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Subject: Feedback on Draft Principles for National Approach to Cooperative Intelligent Transport Systems

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?*

Principles are an essential tool to formally inform the industry about the intention to develop C-ITS. In their current state the principles are good starting point to describe the key objectives of the program at high level. However, at this moment the investment by the industry is likely to be limited due to the uncertainties in many different aspects and probably as a way to mitigate the costs related to potential changes required as the standards evolve or as technology changes are proposed. An example of uncertainty is the one regarding the communications technology (DSRC vs C-V2X) as shown in the analysis by WSP, where there is a lack of harmonization in the industry for the moment.

A few specific comments on some of the principles next:

- Principle 1 - Nationally consistent C-ITS environment Maximising the benefits of C-ITS

Clause “a” regarding individual jurisdictions may be the source of integration problems, if interpreted as a possibility to customize or to partially implement the system by different territories or areas. In the worst-case scenario, discrepancies between different implementation may lead to integration issues regarding functionality or the availability of the system which will more costly the further on the deployment they are raised. The possible interpretations of the clause should be clarified.

- Principle 2 - Maximising the benefits of C-ITS

Clause “a” states that the communication with enabled devices includes those used by pedestrians and other road users, however it is not clear what is the expected level of acceptance of this technology by the general public. It is worth looking into whether this aspect has been considered in the plans and models and to determine what could be the impact on the objectives.

- Principle 3 - Cooperation is key

We agree with the principle in its current form.

- Principle 4 - Harmonising with international approaches

It is advisable to define as soon as possible the means to contact or communicate with counterparts in Europe to exchange useful information, developments, identified issues. These channels would be useful as well to understand the rationale on requirements or design choices and to analyse them in the Australian context.

- Principle 5 - Improving road safety, transport productivity, sustainability and reducing emissions

Principles could address more in detail the strategy for system assurance, safety demonstration and product certification. This aspect could be added to the principles later, after these aspects are addressed by a dedicated working group.

- Principle 6 - Security of systems and messaging and privacy of data

We agree that security aspect of C-ITS are to be carefully investigated in consideration of the large number of expected applications over open communications systems. It's worth noting that similar problems are being addressed across the whole transportation industry making use of modern communications/control systems (e.g. ETCS train protection).

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?*

C-ITS is regarded as an opportunity for growth with great potential. Systra as a transport consultancy is keen to support the development of programs like C-ITS and will continue to engage administrations, regulators and other organizations to help within our capabilities in areas of significant added value, like operational aspects, deployment strategy or technical issues where an experience engineering approach is required.

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?*

The potential impact on existing technologies or programs under development in the industry would be better addressed by specific studies on the subject. Specific organizations like vehicle manufacturers probably have a clearer picture on specific questions. At this moment there is no significant feedback we can provide on this broad and complex question. It is however reasonable to expect that potential conflicts between existing and future systems are entirely resolved at technological and standardization level, with no specific actions requested to the end users (i.e. drivers).

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 first step should be the establishment of working groups participated by all relevant stakeholders, which is key in order to successfully develop an effective and functional interoperable system.

The outcome of these working groups should be translated into standards that gradually define the system as required to make the interoperability possible. Given the complexity and number of stakeholders an iterative approach considering specific pilot trials to detect issues and provide feedback is probably the most reasonable approach.

The standards will require a substantial development to mitigate risks on interoperability issues. Interoperability is a critical and specially challenging aspect of an Australian C-ITS program.

The experience in the railway sector, for instance in the development of the ETCS system, shows that a loose approach on the definition of specifications may end up on critical issues that impact the core functions or their applicability for specific administrations. The context and sector specifics of the railway sector are significantly different from C-ITS, but the concepts, problematics and challenges are similar in many aspects. Given the number of stakeholders the case of C-ITS is likely to be more complex to manage.

As the program develops changes introduced to the system will significantly impact the cost and time of the projects. Hence the need to focus on the development of the standards to an adequate level of maturity.

Among the structures to be defined as part of the framework it is worth mentioning the relevance of safety and certification. The available documentation identifies a series of safety related functions that will need to be developed. It is highly probable that these functions will be shared by independent parts or subsystems, which will lead to the need to define and agree the allocation of specific parts of the functions, apportionments on

the safety levels, definition of the interfaces and others. The definition of a leading group or structure to lead the development of these aspects is highly recommended.

The experience in other industries like aviation and railways shows that the appointment of a safety authority is the solution that provides better outcomes in terms of controlling and mitigating the risks in complex systems where the hazards can be caused by the interaction of different subsystems (e.g. a fault in one subsystem may compromise the safety on another one). It is also possible that among its competencies the safety authority endorses the safety demonstrations provided. Similarly, it is reasonable to think of a standardized certification process to demonstrate the compliance with the specifications.

This kind of approach may differ considerably new to this industry, and it would be advisable to start working on a common approach early on.

The former points seem to be currently considered in the development in Europe and are the reason behind C-Roads and C2C organizations. Australia could potentially adopt a similar approach and to adapt these structures to the local context.

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

Considering the number of aspects to be developed the creation of working groups for the stakeholders to engage in the development of C-ITS in Australia should be the priority. It could also be worth defining a strategy regarding the level of engagement in the working groups. This could make it easier to advance, specially in early stages, by ensuring the parties involved are adequate to the stage of the development, expanding it further as the program progresses.

The administration should also work in a way to establish formal channels of communication with the European groups leading the development of standards and processes for C-ITS.

The administration should also progress in the deployment strategy, either at a federal level or at state level, to decide for example the order of priority of urban versus rural areas or personal vehicles versus freight routes. In this regard, we would also recommend drafting a Concept of Operations document, where the planned functions are described within operational scenarios.

There are many other significant and complex subjects that could be discussed, for example the human factors approach, the definition and management of baselines, challenges on version compatibility, or the legal framework to name a few. Systra is open to discuss these, or any other aspects as required, by participating in meetings, forums or other specified means.