



indra

Principles for a National Approach to C-ITS

Inputs to C-ITS deployment models for
Australia.

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Question 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?

Based on our experience in US and Europe deployments and our participation in working groups related to standards, harmonization, etc during last 10 years, it is very important to establish a solid foundation from communication technologies and data and service standards at application level to ensure interoperability when deploying C-ITS technology.

The draft principles states that the cooperation is a key and the harmonization with international approaches is also important. It is important to stress the **international cooperation** is important to guarantee interoperability between implementations with deployment in other countries.

Maybe some timeline or magnitude insights could be provided.

Question 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?

Indra has already a relevant involvement in C-ITS, our R&D activities started more than 10 years ago working with global partners from Australia, Europe and America. For Indra, C-ITS is already a core element to provide Safety Mobility Solutions and Services. Our role would be to provide end-to-end solutions to enhance the road infrastructure with C-ITS capabilities based on different services to ensure a more reliable, safer and securer connected and automated mobility.

Question 3: How might C-ITS impact other vehicle connectivity systems in Australia, including vehicle/OEM connectivity, vehicle/cloud connectivity, heavy vehicle telematics systems, mapping systems, etc?

We identify the main elements to be impacted by C-ITS:



- OEMs should incorporate C-ITS technologies in their On-Board Units to share safety related messages (position, speed, side, ABS status, etc) and also to receive information from other vehicles and the infrastructure to guarantee safety and for traffic management purposes, to update certificates, etc.
- Road Operators: They need to incorporate a C-ITS module or to connected to a C-ITS platform on the cloud to interact with connected vehicles using the selected standard. In addition, Road Operators would need to install V2X antennas in their infrastructure or to reach agreements with mobile operators to deploy edge servers next to 5G-antennas with V2X capabilities. Enabling C-ITS technology will allow the road operators improving the traffic monitoring capabilities and developing smarter traffic managing solutions.
- Cloud: V2X antennas should be connected to cloud environments that can scale and increase their performance capabilities easily so cloud environments should be the most suitable.

Question 4: 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?

The following main structures should be involved:

- **C-ITS Platform** where all stakeholders agreed on services to be deployed to ensure interoperability and to define the national roadmap. This platform could have different working groups on different topics such as cybersecurity, communication, data governance, etc. In Europe was created C-ROADS Platform with four task forces.
- **Equipment certification Authority** for C-ITS Equipment (Road Side Units) similar to Omniair in the USA
- **Cybersecurity Authority** provider to provide certificates for the Road Side Units and the On-Boar-Units. Similar to the SCMP group
- **Regulatory bodies:** would be needed to be involved to adapt the current legislations if needed

Question 5: After the Principles, what next steps do you think would be most productive?



Based on our experience in deploying C-ITS solutions both in Europe and USA, the most productive step it would be to deploy an **initial C-ITS corridor** in a highway as a C-ITS highway showcase for the different stakeholders. This corridor will include a C-ITS platform to send Road Safety Messages to Connected and Automated Vehicles through different communication technologies (ETSI-G5 and 5G). This C-ITS platform will collect information from ATMS, Connected Vehicles as well as other relevant data sources related to C-ITS services and messages. This showcase will allow different C-ITS stakeholders to perform interoperability tests and perform demonstrations.

This corridor will have the following key elements:

- Different V2X antennas from different providers to ensure interoperability among vendors and to ensure that the communication between antennas and control center is standard
- Different C-ITS services to ensure that all vehicles receive initial safety messages.
- C-ITS Certificate provider to allow RSUs and OBUs to download certificates to ensure that all messages are reliable
- Safety-related vehicles would be fitted with On Board Units with V2X capabilities
- The advanced platform will provide as key elements
 - Data collection from V2X messages sent from connected and automated vehicles
 - Services based on information coming from V2X messages or from data or events coming from the ATMS to generate road safety messages

Regards,



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