Government access to vehicle-generated data

November 2020

Policy paper

National Transport Commission

Report outline

Title	Government access to vehicle-generated data
Type of report	Policy paper
Purpose	For approval at the Infrastructure and Transport Ministers Meeting – November 2020
Abstract	This paper identifies three problems that need to be addressed to achieve government access to and use of vehicle-generated data and provides policy recommendations to address these problems.
Attribution	This work should be attributed as follows, Source: National Transport Commission, *Government access to vehicle-generated data: policy paper*, NTC, Melbourne. If you have adapted, modified or transformed this work in anyway, please use the following, Source: based on National Transport Commission, *Government access to vehicle-generated data: policy paper*, NTC, Melbourne.
Key words	Vehicle-generated data, government access, use cases, road safety, infrastructure planning, network efficiency, asset maintenance, automated vehicles, V2X, connected vehicles
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Foreword

Evolving vehicle and transport technologies are increasingly capturing a range of useful data about the road environment, vehicles and the way drivers use them. The vehicle industry is also rapidly expanding the capability of vehicles to connect and share data. This creates opportunities to manage traffic and mobility, enhance transport infrastructure, and provide improved interfaces for transport services.

Australia's transport agencies have identified that this new data will be important for operating more dynamic and responsive transportation systems. However, if access to and exchange of this data is not considered in a nationally consistent way, governments risk creating a fragmented or inefficient data environment.

Recognising that vehicle-generated data is still at the nascent stage of development in Australia and that stakeholders remain unclear on priorities, there is an opportunity for governments to adopt a new policy approach. The National Transport Commission (NTC) proposes a collaborative approach that will build trust and develop relationships to enable the future exchange of vehicle and road operator data between government and industry that will be mutually beneficial.

The NTC consulted with the public, industry and government stakeholders to identify the key issues and barriers for turning these opportunities into real-life data exchange scenarios. The recommendations set out in this policy paper are designed to provide decision-makers with a meaningful step to build that trust and start a collaboration. We expect that this new approach will ensure the development of a nationally consistent framework for exchanging vehicle and road operator data between government and industry.

We would like to sincerely thank our stakeholders who took part in this project. With their ongoing support we can ensure that the opportunities of new technologies will benefit all Australians.

Marcus Burke
Executive Leader Future Technologies

Dr Gillian Miles
Chief Executive Officer and Commissioner

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Executive summary

Vehicle and road operator data can enable opportunities for transport agencies and industry to create value by enhancing network operations, investment, maintenance, planning and road safety. In this policy paper, the National Transport Commission (NTC) proposes a collaborative approach between government and industry to enable the exchange of vehicle and road operator data. This will create value from this data while managing commercial, privacy and security issues, without creating disincentives to deploying technology.

Context

Many transport agencies consider access to data as critical to their future operations. Data helps these agencies make better decisions. New and emerging technologies such as connected and automated vehicles could disrupt existing travel patterns and vehicle use. Data from the same vehicles could allow more dynamic responses to these challenges.

The vehicle industry has expressed its willingness to exchange data for road safety–related (and other) purposes. However, industry has raised concerns over the breadth of purposes vehicle data could be used for because transport and road agencies are both regulators and transport system operators. Industry reluctance is founded on concerns of government use impacting on them or their customers through enforcement or compliance action, inadvertent release of commercial intellectual property and impinging on customer privacy.

While there is an opportunity to enhance decision making and allow more dynamic responses, the uses of vehicle and road operator data require greater definition. Questions remain as to what data transport agencies desire, and whether this data can be meaningfully 'refined' into new insights. Research is still required to turn these opportunities into real-life data exchange. Australia risks creating a fragmented data approach if a national view of government access to vehicle and road operator data needs is not developed. It risks creating an overly burdensome environment of data sharing if demand for data is not well planned. Currently there is no framework in place that addresses these issues for all vehicles.

The NTC has identified three key problems that need to be addressed:

- Australia is currently missing out on the benefits from vehicle and road operator data.
- There is no national data access framework.
- There is low penetration of connectivity across the vehicle fleet.

Conclusions and recommendations

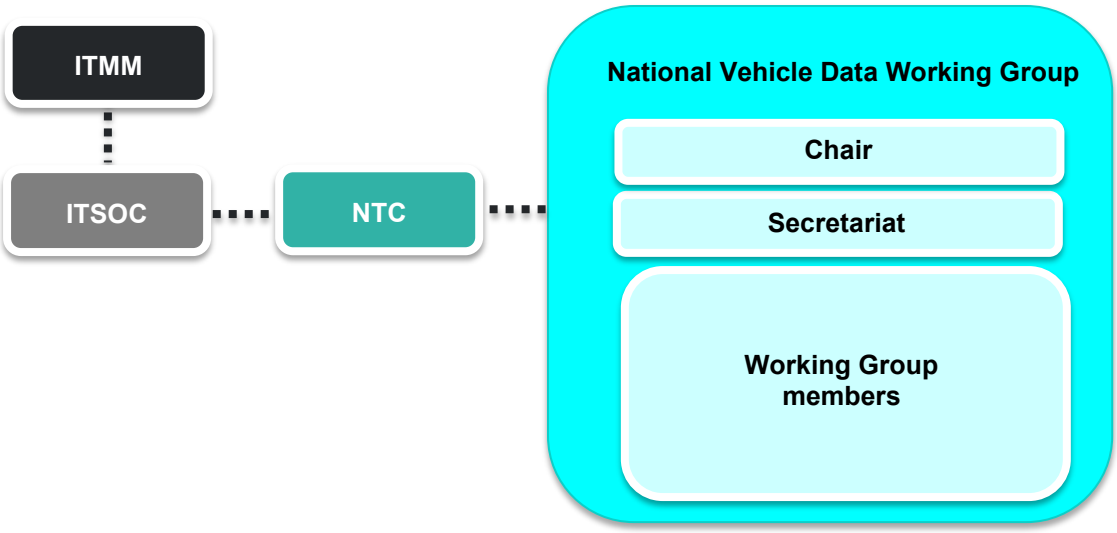
A collaborative approach to government access to vehicle and road operator data

The NTC proposes establishing a National Vehicle Data Working Group to lead the development of principles that would direct the exchange of data, as well as other initiatives to be determined and agreed by its members. These could include a roadmap for developing a data exchange framework and future governance structure and funding arrangements.

In establishing this working group, the NTC proposes that:

- the membership of the working group consists of representatives from organisations with technical expertise in the creation, collation, processing and analysis of vehicle-generated data, as well as from sectors that could be significantly impacted by the group's proposals
- the NTC supports the working group, with the assistance of Austroads
- the working group is able to explore opportunities for exchanging data created by public and private road operators and vehicle manufacturers for a broad range of purposes
- the working group determines the most appropriate terms for data exchange (commercial or non-commercial) on a case-by-case basis
- participation in the working group does not imply a binding commitment to participating in any data exchange.

The diagram below shows the proposed governance of the working group.



Challenges to implementing Automatic Crash Notification capabilities for new vehicles

In the discussion paper, the NTC proposed that the Australian Government considers policy options and infrastructure requirements for implementing Automatic Crash Notification (ACN) capabilities in new vehicles.

However, stakeholder views on requiring these capabilities in Australia indicated no definitive support for it. Stakeholders raised several issues and concerns, including the following:

- Australia's public service access point (triple zero service) currently does not have the capability to enable an extensive use of ACN.
- Parts of Australia's regional and remote areas currently have limited or no mobile phone voice and data reception coverage.
- ACN needs to be able to deliver the highest net benefit to the public when compared against alternative road safety solutions.

The NTC considers that ACN could be further explored as part of developing the *National Road Safety Strategy 2021–30* and its associated action plan.

Consultation

The NTC undertook a broad range of consultation initiatives to inform the recommendations in this policy paper, including:

- A series of co-design workshops in Sydney, Melbourne and Brisbane with government and industry stakeholders to inform the discussion paper.
- The release of the discussion paper was followed by a public consultation process seeking community and stakeholder views on the problems identified and options proposed in the paper. We held eight information sessions with representatives from industry and the Australian, state and territory governments. The NTC received 39 submissions from a wide range of stakeholders including the state and territory governments, local government, police, research bodies, legal services, vehicle manufacturers, motoring clubs, the heavy vehicle industry representatives and technology providers. Of these, 33 were public and are available on the NTC website. A list of the public submissions to the discussion paper is provided at Appendix A. Further detail on feedback on issues raised in the submissions is provided at Appendix B.

Next steps

The NTC will work with industry, all governments and Austroads to formally establish the proposed National Vehicle Data Working Group by June 2021.

1 Context

Key points

The Transport and Infrastructure Council asked the National Transport Commission to develop policy options for government access to and use of vehicle-generated data for the purposes of network operations, investment, maintenance, planning and road safety.

The purpose of this policy paper is to:

- outline current problems and opportunities relating to government access to vehicle-generated data
- consider feedback received as part of our consultation on the discussion paper on government access and use of vehicle-generated data
- recommend an approach that enhances government access to vehicle-generated data.

1.1 Purpose of this project

At the November 2019 meeting of the Transport and Infrastructure Council, the council asked the National Transport Commission (NTC) to:

> *Develop policy options for government access and use of vehicle-generated data for the purposes of network operations, investment, maintenance, planning and road safety.*

1.2 Purpose of this policy paper

The purpose of this policy paper is to:

- outline current problems and opportunities relating to government access to vehicle-generated data including:
  - the opportunity to enhance road safety outcomes through the exchange of safety-related data between government agencies and industry
  - the current lack of incentive to exchange data with governments
  - the current lack of trust in exchanging data
- consider feedback received as part of our consultation on the discussion paper
- recommend an approach to government access to vehicle-generated data.

1.3 About the National Transport Commission

The NTC leads national land transport reform in support of Australian governments to improve safety, productivity, environmental outcomes and regulatory efficiency.

The NTC is a key contributor to the national reform agenda with accountability to the Infrastructure and Transport Ministers Meeting and its advisory body, the Infrastructure and Transport Senior Officials' Committee.

1.4 Project mandate

At its August 2019 meeting, the Transport and Infrastructure Council agreed that:

> *... the NTC should work with jurisdictions, the Commonwealth and Austroads to analyse future government access and use of Cooperative-Intelligent Transport Systems [C-ITS] and automated vehicle data, including for network efficiency, infrastructure investment and road safety.*

The NTC previously discussed vehicle-generated data in our policy paper *Regulating government access to C-ITS and automated vehicle data*, which focused on user privacy. How governments may access vehicle-generated data has not to date been publicly discussed. In submissions to our discussion paper on *Regulating government access to C-ITS and automated vehicle data*, one state transport agency argued that:

> *The most significant issue with the current information access framework for government collection is that it does not authorise the collection, use and disclosure of CAV [connected and automated vehicle] data for legitimate government use cases.*[1]

In consultation with states and territories we refined the scope and project purpose to include all vehicle-generated data, rather than just C-ITS and automated vehicle data. By considering data needs in this way, we can consider data needs from current and near-market vehicle systems as well as longer term solutions such as C-ITS.

The redefined project purpose was noted at the November 2019 council meeting as:

> *Develop policy options for government access and use of vehicle-generated data for the purposes of network operations, investment, maintenance, planning and road safety.*

1.5 Linkages and related projects and initiatives

1.5.1 NTC automated vehicle reform

The NTC is currently developing an end-to-end regulatory framework for automated vehicles. Future work will consider access to data from automated vehicles for compliance and enforcement purposes to support in-service safety obligations. As part of this work, we will consider access to automated vehicle data by insurers to assess liability for insurance purposes.

1.5.2 NTC Heavy Vehicle National Law review

The NTC is currently reviewing the Heavy Vehicle National Law from a first-principles perspective. As part of the review, we will consider the role of technology as primary data generator to underpin compliance, enforcement and assurance activities. We will take an outcome-focused approach in the new law and avoid prescribing particular technologies. Consultation has indicated that the sharing of de-identified and aggregated data should be

[1] See: https://www.ntc.gov.au/submission_data/92

facilitated and encouraged through a clear data framework. The data framework would provide clarity and certainty to operators, government, regulators and technology providers about the permitted collection and use of data.

1.5.3 Freight data hub

The Department of Infrastructure, Transport, Regional Development and Communications is currently working with stakeholders on the design of the National Freight Data Hub. The purpose of the Freight Data Hub will be to enhance access to freight data across all modes to:

- support day-to-day operations
- improve infrastructure and transport network investment decisions
- enable end-to-end performance evaluation of Australia's freight system.

The project will consider how stakeholders will be able to access and share freight data.

1.5.4 National Telematics Framework

The National Telematics Framework is administered by Transport Certification Australia (TCA). The telematics framework covers some key data governance principles including:

- defining and separating the roles and functions of participants in a data exchange system
- separating the purposes for using similar data (such as location data) for compliance, enforcement and road management functions
- facilitating trust among users within the system by separating providers of data (drivers, fleets) from developers of regulatory tools (transport agencies)
- a data dictionary to facilitate and reduce the cost of data exchange between key system participants
- principles for establishing new regulatory tools from compliance and enforcement data.

However, transport agencies are increasingly interested in use of data, not for compliance purposes but for improved performance of transport networks. The Road Infrastructure Manager application (Transport Certification Australia, 2020b) is an example of a level 1 application (the lowest out of three levels of assurance) that is being increasingly used in notices and permits required for network access. Data is used only to provide reports on road usage so that improved network planning and maintenance decisions can be made and can be drawn from devices that do not need to be type-approved by TCA.

TCA's telematics data exchange platform allows standardised data from vehicles and transport operators to be collected automatically and in near real time. Once collected, data can be processed, analysed, de-identified, aggregated and potentially shared (or visualised in aggregated form, depending on the data consent arrangements in operation) to facilitate public policy outcomes such as road network planning or strategic compliance while supporting privacy obligations.

The framework has also facilitated the voluntary exchange of data between heavy vehicle and transport agency participants. For example, dangerous goods transport operators have provided vehicle movement data used to highlight network planning challenges with moving dangerous goods. This data was collected by TCA, de-identified, aggregated and visualised for analysis and discussion by the transport agency.

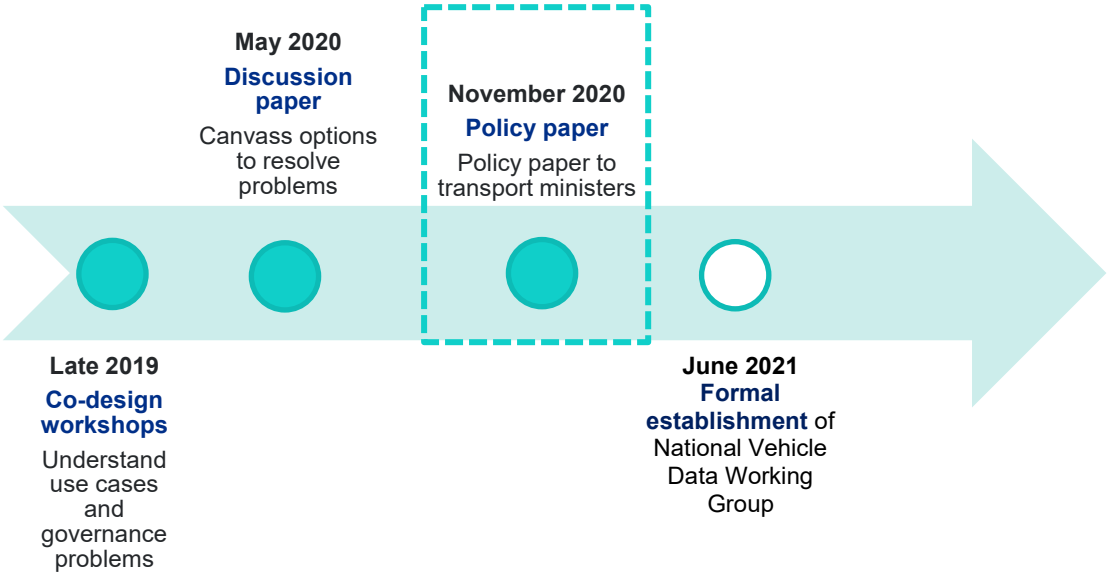
1.5.5 Austroads Future Vehicles and Technologies program

The Future Vehicles and Technologies program supports Austroads' member organisations to deliver an improved road transport network, leveraging the benefits of emerging technologies while minimising some of the risks faced during a period of rapid change. The *Future Vehicles 2030* report (released in June 2020) includes future forecasts for C-ITS technology market penetration in Australia (see chapter 4).

Austroads is also seeking to understand how road and transport agency operations can make data related to the safe operation of connected and automated vehicles available. The project, called Road Authority Data for Connected and Automated Vehicles, will make guidelines available on data such as roadworks, speed zones and traffic signals.

1.6 Approach

This NTC conducted a series of co-design workshops that led to a discussion paper and a public consultation process. We have reviewed all submissions and feedback in developing this policy paper.



1.7 Consultation

1.7.1 Information sessions and webinar

As part of our discussion paper consultation the NTC held eight information sessions with representatives from industry and the Australian, state and territory governments. We also hosted an online panel with ITS Australia with panel members from HERE Technologies, Toyota Australia and Queensland's Department of Transport and Main Roads. Over 100 attendees participated in our consultation sessions and more than 200 people attended the ITS-Webinar.

1.7.2 Public consultation

The NTC released a discussion paper for public consultation in May 2020 and received 39 submissions. Of these, 33 were public and are available on the NTC website. Six

submissions were submitted on a confidential basis. Submissions were received from a wide range of stakeholders including the state and territory governments, local government, police, research bodies, legal services, vehicle manufacturers, motoring clubs, heavy vehicle industry representatives and technology providers. A list of the public submissions to the discussion paper is provided at Appendix A.

The consultation process showed wide support among stakeholders to the proposals in the discussion paper. This process resulted in substantial feedback on the issues discussed in the policy paper, including:

- road safety as a priority use case and the need for a clear definition
- the pros and cons of having a national data aggregator
- the need for strong protections to the privacy of consumers
- the importance of the consumer perspective
- the need for agreed principles for collaboration framing the development of use cases.

Further detail on feedback on these issues is provided at Appendix B.

The NTC incorporated stakeholder views into its analysis.

Statistics on stakeholder responses to the key elements of the proposal are summarised in Figure 1. Figure 2 provides a breakdown of the submissions by sector.

Figure 1. Stakeholder views on proposals

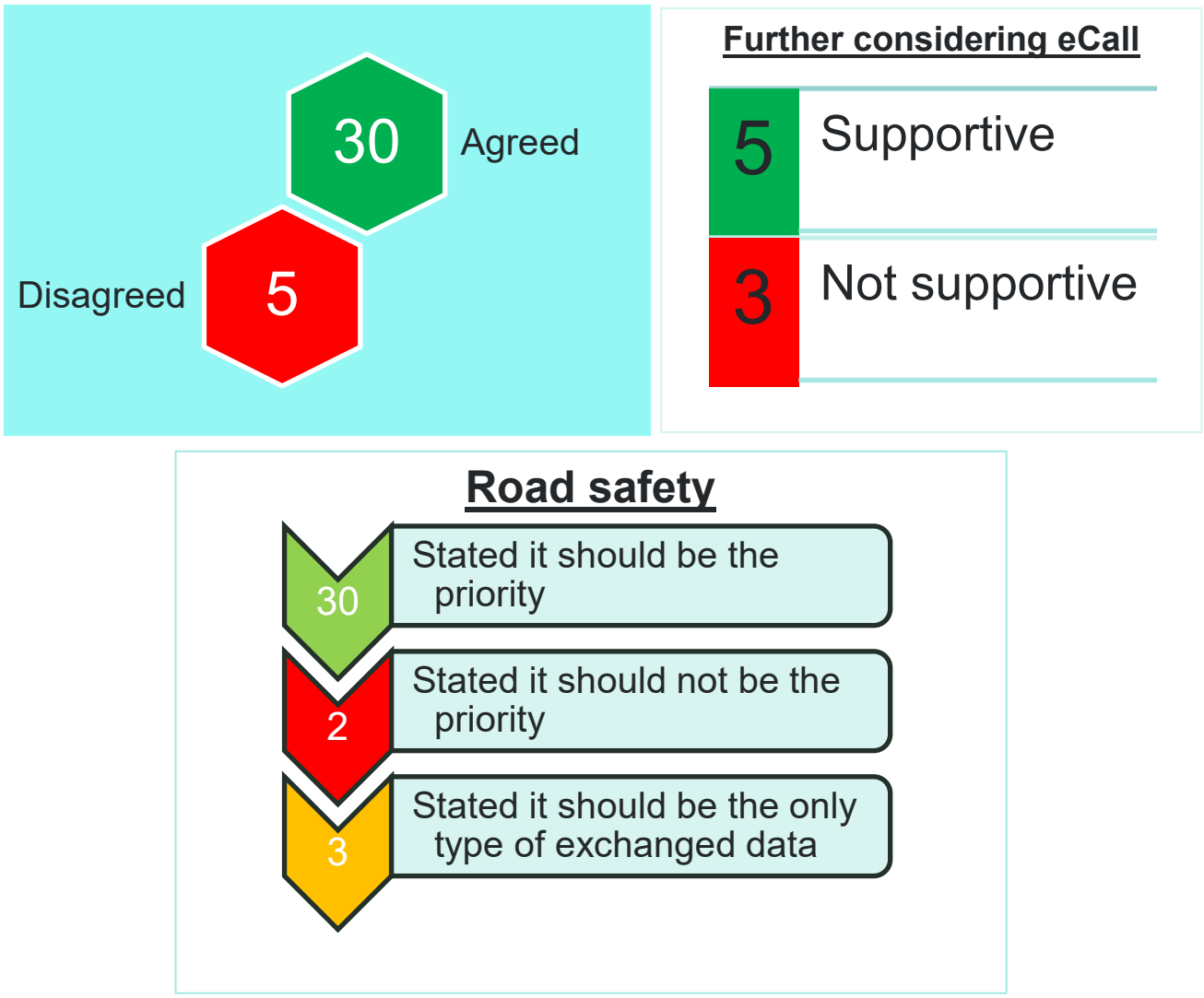


Figure 2. Submissions by sector

2 Problem 1: Australia is missing out on the benefits of vehicle and road operator data

Key points

Vehicle and road operator data is not being accessed, used and exchanged by transport agencies for purposes that could be beneficial to the public. This is due to current vehicle capabilities and a lack of incentive or reason for industry and road users to provide the data.

Enabling exchange and access to this data could improve:

- road safety
- network operations
- future transport network planning
- freight planning, leading to increased productivity and environmental performance
- infrastructure asset maintenance and inventory.

2.1 Overview

Although vehicles are increasingly capturing a range of useful data, the public as a whole is missing out on the benefits of this data. Vehicle-generated data can enable opportunities for transport agencies and industry to create public value from enhanced network operations, investment, maintenance, planning and road safety. Australia's transport agencies are seeking to understand how they may access and create value from this data without raising commercial, privacy or security issues or disincentives to deploying technology.

In the discussion paper we identified the following problem:

> *Vehicle-generated data is currently not provided to transport agencies for purposes that may have publicly beneficial outcomes. This is due to current vehicle capabilities or a lack of incentive or reason for industry and road users to provide the data (the exception to this being heavy vehicles enrolled in a current regulatory access or compliance schemes).*

Many transport agencies consider access to data as critical to their future operations. Data supports more informed decisions. New and emerging technologies, such as connected and automated vehicles, could disrupt existing travel patterns and vehicle use. Data from the same vehicles could allow more dynamic responses to these challenges.

In addition, stakeholders have expressed strong support for exploring opportunities from the access and use of road operator data by industry, government and consumers. Road operators could assist industry, researchers and the public to develop innovative solutions to transport problems by providing open access to this data.

The Australian and all state and territory governments have policies requiring government entities to make their data available as 'open data'. These policies do not require the

collection of additional data, improvements in quality and timeliness of that data nor the provision of any guarantees in the supply of data. This means that potentially useful data requires processing and modification to be of any use or value for consumption by vehicles. Most of this data is currently unavailable in suitable form, and the greatest barriers to availability are more related to business processes than to collection or storage constraints (Austroads, 2018).

While there is an opportunity to enhance decision making and allow more dynamic responses, the use of vehicle and road operator data remains uncertain. Questions remain as to what data transport agencies desire, and whether this data can be meaningfully 'refined' into new insights. Research is required to turn these opportunities into real-life data exchange scenarios. A national view on transport agency data needs will reduce the likelihood of gaps or duplication of requests to generators of vehicle data.

2.1.1 Key opportunities and benefits

Transport agencies see a range of potential benefits and are optimistic about how data could be used to generate new services and make better decisions. Likewise, industry participants have acknowledged the public benefits that may be achieved and, in many cases, see alignment with their corporate objectives around safety, mobility and environmental outcomes.

Following the stakeholder workshops and public and targeted consultation for the discussion paper, the NTC identified the following potential opportunities and benefits from addressing this problem:

- improving road safety through fewer end-of-queue crashes and faster emergency response times
- improving network operations through reduced journey times and better-informed traffic decision making
- enhanced future transport network planning through identifying where increased network capacity or operational changes are required
- better freight planning leading to increased productivity, reduced cost of goods, targeted infrastructure investment and improved safety and environmental outcomes
- improving asset awareness and inventory with better targeted maintenance, reduced response times to asset maintenance issues and better safety through improved roadway condition
- potential improvements to the Road User Charging scheme based on vehicle type, use, location and mass (Truck Industry Council, 2020)
- improved monitoring of environmental impacts of the light and heavy vehicle fleets.

2.1.2 Key barriers and issues

The stakeholder workshops and research for the discussion paper highlighted the following barriers and issues:

- **Capabilities:** Transport agencies currently have limited capabilities to process and analyse vehicle-generated data to develop valuable information, insights and services. Workshop participants with experience in working with large datasets noted the challenge of building a 'data refinery'.
- **Costs:** There is currently a high cost for data systems, data collection, data storage and data analytics to manage vehicle-generated data. The sharing of data outside of the vehicle results in costs for data carriage, storage and analytics. High costs of

storage and transmission are likely to inhibit data sharing. It is likely that only small packets of information derived from vehicle sensors or systems could be cost-effectively shared (Obstfeld & Grayson, 2019).

- **Costs unclear:** The costs to industry and government for vehicle-generated data are currently unclear, which may be due to (Obstfeld & Grayson, 2019) (Transport Certification Australia, 2020a):
  - data costs varying significantly depending on the frequency of data provided
  - richer location data requiring embedded connectivity
  - whether data is processed on board the vehicle or externally
  - the sample size of data needed will vary the cost
  - the level of data assurance required[2]
  - transport agency capabilities including systems and staff capabilities.
- **Privacy:** There is a strong need to maintain user privacy and ensure proper handling and protection of vehicle-generated data. In our workshops we heard that the level of privacy risk varies greatly depending on the use case and the richness of granularity of data required for each use case.
- **Data not captured or stored:** Potentially useful data is not currently being captured or stored by vehicles. Most vehicle data are consumed within a system within the vehicle but never stored or collected (Obstfeld & Grayson, 2019).
- **Form of government data:** Potentially useful road operator data is not currently being consumed by vehicles as is not available in suitable form and requires processing and modification with no guarantee for accuracy (Austroads, 2018).
- **Commercial sensitivities:** There are commercial sensitivities affecting industry's willingness to share data. The engagement with the vehicle industry highlighted concerns about sharing data with governments due to the breadth of purposes it could be used for, given that many agencies hold roles as both regulator and transport system operator. Such concern is founded on potential risks of government use of data detrimentally impacting on companies or their customers. This could include enforcement or compliance action, or inadvertent release of commercial intellectual property or private customer information.
- **Consumer concerns:** The dual role within government as road network manager and enforcement agency could also deter some consumers from voluntarily sharing data (Federal Chamber of Automotive Industries, 2020).

2.2 Stakeholder feedback

Stakeholders almost unanimously agreed that Australia is currently missing out on the benefits of accessing vehicle-generated data. Road agencies noted that the potential cost savings could be significant, enabling those resources to be reallocated to other areas. These costs include managing and maintaining the physical infrastructure associated with the current data-gathering tools and subsequent commercial arrangements.

While agreeing with the benefits and barriers, some stakeholders pointed at additional benefits and barriers. Additional barriers include:

[2] See, for example, the costs for different levels of assurance under the National Telematics Framework: https://tca.gov.au/service-providers/different-levels-of-assurance/.

- the lack of telecommunications technology required to support some elements of connectivity throughout regional and remote Australia
- an ambitiously scoped approach beyond international norms and developments that could create resistance to participate among stakeholders (Federal Chamber of Automotive Industries, 2020)
- potential ongoing costs to consumers from the data plans required to transmit data (Federal Chamber of Automotive Industries, 2020)
- lack of consumer trust about governments using data for purposes beyond what was initially stated (such as enforcement and compliance)
- determining a minimum standard for new vehicles that have connectivity features
- uncertainty that a greater uptake of vehicles and data will result in greater availability of technology and vice versa.

Additional benefits noted by stakeholders include the following:

- In some instances, use cases can leverage data currently available on the vehicle's communication systems (Controller Area Network, CAN), reducing the time required for implementation (Federal Chamber of Automotive Industries, 2020).
- Developing a framework for accessing and exchanging vehicle-generated data could also create opportunities for other areas such as:
  - health and wellbeing data for drivers
  - machine learning.

2.3 NTC conclusions

Given the benefits and barriers discussed above and following engagement with governments, industry and other key stakeholders, the NTC has identified key categories of vehicle data to explore and consider for access in the short, medium and long term.

2.3.1 Short-term opportunities

- **Vehicle event and driver behaviour data for road safety:** This refers to data that could support faster incident response times, network safety planning and evaluation, providing enhanced safety information to road users and safe system strategic activities.
- **Crash analysis:** Data that could support crash reconstruction for enforcement and safety planning. The NTC notes that the Australian Government is likely to adopt the DSSAD/EDR standards from the United Nations' regulations for automated vehicles, which include data collection. However, access by law enforcement and state and territory agencies will require legislative change.
- **Freight vehicle movement data:** This could support more efficient network operations, network planning, project evaluation and investment planning.

2.3.2 Medium-term opportunities

- **Asset sensing:** This refers to data that could be used to support transport asset maintenance, predictive maintenance, asset inventory and freight access policy.
- **Vehicle condition monitoring:** Vehicle data that could provide information relevant to roadworthiness (and support digital lodgement) and could support planning for infrastructure such as electric vehicle charge points.

- **Automatic Crash Notification:** Vehicle data that enhances incident responses and road safety evaluation.

2.3.3 Longer term opportunities:

- **V2X:** This refers to vehicle data that can convey important information to the driver about inclement weather, nearby accidents, road conditions and the dangerous activities of nearby vehicles. It would require vehicles to be capable of connecting with one another and with infrastructure.
- **Automated driving regulation:** This refers to vehicle data that could support the regulatory oversight of automated vehicle deployment by transport agencies.
- Other opportunities beyond road safety will emerge as technology evolves and data costs reduce.

3 Problem 2: Lack of a national data access framework

Key points:

- Australia does not have a data access framework to provide the necessary trust, data exchange systems, data standards/definitions, understanding of data needs, and governance to enable sharing and exchanging of data between governments and industry.
- This could lead to a fragmented data approach, resulting in additional costs from industry having to meet a variety of requirements for each jurisdiction.
- A first step for addressing this problem is proposed in chapter 5 of this paper.

3.1 Overview

Australia lacks a data access framework to provide the necessary trust, data exchange systems, data standards/definitions, understanding of data needs, and governance to establish data access and use. Heavy vehicles are an exception, with some already enrolled in regulatory access or compliance schemes.

The NTC considers that, to enable vehicle and road operator data to be shared and exchanged between government and industry, Australia needs to develop a national framework to provide consistency and certainty to all the parties participating in exchanging data. Australia risks creating a fragmented data approach if a national view of access and exchange of this data is not developed. If states and territories develop different requirements and standards, this would add costs and create barriers to data exchange.

3.1.1 Key issues

The discussion paper identified and discussed the following issues:

- **Lack of trust in exchanging data between parties:** Industry is hesitant to provide data to transport agencies due to user privacy concerns and uncertainties over the purposes for which data will be used.
- **Lack of clarity and alignment on government priorities:** Competing priorities within transport agencies means that transport agencies have not identified their own data priorities and use cases, nor have they agreed to national priorities.
- **Maintaining user privacy:** Maintaining privacy should be paramount in any data access arrangement. Privacy protections will determine whether users will opt in or out of providing data.
- **Lack of agreed standards:** A lack of standardisation for data exchange across the many different interested government agencies could result in different road agencies requiring similar data in different formats. This would add costs to industry associated with duplication and format conversion. Standardisation across government would potentially decrease costs to generating and exchanging data.

3.2 Stakeholder feedback

During workshops and the public consultation process, stakeholders almost unanimously agreed there is an absence of a data access framework. Specifically, a framework that provides the necessary trust, data exchange systems, data standards/definitions, understanding of data needs, and governance to enable government and industry collaboration to share and exchange vehicle-generated data. One stakeholder noted that it is unlikely that the development of individual data management practices and processes with individual government agencies would be practical or even achievable (Austroads, 2020a).

Several submissions highlighted that a national data access framework could help establish trust and common expectations between industry and government.

However, stakeholders also recommended that such a framework should consider:

- the role of consumers in informing the framework (RAC, 2020)
- starting with a proof of concept to inform the way forward for all the potential uses of data (RAC, 2020)
- robust and consistent definitions and practices (Brisbane City Council, 2020)
- that objectives may take significantly longer to be achieved under this model (Brisbane City Council, 2020)
- developing a set of principles agreed between stakeholders (Department of Transport and Main Roads, 2020)
- establishing an accountable entity to progress development of a data exchange framework and to establish necessary governance (Department of Transport and Main Roads, 2020)
- the need for governments to identify and consider all the enabling activities, including the necessary capability to efficiently use vehicle-generated data to deliver public value (Department of Transport and Main Roads, 2020)
- establishing an organisation similar to the European Union's Data Taskforce that would work collaboratively with government and industry to establish data standards and communication protocols to harmonise government access to vehicle-generated data and vehicle manufacturer access to road agency–generated data (Austroads, 2020a).

3.3 NTC conclusions

Through our workshops, engagement sessions and public consultation process, stakeholders supported the NTC's assessment of this problem almost unanimously.

It is challenging to define in detail what the priority data needs of transport agencies are at this stage. It also means that opportunities to use data are not yet well understood.

The discussion paper proposed establishing a national data exchange partnership between industry and government that would identify opportunities for exchanging vehicle-generated data as well as develop standards and consider proofs of concept.

This policy paper confirms the preferred option proposed in the discussion paper while taking on feedback about the form of this collaboration as a working group. This approach:

- can provide an opportunity for government and industry to collaboratively realise the benefits of vehicle and road operator data for road safety and other benefits
- can provide the best opportunity for government to better understand how to maximise the potential benefits and opportunities of vehicle and road operator data (it will allow for both government and industry to understand the potential costs involved in government access to and use of this data)
- ensures there are no mandatory costs for industry
- allows government and industry to work together to determine privacy and other security issues with exchanging vehicle and road operator data (it can establish trust between industry and government through developing an exchange framework)
- does not get ahead of international developments (any international developments can inform the working group for potential opportunities).

The final proposed approach to this problem is explained in detail in chapter 5 of this paper.

4 Problem 3: Low level of uptake and penetration of connectivity across the vehicle fleet

Key points

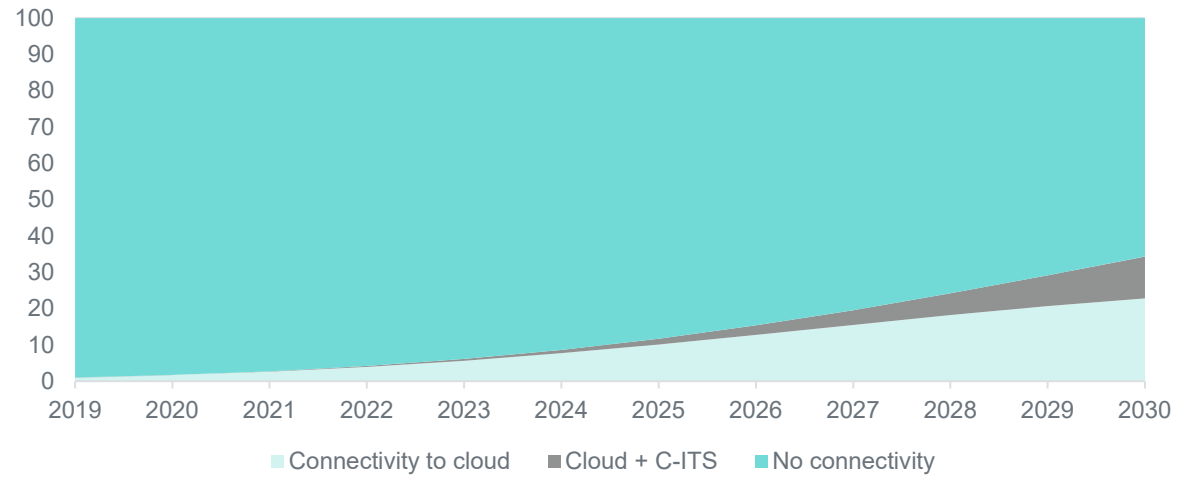
- There is a low level of uptake and penetration of connectivity across the Australian vehicle fleet. This potentially delays the benefits of vehicle-generated data, particularly for safety-critical events.
- Current connectivity options in the Australian fleet remain broad, without any apparent consensus from industry on adopting one preferred solution.
- The final proposed approach to this problem is explained in detail in chapter 6 of this paper.

4.1 Overview

The low level of uptake and penetration of connectivity across the Australian vehicle fleet could delay the benefits of vehicle-generated data, particularly related to safety-critical events. Connectivity options in vehicles remain broad, without any apparent consensus from industry on adopting one preferred solution. While some technology is currently available, connectivity of vehicles in Australia remains low.

This is particularly evident in the light vehicle fleet (Figure 3). In comparison with international markets, there are currently fewer vehicles capable of capturing and communicating vehicle-generated data on Australia's roads, with only market-based mechanisms to encourage uptake.

Figure 3. Predicted percentage of car and SUV fleet with connectivity features to 2030



Source: Austroads 2020b

Austroads identified that, in 2019, 7 per cent of newly sold vehicles were fitted with some form of connectivity to the cloud (Austroads, 2020b). The report also forecasts slow growth in cooperative and embedded systems. Austroads estimates that approximately 1 per cent of the Australian fleet is equipped with some form of connectivity. No new vehicles in the Australian market are equipped with C-ITS-capable technology. C-ITS-equipped vehicles are forecast to make up around 12 per cent of the fleet by 2030. A survey conducted by the Federal Chamber of Automotive Industries (FCAI) of 15 vehicle brands found that there were approximately 72,000 vehicles on Australian roads with connected vehicle capabilities.[3] Low fleet penetration and the inability to access the data from other sources was noted as a current barrier in many of the use cases in our discussion paper.

The case of heavy vehicles is different. In its submission to the discussion paper, the Truck Industry Council noted that vehicle-generated data is quite prevalent within the heavy vehicle freight industry and that a significant amount of this data is captured and transmitted from the vehicle. However, these systems are not usually supplied by vehicle manufacturers but are predominantly the result of aftermarket third-party installations (Truck Industry Council, 2020).

4.2 Stakeholder feedback

Most stakeholders agree there is a low level of uptake and penetration of connectivity across the Australian vehicle fleet. There is broad agreement that this could limit the public benefits from accessing vehicle-generated data in the short term.

As the FCAI noted, vehicle-generated data is only useful if it can be transmitted beyond the vehicle. This requires vehicles to incorporate a level of communication connectivity and communication protocols that is not widely deployed in Australia (Federal Chamber of Automotive Industries, 2020). The FCAI considers that, without overarching principles, technology introduction will only rely on competitive market forces focusing on factors that appeal to consumers.

To address this problem, stakeholders agreed with:

- exploring the feasibility of regulatory options such as mandating eCall to reduce the barriers to vehicle connectivity in Australia (Austroads, 2020a) (Intelematics, 2020) (Telstra, 2020)
- addressing the lack of telecommunication technology required to support some elements of connectivity throughout regional and remote Australia
- exploring policy options to offer incentives or create a more favourable environment to accelerate the deployment of connected vehicles with data capture capabilities beyond regulatory requirements. This could include infrastructure upgrades (Department of Transport and Main Roads, 2020).

[3] A case study on this figure can be found on p. 32 of our discussion paper.

4.3 NTC conclusions

Gaining significant value from vehicle-generated data may not be feasible in the short term due to the low fleet penetration of vehicles that generate useful data. Some vehicle-generated data use cases:

- only achieve substantial benefits if all road-based incidents and events are recorded
- require a minimum deployed vehicle fleet to create a level of statistical significance.

Other use cases may be achieved via a captive or corporate vehicle fleet (for example, a road network could be sampled by a smaller number of vehicles).

Further considerations on this problem are discussed in chapter 6 of this paper.

5 Policy proposal: a collaborative approach to government access to vehicle and road operator data

Key points

The NTC proposes:

- establishing a National Vehicle Data Working Group to develop principles that would direct the exchange of data, as well as other initiatives to be determined and agreed by its members
- that the membership of the working group consists of representatives from organisations with technical expertise in the creation, collation, processing and analysis of vehicle and road operator data, as well as from sectors that could be significantly impacted by the group's proposals
- that the NTC supports the working group with the assistance of Austroads
- that the working group explores opportunities for exchanging data created by public and private road operators and vehicle manufacturers for a broad range of purposes
- that the working group determines the most appropriate terms for data exchange (i.e. commercial or non-commercial) on a case-by-case basis
- that participation in the working group does not imply a binding commitment to participating in any data exchange.

5.1 Overview

The NTC is proposing a partnership approach to identify opportunities for vehicle and road operator data exchange between industry and government and the feasibility of those opportunities. This approach includes establishing a National Vehicle Data Working Group. This working group will develop a vision and principles for future exchange of data, as well as other initiatives to be determined and agreed by its members (Figure 4).

Senior representatives from governments and industries would be invited as members of the group and would be responsible for:

- setting the vision and principles for data exchange
- identifying potential proofs of concept, use cases and further research work.

The working group would provide a forum for key stakeholders to share knowledge and advice on the direction and scope of future use cases. Participation in the working group would not imply a binding commitment to participating in any data exchange. Participation in data exchange and the relevant terms would be negotiated for each use case.

This proposal seeks to address problems 1 and 2 by providing:

- an opportunity for government and industry to collaboratively identify ways to realise the benefits of vehicle and road operator data for a broad range of uses

- principles that will frame the development of a consistent framework for ensuring secure data access and high levels of data-use capability.

The proposed approach should be flexible enough to support a growing range of use cases as business priorities progress. This will facilitate a variety of future road and transport use cases to generate benefits.

This proposal would not prevent Australian, state and territory governments from legislating to ensure their access to vehicle-generated data, as is their prerogative. However, the NTC notes that a national harmonised approach to regulation that is consulted on with all the relevant stakeholders would be preferable, should changes to or new legislation be required.

5.2 Stakeholder feedback

Most of our stakeholders expressed strong support to the proposal in the discussion paper for a collaborative approach between government and industry. The public consultation process showed that almost all interested parties agree that a data sharing partnership is the optimal approach for establishing trust and setting agreed expectations between industry and government.

However, some of the submissions raised issues that we considered and, where possible, incorporated into the proposal. These included the following:

- **The need for a principles-based approach** (Department for Infrastructure and Transport, 2020) (Department of Transport and Main Roads, 2020)**:** The NTC strongly agrees with those views and has proposed that government, industry and other relevant stakeholders jointly prepare a set of principles for collaboration (Recommendation 1).
- **Concern about excessively narrowing the scope of future work by prioritising road safety vehicle data:** The NTC is proposing that government and industry collaborate on a broad range of opportunities for data exchange.
- **The need for establishing a centralised data aggregator to compile data at the national level:** The NTC reviewed the different views on this matter and considers that the working group would be in the best position to advise on roles and responsibilities.
- **Privacy of consumers:** Participation of a consumer representative in the partnership could play an important role in ensuring that privacy risks to consumers are addressed (AAA, 2020) (Department for Infrastructure and Transport, 2020).

Most stakeholders agreed with prioritising road safety as the starting point for exchanging vehicle-generated data between industry and government. A telematics service provider noted that a safe driving experience is beneficial to all parties: vehicle manufacturers, road authorities and also drivers (Intelematics, 2020).

There is a close alignment of objectives and expectations of industry and government to share or exchange road safety data. The Australian Automobile Association (AAA) referred to the European ‘Data for Road Safety’ collaboration launched in June 2019 (which prioritises access to safety data to enhance road safety) and Australia’s trend in the number of fatalities (relatively unchanged over the past 12 months) as a strong reason to prioritise road safety (AAA, 2020).

However, most stakeholders also agree that road safety should not be the exclusive use of data generated by vehicles. Stakeholders consider that additional uses could include network planning and management, infrastructure investment and emissions monitoring.

Vehicle industry stakeholders have indicated that prioritising road safety data depends on the terms and conditions for such exchange. These stakeholders have suggested that, under non-commercial terms, they would most likely prefer to focus any data exchange on road safety. If governments agree to negotiate such terms based on each specific use case and are open to considering exchanging data under commercial terms (if deemed appropriate), vehicle manufacturers would be willing to consider a broad range of purposes. Government stakeholders have also indicated support for the terms of data exchange to be agreed on an individual use case basis.

Further, Austroads noted that customers providing data to government agencies may also expect that agencies will provide road safety–related data such as speed limits and incident and road hazard warnings back to drivers and vehicles (Austroads, 2020a).

5.3 National Vehicle Data Working Group

5.3.1 Purpose of the working group

The purpose of the National Vehicle Data Working Group would be to explore opportunities for exchanging data between industry and government under both non-commercial and commercial terms. For the purpose of this policy proposal, non-commercial means that either:

- participants would not be required to pay any compensation to the provider of the data beyond what is required to cover any direct costs caused by the exchange
- data is given and received by parties on a reciprocal basis.

The working group would enable participating members to propose and discuss potential use cases with government and industry. This would include data generated by vehicles and by road operators. Members would be able to propose, validate and test general principles of data sharing, access and use.

The working group would have the following purposes:

- identifying and exploring opportunities for exchanging vehicle and infrastructure-generated data between government and industry that could result in mutual benefits to government and industry parties, as well as to the public
- identifying areas of research required to support these opportunities
- facilitating national and international collaboration on beneficial uses of vehicle and road operator data.

5.3.2 Roles and responsibilities for working group members

The roles and responsibilities would include but not be limited to:

- developing a shared vision and principles for exchanging data
- assessing data availability and the feasibility of data development
- developing a framework and any subsequent reviews or updates
- seeking member agreement on the scope and terms for potential proofs of concept and use cases
- advocating for harmonisation regarding access, use and exchange of vehicle and road operator data
- observing and/or participating in international developments on exchanging vehicle and road operator data

- transferring knowledge from proofs of concept, use cases and pilot projects in Australia and overseas.

5.3.3 Scope of the working group

The NTC proposes that the working group:

> *Will lead industry and government collaboration to identify opportunities for exchanging vehicle and road operator data for a broad range of purposes, including network operations, investment, maintenance, planning and road safety. The terms of this exchange should be agreed on a use-case-by-use-case basis.*

This means that the exchange of data between government and industry would include data created by vehicles as well as data generated by road agencies and private road operators. This approach would enable the working group to explore potential uses of data for a broad range of purposes including (but not limited to):

- road safety
- network operation and planning
- transport asset inventory and management
- freight policy and planning.

This approach would amend the project purpose endorsed by the Transport and Infrastructure Council in November 2019 to include road operator data in addition to vehicle-generated data. The NTC expects that this amendment would result in greater industry willingness to exchange data from a fair and trusted partnership between government and industry that is based on the principle of reciprocity.

Targeted consultation undertaken by the NTC highlighted broad support for including road operator (in addition to vehicle-generated) data in the scope for the working group to allow for reciprocity in exchange. Stakeholders expressed strong support for engagement between industry and government on the reciprocal exchange of data that can benefit all parties, rather than focusing on data being consumed by government. Including road operator data (along with vehicle-generated data) is also in line with the principle of reciprocity for data exchange embedded in the European Commission's Data Task Force. Broadening the scope opens greater opportunities for exchange and greater benefits.

In the discussion paper, the NTC proposed that road safety should be the starting point for exchanging vehicle-generated data between industry and government. We also recommended that industry and government adopt a principle of non-commercial sharing or exchange of road safety data. However, the public and targeted processes revealed willingness to consider data exchange opportunities on a commercial basis (Department for Infrastructure and Transport, 2020). Government and industry stakeholders recommended that the terms of exchange could be agreed by the relevant parties in an individual use case basis because this could broaden the range of potential opportunities for data exchange. Including exchanging data on a commercial basis does not imply there is a preference for either commercial or non-commercial exchange. The working group may also consider the opportunities we have outlined in section 2.3 to inform its future work and consider any priorities.

5.3.4 Membership of the working group

Membership would consist of ideally no more than 20 senior representatives from:

- the Australian Government
- state and territory governments

- peak bodies for heavy and light vehicle industries
- light vehicle manufacturers
- heavy vehicle manufacturers
- organisations with expertise in automated driving that are not vehicle manufacturers
- Transport Certification Australia
- other data aggregators
- road user advocacy groups
- telematics companies
- private road operators.

All members should have demonstrated technical expertise and capability in the creation, collation, processing and analysis of vehicle and/or road operator data. Representatives selected by each organisation would be expected to contribute to both technical and strategic issues.

Working group members could agree on the participation of additional members on a permanent or temporary basis if they deem it necessary to meeting the group's purpose.

5.3.5 Chair of the working group

The chair would be responsible for leading the working group including:

- facilitating proper information flow to the working group
- facilitating the effective functioning of the working group including managing the conduct, frequency and length of meetings
- communicating the views of the working group to broader stakeholders.

The chair's responsibilities would also include:

- setting the agenda for the matters to be considered by the working group
- seeking to ensure that the information provided to working group members is relevant, accurate, timely and sufficient to keep the group appropriately informed of any developments that may have a material impact on the group's performance
- seeking to ensure that communications with stakeholders are accurate and effective
- facilitating open and constructive communications among working group members and encouraging their contribution to deliberations
- liaising and interfacing with other private and government bodies undertaking work relevant to the working group's purpose
- liaising with working group members.

The chair would be appointed by the working group members for the initial two-year duration of the group.

5.3.6 Secretariat of the working group

The administrative duties for the working group would be undertaken by the secretariat. The secretariat would be the NTC with support from Austroads. The role of the secretariat would include:

- coordinating meeting and work agendas for the group
- supporting the working group by undertaking or commissioning research (funding would need to be determined for any research required)

- any other matters as agreed by the secretariat and the working group.

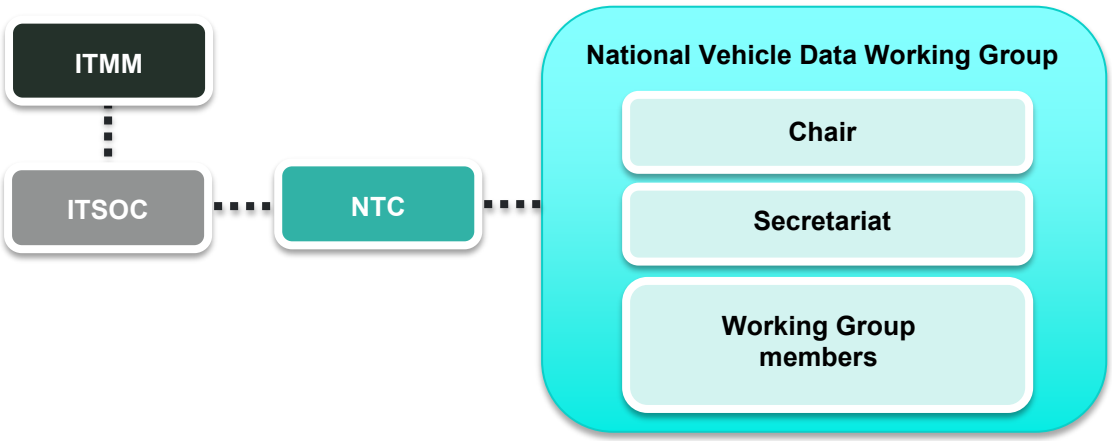
5.3.7 Reporting

The NTC would provide yearly progress reports on the working group's activities to the Infrastructure and Transport Senior Officials' Committee (ITSOC) and to infrastructure and transport ministers.

5.3.8 Duration of the working group

The proposed duration for the working group is two years. This could be extended if required to meet the group's purpose.

Figure 4. Governance model for a collaborative approach to data exchange



5.4 Data protection and privacy

The NTC proposes that the working group considers the Australian Privacy Principles in developing a framework for data exchange. These 13 principles govern standards, rights and obligations regarding (Office of the Australian Information Commissioner, 2019):

- the collection, use and disclosure of personal information
- an organisation or agency's governance and accountability
- integrity and correction of personal information
- the rights of individuals to access their personal information.

The NTC also proposes that future use of vehicle and road operator data could consider its alignment with the Australian Data and Digital Council's trust principles for using data and digital technologies. These principles seek to build community trust by ensuring that the use of any citizen's data considers the best mechanisms and protocols regarding accountability, security, respect and transparency (Department of the Prime Minister and Cabinet, 2020).

Finally, the NTC proposes that the working group considers the benefits from including the following aspects when developing privacy protections:

- the need to specify that the data exchanged would be aggregated and de-identified
- minimising data collection, ensuring that data is collected to be used for an identified benefit
- being consistent with and informed by:
  - Information Protection Principles under existing state and territory legislation regarding privacy and personal information protection

  - existing and emerging Australian and international privacy and data access frameworks
- aligning government entities' approaches to managing C-ITS and automated vehicle data with the objectives underlying existing concepts of personal information
- specifying the C-ITS and automated vehicle data covered, the purposes for which the data can be used and the parties to whom the purpose limitations apply (this would not prevent access to data with a warrant or court order authorising a different use)
- recognising the importance of notifying users in plain English about government collection, use, disclosure and storage of C-ITS and automated vehicle data.

The NTC notes that new legislative reform may be necessary to clarify consumer rights in relation to data ownership and use (Maurice Blackburn Lawyers, 2020). It is expected that the work on developing a data exchange framework would include legislative analysis to determine whether amendments are required.

5.5 Outputs

The implementation of the proposed collaborative approach undertaken through the National Vehicle Data Working Group would deliver:

- the vision and principles that would direct the exchange of data between government and industry
- other initiatives to be determined and agreed by its members such as:
  - a roadmap for developing a data exchange framework
  - the proposed governance structure and funding arrangements of a future body or bodies.

5.6 Expected benefits

The NTC considers that this proposal would provide the first step for realising the following benefits:

- providing the best opportunity for government and industry to better understand how to maximise the potential benefits and opportunities of vehicle and road operator data
- establishing trust between industry and government through developing an exchange framework that would result in mutually beneficial outcomes
- allowing for both government and industry to understand the potential costs and risks involved in exchanging vehicle and road operator data
- enabling government and industry to collaborate in identifying privacy and other security issues with exchanging data
- mapping out the process for developing a consistent framework for secure data access
- a national forum in which the feasibility and benefits of different use cases for exchanging data could be discussed and considered
- no mandatory costs for industry and, depending on the nature of future agreements, no additional costs for industry participants
- international developments could inform the working group for potential opportunities

- standardisation and alignment of messaging across state and territory jurisdictions would have enormous advantages across industry and governments, enabling efficiencies in equipment required, purchasing cost reductions and potential flow-on effects to C-ITS applications and infrastructure (Federal Chamber of Automotive Industries, 2020)
- better understanding of persistent road safety issues
- potential benefits to maintenance, traffic management/control and strategic upgrade planning of road network and assessing environmental impacts
- better preparedness for managing impacts on the transport network from unexpected events such as natural catastrophes or pandemics.

6 Improving the connectivity of the fleet – challenges to implementing Automatic Crash Notification

Key points

The NTC proposed in the discussion paper that the Australian Government considers policy options and infrastructure requirements for implementing Automatic Crash Notification (ACN) capabilities in new vehicles.

However, stakeholder views on requiring these capabilities in Australia indicated no definitive support for it. Stakeholders raised several issues and concerns including that:

- Australia's public service access point currently does not have the capability to enable an extensive use of ACN
- parts of Australia's regional and remote areas currently have limited or no mobile phone voice and data reception coverage
- ACN needs to be able to deliver the highest net benefit to the public when compared against alternative road safety solutions.

The NTC considers that this matter could be explored as part of developing the *National Road Safety Strategy 2021–30* and its associated action plan.

6.1 Overview

In the discussion paper, the NTC proposed that the Australian Government considers policy options and infrastructure requirements for implementing Automatic Crash Notification (ACN) capabilities in new vehicles.

Following stakeholder consultation and jurisdictional advice, the NTC considers that policy options to implement ACN capabilities would be best considered as part of developing the *National Road Safety Strategy 2021–30*. The Office of Road Safety is leading this work with support from states, territories and the Australian Local Government Association.

The new strategy is expected to include a set of targets and priorities to improve road safety in Australia in line with the long-term goal of zero deaths and injuries on our roads. The new strategy and a National Action Plan for the first three years are expected to be finalised in early 2021 (Office of Road Safety, 2020). Considerations on road safety priorities could include options (and their feasibility) for implementing ACN through the Australian Design Rules.

The initial proposal sought to improve Australia's fleet connectivity by introducing a standard for new vehicles in the Australian Design Rules that would enable ACN services in case of a road crash, similar to the European eCall system. This was based on the assumption that larger uptake of ACN could also enable opportunities to exchange vehicle-generated data for other purposes (as has been the case in Europe).

As outlined in problem 3 (chapter 4), Australia's light connected vehicle fleet penetration is low, with the current number of connected vehicles estimated at less than 5 per cent of the total fleet. Accelerating the adoption rate of connected technologies in the Australian vehicle fleet could increase the number of vehicles from which data can be collected and used.

Representatives from the European Commission's Data Task Force have confirmed that the implementation of eCall in 2018 increased the volume of vehicle data available. Stakeholders identified opportunities to develop further applications or improvements from higher levels of data availability (Intelematics, 2020).

However, it is not yet clear whether ACN would effectively lead to a significant increase in vehicle connectivity. Implementation of embedded (on-vehicle) connectivity may not provide for other uses of vehicle data. For example, an approach to ACN that uses paired smartphones rather than embedded connectivity.

6.2 Implementing ACN in Australia

ACN (or eCall) is becoming a standard feature of connected services provision in some countries. Despite ACN's potential to reduce road fatalities and severe injuries on Australian roads, challenges and constraints would need to be addressed before its national implementation.

The European Union made eCall mandatory in all new cars sold within the EU from April 2018 (European Commission, 2015). It is estimated that mandating eCall in Europe could result in reducing emergency response times by 40 per cent in urban areas and 50 per cent in the countryside. This would reduce the number of fatalities by at least 4 per cent and the number of severe injuries by 6 per cent (European Commission, 2020).

In addition, the United Nations has developed UN-Regulation 144, requiring vehicles to:

- fit a system capable of providing data over public mobile phone networks
- be interoperable with public exchange points for a minimum set of data
- include a mechanism to collect data from the vehicle in the event of a crash.

These capabilities enable the use of private services that 'triage' calls through a call centre, as well as those that send data directly to a public service access point such as Australia's triple zero (000) service.

However, there are several challenges to implementing ACN systems in Australia. These include infrastructure constraints, variable network coverage and competing road safety priorities.

Infrastructure constraints: Australia's public service access point currently does not have the capability to enable an extensive use of ACN (or eCall). The Australasian New Car Assessment Program (ANCAP) delayed the introduction of eCall within its 2020 Rescue and Extrication protocols, as well as its safety assessment, due to the lack of infrastructure readiness for eCall (ANCAP, 2020). The NTC understands that investment to upgrade infrastructure requirements and system capabilities is required, in particular triple zero (000) capabilities.

Variable network coverage: Parts of Australia's regional and remote areas currently have limited or no mobile phone voice and data reception coverage (Infrastructure Australia, 2020). This barrier would reduce access to the benefits of this proposal for individuals when they travel and for some regional and remote communities.

Competing road safety priorities: ACN's foremost benefit is the reduction of serious injury and fatalities from road crashes, due to faster response times for emergency services. In particular, crash notifications are most significant for crashes in areas without passers-by to call emergency services. This means that ACN is a road safety solution before a data transmission solution. Given the constraints and investment required, we need to be

satisfied that ACN can deliver the highest net benefit to the public when compared against alternative road safety solutions.

6.3 Stakeholder feedback

Stakeholder views on mandating eCall-like capabilities in Australia were diverse during the public consultation process with no definitive support for it. Only a few stakeholders provided an explicit position. The NTC also notes the concern among some parties that such an initiative could become outdated due to changes in vehicle technology. Other stakeholders recommended a 'technology agnostic' approach to address this risk.

Industry stakeholders that attended our workshops noted that the requirement of eCall services is the only regulatory measure that they would be likely to support at this time. Some noted that, at present, it is challenging to justify the fitment of connectivity in Australian-delivered vehicles to their overseas parent companies.

Stakeholders from the vehicle industry and technology sector noted that a range of similar services have previously been operational or are currently operational in Australia. The NTC is aware of at least two manufacturers currently offering this type of service, with another two also previously having offered such services as part of their connected programs. These manufacturers provided those services through third-party providers, not requiring infrastructure capability from emergency services operators.

Submissions to the discussion paper highlighted challenges to implementing ACN or eCall in Australia:

- The extent to which this will promote the uptake of connected vehicles is unclear (Federal Chamber of Automotive Industries, 2020) (RAC, 2020).
- The potential road safety benefits may be limited if this is the only type of data collected and used (RAC, 2020).
- There are issues associated with telecommunications network coverage and the ability of emergency service dispatchers to manage ACN signals that need to be further analysed, in particular regarding access to such service in regional and remote areas (AAA, 2020) (Department of Transport and Main Roads, 2020) (RAC, 2020) (Telstra, 2020).
- There is a need for government investment in the associated enabling infrastructure (RAC, 2020).

6.4 Conclusion

The differing views of stakeholders, practical challenges around implementation and potential limitations in Australia have informed the NTC's position in this policy paper regarding ACN.

Given all these challenges, the NTC believes that ACN is best considered as part of establishing the priorities for the new *National Road Safety Strategy* and its associated action plan.

7 Next steps

Key point

- The NTC will work with industry, all governments and Austroads to formally establish the proposed National Vehicle Data Working Group by June 2021.

7.1 Establishing the National Vehicle Data Working Group

The NTC will work with all governments, industry and Austroads to formally establish the proposed National Vehicle Data Working Group. This work will consist of working with industry stakeholders and Australian, state and territory governments to:

- prepare terms of reference for the working group, chair and secretariat
- invite potential working group members to opt in
- prepare a process for appointing a chair or co-chairs.

Appendix A List of public submissions to the discussion paper

Name of organisation	Description
Australasian New Car Assessment Program (ANCAP)	Car safety performance assessment program
Australian Automobile Association (AAA)	National peak body representing automobile clubs
Australian Automotive Dealership Association (AADA)	Peak industry body representing new car dealers
ARTSA Institute (ARTSA-i)	Transport research institute
Austroads	Peak organisation of Australasian road transport and traffic agencies
Brisbane City Council	Local council
Communications Alliance	Peak body representing communications industry
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Government body
Department for Infrastructure and Transport South Australia	State government department
Department of Infrastructure, Transport, Regional Development and Communications	Australian government department
Department of Transport and Main Roads Queensland (TMR)	State government department
Ellie Issa	Individual
Federal Chamber of Automotive Industries (FCAI)	National peak body representing manufacturers and importers of passenger vehicles, light commercial vehicles and motorcycles in Australia
Ford Motor Company	Automotive firm
Gas Energy Australia	National peak body representing downstream gas industry

HERE	Mapping and location data company
Information and Privacy Commissioner NSW	Independent statutory body
Intelematics	Telematics company
IoT Alliance Australia	Peak industry body representing the Internet of Things in Australia
Jukka S Rannila	Individual
Dr Karlson Hargroves	Individual
Law Institute of Victoria	Peak body for Victorian legal professionals
Maurice Blackburn Lawyers	Law firm
National Road Transport Organisation (NatRoad)	Peak body representing long distance and regionally based road transport operators
National Bulk Tanker Association (NBTA)	Organisation representing companies involved in the manufacture, storage and distribution of liquid bulk products
NSW Young Lawyers	Body representing newly practising lawyers and law students
Office of the Victorian Information Commissioner	Intendent government body
Queensland Law Society	Peak body for Queensland legal professionals
Royal Automobile Club of Western Australia (RAC WA)	Automobile club and insurance company
Transport Certification Australia (TCA)	Government body
Telstra	Telecommunications company
Transurban	Manager and developer of urban toll road networks in Australia and the United States
Truck Industry Council	Peak industry body representing truck manufacturers, importers and major component suppliers

Appendix B Key issues raised (relevant to policy proposal)

Stakeholder organisation	Issues raised	NTC response
TMR	A pure focus on advancing government access to vehicle-generated data based on a single theme is not the most effective approach.	The NTC recognises the need to consider data for purposes other than for road safety and has incorporated this approach in the proposal following targeted consultation with industry and government stakeholders.
Brisbane City Council, multiple government agencies, IoT Alliance Australia, FCAI, NatRoad, Intelematics, AADA, Elie Issa, Maurice Blackburn Lawyers, Truck Industry Council, ARTSA-I, AAA, TAC, NSW Young Lawyers	Road safety should be considered the priority purpose for any policy developments for government access to vehicle-generated data.	We welcome this view from stakeholders. However, targeted consultation with industry and government stakeholders has revealed a preference for a broader scope if flexibility to consider different terms of exchange is provided.
FCAI, Elie Issa, NSW Young Lawyers, a government agency	There is currently no agreed clearly defined definition of 'road safety'. This term will need to be defined for any further policy developments, otherwise it will be unclear for stakeholders.	We recognise there is currently no agreed definition for road safety. To address this, we are expecting that working group members will agree on a definition for the relevant use cases.

Stakeholder organisation	Issues raised	NTC response
TMR Queensland	Any proposed technical solution, such as ExVe, is premature at this stage.	We recognise that adopting ExVe at this time may not be a suitable approach and we are not recommending any technical solution.
FCAI, AADA, Truck Industry Council, Austroads (supports further exploration)	ExVe could be adopted in Australia, which is in line with the approach taken in the EU. Australia should look to the European approach on how this could be adopted locally.	We recognise there are potential benefits and drawbacks for ExVe but will not be recommending its adoption in Australia. ExVe and other technical solutions may be further considered by the National Vehicle Data Working Group.
NatRoad	ExVe could be adopted in Australia and administered by the National Heavy Vehicle Regulator for heavy vehicles. The NHVR could run the administration of ExVe, benefitting the heavy vehicle industry.	We recognise there are potential benefits and drawbacks for ExVe but will not be recommending its adoption in Australia. ExVe and other technical solutions and who may administer such a technical solution may be further considered by the National Vehicle Data Working Group.
Iot Alliance Australia, AAA, a government agency, NSW Young Lawyers	Adopting ExVe could result in manufacturers having further control of the data, resulting in limited access by other parties.	We recognise there are potential benefits and drawbacks for ExVe but will not be recommending its adoption in Australia. ExVe and other technical solutions and issues such as control of data may be further considered by the National Vehicle Data Working Group.
Telstra, Brisbane City Council	The adoption of ExVe will impact data sovereignty, leading to further control by original equipment manufacturers of any data that is produced.	We recognise there are potential benefits and drawbacks for ExVe but will not be recommending its adoption in Australia. ExVe and other technical solutions and issues such as control of data may be further

Stakeholder organisation	Issues raised	NTC response
		considered by the National Vehicle Data Working Group.
Intelematics, a government agency, Telstra	The adoption of ExVe will impact the cost of data transmission and storage. It is unclear then who would bear the additional costs associated and it could result in higher costs for consumers.	We recognise there are potential benefits and drawbacks for ExVe but will not be recommending its adoption in Australia. ExVe and issues such as cost and the impact of data may be further considered by the National Vehicle Data Working Group.
Information and Privacy Commission, a government agency	There will need to be consideration of whether any access to data is subject to existing Commonwealth and/or state privacy legislation.	Privacy will be a key consideration of the National Vehicle Data Working Group and for any use cases that are developed.
Three government agencies, CSIRO, Ford Motor Company, Maurice Blackburn Lawyers, Office of the Victorian Information Commissioner, AAA, NSW Young Lawyers, Communications Alliance	Any future policy will further need to consider privacy implications for road users. This can include relevant existing legislation and its impact as well as whether there will be a need for further privacy protections.	Privacy will be a key consideration of the National Vehicle Data Working Group and for any use cases that are developed. Any use case will need to consider what privacy implications it will have for road users.
Three government agencies, NatRoad (for heavy vehicles), HERE, Austroads, ARTSA-I, AAA,	There is value in establishing a national data aggregator. It can assist in building trust between government and industry and develop nationally consistent standards and frameworks.	We recognise the potential benefits of a national data aggregator; however, we are not recommending the establishment of a national data aggregator. Further consideration of a national data aggregator may be undertaken by the National Vehicle Data Working Group.

Stakeholder organisation	Issues raised	NTC response
Telstra, NSW Young Lawyers		
Transurban, TMR, FCAI, Intelematics, Truck Industry Council, AADA	There is no value in establishing a national data aggregator at this time. Adopting data definitions and formalised legal agreements instead would make a national data aggregator unnecessary.	We will not be recommending the establishment of a national data aggregator. The National Vehicle Data Working Group will be considering adopting data definitions and standards.
RAC (WA), TMR (Qld), FCAI, Maurice Blackburn Lawyers, AADA, Law Institute of Victoria, a government agency, NSW Young lawyers, Gas Energy Australia, AAA	Policies on vehicle-generated data will need to consider the role, perspective and impact for consumers and road users. This can include what rights and control consumers may have over any data produced by their vehicle.	We consider consumer data rights outside the scope of this paper, noting that consumer rights more broadly are being considered by the Australian Government's Consumer Data Right.
TMR (Qld), AADA, FCAI, a government agency	There is a need for agreed principles within a framework to ensure collaboration in framing the development of use cases.	We recognise the need for an agreed framework and have recommended that the National Vehicle Data Working Group develops a set of principles that will frame the exchange of vehicle and road agency data between government and industry.

Glossary

Term	Definition
Aggregated data	Raw data gathered and expressed in a summary form for statistical analysis.
Automated driving system	The hardware and software that are collectively capable of performing the entire dynamic driving task (steering, accelerating, braking and monitoring the driving environment) on a sustained basis.
Automated vehicle	A vehicle with SAE levels 3–5 automation. It is a vehicle that has an automated driving system, which means that it is capable of performing the entire dynamic driving task on a sustained basis without human input. It is distinct from vehicles with automated features to assist a driver (SAE levels 1–2), which still require a human driver to perform part of the dynamic driving task. The NTC's automated vehicle work program adopts the taxonomy of SAE International Standard J3016. SAE J3016 provides a broadly accepted, common set of definitions and has not as yet been superseded by any other international standards.
Connected vehicle	Any 'smart vehicle' with wireless connectivity to the internet, local network, 'the cloud', other vehicles, personal communication devices, roadside infrastructure or control centres for real-time communication or exchange of data. This could include embedded systems within the vehicle, tethered connectivity or telematics systems fitted in the aftermarket.
Cooperative intelligent transport system (C-ITS)	A technology platform that enables components of the transport network (vehicles, roads and infrastructure) to wirelessly communicate and share real-time information including data on vehicle movements, traffic signs and road conditions.
De-identified data	Data from which the personal identifiers have been removed. It covers both information that cannot be re-identified and pseudonymised information (the removal of individual identifiers). When data is pseudonymised it is most likely still identifiable when combined with other data.
Extended vehicle (ExVe)	External software and hardware extensions for road vehicles that are developed, implemented and managed by the vehicle manufacturer.
Personal information	Broadly means information about a reasonably identifiable individual.

V2X	Vehicle-to-anything. The passing of information from a vehicle to any entity that may affect the vehicle, and vice versa.
Vehicle-generated data	Any data generated by the vehicle itself about the vehicle, the road environment or the use of the vehicle.

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List of figures

Figures

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