Telematics Industry Group Forum

Hosted by

Transport Certification Australia

1 August 2019

Agenda

1. Introductions and welcome

2. National Telematics Framework – overview of new applications and functionalities

3. How these applications are being used

   • Statements by road managers

Lunch

4. Release of functional and technical specifications

5. Costing and consumer information

6. Other developments

7. Next steps and timing

Why new applications?
Stakeholders wanted:

RIM

- Need analysis about the use of roads and assets
- Data from a wide variety of sources
- Low barriers to entry
- Typically aggregated data
- Analysis on demand for road managers (no event reporting)

TMA

- Data about road use and specific assets
- Mainly aggregated data
- Can identify non-compliant vehicle movements
- Analysis on demand for road managers (no event reporting)
- Lower cost of operations
- Mass optional

TDE

More streamlined ways of ingesting standard information

Introducing Telematics Monitoring Application (TMA)

A Level 2 Assurance application (sits between IAP and RIM)

Differs from IAP:

- A monitoring application – on demand access to information
- Evidentiary quality (but not linked to HVNL provisions)
- Designed to be used with corroborating evidence/persuade compliance
- Allows option of mass and vehicle configuration data

Differs from RIM:

- Identifiable information
- Type-approved devices (integrity and security of data)

Introducing Road Infrastructure Management (RIM)

A Level 1 Assurance application

Differs from IAP:

- A monitoring application – on demand access to information
- Not used for tracking individual vehicles
- Data typically de-identified and not used for enforcement

Differs from TMA:

- Data used to generate analysis on road usage and vulnerable asset use
- Lower barriers to entry - bring your own device

Applications at all levels of assurance

Application	IAP	TMA	RIM
Assurance level	3	2	1
Devices	Type-approved IVUs	Type-approved IVUs	Bring your own device
ASP requirements	Certification Significant data processing	Certification Data transfer & storage only	Self-assessment Data transfer in standard format only
Reporting	Non-compliance reports and alarms generated	Vehicle-specific data available 'on-demand'	Typically aggregated, de-identified analysis
Compliance mgmt./ evidence	Certificate-based evidence	Telematics combined with other data	Informing strategy and resource allocation
Main uses	High risk (infrastructure and activity) arrangements	Lower oversight for lower infrastructure and operator risks	Network and asset utilisation and planning
Availability	Widely used	Implemented in 2019	Implemented in 2019

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How these new applications are being used

TCA has been asked to deliver a range of schemes, based on new and existing capabilities

- Tasmania   https://hvat.stategrowth.tas.gov.au/
- Victoria
- Western Australia
- NSW   (Spects link)
- Queensland   (Website Link)

Victoria – High Productivity Freight Vehicle (HPFV) monitoring scheme

7. VICTORIA IN 2050

What do these trends and technologies mean for Victoria in 2050? How will Victoria's freight and logistics system develop over the next 30 years to respond to these challenges?

Below are some hypothetical scenarios for Victoria's freight future which are based on current available evidence.

Statewide

- 24/7 freight operations
- Use of drones for last mile deliveries on some non-metropolitan corridors
- Much greater use of e-commerce and paperless supply chain transactions
- Data sharing, real time tracking and visibility of freight movements

Air freight

- Melbourne Airport 's 24/7 curfew-free status has been maintained.
- A significant freight precinct has developed at the 24/7 curfew free Avalon airport.
- Regional airports perform roles as freight hubs, using areas of available adjacent land for freight operators and allied businesses.
- Agricultural production centres link to airports through efficient landside connections to allow fresh produce to be exported.

Urban freight

- Urban freight networks consist of intermodal terminals and freight consolidation centres (FCC) and dedicated transport links that are integrated with open and shared logistics services.
- Urban FCCs are located around the CBD and other major population centres. Each FCC is located within 3 kilometres of the CBD.
- Many city-based residential towers support their own micro consolidation centre with secure storage located on site. These spaces are key locked or geo-fenced but allow access for carriers.

- Planning permits for new buildings reflect requirements for the delivery of freight.
- Pick-up and drop-off points, located at local stores (such as supermarkets) and public transport hubs, are commonplace.

Road freight

- The regulation of heavy vehicles in Australia is fully harmonised.
- The monitoring and management of traffic flow on all major Melbourne roads has been possible due to significant technology investments. This has led to the resolution of key congestion points and enables freight vehicles to re-route in real-time to improve the efficiency and certainty of their task.
- Vehicle-to-vehicle and vehicle-to-infrastructure technologies are used to achieve heavy vehicle safety, travel time reliability and efficiency outcomes.
- Trucks are quieter, cleaner and safer. Remotely piloted trucks operate in controlled areas.
- The HPFV network is extensive and provides end-to-end access through integrated interstate, state and local road connections.

Victorian Freight Plan

www.tca.gov.au

Victoria's Freight Plan

Delivering the Goods, Creating Victorian Jobs, Victorian Freight Plan 2018-50 identifies 5 priorities to address Victoria's growing freight demand.

Within Priority 1: Manage existing and proposed freight corridors and places in conjunction with urban form changes is the continued expansion of the HPFV Network

High Productivity Freight Vehicles

In Victoria, a High Productivity Freight Vehicle (HPFV) is classified as a Class 2 heavy vehicle combination that exceeds 26m in length and/or has a gross combination mass (GCM) more than 68.5 tonnes, or a semi-trailer fitted with a quad-axle group.

Access the network under a Class 2 Performance Based Standards (PBS) permit.

2018 HPFV Network Usage
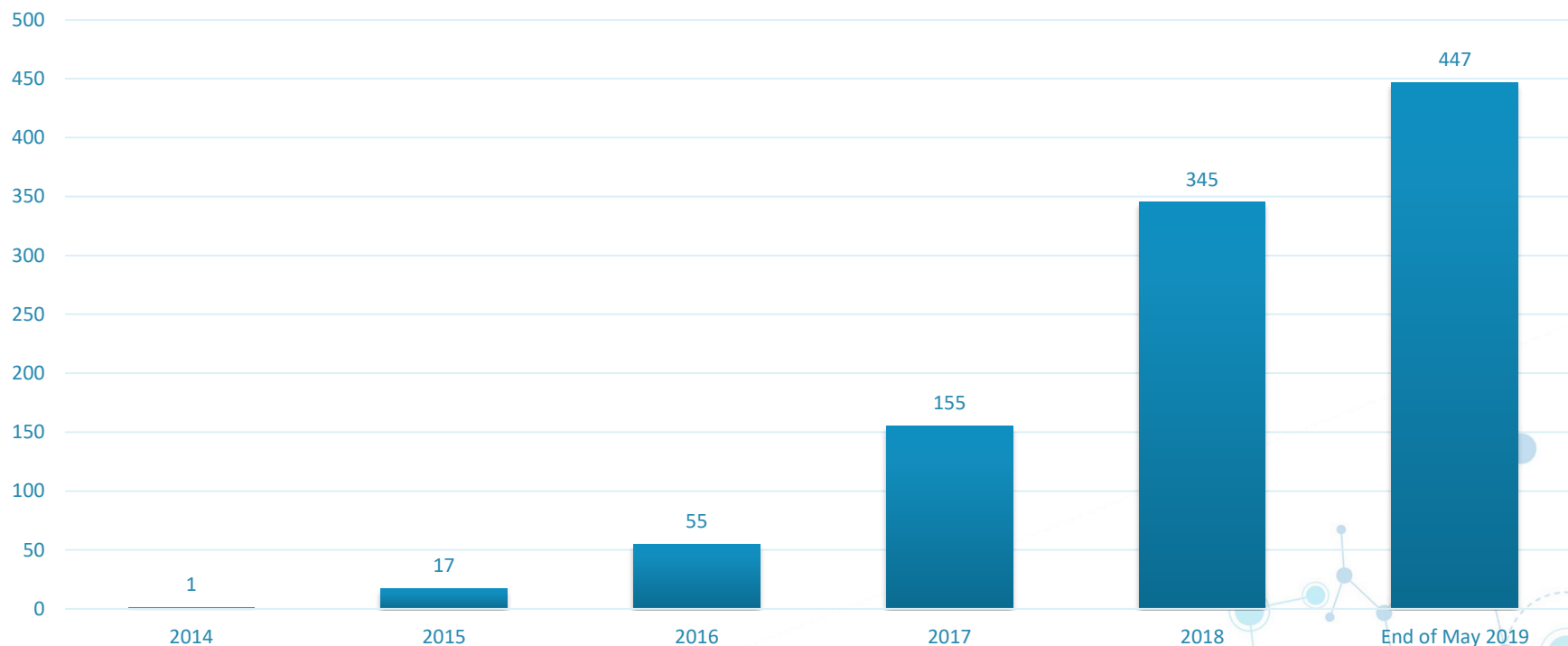

www.tca.gov.au
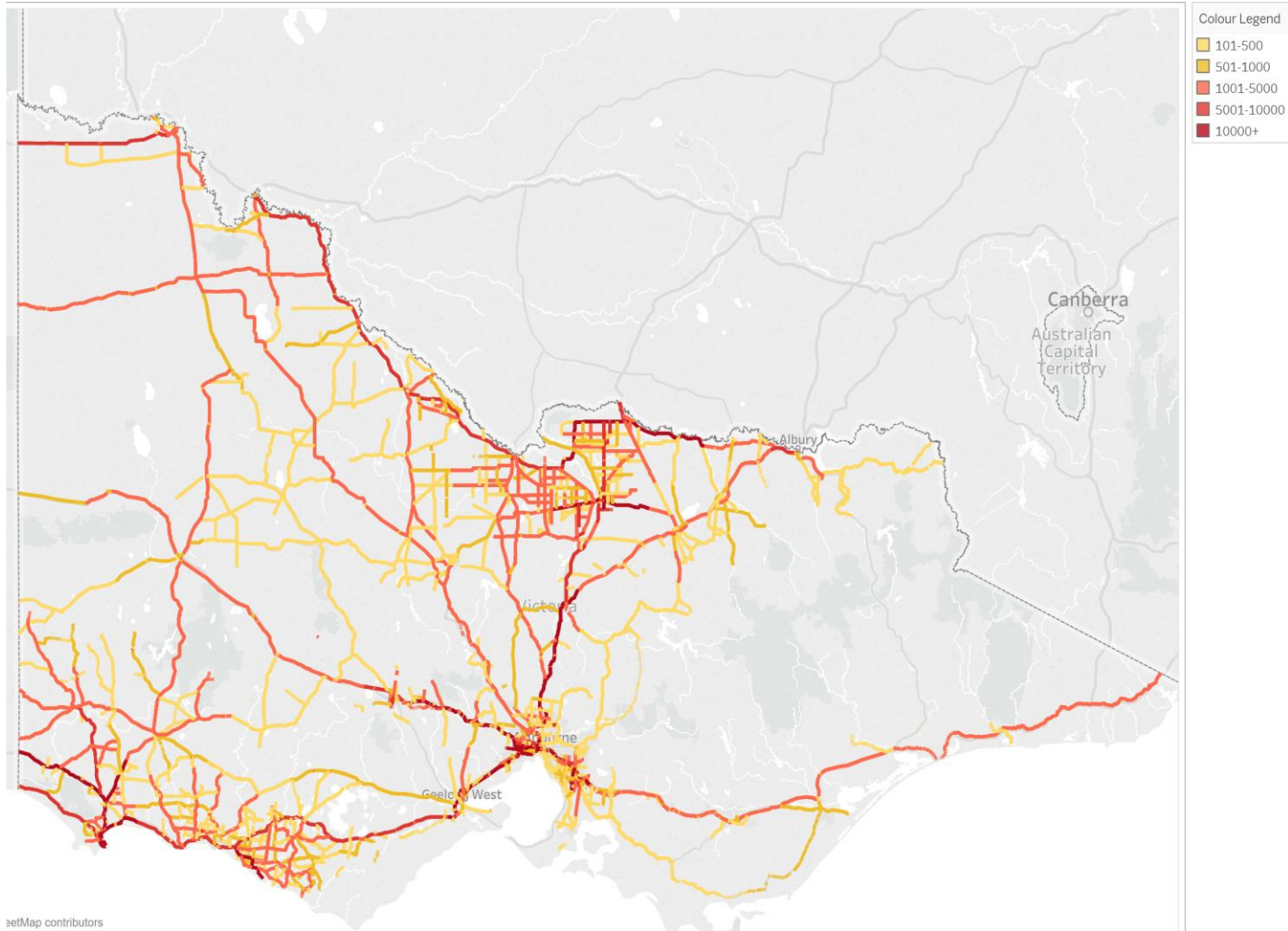
Growing HPFV usage in Victoria

HPFV's Actively Enrolled in IAP
(Jul 2014 to May 2019)

www.tca.gov.au

Current HPFV Network

Victoria's HPFV 30m A-Double Network for Reference Vehicle 2 (6.0-3.75-6.2)
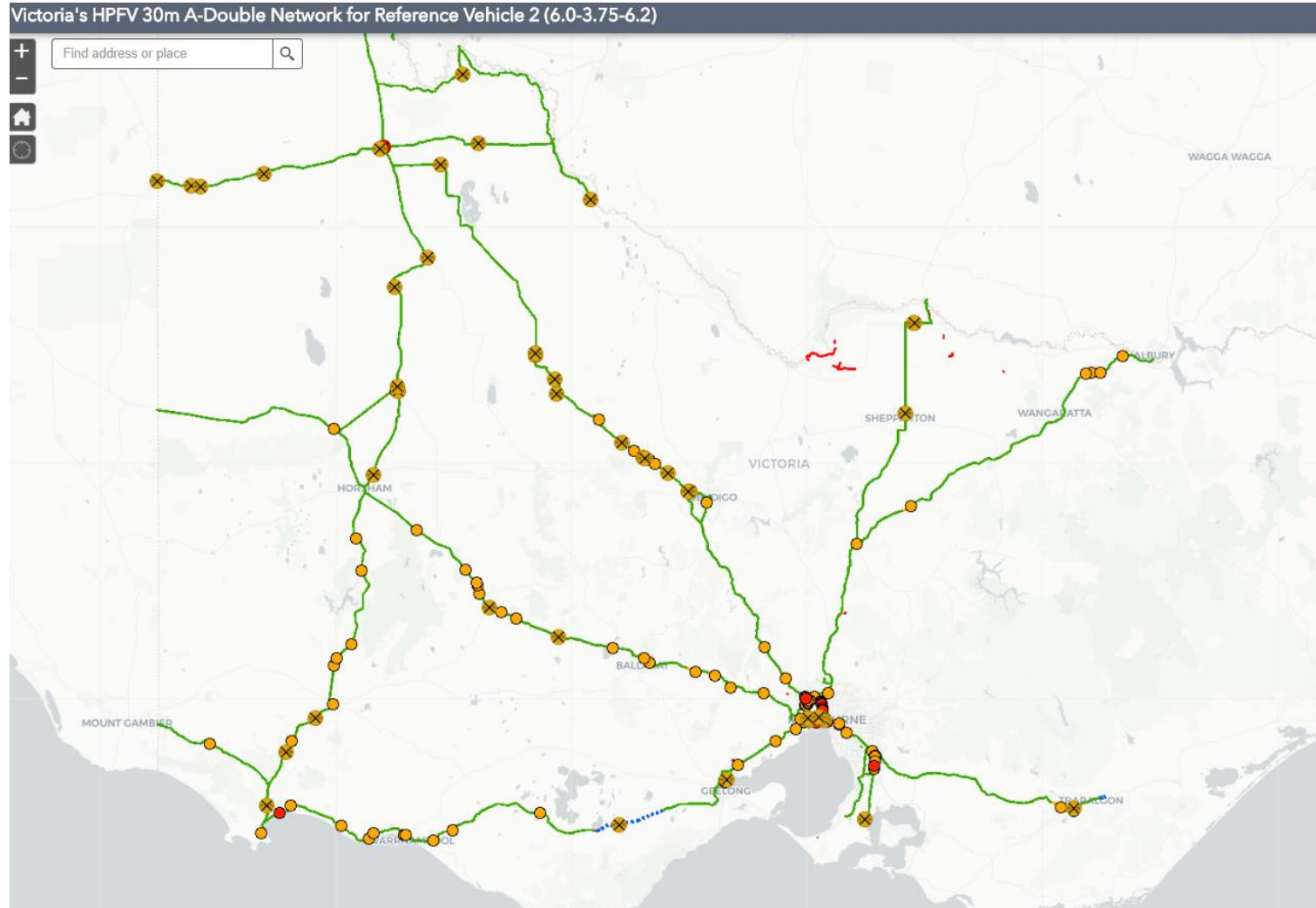
Current HPFV network

Structures assessed to determine capacity to accommodate loads greater than 68.5 tonne (up to 85.5 tonne).

AS 5100 (Australian Bridge Standard) has a provision for On Board Mass in these assessments.

- Effectively provides an increase in allowable mass of HPFVs over these structures of 10%.

HPFV Access Conditions

What are the operating conditions on the HPFV Mass Network?

The following conditions apply to operate A-Doubles on the HPFV Mass Networks:

- Satisfy Level 2 Performance Based Standards (PBS) (refer the National Heavy Vehicle Regulator website for further information);
- HPFV A-Doubles are fitted with a GPS device accredited under the Intelligent Access Program (IAP);
- Fitment of a certified On Board Mass (OBM) system that can be integrated with IAP[4];
- The A-Double (prime mover and trailers) is accredited under the Mass Management module of the National Heavy Vehicle Accreditation Scheme;
- The A-Double has an anti-lock braking system fitted on all axles;
- Certified Road Friendly Suspension (RFS) is fitted to the A-Double;
- The A-Double displays a "long vehicle" warning sign at the front and rear.

OBM requirement currently waived:

[4] While fitment of an approved OBM system has been specified as an access condition, it is recognised that such systems are not currently available. Accordingly, this requirement is waived until such time as when advice is provided by VicRoads that an OBM system must be fitted to the combination in accordance with the specifications and standards set by Transport Certification Australia.

On-Board Mass (OBM)

When the first HPFV networks were released, one of the access conditions was fitment of a certified On Board Mass (OBM) system that can be integrated with IAP.

It was recognized at the time that these systems were not currently available, and an exemption was provided to all operators until the technology was further developed.

Intention:

As of early 2020, all HPFV combinations will be required to be fitted with a category B or C OBM system that can be integrated with IAP.

Summary:

Currently there are around 450 HPFV's monitored under the scheme, and this is a rapidly growing market

VicRoads is looking for Level of assurance 2 data – to plan and maintain the network and monitor compliance

Category B and C systems would be a requirement – with data sent to TCA via SPs

How these new applications are being used

TCA has been asked to deliver a range of schemes, based on new and existing capabilities

- Tasmania
- Victoria
- Western Australia
- NSW
- Queensland

Release of Functional and Technical Specifications

Peter Clark & David Rowe

Transport Certification Australia

1 August 2019

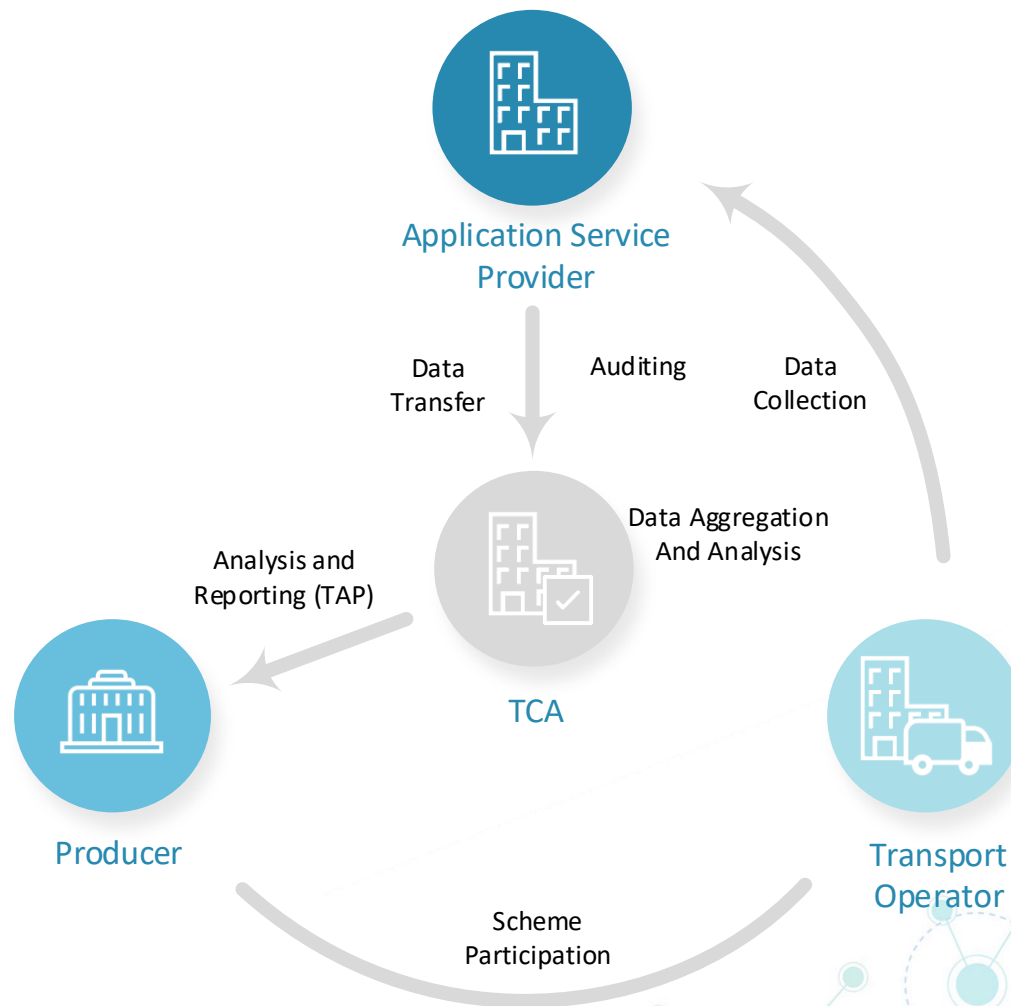# Functional and technical specifications

- TCA sets the standards for telematics applications, devices and data exchange in functional and technical specifications, which are aligned with the National Telematics Framework

- These specifications are available for free on the TCA website

- Having clear specifications for requirements is important for defining performance and promoting interoperability

Key participants

Application Service Provider

Data Transfer

Auditing

Data Collection

Data Aggregation And Analysis

Analysis and Reporting (TAP)

TCA

Producer

Transport Operator

Scheme Participation

Monitoring applications
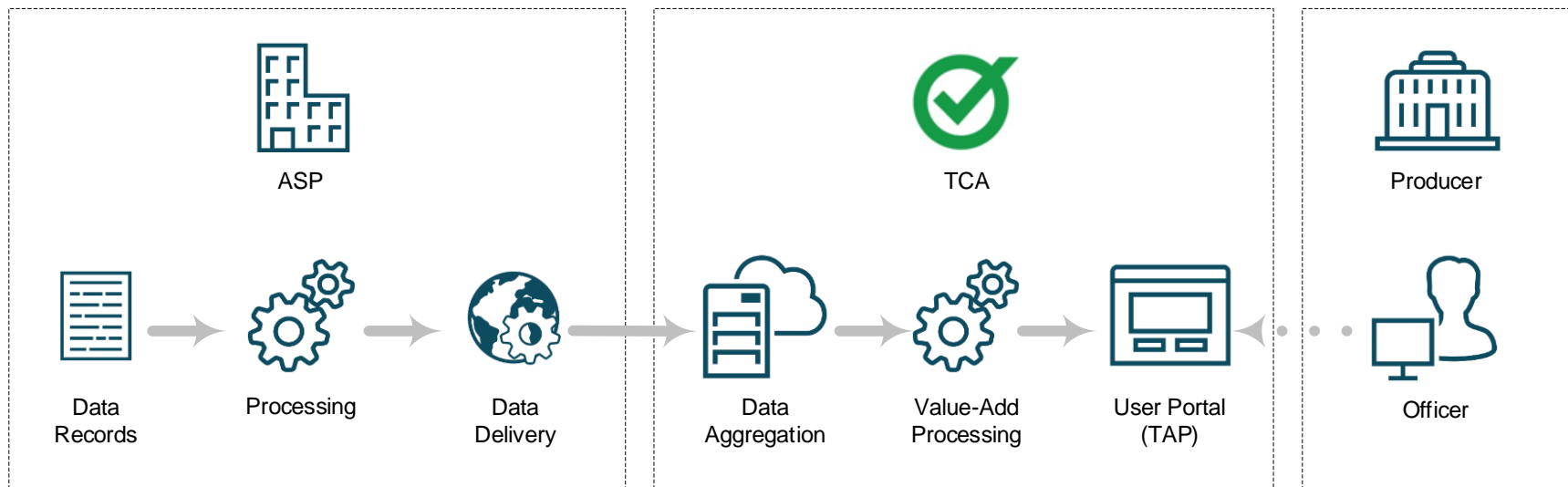
- Enrolled vehicles are monitored and data records are transferred to the ASP back office

- Records are forwarded to TCA, which completes processing and makes reports available to the producer

Overview

	RIM	TMA
Level of assurance	Level 1	Level 2
Conformance	Self-assessment	TCA certification
Device requirements	Own device	• Type-approved IVU • If required: type-approved OBM system • If required: user interface
Data exchange	Transfer to TCA using TDE B2B mechanisms	
Position records	Collected at 1- to 60-second intervals	Collected at 30-second intervals
Additional features	-	• Optional mass and vehicle configuration • Optional self-declaration (comments)

Platform approach

www.tca.gov.au
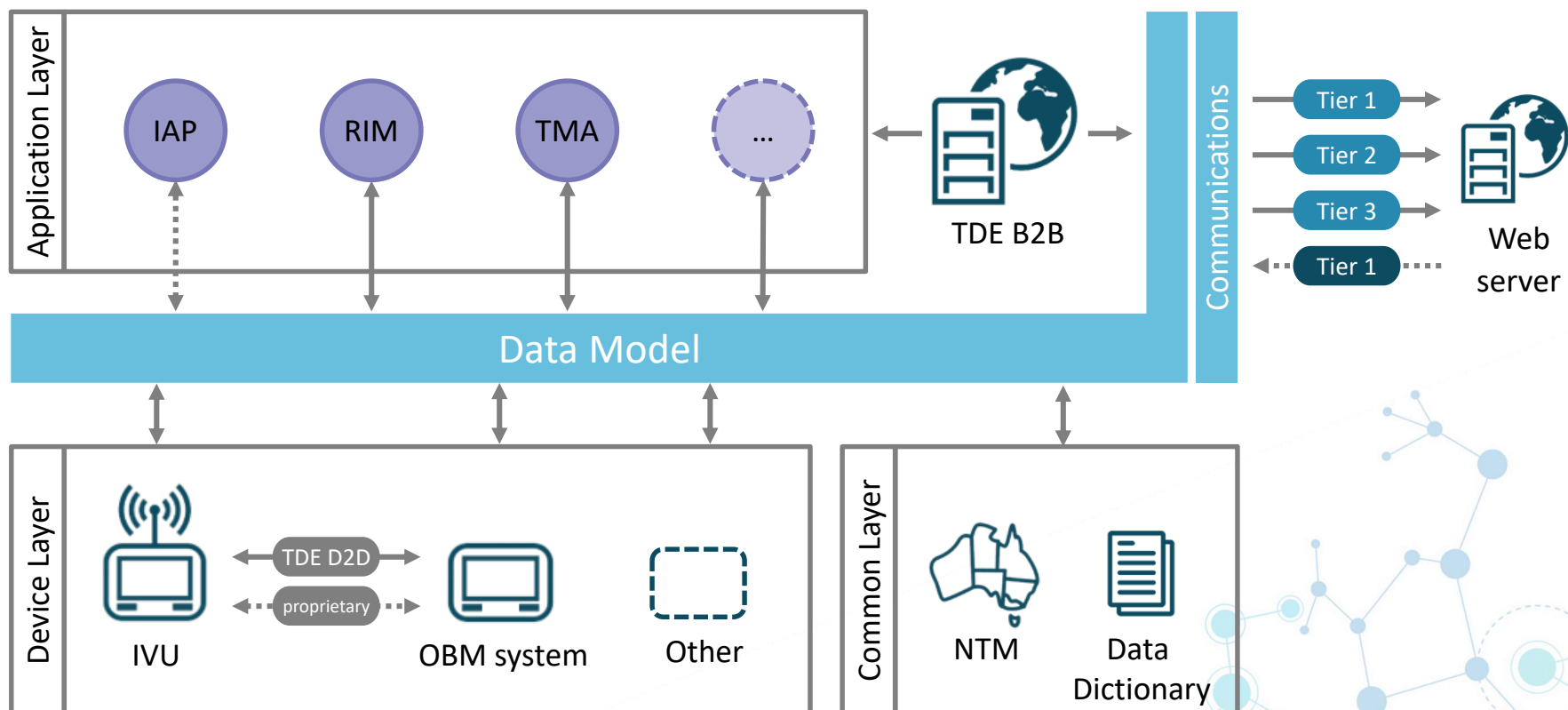
Road Infrastructure Management (RIM)

Road Infrastructure Management

ASPs:

- Complete self-assessment

- Enrol transport operators and vehicles into schemes

- Collect position data from enrolled vehicles

- Provide data to TCA

Producers:

- Offer schemes that use RIM

- View reports from TCA

- Use reports to manage their networks

RIM: Requirements for ASPs

TELEMATICS DEVICE

A.1   Physical Characteristics

A.2   Position Data

A.3   Date and Time Data

A.4   Position Records

ASP SYSTEM

B.1   ASP System Maintenance and Continuity

DATA HANDLING

B.2   Data Processing

ENROLMENT

B.3   Enrolment

B.4   Enrolment Form

B.5   Enrolment Cancellation

DATA REPORTING

B.6   Data Reporting

ENROLMENT REPORT

B.7   Enrolment Report

DATA EXCHANGE

B.8   Tier 2 Data Exchange

B.9   Tier 3 Data Exchange

RIM: Requirements for ASPs

Telematics device:

- Collects position records containing latitude, longitude and date time at a regular interval between 1 and 60 seconds

- Has a unique identifier

- Obtains date and time from a trusted time source

RIM: Requirements for ASPs

Enrolment:

- The ASP is responsible for creating, approving and cancelling enrolments

- Each enrolment (and any updates) sent to TCA

- An enrolment report summarising monitored vehicles is created at the end of the month and sent to TCA
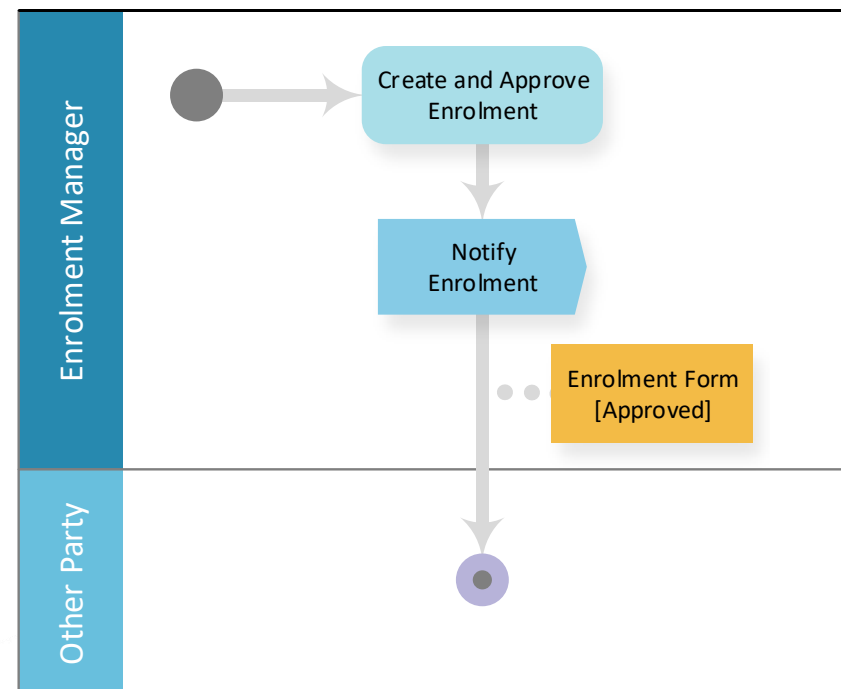
RIM: Requirements for ASPs

Data reporting:

- Data collected by vehicles with an active enrolment is sent to TCA in a data package

- Data packages also contain enrolment forms and reports (if not already provided)

- Data package requirements are specified in the *Telematics Business-to-Business Data Exchange Functional and Technical Specification*

RIM: Example of output

SPV movements in a Local Government Area

www.tca.gov.au

RIM: Example of output

SPV movements in a Local Government Area

Lga Name: **NSW Blue Mountains City Council**
Road Name: **Great Western Highway**
Journey Count: **23,090**
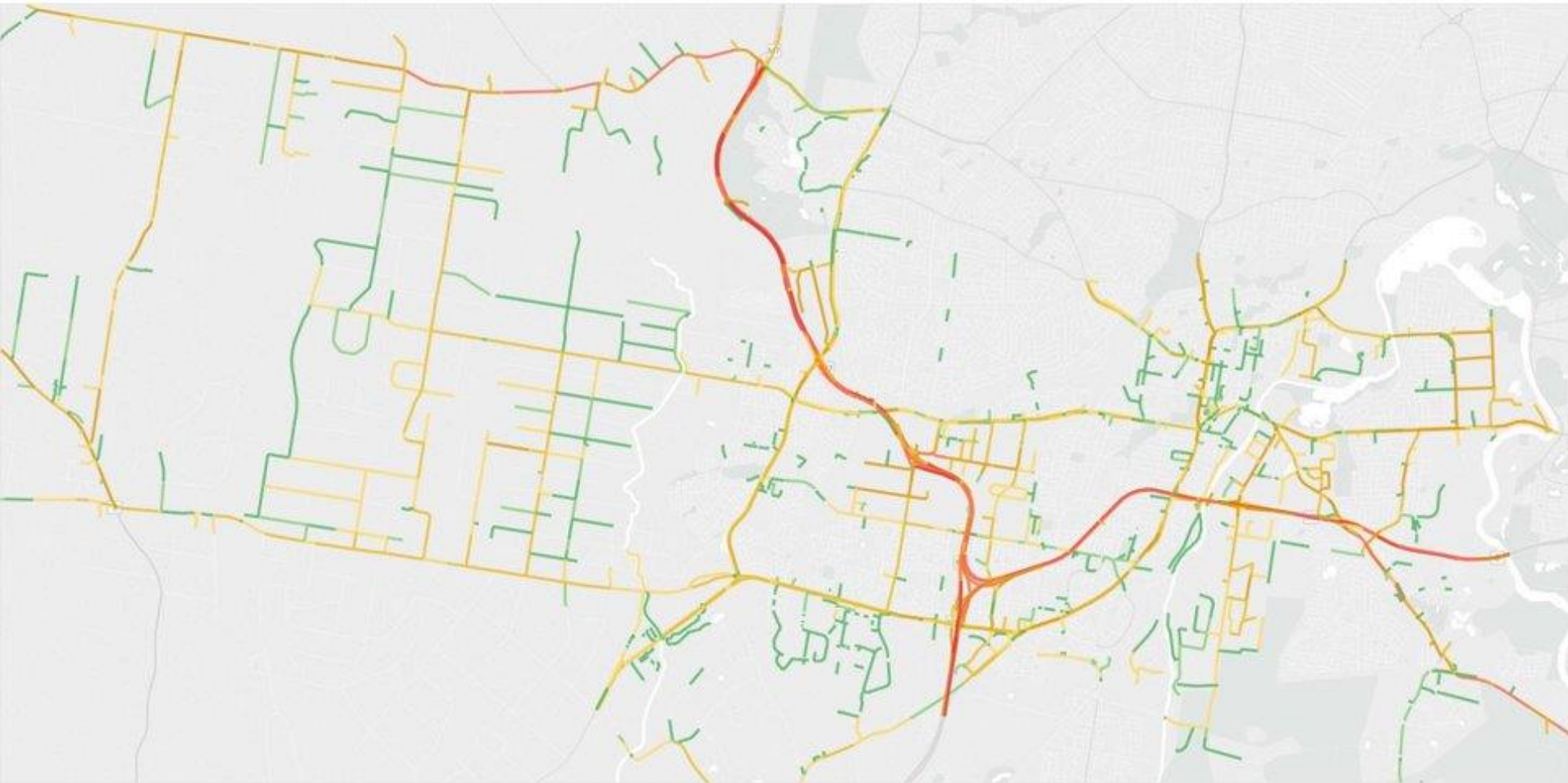
RIM: Example of output

TMR Bridge Analysis: Blackrock Creek (7350)

Journey count per month

Bridge Name: Blackrock Creek

(Bar chart — Distinct count of Journeys by month: November 2017 through October 2018)

Unique vehicle count per month

Bridge Name: Blackrock Creek
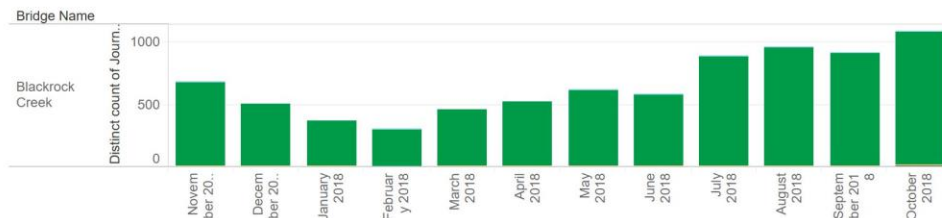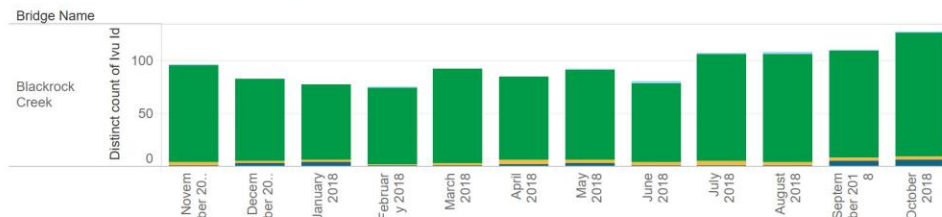
(Bar chart — Distinct count of Ivu Id by month: November 2017 through October 2018)

### Position record map

Bruce Highway
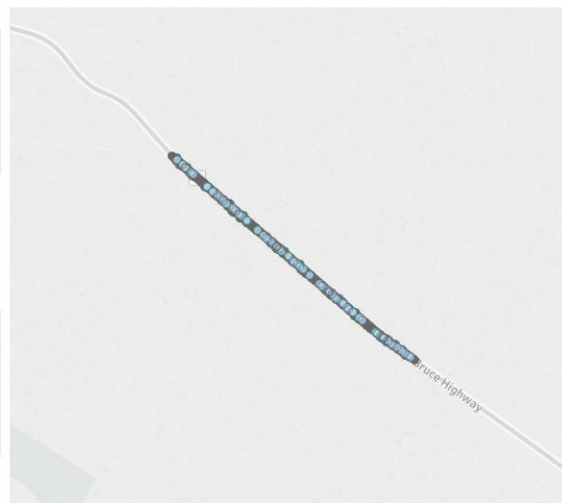
Bridge Name
- ● Blackrock Creek
- ○ Josephine Creek
- ○ Roundstone Creek

Vehicle Type
- ☑ Non Standard Freight Vehicle
- ☑ Prime Mover
- ☑ Rigid
- ☑ SPV
- ☑ Unknown

Month and year
- ☑ November 2017
- ☑ December 2017
- ☑ January 2018
- ☑ February 2018
- ☑ March 2018
- ☑ April 2018
- ☑ May 2018
- ☑ June 2018
- ☑ July 2018
- ☑ August 2018
- ☑ September 2018
- ☑ October 2018

Summary dashboard

Vehicle Type	November Vehicles	November Journeys	December Vehicles	December Journeys	January Vehicles	January Journeys	February Vehicles	February Journeys	March 2018 Vehicles	March 2018 Journeys	April 2018 Vehicles	April 2018 Journeys	May 2018 Vehicles	May 2018 Journeys	June 2018 Vehicles	June 2018 Journeys	July 2018 Vehicles	July 2018 Journeys	August 2018 Vehicles	August 2018 Journeys	September Vehicles	September Journeys	October Vehicles	October Journeys
Non Standard Freight Vehicle	1	4					1	2					1	2	2	3	1	2	2	2	1	2	1	4
Prime Mover	92	680	78	498	72	361	73	307	89	454	79	518	85	614	75	573	101	879	102	961	101	913	117	####
Rigid	3	4	2	6	2	4	1	1	2	7	4	6	3	5	3	10	4	9	3	7	4	6	4	7
SPV	1	2	3	7	4	8	1	2	1	2	2	3	3	6	1	1	1	2	1	2	5	6	6	11

Journey distribution by hour of the day

(Bar chart — % of journeys by hour 1–23)
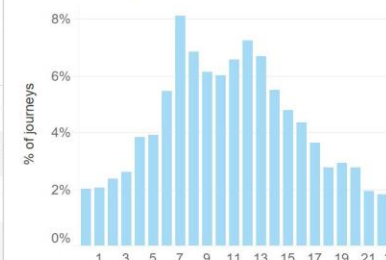
Day of week
- ☑ Monday
- ☑ Tuesday
- ☑ Wednesday
- ☑ Thursday
- ☑ Friday
- ☑ Saturday
- ☑ Sunday

Iap Application: All

35

Telematics Monitoring Application (TMA)

Telematics Monitoring Application

ASPs:

- Apply for certification

- Enrol transport operators and vehicles into schemes

- Collect position data from enrolled vehicles

- If collection of mass is required by a scheme, install an OBM system and collect mass data

- If self-declaration is required by a scheme, install a user interface and collect comment data

- Provide data to TCA

Producers:

- Offer schemes that use TMA

- Offer schemes that use TMA with mass and/or SD

- Receive reports from TCA

- Use reports to manage their networks

TMA: Requirements for ASPs

REQUIREMENTS FOR DEVICE TYPE-APPROVAL

TELEMATICS IN-VEHICLE UNIT (IVU)

A.1   Telematics In-Vehicle Unit (IVU)

A.2   Position Records

REQUIREMENTS FOR ASP

ASP CERTIFICATION

B.1   Certification of an ASP for TMA

DEVICE INSTALLATION, OPERATION AND MAINTENANCE

B.2   Type-Approved Devices

B.3   Installation, Operation and Maintenance of Devices

B.4   Documentation

ASP SYSTEM

B.5   ASP System

B.6   ASP System Maintenance and Continuity

B.7   Documentation

DATA HANDLING

B.8   Data Collection

B.9   Data Processing

B.10 Data Backup and Archiving

ENROLMENT

B.11 Enrolment

B.12 Enrolment Form

B.13 Enrolment Cancellation

DATA REPORTING

B.14 Data Reporting

ENROLMENT REPORT

B.15 Enrolment Report

DATA EXCHANGE

B.16 Tier 2 Data Exchange

B.17 Tier 3 Data Exchange

ASP QUALITY SYSTEM

B.18 Information Security

ASP PERFORMANCE SYSTEM

B.19 ASP Performance System

ASP AUDIT AND REVIEW

B.20 IVU Audit

ASP RESTRICTION ON POST-CERTIFICATION CHANGE

B.21 ASP Restriction on Post-Certification Change

www.tca.gov.au

TMA: Requirements for ASPs

REQUIREMENTS FOR VEHICLE CONFIGURATION AND MASS

CERTIFICATION OF ASPs

C.1   Certification of an ASP for TMA

TELEMATICS IN-VEHICLE UNIT (IVU)

C.2   Telematics IVU
C.3   Transfer Data Records
C.4   Mass Records
C.5   Alarm Records
C.6   Data Storage and Transfer

ON-BOARD MASS (OBM) SYSTEM

C.7   OBM System

OBM SYSTEM INSTALLATION, OPERATION AND MAINTENANCE

C.8   Type-Approved OBM Systems

C.9   Installation, Operation and Maintenance of OBM Systems

C.10   Documentation

C.11   Additional Requirements for OBM Systems

DATA HANDLING

C.12   Data Backup and Archiving

ENROLMENT

C.13   Enrolment Form

REQUIREMENTS FOR SELF-DECLARED DATA

CERTIFICATION OF ASPs

D.1   Certification of an ASP for TMA

TELEMATICS IN-VEHICLE UNIT (IVU)

D.2   User Interface
D.3   Self-Declared Data
D.4   Self-Declared Records
D.5   Data Storage and Transfer

DATA HANDLING

D.6   SD Data

TMA: Requirements for ASPs

Telematics device:

- Uses a type-approved telematics IVU

- Configured to collect position records at 30-second intervals

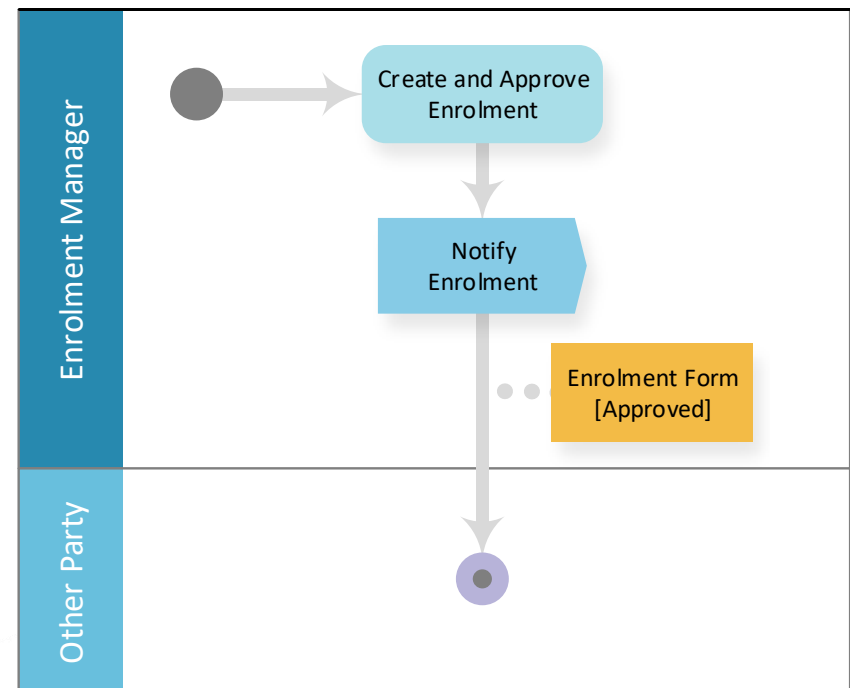# TMA: Requirements for ASPs

ASP System:

- Requirements to record and report malfunctions

- Backup and recovery requirements

- Must have a quality system and information security management system (ISMS), and must monitor device performance

- Changes must be managed through a re-certification process

TMA: Requirements for ASPs

Enrolment:

- The ASP is responsible for creating, approving and cancelling enrolments

- Each enrolment (and any updates) is sent to TCA

- An enrolment report summarising monitored vehicles is created at the end of the month and sent to TCA

TMA: Requirements for ASPs

Data reporting:

- The data collected by vehicles with an active enrolment is sent to TCA in a data package

- Data packages contain enrolment forms and reports (if not already provided)

- Data package requirements are specified in the *Telematics Business-to-Business Data Exchange Functional and Technical Specification*

TMA: Requirements for ASPs

Mass (optional):

- ASP must also install a type-approved OBM system that is Category B or Category C

- Additional IVU requirements for communication with the OBM system

- Mass records are collected once every 5 minutes

- Must provide a record linking MSU ID to registration number of the vehicle it is installed in

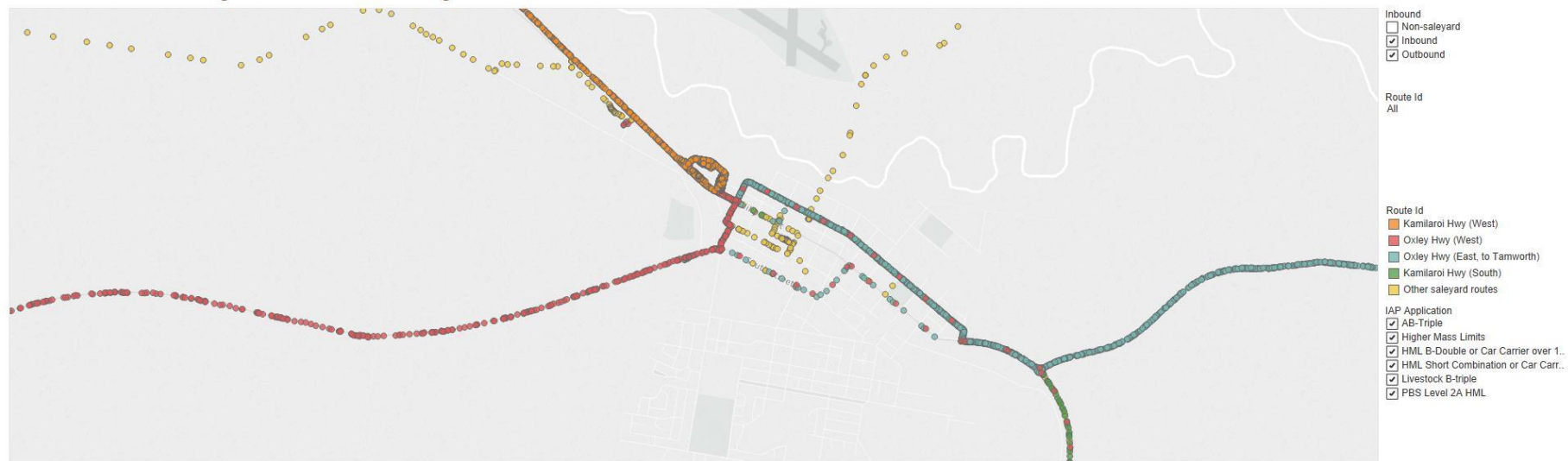- Periodic calibration and adjustment required

TMA: Requirements for ASPs

Self declaration (optional):

- A user interface is used for self declaration

- An alternate facility can also be used (e.g. website)

- Allows the driver to make comments with a pre-set list of comment names and additional free text

TMA: Example of output

Gunnedah Saleyards route analysis

Inbound
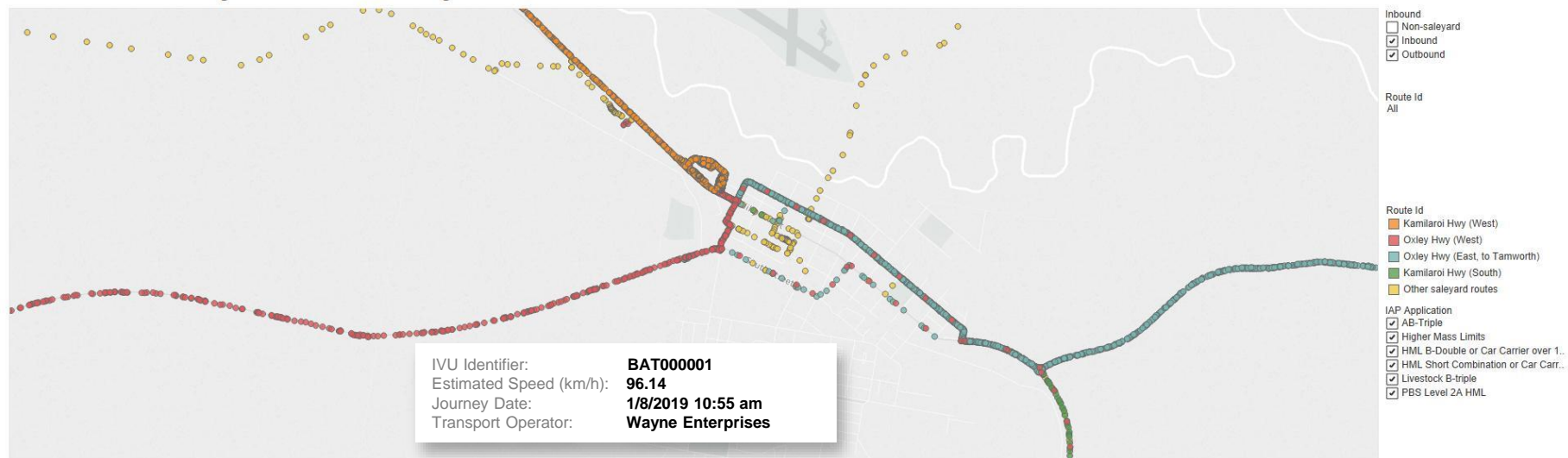- ☐ Non-saleyard
- ☑ Inbound
- ☑ Outbound

Route Id
All

Route Id
- ■ Kamilaroi Hwy (West)
- ■ Oxley Hwy (West)
- ■ Oxley Hwy (East, to Tamworth)
- ■ Kamilaroi Hwy (South)
- ■ Other saleyard routes

IAP Application
- ☑ AB-Triple
- ☑ Higher Mass Limits
- ☑ HML B-Double or Car Carrier over 1..
- ☑ HML Short Combination or Car Carr..
- ☑ Livestock B-triple
- ☑ PBS Level 2A HML

Vehicle and journey counts

Route Id	Journey count			Vehicle count		
	Non-saleyard	Inbound	Outbound	Non-saleyard	Inbound	Outbound
Non-saleyard vehicle movements	84,721			1,001		
Kamilaroi Hwy (West)		23	46		12	15
Oxley Hwy (West)		9	15		7	10
Oxley Hwy (East, to Tamworth)		57	27		17	15
Kamilaroi Hwy (South)		22	2		14	2
Other saleyard routes		7	75		6	23

Vehicle types

	AB-Triple				Higher Mass Limits				HML B-Double or Car Car..				HML Short Combination o..				Livestock B-triple				PBS Level..	
	Journey count		Vehicle count		Journey count		Vehicle count		Journey count		Vehicle count		Journey count		Vehicle count		Journey count		Vehicle count		Journ ey c..	Vehic le c..
	Inbo..	Out..	Inbo..	Out..	Inbo..	Out..	Inbo..	Out..	Inbo..	Out..	Inbo..	Out..	Inbo..	Out..	Inbo..	Out..	Inbo..	Out..	Inbo..	Out..	Out..	Out..
Kamilaroi Hwy (West)					2	1	2	1	5	12	3	3	5	5	2	3	11	28	5	8		
Oxley Hwy (West)					3	1	1	1	2		2				1		4	13	4	8		
Oxley Hwy (East, to Tamworth)	1	1	1	1	2	1	1	1	9	4	4	2	7	9	2	2	38	11	9	9	1	1
Kamilaroi Hwy (South)					8	1	4	1	6		4		2		2		6	1	4	1		
Other saleyard routes					1	10	1	4		15		7		11		5	6	39	5	8		

TMA: Example of output

Gunnedah Saleyards route analysis

IVU Identifier: **BAT000001**
Estimated Speed (km/h): **96.14**
Journey Date: **1/8/2019 10:55 am**
Transport Operator: **Wayne Enterprises**

Inbound
☐ Non-saleyard
☑ Inbound
☑ Outbound

Route Id
All

Route Id
■ Kamilaroi Hwy (West)
■ Oxley Hwy (West)
■ Oxley Hwy (East, to Tamworth)
■ Kamilaroi Hwy (South)
■ Other saleyard routes

IAP Application
☑ AB-Triple
☑ Higher Mass Limits
☑ HML B-Double or Car Carrier over 1..
☑ HML Short Combination or Car Carr..
☑ Livestock B-triple
☑ PBS Level 2A HML

Vehicle and journey counts

Route Id	Journey count Non-saleyard	Journey count Inbound	Journey count Outbound	Vehicle count Non-saleyard	Vehicle count Inbound	Vehicle count Outbound
Non-saleyard vehicle movements	84,721			1,001		
Kamilaroi Hwy (West)		23	46		12	15
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Kamilaroi Hwy (South)		22	2		14	2
Other saleyard routes		7	75		6	23

Vehicle types

|	AB-Triple Journey count Inbo..	AB-Triple Journey count Out..	AB-Triple Vehicle count Inbo..	AB-Triple Vehicle count Out..	Higher Mass Limits Journey count Inbo..	Higher Mass Limits Journey count Out..	Higher Mass Limits Vehicle count Inbo..	Higher Mass Limits Vehicle count Out..	HML B-Double or Car Car.. Journey count Inbo..	HML B-Double or Car Car.. Journey count Out..	HML B-Double or Car Car.. Vehicle count Inbo..	HML B-Double or Car Car.. Vehicle count Out..	HML Short Combination o.. Journey count Inbo..	HML Short Combination o.. Journey count Out..	HML Short Combination o.. Vehicle count Inbo..	HML Short Combination o.. Vehicle count Out..	Livestock B-triple Journey count Inbo..	Livestock B-triple Journey count Out..	Livestock B-triple Vehicle count Inbo..	Livestock B-triple Vehicle count Out..	PBS Level.. Journey c.. Out..	PBS Level.. Vehicle c.. Out..
Kamilaroi Hwy (West)					2	1	2	1	5	12	3	3	5	5	2	3	11	28	5	8		
Oxley Hwy (West)					3	1	1	1	2		2			1		1	4	13	4	8		
Oxley Hwy (East, to Tamworth)	1	1	1	1	2	1	1	1	9	4	4	2	7	9	2	2	38	11	9	9	1	1
Kamilaroi Hwy (South)					8	1	4	1	6		4		2		2		6	1	4	1		
Other saleyard routes					1	10	1	4		15		7		11		5	6	39	5	8		

TMA: Example of output

## VicRoads Bridge Analysis: Melbourne-Bendigo Railway Line

Journeys by vehicle type

	November 2017	December 2017	January 2018	February 2018	March 2018	April 2018	May 2018	June 2018	July 2018	August 2018	September 2018	October 2018
B Double	698	534	565	535	620	567	687	516	557	632	562	628
Cranes	6	7	2	9	6	11	7	8	13	21	16	13
Non-Victorian enrolled HPFV	49	43	47	62	77	46	43	45	28	50	32	63
Rigid and Trailer	8	2		5	4		5	3		1	4	7
Semi Trailer	33	33	22	26	41	44	49	57	56	85	60	40
Victorian-enrolled HPFV	25	42	75	126	181	200	169	136	175	141	179	204
Unknown	5	1	8	18	29	13	4	15	11	17	8	9

Journeys/week
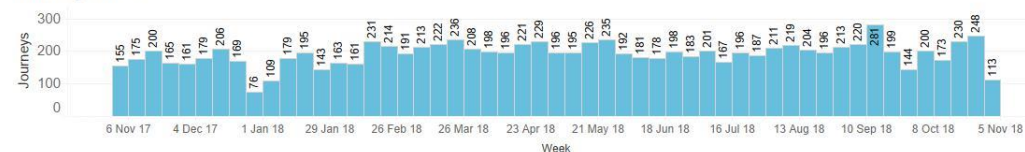
Unique vehicles/week
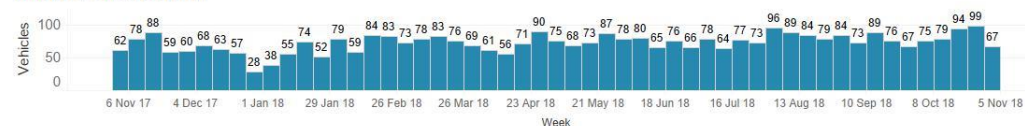
HPFV-type journeys per month (Victorian HPFV and equivalent interstate)

Non-Victorian enrolled HPFV
Victorian-enrolled HPFV
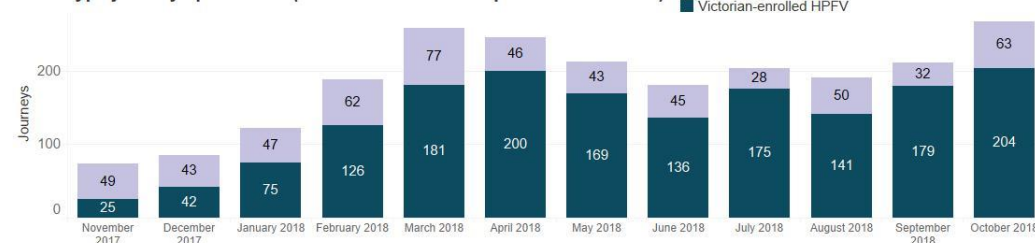
Position record locations

Average speed by hour of day (km/h)

Journeys by weekday

Vehicle type breakdown

	% of journeys	% of unique vehicles
B Double	69.7%	57.9%
Cranes	1.2%	6.0%
Non-Victorian enrolled HPFV	5.7%	14.1%
Rigid and Trailer	0.4%	1.1%
Semi Trailer	5.4%	10.0%
Victorian-enrolled HPFV	16.2%	7.4%
Unknown	1.4%	5.9%

Disclaimer: The analysis provided is representative of vehicles enrolled in a TCA certified program and as such may not be representative of all vehicles using these roads. This report has been developed by TCA at the request of VicRoads using Intelligent Access Program (IAP) information. It contains aggregated and de-identified IAP information. TCA has not disclosed IAP information which identifies any transport operator or vehicle enrolled to any party. Data was collected between November 2017 and October 2018.
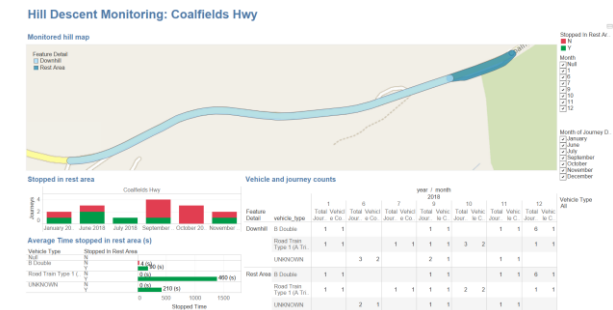
TMA: Example of output

Area analysis


Feature analysis
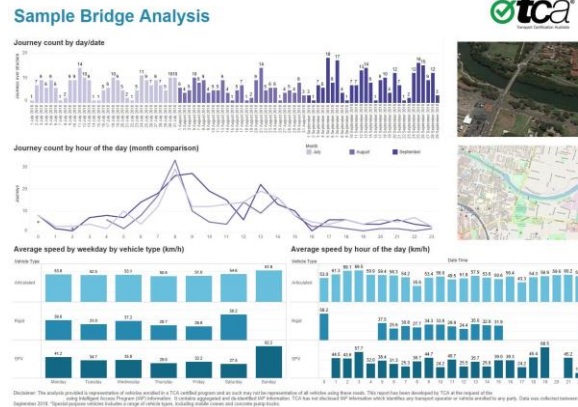
Custom analysis

Telematics Data Exchange

Telematics Data Exchange – Business to Business

- Describes the standard methods and mechanisms for B2B data exchange within telematics applications and the standard business documents and reporting artefacts that are exchanged

- Comprehensive and used for all applications: build once, use many

- RIM and TMA use a subset of the TDE mechanisms

Telematics Data Exchange – Business to Business
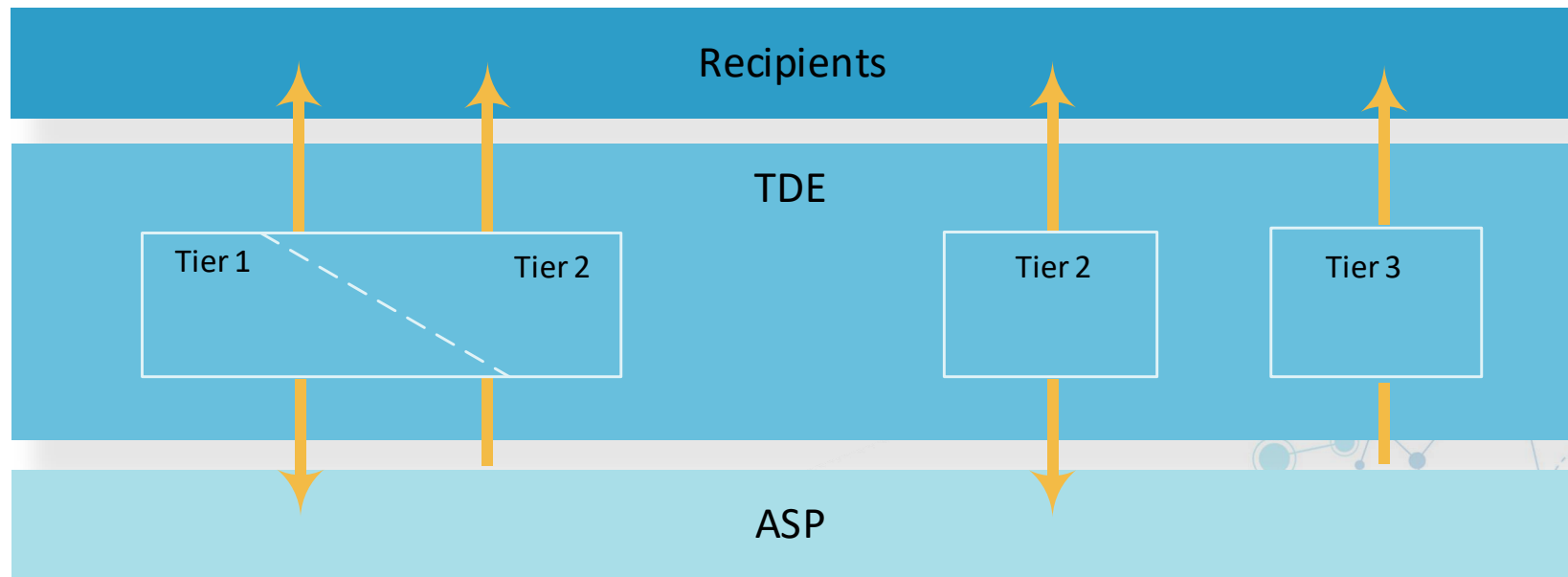
Telematics Data Exchange – Business to Business

Data reporting

For each month, the ASP must provide:

- Enrolment forms

- Enrolment reports

- Data records for the period the vehicle was enrolled

Reported using either:

- Progressive transfer using a RESTful API

- Bulk transfer using FTPS

Data records in JSON format

Telematics Data Exchange – Business to Business

Enrolment

- Documents a vehicle participating in a scheme and its associated application

- Enrolment information includes:
  - Unique ID
  - Start and end time
  - Scheme and application details
  - ASP details
  - Device details
  - Transport operator details
  - Approval and cancellation details

Telematics Data Exchange – Business to Business

Enrolment report

- Summarises all enrolments for a single producer over a month

- Includes an entry for each enrolment that details:
  - Enrolment ID
  - IVU ID
  - VIN
  - Scheme
  - Entry date and time
  - Exit date and time

Telematics Data Exchange – Business to Business

Progressive transfer

- RESTful API used to send information as it becomes available

Notify Enrolment

URL Path	/enrolment/{enrolment-id}
Method	PUT
Parameters	• enrolment-id – the identifier of the enrolment
Request Headers	• Content-Type: application/xml
Request Body	• XML document for schema element {http://www.tca.gov.au/schemas/tde/core/enrolment/2018-07}enrolmentForm

Notify Enrolment Report

URL Path	/enrolment-report/{enrolment-report-id}
Method	PUT
Parameters	• enrolment-report-id
Request Headers	• Content-Type: application/xml
Request Body	• XML document for schema element {http://www.tca.gov.au/schemas/tde/core/enrolment-report/2018-07}enrolmentReport

Notify Data Records

URL Path	/data-records/{batch-id}
Method	PUT
Parameters	• batch-id – the unique batch identifier assigned by the ASP
Request Headers	• Content-Type: application/xml or • Content-Type: application/json
Request Body	• XML document for schema element {http://www.tca.gov.au/schemas/tde/core/data-record/2018-07}dataRecordBatch • JSON document formed against schema http://www.tca.gov.au/schemas/tde/iap/data-record/2018-07

Telematics Data Exchange – Business to Business

Bulk transfer

- Use FTPS to send all data in zipped files

```
<root>
    data
        <yyyymmdd>
            <batch identifier>.json
    <IVU-identifier>
        enrolment
            <producer-code>_<enrolment-identifier>_<status>.xml
    enrolment-report
        <producer-code>_<enrolment-report-identifier>.xml
```

Telematics Data Exchange – Business to Business

Test server for API

- TCA maintains a test server for ASPs implementing the API

- Used to validate implementation

- Talk to TCA to get an account set up

```
PUT /tde/rest/data-records/ABC20190803 HTTP/1.1
Host: tde-dev.tca.gov.au
Authorization: Basic dGRlYWJjOlBhc3MtMTIz
User-Agent: curl/7.54.0
Accept: */*
Content-Type: application/json
Content-Length: 962

{
    "tdeVersion" : "2.0",
    "batchId" : "ABC20190803",
    "deviceRecords" : [{
        "device": {
            "id" : "1234"
        },
        "records" : [
            {
                <data>
```

```
HTTP/1.1 204
Cache-Control: no-cache, no-store, no-
transform, must-revalidate
Expires: Thu, 01 Jan 1970 10:00:00 AEST
Date: Sun, 23 Jun 2019 23:52:11 GMT
```

Telematics Data Exchange – Business to Business

Transitional arrangements

- For the early stage of RIM, TCA will support more flexible data provision

- Typically, CSV exports via FTPS

- We have also built limited support for CSV data records and enrolment reports via the API

- Talk to us if you are interested in participating!

Questions?

Costing and consumer information

Currently proposing that TCA would set charges for participating vehicles at:

- $10 per month for RIM
- $20 per month for TMA

Promoting and ensuring clear information is available to consumers through:

- Re-developing the TCA website
- Providing clear direction to transport operators about how to participate in schemes – links to Certified providers / NTF branding
- Creating user friendly (printable) collateral to describe applications, schemes and requirements

Other developments

National Developments

- Over-size, Over-mass movements
- Road user charging

Telematics Information Exchange (TIX)

- Port of Fremantle
- Rest area and other information such as turn-by-turn navigation

Oversize Overmass Review

Surface Transport Policy Division

OSOM Review recommendations

Completed
Rec 1 – TIC agree to implement measures to facilitate access
Rec 2 – TIC agree to a work program of implementation being prepared
Rec 5 – NHVR communication policy
Rec 9 – permit duration of 12 months
Rec 10 - new National Class 1 Agricultural Notice
Rec 22 – automatic empty return trip
Rec 32 – NHVR project team established to investigate improved data movement
Rec 37 – possible legislative changes referred to the NTC for consideration under the Heavy Vehicle National Law
Rec 38 – Council has agreed to aim for an average of 48-hour processing time

The new National Class 1 Agricultural Notice

Modernised and simplified set of national standards

Includes:
- conditions relating to maximum speeds
- maximum mass and dimension limits
- vehicle standards that meet the Australian Design Rules
- warning signs/lights and pilot/escort vehicles

Budget announcements to assist with OSOM vehicle access

National Heavy Vehicle Regulator
$8 million to streamline the approval process for heavy vehicle road access:

o $6 million to fund engineering assessments for road network infrastructure owned by local government

o $2 million to build an asset information collection, storage and sharing system

Australian Road Research Board
$2.55 million to build local government road network asset management and capability:

o $2 million to update/create manuals to be provided free of charge to all local government

o $550,000 to purchase portable devices to assess road network infrastructure in situ

Next steps:
→Negotiation with NHVR and ARRB on funding agreement details.

National Heavy Vehicle Pilot

Land Transport Market Reform Branch

National Heavy Vehicle Pilot

- The Department is conducting a National Heavy Vehicle Pilot, to test options for replacing heavy vehicle registration fees and fuel based charges with an alternative mass distance charge.

- At the same time, the Government will continue to prioritise progress on supply-side Heavy Vehicle Road Reform while testing these alternative demand-side charging models.

- No decisions have been made to change the way charges are currently collected and current arrangements will remain in place while the pilot is underway.

- Decisions to implement a new way of collecting heavy vehicle charges may be part of a potential future stage of reform and will be informed by the real-life experience of industry following a full evaluation of the pilot.

- The Department is working closely with industry on designing the trials and the testing parameters.

Trial Operation Using Telematics

Vehicle travels using telematics and data is collected

The Department, in partnership with service providers, will calculate a mock bill based on distance travelled and truck configuration used

Estimated bill under current PAYGO system

Mock bill under alternative charging model
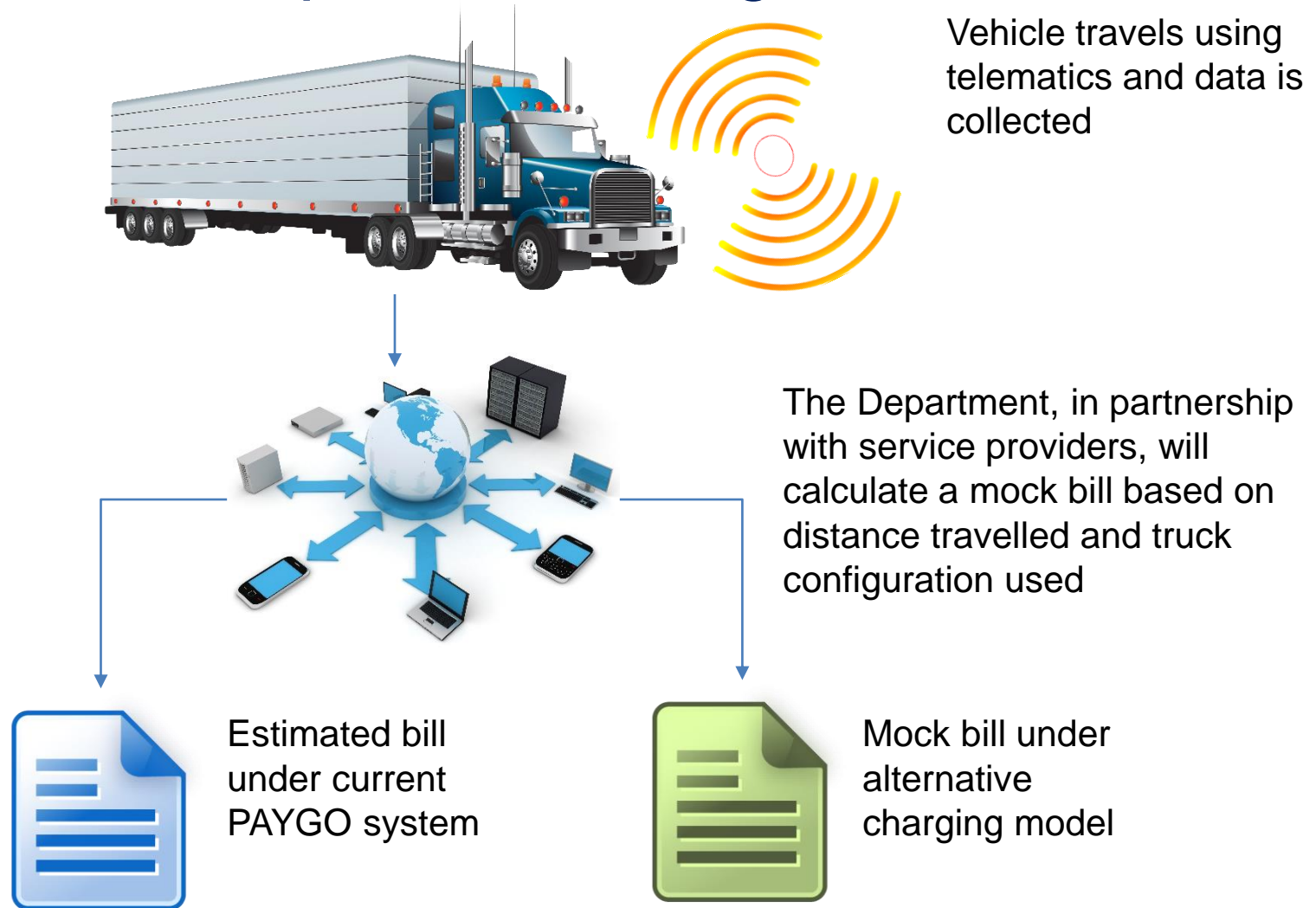
Small Scale On-Road Trial

- **Small scale on-road trial** (commenced in July 2019):
  - Eleven volunteer fleet operators
  - Approximately 110 vehicles
  - Testing telematics, administrative processes and invoice generation
  - Mock billing – comparison against PAYGO
  - Runs for six months

Large Scale On-Road Trial

- **Large scale on-road trial** (from 2020):
  - Around 100 fleet operators
  - Up to 1000 vehicles
  - Testing telematics, manual options, administrative processes, database systems and bulk invoice generation capabilities
  - Proposed to run over a 12 month period
  - Mock billing – comparison against PAYGO
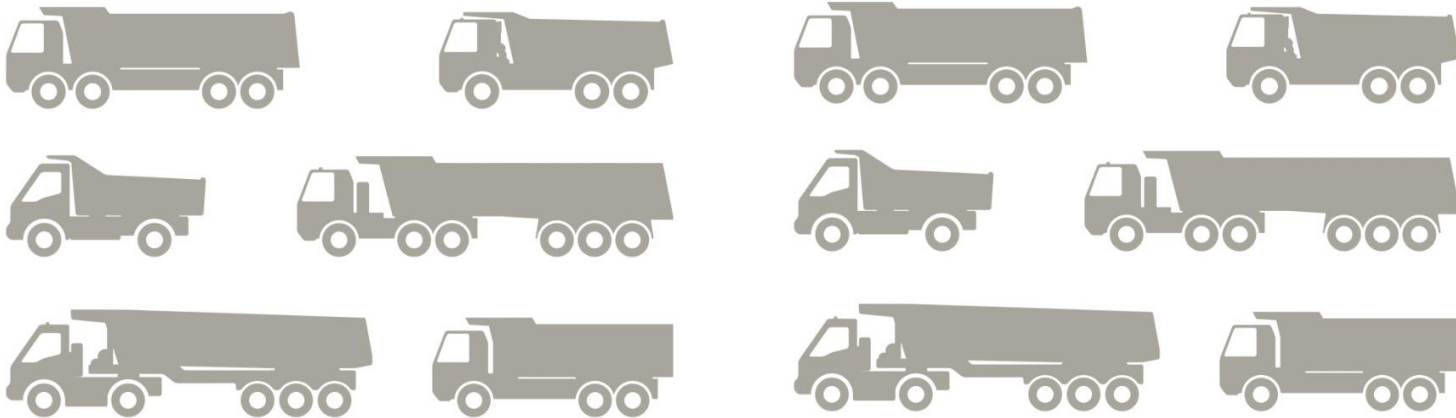
Opportunity for partnership

- We are developing our understanding of technologies required for the next stage of the National Pilot and currently assessing the capabilities of the telematics industry.

- Any formal engagement will be subject to normal Commonwealth procurement processes.

- Telematics providers will be gathering data from their customers on: configuration used for travel; distance traveled; fuel consumed and location pings. They will also be involved in producing mock invoices for their customers.

- Further information can be found at www.infrastructure.gov.au/nationalpilot and you can reach the National Pilot Team at: National.Pilot@infrastructure.gov.au

Questions?

Traveller Information Exchange (TIX) Western Australia

Thursday 1st August, 2019

Fremantle Ports
is the
West Australian
Government-
owned
**strategic
manager** of
Fremantle Port

Victoria Quay

Rous Head

North Quay

Fremantle Inner Harbour

Plan meets Reality
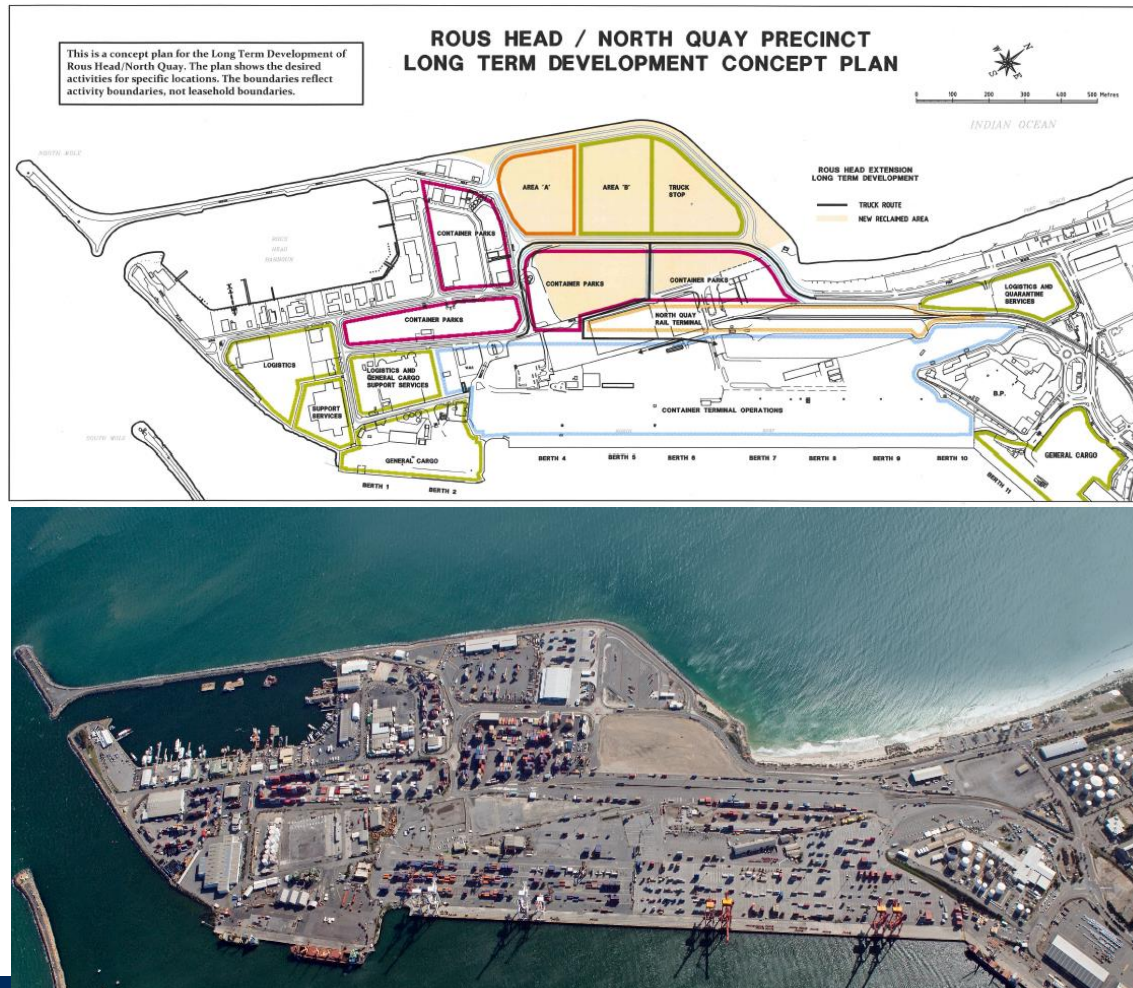
INNOVATIVE TRUCK CONTROL
FREMANTLE PORTS
TRUCK CONTROL SYSTEM

- Getting better co-ordination of heavy vehicles into and out of a sensitive precinct
- Looking at better ways of doing it – Innovation
- Go beyond Australia … to be world standard
- Actually making a difference – not just co-ordinate but take action

Congestion Management   **Queuing**
Control
Truck Marshalling
                Key Performance Indicators
Vehicle Detection System – instant monitoring of delays   Automated Precinct Status Messaging
In Cab Telematics Driver Information   **Military Grade Wireless**
Mesh Wifi

CMS Automated Messaging – Truck Information Exchange

- Fleet Controllers usually work early until mid afternoon

- Most early slot opening occur in early evening (from 5pm on and weekends). Other messages also get missed

- Until now, Fremantle Ports staff had to (i) notice early slot openings & (ii) manually update the system

- Messages displayed on Variable Messaging Signs throughout port

THE PROJECT

- System to read notification emails & automatically turn them into text for VMS and other developments

WHAT'S HAPPENING NOW?

- Live operation since 26 April 2017

- 22 automated messages on first weekend, all displayed at times when transport offices not occupied

- Slots opened early every weekend – e.g. 8 automated messages last weekend (27/28 July 2019)

- Driver informed directly and able to act immediately meaning less time on roads and less emissions
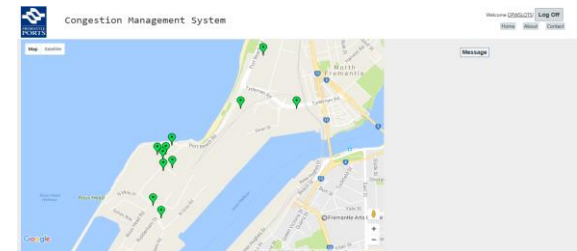
Emergency Message directed instantaneously to TIX

Congestion Management System

Edit Message

Message Name:	STIRLING BRIDGE CLOSED
Priority:	High
Allow Login Message:	No
Send to External:	Yes
Send to Truck:	Yes
Send to TMA:	Yes

Preview

STIRLING BRIDGE
CLOSED UNTIL
FURTHER NOTICE

- Main types of messaging
  - Emergency
    - Precinct Route Closures
    - Evacuations
    - Other Safety, etc.
  - Medium Level
    - CMS Operation ("Go to TMA")
    - Early Slot Openings
    - Container Redirections
    - Delays
    - Weather Warnings
    - Closures or Extended Hours
    - Road Works
  - General Information
    - Public Traffic Impacts (e.g. Ship Arrivals of Interest)
    - Open Days

Recently sent, delay-saving messages – sent direct to cab

```
DP WORLD
GATES CLOSE @
20:40 THUR/FRI
```

```
CENTRAL BOUND
MAERSK 2ZG1 ONLY
TO QCP UNTIL
FURTHER NOTICE
```

```
ALL DPW BOUND
ANL/APL/CMA/CGM
POOL MT
20' TO QCP
UNTIL ADVISED
```

```
STIRLING BRIDGE
NIGHT WORKS
JUNE 9 - JULY 9
LANE CLOSURES
AND 40KM/HR
IN EFFECT
```

```
TOLL (TMA)
WEIGHBRIDGE
CLOSED
TUESDAY 19/3
```

```
CARGOLINK OPEN
TONIGHT
TILL 18:00 HOURS
```

```
USE CAUTION
SLIPPERY ROADS
DIESEL SPILT
PORT BEACH RD
NOBLE CLOSE
ROUNDABOUT AREA
```

```
ICS FORRESTFIELD
EQUIPMENT ISSUES
POSSIBLE DELAYS
```

```
WIND DELAYS
REPORTED AT
DPW.  CHECK
WITH YOUR
CONTROLLER
```

```
WESTBOUND
SLIP LANE INTO
PATRICK CLOSED
DETOUR AROUND
TMA/MANOORA
ROUNDABOUT &
COME BACK
```

```
HEAVY VEHICLES
DO NOT USE
FREMANTLE
TRAFFIC BRIDGE
ABOVE WEIGHT
RESTRICTION
```

```
CAUTION
LEACH HWY STHBND
TURNING STOCK RD
TRUCK BREAKDOWN
USE LEFT LANE
TO TURN RIGHT
```

```
PATRICK - CT 3/4
MARGARET RIVER
BRIDGE DISCHARGE
DELAYED. CHECK
CONTAINER
AVAILABILITY
```

```
PATRICK 7&8
EVACUATION DRILL
IN PROGRESS -
DO NOT ENTER
UNTIL ADVISED
```

```
CAUTION!
TRUCK BREAKDOWN
SLIP LANE
TURNING LEFT
FROM TYDEMAN
ONTO PORT BEACH
```

In Cab Telematics (IVU) – Driver Information System

In Cab Telematics – Info direct to drivers
- 30 000 approved Telematic In-Vehicle Units (IVU) in vehicles in Australia
- 500 target devices here in Western Australia (i.e. Dealing with Fremantle Port)

The Project
- Joint project with Transport Certification Australia (national regulating body)
- Info localised – driver only sees it on approaches to port
- Take the same electronic information and make it available direct to driver through telematics
  - Advantages
    - Driver gets information in timely manner
    - Driver able to act on issue prior to arriving at port

In-cab Telematics – the future of "Virtual TMA"

- Utilises existing messaging through CMS, enhanced to encompass automated messaging (read standard emails & convert to electronic VMS messages).

- Messaging important to drivers transmitted directly to in-cab telematics = timely live information

- Early slot openings, container redirection messaging allows drivers to make informed decisions, even after hours
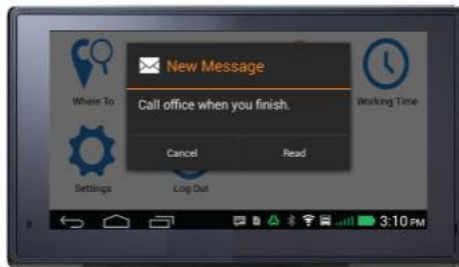
- Emergency mes~~~~~~~~~~~e issues), congestion and other redirections to allow **"Virtual TMA"** = avoiding having the truck come to the port in the first place

"This is the first of its kind anywhere in the country. We're keen to showcase it to other ports (and other 'off-road' locations) around the country!"
Gavin Hill - GM Strategic Development - TCA

Mon 29/07/2019 4:35 AM
noreply@1-stop.biz
[PATRICK, WA, FREMANTLE - Patrick Fremantle] 29 Jul 2019 05:00 Timeslots are now OPEN
To

Issue: Patrick Fremantle 29 Jul 2019 05:00 Timeslots are now OPEN
Short Description: Patrick Fremantle 29 Jul 2019 05:00 Timeslots are now OPEN. Sent at 29/07/2019 04:31

Priority: Urgent
Notification Date: 29/07/2019 04:31
Current for: 1 Day(s)

Regards,
Nikki Moreira
PATRICK, WA, FREMANTLE
Patrick Fremantle

DPWORLD PLEASE GO TO TMA

CARGOLINK BOUND ALL PIL 40' HC & GP TO TYDEMAN

QUBE CENTRAL PLEASE GO TO TMA
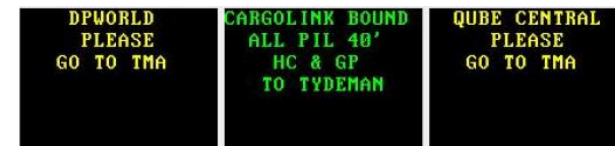
Supply Chain Excellence and Innovation Awards

New Innovation – Exclusive to TIX – Near Term!

- New Truck Control System Cameras = Live Truck Turn Time
- Once first system providers commences live feeds, they will receive TTT for monitored ECPs and Terminals
- This will not be available on the FP website or via the Variable Messaging Signs – only on TIX
- Drivers on TIX will know what the most recent TTTs are at key sites to make informed decisions.

Feature on TIX appearing in the next edition of "WA Transport Magazine"
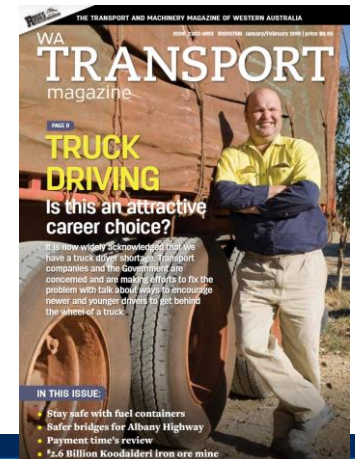
New Developments

On 2 August, 28 TIX messages were dispatched relating to critical power outages and other issues:

- 12 Early slot openings
- A power outage to the whole of NQ, which resulted in: 7 individual critical messages on the VMS within 2 hours
- Plus the potential from 9 Vehicle Booking System messages that will, into the future, under the new lease arrangements, be required to use the TIX.

Message Name:	ALL SITES
Priority:	High
Allow Login Message:	No
Send to External:	Yes
Send to Truck:	Yes
Send to TMA:	Yes

Preview

ALL SITES AFFECTED BY POWER OUTAGE. QUEUING POINTLESS GO TO TMA

5. Next steps and timing

www.tca.gov.au