26 May 2017

Committee Chair: Ms Michelle Landry MP
Standing Committee on Industry, Innovation, Science and Resources
Federal House of Representatives
PO Box 6021,
Parliament House Canberra ACT 2600

Email: iisr.reps@aph.gov.au

Dear Ms Landry,

Additional information as offered by Telstra at public hearing, 4 May 2017

Thank you for the opportunity to attend the public hearing into the social issues relating to land-based driverless vehicles in Australia on 4 May 2017. Please find enclosed the supplementary information Telstra offered to provide during our attendance at the hearing.

Please do not hesitate to contact Geoffrey Gerrand [redacted] or on [redacted] if you have any questions about this information.

Yours sincerely

[redacted]

James Shaw
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Question 1: Are telecommunications companies playing different roles in the emergence of automated vehicles in different markets? What are your strategic choices?

1a) Different roles telecommunications companies play in different markets

Telecommunications companies globally are engaging in a variety of roles from the development of connected and autonomous vehicle technology, the development of communications standards and protocols for connected vehicles and safety standards and regulatory reforms, to the support of automated vehicles.

We list some examples below:

- **AT&T (USA)** is working in partnership with the American Centre for Mobility to explore, create and safely test driverless technologies[1]. The American Centre for Mobility has developed a 335 acre facility, and AT&T is testing technology for Vehicle-to-Anything (V2X) and connected and automated vehicle (CAV) solutions that operate in a highly secure manner.
- **Orange (France)** is working in partnership with Ericsson and the Peugeot Société Anonyme (PSA) Group to develop 5G technologies and standards required to deploy real-time Intelligent Transport Systems (ITS) and Connected Vehicle systems[2].
- **Telefonica (France)** is working in partnership with Ericsson to develop remotely controlled car technology[3].
- **Verizon Enterprises (USA)** have developed fleet tracking using mobile network solutions[4], and **Verizon Ventures** has recently invested[5] in Renovo Auto, developers of automated mobility platforms and solutions. In addition, Verizon is also a partner in Mcity[6] which is a 32 acre "mock city" for testing of Driverless Vehicles.

We also note telecommunications companies are members of organisations such as the 5G Automotive Association[7] and the GSMA's Connected Vehicle Forum.

1b) Telstra's strategic choices

Telstra's vision to become a world class technology company drives our strategic choices. We are actively exploring how we can use our mobile networks and technology to hasten the evolving Connected and Autonomous Vehicle (CAV) industry in a number of ways. For example, we are conducting proof-of-concept trials to assist in the development of technology to allow V2X communication to pedestrians and bicycles through their smartphones.

We are proud to be represented on the executive steering committee for the Australian Driverless Vehicle Initiative (ADVI) along with government, industry and academia, and to be able to do our part to support the safe introduction of CAVs onto Australian roads. We are also a partner in National Road Safety Partnership Program (NRSPP)[8].

We are also working on a submission to the National Transport Commission's (NTC) discussion

[1] AT&T and American Centre for Mobility partnership. http://about.att.com/story/future_of_automated_driving.html
[2] Orange, Ericsson and PSA Group partnership. https://www.ericsson.com/en/press-releases/2017/1/2068705-ericsson-orange-and-psa-group-to-partner-on-5g-connected-car
[3] Telefonica and Ericsson partnership. https://disruptive.asia/telefonica-ericsson-remote-car/
[4] Verizon Enterprises. http://www.verizonenterprise.com/products/internet-of-things/asset-tracking-management/fleet-management/
[5] Verizon Ventures. http://www.verizonventures.com/blog/2017/05/verizon-ventures-bets-on-amod-to-drive-the-future-of-urban-transportation-with-investment-in-renovo/
[6] Mcity. http://ns.umich.edu/new/multimedia/videos/23020-u-m-opens-mcity-test-environment-for-connected-and-driverless-vehicles
[7] 5G Automotive Association (5GAA). http://5gaa.org/
[8] NRSPP. http://www.nrspp.org.au/

paper on 'Clarifying control of automated vehicles'[9] to participate in the regulatory reform outlined in the NTC's policy paper[10] of November 2016.

Question 2: Please supply additional information in relation to truck platooning, especially relating to the ability of other vehicles to overtake a platoon.

2a) Additional information about platooning

Platooning systems use Vehicle to Vehicle (V2V) communication to connect the control systems of each vehicle so that they act as one. Differing levels of control can be synchronized, such as use of radar-based collision mitigation systems or full truck-to-truck wireless communication to allow the rear truck to automatically initiate braking when the front truck begins to slow.

Telstra has been working with Peloton Technology[11], a company developing systems for truck platooning based in California, USA. Peloton's truck platooning system[12] uses Vehicle to Vehicle (V2V) communication to connect the braking and acceleration systems between two trucks. The V2V link allows the lead truck to control the acceleration and braking of both trucks simultaneously, reacting faster than a human or even radar sensors could. For the rear truck in the platoon, the steering is manual but the braking is automatic, using truck-to-truck wireless communication to allow the rear truck to automatically initiate braking even before the front truck begins to slow. By electronically coupling the trucks in this way, they accelerate and brake together and can safely operate at closer distances and maximise fuel savings.

2b) Other vehicles passing a platooning convoy of trucks

The length of a truck platoon can be restricted (for example, to a maximum of two vehicles) for ease of overtaking. Certain platooning platforms also have the ability to define the locations where platooning is allowed (for example, platooning may be restricted to multilane split highways so they do not impede traffic flow). Platooning solutions can also allow drivers to remain in control of the system so they can take back full manual control at any time.

Some platooning systems can actively increase the separation between platooning vehicles to allow another vehicle to cut in if required. Experience on highways has shown that this can actually make it easier to drive around the platooning trucks than around manually driven trucks.

Some platooning platforms (such as Peloton[13]) are managed by a Network Operations Centre (NOC)[14]. A NOC can ensure platooning only occurs when and where it is safe to do so, by individually approving each platoon. It also adjusts platooning parameters to be safe for the local weather and road conditions. Nevertheless, drivers can always choose when to platoon and always retain primary control of their own trucks.

We note that the NTC's *National guidelines for automated vehicle trials*[15] identifies a number of criteria that should be addressed before conducting a platooning trial, including consideration of traffic management plans. With the exception of the Northern Territory and Western Australia, heavy vehicles are regulated under the Heavy Vehicle National Law (HVNL) which is administered by a single regulatory agency, the National Heavy Vehicle Regulator (NHVR). We expect that the regulator would wish to satisfy itself that adequate consideration is given to both safety aspects and the needs of other road users, including the ability to overtake the platoon.

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[9] NTC discussion paper, 'Clarifying control of automated vehicles', April 2017. https://www.ntc.gov.au/current-projects/clarifying-control-of-automated-vehicles/
[10] NTC Policy Paper, 'Regulatory reforms for automated road vehicles', November 2016. https://www.ntc.gov.au/Media/Reports/(3FDD4E74-2840-915F-65EF-492C50C18B78).pdf
[11] More information about Peloton can be found here: http://peloton-tech.com/
[12] More information about the platooning system can be found here: http://peloton-tech.com/how-it-works/
[13] More information about Peloton can be found here: http://peloton-tech.com/
[14] More information about the role of a NOC in platooning can be found here: https://vimeo.com/146972113
[15] NTC Policy Paper, 'National guidelines for automated vehicle trials', February 2017. http://www.ntc.gov.au/Media/Reports/(00F4B0A0-55E9-17E7-BF15-D70F4725A938).pdf