X4000 Communications feedback on a draft National Road Transport Technology Strategy and 2024–27 National Connected and Automated Vehicle (CAV) Action Plan– December 2023

X4000 Communications specialise in wireless technology which includes 5G/4G LTE C-V2X and C-ITS technology. Website: https://www.x4000.com

X4000 research and development is based on international progression in V2X technology utilising IEEE and 3GPP international standards including the Society of Automotive Engineers (SAE) standards and global cross-industry organisations which form the 5G Automotive Association (5GAA) which are from the automotive, technology, and telecommunications industries (ICT), working together to develop end-to-end solutions for future mobility and transportation services.

The Advanced Driver Assistance Systems (ADAS) hardware and software enhancements are being deployed by OEM vehicle manufactures at a rapid pace across the globe with C-V2X technology becoming the standard technology of choice for V2X, V2I, V2N, V2V communication.

National Road Transport Technology Strategy

The high-level approach and outcomes for societal, transports, technology, and the steps towards technology deployment with an action plan is welcomed to advance the CAV in Australia.

Whilst the policy principles define a high-level approach with all eight principles being important **safety** is crucial, although the CAV can improve road safety and reduce fatality it also has the potential to cause a major impact to society if the CAV malfunctions and the action to develop a *'fit-for-purpose'* national regulatory for AVs to safely operate is key to the outcome.

Cyber security is a national concern with the increase of cyber-attacks focused on critical infrastructure and the approach of the new 2023–2030 Australian cyber security strategy must be embraced efficiently. New hardware and software being developed must be in-line with NIST/ASD/ASCS security frameworks and standards, including security compliance and be thoroughly tested during pre-production and production deployment with operational periodic functional and non-function testing.

New technology and technology infrastructure must be deployed and available for use to progress– for example utilising the Southern Positioning Augmentation Network (SouthPAN) for increased accuracy for CAV positioning which the current timeframe for full operating capability is 2028+ and is dependant of OEM hardware and software modules being available and deployed in OEM vehicles to support this system in Australia for use short-term and long-term. Security awareness that cyber warfare attacks in space or on-the-ground can cause radio interference or system outages which can potentially have an impact the CAV to function appropriately. The CAV must be able to function without any communication causing no disruption or harm to society, in this event potentially a physical driver must take control or automated safety control system is applied.

Data, privacy policy and control need to be applied with large volume of data being generated and software API integration between government agencies and third-party service providers which requires to be designed '*fit-for-purpose*' but secure and future-proof by design to address any issues that may occur.

Action Plan

The feedback provided is based on the action plan of the three workstreams with a key focus on C-ITS and emerging technology.

(1) Vehicle Automation – This requires a comprehensive approach to the AV regulatory framework and actions for government policy and control including management, monitoring, safety, standards, and legality including a focus on the volume of raw data being generated, sovereign data repositories, and cyber security ensuring this meets the federal and state requirements.

(2) Vehicle Connectivity – New emerging technology is being developed, evaluated, tested and has become available for C-ITS and V2N such as 5G-V2X which has been deployed in the United States, Europe and China.

This requires further strategic planning on scalability by design and the cyber security approach which needs to be considered within the national architecture design, deployment, and real-time day-to-day operations with continuous testing.

Highlighting if any events that would occur which potentially can cause a major impact in which disaster recovery strategic planning needs to be considered in event of the C-ITS or V2N being offline for extensive period of time due to a major critical infrastructure outage and how this would impact the community. Noting – Unwanted radio Interference from unknown sources may cause critical issues in a particular geographic location which would cause disruption and potential impact to society. Over-the-air software enhancements can cause major issues and the government approach must ensure safety within the AV regulatory framework.

The C-ITS deployment model maybe a hybrid approach for interoperability across states and territories which will need to be clearly defined and managed appropriately for interstate C-ITS interoperability.

(3) Cross-cutting actions supports CAVs – whilst there are may actions to consider it has already been identified the shortage of skilled workforce required to support this emerging technology which will require further investments in the education including innovations training centers to provide new training courses such as TAFE college which are currently innovating in Industry 4.0 and embracing new training facilities.

The future of AI intelligence closed-loop solutions being utilised for any of these services must be considered and how this may impact or affect the outcome of the AV regulatory framework if not now in the near future this must be considered and controlled.

Any deployment of the CAV application and network services in the future must comply with Artificial Intelligence, Cyber Security regulatory frameworks and industry standards issued by the Australian authorities and a risk management approach must be applied at each stage of the process highlighting any high-risk impacts to society or communities for CAV transportation services.

Whilst there is a number actions and timeframes defined there is a not a clear high-level glossary roadmap ahead for CAV to be successfully implemented and operated across parts of Australia or Australia-wide, noting internationally CAV solutions are already being tested and deployed successfully across the globe with clear strategic vision by international government agencies.

The question is does this strategy and action plan provide sufficient outcomes for Australia to proceed with a future CAV deployment across Australia in a timely manner to meet industry and transportation demand.

We welcome this consultation for feedback and recommend further research and engagement with government agencies, international automotive industry, vendors and independent expertise to ensure this strategy and action plan aligns for the future development of the CAV in Australia.