Transport Certification Australia

Telematics Industry Group (TIG)

Welcome!

Overview of Today's Session

Gavin Hill
General Manager
Strategic Development/Implementation

Housekeeping

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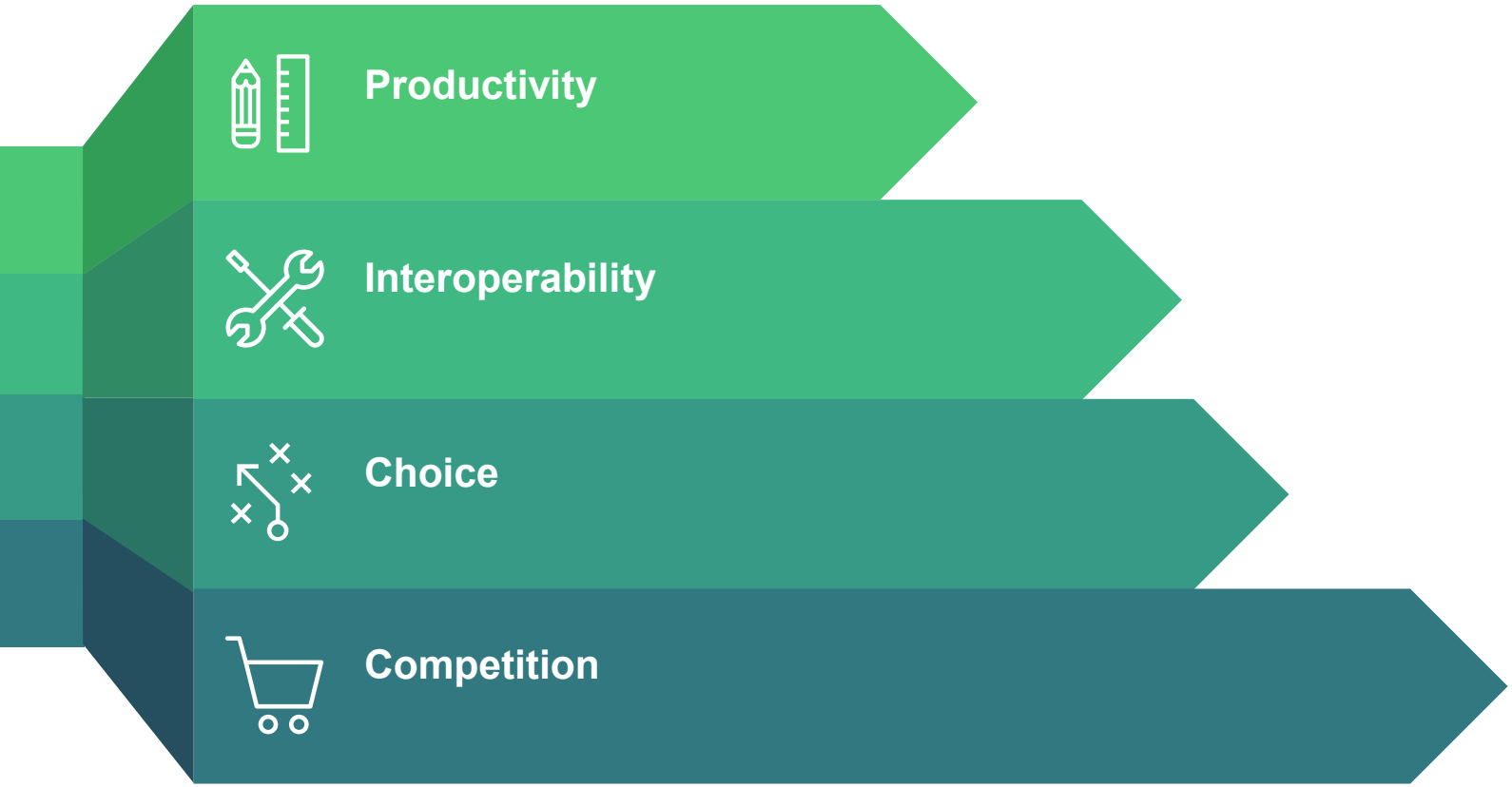
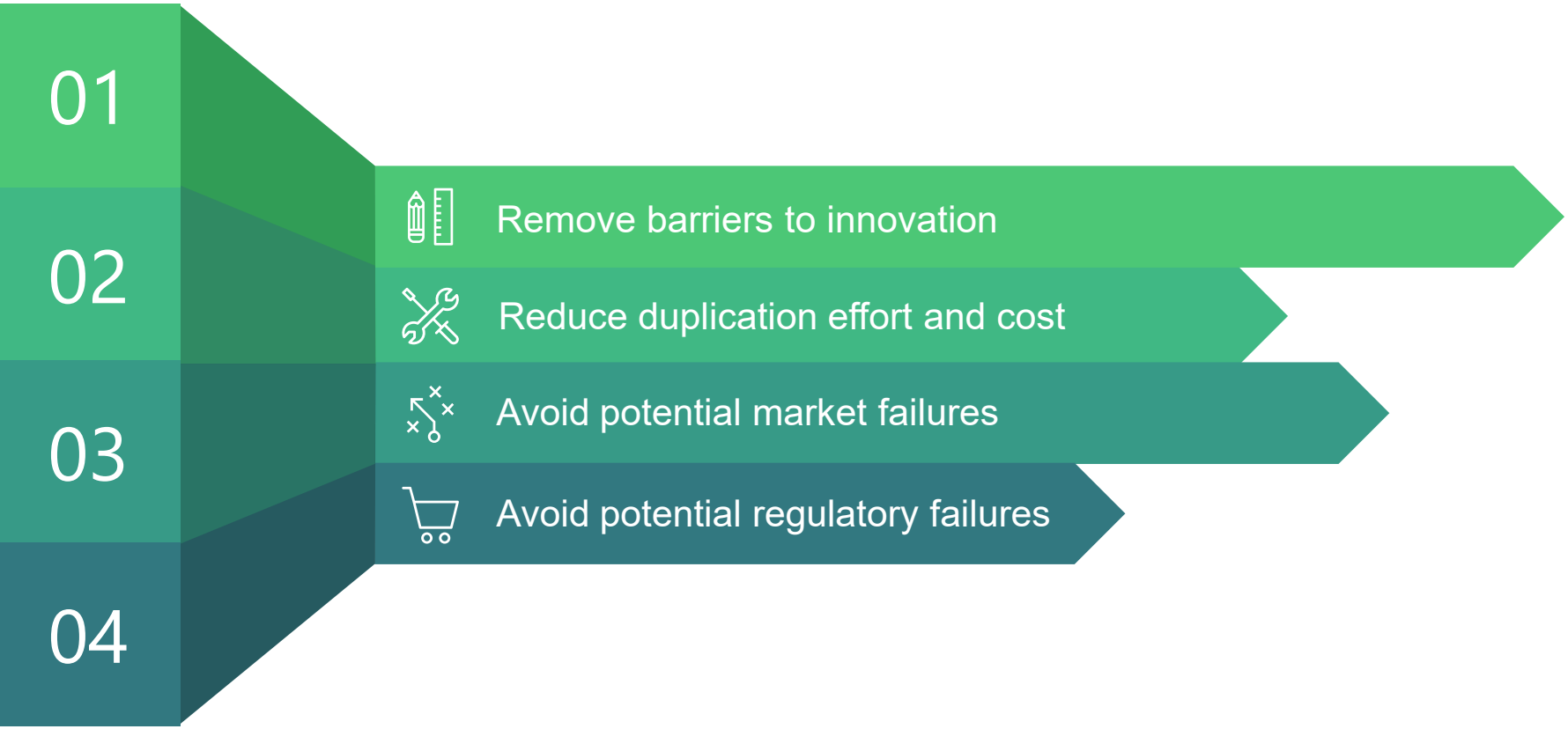
1. Today's program
2. Our speakers
3. Questions as we go…a lot of turf we need to cover!
4. Scheduled breaks
5. Facilities


Productivity
Interoperability
Choice
Competition


01
02
03
04
Remove barriers to innovation
Reduce duplication effort and cost
Avoid potential market failures
Avoid potential regulatory failures

National Telematics Framework

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The National Telematics Framework is a **digital business platform** consisting of **infrastructure and rules** that support an **open marketplace** of telematics and related intelligent technology providers.

Allows multiple **applications** to co-exist with different **levels of assurance**

Links **producers**, **providers** and **consumers**

National Telematics Framework

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NATIONAL TELEMATICS FRAMEWORK ECOSYSTEM

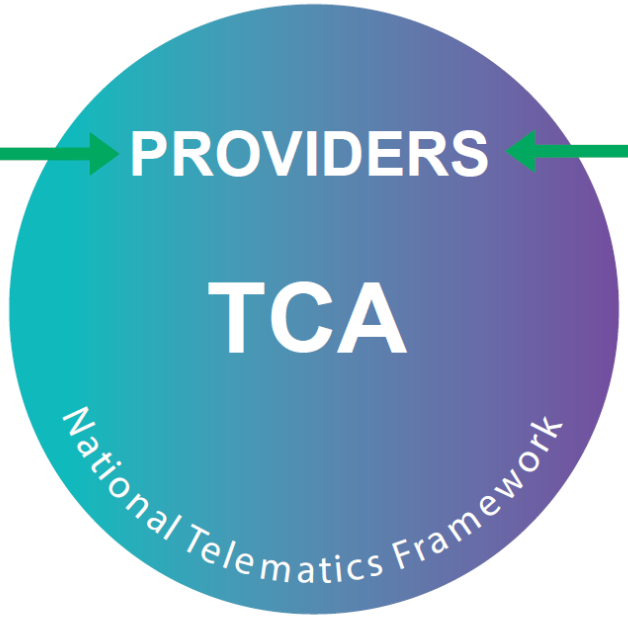
PRODUCERS

Creators of Framework offerings and applications (government bodies, regulators, private sector)

Regulatory, contractual and/or commercial data and value exchange

CONSUMERS

Buyers or users of Framework offerings and applications (operators, drivers, end-users)



PROVIDERS

Interfaces for the Framework (telematics and intelligent technology service providers)

TCA

Administrator of the Framework and governance of participants

Update on TCA

Nick Koukoulas
Chief Executive Officer
Austroads Ltd

Austroads

Nick Koukoulas
Chief Executive

Improving the safety, productivity and sustainability of Australasian road networks through research and collaboration.

Austroads

Peak organisation of Australasian road transport and traffic agencies.

873,500 kilometres of roads

$250AU/$189US/€157 billion value

Activities:

- strategic research
- promote a consistency
- share knowledge
- conduct business activities
- foster international collaboration.

Structure

Programs

- Assets
- Safety
- Network
- Connected and Automated Vehicles

National Exchange of Vehicle and Driver Information System (NEVDIS)

- enables road authorities to interact across state borders
- supports transport and automotive industries
- owned by Austroads

Assets Program

Extending the life and performance of road infrastructure

- Materials development
- Strategic management of road infrastructure
- Managing loading impacts
- Pavement management
- Bridge management
- Managing for climate change
- Managing rural and remote roads

Network Program

Improving mobility on the road network

- Managing urban congestion
- Traffic management planning and infrastructure
- Freight transport/road productivity
- Road funding models
- Active travel and integration with public transport

Safety Program

Planning, designing and managing ‘Towards Zero’

- mapping crash risks
- targeting research to mitigate emerging crash risks and gaps in knowledge
- providing harmonised, concise, and simple guidance.

Connected and Automated Vehicles Program

Realising the benefits of emerging technologies

- Infrastructure readiness
- Regulatory readiness
- Data readiness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Road Infrastructure Management (RIM) application – NSW deployment

Scott Greenow
Senior Manager, Network Management
Roads & Maritime Services

Questions and comments

Transport Certification Australia

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Levels of assurance through the National Telematics Framework

Gavin Hill
General Manager
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National Telematics Framework

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NATIONAL TELEMATICS FRAMEWORK ECOSYSTEM

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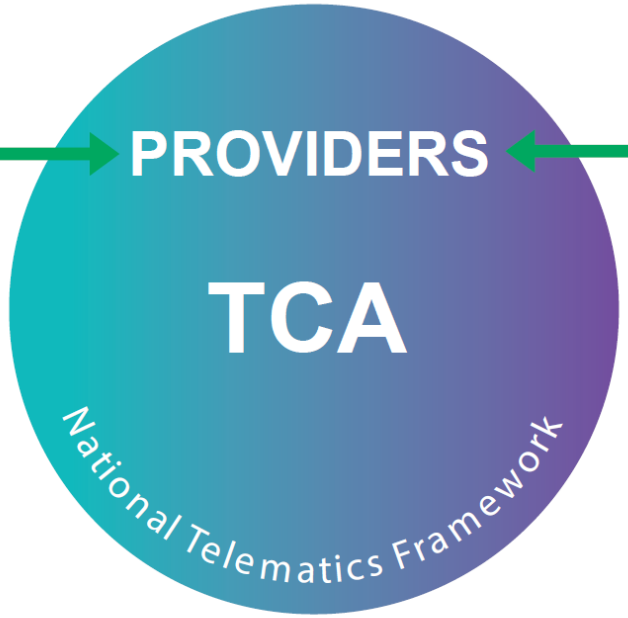

PROVIDERS

Interfaces for the Framework (telematics and intelligent technology service providers)

TCA

Administrator of the Framework and governance of participants

Different levels of assurance

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The National Telematics Framework supports multiple applications, as well as different levels of assurance

This allows Producers to determine the level of assurance for applications, depending on:

- The **intended use** of a telematics application
- The **risks** being managed
- The **needs and expectations** of consumers (and other stakeholders)

Different levels of assurance

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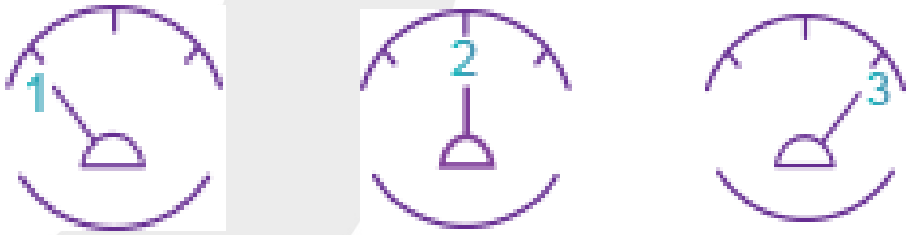
- Apply the appropriate level of **independent assessment** commensurate with intended outcomes
- **Allocate risk** to the party/ies best placed to manage those risks
- Obtain the **right balance** between costs and benefits

Different levels of assurance

Assurance levels can be “dialled-up” or “dialled-down”…

…without impacting the common business rules of the National Telematics Framework



Different levels of assurance

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The National Telematics Framework does not prescribe or ‘hard-wire’ a specific level of assurance

Instead, the level of assurance is determined by individual producers (or consumers)

Different levels of assurance

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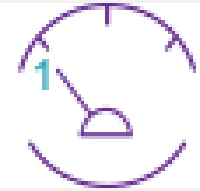
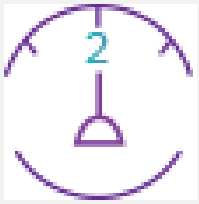
LEVEL		DESCRIPTION	EXAMPLES
Level 1 Assurance 	Self-assessment or advisory No independent oversight	Self-assessment of data No independent oversight of telematics application	Consumers need to self-assess the use of data in relation to its intended use
Level 2 Assurance 	Independent assessment – periodic audit	Independent assessment of specific elements of telematics application Telematics data is combined with other data sources	The use of telematics data in combination with other data sources, to deliver an intended purpose
Level 3 Assurance 	Independent assessment – oversight	Certificate based data and evidence Independent assessment and oversight of telematics application and service provision.	The use of telematics data as the primary source of data to deliver an intended purpose

Different levels of assurance

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Level 1 relies on the self-assessment. Associated with 'advisory' applications, where data is not being depended upon for high levels of accuracy or integrity.

Level 2 provides greater rigour in the collection and reporting of information from a telematics application. Complemented with other data sources (i.e. data collected from other systems, administrative records).

Level 3 provides the necessary environment for collection and secure storage of high-integrity data which may provide (subject to underlying legislative provisions) certificate-based data and evidence.

Different levels of assurance

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There is no perfect fit or alignment with any one of the levels of assurance

Rather, there are numerous sub-options within each level of assurance, which will be influenced by any number of factors

Determining the appropriate level of assurance (1/2)

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- What is the problem that is sought to be solved?
- Why is producer (government or commercial entity) action needed?
- How much of the problem/action will be undertaken by the telematics application and how much can/should be undertaken outside the application?
- What benefits would an application of the National Telematics Framework enable?
- What is the net benefit of the desired behaviours that are being sought?

Determining the appropriate level of assurance (2/2)

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- What incentives exist for consumer participants to game/cheat the application?
- What is the intended use of the information obtained from the application (i.e. could it be used against consumer participants)?
- How will the application interact with other interventions (i.e. is it stand alone, will it be used in conjunction with other information, could it be used to influence other government permissions)?
- How will participation in the application be facilitated?

Questions and comments

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Updated Telematics IVU Functional and Specification (Version 3)

Peter Clark
Specification Manager

Reasons for this update

1. Make requirements more functional and less prescriptive
   - Provide more options for meeting requirements
   - Reduce barriers to uptake
   - Reduce costs of meeting requirements where possible

2. Acknowledge that technology has advanced in certain areas, and that after analysis of TCA's testing and auditing evidence base, some requirements can be less stringent or removed
   - Evidence-based changes include stakeholder feedback

Reasons for this revision

3. Acknowledge that the IVU may support multiple NTF applications,
   including:
   - Applications and features described in the *Business Case to the Transport and Infrastructure Council (TIC*) approved by Ministers
   - Applications with different levels of assurance (Levels 1, 2 and 3)

   This allows producers to offer multiple applications with differing levels of assurance without requiring investment in new IVUs, or needing multiple IVUs in the same vehicle to support applications at different levels of assurance

4. Make implicit requirements more explicit, and acknowledge that the IVU may be more than just a ‘black box’

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More functional, less prescriptive

More functional, less prescriptive

With greater focus on outcomes, reduced need to specify how something is expected to be done

- Removed internal power supply from list of core functions.
- Removed how a GNSS receiver is connected to GNSS antenna (and how communications device is connected to communications antenna).
- Removed requirement for an internal backup battery. Stated instead that the IVU must be able to be operated, within limits, when disconnected from the external power supply.

More functional, less prescriptive

- Combined several requirements into a single requirement for a feature that provides evidence of unauthorised removal or opening of IVU
- Merged Security Seals (Section A.3) with Section A.1 and removed requirements specific to security seals. Focus on expected functional outcomes instead
- Removed ‘Doppler’ as the prescribed method for measuring speed
  (e.g. ‘GNSS-derived method’, instead of ‘GNSS Doppler-derived method’)

More functional, less prescriptive

Environmental Characteristics

- Added introductory requirement that allows in-field performance evidence to be provided as evidence of compliance
  Replaced phrase 'from an appropriate body with the following or equivalents' with 'compliance with the following standards or their equivalents'
- For radiated and conducted emissions added ACMA Regulatory Compliance Mark as another way of providing evidence of compliance
- Added that if an environmental characteristic requirement is not applicable or unnecessary as a result of IVU installation, that requirement shall not apply

IVU GNSS Capability

- Removed requirement in note that GNSS antenna should be mounted on outside of vehicle

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Technology advance,
less stringent requirements

Technology advance, less stringent requirements

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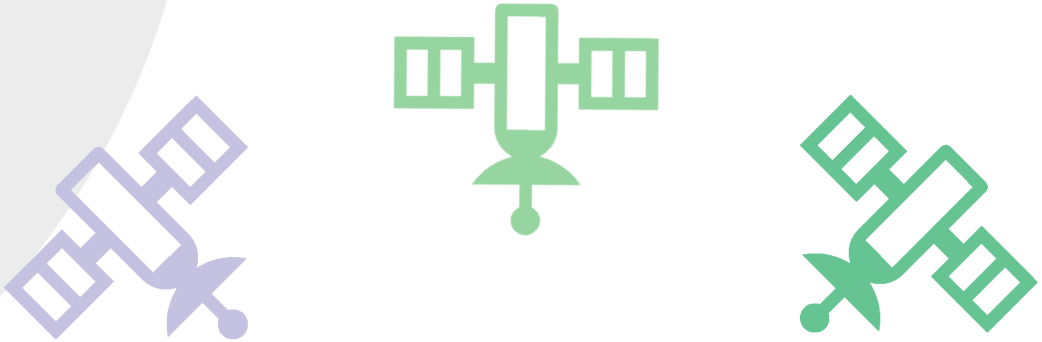
Technology advance: GNSS

- Replaced GPS with GNSS throughout document. Changed ‘Vehicle Speed’ to ‘GNSS Speed’
- Added note clarifying type-approval in a multi-GNSS environment
- Added note that suitable GNSS must provide publicly available measures of health and historical performance; info on suitable GNSS available from TCA
- Removed note stating that desired speed measurement performance is possible where the IVU GNSS receiver is configured to only use line-of-sight satellites



Technology advance, less stringent requirements

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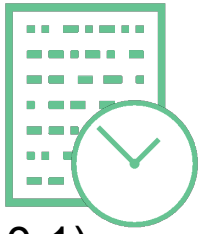
From analysis of testing and auditing evidence bases, some parameters can be relaxed as appropriate to answer intent of requirement

- Removed physical characteristics requirement related to electrostatic discharge
- Allowed slightly wider fixed mask angle for the IVU GNSS receiver (5 to 20 degrees, instead of 10 to 20 degrees)
- Shortened time an IVU internal clock needs to operate or be accurate (7 days, from 28) if external power supply fails



- Softened resolution of direction of travel to 1 degree or better (from 0.1)
- Modified compliance percentage for measurement of vehicle speed from 99.9% to 99.5%
- Added requirement such that for any of four preceding alarm status data requirements, if a suitable protection feature exists to prevent disconnection or access (as applicable), that requirement shall not apply

Technology advance, less stringent requirements

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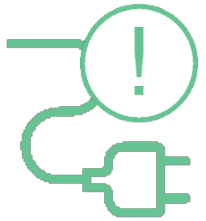
From analysis of testing and auditing evidence bases, some parameters can be relaxed as appropriate to answer intent of requirement.

- Shortened the time an IVU internal clock needs to store data (7 days, from 28) if IVU fails or shuts down
- Shortened the time an IVU monitors ignition status and other independent movement sensor (1 day, from 7) if IVU fails or shuts down



Transfer of Data from IVU

- Removed mention of term ‘data blocks’, and merged requirements with ‘IVU Data Records and Data Blocks’ and ‘Integrity and Origin of Data Blocks and IVU Data Records’

IVU support for multiple NTF applications

IVU support for multiple NTF applications

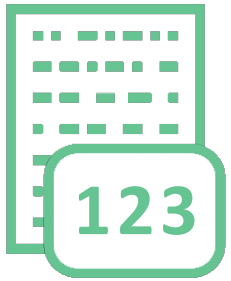
Telematics IVU

- Added expectation that IVU should be able to support different applications
- Added note under examples of IVU data records as a reminder that data records are not necessarily expected to be standalone
  In environments where multiple NTF applications are supported, data may be combined within the data stream as needed

Record Numbering

- Harmonised with corresponding ‘core’ content in applications such as Intelligent Location Monitoring, Intelligent Mass Monitoring and Intelligent Mass Assessment

  An application may specify a separate numbering sequence for a specific type of data record



State previously implicit requirements

State previously implicit requirements

Background: Telematics IVU

- Added that IVU may not be a single device, but a collection of core functions, or a distributed system.
  Included schematic of this concept on cover.

Installation, Operation and Maintenance

- Added new section modelled on corresponding section in OBM System Spec.

IVU Alarm Records

- To event subclauses i) to l), added '(regardless of whether the vehicle is in operation or not in operation)'

Questions and comments

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On-Board Mass (OBM) System type-approval

Paul Corkill
General Manager
Operations

OBM Systems

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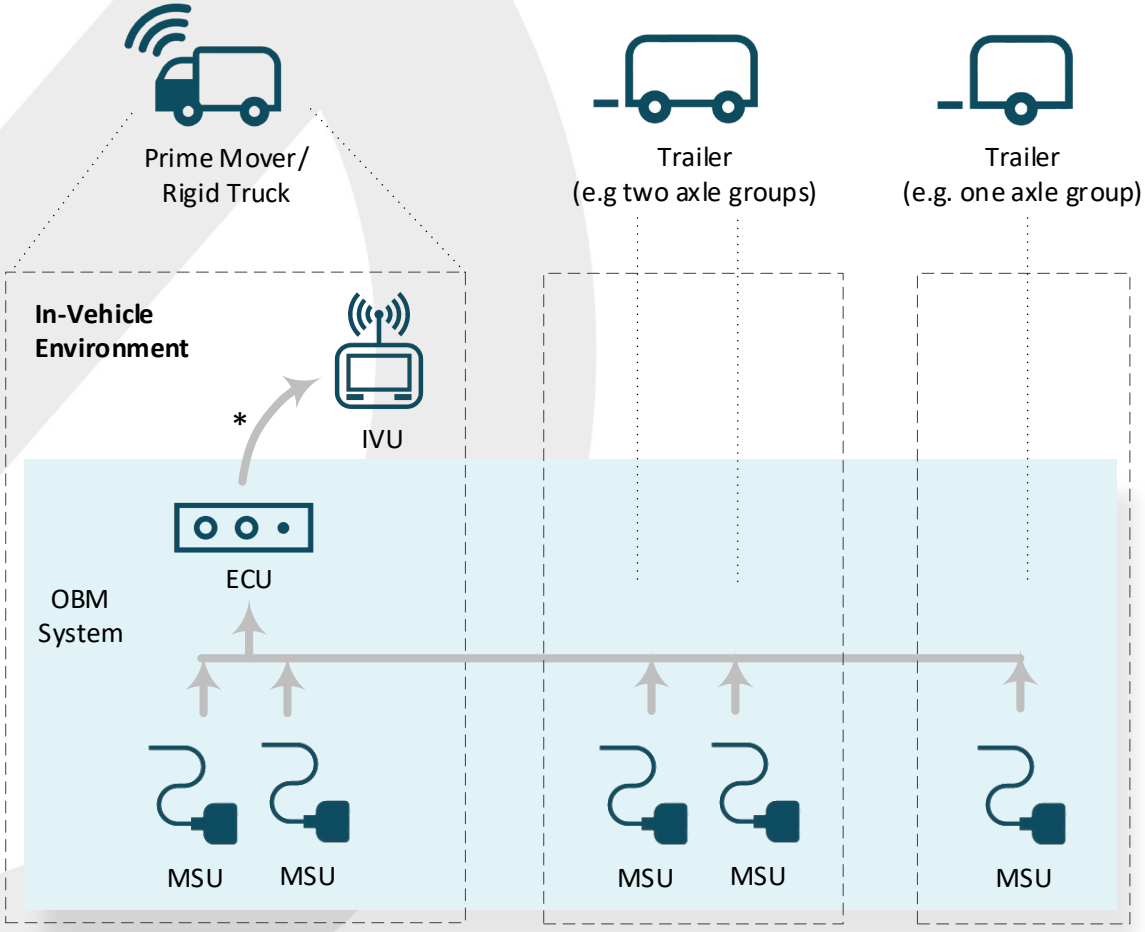

OBM System Functional and Technical Specification

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- Valuable as a stand alone document
- Can be used to for self-assessment of available systems by purchasers
- Self-assessment by OBM suppliers
- Forms the basis for type-approval
- Available at:

www.tca.gov.au

OBM System Functional and Technical Specification

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- Physical Characteristics
- Environmental Characteristics
- Data Collection
- Record Generation
- Functionality
- Data Storage
- Data Security and Transfer
- Interconnection to a Telematics In-Vehicle Unit (IVU)
- Installation, Calibration, Operation and Maintenance

OBM System Functional and Technical Specification

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Philosophy:

- ‘Performance-based’ focus on required outcomes
- Use of a conceptual description (e.g. ECU, MSUs) requiring equivalent, but not exact, physical match
- Innovation encouraged! For example:
  - OEM-fitted or an after-market product
  - ‘Shared components’ providing comparable functionality
  - Quality management system approach to calibration to maintain accuracy

Categories of OBM Systems

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Category A – OBM Systems in this category electronically display collected data to drivers and/or loaders

Category B – OBM Systems in this category also collect and transfer the collected data

Category C – OBM Systems in this category collect data and transfer Data Records in a standardised way to a telematics in-vehicle unit (in accordance with Interconnectivity of Telematics In-Vehicle Unit With Other Systems Functional and Technical Specification)

Type-approval of OBM Systems

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Type-approval is focused on meeting required outcomes

OBM System type-approvals are under way with TCA

Five different systems currently under assessment (with three already approved)

Benefits of type-approval

OBM Systems which are type-approved are recognised as having achieved an independent benchmark for quality, reliability and functionality

Entitled to carry the TCA Type-Approved logo (for OBM):

TCA website – source of truth

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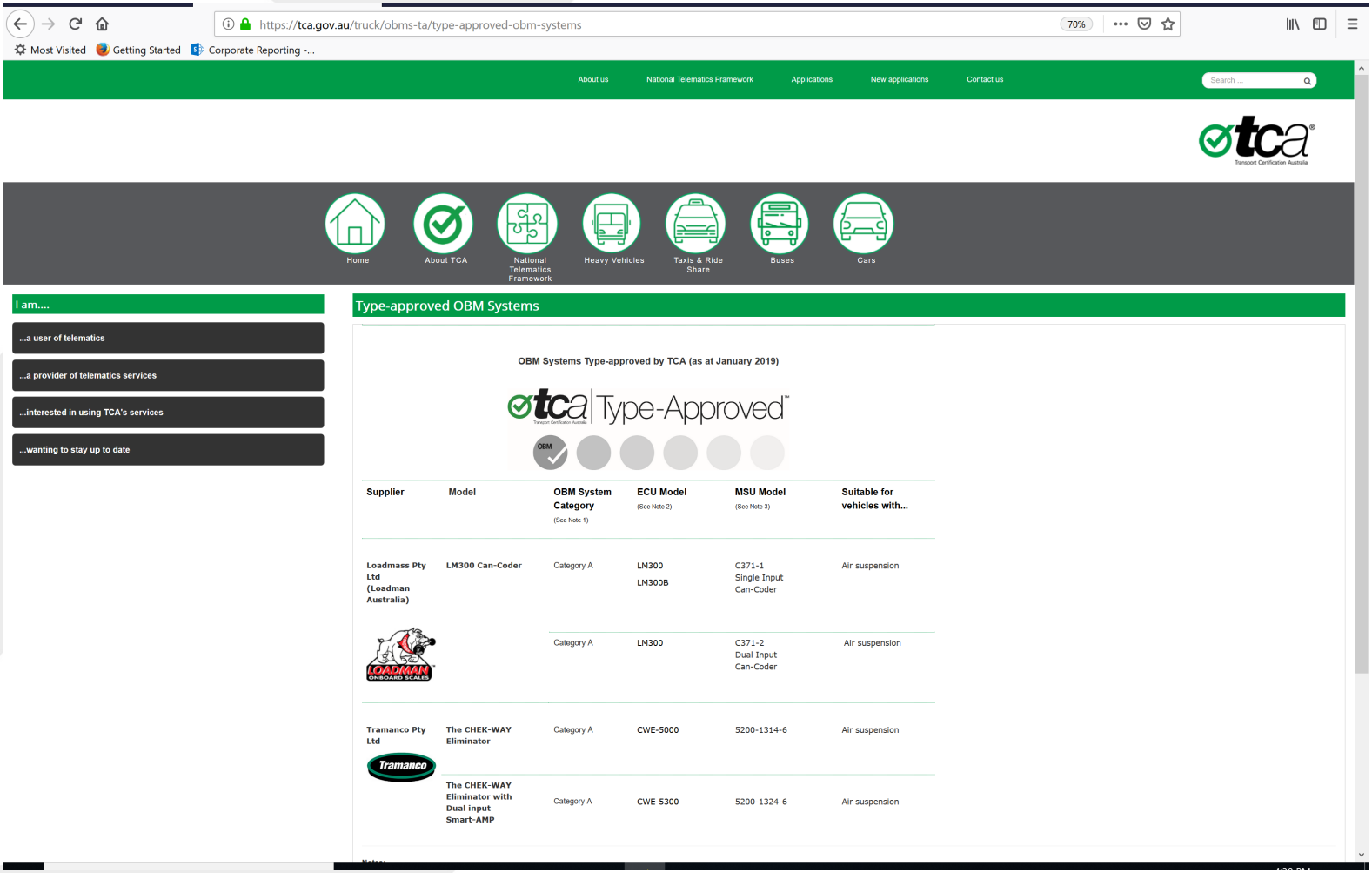

OBM Systems and Intelligent Mass functionality

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The OBM System Functional and Technical Specification is a foundational document for Intelligent Mass functionality

Category B and C type-approved systems provide the necessary information for Intelligent Mass

More on Intelligent Mass later on the agenda

Finding out more

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Suppliers of OBM Systems encouraged to contact us for more information

Initial reviews (and gap analyses) can be arranged with my team

Discussions with TCA are confidential

Questions and comments

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New applications of the National Telematics Framework

Gavin Hill
General Manager
Strategic Development/Implementation

Let's start at the beginning…

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May 2018:

Transport and Infrastructure Council (TIC) assign TCA to lead a business case on improvements to the IAP

May to August 2018:

Consultation and engagement with producers, providers and consumers of the IAP

Freight Telematics Workshop

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Freight Telematics Workshop

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What stakeholders told us…

There are specific needs and demands about the use of telematics applications across:

- Road managers
- Regulators
- Telematics providers
- Transport operators and drivers

Two take-away messages…

1. The need for the IAP application was reaffirmed by all stakeholders (road managers and regulators need a high assurance application to manage high risk vehicles and operations)

2. There are opportunities to apply other telematics applications to improve road utilisation, infrastructure planning and access management

Road managers need new tools

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More specifically, road managers want telematics applications that can:

- Change the way road networks are managed
- Improve route assessment decision making and approvals
- Enable a transition away from transactional, permit-based arrangements to manage restricted access vehicles
- Optimise the balance between productivity, safety and the use of infrastructure assets

Road managers need new tools

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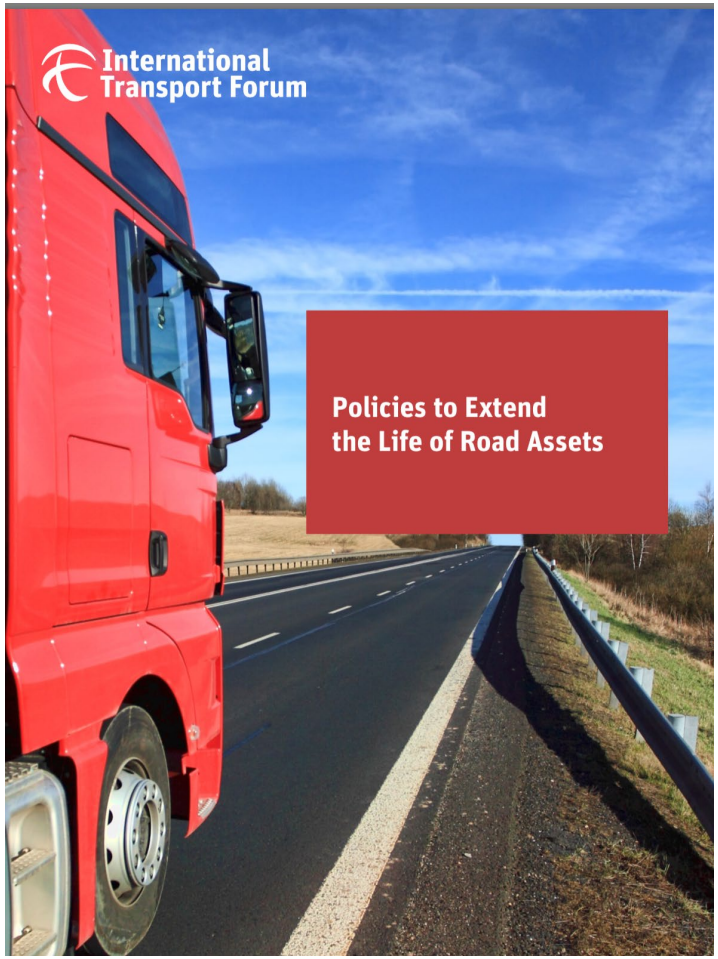
The needs of road managers in Australia are consistent with international developments/best practice

(Using telematics data to further advance road infrastructure management and life-cycle asset management)



Some suggested bedtime reading…

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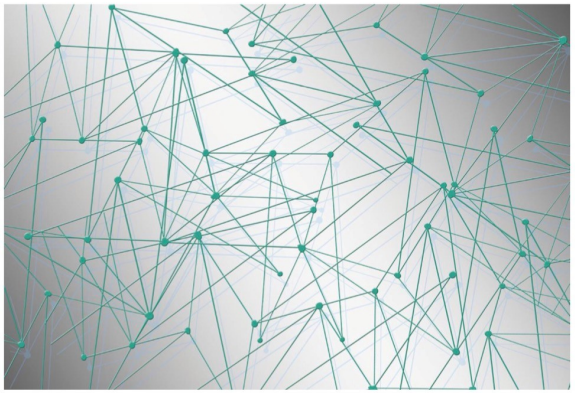
IMPROVEMENTS TO THE INTELLIGENT ACCESS PROGRAM (IAP)

STAKEHOLDER REPORT



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So what happened next?

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September 2018:

Transport and Infrastructure Senior Officials Committee (TISOC) endorse the Business Case

November 2018:

Transport and Infrastructure Council (TIC) endorse the Business Case

The business case…

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Stakeholder	Initiative
Road managers	1. Introduce a new application to support road asset management and planning application specifically for road managers (including local governments), with lower levels of assurance 2. Enhance the availability of IAP information for research purposes.
Regulators	3. Optimise electronic conditions to manage key risks 4. Enable on-demand access to telematics data 5. Improve the management of enrolments and cancellations 6. Improve the management of self-declarations.
Road managers and regulators (common needs)	7. Enable the use of real-time alerts 8. Improve vehicle configuration identification 9. Enable new access applications with lower levels of assurance ('IAP lite') 10. Make the Telematics Analytics Platform (TAP) available for use across multiple producers.
Telematics providers	11. Streamline processes for providers to offer applications with lower levels of assurance (through the National Telematics Framework) 12. Improve the management of alarms and malfunctions 13. Update hardware requirements.
Transport operators and drivers	14. Enable turn-by-turn navigation/route guidance for heavy vehicle drivers 15. Allow transport operator systems to be used for access applications

The business case…

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The business case…

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Where to from here?

Seven improvements which are already underway as part of TCA's 2018-19 work program

Nine improvements can be progressed as part of future TCA work programs

Where to from here?

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There are two key initiatives from the Ministerially-approved Business Case which are driving TCA's focus and priorities:

- Road Infrastructure Management (RIM) application – Level 1 assurance
- IAP Lite application – Level 2 assurance

Where to from here?

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TCA is working closely with road agencies in New South Wales, Queensland, Western Australia and Tasmania on new, innovative access management approaches which utilise RIM and IAP Lite.

While each deployment of RIM and IAP Lite will be tailored according to the policy settings of each agency…*the technical and operational deployments will be consistent*

Questions and comments

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Intelligent Mass

David Rowe
Senior Engineer

Intelligent Mass

Transport Certification Australia

New functionality of the National Telematics Framework

The Intelligent Mass Specification has the requirements for both:

- *Assessment applications (*Intelligent Mass Assessment)
- *Monitoring applications (*Intelligent Mass Monitoring)

This functionality can be used by different producers to offer applications for different use cases and different levels of assurance

Collect mass data from an OBM system and position data from an IVU to manage vehicle mass

On-Board Mass System

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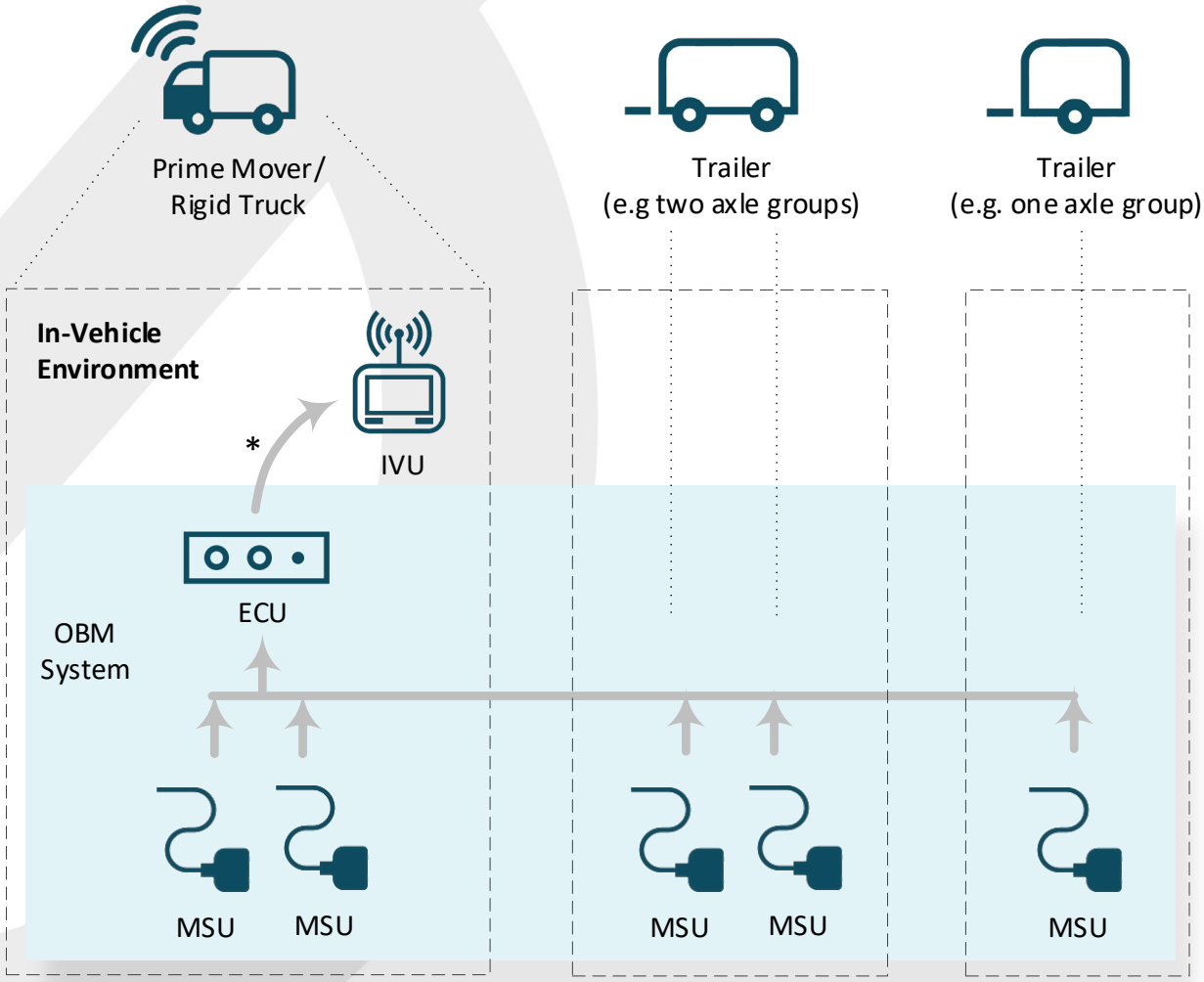

Structuring of requirements

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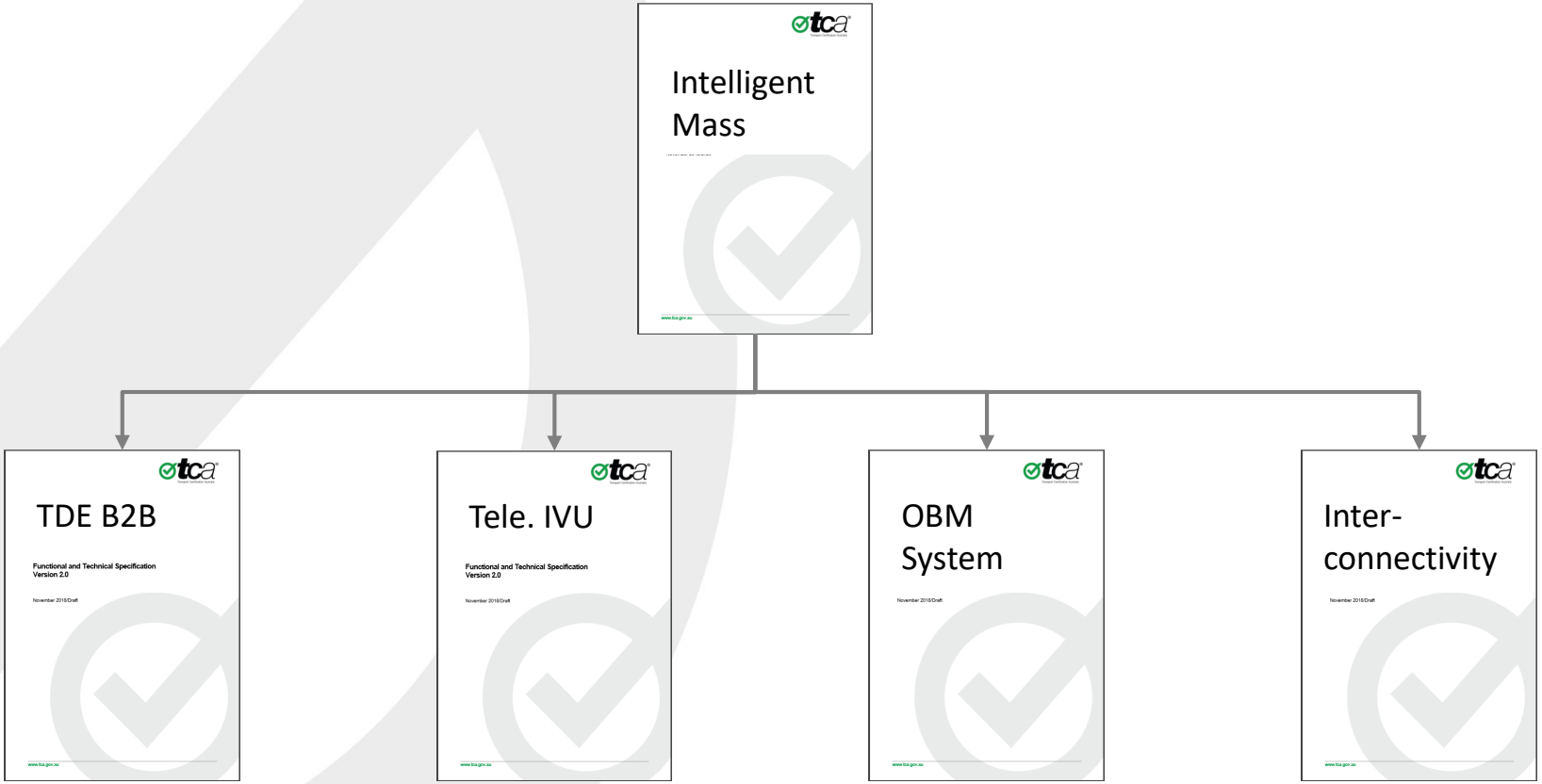

Assessment & Monitoring Applications

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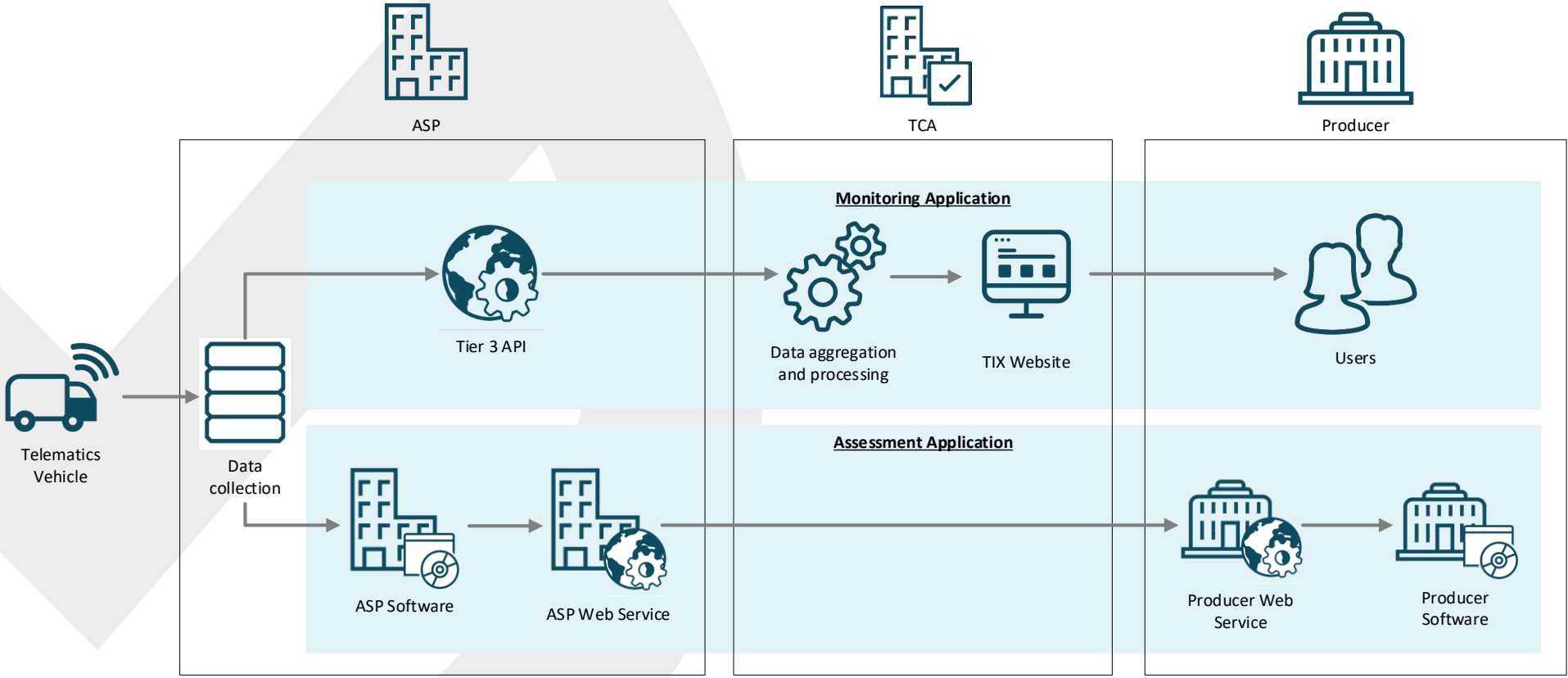

Role of producers

Based on policy and program needs, the producer is able to set:

- Whether to use a monitoring or assessment application
- The process for enrolment of vehicles
- The level of assurance needed

These tools and options allow Intelligent Mass to cater for a range of producer needs, schemes and policy and commercial considerations

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Progress to Date

Consultation

Public consultation on the draft of the Intelligent Mass specification opened in Early November 2018

Consultation period was extended and last comments were accepted to the end of January 2019

Feedback was generally positive with no significant changes required to draft

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Next Steps

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Final Release

Expected by end Q1 2019

Go-to-market timeframes

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TCA is discussing with producers the uses and near-term needs for intelligent mass functionality

Dependent on Category B or C type-approved OBM Systems becoming available

Questions and comments

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Transport Certification Australia

Interconnectivity protocol for fatigue monitoring devices

David Rowe
Senior Engineer

Background

Drowsiness monitoring device

Telematics device

About the initiative

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TCA is working to support the interconnection between telematics devices and fatigue monitoring devices

This work is complementary to the NTC / Alertness CRC heavy vehicle driver fatigue research project

About the initiative

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TCA is working with industry to minimise the barriers which may inhibit the adoption of these technologies, including:

- Lack of integration with other systems
- Proprietary connections and data formats
- Inability to leverage existing investments in telematics

It is not heavy vehicle specific, but is intended to provide interconnectivity between fatigue monitoring devices and telematics devices - irrespective of the needs of consumers, or what kind of vehicles they're used in

About the initiative

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Objectives:

- Explore the viability of defining one or more standard digital interfaces for exchanging mutually-appropriate data
- Develop an open protocol that vendors of drowsiness monitoring devices and telematics devices can adopt to facilitate data exchange between those devices
- Consult widely with industry at all stages of analysis

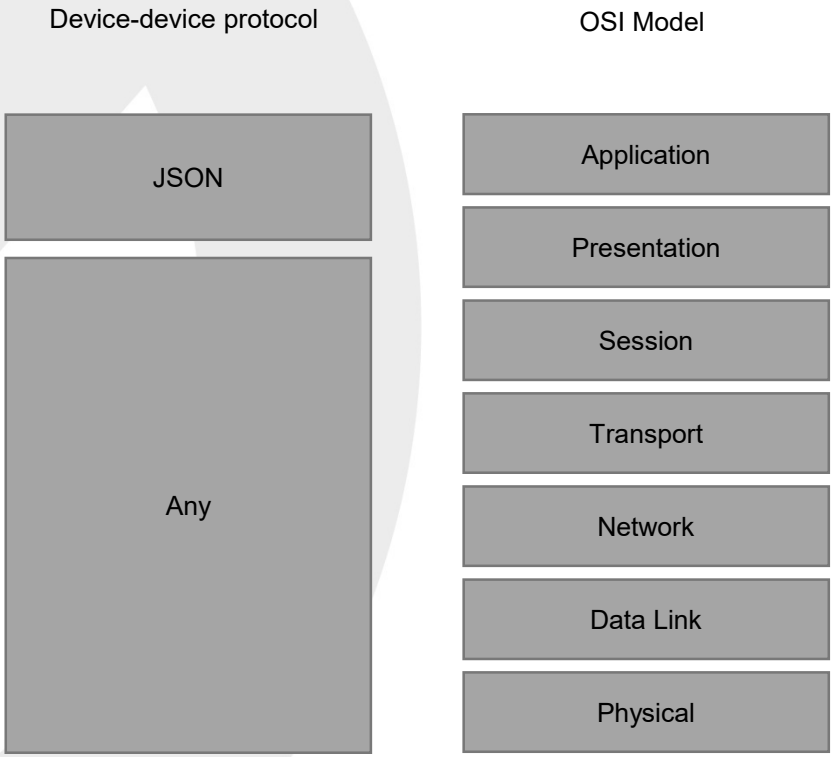
Timeline

DATE	MILESTONE
August 2018	Host initiative kick-off meeting and confirm feasibility (completed)
September 2018	Agree on detailed scope of the protocol
October 2018	Agree on data payload
December 2018	Agree on data protocol message layer and lower layers
February 2019	Release Draft protocol for comment
April 2019	Publish a Drowsiness-Telematics Device Interconnectivity Protocol

Progress

- Two meetings held with interested stakeholders
- Strong participation and representation from industry (telematics and drowsiness device suppliers)
- Decided principles, scope and approach
- Draft protocol developed
- Consultation stage

Protocol features



Protocol features

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Heartbeat message:

Container type	Description
Positioning container	Used to communicate a device's measure of current position
Vehicle container	Used to communicate the current vehicle in use and its attributes
Driver container	Used to communicate the driver and HoS status
Drowsiness container	Used to communicate a device's measure of driver drowsiness

Protocol features

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Event message:

Event type	Description
HARSH_BRAKING	Vehicle deceleration exceeds threshold
HARSH_STEERING	Rate of change of steering angle exceeds threshold
LANE_DEPARTURE	Lane departure warning activated
DROWSINESS_EVENT	Driver drowsiness exceeds threshold or changes risk category
REST_BREAK_REQUIRED	A rest break is recommended based on hours of service / hours of driving

Next Steps

Currently out for comment with stakeholders

Free to request a copy for comment

Next meeting for late Feb / early March

- To resolve comments on the draft
- To discuss any follow-on work or initiatives

Publish by mid-2019

Questions and comments

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Traveller Information Exchange (TIX)

Janelle Shotton
Government Relations &
Engagement Manager

Overview

Traveller Information Exchange (TIX)

- What is TIX all about
- Latest developments
- Rest area location and amenity information

What TIX does

TIX enables users of the transport network to connect with many producers of information through one common standardised information exchange

Making Information Available

- Sends messages to your vehicle
- Customised to the consumer
  - Port slot openings
  - Traffic congestion or road closures
  - Rest area information
- En route journey planning
- Network use decisions

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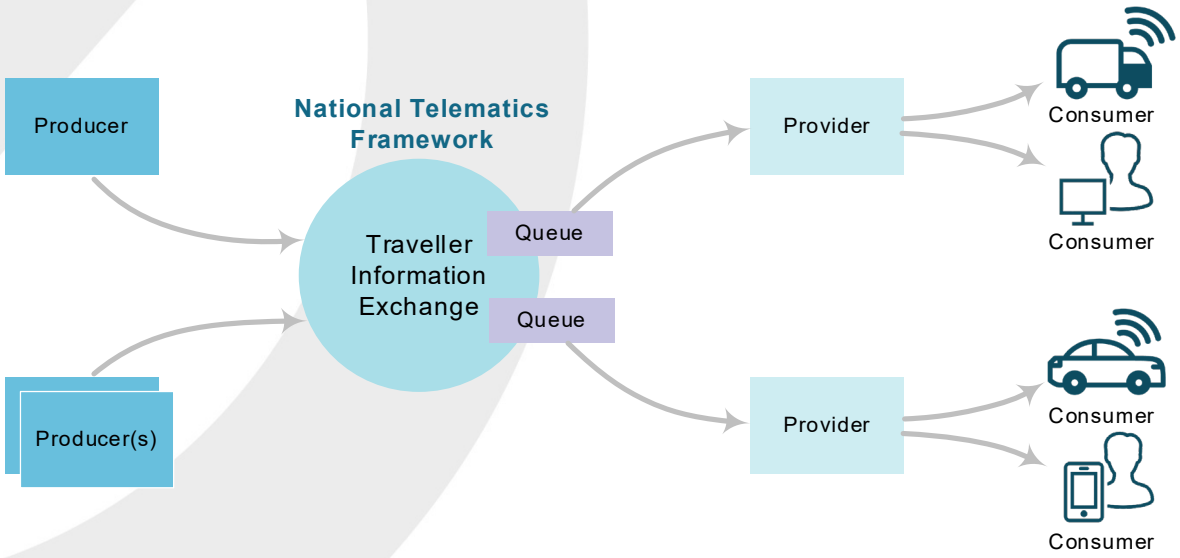
Traveller Information Exchange Ecosystem



Latest developments

The Port of Fremantle provides real-time information on:

- Road closures and congestion
- Availability of port access slots and
- Other relevant information in the port precinct
- Improves driver planning and scheduling on way to the Port

'Virtual truck marshalling area' for drivers and operators

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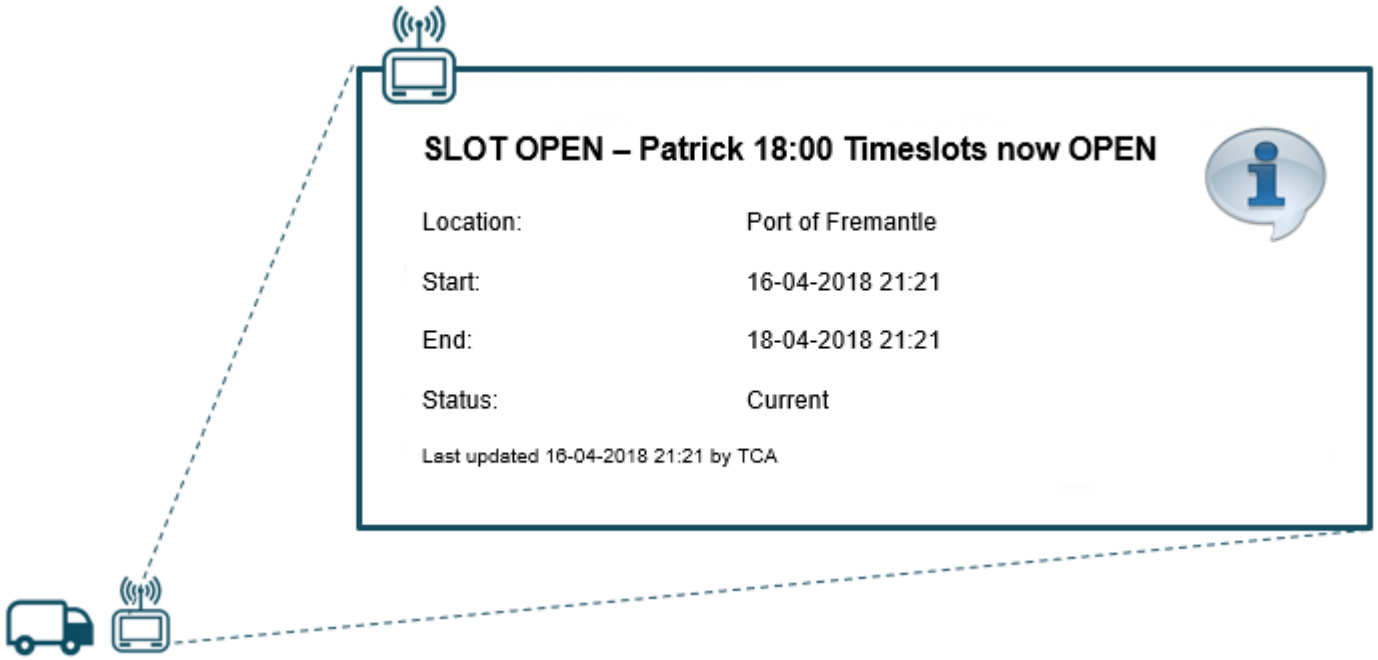

Rest area location and amenities

- Formal heavy vehicle rest areas
- Informal heavy vehicle rest areas (green reflectors)

Consolidated rest areas

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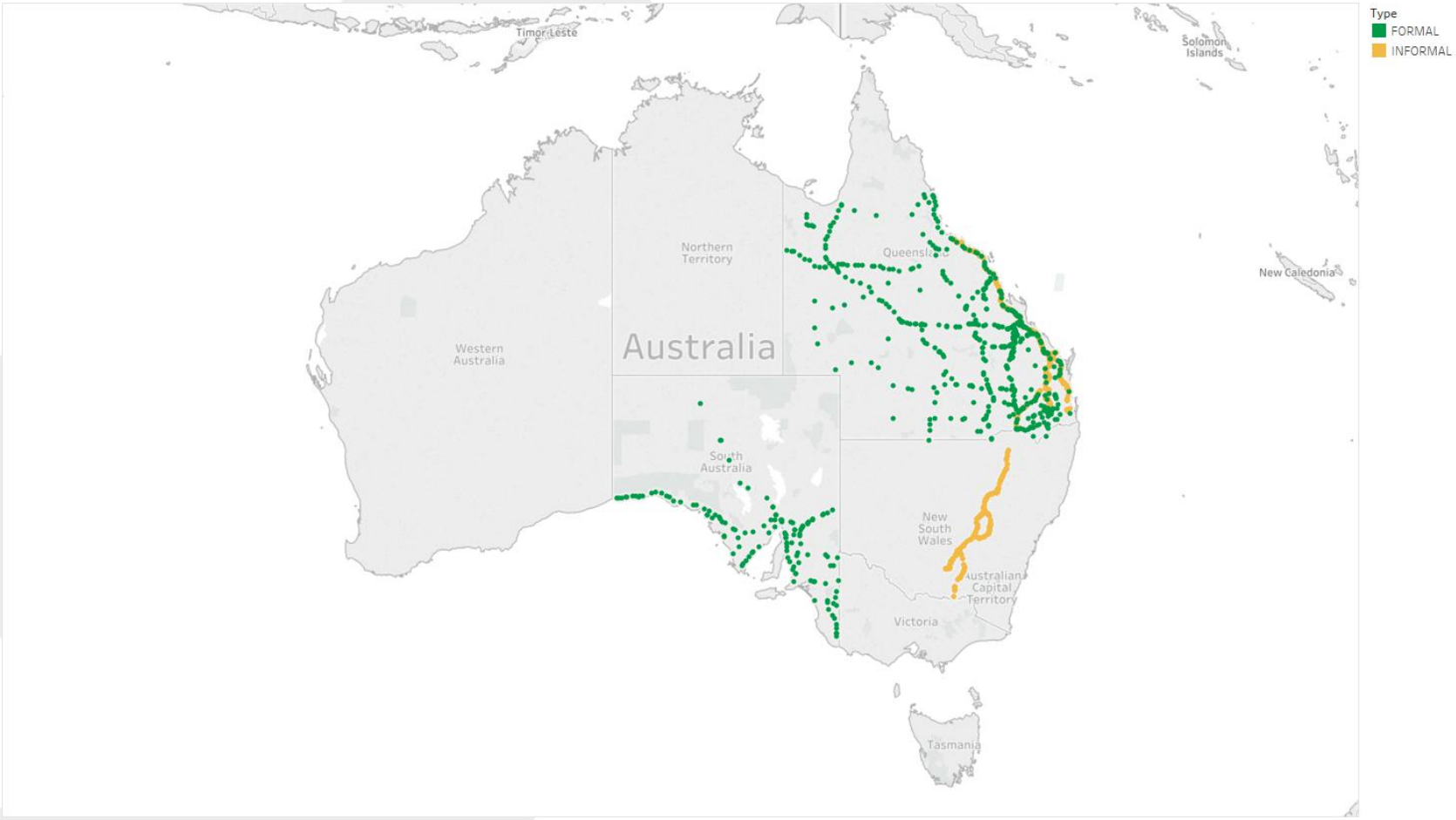

How to access

- Live information available for technology providers and transport operators through the TIX web API
- Heavy vehicle rest area data set is also available as a downloadable human-readable data file
- API access information and downloadable data file can be accessed by clicking the link on the TCA website

  www.tca.gov.au/supplementary-page-rest-area

Questions and comments

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