TELSTRA CORPORATION LIMITED

Submission to the National Transport Commission's consultation

Government Access to Vehicle Generated Data

10 July 2020

Executive Summary

We welcome the opportunity to respond to the National Transport Commission's discussion paper on *Government access to vehicle generated data* (**Consultation**). In previous submissions to the NTC, we have highlighted the human and financial cost of road trauma and have provided examples where the implementation of technology can help reduce this. Access to Vehicle Generated Data (VGD) and the insights that can be obtained from processing this data, while simultaneously maintaining the privacy of information about road users, will enable further gains to be made toward improving safety, reducing road trauma and relieving congestion on our roads.

Telstra has been developing trial and pre-commercial Cooperative Intelligent Transport Systems (**C-ITS**) for several years now, providing us with good insight into the challenges and complexity of aggregating and processing VGD. Drawing on this experience, our submission notes there is significant value in establishing a national data aggregator for VGD. While the adoption of standards undoubtedly has a strong role to play in ensuring good interoperability, high levels of reuse and good governance, a national data aggregator can better bring together different data producers and consumers across multiple vehicle and standards generations as well as catering for differing levels of capability and maturity of implementation.

We agree with the NTC's preliminary preference for Option 2, which would see a data exchange partnership formed between industry and government to identify opportunities, develop data standards and consider a proof of concept as the best way forward. Beyond the immediate proof-of-concept trials, we recommend an independent industry administrator for the national data aggregator is the best approach, as industry is well placed to keep pace with the rapidly evolving datasets from VGD and the technological advancements in data analytics capabilities.

We are supportive of the NTC's proposed approach to look at the introduction of a mandatory eCall-like service in new vehicles that is in line with international standards, however, before it can be mandated on new vehicles, a number of implementation aspects will need to be evaluated, including consulting with Emergency Service Organisations to determine their requirements and identifying the infrastructure requirements and systems capabilities to allow eCall messages to be received and actioned.

Finally, we propose that introduction of Advanced Driver-Assistance Systems (ADAS) capable of communicating data could help expose common blackspots on our roads. Information related to sudden braking, maintenance and fatigue management sourced from integrated telematics solutions could open new insights in to infrastructure design and traffic flow whilst simultaneously increasing driver safety.

1 Introduction

We welcome the opportunity to respond to the National Transport Commission's discussion paper on _Government access to vehicle generated data_ (**Consultation**). Telstra is a participating member for global standards bodies such as the Third Generation Partnership Project (**3GPP**) for developing 5G standards, and industry associations such as the 5G Automotive Association (**5GAA**) which is connecting the telecom industry and vehicle manufacturers to develop end-to-end solutions for future mobility and transportation services. Locally, we are also a member of the Australian & New Zealand Driverless Vehicle Initiative (**ADVI**) which aims to accelerate the safe and successful introduction of driverless vehicles to Australia.

Telstra has been developing trial and pre-commercial Cooperative Intelligent Transport Systems (**C-ITS**) for several years now. Recently we completed running Australia's first Cellular Vehicle-to-Everything (**C-V2X**)[1] technology trial with our partner Lexus Australia titled "Advanced Connected Vehicle Victoria"[2] (**ACV²**) for the Victorian Government, VicRoads, TAC and Towards Zero initiative. We have also previously completed a Vehicle-to-Infrastructure (**V2I**) trial over 4G with our partner Cohda Wireless for the Department of Planning, Transport and Infrastructure (**DPTI**) of South Australia.

In previous submissions to the NTC, we shared the tragic human and financial cost of road trauma, and that the implementation of technology can help reduce this. Flowing from this goal, our submission emphasises the importance of connecting vehicles through mobile communications networks providing access to additional information that can greatly enhance the safety of these vehicles and therefore the general public as well.

We agree with the NTC's preliminary preference for Option 2, which would see a data exchange partnership formed between industry and government to identify opportunities, develop data standards and consider a proof of concept as the best way forward.

Our submission is structured as follows:
- Section 2 provides our thoughts on possible models for data collection and analysis, highlighting the need for standards to be established;
- Section 3 provides our thoughts on emergency calls; and
- Appendix A provides more detailed answers to selected consultation questions.

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[1] Examples of V2X include vehicles talking to infrastructure (such as traffic lights), vehicles talking to other vehicles, and vehicles talking to vulnerable road users such as cyclists and pedestrians.

[2] "ACV-squared" (ACV²) http://www.acv2.tech/

2 National data aggregator

2.1. National consistency and standards-based approach

Telstra believes there is significant value in establishing a national data aggregator. While the relevance of Vehicle Generated Data (**VGD**) is likely to be local (such as traffic flows in metropolitan areas) or hyper-local (such as a road hazard) which may appear to favour a state-based systems where local road authorities can action problems identified, the benefits of a national system not only include consistent standards (imported vehicles need only comply with a single standard regime for Australia) but also include the opportunity for different state road authorities to gain insights and learn from other states.

Ultimately, as the NTC discussion paper recognises, data in this ecosystem will come from a diverse set of providers. The community of consumers (described in the narrow scope of section 1.7) has diverse needs and diverse levels of data management capability. While adoption of standards, including data definitions and data practices undoubtedly has a strong role to play, standards alone are not enough (i.e., *necessary*, but not *sufficient*) to ensure good interoperability, high levels of reuse and good governance in a complex, heterogeneous data ecosystem such as this. This is where a national data aggregator can bridge the gap. A national data aggregator can allow different data producers and consumers to use standards that are relevant to them as well as cater for differing levels of capability and maturity in the market by transforming raw VGD into consistent and meaningful datasets. It is important to remember that vehicle life can extend to well over a decade and within that time, there is likely to be evolution in data standards to cater for new types of data and/or use cases. As such, several years from now there will be multiple generations of on-board devices creating VGD against different standard or generations of the standards, which needs to be aggregated into consistent and meaningful datasets, which can be readily performed by a single national data aggregator.

We also believe that the national data aggregator should function as a data interchange, acknowledging that many of the data producers may also be consumers.

2.2. Option 2: Government and industry data exchange partnership trial

We support the NTC's preference for Option 2 to further explore road safety improvement opportunities using VGD through a joint government and industry trial of a data exchange proof of concept to validate the value of data exchange.

We have considerable experience in Advanced Driver-Assistance Systems (ADAS) and the data associated with them. An ADAS is any electronic equipment that works to help a driver as they operate a motor vehicle and in Australia, Telstra has partnered with Mobileye[3] to deliver ADAS to the commercial vehicle aftermarket. Enabling fleets to better protect their drivers through in-cabin alerts whilst providing insights on driver performance to their fleet operators can lead to improved road safety.

In addition to our partnership with Mobileye, Telstra has successfully run several C-ITS trials using V2X platforms to facilitate vehicles exchanging data, and we would welcome the opportunity to contribute toward a trial.

2.3. Beyond proof-of-concept trials: Industry administration

We would like to highlight that an independent industry participant(s) could be appointed as the national data aggregator to administer a data exchange on behalf of the government. Based on our experience in the Telecommunications sector, we propose industry is best placed to administer data exchanges of the type that would be required for VGD. One good example of industry administering a large database is the Integrated

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3   https://www.telstra.com.au/business-enterprise/products/internet-of-things/solutions/vehicles/mobileye

Public Number Database (IPND)[4] which is a record of most Australian phone numbers and owner details including both listed and unlisted phone numbers. This is an excellent example of industry administering a large database with very restricted access to maintain privacy over the information contained within it.

In addition to privacy requirements, we would expect VGD to significantly evolve over time as the type of information generated becomes more sophisticated and as vehicles themselves evolve. Industry is well positioned to keep pace with evolving technology to ensure diverse datasets contained in the database can be aggregated and interpreted to gain useful insights.

2.4. Non-commercial sharing does not mean intermediaries' costs are zero

We also observe that while the principle of non-commercial sharing or exchange of data between data providers such as Vehicle Original Equipment Manufacturers (OEMs) and data recipients (e.g. Government) appears to be a useful starting point for a partnership, this principle ought not to be taken to mean that all intermediaries and parties within the 'supply chain' of the data (e.g. network operators, cloud platforms operators) will be able to provide services on a non-commercial basis. Moreover, the costs to expose data from vehicles or other systems may be considerable, and so it may not be feasible to support all use-cases and data types on a non-commercial basis.

3 Emergency Calls

Telstra is supportive of NTC's proposed approach to look at the introduction of mandatory eCall-like service in new vehicles that is in line with international standards. However, implementing eCall will require changesc to infrastructure requirements and systems capabilities to allow for eCall messages to be received and actioned. These changes will need to be evaluated, agreed and implemented by affected parties before eCall can be mandated on new vehicles. Also, how these automated calls are managed, triaged and processed through to ESOs (Police, Fire and Ambulance) needs to be reviewed and agreed by key stakeholders.

There will also need to be agreement and certainty on the expectations for vehicular lifetime and technology types compared to the longevity of mobile network infrastructure. Mobile network technologies have a typical lifespan of 1-2 decades, and some vehicles will remain on the road beyond the "switch-off" date of the mobile network technology they are able to connect to.

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4   https://www.acma.gov.au/accessing-ipnd

Appendix A – Answers to selected consultation questions.

In this appendix, we provide answers to several selected question from the consultation.

1. Do our problem and opportunity statements accurately define the key problems to be addressed, and do they capture the breadth of problems that would need to be addressed?

   Opportunity statement: We agree with the NTC's opportunity statement and the initial focus on road safety. In the future, we believe the collaboration opportunity could extend beyond road safety into aspects such as environmental benefits where better data could be used to manage traffic flows and congestion, however in the short term we agree with and support the NTC's proposal to focus on road safety.

   Problem statements: We agree with the NTC's three problem statements. In addition, we recommend a fourth problem statement is added related to the financial cost to transfer and process VGD. On the assumption mobile networks will be used to transfer VGD, the costs incurred by mobile network operators will need to be adequately compensated, and further work is required to understand the scale and scope of the VGD to be transferred to determine appropriate compensation. In addition, consideration will need to be given to the data exchange between various cloud systems used to communicate with vehicles and infrastructure, along with the integration and ongoing maintenance costs a data aggregator or exchange will incur. Given this, it may be necessary to introduce commercial mechanisms for aggregation and/or exchange of valuable data, in order to achieve significant interest in uptake.

5. What issues do you believe will be created if ExVe is adopted and that would need to be considered in Australia?

   Despite having reached a level of maturity through the completion of ISO standards, Telstra believes there are potentially some implementation issues to be addressed if the European Extended Vehicle (ExVe) concept is adopted in Australia.

   - Who will run the neutral servers? Will this be a government entity or an independent industry participant?
   - If data is being sent to a neutral server via OEM servers, where do the OEM servers reside - Australia/Overseas? What are the implications of data sovereignty rules from data stored overseas? Central to these concerns is privacy and data security for Australians.
   - Do all OEMs connect to a single national neutral server in ExVe, or are there potentially multiple ExVe neutral servers, for example per government jurisdiction (noting that multiple neutral servers will create additional overhead for OEMs)?
   - Would this approach also be used to support the future use/exchange of near real-time C-ITS messages for V2I/V/P/N?

6. Is there value in establishing a national data aggregator or trust broker? Could good data definitions, practices and cooperation between entities achieve the same outcome?

   Telstra believes there is significant value in establishing a national data aggregator.

   Ultimately, as the NTC discussion paper recognises, data in this ecosystem will come from a diverse set of providers. Similarly, the community of consumers, even within the narrow scope defined in section 1.7, is complex. The community described has diverse needs and diverse levels of data management capability. While adoption of standards, including data definitions and data practices, undoubtedly has a strong role to play, standards are typically only one piece of the puzzle in ensuring good interoperability, high levels of reuse and good governance in a complex, heterogeneous data ecosystem such as this. A national data

aggregator simplifies this by allowing different data producers and consumers to use standards that are relevant to them and by catering for their differing levels of capability and maturity in managing this data.

Some of the data use cases described in the discussion paper will require strong data provenance. The task of establishing strong and reliable evidence of data provenance is a specialised and complex discipline. It requires what can fairly be described as a relatively rare skill set. The task is especially difficult if data travels through a diverse and decentralised environment. Many of the organisations in this ecosystem simply will not have access to the skill sets required to maintain provenance in a distributed model.

Finally, in a rapidly evolving domain such as vehicle originated data, both the spectrum of data available and the segment of that considered important in the face of evolving government and agency needs will continue to evolve. A decentralised but cooperative approach will be slower to evolve in such a dynamic environment. Consensus on the imperative for change must be built across many stakeholders, each with diverse requirements and their own budgetary pressures. A central aggregator approach, with good representative governance, can evolve and respond more quickly.

8. Are there relevant international standards that should be adopted for vehicle generated data? Are there any standards that could be locally developed?

Any technology which requires a common communication platform with vehicles needs commonality of rules and standards. Australia is not able to lead the development of global technical standards, and so we must take the output of international standards (for example, from the EU), and move to quickly and decisively implement local guidelines to match.

Decisive action and a strong partnership between government and private industry can provide a level of certainty allowing automotive brands, infrastructure providers and government road operators to roll out technology to share vehicle data that can mitigate loss of lives, congestion and pollution.

Conversely, heavy handed standardisation through regulation can stifle innovation. In the C-ITS space both the EU and USA have been backing away from potential technology mandates. There is a balance to be found, but a key ingredient should be an attempt to form strong guidelines in partnership with industry, for industry to follow.

The 5G Automotive Association (5GAA) in its position paper[5] commenting on "Improving real-time traffic information in the EU in the context of possible revision of Delegated Regulation (EU)2015/962" states:

> *Standards should play a key role in supporting the development and RTTI harmonisation of RTTI services. Although DATEX II is the reference standard for road authorities and road operators, other standards, such as TPEG21 or Google's Protobuf2, are widely used today by service providers to deliver RTTI services to drivers.*
> *Beyond DATEX II, TN-ITS should be considered for new traffic data types such as the location of urban vehicle access restrictions and EV charging infrastructure related data. Also, SENSORIS should be considered as the most appropriate standard for vehicle sensor data (Vehicle to Cloud/ Cloud to cloud). RTTI should encourage the re-use of existing standardized data schemes.*

16. Should road safety be adopted as the priority for developing use cases for government use of vehicle-generated data? If not, what other approach should Australia take?

Telstra supports road safety as the priority use case for government use of VGD. At the same time, we suggest other commercial and/or efficiency use-cases should be considered, especially where they could stimulate the overall uptake and drive safety outcomes. For many road users, technology leading to improved safety outcomes will be invisible on any individual journey, and for some, will never be visible in

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5   https://5gaa.org/wp-content/uploads/2020/06/5GAA_200514_Draft-position-paper-5GAA-RTTI.pdf

the lifetime of owning a particular vehicle. However, if this data can also be used to improve road efficiency, in a way that has a visible impact on any given journey, this will drive user adoption of these features in vehicles faster than safety outcomes alone. Given this, we note that the framework and implementation should be architected to allow for participants (if they so desire) to share data sets for other use cases (e.g. traffic congestion, incident avoidance, route planning) either on non-commercial or commercial terms. This may also have demonstrable environmental benefits (lower congestion leads to shorter vehicle operating time) which again could facilitate faster uptake and hence safety outcomes.

18. Does the NTC's preferred approach (option 2) best address the problems we have identified? If not, what approach would better address these problems?

Telstra is supportive of NTC's preferred approach (option 2). We agree this is the best initial solution to address the problems identified. Unlike option 1, we believe option 2 will help facilitate a national approach enabling consistency of data definitions and standards across in all jurisdictions in Australia. This will help prevent a fragmented approach and lower the cost and complexity for participants to share data via economies of scale.

Telstra has successfully run several C-ITS trails using V2X platforms to facilitate vehicles exchanging data. We are supportive of industry and government trialling the exchange of data through a proof of concept to validate the value of data exchange. We believe a joint government and industry approach is the best model. We would like to highlight that an independent industry participant could be appointed to administer a data exchange of behalf of the government and industry partnership.

We would also like to state that while the principle of non-commercial sharing or exchange of data between data providers (e.g. Vehicle OEMs) and data recipients (e.g. government) appears to be a useful starting point for a partnership, this principle ought not to be taken to mean that all intermediaries and parties within the 'supply chain' of the data (e.g. network operators, cloud platforms operators) will be able to provide services on a non-commercial basis.

Regarding option 3, which proposes introducing new, nationally consistent legislation that would require industry to capture, store and process vehicle-generated data to be provided to road agencies, Telstra agrees with NTC's assessment that option 3 may be a potential future policy but that for now without a clear set of use cases, government may legislate too broadly, which may result in cumbersome regulation and increased cost to industry. The 5G Automotive Association (5GAA) in its position paper commenting on "Improving real-time traffic information in the EU in the context of possible revision of Delegated Regulation (EU)2015/962" states[6]:

> 5GAA does not favour an expansion of the scope of this Regulation to vehicle-generated data, beyond safety-essential vehicle data (already covered by Commission Delegated Regulation (EU) No 886/2013). As recalled by ACEA, vehicle manufacturers invest heavily in safety and data sharing models. From the envisaged regulatory framework, it is doubtful if vehicle data sharing can or should be mandated.

19. Does the NTC's proposed approach best address the problems we have identified? If not, what approach would better address these problems?

Telstra is supportive of NTC's proposed approach to look at the introduction of a mandatory eCall-like service in new vehicles that is in line with international standards. Implementing eCall will require changes to infrastructure requirements and systems capabilities to allow for eCall messages to be received and

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6   https://5gaa.org/wp-content/uploads/2020/06/5GAA_200514_Draft-position-paper-5GAA-RTTI.pdf

actioned. These changes will need to be evaluated, agreed and implemented by affected parties before it can be mandated on new vehicles.

In respect to devices that collect and forward information to the Triple Zero (000 & 112) emergency call services, for example in response to a time critical or life threatening incident, it is expected that this information will firstly be sent to a third party/service provider/concierge to triage the information. The third party/service provider/concierge will then contact Triple Zero if an emergency response is required. This is the current preferred process with Emergency Service Organisations (Police, Fire and Ambulance) as we understand that they generally do not want to receive pre-recorded voice message or a synthetic voice that presents a latitude and longitude with no further information.

While the implementation of mandatory eCall services is desirable, the approach must also address the entire lifecycle of eCall supporting vehicles including the future resale (second-hand market) of the vehicle and who is responsible for activating (the SIM/eSIM) the eCall capability. In some cases, vehicles may continue to be used on the roads beyond the lifetime of the generation of mobile network they were designed to be used with. Mobile networks generations have a typical lifespan of 1-2 decades. Given the integrated nature of vehicle modems, it may not be practical to upgrade from an older system to a more modern standard and so older vehicles will eventually no longer be eCall capable. We would not support any requirements to operate mobile networks beyond their normal commercial viability in order to facilitate eCall on legacy vehicles and note that appropriate mechanisms would need to be in place to notify vehicle owners and users that these features would no longer function.

Another approach we consider to potentially be useful for driving the uptake of connected vehicles is an Advanced Driver-Assistance System (ADAS). An ADAS is any electronic equipment that works to help a driver as they operate a motor vehicle. About 90% of accidents are caused by driver error and nearly 80% of crashes involve inattention within three seconds before the event. ADAS systems are increasingly being mandated across the globe to achieve the objective of safer roads.

We know that in Israel, accident and fatalities reduced by 57% and 35% respectively since the introduction of these systems. The European Commission has also recently announced[7] eleven systems that will become mandatory from 2021 for new cars introduced to the market, saving an estimated 7,300 lives and preventing 38,900 serious injuries between 2020 and 2030.

In Australia, Telstra has partnered with Mobileye to deliver ADAS to the commercial vehicle aftermarket. Enabling fleets to better protect their drivers through in-cabin alerts whilst providing insights on driver performance to their fleet operators. The possibility of sharing the visual metadata from these ADAS solutions could help expose common blackspots on our roads. Combined with speed, maintenance and fatigue management data from our telematics solutions we could open new insights into infrastructure design and traffic flow whilst ultimately protect driver safety.

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7   https://garagewire.co.uk/offbeat-news/mandate-lists-11-advanced-driver-assist-systems-to-be-fitted-to-new-cars-from-2021/