information
Other Vehicle OBEs	Vehicle OBE	vehicle travel time data
Personal Information Device	Connected Vehicle Roadside Equipment	private location and address flow
Vehicle OBE	Connected Vehicle Roadside Equipment	driver display conflict warning
Vehicle OBE	Connected Vehicle Roadside Equipment	driver display snapshots
Vehicle OBE	Connected Vehicle Roadside Equipment	private location and address flow
Vehicle OBE	Connected Vehicle Roadside Equipment	service response
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle profile
Vehicle OBE	Other Vehicle OBEs	vehicle headlight dim request

Solution Name:	(None-Data) - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total 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	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 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	location correction
Connected Vehicle Roadside Equipment	Vehicle OBE	location correction

Solution Name:	(None-Data) - Mobile Internet (X.509)	Number of Issues:	4	Total Issue Severity:	46

This solution is used within the U.S., E.U., and Australia. It combines standards associated with (None-Data) with those for I-M: Mobile Internet (X.509). The (None-Data) standards include an unspecified set of standards at the upper layers. The I-M: Mobile Internet (X.509) 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 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
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

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

Source	Destination	Flow Name
Personal Information Device	Center	device identification
Vehicle OBE	Center	device identification

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

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

Source	Destination	Flow Name
Center	Personal Information Device	permission application receipt
Personal Information Device	Center	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	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

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

Source	Destination	Flow Name
Transportation Information Center	Vehicle OBE	road weather advisories

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
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

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

Source	Destination	Flow Name
Personal Information Device	Privacy Protection Gateway	private location and address flow
Vehicle OBE	Privacy Protection Gateway	private location and address flow

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

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Emergency Management Center	emergency vehicle tracking data
Personal Information Device	Service Monitor System	PID status
Vehicle OBE	Service Monitor System	OBE 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-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

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

Source	Destination	Flow Name
Emergency Management Center	Emergency Vehicle OBE	green wave information
Emergency Vehicle OBE	Emergency Management Center	green wave 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-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

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	Vehicle OBE	intersection status

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
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

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	Personal Information Device	map updates
Map Update System	Vehicle OBE	map updates
Map Update System	Vehicle OBE	parking facility geometry
Map Update System	Vehicle OBE	roadway geometry
Traffic Management Center	Vehicle OBE	vehicle road 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 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

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	Vehicle OBE	automated lane control data

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 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

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

Source	Destination	Flow Name
Transportation Information Center	Personal Information Device	traffic-related regulations
Transportation Information Center	Vehicle OBE	traffic-related regulations

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: Work zone status	Develop an ITS application specification for a maintenance and construction vehicle to report and update the status of a work zone to a centre.	Near-term	Australia, European Union

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

Source	Destination	Flow Name
Maint and Constr Vehicle OBE	Maint and Constr Management Center	work zone status

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
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 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

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

Source	Destination	Flow Name
Vehicle OBE	Map Update System	vehicle location and motion for mapping

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: 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

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	Transit Vehicle OBE	transit schedule information
Transit Vehicle OBE	Transit Management Center	transit vehicle schedule performance

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: 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	Data Distribution System	vehicle situation data

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined (high)	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

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Emergency Management Center	emergency vehicle tracking data

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: 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

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Emergency Management Center	emergency vehicle tracking data

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
Performance not fully defined (medium)	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

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	Vehicle OBE	intersection status

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: 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

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

Source	Destination	Flow Name
Vehicle OBE	Map Update System	vehicle location and motion for mapping

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

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

Source	Destination	Flow Name
Personal Information Device	Center	device identification
Vehicle OBE	Center	device identification

Solution Name:	(None-Data) - NTCIP Messaging	Number of Issues:	5	Total Issue Severity:	49

This solution is used within the U.S. and Australia. It combines standards associated with (None-Data) with those for C-C: NTCIP Messaging. The (None-Data) standards include an unspecified set of standards at the upper layers. 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
Archived Data Center	Archived Data User Systems	archive analysis results
Archived Data Center	Archived Data User Systems	archive request confirmation
Archived Data Center	Archived Data User Systems	archived data products

Solution Name:	(None-Data) - NTCIP Messaging	Number of Issues:	5	Total Issue Severity:	49

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 Center	Border Inspection System	consolidated agency response
Border Inspection Administration Center	Border Inspection System	manifest data
Border Inspection Administration Center	Border Inspection System	traveler personal information
Border Inspection Administration Center	Fleet and Freight Management Center	clearance notification
Border Inspection Administration Center	Freight Distribution and Logistics Center	clearance notification
Border Inspection Administration Center	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
Commercial Vehicle Administration Center	Commercial Vehicle Check Equipment	credentials information
Commercial Vehicle Administration Center	Commercial Vehicle Check Equipment	credentials status information
Commercial Vehicle Administration Center	Commercial Vehicle Check Equipment	cv driver record
Commercial Vehicle Administration Center	Commercial Vehicle Check Equipment	safety status information
Commercial Vehicle Administration Center	Commercial Vehicle Check Equipment	targeted list
Commercial Vehicle Administration Center	Commercial Vehicle Check Equipment	transportation border clearance assessment
Commercial Vehicle Administration Center	Commercial Vehicle OBE Service Provider	commercial vehicle permit information

Solution Name:	(None-Data) - NTCIP Messaging	Number of Issues:	5	Total Issue Severity:	49

Commercial Vehicle Administration Center	CVO Information Requestor Center	carrier participation report
Commercial Vehicle Administration Center	CVO Information Requestor Center	credentials information
Commercial Vehicle Administration Center	CVO Information Requestor Center	credentials status information
Commercial Vehicle Administration Center	CVO Information Requestor Center	cv driver record
Commercial Vehicle Administration Center	CVO Information Requestor Center	safety status information
Commercial Vehicle Administration Center	Fleet and Freight Management Center	border clearance status
Commercial Vehicle Administration Center	Fleet and Freight Management Center	citation
Commercial Vehicle Administration Center	Fleet and Freight Management Center	compliance review report
Commercial Vehicle Administration Center	Fleet and Freight Management Center	credentials information
Commercial Vehicle Administration Center	Fleet and Freight Management Center	credentials status information
Commercial Vehicle Administration Center	Fleet and Freight Management Center	cv driver record
Commercial Vehicle Administration Center	Fleet and Freight Management Center	safety status information
Commercial Vehicle Administration Center	Fleet and Freight Management Center	trigger area
Commercial Vehicle Administration Center	Fleet and Freight Management Center	trigger area notification
Commercial Vehicle Administration Center	Intermodal Customer System	border clearance status
Commercial Vehicle Administration Center	Other CV Administration Centers	accident report
Commercial Vehicle Administration Center	Other CV Administration Centers	citation
Commercial Vehicle Administration Center	Other CV Administration Centers	commercial vehicle permit information
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	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
Commercial Vehicle OBE Service Provider	Commercial Vehicle Administration Center	commercial vehicle permit information
Connected Vehicle Roadside Equipment	Intermodal Terminal	container identification
Connected Vehicle Roadside Equipment	Intermodal Terminal	container location
Connected Vehicle Roadside Equipment	Intermodal Terminal	container transfer location request

Solution Name:	(None-Data) - NTCIP Messaging	Number of Issues:	5	Total Issue Severity:	49

CVO Information Requestor Center	Commercial Vehicle Administration Center	request for data review
Data Distribution System	Center	operational data
Data Distribution System	Center	regional situation data
Data Distribution System	Other Data Distribution Systems	field situation data sharing
Data Distribution System	Other Data Distribution Systems	traveler situation data sharing
Data Distribution System	Other Data Distribution Systems	vehicle situation data sharing
Data Distribution System	Service Monitor System	service maintenance request
Data Distribution System	Service Monitor System	support system status
Emergency Management Center	Other Emergency Management Centers	evacuation coordination
Emergency Management Center	Public Health System	public health request
Emergency Management Center	Traffic Management Center	emergency traffic control request
Emergency Management Center	Traffic Management Center	special vehicle restricted use information
Emergency Management Center	Transportation Information Center	incident information
Emergency Management Center	Transportation Information Center	transportation system status
Emissions Management Center	Traffic Management Center	low emissions zone coordination
Emissions Management Center	Traffic Management Center	low emissions zone operations information
Emissions Management Center	Traffic Management Center	mobile source emissions data
Emissions Management Center	Traffic Management Center	widearea statistical pollution information
Emissions Management Center	Transit Management Center	low emissions zone coordination
Emissions Management Center	Transit Management Center	low emissions zone operations information
Emissions Management Center	Transportation Information Center	air quality information
Emissions Management Center	Transportation Information Center	low emissions zone operations information
Enforcement Center	Commercial Vehicle Check Equipment	information on violators
Event Promoters	Parking Management System	event plans
Fleet and Freight Management Center	Border Inspection Administration Center	manifest data
Fleet and Freight Management Center	Commercial Vehicle Administration Center	audit data
Fleet and Freight Management Center	Commercial Vehicle Administration Center	credential application
Fleet and Freight Management Center	Commercial Vehicle Administration Center	on-board safety data
Fleet and Freight Management Center	Commercial Vehicle Administration Center	request for permit
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 Management Center	Emergency Management Center	commercial vehicle incident notification
Fleet and Freight Management Center	Freight Distribution and Logistics Center	available truck capacity
Fleet and Freight Management Center	Freight Distribution and Logistics Center	load appointment status
Fleet and Freight Management Center	Intermodal Customer System	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	freight transportation status
Fleet and Freight Management Center	Intermodal Terminal	terminal reservation request
Fleet and Freight Management Center	Transportation Information Center	commercial vehicle trip information
Fleet and Freight Management Center	Transportation Information Center	freight traveler information preferences
Fleet and Freight Management Center	Transportation Information Center	route request
Freight Consolidation Station	Fleet and Freight Management Center	container pickup request
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	Connected Vehicle Roadside Equipment	container transfer location
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	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	Center	equipment maintenance 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	Map Update System	current infrastructure restrictions
Maint and Constr Management Center	Traffic Management Center	special vehicle restricted use information
Maint and Constr Management Center	Traffic Management Center	work zone information

Solution Name:	(None-Data) - NTCIP Messaging	Number of Issues:	5	Total Issue Severity:	49

Maint and Constr Management Center	Transportation Information Center	maint and constr work plans
Maint and Constr Management Center	Transportation Information Center	roadway maintenance status
Maint and Constr Management Center	Transportation Information Center	work zone information
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 Authorizing Centers	Authorizing Center	permission request coordination
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
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
Other Parking Management Systems	Parking Management System	parking coordination
Other Traffic Management Centers	Traffic Management Center	device data
Other Traffic Management Centers	Traffic Management Center	device status
Other Traffic Management Centers	Traffic Management Center	road network conditions
Other Transportation Information Centers	Transportation Information Center	incident information
Other Transportation Information Centers	Transportation Information Center	multimodal information
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 image meta data
Other Transportation Information Centers	Transportation Information Center	traffic images
Other Transportation Information Centers	Transportation Information Center	transit service information
Parking Management System	Map Update System	parking facility geometry
Parking Management System	Other Parking Management Systems	parking coordination
Parking Management System	Transportation Information Center	parking reservation confirmation

Solution Name:	(None-Data) - NTCIP Messaging	Number of Issues:	5	Total Issue Severity:	49

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	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 Acquisition System	Maint and Constr Management Center	maintenance materials storage status
Surface Transportation Weather Service	Traffic Management 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	low emissions zone coordination
Traffic Management Center	Enforcement Center	lane violation notification
Traffic Management Center	Intermodal Terminal	intermodal freight traffic confirmation
Traffic Management Center	Maint and Constr Management Center	incident information
Traffic Management Center	Maint and Constr Management Center	road network conditions
Traffic Management Center	Map Update System	map update notification
Traffic Management Center	Map Update System	map update notification
Traffic Management Center	Media	traffic information for media
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	road network conditions
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 Management Center	Transit Management Center	traffic control priority status
Traffic Management Center	Transportation Information Center	incident information
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
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

Solution Name:	(None-Data) - NTCIP Messaging	Number of Issues:	5	Total Issue Severity:	49

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	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

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: 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
Traffic Management Center	Transit Management Center	traffic control priority status
Transit Management Center	Traffic Management Center	traffic control priority 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: 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 Triples using this solution and affected by this Issue that would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Center	Service Monitor System	system monitoring
Data Distribution System	Service Monitor System	support system status
Wide Area Information Disseminator	Service Monitor System	support system 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: 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

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

Source	Destination	Flow Name
Transportation Information Center	Traffic Management Center	road network environmental situation data

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, European Union

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

Source	Destination	Flow Name
Emergency Management Center	Traffic Management Center	emergency traffic control request
Traffic Management Center	Emergency Management Center	emergency traffic control 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	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

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

Source	Destination	Flow Name
Authorizing Center	Other Authorizing Centers	permission request coordination
Other Authorizing Centers	Authorizing 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

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

Source	Destination	Flow Name
Authorizing Center	Center	permission request received
Center	Authorizing Center	permission request
Center	Authorizing 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

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

Source	Destination	Flow Name
Surface Transportation Weather Service	Traffic 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

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

Source	Destination	Flow Name
Other Traffic Management Centers	Traffic Management Center	device data
Other Traffic Management Centers	Traffic Management Center	device status
Other Traffic Management Centers	Traffic Management Center	road network conditions
Other Transportation Information Centers	Transportation Information Center	road network conditions
Traffic Management Center	Emergency Management Center	road network conditions
Traffic Management Center	Maint and Constr Management Center	road network conditions
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	road network conditions
Traffic Management Center	Transportation Information Center	road network conditions
Transportation Information Center	Fleet and Freight Management Center	road network conditions
Transportation Information Center	Other Transportation Information Centers	road network conditions

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 incident information	Adopt an existing incident management centre-to-centre data profile for use within the region.	Urgent	Australia

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

Source	Destination	Flow Name
Emergency Management Center	Transportation Information Center	incident information
Maint and Constr Management Center	Traffic Management Center	work zone information
Maint and Constr Management Center	Transportation Information Center	work zone information
Other Transportation Information Centers	Transportation Information Center	incident information
Traffic Management Center	Emergency Management Center	incident information
Traffic Management Center	Maint and Constr Management Center	incident information
Traffic Management Center	Transportation Information Center	incident information
Transportation Information Center	Fleet and Freight Management Center	incident information
Transportation Information Center	Other Transportation Information Centers	incident 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	Credentials management system	Implement regional (security) credentials management systems that are interoperable.	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 OBE Service Provider	security credentials
Security Credentials Registry	Commercial 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	C-C: Equipment maintenance coordination	Develop an internationally acceptable ITS application specification for C-C exchange of equipment maintenance and status information	Near-term	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
Center	Maint and Constr Management Center	equipment maintenance request
Center	Service Monitor System	service maintenance request
Data Distribution System	Service Monitor System	service maintenance request
Maint and Constr Management Center	Center	equipment maintenance status
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
Wide Area Information Disseminator	Service Monitor System	service maintenance 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: 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	Flow Name
Center	Map Update System	map update notification
Maint and Constr Management Center	Map Update System	current infrastructure restrictions
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 Map Update Systems	Map Update System	map update coordination
Parking Management System	Map Update System	parking facility geometry
Traffic Management Center	Map Update System	map update notification

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

Source	Destination	Flow Name
Privacy Protection Gateway	Center	protected location and address flow

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 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

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 OBE Service Provider	security credentials
Security Credentials Registry	Commercial 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

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

Source	Destination	Flow Name
Other Transportation Information Centers	Transportation Information Center	traffic images
Traffic Management Center	Transportation Information Center	traffic images
Transportation Information Center	Other Transportation Information Centers	traffic images

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 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

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

Source	Destination	Flow Name
Traffic Regulatory Authority	Transportation Information Center	traffic-related regulations
Transportation Information Center	Wide Area Information Disseminator	traffic-related regulations

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 not fully defined (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

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

Source	Destination	Flow Name
Transportation Information Center	Traffic Management Center	road network environmental situation data

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

Source	Destination	Flow Name
Emergency Management Center	Transportation Information Center	incident information

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Data not defined (high)	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

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

Source	Destination	Flow Name
Transportation Information Center	Traffic Management Center	road network environmental situation data

Solution Name:	(None-Data) - Wide Area Broadcast (Upper)	Number of Issues:	2	Total Issue Severity:	33

This solution is used within the U.S., E.U., and Australia. It combines standards associated with (None-Data) with those for C-X: Wide Area Broadcast (Upper). The (None-Data) standards include an unspecified set of standards at the upper layers. 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.

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

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

Source	Destination	Flow Name
Transportation Information Center	Personal Information Device	emergency traveler information
Transportation Information Center	Vehicle OBE	emergency traveler information

Solution Name:	(None-Data) - Wide Area Broadcast (Upper)	Number of Issues:	2	Total Issue Severity:	33

Wide Area Information Disseminator	Personal Information Device	traffic-related regulations
Wide Area Information Disseminator	Vehicle OBE	traffic-related regulations

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 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

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

Source	Destination	Flow Name
Wide Area Information Disseminator	Personal Information Device	traffic-related regulations
Wide Area Information Disseminator	Vehicle OBE	traffic-related regulations

Solution Name:	AU TRAFF - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

This solution is used within the Australia. It combines standards associated with AU TRAFF with those for I-F: AU IFCP. The AU TRAFF standards include upper-layer standards for communicating to traffic controllers. The I-F: AU IFCP standards include lower-layer placeholder for an Australian solution identified for development. This may end up being I-F: SNMPv3, but it is currently undefined and just used as a placeholder.

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 would be addressed by the Proposed Resolution

Source	Destination	Flow Name
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	conflict monitor status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	intersection control status
ITS Roadway Equipment	Other ITS Roadway Equipment	signal control data
ITS Roadway Equipment	Traffic Management Center	signal control status
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control data
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 control plans

Solution Name:	AU TRAFF - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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 by this Issue that would be addressed by the Proposed Resolution

Source	Destination	Flow Name
ITS Roadway Equipment	Other ITS Roadway Equipment	signal control data
ITS Roadway Equipment	Traffic Management Center	signal control status
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control data
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 control plans

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: 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	Destination	Flow Name
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	conflict monitor status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	intersection control status
ITS Roadway Equipment	Other ITS Roadway Equipment	signal control data
ITS Roadway Equipment	Traffic Management Center	signal control status
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control data
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 control plans

Solution Name:	AU TRAFF - AU IFCP	Number of Issues:	5	Total Issue Severity:	54

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	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	Destination	Flow Name
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	conflict monitor status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	intersection control status
ITS Roadway Equipment	Other ITS Roadway Equipment	signal control data
ITS Roadway Equipment	Traffic Management Center	signal control status
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control data
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 control plans

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	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	Destination	Flow Name
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	conflict monitor status
ITS Roadway Equipment	Connected Vehicle Roadside Equipment	intersection control status
ITS Roadway Equipment	Other ITS Roadway Equipment	signal control data
ITS Roadway Equipment	Traffic Management Center	signal control status
Other ITS Roadway Equipment	ITS Roadway Equipment	signal control data
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 control plans

Solution Name:	AU TRAFF - AU TRAFF Comms	Number of Issues:	4	Total Issue Severity:	46

This solution is used within the Australia. It combines standards associated with AU TRAFF with those for I-F: AU TRAFF Comms. The AU TRAFF standards include upper-layer standards for communicating to traffic controllers. The I-F: AU TRAFF Comms standards include lower-layer standards that support communication to a traffic controller.

Solution Name:	AU TRAFF - AU TRAFF Comms	Number of Issues:	4	Total Issue Severity:	46

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 would be addressed by the Proposed Resolution

Source	Destination	Flow Name
ITS Roadway Equipment	Traffic Management Center	signal control status
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 control plans

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 by this Issue that would be addressed by the Proposed Resolution

Source	Destination	Flow Name
ITS Roadway Equipment	Traffic Management Center	signal control status
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 control plans

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: 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	Destination	Flow Name
ITS Roadway Equipment	Traffic Management Center	signal control status
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 control plans

Solution Name:	AU TRAFF - AU TRAFF Comms	Number of Issues:	4	Total Issue Severity:	46

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	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	Destination	Flow Name
ITS Roadway Equipment	Traffic Management Center	signal control status
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 control plans

Solution Name:	AU TRAFF - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

This solution is used within the Australia. It combines standards associated with AU TRAFF with those for V-X: BTP/GeoNetworking/G5. The AU TRAFF standards include upper-layer standards for communicating to traffic controllers. The V-X: BTP/GeoNetworking/G5 standards include lower-layer standards that support broadcast, near constant, low latency vehicle-to-vehicle and vehicle-to-infrastructure communications using the ETSI GeoNetworking Bundle over the 5.9GHz spectrum.

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 would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

Solution Name:	AU TRAFF - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

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
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

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: 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	Destination	Flow Name
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

Solution Name:	AU TRAFF - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

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	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	Destination	Flow Name
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Protocol features partly not applicable in the given context	A feature of the protocol is not fully applicable in the given context, e.g. GeoNetworking multi-hop forwarding in 5.9 GHz channels.	Low	V-L: GeoNetworking	Determine how to implement GeoNetworking without unduly flooding the network and, if feasible, prove out concept.	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
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

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	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

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	ITS Roadway Equipment	intersection status monitoring

Solution Name:	AU TRAFF - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

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	V-L: EU signal operations	Develop an ITS application specification for providing intersection status information to vehicles from the roadside.	Urgent	Australia, European Union

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	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

Solution Name:	AU TRAFF - FNTP/M5	Number of Issues:	6	Total Issue Severity:	23

This solution is used within the Australia. It combines standards associated with AU TRAFF with those for V-X: FNTP/M5. The AU TRAFF standards include upper-layer standards for communicating to traffic controllers. The V-X: FNTP/M5 standards include lower-layer standards that support connectionless, broadcast and unicast, near constant, ultra-low latency vehicle-to-any communications within ~300m using Fast Network Transport Profile (FNTP) over the 5 GHz spectrum as allocated within a region. The broadcast mode is interoperable with WAVE WSMP. The M5 radio of this profile can receive ITS G5 frames.

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 would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

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
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

Solution Name:	AU TRAFF - FNTP/M5	Number of Issues:	6	Total Issue Severity:	23

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: 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	Destination	Flow Name
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

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	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	Destination	Flow Name
Connected Vehicle Roadside Equipment	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	ITS Roadway Equipment	intersection status monitoring
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

Solution Name:	AU TRAFF - FNTP/M5	Number of Issues:	6	Total Issue Severity:	23

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	V-L: EU signal operations	Develop an ITS application specification for providing intersection status information to vehicles from the roadside.	Urgent	Australia, European Union

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	Commercial Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Emergency Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Transit Vehicle OBE	intersection status
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection status

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	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

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	ITS Roadway Equipment	intersection status monitoring

Solution Name:	AU TRAFF - Mobile Internet (X.509)	Number of Issues:	4	Total Issue Severity:	17

This solution is used within the Australia. It combines standards associated with AU TRAFF with those for I-M: Mobile Internet (X.509). The AU TRAFF standards include upper-layer standards for communicating to traffic controllers. The I-M: Mobile Internet (X.509) 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 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 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 would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Traffic Management Center	Commercial Vehicle OBE	intersection status
Traffic Management Center	Emergency Vehicle OBE	intersection status

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: 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	Destination	Flow Name
Traffic Management Center	Commercial Vehicle OBE	intersection status
Traffic Management Center	Emergency Vehicle OBE	intersection status

Solution Name:	AU TRAFF - Mobile Internet (X.509)	Number of Issues:	4	Total Issue Severity:	17

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	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	Destination	Flow Name
Traffic Management Center	Commercial Vehicle OBE	intersection status
Traffic Management Center	Emergency Vehicle OBE	intersection status

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: 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

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	Emergency Vehicle OBE	intersection status

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: Signal operations	Develop an ITS application specification for providing intersection status information to vehicles from a centre for environmental benefits.	Urgent	Australia, European Union

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	Commercial Vehicle OBE	intersection status

Solution Name:	DMS and RWIS data - AU IFCP	Number of Issues:	3	Total Issue Severity:	48

This solution is used within the Australia. It combines standards associated with DMS and RWIS data with those for I-F: AU IFCP. The DMS and RWIS data standards include lower-layer standards that define messages, monitoring and control of DMS and RWIS using SA TS 5719. The I-F: AU IFCP standards include lower-layer placeholder for an Australian solution identified for development. This may end up being I-F: SNMPv3, but it is currently undefined and just used as a placeholder.

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 would be addressed by the Proposed Resolution

Source	Destination	Flow Name
ITS Roadway Equipment	Maint and Constr Management Center	roadway dynamic signage status
ITS Roadway Equipment	Traffic Management Center	environmental sensor data
ITS Roadway Equipment	Traffic Management Center	roadway dynamic signage status
ITS Roadway Equipment	Traffic Management Center	variable speed limit status
Maint and Constr Management Center	ITS Roadway Equipment	roadway dynamic signage data

Solution Name:	DMS and RWIS data - AU IFCP	Number of Issues:	3	Total Issue Severity:	48

Traffic Management Center	ITS Roadway Equipment	environmental sensors control
Traffic Management Center	ITS Roadway Equipment	roadway dynamic signage data
Traffic Management 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, 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	variable speed limit status
Traffic Management Center	ITS Roadway Equipment	variable speed limit control

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	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	Destination	Flow Name
ITS Roadway Equipment	Maint and Constr Management Center	roadway dynamic signage status
ITS Roadway Equipment	Traffic Management Center	environmental sensor data
ITS Roadway Equipment	Traffic Management Center	roadway dynamic signage 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	environmental sensors control
Traffic Management Center	ITS Roadway Equipment	roadway dynamic signage data
Traffic Management Center	ITS Roadway Equipment	variable speed limit control

Solution Name:	DMS and RWIS data - DMS and RWIS comms	Number of Issues:	1	Total Issue Severity:	32

This solution is used within the Australia. It combines standards associated with DMS and RWIS data with those for I-F: DMS and RWIS comms. The DMS and RWIS data standards include lower-layer standards that define messages, monitoring and control of DMS and RWIS using SA TS 5719. The I-F: DMS and RWIS comms standards include lower-layer standards that support communications for DMS and RWIS using SA TS 7519 via IP.

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, 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	variable speed limit status
Traffic Management Center	ITS Roadway Equipment	variable speed limit control

Solution Name:	EU: CA Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

Solution Name:	EU: CA Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

This solution is used within the E.U., and Australia. It combines standards associated with EU: CA Service with those for V-X: BTP/GeoNetworking/G5. The EU: CA Service standards include upper-layer standards required to implement V2x safety situation awareness information flows. The V-X: BTP/GeoNetworking/G5 standards include lower-layer standards that support broadcast, near constant, low latency vehicle-to-vehicle and vehicle-to-infrastructure communications using the ETSI GeoNetworking Bundle over the 5.9GHz spectrum.

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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Connected Vehicle Roadside Equipment	vehicle location and motion
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle location and motion
Other Vehicle OBEs	Vehicle OBE	vehicle location and motion
Transit Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle ID
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion
Vehicle OBE	Personal Information Device	vehicle location and motion

Solution Name:	EU: CA Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

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
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Connected Vehicle Roadside Equipment	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	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle ID
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion
Vehicle OBE	Personal Information Device	vehicle location and motion

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	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

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Other Vehicle OBEs	Vehicle OBE	vehicle location and motion
Transit Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion

Solution Name:	EU: CA Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

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-L: CAM and DENM	Standardise on a single solution for providing vehicle event information; currently this information can be transmitted using CAM or DENM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle control event

Solution Name:	EU: CA Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Connected Vehicle Roadside Equipment	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	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle ID
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion
Vehicle OBE	Personal Information Device	vehicle location and motion

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-L: CAM and SRM	Standardise on a single solution for requesting signal priority; currently this request can be transmitted using CAM or SRM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request

Solution Name:	EU: CA Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use case not considered in design (critical)	While the indicated standards nominally address the information flow, the design details may not meet performance or other requirements because this particular use case was not the focus of the design effort.	High	V-L: Special vehicle alert	Develop an internationally acceptable ITS application specification for sending special vehicle alerts.	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 OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Protocol features partly not applicable in the given context	A feature of the protocol is not fully applicable in the given context, e.g. GeoNetworking multi-hop forwarding in 5.9 GHz channels.	Low	V-L: GeoNetworking	Determine how to implement GeoNetworking without unduly flooding the network and, if feasible, prove out concept.	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 OBE	Connected Vehicle Roadside Equipment	local signal priority request
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Connected Vehicle Roadside Equipment	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	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle ID
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion
Vehicle OBE	Personal Information Device	vehicle location and motion

Solution Name:	EU: CA Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

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	V-L: EU signal priority	Develop an ITS application specification for a traffic signal to provide pre-emption or priority to authorised vehicles.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request

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	V-L: Special vehicle alert	Develop an internationally acceptable ITS application specification for sending special vehicle alerts.	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 OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert

Solution Name:	EU: CA Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	27

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: CAM	Develop an internationally acceptable ITS application specification for CAM for each use case where it applies and when the CAM should include optional fields for each condition.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Connected Vehicle Roadside Equipment	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	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle ID
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion
Vehicle OBE	Personal Information Device	vehicle location and motion

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 signal to provide pre-emption or priority to authorised vehicles.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request

Solution Name:	EU: CA Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	23

This solution is used within the E.U., and Australia. It combines standards associated with EU: CA Service with those for V-X: FNTP/M5. The EU: CA Service standards include upper-layer standards required to implement V2x safety situation

Solution Name:	EU: CA Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	23

awareness information flows. The V-X: FNTP/M5 standards include lower-layer standards that support connectionless, broadcast and unicast, near constant, ultra-low latency vehicle-to-any communications within ~300m using Fast Network Transport Profile (FNTP) over the 5 GHz spectrum as allocated within a region. The broadcast mode is interoperable with WAVE WSMP. The M5 radio of this profile can receive ITS G5 frames.

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
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Connected Vehicle Roadside Equipment	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	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle ID
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion
Vehicle OBE	Personal Information Device	vehicle location and motion

Solution Name:	EU: CA Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	23

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	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

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Other Vehicle OBEs	Vehicle OBE	vehicle location and motion
Transit Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion

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-L: CAM and DENM	Standardise on a single solution for providing vehicle event information; currently this information can be transmitted using CAM or DENM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle control event

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-L: CAM and SRM	Standardise on a single solution for requesting signal priority; currently this request can be transmitted using CAM or SRM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request

Solution Name:	EU: CA Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	23

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Connected Vehicle Roadside Equipment	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	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle ID
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion
Vehicle OBE	Personal Information Device	vehicle location and motion

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use case not considered in design (critical)	While the indicated standards nominally address the information flow, the design details may not meet performance or other requirements because this particular use case was not the focus of the design effort.	High	V-L: Special vehicle alert	Develop an internationally acceptable ITS application specification for sending special vehicle alerts.	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 OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert

Solution Name:	EU: CA Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	23

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	V-L: Special vehicle alert	Develop an internationally acceptable ITS application specification for sending special vehicle alerts.	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 OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert

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	V-L: EU signal priority	Develop an ITS application specification for a traffic signal to provide pre-emption or priority to authorised vehicles.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request

Solution Name:	EU: CA Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	23

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: CAM	Develop an internationally acceptable ITS application specification for CAM for each use case where it applies and when the CAM should include optional fields for each condition.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	local signal priority request
Commercial Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Connected Vehicle Roadside Equipment	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	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle ID
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle location and motion
Vehicle OBE	Personal Information Device	vehicle location and motion

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 signal to provide pre-emption or priority to authorised vehicles.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request

Solution Name:	EU: CA Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	18

This solution is used within the E.U., and Australia. It combines standards associated with EU: CA Service with those for V-X: Local Broadcast Wireless (AU/EU). The EU: CA Service standards include upper-layer standards required to implement V2x

Solution Name:	EU: CA Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	18

safety situation awareness information flows. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance

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
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance

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	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

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 location and motion for surveillance

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance

Solution Name:	EU: CA Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	18

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-L: CAM and SRM	Standardise on a single solution for requesting signal priority; currently this request can be transmitted using CAM or SRM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request

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	V-L: EU signal priority	Develop an ITS application specification for a traffic signal to provide pre-emption or priority to authorised vehicles.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request

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: CAM	Develop an internationally acceptable ITS application specification for CAM for each use case where it applies and when the CAM should include optional fields for each condition.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle location and motion for surveillance

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 signal to provide pre-emption or priority to authorised vehicles.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Emergency Vehicle OBE	Connected Vehicle Roadside Equipment	local signal preemption request

Solution Name:	EU: CA Service - Mobile Internet (X.509)	Number of Issues:	1	Total Issue Severity:	3

This solution is used within the E.U., and Australia. It combines standards associated with EU: CA Service with those for I-M: Mobile Internet (X.509). The EU: CA Service standards include upper-layer standards required to implement V2x safety situation awareness information flows. The I-M: Mobile Internet (X.509) 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 certificates. A non-mobile (if any) endpoint may connect to the wide-area-wireless service provider using any Intneret connection method.

Solution Name:	EU: CA Service - Mobile Internet (X.509)	Number of Issues:	1	Total Issue Severity:	3

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: CAM	Develop an internationally acceptable ITS application specification for CAM for each use case where it applies and when the CAM should include optional fields for each condition.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Vehicle OBE	Data Distribution System	vehicle situation data

Solution Name:	EU: Contextual Speed Information Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	4	Total Issue Severity:	12

This solution is used within the E.U., and Australia. It combines standards associated with EU: Contextual Speed Information Service with those for V-X: Local Broadcast Wireless (AU/EU). The EU: Contextual Speed Information Service standards include upper-layer standards that support for providing speed information to a vehicle from roadside infrastructure. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	speed management 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

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	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	speed management 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

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	speed management information

Solution Name:	EU: Contextual Speed Information Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	4	Total Issue Severity:	12

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	speed management information

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 vehicle signage data	Develop an ITS application specification for providing vehicle signage data to vehicles over DSRC.	Urgent	Australia, European Union

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	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	speed management information

Solution Name:	EU: Contextual Speed Information Service - Mobile Internet (X.509)	Number of Issues:	2	Total Issue Severity:	6

This solution is used within the E.U., and Australia. It combines standards associated with EU: Contextual Speed Information Service with those for I-M: Mobile Internet (X.509). The EU: Contextual Speed Information Service standards include upper-layer standards that support for providing speed information to a vehicle from roadside infrastructure. The I-M: Mobile Internet (X.509) 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 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
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

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	Vehicle OBE	speed management information

Solution Name:	EU: Contextual Speed Information Service - Mobile Internet (X.509)	Number of Issues:	2	Total Issue Severity:	6

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

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	Vehicle OBE	speed management information

Solution Name:	EU: Data Probe Management - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total Issue Severity:	15

This solution is used within the E.U., and Australia. It combines standards associated with EU: Data Probe Management with those for V-X: Local Broadcast Wireless (AU/EU). The EU: Data Probe Management standards include upper layer standards that define how to manage the reporting of probe data. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	vehicle situation data parameters

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
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle situation data parameters

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	vehicle situation data parameters

Solution Name:	EU: Data Probe Management - Local Broadcast Wireless (AU/EU)	Number of Issues:	5	Total Issue Severity:	15

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: 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
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle situation data parameters

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: 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
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle situation data parameters

Solution Name:	EU: Data Probe Management - Mobile Internet (X.509)	Number of Issues:	2	Total Issue Severity:	6

This solution is used within the E.U., and Australia. It combines standards associated with EU: Data Probe Management with those for I-M: Mobile Internet (X.509). The EU: Data Probe Management standards include upper layer standards that define how to manage the reporting of probe data. The I-M: Mobile Internet (X.509) 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 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
Performance not fully defined (medium)	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

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

Source	Destination	Flow Name
Transportation Information Center	Vehicle OBE	vehicle situation data parameters

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: 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
Transportation Information Center	Vehicle OBE	vehicle situation data parameters

Solution Name:	EU: DEN Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	32

Solution Name:	EU: DEN Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	32

This solution is used within the E.U., and Australia. It combines standards associated with EU: DEN Service with those for V-X: BTP/GeoNetworking/G5. The EU: DEN Service standards include upper-layer standards required to implement V2x decentralized environmental notification information flows. The V-X: BTP/GeoNetworking/G5 standards include lower-layer standards that support broadcast, near constant, low latency vehicle-to-vehicle and vehicle-to-infrastructure communications using the ETSI GeoNetworking Bundle over the 5.9GHz spectrum.

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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Fleet and Freight Management Center	vehicle environmental data
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection safety warning
Connected Vehicle Roadside Equipment	Vehicle OBE	queue warning information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle collision warning
Connected Vehicle Roadside Equipment	Vehicle OBE	wrong way vehicle detected
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Other Vehicle OBEs	Vehicle OBE	vehicle collision warning
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Other Vehicle OBEs	Vehicle OBE	vehicle hazard event
Other Vehicle OBEs	Vehicle OBE	wrong way vehicle detected
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle collision warning
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle hazard event
Vehicle OBE	Other Vehicle OBEs	wrong way vehicle detected

Solution Name:	EU: DEN Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	32

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: CAM and DENM	Standardise on a single solution for providing vehicle event information; currently this information can be transmitted using CAM or DENM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Fleet and Freight Management Center	vehicle environmental data
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data

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
Commercial Vehicle OBE	Fleet and Freight Management Center	vehicle environmental data
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection safety warning
Connected Vehicle Roadside Equipment	Vehicle OBE	queue warning information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle collision warning
Connected Vehicle Roadside Equipment	Vehicle OBE	wrong way vehicle detected
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Other Vehicle OBEs	Vehicle OBE	vehicle collision warning
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Other Vehicle OBEs	Vehicle OBE	vehicle hazard event
Other Vehicle OBEs	Vehicle OBE	wrong way vehicle detected
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle collision warning
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle hazard event
Vehicle OBE	Other Vehicle OBEs	wrong way vehicle detected

Solution Name:	EU: DEN Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	32

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Fleet and Freight Management Center	vehicle environmental data
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection safety warning
Connected Vehicle Roadside Equipment	Vehicle OBE	queue warning information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle collision warning
Connected Vehicle Roadside Equipment	Vehicle OBE	wrong way vehicle detected
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Other Vehicle OBEs	Vehicle OBE	vehicle collision warning
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Other Vehicle OBEs	Vehicle OBE	vehicle hazard event
Other Vehicle OBEs	Vehicle OBE	wrong way vehicle detected
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle collision warning
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle hazard event
Vehicle OBE	Other Vehicle OBEs	wrong way vehicle detected

Solution Name:	EU: DEN Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	32

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-L: CAM and DENM	Standardise on a single solution for providing vehicle event information; currently this information can be transmitted using CAM or DENM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle control event

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use case not considered in design (critical)	While the indicated standards nominally address the information flow, the design details may not meet performance or other requirements because this particular use case was not the focus of the design effort.	High	V-L: Special vehicle alert	Develop an internationally acceptable ITS application specification for sending special vehicle alerts.	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 OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert

Solution Name:	EU: DEN Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	32

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Protocol features partly not applicable in the given context	A feature of the protocol is not fully applicable in the given context, e.g. GeoNetworking multi-hop forwarding in 5.9 GHz channels.	Low	V-L: GeoNetworking	Determine how to implement GeoNetworking without unduly flooding the network and, if feasible, prove out concept.	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 OBE	Fleet and Freight Management Center	vehicle environmental data
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection safety warning
Connected Vehicle Roadside Equipment	Vehicle OBE	queue warning information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle collision warning
Connected Vehicle Roadside Equipment	Vehicle OBE	wrong way vehicle detected
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Other Vehicle OBEs	Vehicle OBE	vehicle collision warning
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Other Vehicle OBEs	Vehicle OBE	vehicle hazard event
Other Vehicle OBEs	Vehicle OBE	wrong way vehicle detected
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle collision warning
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle hazard event
Vehicle OBE	Other Vehicle OBEs	wrong way vehicle detected

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	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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data

Solution Name:	EU: DEN Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	32

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	V-L: Special vehicle alert	Develop an internationally acceptable ITS application specification for sending special vehicle alerts.	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 OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert

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	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

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	intersection safety warning
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info

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: DENM	Develop an internationally acceptable ITS application specification for DENM for each use case where it applies and when the DENM should include optional fields for each condition.	Urgent	Australia, European Union

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	wrong way vehicle detected
Other Vehicle OBEs	Vehicle OBE	vehicle collision warning
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle hazard event
Other Vehicle OBEs	Vehicle OBE	wrong way vehicle detected
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Vehicle OBE	Other Vehicle OBEs	vehicle collision warning
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle hazard event
Vehicle OBE	Other Vehicle OBEs	wrong way vehicle detected

Solution Name:	EU: DEN Service - BTP/GeoNetworking/G5	Number of Issues:	8	Total Issue Severity:	32

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: Vehicle collision warning	Standardise the complete ITS application specification for exchanging alerts locally that vehicles are about to collide.	Urgent	European Union

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	vehicle collision warning

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: 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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data

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: 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

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	intersection safety warning
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info

Solution Name:	EU: DEN Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	28

This solution is used within the E.U., and Australia. It combines standards associated with EU: DEN Service with those for V-X: FNTP/M5. The EU: DEN Service standards include upper-layer standards required to implement V2x decentralized environmental notification information flows. The V-X: FNTP/M5 standards include lower-layer standards that support connectionless, broadcast and unicast, near constant, ultra-low latency vehicle-to-any communications within ~300m using Fast Network Transport Profile (FNTP) over the 5 GHz spectrum as allocated within a region. The broadcast mode is interoperable with WAVE WSMP. The M5 radio of this profile can receive ITS G5 frames.

Solution Name:	EU: DEN Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	28

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: CAM and DENM	Standardise on a single solution for providing vehicle event information; currently this information can be transmitted using CAM or DENM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Fleet and Freight Management Center	vehicle environmental data
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data

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
Commercial Vehicle OBE	Fleet and Freight Management Center	vehicle environmental data
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection safety warning
Connected Vehicle Roadside Equipment	Vehicle OBE	queue warning information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle collision warning
Connected Vehicle Roadside Equipment	Vehicle OBE	wrong way vehicle detected
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Other Vehicle OBEs	Vehicle OBE	vehicle collision warning
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Other Vehicle OBEs	Vehicle OBE	vehicle hazard event
Other Vehicle OBEs	Vehicle OBE	wrong way vehicle detected
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle collision warning
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle hazard event
Vehicle OBE	Other Vehicle OBEs	wrong way vehicle detected

Solution Name:	EU: DEN Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	28

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-L: CAM and DENM	Standardise on a single solution for providing vehicle event information; currently this information can be transmitted using CAM or DENM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle control event

Solution Name:	EU: DEN Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	28

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Commercial Vehicle OBE	Fleet and Freight Management Center	vehicle environmental data
Commercial Vehicle OBE	Vehicle OBE	special vehicle type alert
Connected Vehicle Roadside Equipment	Vehicle OBE	intersection safety warning
Connected Vehicle Roadside Equipment	Vehicle OBE	queue warning information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle collision warning
Connected Vehicle Roadside Equipment	Vehicle OBE	wrong way vehicle detected
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Other Vehicle OBEs	Vehicle OBE	vehicle collision warning
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Other Vehicle OBEs	Vehicle OBE	vehicle hazard event
Other Vehicle OBEs	Vehicle OBE	wrong way vehicle detected
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Vehicle OBE	Other Vehicle OBEs	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	vehicle collision warning
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle hazard event
Vehicle OBE	Other Vehicle OBEs	wrong way vehicle detected

Solution Name:	EU: DEN Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	28

Issue	Issue Description	Issue Severity	Proposed Resolution	Resolution Description	Timeframe	Applicability
Use case not considered in design (critical)	While the indicated standards nominally address the information flow, the design details may not meet performance or other requirements because this particular use case was not the focus of the design effort.	High	V-L: Special vehicle alert	Develop an internationally acceptable ITS application specification for sending special vehicle alerts.	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 OBE	Vehicle OBE	special vehicle type alert
Emergency Vehicle OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert

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	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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data

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	V-L: Special vehicle alert	Develop an internationally acceptable ITS application specification for sending special vehicle alerts.	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 OBE	Vehicle OBE	special vehicle type alert
Maint and Constr Vehicle OBE	Vehicle OBE	special vehicle type alert
Transit Vehicle OBE	Vehicle OBE	special vehicle type alert

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	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

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	intersection safety warning
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info

Solution Name:	EU: DEN Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	28

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: 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

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	intersection safety warning
Other Vehicle OBEs	Vehicle OBE	intersection infringement info
Vehicle OBE	Connected Vehicle Roadside Equipment	intersection infringement info
Vehicle OBE	Other Vehicle OBEs	intersection infringement info

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: DENM	Develop an internationally acceptable ITS application specification for DENM for each use case where it applies and when the DENM should include optional fields for each condition.	Urgent	Australia, European Union

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	wrong way vehicle detected
Other Vehicle OBEs	Vehicle OBE	vehicle collision warning
Other Vehicle OBEs	Vehicle OBE	vehicle control event
Other Vehicle OBEs	Vehicle OBE	vehicle hazard event
Other Vehicle OBEs	Vehicle OBE	wrong way vehicle detected
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle control event
Vehicle OBE	Connected Vehicle Roadside Equipment	wrong way vehicle detected
Vehicle OBE	Other Vehicle OBEs	vehicle collision warning
Vehicle OBE	Other Vehicle OBEs	vehicle control event
Vehicle OBE	Other Vehicle OBEs	vehicle hazard event
Vehicle OBE	Other Vehicle OBEs	wrong way vehicle detected

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: 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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data

Solution Name:	EU: DEN Service - FNTP/M5	Number of Issues:	6	Total Issue Severity:	28

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: Vehicle collision warning	Standardise the complete ITS application specification for exchanging alerts locally that vehicles are about to collide.	Urgent	European Union

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	vehicle collision warning

Solution Name:	EU: DEN Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

This solution is used within the E.U., and Australia. It combines standards associated with EU: DEN Service with those for V-X: Local Broadcast Wireless (AU/EU). The EU: DEN Service standards include upper-layer standards required to implement V2x decentralized environmental notification information flows. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	queue warning information
Connected Vehicle Roadside Equipment	Vehicle OBE	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road weather advisories
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle environmental data
Vehicle OBE	Other Vehicle OBEs	vehicle environmental data

Solution Name:	EU: DEN Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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: CAM and DENM	Standardise on a single solution for providing vehicle event information; currently this information can be transmitted using CAM or DENM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle environmental data
Vehicle OBE	Other Vehicle OBEs	vehicle environmental data

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
Connected Vehicle Roadside Equipment	Vehicle OBE	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	queue warning information
Connected Vehicle Roadside Equipment	Vehicle OBE	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road weather advisories
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle environmental data
Vehicle OBE	Other Vehicle OBEs	vehicle environmental data

Solution Name:	EU: DEN Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure 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	vehicle signage data

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	queue warning information
Connected Vehicle Roadside Equipment	Vehicle OBE	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road weather advisories
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle environmental data
Vehicle OBE	Other Vehicle OBEs	vehicle environmental data

Solution Name:	EU: DEN Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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	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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle environmental data
Vehicle OBE	Other Vehicle OBEs	vehicle environmental data

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	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

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information

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: DENM	Develop an internationally acceptable ITS application specification for DENM for each use case where it applies and when the DENM should include optional fields for each condition.	Urgent	Australia, European Union

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	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information

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: 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

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

Source	Destination	Flow Name
Other Vehicle OBEs	Vehicle OBE	vehicle environmental data
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle environmental data
Vehicle OBE	Other Vehicle OBEs	vehicle environmental data

Solution Name:	EU: DEN Service - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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 vehicle signage data	Develop an ITS application specification for providing vehicle signage data to vehicles over DSRC.	Urgent	Australia, European Union

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	vehicle signage data
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data

Solution Name:	EU: DEN Service - Mobile Internet (X.509)	Number of Issues:	5	Total Issue Severity:	25

This solution is used within the E.U., and Australia. It combines standards associated with EU: DEN Service with those for I-M: Mobile Internet (X.509). The EU: DEN Service standards include upper-layer standards required to implement V2x decentralized environmental notification information flows. The I-M: Mobile Internet (X.509) 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 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
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: Work zone status	Develop an ITS application specification for a maintenance and construction vehicle to report and update the status of a work zone to a centre.	Near-term	Australia, European Union

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

Source	Destination	Flow Name
Maint and Constr Management Center	Vehicle OBE	work zone information

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

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	Vehicle OBE	vehicle signage data

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: CAM and DENM	Standardise on a single solution for providing vehicle event information; currently this information can be transmitted using CAM or DENM.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
Vehicle OBE	Transportation Information Center	vehicle environmental data

Solution Name:	EU: DEN Service - Mobile Internet (X.509)	Number of Issues:	5	Total Issue Severity:	25

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

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	Vehicle OBE	lane closure information
Traffic Management Center	Vehicle OBE	vehicle signage data

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	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

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

Source	Destination	Flow Name
Maint and Constr Management Center	Vehicle OBE	work zone information
Traffic Management Center	Vehicle OBE	lane closure information
Traffic Management Center	Vehicle OBE	vehicle signage data
Vehicle OBE	Transportation Information Center	vehicle environmental data

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: 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	Transportation Information Center	vehicle environmental data

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

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	Vehicle OBE	lane closure information

Solution Name:	EU: DEN Service - Mobile Internet (X.509)	Number of Issues:	5	Total Issue Severity:	25

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: 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

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

Source	Destination	Flow Name
Vehicle OBE	Transportation Information Center	vehicle environmental data

Solution Name:	EU: Electric Charging Hot Spot - AU IFCP	Number of Issues:	2	Total Issue Severity:	16

This solution is used within the Australia. It combines standards associated with EU: Electric Charging Hot Spot with those for I-F: AU IFCP. The EU: Electric Charging Hot Spot standards include upper-layer standards required to advertise the existance of a electric vehicle charging station. The I-F: AU IFCP standards include lower-layer placeholder for an Australian solution identified for development. This may end up being I-F: SNMPv3, but it is currently undefined and just used as a placeholder.

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 would be addressed by the Proposed Resolution

Source	Destination	Flow Name
Transportation Information Center	Connected Vehicle Roadside Equipment	electric charging services inventory

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	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	Destination	Flow Name
Transportation Information Center	Connected Vehicle Roadside Equipment	electric charging services inventory

Solution Name:	EU: Electric Charging Hot Spot - Local Broadcast Wireless (AU/EU)	Number of Issues:	3	Total Issue Severity:	9

This solution is used within the E.U., and Australia. It combines standards associated with EU: Electric Charging Hot Spot with those for V-X: Local Broadcast Wireless (AU/EU). The EU: Electric Charging Hot Spot standards include upper-layer standards required to advertise the existance of a electric vehicle charging station. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, etc.

Solution Name:	EU: Electric Charging Hot Spot - Local Broadcast Wireless (AU/EU)	Number of Issues:	3	Total Issue Severity:	9

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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	current charging status
Connected Vehicle Roadside Equipment	Vehicle OBE	electric charging services inventory
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle charging profile

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
Connected Vehicle Roadside Equipment	Vehicle OBE	current charging status
Connected Vehicle Roadside Equipment	Vehicle OBE	electric charging services inventory
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle charging profile

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	current charging status
Connected Vehicle Roadside Equipment	Vehicle OBE	electric charging services inventory
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle charging profile

Solution Name:	EU: Electric Charging Management - AU IFCP	Number of Issues:	2	Total Issue Severity:	16

This solution is used within the Australia. It combines standards associated with EU: Electric Charging Management with those for I-F: AU IFCP. The EU: Electric Charging Management standards include upper-layer standards required to support the management of electric vehicle charging. The I-F: AU IFCP standards include lower-layer placeholder for an Australian solution identified for development. This may end up being I-F: SNMPv3, but it is currently undefined and just used as a placeholder.

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:	EU: Electric Charging Management - AU IFCP	Number of Issues:	2	Total Issue Severity:	16

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	Electric Charging Station	vehicle charging profile
Electric Charging Station	Connected Vehicle Roadside Equipment	current charging status

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	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	Destination	Flow Name
Connected Vehicle Roadside Equipment	Electric Charging Station	vehicle charging profile
Electric Charging Station	Connected Vehicle Roadside Equipment	current charging status

Solution Name:	EU: Electric Charging Management - Local Broadcast Wireless (AU/EU)	Number of Issues:	3	Total Issue Severity:	9

This solution is used within the E.U., and Australia. It combines standards associated with EU: Electric Charging Management with those for V-X: Local Broadcast Wireless (AU/EU). The EU: Electric Charging Management standards include upper-layer standards required to support the management of electric vehicle charging. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	current charging status
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle charging profile

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
Connected Vehicle Roadside Equipment	Vehicle OBE	current charging status
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle charging profile

Solution Name:	EU: Electric Charging Management - Local Broadcast Wireless (AU/EU)	Number of Issues:	3	Total Issue Severity:	9

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	current charging status
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle charging profile

Solution Name:	EU: In-Vehicle Information - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

This solution is used within the E.U., and Australia. It combines standards associated with EU: In-Vehicle Information with those for V-X: Local Broadcast Wireless (AU/EU). The EU: In-Vehicle Information standards include upper-layer standards required to provide a visualisation of static and/or dynamic traffic sign information inside a vehicle. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	speed management information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information

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: EU vehicle signage data	Develop an ITS application specification for providing vehicle signage data to vehicles over DSRC.	Urgent	Australia, European Union

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	vehicle signage data
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data

Solution Name:	EU: In-Vehicle Information - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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
Connected Vehicle Roadside Equipment	Vehicle OBE	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	speed management information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone 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

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
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	vehicle signage data

Solution Name:	EU: In-Vehicle Information - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	reduced speed notification
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	speed management information
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information

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	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

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information

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 vehicle signage data	Develop an ITS application specification for providing vehicle signage data to vehicles over DSRC.	Urgent	Australia, European Union

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	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	vehicle signage data

Solution Name:	EU: In-Vehicle Information - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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: IVI	Develop an ITS application specification for in-vehicle information for each applicable use case.	Urgent	Australia, European Union

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	road closure information

Solution Name:	EU: In-Vehicle Information - Mobile Internet (X.509)	Number of Issues:	5	Total Issue Severity:	25

This solution is used within the E.U., and Australia. It combines standards associated with EU: In-Vehicle Information with those for I-M: Mobile Internet (X.509). The EU: In-Vehicle Information standards include upper-layer standards required to provide a visualisation of static and/or dynamic traffic sign information inside a vehicle. The I-M: Mobile Internet (X.509) 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 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
Performance not defined (high)	The performance rules are not defined for this information flow.	High	V-L: EU vehicle signage data	Develop an ITS application specification for providing vehicle signage data to vehicles over DSRC.	Urgent	Australia, European Union

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	Vehicle OBE	vehicle signage data

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

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	Vehicle OBE	lane closure information
Traffic Management Center	Vehicle OBE	speed management information
Traffic Management Center	Vehicle OBE	vehicle signage data

Solution Name:	EU: In-Vehicle Information - Mobile Internet (X.509)	Number of Issues:	5	Total Issue Severity:	25

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-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union

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

Source	Destination	Flow Name
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

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

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	Vehicle OBE	lane closure information

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

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	Vehicle OBE	speed management information
Traffic Management Center	Vehicle OBE	vehicle signage data

Solution Name:	EU: Probe Data - Local Broadcast Wireless (AU/EU)	Number of Issues:	4	Total Issue Severity:	12

This solution is used within the E.U., and Australia. It combines standards associated with EU: Probe Data with those for V-X: Local Broadcast Wireless (AU/EU). The EU: Probe Data standards include upper-layer standards required to provide detailed probe data information from a vehicle. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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 situation data

Solution Name:	EU: Probe Data - Local Broadcast Wireless (AU/EU)	Number of Issues:	4	Total Issue Severity:	12

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
Vehicle OBE	Connected Vehicle Roadside Equipment	vehicle situation data

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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 situation data

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: 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 situation data

Solution Name:	EU: Probe Data - Mobile Internet (X.509)	Number of Issues:	1	Total Issue Severity:	3

This solution is used within the U.S., E.U., and Australia. It combines standards associated with EU: Probe Data with those for I-M: Mobile Internet (X.509). The EU: Probe Data standards include upper-layer standards required to provide detailed probe data information from a vehicle. The I-M: Mobile Internet (X.509) 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 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
Performance not fully defined (medium)	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

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

Source	Destination	Flow Name
Vehicle OBE	Transportation Information Center	vehicle situation data

Solution Name:	EU: TPEG2 - Internet (X.509)	Number of Issues:	1	Total Issue Severity:	3

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

Solution Name:	EU: TPEG2 - Internet (X.509)	Number of Issues:	1	Total Issue Severity:	3

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

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	Media	traffic information for media
Transportation Information Center	Media	traffic information for media
Transportation Information Center	Media	traveler information for media
Transportation Information Center	Wide Area Information Disseminator	traveler information for media

Solution Name:	EU: TPEG2 Parking Information - Local Broadcast Wireless (AU/EU)	Number of Issues:	3	Total Issue Severity:	9

This solution is used within the E.U., and Australia. It combines standards associated with EU: TPEG2 Parking Information with those for V-X: Local Broadcast Wireless (AU/EU). The EU: TPEG2 Parking Information standards include upper-layer standards required to implement parking information flows. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	parking availability

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
Connected Vehicle Roadside Equipment	Vehicle OBE	parking availability

Solution Name:	EU: TPEG2 Parking Information - Local Broadcast Wireless (AU/EU)	Number of Issues:	3	Total Issue Severity:	9

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	parking availability

Solution Name:	Flow-Specific Data - NTCIP Messaging	Number of Issues:	3	Total Issue Severity:	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 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
Center	Data Distribution System	data provision
Center	Data Distribution System	data query
Center	Data Distribution System	data subscription
Data Distribution System	Center	data publication
Data Distribution System	Center	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
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

Solution Name:	Flow-Specific Data - NTCIP Messaging	Number of Issues:	3	Total Issue Severity:	9

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

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

Source	Destination	Flow Name
Center	Data Distribution System	data provision
Center	Data Distribution System	data query
Center	Data Distribution System	data subscription
Data Distribution System	Center	data publication
Data Distribution System	Center	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
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

Solution Name:	Flow-Specific Data - NTCIP Messaging	Number of Issues:	3	Total 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

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

Source	Destination	Flow Name
Center	Data Distribution System	data provision
Center	Data Distribution System	data query
Center	Data Distribution System	data subscription
Data Distribution System	Center	data publication
Data Distribution System	Center	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
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

Solution Name:	Location/Time reference - Positioning	Number of Issues:	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.

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, 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
Field Location and Time Data Source	Connected Vehicle Roadside Equipment	location and time
Personal Location and Time Data Source	Personal Information Device	location and time
Vehicle Location and Time Data Source	Vehicle OBE	location and time

Solution Name:	TMC - Wide Area Broadcast (Upper)	Number of Issues:	3	Total Issue Severity:	7

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

Solution Name:	TMC - Wide Area Broadcast (Upper)	Number of Issues:	3	Total Issue Severity:	7

expectation of acknowledgement or response; security is provided by the upper-layers.

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

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

Source	Destination	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

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

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

Source	Destination	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

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

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

Source	Destination	Flow Name
Transportation Information Center	Vehicle OBE	broadcast traveler information
Wide Area Information Disseminator	Vehicle OBE	broadcast traveler information

Solution Name:	TPEG2 - Guaranteed Internet (X.509)	Number of Issues:	2	Total Issue Severity:	6

This solution is used within the U.S., E.U., and Australia. It combines standards associated with TPEG2 with those for I-I: Guaranteed Internet (X.509). The TPEG2 standards include upper-layer standards required to support multi-modal information services. The I-I: Guaranteed Internet (X.509) standards include lower-layer standards that support secure communications with guaranteed delivery between ITS equipment using mainstream Internet security standards (X.509).

Solution Name:	TPEG2 - Guaranteed Internet (X.509)	Number of Issues:	2	Total Issue Severity:	6

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

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	broadcast traveler information
Transportation Information Center	Wide Area Information Disseminator	traffic information for media

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

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

Source	Destination	Flow Name
Transportation Information Center	Wide Area Information Disseminator	broadcast traveler information

Solution Name:	TPEG2 - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

This solution is used within the E.U., and Australia. It combines standards associated with TPEG2 with those for V-X: Local Broadcast Wireless (AU/EU). The TPEG2 standards include upper-layer standards required to support multi-modal information services.. The V-X: Local Broadcast Wireless (AU/EU) standards include lower-layer standards that support local-area broadcast wireless solutions, such as DSRC technologies, 5G LTE, 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	V-L: Update GeoNetworking security	Update the GeoNetworking standard to provide secure data exchange where the transmitter of a message is not the same of the generator of the message (e.g., a message generated by a central system and sent to the RSE for transmission or a message generated by one vehicle and rebroadcast by another vehicle).	Urgent	Australia, European Union

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road weather advisories
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information

Solution Name:	TPEG2 - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road weather advisories
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone 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

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road weather advisories
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information

Solution Name:	TPEG2 - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data

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-L: EU vehicle signage data	Develop an ITS application specification for providing vehicle signage data to vehicles over DSRC.	Urgent	Australia, European Union

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	vehicle signage data

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-L: BTP/GeoNetworking/G5 and FNTP/M5	Standardise on a single solution for providing DSRC communications within Europe and Australia; currently BTP/GeoNetworking/G5 and FNTP/M5 are competing solutions that are not interoperable at the Subnet or Transnet layers.	Urgent	Australia, European Union

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road weather advisories
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information

Solution Name:	TPEG2 - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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	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

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road weather advisories
Connected Vehicle Roadside Equipment	Vehicle OBE	vehicle signage data
Connected Vehicle Roadside Equipment	Vehicle OBE	work zone information
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	work zone information

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	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

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	lane closure information
Connected Vehicle Roadside Equipment	Vehicle OBE	road closure information

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 vehicle signage data	Develop an ITS application specification for providing vehicle signage data to vehicles over DSRC.	Urgent	Australia, European Union

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	vehicle signage data
Emergency Vehicle OBE	Vehicle OBE	vehicle signage data
Maint and Constr Vehicle OBE	Vehicle OBE	vehicle signage data

Solution Name:	TPEG2 - Local Broadcast Wireless (AU/EU)	Number of Issues:	6	Total Issue Severity:	23

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: TPEG2	Develop an ITS application specification for transmission of TPEG2 to a vehicle from a local broadcast source.	Near-term	Australia, European Union

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	road closure information

Solution Name:	TPEG2 - Mobile Internet (X.509)	Number of Issues:	5	Total Issue Severity:	44

This solution is used within the U.S., E.U., and Australia. It combines standards associated with TPEG2 with those for I-M: Mobile Internet (X.509). The TPEG2 standards include upper-layer standards required to support multi-modal information services.. The I-M: Mobile Internet (X.509) 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 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

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

Source	Destination	Flow Name
Data Distribution System	Personal Information Device	traveler information
Data Distribution System	Vehicle OBE	traveler information
Emergency Management Center	Emergency Vehicle OBE	suggested route
Maint and Constr Management Center	Vehicle OBE	work zone information
Traffic Management Center	Personal Information Device	traffic demand management information
Traffic Management Center	Vehicle OBE	lane closure information
Traffic Management Center	Vehicle OBE	traffic demand management information
Traffic Management Center	Vehicle OBE	vehicle signage data
Transportation Information Center	Vehicle OBE	road weather advisories

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-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

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

Source	Destination	Flow Name
Transportation Information Center	Vehicle OBE	road weather advisories

Solution Name:	TPEG2 - Mobile Internet (X.509)	Number of Issues:	5	Total Issue Severity:	44

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	C-V: In-vehicle signage	Develop an ITS application specification for in-vehicle signage to the vehicle from a centre.	Urgent	Australia, European Union

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	Vehicle OBE	vehicle signage data

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

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	Vehicle OBE	lane closure information

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

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	Vehicle OBE	lane closure information

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: Weather information	Update the international ITS application specification to address road weather advisories.	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
Transportation Information Center	Vehicle OBE	road weather advisories

Solution Name:	TPEG2 - Mobile Internet (X.509)	Number of Issues:	5	Total Issue Severity:	44

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

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	Vehicle OBE	vehicle signage data

Solution Name:	TPEG2 - NTCIP Messaging	Number of Issues:	2	Total Issue Severity:	6

This solution is used within the U.S. and Australia. It combines standards associated with TPEG2 with those for C-C: NTCIP Messaging. The TPEG2 standards include upper-layer standards required to support multi-modal information services.. 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
Transportation Information Center	Wide Area Information Disseminator	broadcast traveler 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

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

Source	Destination	Flow Name
Transportation Information Center	Wide Area Information Disseminator	broadcast traveler information

Solution Name:	TPEG2 - NTCIP Messaging	Number of Issues:	2	Total Issue Severity:	6

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

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

Source	Destination	Flow Name
Transportation Information Center	Wide Area Information Disseminator	broadcast traveler information

Solution Name:	TPEG2 - Wide Area Broadcast (Upper)	Number of Issues:	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 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.

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

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

Source	Destination	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

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

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

Source	Destination	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

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

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

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

Source	Destination	Flow Name
Transportation Information Center	Vehicle OBE	broadcast traveler information
Wide Area Information Disseminator	Vehicle OBE	broadcast traveler information