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To:

The Department of Infrastructure, Transport, Regional Development,
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Draft Principles for National Approach to Cooperative Intelligent Transport Systems | Department of Infrastructure, Transport, Regional Development, Communications and the Arts

Dear Sir or Madam,

The Agricultural Industry Electronics Foundation (AEF) is an independent organization founded in October 2008. As of today, we represent about 280 member companies and our core membership is comprised of eight agricultural equipment manufacturers and three trade associations[1)]. AEF is dedicated to continuously analyzing and developing improvements to the technical capabilities of agricultural equipment. We seek to continuously ensure the ongoing safety of those operating the vehicles. As such, working to develop and implement international electronic safety and efficiency innovations and standards is a cornerstone of our work.

AEF is currently working on guidelines to ensure interoperable electronic solutions for agricultural equipment.

The agricultural machinery industry is working on implementing C-ITS based features to improve the safety and efficiency of our vehicles in the field and on the road. Communication between agricultural equipment, automobiles and any other vehicles on the road is a priority for us.

Australia is an important agriculture market and therefore an important agriculture equipment market. Equipment is typically operated in rural areas, often with limited cellular coverage. In our opinion, V2X technology without infrastructure is the best available technology today for a wide range of applications.

Besides that, two aspects are highly important to us:

[1)] Our core members include:

- Our equipment has a relatively long lifespan and therefore needs a stable, long-term spectral "home;" and
- Most agricultural vehicle manufacturers sell their machines worldwide, which makes coordination with other global regions imperative to achieve economies of scale and keep costs down for the farmer.

Responding to your 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?*

   For ensuring interoperability, backward compatibility and spectrum availability rulemaking will be required to give clear directions for implementation.

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?*

   AEF focus of work is, beside already existing road safety use cases, where we fully support CAR 2 CAR Communication Consortium, on interoperable in-field communication for agricultural machines to enhance work efficiency and work safety.

   AEF is working on guidelines to enhance already existing C-ITS technology to enable farmer to work efficient and safe in different cooperative use cases (e.g. harvest operation). We see existing C-ITS application here as a relevant part of our application and will strongly benefit from applications already existing for on road use cases.

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?*

   We need both. C-ITS based short-range communication addresses a lot of our requirements according to latency, network topology, availability and functional safety. Beside that a wide range of application relate to ag machinery already uses cloud connection. In the end both technologies will work in a combination to ensure efficient and safe work on fields.

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?*

   Beside required centralized neutral security Private Key Infrastructure (PKI) any research support to fit the system perfectly on country specific requirements is highly welcome.

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

   Start talking to each other and foster exchange on already existing experience. Therefore, joining organization like Car2Car Communication Consortium does make sense.

To summarize:

Agricultural machinery is connected to C-ITS, on- and offroad. We need sufficient spectrum to ensure the safest possible operation of our machines on- and in-field. We need to have relatively high sending power to ensure sufficient communication range under all conditions. We also need to consider the relatively long lifetime of our machines which necessitates a stable long-term regulation according to C-ITS. A majority of agricultural machine producers sell their machines worldwide. Given the relatively small number of units produced globally, comparable rules in

different regions of the world are vital to facilitate the use and advancement of these safety enhancing technologies.

C-ITS improves safety and traffic efficiency for all ground-based transportation systems. We all will benefit by growing the number of users; therefore, we see the need to have enough space in the spectrum to communicate with one another and ensure awareness.

Respectfully submitted,

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