

Submission to NTC

re In-service safety for automated vehicles

I have examined the Consultation regulation impact statement for In-service safety of autonomous vehicles. While the statement is very thorough it has not addressed what I now see to be a highly significant problem that may eventually have great economic costs.

The issue is self certification where an entity is required to provide evidence against a set of safety criteria (Statement 1.8.3 page 28).

The software and safety algorithms operating in an automated vehicle will be very complex and difficult to test fully in real world environments. I note that some entities have already collected millions of hours of real world automatic vehicle system experience and have used machine learning to incorporate this into their algorithms.

The statement takes a simplified view of automated vehicle manufacturing by considering vehicle manufacturers and their component suppliers. A number of existing and intending vehicle manufacturers have recognised that they do not have the skill sets and expertise to produce automated vehicles in-house and are engaging sub-contractors (and sub-sub-contractors), partnering or even externally purchasing the necessary electronic systems, hardware and software. Each of these arrangements will have a different chain of responsibilities and the resultant legal liabilities. The majority of entities involved are likely to be based overseas and operating under different legal systems.

The problems I foresee are:

- Australian authorities will be accepting certifications for safety without independently verifying them, and are unlikely to even have the internal ability to test and verify when needed.
- The chain of responsibility will be complex and international, making it too expensive and difficult to enforce.
- Suppliers may set up \$2 companies that could fly by night or overseas entities to protect against claims made for safety failures.
- Suppliers may set up a chain of companies to pass liabilities down to worthless or untouchable entities.
- Manufacturers and their suppliers may dispute claims between themselves and so allow public claims to fall between the cracks. There may also be lengthy delays caused by the disputes.
- A dubious manufacturer may subcontract safety certification to the cheapest and most accommodating certifying company thus lowering the industry bar.
- Where a safety defect becomes apparent a manufacturer may rush out a quick software patch to keep market share. It may not be clear for some time if the patch has solved the problem or not.

- Where there is a safety problem some manufacturers may attempt to minimise adverse publicity and only apply corrective patches in regular servicing.
- A vehicle certification will probably only have a validity of several years in order to protect the supplier against changed traffic conditions and traffic regulations (if update patches are not applied or not available). If patches are not available it is possible the vehicle model will be deemed unroadworthy.
- Road safety authorities and courts will not have access to proprietary automated vehicle algorithms and so will be unable to investigate and determined crash causes and liabilities

My concerns are based on recent events, particularly in the NSW building industry where self certification has failed at great cost to the public. Many people have been evicted from their residences and advised to take out expensive mortgages to rectify serious defects. Their property assets have become unusable. The chain of responsibility has failed as the responsible parties have so far escaped liability. This could easily happen to automated vehicles where safety failures could render whole fleets unroadworthy. Other related events are the certification of flammable building cladding materials and the now grounded Boeing 737 MAX aircraft.

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