Government Access to Vehicle-Generated Data

Submission by the
Department for Infrastructure and Transport
South Australia

August 2020

Table of Contents

Introduction 3
DIT's response to the NTC Government Access to Vehicle-Generated Data questions 3

Introduction

The South Australian Department for Infrastructure and Transport (DIT) welcomes the opportunity to provide a response to the National Transport Commission (NTC) Discussion Paper on *Government Access to Vehicle-Generated Data*.

DIT acknowledges that this project is designed to develop options for government access and use of vehicle generated data for road safety, network operations, investment, maintenance, planning, and other related purposes.

DIT supports the development of an arrangement that enables governments to access vehicle-generated data (VGD), while also recognising that such an arrangement will be guided by technological, economic, social, and political factors, the impacts of which are not yet known.

DIT's preferred approach would be to develop a system which enables the international vehicle manufacturer community to set their own agreed standard for the exchange of vehicle data, thereby providing the flexibility required to accommodate the rapidly evolving pace which is inherent to this field. Critically, DIT is of the opinion that questions of compliance and enforcement are inherent to the vehicle data landscape, and therefore, within the scope of the project.

DIT is of the view that a suitable data access arrangement – in whatever form it takes – should be reflective of the current data ecosystem in Australia, while also being technology-neutral in order to accommodate future technologies and emerging industries (e.g. connected and autonomous vehicles). The arrangement should be issues-responsive and should address concerns relating to the reliability, security, and accessibility of data. Furthermore, it should provide for efficient and robust service models, and be capable of dispersing data access benefits equitably among industry and government.

DITs response to the NTC Government Access to Vehicle-Generated Data questions

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

   DIT agrees that access to VGD would provide the opportunity for increased collaboration between stakeholders, with a focus on strengthening road safety Australia-wide. However, while safety remains an ongoing priority, particularly in relation to supporting road safety investigations and compliance enforcement operations, there are additional opportunities that VGD may offer. These opportunities include the development of new mobility options and regulation, road traffic environments, road safety and infrastructure planning, as well as the option to collect systemic data that supports investment and operational strategy. Furthermore, VGD will also present opportunities for jurisdictions to invest and implement road user charging models.

Problem statements

Overall, the problem statements accurately describe the issue to be addressed, and it is evident that any beneficial outcomes that may result from government access to VGD are reliant upon key elements, such as trust and security, established data standards and definitions, and clear parameters for data utilisation.

DIT has identified additional issues that may require consideration. The Discussion Paper refers to a series of co-design workshops held in late 2019, which resulted in a total of 23 potential use cases developed around road safety, network operations, planning, and other related concerns. However, while road safety was commonly identified by workshop participants as a key priority, there is a need to define a specific use case for road safety. Enhancing safety is a compelling basis for collaboration between industry and government, and therefore, any viable evidence-based use case should outline quantifiable benefits of data access for states and territories.

There are other factors that DIT believes require consideration, such as cross-border data sharing. There appears to be a general assumption that data delivered by a third-party data owner will be both accurate and of a 'minimum' quality. There is no evidence as to how this assumption was reached.

2. *In our table, have we accurately captured all the regulatory and legislative mechanisms government could currently use to access vehicle-generated data?*

The table provides a sufficient overview of existing mechanisms that allow or restrict government access to VGD. It would, however, be useful to include the powers (or lack thereof) of agencies to access VGD under existing regulatory frameworks (e.g. via a warrant or court order) in the event of crashes or other road incidents. Providing this information would not only create a more complete picture of the existing data ecosystem but would also serve to emphasise the currently limited accessibility of VGD, thereby emphasising the benefits of expanding access to VGD.

3. *Are there other major local or international jurisdictional developments providing further access powers or arrangements for vehicle-generated data?*

It may be useful to evaluate global initiatives relating specifically to the access of VGD for connected autonomous vehicles (CAVs). As stated in question 1, access to VGD should be governed by a framework which accommodates innovative technologies and emerging industries. An awareness of CAV-specific data access arrangements is vital, particularly given that CAV data could provide high quality, evidence-based infrastructure planning and investment insights, which would be of significant benefit.

One useful example of an international jurisdiction developing access arrangements for VGD is the United States, where Carnegie Mellon University (CMU) researchers have developed a method to unlock increased amounts of AV driving data to increase the efficiency and precision of methods used

to 'train' AVs to recognise objects, obstacles, and hazards.[1] The technique is known as 'scene flow', and involves calculating the speed and trajectory of each 3D point of surrounding objects, and 'groups of points' moving together and are interpreted via scene flow as vehicles, pedestrians, nearby vehicles, or other objects. The result of the technology is a more robust data collection method, which therefore requires an equally robust method for dispersing and sharing that data. CMU's initiative signifies that, as the methods for generating data progress, particularly in the AV and future mobility sphere, the methods for transmitting and exchanging that data must also progress. Therefore, any viable framework for accessing VGD must be flexible and technology-neutral to be capable of evolving alongside the data it governs.

4. *Do you agree with our assumptions on the currently low uptake and limited availability of technology that supports the generation of vehicle data and that there are few and limited current government access arrangements for vehicle-generated data?*

While the availability of technology that supports the generation of vehicle data is currently limited, the vehicle technology landscape, as we have previously highlighted, is rapidly evolving. It is reasonable to assume that connected vehicles and, eventually, CAVs, will comprise a significant proportion of the national fleet in the decade to come. Therefore, considerations regarding the widespread generation and exchange of data, though theoretical now, will likely be practically applicable in the coming years.

Notably, Australia's Heavy Vehicle Fleet already has a relatively developed connectivity and data collection capacity (at least when compared to its Light Vehicle counterpart), and any future mechanisms to enable government access to VGD should not compromise or hinder the Heavy Vehicle Fleet.

DIT agrees that there are few and limited current government access arrangements for VGD, thereby emphasising that any framework which governs access to and exchanging of data is guided by clear definitions and standards.

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

While DIT is of the view that any technical solution is, at this stage, premature, we nonetheless recognise the benefits of the ExVe neutral server concept, which we understand would enable governments to access data directly from vehicle manufacturers.

However, as identified in the Discussion Paper, DIT is concerned that the ExVe approach may encourage anti-competitive practices. Additionally, DIT questions whether penalties should be

[1] Luke James, 'A New Method to Generate Data for Training Autonomous Vehicles', *All About Circuits* (webpage, 29 June 2020) <https://www.allaboutcircuits.com/news/a-new-method-to-generate-data-for-training-autonomous-vehicles/>.

established for deliberate 'manipulation of data for personal or corporate gain', particularly where this may result in road safety misinformation or incorrect allocation of public resources.

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?*

DIT is of the opinion that a more comprehensive understanding of the data ecosystem is required before developing a specific technical solution. Nonetheless, there is value in establishing a national aggregator or trust broker, particularly in terms of minimising industry burden. It is acknowledged the potential latency a national aggregator may introduce to any data exchange, and therefore support the views of the stakeholder consultation participants who recognised that the introduction of a national aggregator would be coupled with a need for an entity to advocate for good standards and practices. If a national data aggregator or trust broker is established, a mechanism to ensure the accuracy and quality of the data would be vital. As such, an alternative to establishing a national data aggregator or trust broker could be to use a General Data Protection Regulation or equivalent privacy advocate or enabler.

7. *Can you provide us with more information on either the costs or benefits for government access to vehicle-generated data for the use cases listed in Appendix B?*

As the Discussion Paper has recognised, it is difficult to estimate costs and benefits of government access to VGD at present. It is, however, reasonable to assume that there will be a net benefit in the future associated with government access to VGD, though further analysis and evidence-base is required.

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

DIT is aware of international frameworks which require data for criminal proceedings. The United States National Highway Traffic Safety Administration within the Department of Transportation, for instance, introduced *49 CFR Part 563,* a Federal Motor Vehicle Standard (the Standard) mandating all passenger vehicles and light trucks to be equipped with an Electronic Data Recorder (EDR). The Standard provides for the collection, storage, and the availability and retrieval of data after a following a motor vehicle crash. The tools and methods for data retrieval are also outlined, and all passenger vehicles and light trucks sold in the US are required to comply with the Standard.

The South Australian Police (SAPOL) have indicated that a similar standard would be useful to compel vehicle manufacturers or crash data retrieval component companies to provide data to assist with vehicle crash reconstruction.

Various jurisdictions throughout Australia have proposed to amend the ADRs to allow law enforcement agencies to access VGD, thereby aligning international standards and developments. DIT is of the view that compliance and enforcement measures are integral to this project and recommend that the scope for road safety be expanded to include crash investigation and access to EDR data.

9. *Have we accurately described the key barriers to accessing vehicle-generated data? Are there additional barriers?*

The key barriers to accessing VGD have been accurately described, however DIT notes that, due to the extensive scale of data to be exchanged between industry and government, additional, unprecedented barriers may arise in the future. Additional barriers might include continuously changing data and data sources, particularly considering a rapidly changing CAV data landscape, as discussed in question 3. That is, if a viable data access and exchange framework is established, it must be technology-neutral to suit an evolving connected vehicle and CAV data landscape.

A lack of consumer and industry acceptance may operate as a barrier, and therefore, communication of the benefits of VGD access will be critical to ensure that those affected (e.g. drivers and operators) are made sufficiently aware of the usefulness and usability of the technology, and are confident that the sharing of data will not generate negative commercial effects. Further, industry must be assured that the technology is reliable, cost-effective, and protective of privacy.

DIT has also identified potential barriers regarding 'types of data' being aggregated and anonymous versus containing personally-identifying-information (PII) or other sensitive data. Access to data not only depends on the type of data, but also on who is requesting access and under what circumstances. The situation is further complicated by the fact that data security needs to be 'carried with the data', that is, when data leaves the vehicle and is copied to an entity, that entity must ensure that the data retains at the same level of security and authentication over the air as when in the vehicle. Similarly, when a vehicle manufacturer issues a recall, or wants to remove access to a data set due to a legal order or breach, consideration should be given to how this will be achieved if there are copies (or copies of copies) of the data across different entities or third parties.

This problem has been resolved in some areas of cloud IT (like Office 365) by data that simultaneously 'carries' a certificate, thereby granting access to any data sets encrypted with that certificate through a permissions server. Then, when the data is accessed, the data set's certificate is checked against the permissions server over the Internet. If the permission server confirms that the data encrypted with the certificate is valid, then the data can be read. If not, the data is unreadable.

An alternative approach is the use of a central server, which involves access to data being held in a central repository. The key problem with this approach is the risk of the central repository becoming a bottleneck. If someone takes a local copy of the data that they access from the central repository, there is a risk of security becoming uncontrolled.

10. *Do you agree that road safety data should be considered the priority purpose for which we seek to exchange data with industry?*

Road safety should be a priority. We suggest that a use-case which is focused on a single theme, i.e. securing road safety data, is not the most effective or robust approach. Please refer to Question 1 for details relating to the potential additional purposes of enabling access to VGD (in conjunction with road safety objectives).

Furthermore, as noted in question 9, a primary purpose for enabling the access and exchanging of VGD should achieve widespread consistency for governments and industry, with the consumer experience at the centre of these discussions.

11. *What are the key data needs of transport agencies beyond those already identified?*

The Discussion Paper has accurately identified the existing data needs of transport agencies related to VGD. Additional data needs may include the availability of data (can it be accessed/delivered within a reasonable timeframe?), the accuracy of the data (is it valid and ready for use?), the reliability of the data (do the established data sources reliably record, transmit, and receive information?), and the resilience of the data (can it be transferred and received securely?). Further considerations relate to future mobility solutions, such as CAVs, Mobility as a Service, and infrastructure development (e.g. Collaborative Intelligent Transport Systems (C-ITS)) and the Internet of Things.

As noted in question 3, the project should not only consider sources of data, but also potential future sources of data to the extent that they are likely to affect the support of and/or are required by CAVs (i.e. for systemic applications) network management and planning.

12. *What further benefits from vehicle-generated data should be considered?*

DIT recommends a principles-based approach to develop a framework for data access. At present, it would be premature to attempt to predict benefits that will invariably arise over time, as we develop a more comprehensive picture of the current data ecosystem. Benefits derived from VGD will be varied and will emerge gradually as future opportunities and issues become apparent. A robust yet flexible technology-neutral regulatory framework will be critical to maximising benefits and addressing issues as they are identified.

13. *We contend that a prioritised starting point should be established from which data for other purposes can be further developed. Are there other approaches that could achieve this?*

DIT supports the establishment of a prioritised starting point from which data for other purposes can be further developed.

14. *Do you agree with the analysis presented in Table 7? What other opportunities are there for vehicle-generated data, and why?*

DIT generally agrees with the analysis presented in Table 7 and the NTC's approach to categorising data. However, some additional data sets and protocols would be of use, such as a column which notes whether the data is available as both real-time (i.e. information to be collected and provided immediately) and historical (i.e. information required for road safety planning, research, and investment). DIT would support the inclusion of an additional matrix that compares the 'data categories versus use cases', the intersection of which could indicate which use cases require which data categories.

15. *Have priorities changed for land transport policy and for data access from vehicles with the onset of COVID-19?*

COVID-19 has created a changed market environment, providing new opportunities and new limitations as a result. The precise nature of these opportunities and limitations as they pertain specifically to land transport policy and data access is not yet clear and would require further analysis.

The used of VGD under a declared health emergency, could assist in contact-tracing or for enforcement of movement restrictions, such as personal or outbreak isolation.

From a research perspective aggregated movement data could provide insight into how people's movement patterns change, and whether they could be better managed in the event of a future pandemic or emergency occurrence.

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?*

DIT is of the view that road safety remains a fundamental priority in developing a viable use case for the provision of government access to VGD. As previously indicated, any use-case which is focused on a single theme, like road safety, is likely not the most effective or robust approach. Refer to question 1 for further analysis.

Finally, DIT again emphasise that, at this initial stage, the focus should be on understanding the current transport and data ecosystem in order to develop a flexible, technology neutral principled-based framework that provides for appropriate data exchange arrangements.

17. *Can data other than for the purposes of road safety be exchanged on non-commercial terms?*

DIT's view is that any data which is of demonstrable mutual benefit to the public, industry, and government, or which is of such significant benefit to the public as to outweigh the cost to the OEM and government, should be capable of being exchanged, irrespective of whether it concerns road safety.

However, one concern is that such an arrangement leaves manufacturers in control, with the freedom to not participate or honour the agreement if they so choose. Indeed, if there are reasons (outside of safety, law enforcement, and insurance) for the public to gain access to vehicle data through the government, commercial entities are unlikely to bear the costs for provision of the data unless mutual benefit can be achieved for government and the commercial entity. This is particularly true given the relatively small size of the Australian market, and therefore, the limited ability for governments to significantly influence commercial behaviour.

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?*

DIT's questions why Options 2 and 3 are presented as mutually exclusive, when, in practice, certain data access provisions which might be established under Option 2 would likely need to be legislated to effect any lasting change. Using Heavy Vehicles as an example, there are both legislative 'road access' requirements and mutually beneficial reasons for exchanging data. Future AV data access arrangements, too, would likely need to be legislated in order to legitimise investigation procedures and enable the enforcement of AV laws, particularly regarding the assessment of liability in the event of a crash or other incident. DIT is of the opinion that it would be prudent to present Options 2 and 3 as complementary, rather than distinct from one another.

DIT's preferred approach would be to develop a system which enables the international vehicle manufacturer community to set their own agreed standard for the exchange of vehicle data, thereby providing the necessary flexibility to cope with the pace of change inherent to this field. Ideally, the governing international road transport community could insist that the industry itself contributes to, creating, publishing, and conforming to its own developed international vehicle data standard. That is, rather than legislating a vehicle data access standard (i.e. Option 3), mandating via legislation that the industry must develop and deliver a standard. If successful, such an approach would ensure mutual benefits for all stakeholders – allowing commercial entities to innovate and operate at their usual pace without waiting for government standards, legislation, and regulation to catch up. This approach would ensure consistency, as government would be able to access vehicle data from all manufacturers using a single, industry-agreed standard.

A similar approach has already been implemented in the public transport and journey planning space in the form of Google's 'Google Transit Feed Specification (GTFS)', which enables governments to provide public transport schedules and timetable data directly to Google, so that users can then plan journeys on Google Maps (Google Transit). The standard become so widely accepted across industry that Google made it freely available to be used by anyone and renamed it the 'General Transit Feed Specification'.

As noted in question 8, compliance and enforcement measures are integral to questions of data access, especially when considering the issues currently facing law enforcement agencies, and transition to connected CAVs. Therefore, to ensure the consistent provision of the relevant data, DIT is of the view that compliance and enforceability are within scope of the project.

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

Please refer to question 18.