TELSTRA GROUP LIMITED

Submission to:

Department of Infrastructure, Transport, Regional Development, Communications and the Arts consultation on

Draft National Road Transport Technology Strategy and 2024–27 National Connected and Automated Vehicle (CAV) Action Plan

Public Submission

7 December, 2023

01 Introduction

Telstra welcomes the opportunity to provide its views to the DITRDCA's (the **Department**) consultation on the **Draft National Road Transport Technology Strategy** (the **Strategy**), **and 2024–27 National Connected and Automated Vehicle (CAV) Action Plan** (the **Action Plan**). The development of a national road transport technology strategy is an important activity, as many new road transport technologies are coming, or are already here, and it is vital that Government provide strategic direction to road users, infrastructure developers and states and territories on the types of technology and ways in which that technology should be implemented.

The Strategy and the Action Plan necessarily covers many important topics such as safety, efficiency and productivity, sustainability, and accessibility, all of which are essential considerations in developing a holistic national road transport technology strategy. Our contribution to this holistic strategy, contained in this submission, focuses on topics related to Telstra's core expertise, including communication and connectivity for vehicles and transport infrastructure, cooperative intelligent transport systems (C-ITS), and data analytics and AI.

Overall, we support both the Strategy and the Action Plan, especially their focus on developing a nationally consistent approach to technology development and deployment across all state and territory jurisdictions. This is an important goal to pursue, to avoid the "rail gauge" issue that plagued rail transport for many decades.

Our submission is structured as follows:

- Section 02 comments on the relationship between this strategy and other government strategy development;
- Section 03 comments on the proposed principles outlined in the Strategy; and
- Section 04 observes that satellite communication is likely to play a role on providing connectivity to vehicles in the near future; and
- Section 05 contains our comments on the draft Action Plan.

We would welcome the opportunity to further discuss our submission at a time that is convenient for the Department.

02 Linkage to other strategies

Part of the introduction of the Strategy outlines its relationship with other government strategies.[1] We observe that all the strategies cited as either complementary to, or facilitated by this Strategy, are transport related. For example, several freight and supply chain strategies are listed, as are the NSW Future Transport Strategy, the National Road Safety Strategy, the National Electric Vehicle Strategy, and more. These are clearly important strategies to align with.

While the Department does mention in passing other strategies such as the National Quantum Strategy, the Australian Cyber Security Strategy and the National Robotics Strategy,[2] we propose there are many

1 The Strategy, p.6.

2 The Strategy, last paragraph on p.7.

other Government strategies and policies that should be considered in the development of this strategy on road technology. For example, the Digital Transformation Agency (DTA's) Data and Digital Government Strategy[3] while not yet formally released contains many important principles in the consultation draft including increasing evidence-based policy and decision making and achieving greater economic value from public and private sector data. These objectives go to the heart of where the Department is headed with the National Road Transport Technology Strategy, and it is important to consider that economic benefits do not end simply at improving road transport efficiency. Enabling real-time data collected by road transport infrastructure to be made seamlessly accessible to private sector businesses involved in supply chain and logistics could also deliver economic and productivity gains further into the commercial sector, as intended by the DTA's Data and Digital Government strategy.

Similarly, earlier this year, the Department of Industry, Science and Resources consulted on Supporting Responsible AI.[4] Like the DTA's consultation on Data and Digital Government, this consultation is also yet to resolve its findings and outcomes. It occurs to us that AI will play an increasing pivotal role in road transport, covering functions such as real-time traffic optimisation, road management and future planning. While at first blush, it may appear that ethical considerations for AI may not be relevant given road management is about vehicles, it is important to remember that people drive vehicles, and people have personal information associated with them. As such the safe and ethical use of AI in the development of road transport technology is likely to be important.

03 Principles guiding government action

The Strategy outlines nine principles that will guide government action with the aim of ensuring nationally consistent decision-making across all jurisdictions to support deployment of new road transport technologies.[5] We comment on each of the nine principles in section 3.2 of our submission below, and overall we consider they are appropriate. We are particularly pleased to see concepts such as the following embedded in the principles:

- nationally compatible solutions aligned to international standards, as this will avoid the "rail gauge" issue, both between states here in Australia, but also between Australia and the rest of the world, thereby ensuring access to global device and equipment markets; and
- leveraging existing investments, as this will not only save cost by avoiding duplication and over build, but will also ensure quicker time to market.

Before we comment on each of the nine principles in this consultation, we observe there is one principle missing, which was present in the Department's consultation earlier this year on a National Approach to Cooperative Intelligent Transport Systems (C-ITS).

3 The DTA's Data and Digital Government Strategy is primarily about how the APS delivers services to Australians digitally, however, it does go to matters such as how can government better use the data it collects, and enable others, including the private sector to use that data. The point here is that unlike the strategies listed in the National Road Transport Technology Strategy, which all tend to be immediately adjacent, other strategies like the DTA's Data and Digital Government Strategy are a more holistic "bigger-picture" strategy that the National Road Transport Technology strategy can feed into and align with.

4 DISR consultation on Supporting Responsible AI. https://consult.industry.gov.au/supporting-responsible-ai

5 The Strategy, pp.9-10.

3.1. Linkage to the February 2023 consultation on principles for a National Approach to C-ITS

Earlier this year, the Department consulted on principles for a National Approach to Cooperative Intelligent Transport Systems (NACITS). The Department is yet to advise the outcomes of this consultation, however the stated purpose of that consultation was to "… *inform how governments move forward towards a nationally consistent C-ITS system that will bring a range of benefits to our roads and vehicles, and will help prepare Australia for technologies to come*."[6] In the set of principles proposed in the NACTIS consultation, we observe the first principle was "*Australian governments will work together, and **with industry***, *towards a nationally consistent C-ITS environment* …" [emphasis added]. We consider industry involvement and participation in the development of strategies to be vital, especially where it comes to communications infrastructure and technology. We recommend it would be helpful to incorporate industry involvement and participation in the Strategy, and note that industry involvement is likely to be very helpful in realising Principle 9 on Adapting to Future Change.

3.2. Comments on the nine draft principles

Telstra welcomes the nationally consistent approach to deployment of new road technologies. We support the proposed nine principles and provide specific comments below for each principle. Our response focuses on the infrastructure, communications and data enablement aspects of road transport technology deployment.

1. **Improving transport outcomes:** Government decisions to support road transport technology deployment will be based on the capability of the technology/ies to improve safety, efficiency, productivity, sustainability and accessibility outcomes for transport users, the economy, environment and broader society as identified in the vision for this Strategy.

   Agreed.

2. **Safe and secure operations**: Government decisions to support road transport technology deployment will be based on the ability to ensure the safe and secure deployment, operation and maintenance of these technologies in the Australian context. When systems fail they must fail safely.

   Agreed. The principals of public safety, road transport safety, and security are central to transport technology design, build, roll out and operation. It is in the national and community interests to ensure onshore infrastructure deployment using local professional expertise. As safety-critical infrastructure and vehicles become connected and autonomy-ready, the security of critical data must be upheld. Data exchange, handling and storage must be managed safely, securely, lawfully and ethically.

6 National Approach to C-ITS website, accessed 4 Dec 2023. https://www.infrastructure.gov.au/have-your-say/draft-principles-national-approach-cooperative-intelligent-transport-systems

3. **Nationally compatible deployment**: Where technologies will be deployed across jurisdictional borders, governments will take a national perspective on implementation recognising the impacts on other jurisdictions/operators, including by:
    a. identifying critical standards for harmonisation internationally and across jurisdictions – relevant international or regional standards should be adopted, unless there is a compelling reason for a unique Australian requirement, and
    b. ensuring systems and practices are compatible and interoperable to enable a seamless user experience across Australia.

Agreed. Alignment of communication technologies with global standards is critical. The world is moving away from Dedicated Short Range Communication (DSRC) in favor of modern mobile/cellular-based alternatives, which are lower cost and faster to deploy, as well as being more effective (e.g., following 5GAA standards and guideline).

The Australian geography and population spread need to be considered for accessibility by all road users. Hence, the need for sufficient coverage in both urban and rural areas must be addressed. Communication via mobile networks is particularly suitable for Australian conditions as it allows much greater scalability over DSRC when it comes to cross-border nation-wide deployment, including regional areas. Australian mobile networks have great reach and quality of service (e.g., Telstra's mobile network covers 99.5%[7] of the places where Australians live and work), which becomes increasingly important for CAV deployment, reliant on low-latency, high-bandwidth and reliability standards.

Data exchange of vehicle-generated and road infrastructure data (V2X), particularly between jurisdictions, road operators and users must be consistent across states and territories, as well as consistent with leading international standards (such as ETSI protocols).

Alignment to international standards also allows Australia to leverage the scale of international device markets, enabling lower unit costs and access to after-market solutions (at scale) for older vehicles.

4. **Evidence based, strategic and value for money investment**: Where government investment is identified as needed to support the deployment of new technologies, that investment will be evidence-based, consistent with long term strategic planning, and deliver value for money for the whole of life of the investment.

Agreed.

5. **Leveraging existing investments, market approaches and devices**: Where appropriate, planning for new technologies will leverage existing infrastructure and networks (private sector or government, including public transport), market approaches and consumer devices and equipment (such as smart phones) in order to encourage effective, efficient and equitable deployments.

Agreed. In the interests of reducing timeframe and costs of deployment, the existing infrastructure should be utilised as much as possible, leveraging existing assets and current developments. While the Road Side Unit (RSU) infrastructure may be suitable for densely populated areas (particularly in

7 https://www.telstra.com.au/coverage-networks/our-network

Europe), it is quite expensive for broad deployment throughout Australia due to low population density and geography.

6. **Encouraging competition and innovation**: Where feasible and appropriate, governments should avoid favouring particular technologies, applications and business models, and new technologies should be implemented in a way that supports appropriate data sharing in line with privacy and security requirements.

Agreed. Benefits should be tangible for contributors, users, constructors, custodians and broader community for the ecosystem to be stood up and functional. The V2X Data Exchange needs to be standards-based as noted above.

7. **Sustainable technology deployment**: Road transport technology deployment decisions should consider the whole of life sustainability impacts of the technology, including decommissioning and recycling at end of life.

Agreed.

8. **User-centric implementation**: New technologies should be designed, implemented and delivered in a way that meets the diverse needs of those using them (e.g. travelers with disability, older and younger travelers, those on low incomes, First Nations Australians, culturally and linguistically diverse people, those in regional and remote areas, pedestrians, cyclists and users of multiple transport modes), including in a way that is consistent and familiar, and protects user privacy and security.

Agreed.

9. **Adapting to future change**: New technologies should be implemented in a way that supports resilient, reliable and scalable solutions, backwards compatibility or equivalent functionality, future upgrades, and possible future transitions to other technology platforms.

Agreed. In addition, and given C-ITS / V2X communication will pave the way for autonomous driving, we need to ensure that the solutions are open-standards, modular, interoperable, scalable and future-proof, e.g., extensible, API-based software platforms, low-latency comms, MEC hosting and sufficient bandwidth. We consider industry could be helpful to Government in realising this principle by leveraging the experience it has in developing connectivity solutions, data collection and analysis at scale, and the use of Artificial Intelligence (AI).

04 Strategy Outcomes

The final section of the draft Strategy outlines several benefits and challenges of road transport technologies, categorised into topics such as safety, accessibility, security, and supporting infrastructure (amongst other categories). We have two comments, both in relation to the section on supporting infrastructure.

4.1. Supporting Infrastructure

Ultimately, aspirations for increasing the use of road transport technology rely on **connectivity**. As the opening sentence to this section in the draft Strategy states, "*New road transport technologies will require supporting digital and physical infrastructure to operate effectively*", and chief among these is connectivity. The best time to consider supporting infrastructure is at the planning stage, and we commend the Government to always consider the provision of communications infrastructure when planning and designing new roads and highways. Deploying optic fibre, and making provision for mobile base stations is optimally done when the road or highway is being constructed, and we recommend the Government engage with telecommunications operators at the earliest stages of planning for new roads to ensure communication infrastructure is made available for future use with Road Transport Technologies.

Secondly, we observe that satellites are mentioned only once in the Strategy and once in the Action Plan; and in both cases, it's in relation to vehicle positioning (Global Positioning System – GPS) satellites. However, advances are quickly being made in low earth orbit (LEO) satellite systems, including early trials in the ability to communicate directly with traditional mobile devices.

While it is still probably a few years before data services from LEO satellites directly to mobile devices (including connected cars) are readily available, they are on the horizon within the timeframe of the Strategy. We propose it would be beneficial for the Department to consider the role LEO Satellite connected vehicles could play in road transport technology.

05 Draft Action Plan

In this section of our submission, we provide our comments on the Department's Action Plan.

5.1. Vehicle Automation

We do not have any comments on the actions ascribed to Workstream 1 in the Action Plan.

5.2. Vehicle Connectivity

While reliability is included in Principle 9 in the Strategy, we observe that reliability does not feature in the specific actions ascribed to Workstream 2. We consider communications reliability is paramount for realising many of the goals and objectives of the Strategy, especially goals related to real-time use of data and information, and we propose reliability should be added to many of the specific actions in Workstream 2. We recommend standards for reliability are harmonised to international standards, to ensure a consistent approach across all states and territories.

In addition to that overarching comment on reliability, we make the following recommendations on some of the specific actions in Workstream 2 of the Action Plan.

Action 2.1: Develop and publish a national plan for implementing C-ITS

- Add "Clarification of Data Sovereignty requirements" to the list of items the plan could potentially include. It is important to provide guidance to industry and to state and territory governments any requirements for data localisation of road transport data collected and inferred from road

transport technology systems. For clarity, we are not advocating for or against data sovereignty or data localisation; we are seeking certainty, and for the certainty to be provided to stakeholders, including industry participants, as early as possible.

- Add “long-range communications”. Action 2.1 mentions “short-range communications” twice in the description of the action, however, there is no mention of “long-range communication” in this Action. While short-range communication is important for V2V and V2I in the immediate vicinity of the vehicle in question, long-range communication is important for communication with central data and information systems that can provide real-time updates on traffic and other road situations. We recommend “long-range communication” is added to Action 2.1.

Action 2.2: Develop a nationally harmonised repository of road manager data

- Telstra fully supports development of a nationally harmonised repository of road managed data. There is a need for V2X / C-ITS data exchange national standards to ensure consistency of data sharing across jurisdictions and governance of data handling. ETSI and 5GAA provide common, internationally-recognised C-ITS / C-V2X communication protocols, which have already been adopted by multiple jurisdictions and private entities in Australia. These protocols should be at the core of a national V2X Data Exchange approach, which would orchestrate low-latency, high-accuracy, secure communication between vehicles, infrastructure, cyclists and pedestrians. The cloud-based or edge-deployed platforms should feature modular, API-enabled architecture for ease of integration, scalability, resilience and enhanced data quality for the end-users.

- Over the past few years there have been trials conducted by the state road authorities and their partners, implementing early use cases by using standards-based V2X Data Exchange between infrastructure and vehicles. Distribution of critical data to the road users has proven to deliver significant value to all parties in the way of improving road safety, emission reduction and efficiency uplift, such as easing congestion and operational savings. Some road data-enabled use cases such as Hazard Warning and Traffic Management / Optimisation are close to small-scale commercial implementation.

- In regards to the raised question of “latency considerations and technology developments (e.g. edge computing)”, the deployment of V2X Data Exchange stations can be done at the network edge to enable traffic management and other real-time use cases.

- Part (a) of this action refers to the identification of options for a nationally harmonised C-ITS central station. We stress the importance of ensuring that options identified align with international standards, to facilitate interworking with the widest possible range of in-vehicle devices, the ability to leverage the economies of scale of international markets, and to ensure the shortest time to market.

- Part (b) references the development of a business case. We see value in a “triple bottom line” approach, which can consider environmental benefits and societal wellbeing improvement aspects in the business case. We also see merit in a gradual roll out, enabling early use cases and Proof of Concept (PoC) / Proof of Value deployments between government and industry over the next few years before CAV scale readiness.

Action 2.4: Monitor radiofrequency spectrum arrangements for C-ITS with a view to ensuring they remain fit for purpose and align with key international markets

- Wherever possible, mobile networks should be leveraged for vehicle-related communication, in line with the latest regulatory and commercial trend (USA. Europe, China, etc). Australia has well-developed mobile infrastructure to handle V2N2V, V2N2I and V2N2P. Mobile network usage will ensure inclusivity for all road users (particularly cyclists and pedestrians), tremendous cost benefits and reduced timeframe / ease of implementation. Low-latency use cases can then be enabled on the mobile network edge, high-reliability use cases can be served via mobile network slicing and sufficient throughput can be provisioned by operators.

Action 2.5: Identify and overcome any impediments to implementing the eCall in-vehicle automated crash notification (ACN) system.

- The introduction of eCall capability in Australia will benefit Australian drivers and has the potential to save lives. eCall is mandatory in the European Union for all new vehicles sold since 1 April 2018,[8] and in this respect, Australia lags other jurisdictions globally. In addition to the ability to simply place a voice call to an emergency operator, eCall could also convey telematics information from the vehicle to an emergency operator[9] to assist with despatching appropriate response teams to an incident. There have been many overseas deployments to date, so Australia has an opportunity to learn and improve on early trials in order to implement state-of-the-art eCall capability.

- Because of the potential to simultaneously communicate vehicle telemetry with a voice-call / messaging, it is important that the C-ITS platform identified through the steps in this Action Plan is capable of carrying, and potentially analysing the telemetry data. eCall implementation in Australia will benefit from a national, centralised, multi-channel onshore triaging, risk management, escalation and workflow distribution to authorities, emergency services, road operators, towing services, etc, (such as conducted by BT in the UK). These attributes should be included in the development of capabilities and the specification for eCall implementation in Australia.

- One of the easiest ways to implement eCall would be via V2X Data Exchange covered in Action 2.2, using the same communication protocols and architecture, merging new-age data handling and legacy calling / messaging into the workflow (ETSI has published extensive documentation on the architecture and approach). For example, a 2-way 000 SMS functionality, voice and “human in the loop” control can be automated via V2X Data Exchange platforms to enable efficient and effective eCall management and action. Once again, modularity, extensibility via API, standard topic structure adherence and data sovereignty should be the key governing principals.

- Public mobile networks provide the quickest, most reliable and the cheapest way to roll out eCall Australia-wide. The extensive coverage of the three terrestrial mobile networks, have the potential to provide immediate benefit to Australians, especially in regional and remote areas. We also consider the architecture design should allow implementation and integration with other

8 https://europa.eu/youreurope/citizens/travel/security-and-emergencies/emergency-assistance-vehicles-ecall/index_en.htm

9 Noting that today, the Emergency Call Services (ECS) Answer Point is not equipped to receive such information, and so a commensurate upgrade would be required at the ECS Answer Point.

communication types, including satellite based communication options, especially as that technology matures for direct-to-device communication in the coming years.

Action 2.6: Monitor and harmonise ADRs as necessary to provide for connectivity functionalities.

- We support this element of the Action Plan to harmonise the Australian Design Rules (ADRs) with international vehicle standards. We suggest it is important to do this as expeditiously as possible, to provide a clear signal of the standards Australia plans to align with, to industry, including importers, manufacturers, etc in a timely manner.

5.3. Cross-cutting actions supporting CAVs

We have no comments in relation to the eleven actions already listed for Workstream 3, however, we recommend one further action is added to this category.

Action 3.12: Nationally coordinated, persistent CAV testbeds

- We recommend adding an additional action to this category for the creation of nationally coordinated and persistent Connected and Autonomous Vehicle testbeds. We recommend testbeds should be created and made available in each state and territory. While we are strongly of the view that implementation of Road Transport Technology must be uniform to the greatest extent possible across all states and territories, there is already existing technology, and differences in road rules, signage and markings in each state which necessarily means testing must accommodate existing state/territory differences. A nationally coordinated approach to testbeds, with testbeds available in each state and territory will allow for timely testing, thereby reducing time to market. A nationally consistent approach will also leverage budgets and Government funding more effectively, to drive consistent infrastructure and technology assets for faster incremental innovation for CAVs and other adjacent technologies such as Mobility-as-a-Service (Maas) and EVs, etc.