Telematics Industry Group (TIG)

Meeting

7th June 2017

Overview of today's session

Gavin Hill
A/Chief Executive Officer

Today's session

(1) Opening statements/latest developments

(2) Briefing on the latest specifications

- Interconnectivity of Telematics IVU with Other Systems
- On-Board Mass (OBM) Systems

(3) Type-approval of OBM Systems

- What we mean by type-approval
- Overview of the process

(4) Latest IAP developments

- Operational enhancements
- Strategic initiatives
- IAPm

Today's session

LUNCH (AROUND 12:30)

(5) Update on the Electronic Work Diary (EWD) initiative

(6) Using telematics data from heavy vehicles for road use analysis and planning (Bureau of Infrastructure, Transport and Regional Economics)

(7) Open question and answer

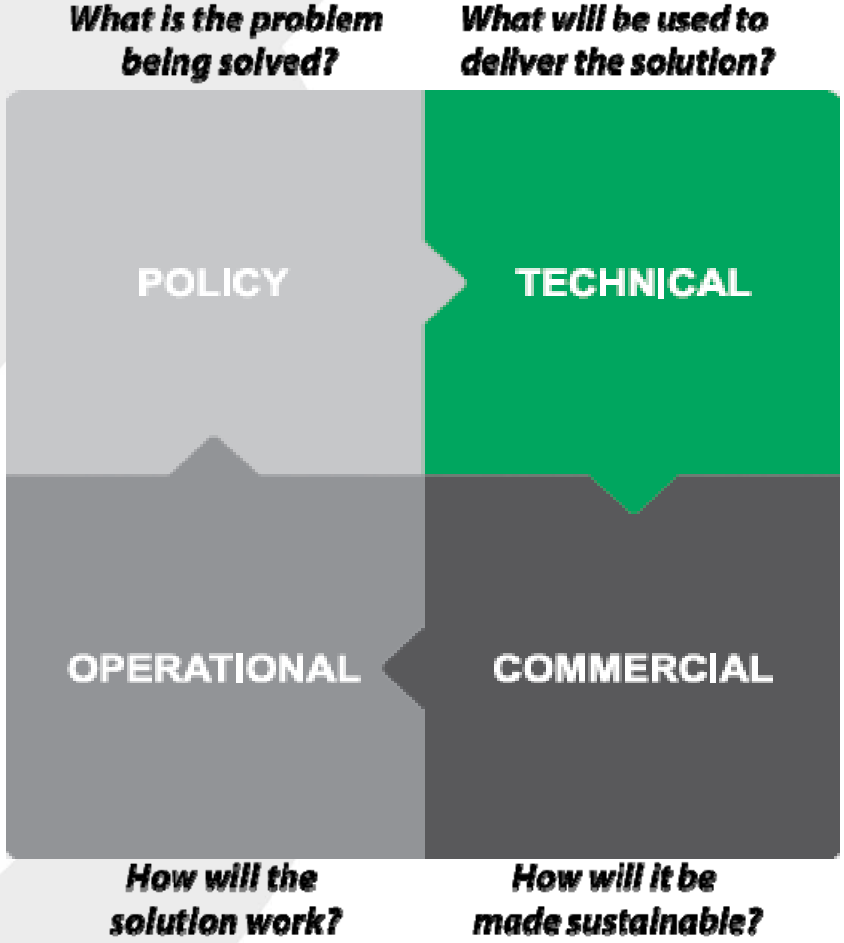
Telematics Industry Group (TIG)

- TIG provides a critical interface between TCA and the telematics industry
- Interaction with TIG members is critical to ensure that the telematics sector is kept abreast of policy and operational developments being led by government…

  …and to obtain feedback from the telematics sector to inform implementation activities

Importance of the TIG

- TCA can’t perform our functions without you


What is the problem being solved?
What will be used to deliver the solution?
POLICY
TECHNICAL
OPERATIONAL
COMMERCIAL
How will the solution work?
How will it be made sustainable?

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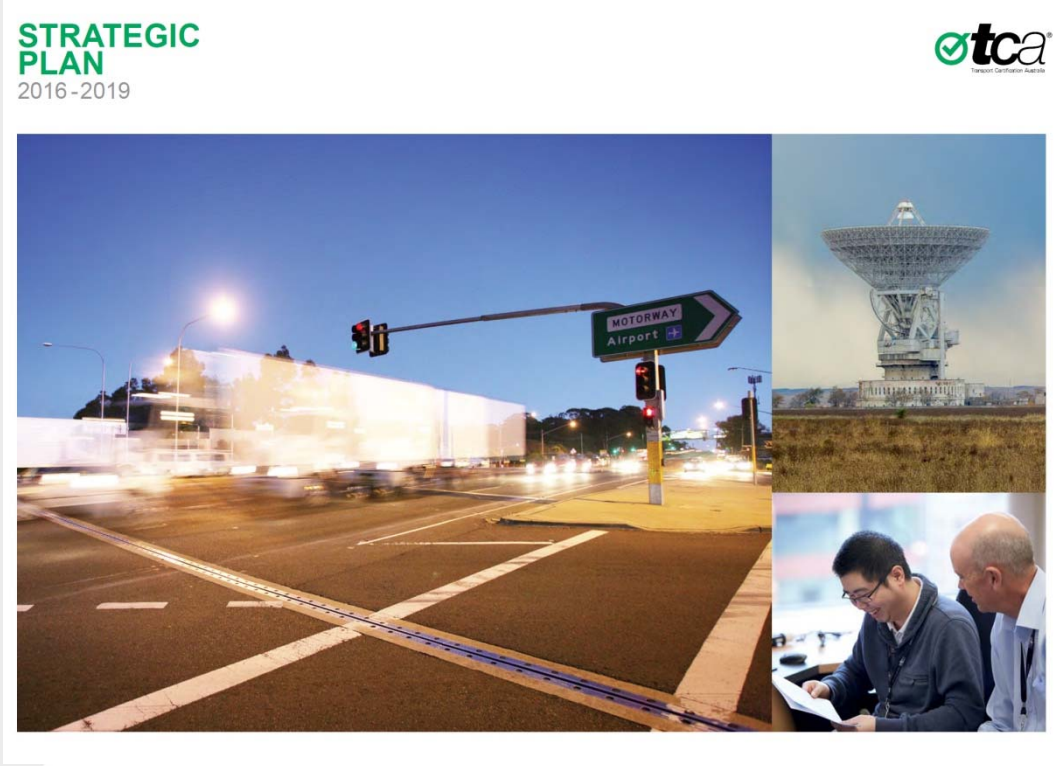
Latest developments

Developments since we last met

- New, three year Strategic Plan, which responds to:
  - The growing use of technologies for government/ legislative programs
  - The emergence of connected and automated vehicles
  - The need for assurance



Developments since we last met

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- The Strategic Plan recognises:
  - TCA as a **'cross-cutting'** organisation which works across different policy streams, surface transport modes, and government and industry sectors
  - The need to promote **innovation and non-conventional** approaches to emerging challenges of achieving safety, productivity and efficiency
  - The **rapid pace** at which technologically-driven changes are influencing **public policy** deliberations and government decision making

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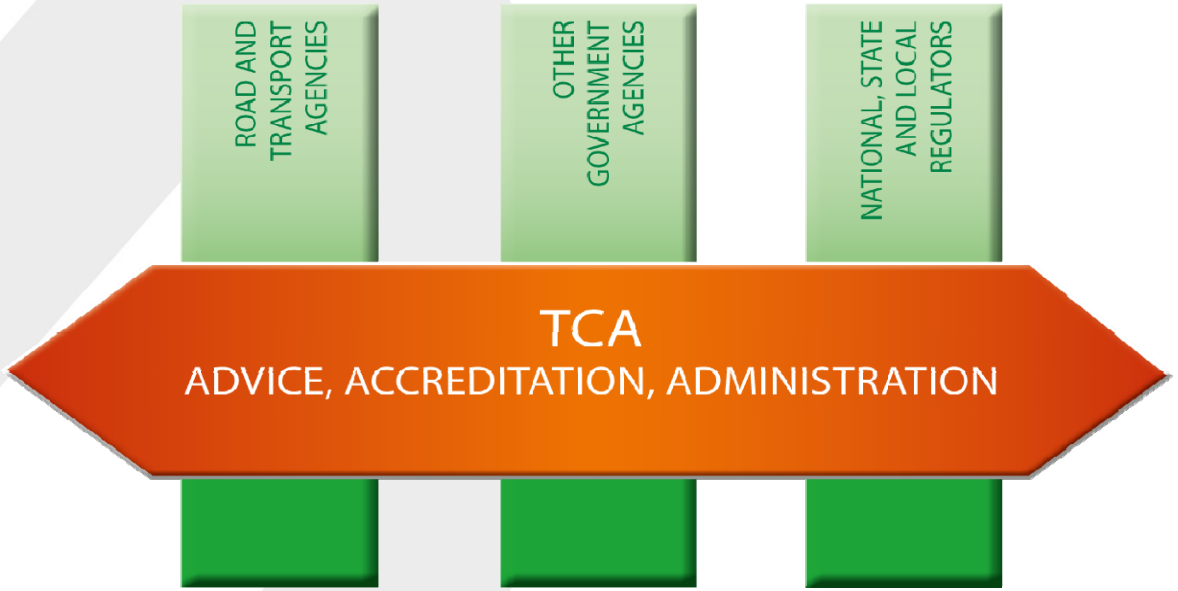

Developments since we last met

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- In late 2016 TCA's Members updated TCA's Constitution
- These updates reaffirmed TCA's established role in providing assurance in the use of telematics and related intelligent technologies…

  … but agreed to expand TCA's role to support the emergence of connected and automated vehicles

Developments since we last met

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Telematics In-Vehicle Units (IVUs)

- Over **32,000 heavy vehicles** are already fitted with In-Vehicle Units (IVUs) which are recognised by TCA
- A 22% increase over the last 2 years
- The transport industry tells us that the IVU is a centrepiece of technology which supports a range of business *and* regulatory functions

Telematics IVUs

- There are common requirements for IVUs across all regulatory applications:
  - Physical Characteristics
  - Environmental Characteristics
  - Data Collection
  - Record Generation
  - Data Storage
  - Data Security
  - Data Transfer
  - Documentation

Telematics IVUs

- While these requirements are core requirements governments are looking for to support regulatory applications of telematics…

  …they are also the features purchasers and end-users are looking for to obtain assurance in the use of telematics

Questions and comments

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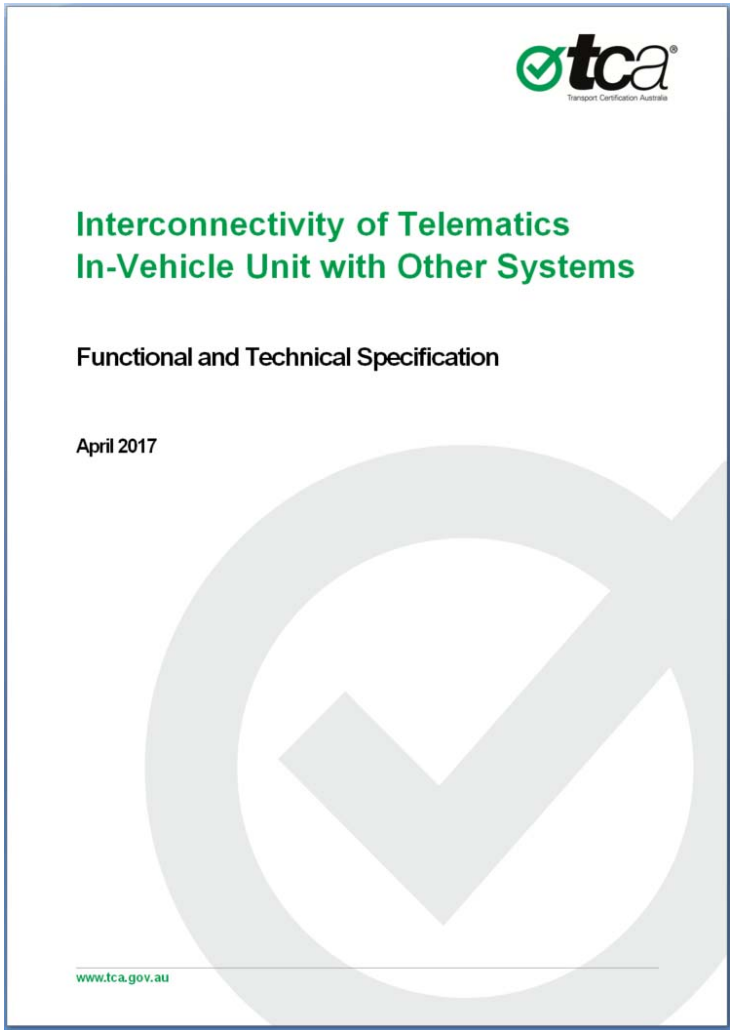
Latest Specifications hosted within the National Telematics Framework

Philip Lloyd
General Manager Implementation

Latest Specifications

- Interconnectivity of Telematics In-Vehicle Unit with Other Systems Functional and Technical Specification

  “a standardised and interoperable communication interface that allows for the efficient provision of a coherent and complete telematics solution”



Latest Specifications

- On-Board Mass (OBM) System Functional and Technical Specification

  “determination of axle group mass, and the subsequent gross vehicle mass of a vehicle, addresses numerous public and private policy and operational needs”

Interconnectivity Specification

- In-vehicle systems and devices typically provide discrete and complementary functionality
- An IVU can coordinate functionality, track time and position based on GNSS reference, and provide a mobile data network connection to the back-office (expensive to duplicate in every in-vehicle system or device)
- Other systems or devices provide highly-specialised capabilities to monitor aspects of vehicle operation, and may generate useful data records or alarms (potentially of great value to integrated telematics solutions)

Interconnectivity Specification

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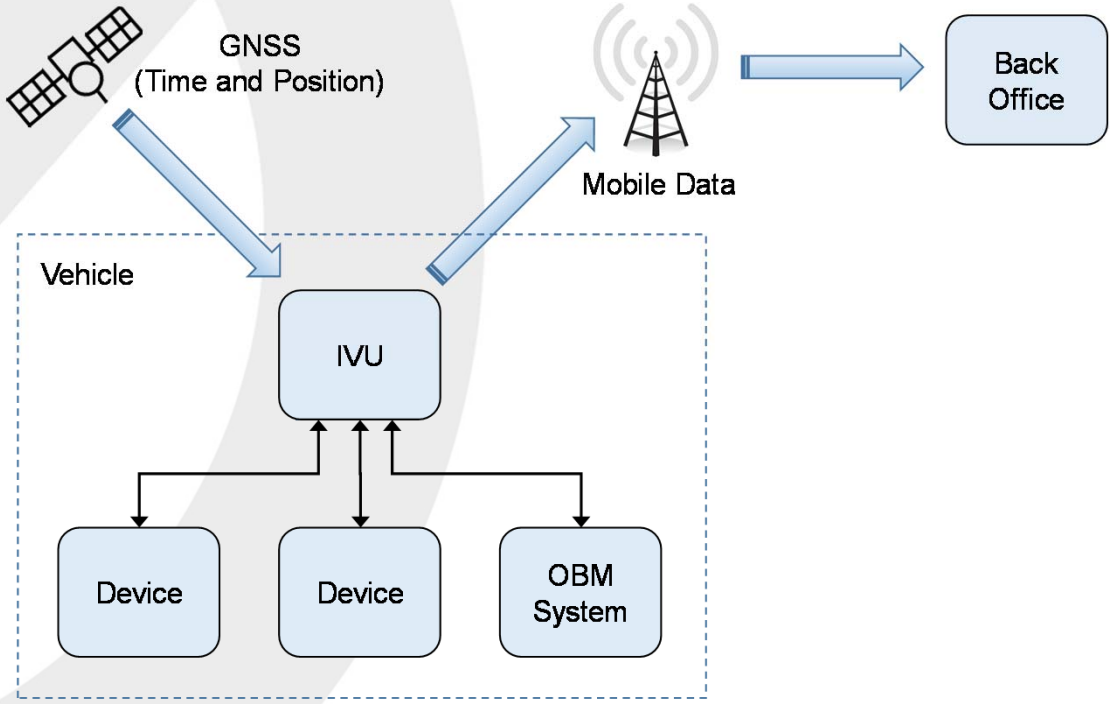
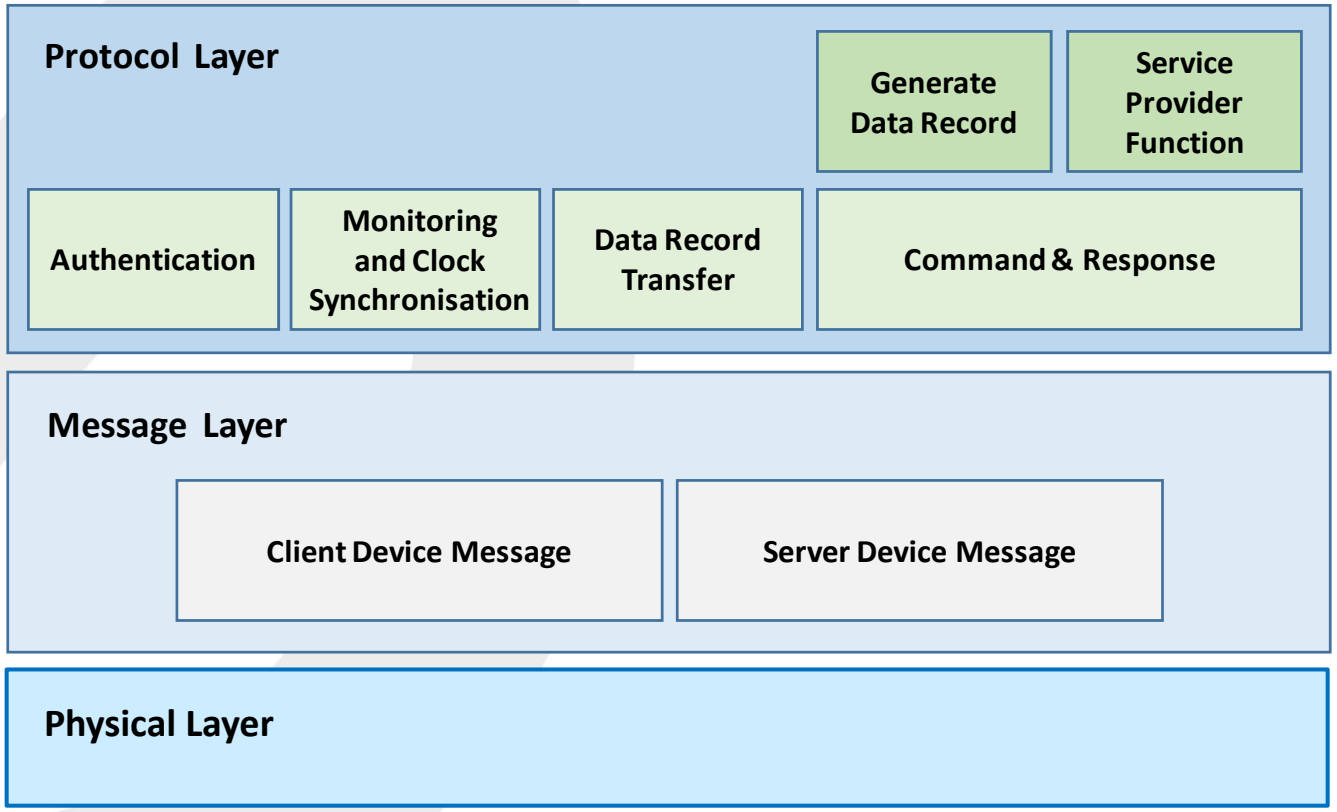
Context…



Interconnectivity Specification

- Enables the IVU to be an ‘in-vehicle telematics hub’
- Standard and interoperable interconnections allows different combinations of IVUs and systems/devices to communicate without requiring multiple, application-specific or proprietary interfaces
- Communications interface is ‘layered’ to support flexibility and evolution of technology
  - Physical Layer – wired, wireless, etc
  - Message Layer – ‘language structure’, sequencing
  - Protocol Layer – ‘conversation’, information exchange

Interconnectivity Specification



Interconnectivity Specification

- Physical Layer
  - Bidirectional, point-to-point transmission of an ordered sequence of bytes (wired or wireless)
  - Minimum data rate of 19,200 bits-per-second
- Base requirements met by an ANSI/TIA/EIA-232-F (RS-232) interface – the default interface when connecting an OBM System
- RS-232 is included because of its prevalence and simplicity; the Specification is not limited to RS-232, neither is it necessarily preferred in most instances

Interconnectivity Specification

- Message Layer
  - Defines the structure and sequencing of message transfer between the Client Device (the in-vehicle system/device) and the Server Device (the IVU)
- Protocol Layer
  - Provides higher-level capabilities, including Authentication, Monitoring and Clock Synchronisation, Data Record Transfer, and a Command and Response mechanism
- Extension Profiles provide application-specific Data Record, Command and Response definitions

OBM System Specification

- An On-Board Mass (OBM) System is comprised of:
  - an Electronic Control Unit (ECU)
  - Mass Sensor Units (MSUs)
  - the documentation associated with its installation, calibration, operation and maintenance

OBM System Specification

- Physical Characteristics
- Environmental Characteristics
- Data Collection
- Record Generation
- Functionality
- Data Storage
- Data Security and Transfer
- Interconnection to a Telematics In-Vehicle Unit
- Installation, Calibration, Operation and Maintenance
- Provision of OBM System for Type-Approval

OBM System Specification

- An OBM System is capable of determining the mass of axle groups on a vehicle via its MSUs, and thus the associated gross vehicle mass
- In operation, the number of MSUs connected to an ECU will vary, given natural variation in vehicle types and numbers of axle groups – and there will not necessarily be an exclusive and ongoing association between an ECU and particular MSUs
  - Dynamic connection of MSUs to an ECU
  - Detection of trailer or dolly with no connected MSUs

OBM System Specification

- The OBM System shall meet environmental conditions suitable for its operation in a vehicle (noting differences between in-cabin ECU and exterior MSUs)
- The OBM System shall collect data identifying malfunctions, tampering and attempts at tampering, and be capable of raising associated alarms
- The OBM System shall meet the requirements for the core capability and the OBM System extension profile, as described by the Interconnectivity of Telematics In-Vehicle Unit With Other Systems Functional and Technical Specification

OBM System Specification

- The axle group mass measured by the MSU shall not deviate from the absolute axle group mass by more than 2% of the maximum permissible mass (i.e. the legal mass limit for an axle group) of the axle group for 98% of observations, when:
  - the vehicle is stationary and on level ground
  - the MSU is calibrated, and
  - the OBM System is operating in accordance with the Specification
- The calibration regime and frequency is flexible to meet this requirement, and is to be documented

OBM System 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
  - Technology or human process for MSU detection
  - ‘Shared components’ providing comparable functionality
  - Quality management system approach to calibration to maintain accuracy

Industry Collaboration

- TCA wishes to recognise and sincerely thank:
  - OBM System suppliers – Accuweigh, Airtech, Elphingstone Weighing Systems, e-Max, Integrated Weighing Solutions, Loadman, Loadsense, Loadsmart, and Tramanco
  - IAP Service Providers – Black Box Control, Ctrack, Pinpoint, TCS, and Transtech / Navman Wireless
  - Road Managers – DPTI, Tasmania DSG, MRWA, TMR, VicRoads and RMS
  - Others from the telematics industry – International Road Dynamics Inc, Vehicle Monitor Corporation, and WiseTech Global

Questions and comments

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Type-Approval of On-Board Mass (OBM) Systems

Paul Corkill

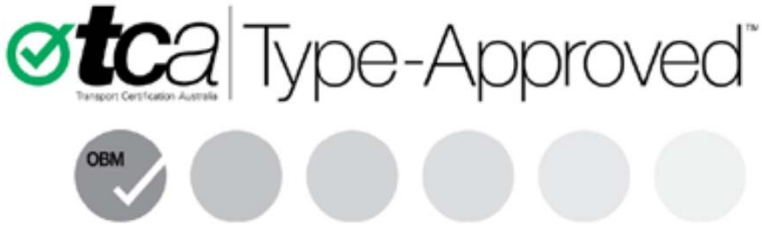
General Manager Operations

Type-Approval overview

- TCA is now accepting applications for type-approval of OBM Systems
- Type-approval provides an independent validation and recognition for OBM System Suppliers
- Type-approval is ‘Performance-based’ - focus on required outcomes
- Applying for type-approval is a staged process

Benefits of Type-Approval

- OBM System Suppliers can use Type-Approval to:
  - Set their system apart in the market as one that has achieved an independent benchmark for quality, reliability and functionality
  - Promote the Type-Approved OBM Systems using the TCA logo:



Assessment for Type-Approval

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- Type-Approval provides assurance of an OBM System in two critical ways:
  - A Probity and Financial assessment of OBM System suppliers
  - A Functional and Technical Assessment of OBM Systems

Type-Approval stages

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TCA's process for Type-Approval of an OBM System involves three stages:

1. Application and Checklist Stage
2. Risk Focused Review Stage
3. Type-Approval Stage

Type-Approval stages

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Application and Checklist Stage

- This stage includes:
  - Due diligence to determine if the Applicant meets the probity and financial requirements
  - Review of the OBM System Checklist for Type-Approval (and supporting documentation)

Type-Approval stages

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Risk Focused Review Stage

- This stage includes:
  - A risk-based assessment of the OBM System Checklist
  - Engagement between TCA's technical experts and Applicant on OBM System functionality (be prepared for questions about your system!)

Note: TCA is not a testing house. We ask that Applicant's substantiate conformance with requirements (doing so will reduce TCA's assessment time).

Type-Approval stages

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Type-Approval Stage

- Subject to TCA being satisfied that the requirements for type-approval of an OBM System have been met:
  - The Applicant will enter into an Agreement that sets out the terms and conditions for maintaining type-approval of an OBM System
  - TCA will grant type-approval of an OBM System

Type-Approval fees

- The TCA Board has approved a 50 per cent discount on Type-Approval fees to promote competition and choice of OBM Systems
- Discount is available for applications submitted within first 60 days of Type-Approval first being offered (ie until 23 July 2017)
- Application and Checklist documents must be completed to be eligible for the discount

Applying for Type-Approval

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- Arrange a pre-application meeting with us to discuss your OBM System
- Documentation is key
- Remember Innovation is encouraged – Talk to us about conformance via alternative means
- Be prepared for questions, responsiveness will reduce assessment time

Further information

- Visit the TCA website:
  https://www.tca.gov.au/truck/obms-ta

- Request an Application Pack
  (03) 8601 4600
  tca@tca.gov.au

Questions and comments

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Latest IAP developments

Gavin Hill
Paul Corkill
Philip Lloyd

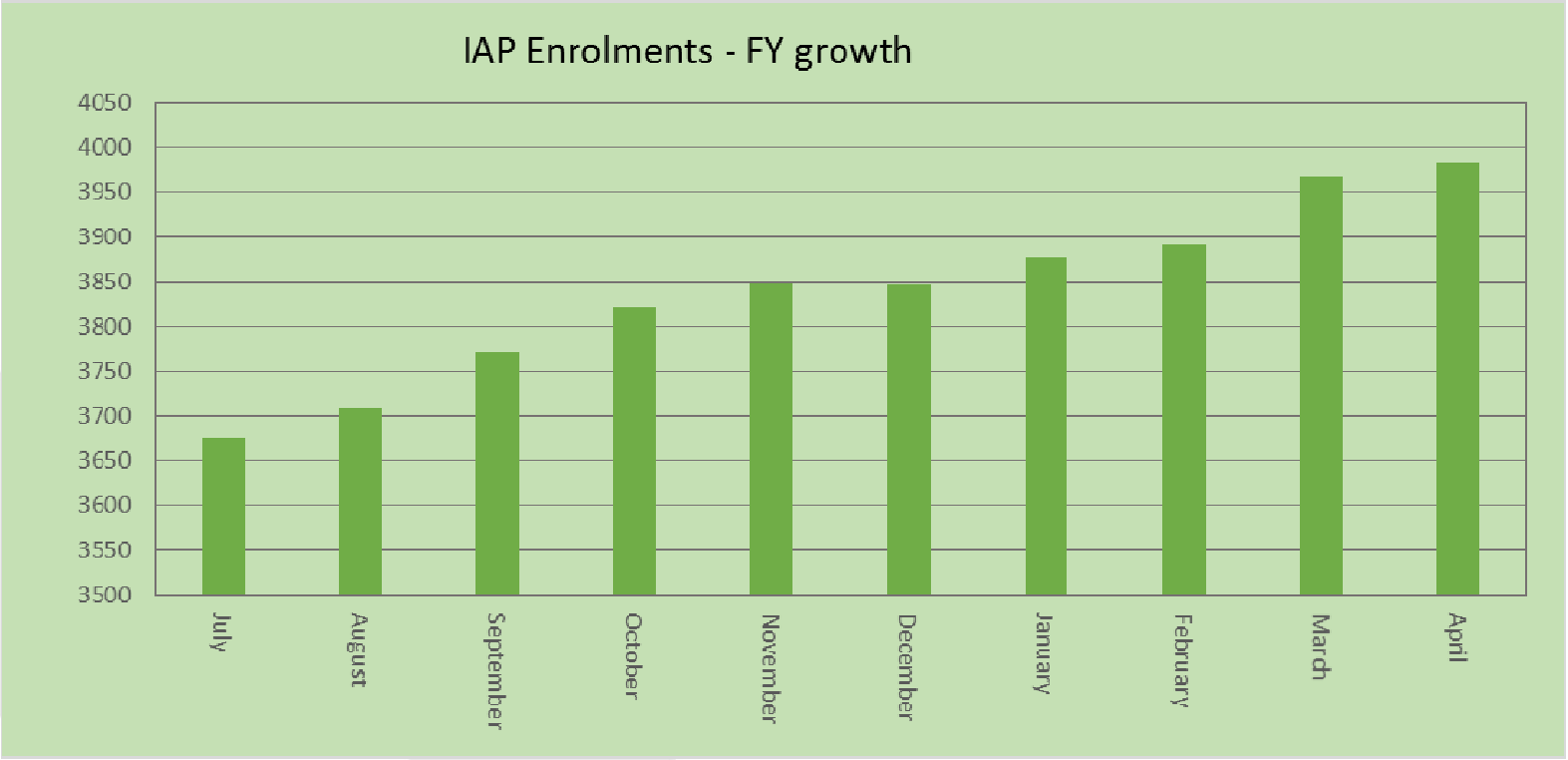
Latest IAP developments

- The IAP continues to enable productivity gains to heavy vehicle operators across the country
- Road Managers and Regulators continue to establish new access arrangements through the IAP

Latest IAP developments

- Some examples over the last 12 months:
  - Victoria: Higher Productivity Freight Vehicles (HPFVs)
  - NSW: Safety, Productivity and Environment Construction Transport Scheme (SPECTS)
  - QLD: Class 1, 2 and SPVs (mobile cranes, concrete pumps and drilling rigs)
  - WA: PBS Super Quad Road Trains

Growth in the IAP



- Average monthly growth of 40 vehicles (12 monthly rolling average)
- 10.5 per cent growth FY to date

Growth in the IAP

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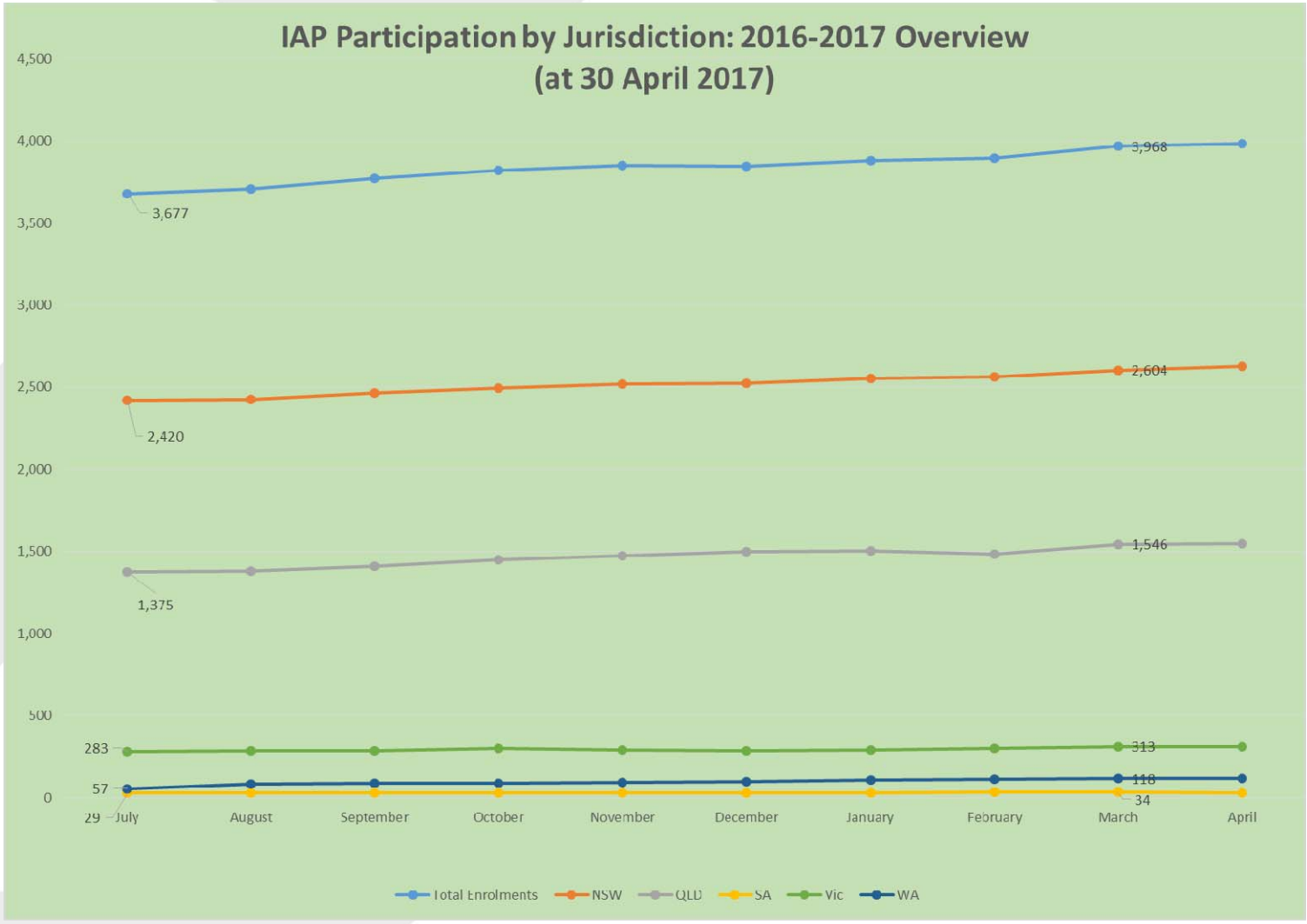

Operational enhancements

- Nine addenda now approved for the IAP Functional and Technical Specification over life of program (Addenda 9 just approved)
- TCA has commenced an initiative to identify and implement enhancements to the IAP:
  - New risk based processes now apply to TCA's Certification, Type-Approval, Re-certification and Audit activities
  - Significant experience of Jurisdictions, IAP-SPs and TCA amassed through delivery of the program
  - Opportunity now for consideration of major change to requirements

Strategic initiatives

- TCA's Members have requested that TCA progress two strategic initiatives for the IAP
  - Investigating the availability of *real-time alerts* from telematics services to road managers and regulators
  - Investigating the use of telematics information for regulators to *perform periodic compliance reviews*
- These initiatives are included in TCA's work program for the 2017-18 financial year

Strategic initiative 1: Real-time alerts

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- Real-time alerts can assist in the management of specific high-risk heavy vehicle combinations and/or road access entitlements
- Examples of high-risk heavy vehicle combinations and/or road access entitlements include:
  - Heavy vehicles carrying over-mass or over-dimension loads approaching vulnerable locations (ie mass constrained infrastructure, low bridge heights)
  - Dangerous goods vehicles in tunnels (and other restricted areas)
  - Sustained periods of speeding

Strategic initiative 2: Periodic compliance reviews

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- Not all new access arrangements warrant the generation of NCRs
- Periodic reviews of telematics data would give regulators the flexibility to manage lower-risk applications, without requiring the generation of NCRs
- However, regulators need to have assurance that information will be available when needed (at a later date) in a consistent format with evidentiary quality

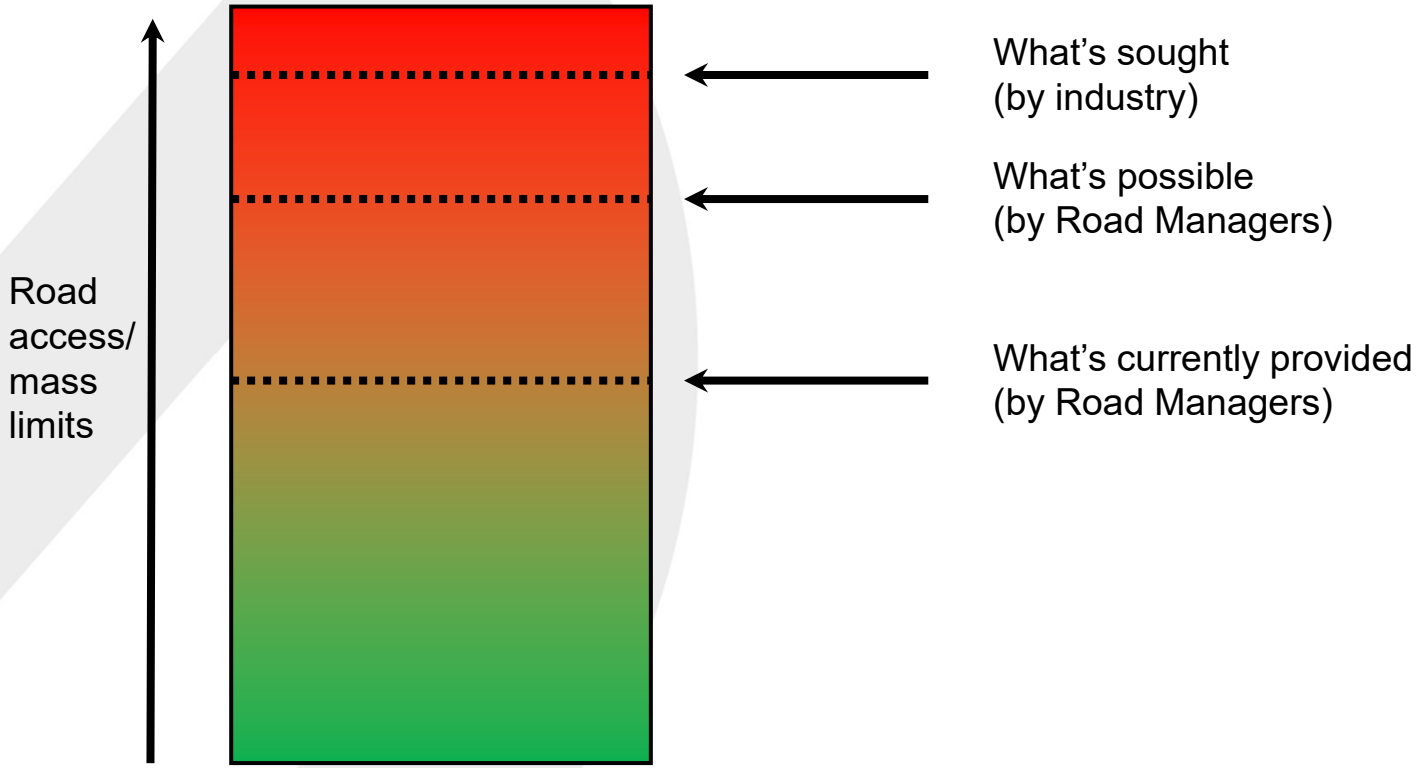
Strategic initiatives

- TCA will commence an engagement process with stakeholders in the coming weeks
- Initial engagement will include:
  - Road Managers
  - Regulators
  - IAP Service Providers
- We'll also engage with other stakeholders across the transport portfolio and telematics sector

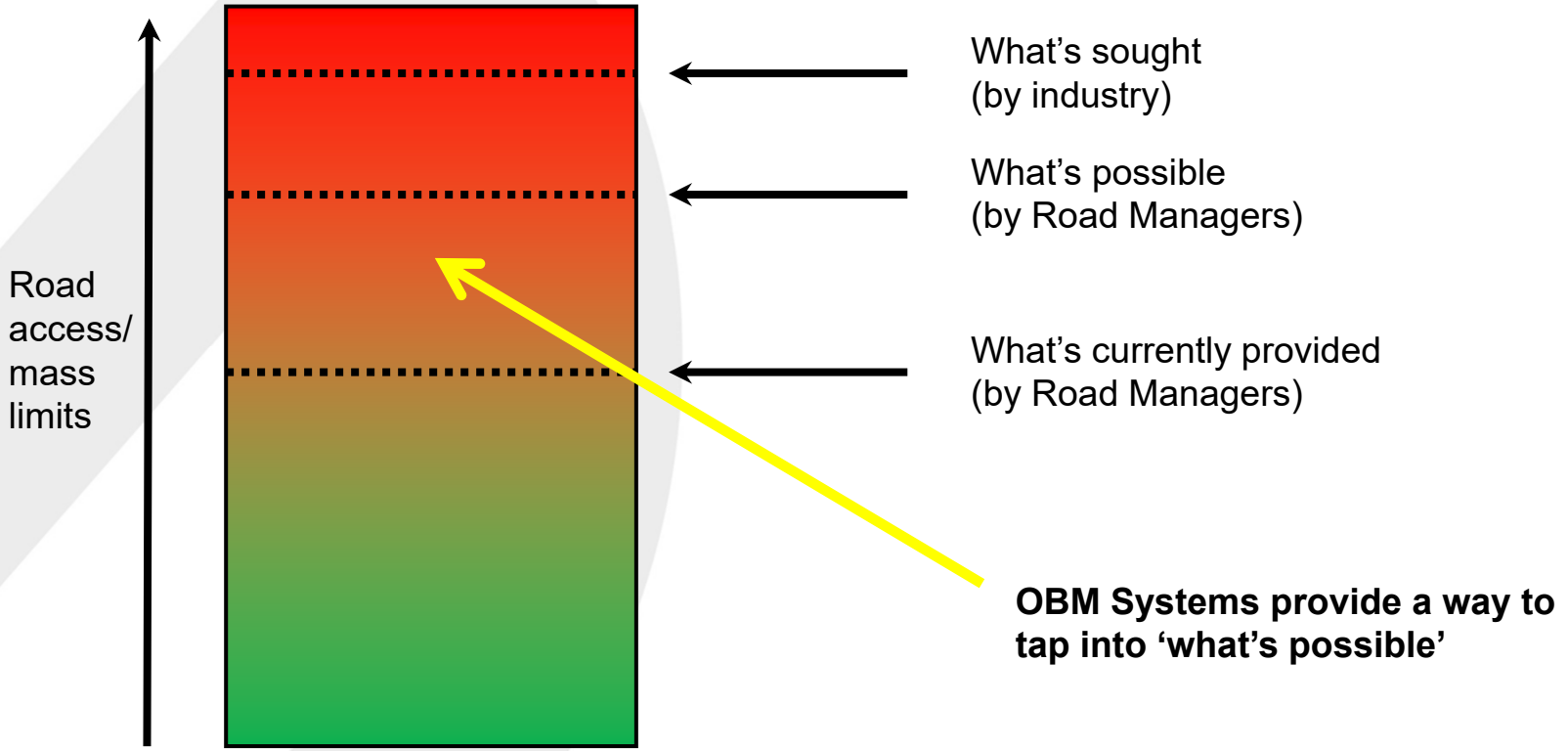
IAPm

- An operational regulatory program that will incorporate Mass Conditions into the IAP
- TCA has been funded by its Members to commence this work
- Will closely consider jurisdictional Road Manager operational requirements and technical requirements of IAP SPs
- Target for completion December 2018

IAPm: the opportunity



IAPm: the opportunity



Questions and comments

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Update on the Electronic Work Diary (EWD) initiative

Gavin Hill

A/Chief Executive Officer

EWD

- The National Heavy Vehicle Regulator (NHVR) has proposed an alternative approach to the implementation of the EWD
- The alternate EWD model reflects the NHVR's strategic priorities, as contained in:
  - NHVR Strategic Directions 2016
  - Strategies for a Safer, Productive and more Compliant Heavy Vehicle Industry 2016 - 2020
- TCA has been advised that the NHVR is currently developing a Project Plan for the EWD

EWD

- TCA will work with stakeholders to:
  - Ensure alignment with nationally agreed policy positions on ITS
  - Leverage investments made by the transport industry in preparation for the EWD
  - Co-locate regulatory telematics applications (avoiding additional hardware requirements for EWD)
  - Uphold established international standards

Questions and comments

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