

iMOVE Australia

Submission to the Queensland Parliament Transport and Public Works Committee Inquiry:

Transport Technology – the challenges and opportunities which technology will bring to the transport sector in coming years

iMOVE Australia is pleased to provide this submission to the Queensland Government's Inquiry into Transport Technology. This submission will specifically address the following aspect of the inquiry in detail as this is within the remit of the iMOVE organisation:

identifying other emerging technological factors which will impact on transport networks into the future, such as driver aid technology and 'driverless car' technologies.

Key points for this submission

- The national (and Queensland) 'mobility task' and 'freight task' are growing much faster than our capacity. This mismatch needs to be addressed urgently to avoid a serious decline in national and state productivity.
- New and emerging technologies and access to data represent unprecedented opportunities to improve transport systems.
- Benefits from the emerging technologies will include: safer transport, congestion reduction, transport equity, access for regional communities, liveability of cities, attraction of investment.
- Deployment of new transport and mobility opportunities offer significant opportunities for business development, economic growth, employment growth, and job content enhancement.
- Queensland-based entities are already actively evaluating technologies and trialling to understand the impacts.
- Queensland is leading the nation in some areas and stands to benefit strongly from its initiatives in this sector.
- There is a need for a national and coordinated approach to the evolving transport technologies. Some national frameworks have been established, but their effectiveness depends on a willingness amongst stakeholders to collaborate, share and learn from each other. Queensland is making an important contribution to this national endeavour.
- Transitional periods for the introduction of new technology need special consideration.
- Technology changes will also drive changes to business models and community behaviour– ie shared mobility, fleet ownership, patronage of public transport.

Context – iMOVE

iMOVE Australia ('iMOVE') is an independent national transport and mobility R&D coordination centre. It runs the iMOVE Cooperative Research Centre ('iMOVE CRC'), a consortium of 44 industry, government and research partners that conduct collaborative research to improve the mobility of people and freight through better use of data. iMOVE CRC is funded through the Federal Government's CRC Program and its partners for ten years.

The successful bid for this large (\$230 million) CRC was built on recognition by the federal government and forward-thinking centre partners that transport systems in Australia are struggling to cope with the increasing demand, and must find cost effective responses. In particular, we are seeing high levels of congestion in our cities which reduces liveability and economic prosperity and

ongoing isolation of regional and remote communities which risks social and economic disadvantage. On the other hand, the emerging technologies, the ability for people to be connected while they travel, the ability to respond to disruptions in real time, the ability to provide mobility and access to our mobility-challenged citizens present a vast array of opportunities for major improvement. The new technologies and data streams represent an unparalleled opportunity to improve the movement of people and goods— whilst also offering dramatic improvements in road safety and reductions in in the social and environmental costs of transportation.

iMOVE operates nationally in Australia, working with its industry partners to help them deliver technological outcomes in a range of transport areas. It has four partners in Queensland – the Department of Transport and Main Roads, Brisbane City Council, Queensland University of Technology and the University of Queensland. There are currently six projects involving Queensland-based partners, covering: parking optimisation, connected and automated vehicle deployment, cybersecurity (for connected automated vehicles), and readiness for Mobility as a Service in Australia. Nationally, iMOVE has 15 projects completed or in progress.

Key technological changes

There are a number of trends emerging in the way that we move both people and things that promise to be game-changing. We highlight three of them here.

Connected and automated vehicles (CAVs)

Technological advances in vehicles will drive big changes on our roads and are already delivering significant safety benefits. The introduction of increasing automation and connectivity is not without its issues, but we believe the benefits will be very significant and make it worthwhile persevering to overcome the challenges. Some of the key changes, challenges and opportunities are outlined below.

- Increasing levels of automation such as automatic emergency braking, lane keeping assistance, and automated parking are already improving safety
- While connectivity and automation will generally make things safer, the transitional period to ‘driverless’ will require the human driver to be ready to intervene. This ‘handover’ process brings a level of uncertainty and risk that needs to be reduced.
- The opportunity that CAVs offer to increase the capacity of our roads (by safely driving closer together) is a positive result.
- However if the convenience of using these vehicles over other forms of transport leads to a surge in single occupant vehicle trips, or even zero occupant trips (by fully automated vehicles) on our roads, it could cause traffic congestion to worsen severely.
- CAVs, along with other emerging trends such as MaaS, will drive an increase in shared mobility and can provide transport to areas which are currently underserved (i.e. not currently close to good public transport options).
- Higher degrees of vehicle automation may offer significant improvements in mobility and access to mobility-challenged members of our community (including elderly and incapacitated members)

Mobility as a Service (MaaS) and on-demand transport

iMOVE Australia recently completed a project looking at the appetite of Australians for MaaS and on-demand transport¹. The report reveals that there is strong appetite for these services, particularly those that offer flexibility and convenience through real-time and customised information, and integrated payment systems (which will be enabled by access to the relevant data).

MaaS necessarily encourages sharing arrangements for transportation. This means less people owning vehicles, with a shift towards fleet ownership and better utilisation of assets. Although it includes public transport (and this is the most popular component of a MaaS ecosystem), it also includes a wide range of other options such as car and ride-share that could offer services where it is not cost-effective to provide traditional public transport.

The report also highlights the fact that younger people are more likely to use MaaS and increasing numbers of them are opting not to own a vehicle or even to obtain a driving licence. This holds a prospect to both reduce the number of the cars on the road and simultaneously provide other options that deliver better travel experiences for the traveller, less congestion and lower environmental impacts..

Data - and making it useful

iMOVE views data as the key enabler for many of the advancements needed in our transport systems. It can improve many processes:

- Informing users to give better travel, parking and freight options with real-time, customised information.
- Informing operators of transport networks of ways to increase efficiency and get better utilisation of assets.
- Informing organisations of ways to optimise their operations (for example capitalising on spare capacity for freight movement / manage fleet) and improving their service to customers.
- Informing government to make better policy, and transport infrastructure investment decisions.

There are however significant challenges in sharing, accessing, processing, analysing, presenting and protecting the data. While increasing amounts of data is being made open, a platform that enables this on a national level, to agreed terms, could help enable technology development for the benefit of all.

Collaboration and a national approach

There is thinking and planning happening at all levels of government about how best to manage and benefit from the influx of new transport technologies and business models. National frameworks and guidelines are necessary to develop a coordinated approach encourage innovation and handle technical issues such as interoperability.

¹ <https://www.its-australia.com.au/maasreport/>

We note that the National Policy Framework for Land Transport Planning² highlights the importance of facilitating collaboration between parties, including industry and researchers, as a role of government.

iMOVE is contributing to this effort through its provision of a national platform for collaborative projects in the transport and mobility sector. Experience has shown that collaborative, multi-party R&D is an effective means of addressing complex problems, such as those typically encountered in the transport industry. This approach ensures that there is access to the right range and depth of perspectives and expertise for the issue in hand. It also contributes to the expanding critical mass of 'ITS' (Intelligent Transport Systems) skills in Australia, creates new networks and alliances and generates further opportunities. iMOVE acknowledges and appreciates the significant role that Queensland organisations are playing in the formation and conduct of collaborative transport technology projects.

Electric Vehicles

We observe that while the uptake of electric vehicles (EV's) in Australia has been low (hampered by cost, availability and a number of other barriers), it is slowly beginning to gain some traction. We view changes in propulsion technologies (like EVs) as complementary to the evolution of automated and connected vehicles, and expect that in the future highly automated vehicles will come predominantly equipped with an electric drivetrain.

Improved digital connectivity of vehicles can help overcome some of the barriers to EV uptake (such as range anxiety) by providing real-time information to drivers on charging options. However, we are unable to comment on the charging infrastructure needs for these vehicles.

Changes to employment arrangements in the transport industry

The transport industry is clearly undergoing an important reconfiguration. As with previous large industrial shifts (such as the introduction of the motor car over the horse and cart) the skills that are needed to operate such an industry will also evolve. It is probable that some routine jobs will disappear over time, however, a more important trend will be in changes to the nature of some jobs (such as driving jobs) into more customer interactive roles and/or into more complex logistics or operations management roles. Although the technology is developing fast, We anticipate that its introduction will not be substantially faster than the natural evolution of the workforce capability.

When we review the industrial ecosystem that will be enabled by higher levels of vehicle technology, the improving performance of our infrastructure networks and the increased intensity and availability of information we see the emergence of a huge range of new services. We encourage stakeholders in the transport and mobility sector to explore these new business opportunities and the many jobs that will come with them.

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²http://transportinfrastructurecouncil.gov.au/publications/files/National_Policy_Framework_for_Land_Transport_Technology.pdf