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Consultation Process
Transport Technology and Policy
Office of Future Transport Technology
Department of Infrastructure, Transport, Regional Development, Communications and the Arts
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C-ITS PRINCIPLES

We make this submission in relation to the draft principles for Co-operative Intelligent Transport Systems, as outlined on the Department's website.

The Institute of Transportation Engineers - Australia and New Zealand Section (ITE-ANZ) is part of an international organisation representing a community of transport professionals including transport engineers, transport planners, urban planners, consultants, educators and researchers. Globally, the ITE works to improve mobility and safety for all transport system users and helps build smart and liveable communities. Founded in 1930, the ITE community has over 17,000 members working in more than 75 countries. Our activities cover all transport modes, transport advocacy and professional development. ITE-ANZ has very strong links with the North American transport profession.

The ITE-ANZ welcomes this consultation on the C-ITS principles.

Our members are very positive about the potential for the collection of data from connected vehicles to support optimisation of traffic safety, efficiency and sustainability outcomes for real time operation and for long term planning.

We strongly advocate for significant investment, continued action and coordination to develop and impose standard and reserve communications channels. The Australian Government must drive this process.

The following are our comments on each of the six principles.

1. Australian governments will work together, and with industry, towards a nationally consistent C-ITS environment with the aim of supporting a seamless experience for road users as they travel across states and territories.

    a. Individual jurisdictions should continue to decide the pace and scale of their respective investments but should commit to national consistency.

The ITE-ANZ strongly agrees. But the Australian Government must drive national consistency; not necessarily wait for consensus. Decisions on reserving spectrum and national standards must be driven at the national level.

We hear frequently from our ITE colleagues in the United States that national collaboration is necessary, and they believe a diminished federal leadership over the past half decade contributed to industry and government not being aligned. It was during this period that their Federal Communications Commission not only reduced the amount of dedicated spectrum, but also stepped

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in and made choices about technology that would have been best made by industry. They cite the lack of a national approach that caused this problem, and agencies in the US are now hitting the "reset button" in some instances and starting over with deployments of roadside and in-vehicle infrastructure.

It is important that individual jurisdictions have the time and opportunity to consider and leverage the benefits of C-ITS frameworks and systems already developed by other states and territories. This requires significant coordination between the Australian Government and the States and Territories. Knowledge sharing is only the first step. There is a need for cross border deployments to speed up understanding and equitable development across Australia.

Less populous States and Territories will require more support in the development and deployment to get the benefits for their communities, including rural and regional Australia, where road safety trauma continues to be a significant concern.

2. Maximising the benefits of C-ITS requires an environment where:

   a. all C-ITS enabled vehicles can communicate with each other, and with C-ITS enabled equipment (including devices used by pedestrians, cyclists, and other road users) and infrastructure, irrespective of make/model;

   b. information is able to be transmitted to all C-ITS enabled vehicles, equipment and infrastructure from trusted sources; and

   c. all road network agencies will be able to collect and share data with the objective of supporting C-ITS optimisation across Australian jurisdictions.

This is critical. Standard communication protocols and message channels must be developed for this to happen. Vehicle manufacturers need the confidence that data exchange with their onboard systems will function throughout Australia.

Our ITE colleagues in the United States point to a 2022 "V2X Summit" held by their US Department of Transportation, where "regulatory uncertainty" was one of the more frequently cited reasons for delays in implementing C-ITS in the US. As they now are setting about the task of developing a "V2X National Deployment Vision and Plan", the conversations include a significant emphasis on creating a stable regulatory environment and strong federal leadership role. ITE-ANZ encourages the same here in Australia.

It is important that C-ITS deployments consider vulnerable road users. There has been some focus on motorcyclists, cyclists and pedestrians in some trial deployments (CAVI and AIMES). However, a great deal more trial and pre-deployment needs to be considered for these groups. It may not always be safe or appropriate to provide a message or warning to cyclists, pedestrians and motorcyclists. As a result, there needs to be a focus on messaging to car and truck drivers to provide better safety outcomes for vulnerable road users and ensure better health and sustainability outcomes through mode shift in the longer term.

3. Cooperation is key and this work should be agreed by governments in consultation with industry, and include participation by community and research stakeholders.

Cooperation will be important. There are few issues in our lifetime that will have a similar long-term impact. To achieve the benefits of C-ITS, industry are the critical component. Government does not have the direct connection to the end user; there is a technology provider as the intermediary. The vehicle manufacturers and the app providers have the end relationship with transport users. And the end users have the connection with these organisations because they seek other services. It is important that the Australian Government leverages these relationships and gets the additional benefit for the end users. End users aren't generally looking to pay for safety

benefits on a personal level as a subscription; they seek other information and comfort services. Governments need to invest to take advantage of this connection. Cooperation and collaboration through data standards like C-ITS are the best way to ensure long-term and enduring impacts and improvement.

4. Harmonising with international approaches, including in relation to spectrum for C-ITS use, helps maximise consumer choice and vehicle availability. As Australia currently bases vehicle safety regulations upon the United Nations Economic Commission for Europe (UNECE) World Forum for the Harmonisation of Vehicle Regulations (Working Party 29) model law1, it should look to harmonise with European approaches in C-ITS.

We agree that harmonising with the European standards would appear to be the best approach. The work being done by C-Roads and the Car2Car Consortium is a great model to build from.

Our ITE colleagues in the United States had attempted to align with that as well, but without a national approach or framework in place, they struggled to attain such an alignment. Their advice is to not wait until the technology path (specifically short-range communications) is agreed by all parties. Technology will continue to evolve and there continues to be lost opportunities from not acting. Hesitancy will impact on the confidence and commitment of vehicle manufactures and, in turn, break the key linkages required to kick-start the C-ITS ecosystem.

The European approach is well advanced. The EU have demonstrated large scale deployment with 20,000 km and over one million vehicles equipped.

The Car2Car consortia have recently published further on the 801.11 standards entitled "*Next Generation V2X –IEEE 802.11bd as fully backward compatible evolution of IEEE 802.11p*" dated 2nd February 2023. It appears that backward compatibility and future technology transition paths are being considered, which mitigates concerns about technology. This signals a transition path available to other new technologies as they become available and offers added benefits and better outcomes. Following the European approach should provide the most flexible pathway for Australia.

5. The focus on uptake of C-ITS in Australia should be on improving road safety, transport productivity, sustainability and reducing emissions, including to support the development of new transport technologies including connected and automated vehicles.

ITE-ANZ agrees that C-ITS can provide significant benefits in all these areas. C-ITS systems and services will be necessary for the safe and effective operation of connected and automated vehicles.

6. Given the cybersecurity and privacy issues in sharing road and vehicle data, Australia must ensure it has effective and timely solutions to managing the security of systems and messaging and privacy of data in C-ITS.

This is of paramount consideration and concern. This will require coordination with all state and national safety and security standards. C-ITS will be considered as critical infrastructure and, as a result, the Australian Government must impose requirements to ensure the safety and security of the data, systems and messages. Privacy of personal information must be protected.

Responses to Questions

1. Are principles for a national approach to C-ITS in Australia necessary? And if so, are the draft principles, as articulated, sufficient to inform investment by industry in C-ITS?

Yes. The principles are a good first step. However, a lot more is needed to encourage investment.

2. Over the next 5 years, to what extent does your organisation anticipate moving into a C-ITS role or increasing its involvement in C-ITS?

ITE-ANZ is a professional institute and has a role in advocacy but will not be directly involved in C-ITS development.

3. How might C-ITS impact other vehicle connectivity systems in Australia, including vehicle/original equipment manufacturer (OEM) connectivity, vehicle/cloud connectivity, heavy vehicle telematics systems, mapping systems, etc?

As C-ITS develops, there will need to be changes to existing systems.

4. After the Principles, what next steps do you think would be most productive?

The principles are a great first step. It is important to get broad agreement on this approach as soon as possible. However, there is a need for continued funding and action with the coordination of the Australian Government and State Governments working together for any benefits to be realised.

There is a need to develop an overarching framework that considers governance, organisations, standards, and an action plan. This requires funding from the Australian Government and close collaboration through new organisation structures.

5. The draft Principles include a focus on cooperation across industry, government, the research sector, and the community: what structures would be necessary to support the development of an Australian C-ITS system?

Establishing an organisational structure reflecting the European model would make sense to develop and deploy C-ITS. One organisation (like the European C-Roads) would deal with the needs of agencies and outcomes on the roads and road users; and another organisation (like Car2Car) would deal with the data standards and outcomes for the vehicles.

- *Road and data focused organisation.* There isn't an obvious national organisation in place to move the discussion of C-ITS from research and trials to development and deployment. It is vital this organisation aligns closely with C-Roads. For example, it should be an associate member of C-Roads (noting Queensland Transport and Main Roads is currently an associate member), enabling close alignment to deployment standards. Austroads could be a potential starting point as an umbrella organisation but would need committed resources from state agencies.

- *Vehicle technology and data organisation.* Considering the vehicle data and standards discussion, this organisation would need to have close collaboration with Car2Car. The FCAI would appear to be a key body. Given there are significant benefits for safety, efficiency and sustainability with deployment of C-ITS for freight, close involvement with organisations working with freight data, like the Transport Certification Australia, is also critical.

- **Ongoing Operation**. There needs **to be c**onsideration of an appropriate operating agency for central systems and security. This will be critical to ensure the best possible value for government agencies and end users.

Who pays and who benefits?

The WSP report (section 2.3.1.3) estimates that the government would see a 25-fold return in socioeconomic benefits on their investment, which would be between 1 and 7% of total investments. There would be very few solutions in the road safety, efficiency or sustainability area which can produce this scale of return.

This is very positive and should make the case for significant investment. The complexity and need for collaboration in a multiple party ecosystem (as outlined in Figure 1.13 of the WSP report) is the critical challenge to unlocking the benefit.

Governments will benefit significantly in getting better outcomes for communities in reduction in road trauma, improved efficiency and support in delivering sustainability goals.

Who should pay:

- The Australian Government should take responsibility for national vehicle standards, data standards and security.

- State-governments should take responsibility for local deployments of traffic systems and infrastructure.

- The development and installation of in-vehicle devices will be borne by vehicle manufactures and passed on to end users. Commercially, end users need to see value in these systems - ie "comfort" benefits are required.

- The operating costs for vehicle systems is by far the highest cost over the long term. Who pays for this is a key issue.

The worst possible outcome for government, industry and the community is the risk of stranded assets. Any next steps taken to develop a C-ITS ecosystem need to resolve how to deal with ongoing costs for operation, particularly cellular data costs for safety messages. There is a significant risk to assuming the end user will pay as part of a subscriber model. Once the vehicle is resold, the connection to these services is generally lost for the second-hand car buyer. This is not a good approach in terms of technology penetration and impact, nor for equity. If the benefit to the community is 25-fold over the investment, then the Australian Government needs to consider how the cost of these ongoing services could be better coordinated. Either governments pay, which comes with many challenges of coordination likely to result in a significant delay to implementation; or governments help to collect the payment from vehicle owners and operators in a highly reliable consistent and equitable manner. The relative roles of the Australian Government and State and Territory governments driving the initial investment and their roles in supporting ongoing operation needs to be defined.

Conclusion

Thank you for the opportunity to comment on this important work.

Yours sincerely

David Nash
Secretary