To the National Transport Commission

Part 2 of a submission on the Safety Assurance for Automated Driving Systems Consultation Regulation Impact Statement - May 2018

General comments

These are based on my key impressions after reading the paper.

This is a very comprehensive discussion paper which outlines the issue well. I liked the set of practical examples. I would prefer the more up to date person-machine-environment-materials-procedures model I have worked with for nearly thirty years rather than the human-machine model.

I may have missed it, but the paper doesn't seem to raise fog, mist, rain, dust, snow or ice (in which autonomy may be a positive or a negative), although it does raise the general ODD issue. My current car has an "ice likely" feature. Add events like motorbikes that travel on lane lines and appear from nowhere, and cyclists on a roundabout at dusk.

I am glad that the committee has favoured option 4. However, particularly after what we have seen with self-regulation by the banks, there needs to be a facility for independent unannounced audits, with a drill down cheeseborer approach.

I would also note that any driving licence test for the next nineteen months needs to include the legal duties of a fallback driver. A blitz PR campaign around November 2019 would be a bit late. I can envisage some drivers continuing to use autonomy outside the designated areas.

Unlike the paper, I would include some aspects of existing autonomy in any oversight. For instance, when my current car is in cruise control and uses the throttle setting for braking, does that operate the brake lights?

I do like the idea in the report of a means of visual communication with other drivers, because what is going to replace the pointed or waved hand, the flicked headlight, the thank you wave which currently solve some problems through those acts of courtesy. Also, I can still dodge or brake for birds which are unlikely to get sufficiently airborne in time.

I also want to highlight an issue which has emerged from human-automation interaction for many years. And that is the issue of an operator who nearly all of the time does not need to manually adjust things., and then when a relatively rare issue occurs, they are expected to take over. Automation has give them less practice at the necessary skills, and when they are called upon it is for the more difficult issues. You can see the parallel with the ADV situation. I note in a previous response to the NTC, Maurice Blackburn cited a figure of up to 45 sec for a driver to be fully acquainted with the traffic environment and in control when the fallback asks them. At 60 kph that is 750m. And traffic is a far more dynamic situation than fixed installations like power stations.

I hope that the ADV systems (unlike drivers today) are allowed to accelerate slightly beyond the posted speed limit to achieve a smooth tuck-in in merge situations.

What is to happen with roadside “furniture”? Will ADVs rely totally on very accurate and up to date over-air signalling to apply the meaning of signs including speed limits, or will roadside furniture have to change to incorporate onboard-sensor readable markings? And this by January 2020.

Convoys are an interesting issue. I have had the experience of a narrowing gap for my car as not one but three double trailer trucks passed me on a country highway, with a deep ditch off the verge, presumably so they could remain a group, as I imagine ADV convoys will want to do, since two of the eg. three trucks won’t have a fallback driver.

I also note the comments about the lack of international agreement, both about the vehicle ADV design and monitoring, and any road changes. I suspect that we are going to get what eg. Toyota, or SAIC Motor decide we are going to get. I also note that BYD Heavy Industries has delivered the first all-electric automated side loader garbage truck to Palo Alto in the US. BYD also aim to lead with electric cars

Importantly, overall, a better time frame than January 2020 for level 4 introduction is January 2021, even though there is now a decision that legislation will be federal.

Specifics

So, now to some specifics, which may to some extent repeat items in my general response given above.

1.2.6

p.11, no 4. The safety assurance system must conduct independent testing and validation. No 5 should be obviated by the plan for federal legislation.

p.11, no 6.

Modifications and over-the-air software updates must be notified to the independent assessor.

Automatic electric braking and lane-keeping should be subsumed by the ADS.

1.2.7. I endorse that Australia should use foreign referencing approvals under the conditions specified.

1.3.2

p.13 Scope. Presumably so-called land based drones are automated heavy vehicles or rail less on-road trams (as in Zhuzhou, Hunan, China) although they I could include the footpath-based moving boxes already trialled elsewhere. Anything using or crossing roads should be included now.

Bullet point 4 – this work with the independent assessor needs to commence later in 2018. Very early in the piece before vehicles are sold to the public, we need to see 50 or 100 vehicles operating safely on eg. Mt Panorama circuit, and ADVs operating safely on police skid pans.

1.4

p.15 re the operational design domain, I note that the Shanghai test area has just been expanded and has been equipped with new road signs. This is of interest because SAIC will be one of the big producers and as you say, there is as yet no international agreement on standards, including those for ODD, so we may need to follow China. I am not sure whether this signage is meant to be readable by the ADVs.

The ODD and SAS need to ice, snow, fog, rain, mist, mud, bulldust, pea gravel, potholes etc. (I note 4.3.9 re animals). The whole issue of SUV and other offroad and 4WD ADVs to be driven on good roads and then in offroad or poor road situations needs to be addressed. Add in trailers, caravans, top and back wheelchair fittings, “Thule” type luggage stowage on the roofrack, and rear bike transport frames.

2.4

p.21. It appears from the May 29 statement from the NTC that national legislation will overcome the problem of inconsistent regulation, as it applies within Australia, but the problem of agreed international standards remains to be solved.

p.22. and 8.2, p 67. Questions posed: The RIS appears to, largely, accurately describe the problems, with detailed reasoning.

As to other factors, some of my responses to various details address this.

2.5

p.23 The two questions: The RIS has provided a sufficient case for government intervention.

The need for industry and community responses have been accurately covered, although I reiterate the need for a ten year information supply and analysis carried out by an independent body such as the Curtin-Monash ARC, which I put in my Part 1 submission.

3.5.4

p.32 Are the four options clearly covered? Yes, I believe they are largely.

Is the ADSE the Australian distributor, the dealer, and not the manufacturer or the component maker or software programmer? C 3.2 is endorsed in this respect.

I have spent too much time burrowing through legislation which either expects referral to other legislation or refers to it, which is then found to contain secondary referrals. So I favour ADV legislation which is as far as possible all inclusive, as opposed to the proposal in the discussion paper. So not just end-to-end, but side-to-side as far as possible (this includes privacy mentioned later, particularly because of the cyber and over-the-air, e.g geolocational, aspects). Many of the implications of ADVs are novel, and would not easily be addressed by eg. existing WHS legislation. A WHS inspector would need a suite of new skills, or the WHS authority would need access to people classed as special inspectors. In any case, at present once an accident is a road accident, the police take the case on, seldom the WHS authority. The police capabilities in this regard will need addressing as a priority, and their liaison, particularly in working with the independent assessor.

Are maintenance providers and repairers going to be ready in 18 months’ time? I have spoken to one for example and he doesn’t believe it’s all about to happen in 18 months.

4.3.2

p.34 I endorse the three bullet points, but predict that some tech-heads will try and outsmart the limits.

4.3.5

p.35 In one recent ADV accident, computer damage in the crash prevented readout. Will it need to be aircraft blackbox standard?

p.36 Driver is to be advised of limits of ADS capability but will drivers listen? eg. when they hook on a trailer, or other additions noted above, although 4.3.2 seems to address this.

B.2

p.74 If there is gaol for a driver, as now, should there be the same for personnel at fault in an ADSE?

C.1.11

p.84 Is this really implementable by December 2019? Humans need to be trained to engage and disengage autonomous controls, and when and when not to do so, that is, the obligations on human drivers. This needs to include the capabilities and restrictions of the technology posed by the components of the ODD. And with implementation from January 2020, new drivers' licenses need to include this by about January 2019, and thought now needs to be given to how to address existing license holders. The obligations and approval of the "non-human drivers" also need to be addressed.

C2.1

p.85 re not being able to program choices about human life. This does require serious further consideration, working with a number of imaginable scenarios.

C 4.1

p.89 Disclosure to the other party. The statement of compliance should address privacy specifically in the context of the ADV phenomenon regardless of obligations under existing law. Because, as noted earlier re 3.5.4, of the cyber and over-the-air, e.g geolocational, aspects.

C 5.1.

p.90 Reporting should be mandatory, and this includes to the proposed independent assessor.

Table 16.

p.96 33, 29, 11 less deaths out of how many?

Table 20

p. 102-3 Allow for the costs of the independent monitoring and research I propose.

General Notes

1. I included the seemingly gross benefits of vehicle automation in lectures from 1990 on, and also the paradox involved in taking over manual control of an automated system in an emergency.

2. Can future documents be searchable, please?

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Perth

15.6.18