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February 10, 2023

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Qualcomm Inc. (Qualcomm) welcomes the opportunity to provide input to the "Draft Principles for a National Approach to Co-operative Intelligent Transport Systems (C-ITS) in Australia." Qualcomm supports Australia's vision, described in the consultation as having the "potential to deliver improved outcomes in road safety, road productivity, traffic congestion, journey times and environmental sustainability – including in the areas of public transport, shared mobility and freight – by enabling improved decision-making based on shared information." Qualcomm views that implementation of this vision will result in profound transformation toward a safe and sustainable transport system that we all want successive generations to inherit.

Qualcomm believes that to support connectivity needs for C-ITS, governments need to adopt policies and strategies that will best ensure that their countries benefit from the far-reaching impacts of digital technologies to maximize social and economic well-being across all sectors. Therefore, we observe that Australia is taking an important step with this consultation process to develop an approach to enabling innovation in the V2X sector, expanding opportunities for improvements to vehicular connectivity, including vehicular and pedestrian safety and also considering optimized traffic flows. This input from stakeholders will be critical to shaping the enabling environment for V2X in Australia.

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?
    Qualcomm commends the Australian government for developing draft principles that solidly underpin essential elements of deployment. These will help to ensure Australia C-ITS deployment and consequential industry transformation with safety, mobility and environmental stewardship are enabled. We believe that Australian road users and operators will significantly benefit from these principles offered in the consultation. Those benefits will be manifest from the targeted elements

therein: broad public-private-academic cooperation, assuring interoperable messages with standardization rooted in the UNECE and European specifications and norms, and in highlighting the need for security.

We note, however, that the supplemental material provided in the consultation asserts some erroneous assumptions. Going forward, Australian C-ITS deployment considerations should correctly reflect the global state of play to minimize the danger of Australian deployments being out of sync with other national and regional C-ITS deployments. For example, principle 4 (harmonizing with international approaches) does not necessarily point to ITS-G5 in Europe as the WSP document asserts. Deployment of ITS-G5 and its radio access technology is not broad in that region; at this writing, commercialization is confined to several models with one OEM. As an important adjunct to this observation, in Europe, ETSI TC ITS specifications include C-V2X based on 3GPP specifications. What is most germane to Australia is that, regardless of the underlying radio access technology, the ETSI application specifications are mature and apply in a radio-neutral aspect to either technology. Another important area of harmonization is spectrum and here we applaud ACMA's 5.9 GHz allocation based on a robust regulatory approach which follows ETSI 302 571 technology neutral spectrum framework.

Therefore, Australia would be well-served to focus on the harmonized short range application specifications for local safety and mobility applications and to approach the radio from the perspective of technology neutrality. We support this observation by noting that there are other international approaches. For example, in the US and China, C-V2X is the only radio access technology allowed. To future proof C-ITS deployments, Australia should recognize the global situation and focus on what is common, that is, not choose ITS-G5 (DSRC) at this point.

2. Over the next 5 years, to what extent does your organization anticipate moving into a C-ITS role or increasing its involvement in C-ITS?
   Qualcomm views V2X as a fundamental component of our future transportation system. In particular, cellular vehicle-to-everything (C-V2X)—including vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), and vehicle-to-pedestrian (V2P) communications, as well as network communications (V2N)—will play a major role. C-V2X technology is incorporated into current and planned future 3GPP releases, adding new capabilities with each release, including progress toward safer autonomous driving enabled by features such as non-line-of-sight sensing, conveying intent for direction changes, and situational awareness. C-V2X also complements other vehicle sensors, improving upon capabilities that currently assist drivers. In addition, C-V2X is designed to allow vehicles to communicate with other vehicles, infrastructure, and vulnerable road users—such as pedestrians and cyclists—without the involvement of a cellular network. For a number of years, Qualcomm has been actively involved in developing and standardizing the technologies that enable this future. Over the next 5 years, we plan on continuing – even accelerating – our participation in standardizing and bringing C-V2X into global markets and most certainly, Australia.

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.?
   In addressing the previous question, we defined the aspects of vehicle-to-everything, V2V, V2P, V2I and V2N. Certainly, V2N embraces vehicle/cloud connectivity. We and others in industry embrace what we call car-to-cloud (https://www.qualcomm.com/products/application/automotive/car-to-cloud) and the concomitant connected services (e.g., mapping systems as mentioned in the

question) that are delivered to different road actors and transport modes (e.g., connected heavy vehicles as mentioned in the 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?
Qualcomm is available as a ready and willing partner to government, industries and academia as they work on concept, develop and deploy C-ITS. We offer fundamental technologies, international awareness, standardization and hardware/software to deliver C-ITS. We are a proud partner of Australian institutions and a proud global partner in the C-ITS movement and are willing and able to work in concert with stakeholders, to include our automotive OEM customers, and to make C-ITS and its benefits readily available to Australian road users.

5. After the Principles, what next steps do you think would be most productive?
Qualcomm believes that an action plan that includes considerations such as those outlined above, when matched with a timeline and commitments from the Australian national and State governments, is an essential next step. This timeline should be ambitious and the commitment from all stakeholders should be clear. The end result – transformative safety, mobility and environmental benefits – will be demonstrated through this investment and commitment.

Should you have any questions or comments on this submission, please do not hesitate to contact me at +1 202 235 6499 (mobile) or jgwelch@qualcomm.com .

Sincerely,

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Cc:

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