National Approach to Co-operative Intelligent Transport Systems (C-ITS) in Australia

ITS Australia Submission

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General Comments

ITS Australia is the peak body for the transport technology sector and many of our 140+ member organisations play a role at the leading edge of new and emerging technologies to improve safety and efficiency on our transport networks. A key element of these advances has been the deployment of traditional ITS and development of C-ITS, with over 15 years of steady progress both nationally and internationally building standards and trialling systems to demonstrate the benefits of cooperative intelligent transport systems and connected vehicle technology.

These trials, pilots and policy developments have now demonstrably proven C-ITS interventions can substantially improve safety and efficiency on our transport networks. These learnings can be shared for the next step of scaled projects across Australia laying the foundation of C-ITS that can be built on over time. This technology is available now and the work can continue to ready for connected vehicles, delivering safer more efficient transport networks now while building for the future.

The Cooperative Intelligent Transport Systems (C-ITS) combine information technology and wireless communication to enable data and command transmissions between vehicles, roadside infrastructure and a central management system, in order to improve roadway safety for all users. Beyond road safety applications built on C-ITS can increase network efficiency, reducing congestion and importantly emissions. Emissions reduction in the transport sector is essential and C-ITS can deliver real sustainability outcomes.

The recent technological advancements in vehicle-to-vehicle and vehicle-to-infrastructure communications (vehicle connectivity, in general), wireless sensors, video analytics, artificial intelligence, edge computing and IoT can support and accelerate cooperative transport systems for Australian cities.

These cutting-edge digital communication technologies will allow cars to interpret their surroundings and alert drivers to potential hazards intelligently. In 2020 ITS Australia with research partners University of Melbourne and key government agencies published a report Investigating pathways to deliver road safety and network efficiency benefits through connected technologies which revealed that these technologies can reduce vehicle crashes by up to 78 per cent, dramatically reducing road trauma and the death toll.

With the recent AAA December 2022 report benchmarking the performance of the national road safety strategy showing road deaths increased by 9.3% in Q3 2022 these connected technologies are increasingly necessary to improve safety outcomes on Australian roads and supporting government goals.

ITS Australia commends the Australian Government in drafting these important steps to deliver an evidence based and collaborative pathway to building an ecosystem for these vital technologies.

ITS Australia endorse the adoption of these principles on the basis that they set the foundation for a nationally consistent approach for C-ITS deployment.
An agreed national approach will:

- Provide industry with clear guidance for their technology pathway
- Give government confidence to invest in supporting infrastructure
- Maximise the market size and stimulate industry to innovate and deliver a breadth of products
- Maximise the potential benefits of connected technologies
- Support a national action plan, investment and alignment with future infrastructure plans

A Question of Principles

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?

These principles as articulated are a sound start to support a pathway forward for a government and industry collaboration to deliver on the promise of C-ITS technologies, to both provide industry with clear guidance for future investment and enable government to confidently invest in supporting infrastructure.

A cross-boarder harmonised approach is the pathway to success for these technologies; delivering a seamless customer experience, equitable outcomes for all areas in Australia, and building a robust framework supporting industry and government investment. The principles articulated lay a strong foundation and ITS Australia is very supportive of these first steps. Maximising the potential of these technologies through collaboration and cooperation is key and ITS Australia is both well placed and keen to play a role.

Leveraging the international experience and ensuring the approach taken expands opportunity rather than limits, relying on proven protocols and deployments is important, specifically supporting adoption of the EU standards as a continuation of the Australian design rules for vehicles harmonisation with Europe.

The potential for these technologies is vast up to and including the deployment of connected and automated vehicles. There is also immediate need and benefit to be gained from less ambitious use cases and focusing activities on improving road safety, transport productivity, sustainability and reducing emissions is important. These are complex and challenging ecosystems and ensuring close consideration of privacy and equity for all users, as well as the security of critical infrastructure, is key to both trust and safety.

Government oversight and cross-border harmonisation would offer industry confidence to invest and a robust national framework with help provide both industry and the community direction on how C-ITS will be deployed and operated.

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?

ITS Australia

Working with research partners and state transport and safety agencies ITS Australia is leading an iMOVE project investigating "Integrated connected data for safer more efficient traffic management operations". This project's aim is to identify and analyse specific aspects of existing and emergent connected and other vehicle and traffic data, to identify how these could supplement and improve existing network management approaches and be integrated with modern traffic control systems in the near-term.

The focus of these activities are locations where operators have an ability to control or manage the use of the network. As such, the focus would be on outcomes primarily at signalised intersections, however considering inputs from all locations across the system.

The project makes an important distinction between the still-emerging technological future vehicles and existing vehicle and other technologies that are already commercialised and gaining ever wider market acceptance however are not presently used as an input to control systems.

In the former case, the deployment of connected vehicles (CVs) requires an extensive standardised ecosystem, subject to significant trials, public-private cooperation and technological decisions by global vehicle manufacturers and their suppliers. While this national "top down" process remains on-going – and needs to fully come to grips with the transformational potential of connected vehicles and infrastructure – there is an opportunity to begin with incremental improvements to current traffic control practices.

Such "bottom -up" improvements do not require a fully-defined concept of operations for connected mobility. Nor do they enter the difficult domain of real-time driver information and warnings. Rather, the use of this new and emerging data will be focused on the road network operator's domain, with an intent of supplementing existing inputs and operational approaches.

Current traffic management systems are typically controlled based on relatively simplistic inputs, such as inductive loops. In recent years there has been significant growth in the sensors available to network operators as well as the data sources available, including the gradual emergence of connected vehicles and infrastructure.

The project aims to identify and analyse current network management approaches, and where existing and emergent connected and other vehicle data and underlying infrastructure data can be integrated with modern traffic control systems in the near-term to improve operations.

This project is highly consistent with long-term safety and mobility goals, while providing specific traffic system and driver behaviour improvements in the short term and is the long-term utilisation and success of technologies building on this project and others like it are predicated on the development of C-ITS standards in Australia.

Our Industry

With the approval of these principles the Australian ITS industry will be freed up to move mor proactively into the C-ITS space and the many opportunities it offers.

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?

The broad membership of ITS Australia represents the majority of the sector that build, utilise or would otherwise benefit from the opportunities C-ITS provide. Supporting a single standards and technology suite will be necessary to support C-ITS optimal interoperability and provide strong foundations on which industry can develop and deploy C-ITS reliant tools and technologies.

As current Australian regulations for vehicles align with those of the United Nations Economic Commission for Europe (UNECE) Working Party 29 and Australian vehicle safety laws are also based on these European model laws, it seems logical the design of Australian C-ITS systems should follow European standards.

Connectivity can not only improve safety outcomes and network efficiency it can do so now in a variety of specific use cases, with benefits for awareness applications being realised at low penetration rates, while other warning and cooperative functions require increasing levels of technology penetration to be effective. To achieve the estimated benefits several factors must be considered, including the technology deployed, method of deployment (i.e. through aftermarket or original equipment manufacturer technology), and infrastructure requirements as well as communications networks and mapping.

With an agreed pathway to C-ITS deployment and support for the exchange of data and harmonisation – standards enhance investment – modelled on proven international safety and standards frameworks the entire transport technology sector can be confident in building products and platforms that offer regret free investment and the opportunity to innovate.

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?

It is essential to progress rapidly due to the clear safety, efficiency, sustainability and accessibility benefits that align with government objectives. Harmonisation requires national leadership and active collaboration across borders and with industry, academia and the wider community a recommended course of action building on the principles would be establishing frameworks and working groups around key areas. Reflecting on the successful C-Roads model and aligned to the European principles these collaborative working groups could include:

- Organisational and business models
- Technical aspects
- Security, equity and privacy
- Cross-border evaluation

Building base level infrastructure and certainty around a national strategic direction will allow the sector to develop and market products and platforms that can be supported in an acceptable product lifecycle. The principles as drafted are a positive first step in building this confidence. Commitment to ongoing engagement across the sector and support of existing consultation processes such as NTC's Vehicle Data Working Group is key this includes the importance of public facing engagement to raise awareness and interest for potential C-ITS applications to build trust and drive demand.

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

The principles provide a foundation for nationally consistent deployment of C-ITS and connected vehicle technologies with substantial safety, efficiency, and sustainability benefits. A national approach also provides strong support for expanded deployment and innovation amongst industry and C-ITS could address some of the key priorities by improving safety for road users, heavy vehicles, regional road users and vulnerable road-users.

Some sectors have been identified as most immediate beneficiaries of these technologies with freight and heavy vehicles being a logical pathway to establishing an ecosystem and viable market that passenger vehicles could build on. With a proven economic benefit and strong cost benefit ratio identified the freight industry could provide an effective way forward.

In 2012, Transport for NSW deployed the world's largest heavy vehicle test bed, for Cooperative Intelligent Transport systems. This deployment has continued to evolve and is still active today and with over a decade of learnings could be leveraged to design broader deployments built on shared standards delivering immediate driver and road safety benefits across Australia's freight networks. More recently the highly successful Cooperative and Automated Vehicle initiative utilised a robust Security Credential Management System that could provide the basis for a national approach.

Establishing collaborative working groups across the key themes identified activities could be readily identified to begin the harmonisation of C-ITS in Australia with a focus on heavy vehicles and commitment to strong government oversight and industry engagement providing a pathway in the immediate future.

Recognising the need for technical certainty ITS Australia is supportive of the next steps identified by the WSP report which reflect the need for a nationally harmonised approach to building the technical components of the ecosystem to support development, including:

- **Communications are key:** Supporting mature communications methods deploying short-range communications infrastructure as well as continued growth of the cellular network for long-range communications

- **Needs trust and security:** Establish a Security Credentials Management System to build a trusted, private and secure flow of information Australians can rely on

- **Location accuracy:** Support the development of guidelines, testing and infrastructure for positioning accuracy – for building accurate reliable and cost-effective systems

- **Data standards and sharing:** Prepare transport management centres to share event data to and from vehicles across borders, a national data exchange for trust and consistency, with guidelines and standards for national consistency.

Conclusion

ITS Australia commends the Federal Government and the Department of Infrastructure, Transport, regional Development, Communications and the Arts, in undertaking this important work to better understand the impacts and opportunities C-ITS offers and is strongly supportive of adopting the principles articulated and the consultation program being undertaken.

With more than 1,200 people dying and over 30,000 people being seriously injured each year on Australia's roads, the only long-term goal we can have is for zero fatal and serious injuries. To that end, we believe connected and cooperative Intelligent Transport Systems are some of the key safety initiatives to achieving that ambitious goal. C-ITS could address some of the key priorities by improving safety for road users, heavy vehicles, regional road users and vulnerable road users

The safety of our citizens is paramount and driver assistance technologies are clearly saving lives on our roads now. Emerging and future technologies will in our view provide enhanced in-vehicle safety, however the deployment of these technologies needs government consideration and oversight. Industry is keen to work with government to best deliver these life-saving technologies, and ITS Australia is well placed to facilitate these discussions.

ITS Australia supports the key findings from the comprehensive report undertaken by WSP that Government leadership and intervention is necessary for C-ITS to succeed in Australia. Reflecting on the size of the Australian market and with most trials in Australia being based on the EU's C-ITS standards suite to facilitate wide deployment, and with on-going industry engagement, establishing a unified C-ITS standard across Australia is recommended.

To facilitate any future engagement ITS Australia Policy Manager Stacey Ryan can be contacted at Stacey.ryan@its-australia.com.au.

Yours sincerely,

Susan Harris
Chief Executive Officer

About ITS Australia

ITS Australia is the peak body for advanced transport technology in Australia. For 30 years, we have been a non-profit, membership-based association representing Australian industry, government and research organisations. On behalf of more than 140 members, we promote the development and deployment of Intelligent Transport Systems (ITS) that enable all Australians to move more safely, efficiently and sustainably through the nation's transport networks.

Australia is a global leader in ITS. We offer a highly connected and well-developed marketplace and our country is ideally suited as a testbed for the deployment of new and emergent technologies. ITS Australia, along with its members, works towards the common good of our industry.

Collaboration and partnership across government, industry and academia underpins our approach to fulfil these aspirations. We strive toward a harmonised industry while recognising the importance of delivering technologies and solutions that work for all Australians across urban, rural and regional transport networks. We also work in partnership with our international peers and leaders to ensure we share the best the Australian ITS industry has to offer and to deliver opportunities for our members, industry and community.

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Intelligent Transport Systems

OUR MEMBERS

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PLATINUM

CUBIC | kapsch challenging limits | NSW GOVERNMENT | Queensland Government | Transurban | VICTORIA State Government Department of Transport and Planning

GOLD

aimsun | aws | Australian Government Department of Infrastructure, Transport, Regional Development, Communications and the Arts | Deloitte. | hmi TECHNOLOGIES | iag | mainroads WESTERN AUSTRALIA

NTT DATA | PTV GROUP the mind of movement | Q FREE | seeing machines | TRANSMAX | UGL

SILVER

AGD AUSTRALASIA | aldridge | ALTUS TRAFFIC | ARCADIS | ARUP | ATC Moving Traffic | aurecon | Austroads | AXIS COMMUNICATIONS

BARTCO | BOSCH Invented for life | BRAUMS Smarter Safer Greener Living | brisbane | CARRS | CBS Technical Advisory | CEOS | cica GROUP | CISCO

CLAYTON UTZ | Cohda Wireless | | COMMUNITY TRANSPORT Central Coast | COMMUNITY TRANSPORT ORGANISATION LTD | Connected strategische veranderingsprocessen | CONDUENT Transportation | DAKTRONICS | Delnorth

DIRECTED TECHNOLOGIES | DM ROADS | EastLink Time better spent. | EASY MILE | ETA ENJOY THE AIR | EXCEL Technology Co | EY Building a better | FEDERAL CHAMBER OF AUTOMOTIVE INDUSTRIES | FELICITY

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InnoFusion | Integrate | Intelematics | intelligent TRANSPORT Services "ITS WORKING" | ITLS | J1-LED | Jacobs | Consulting and Engineering Solutions | JUVANA PTY LTD Patriot | Detection Australia®

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MICRO connect | MONASH University | moovit | MOTT MACDONALD | National Transport Commission Leading change | NEC | netBI inspire curiosity | NHVR | NOVARIS

Optibus | ORCODA | ORION always connected | OSMODAL | Placie | RAA | RACQ | RACV | RANDWICK WAVERLEY COMMUNITY TRANSPORT

Retina Visions | RFI TECHNOLOGY SOLUTIONS | RMIT UNIVERSITY | SAGE | scriptus | SCS by Sylvania Schréder | sensor dynamics | Sensys Gatso Group | ServiceStream

sgfleet | SICE | SICK Sensor Intelligence. | SKEDGO | SMEC Member of the Surbana Jurong Group | Government of South Australia Department for Infrastructure and Transport | Stantec | Sunshine Coast COUNCIL | swarco The Better Way. Every Day.

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TRAFFIC TECH | TRAFFIC TECHNOLOGIES | transdev the mobility company | TransitCare | transoptim CONSULTING | Trapeze Here for the journey | UTS UNIVERSITY OF TECHNOLOGY SYDNEY | VAISALA | ventia

Via | VITRONIC | VIVACITY | WESTERMO | Wam-Batt | WSP | YUNEX TRAFFIC | ZF