Opportunities and Challenges for Mobility as a Service in Australia: Industry Expert Discussion Panel

The Department of Information System and Global Transport and Logistics Research Group, RMIT University

Discussion Paper

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The Webinar was organised and coordinated by Dr Sophia Duan, Professor Alem Molla, Dr Vince Bruno and conducted under the auspices of the Global Transport and Logistics Research group.

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The Department of Information Systems and Business Analytics and the Global Transport and Logistics Research Group hosted a webinar on 30 July 2021, exploring the topic of whether Mobility as a Service (MaaS) represents a viable solution to provide integrated, sustainable, and multimodal urban transport options for users.

The panel discussion of three experts in the field included Ms Susan Harris, Chief Executive Officer of Intelligent Transport Systems Australia (ITS), Dr Chinh Ho, Senior Lecturer Big Data and Spatial Analytics at the University of Sydney and Mr David Gray, Director Transport and Customer Strategy in the Victorian Government Department of Transport. The panel members provided their own perspectives on what MaaS means for Australians and what technology, systems and challenges are present in the design of MaaS, and the policy implications it may have.

Ms Harris offered insights around customer demands and opportunities, free-flow parking for car-sharing in Australia and local and community transport for the future. Dr Ho discussed the preliminary findings and lessons learnt from a MaaS trial system architecture undertaken in Sydney, while Mr Gray discussed issues relevant to assessing whether MaaS can assist governments in achieving the overriding objective of connecting people and places to better facilitate access to social and economic opportunities while limiting fiscal, environmental and social costs.

Purpose of the discussion paper

The objective of this discussion paper is to promote discussion of some of the opportunities and challenges associated with introducing MaaS in Australia, including (but not limited to) information systems integration, technological solutions and policy implications.

Introduction to MaaS

The key features and significance of MaaS

MaaS represents an integrated, coordinated and flexible transport system available to users, who have access to and the option to travel across various modes of transport, with all individuals having instant access to a seamless system of clean, green, efficient and flexible transport to meet their transport needs (Amoretti, Belli & Zanichelli 2017; Arentze & Molin

2013; Lyons, Hammond & Mackay 2019; Wong, Hensher & Mulley 2019). In addition to real time information sharing, private ownership of motor vehicles is replaced by a more flexible model of 'usership.'

Users can benefit from the provision of transport services offered by cars through various ride sharing services, including private ride-sharing services (eg. taxis, Uber, Lyft), car-rental services and car-pooling services (BlaBlaCar). This flexibility stems from the confluence of mobile app technology and the associated advent of new business models (ITS Australia, 2018; 2020). MaaS offers greater consumer choice as new models thanks to shared ownership of mobility assets, real-time aggregation of data and peer-to-peer mobility matching (Docherty, Marsden & Anable 2018).

In his opening remarks to the webinar, Professor Molla described MaaS as a digital platform business model that brings together disparate resources and knowhow from different organisations, to provide frictionless, multi-inter-model, personalised and price worthy mobility services. He introduced the concept of MaaS in the context of a multi-modal trip in Australia. You might need to travel from the home to the office, attend an out of office meeting in between, stop for a medical appointment on the way back, meet friends for after-work drinks and pick up groceries before heading back home. Suppose you do not want to use your car and you wish to use different models for each leg of the journey.

At present and in the absence of a MaaS platform, Professor Molla indicated that users would need to book and pay separately for each leg of their journey, making the process difficult and frustrating. Further, travel options operate independently of public transport services.

Professor Molla suggested that the demand for MaaS could grow due to expectations of a decline in motor vehicle ownership and cited a survey from the RACV that motor vehicle ownership among young adults has been in long-term decline.

User appetite for MaaS

In 2018, ITS Australia worked to advance MaaS in Australia through the publication of their report: MaaS in Australia: Customer insights and opportunities. Survey respondents said that they are unlikely to relinquish the ownership or use of their private motor vehicles due to strong preference expressed for convenience and flexibility. Respondents were more likely to consider using multi-modal options offered by a MaaS platform on a weekend or for a social outing rather than for their regular daily or work commute.

The findings of the study suggested that MaaS solutions offer potentially large benefits to people living in the middle ring around metropolitan areas and major urban centres. People on the urban fringe have a paucity of mobility and public transport solutions available to them while people living in the inner city were unlikely to demonstrate a strong appetite for MaaS due to easy accessibility to multiple transport modes.

Mr Gray suggested he expects that MaaS as an alternative to private vehicle ownership would be most relevant to only a small cohort of the population in inner city areas or densely populated areas, who have plenty of scopes to choose from transport options.

Policy context of MaaS in Australia

Mr Gray said that governments want a transport system that gets people (and goods) to where they need to go, connecting people and places to facilitate access to social and economic opportunities. Ultimately this is designed to achieve social and economic prosperity with limited fiscal, environmental and social costs. Does MaaS help in achieving this overriding objective? Mr Gray posed the following questions.

- Does it make travel more efficient? By separating asset ownership from service provision, it is important to consider whether MaaS makes the system more efficient. MaaS could add to traffic congestion but reduce the number of parking spaces required.
- Does it make a journey faster or more reliable? Mr Gray's preliminary answer to this question was 'probably not' due to the multi-mode nature of journeys that utilise MaaS. He suggested that in a Victorian context, privately owned vehicles are more efficient in terms of time taken and flexibility to complete a journey, but that overall the system is more efficient if people use the right mode for the right trip.
- Does MaaS enable better and easier connections to jobs, education and social opportunities? Mr Gray's view is that a digital platform in isolation cannot be relied on to achieve that, but could be part of the bigger picture.
- Does MaaS act as a catalyst for behavioural change? MaaS may be the delivery mechanism for conventional methods that can help to trigger behavioural changes, e.g. by varying incentives and prices.
- Does MaaS offer broader social and economic benefits? Mr Gray indicated that replacing privately owned motor vehicles with ride and car sharing services doesn't necessarily reduce the number of motor vehicle trips. He added that the relative sustainability benefits of public transport compared to private vehicles is expected to decline as more energy efficient motor vehicles are introduced.
- Does MaaS have relevance to enough people to make a tangible difference? Mr Gray suggested that MaaS platforms as an alternative to private vehicle ownership could apply primarily to a small cohort of the population who reside in inner city and densely populated areas.

The implementation of MaaS in Australia

Dr Ho discussed the Sydney MaaS Trial which brought together transport services into a single, intuitive mobile app, enabling its users to plan, book, use and pay for multiple mobility services seamlessly: PAYG option and monthly subscriptions plans.

Dr Ho described five levels of transport integration.

- 0: No integration.
- 1: Search integration, including timetabling data and journey planners, such as google maps.
- 2: Booking and payment integration, such as ride sharing service providers, notably Uber.
- 3: Service integration and subscription contracts, including PAYG and monthly bundles, including Ubigo, Whim and City mapper).
- 4: Integration of societal goals such as sustainability, as offered in the University of Sydney MaaS Trial.

The focus of the discussion by Dr Ho was on two dimensions: assessing MaaS potential in achieving societal goals through promoting greener travel choices and assessing the prospect for commercialization.

The Opportunities and Challenges

Dr Ho said that MaaS is seen as the next transport revolution because it presents value-adding for key stakeholders. For users, MaaS offers the best value proposition by helping them meet their mobility needs. For service providers, it could boost profits through additional volume. For society, it can reduce emissions and traffic congestion. For app developers: MaaS offers new challenges and opportunities, while for investors: (brokers and integrators) it opens up new markets.

Dr Ho explained that the key lessons learnt to date from the MaaS Trial were as follows.

- Undertaking the study design for the trial was a complex process, including lengthy negotiations with transport providers to include them in MaaS offers and issues relating to bookings and payments and volume discounts offered.
- One of the objectives of the study's societal goals was to de-carbonise transport. Every dollar spent to encourage users to use the MaaS platform was estimated to reduce carbon emissions by 3kgs.
- MaaS offerings with substantial bundles delivered additional revenue for ride sharing modes, including Uber, taxis and public transport.
- The trial demonstrates that there are opportunities for public and private sectors to work together in PPPs.

Future Directions: How can we make MaaS work in Australia's Transport System?

The technological requirements

Based on the Sydney MaaS Trial, Dr Ho suggested that variation in tech readiness across different transport providers represented a significant hurdle and cost for systems integration. Large investment in negotiation and achieving integration is necessary for end users to see value in the MaaS platform.

Public transport providers, notably bus and train operators, are fitting their fleets with integrated sensors which allow passengers to track their location, level of crowdedness and business of their planned route on their smartphones which facilitate information sharing necessary for MaaS (Luo et al. 2019; Nelson & Mulley 2013).

Technology: In addition to integrated sensor technologies and the Internet of Things (ie. connected devices that can communicate with other connected devices), the technology and sciences around cloud computing and big data represent the backbone of smart mobility and MaaS platforms. These technologies are necessary to help process the vast bytes of traffic flow data generated by users and coordinate the key functions of pre-trip services and real-time updates.

Policy requirements

Information sharing amongst key business providers is necessary to facilitate a seamless MaaS offering to end-users, in which they have real-time access to all available transport modes. Profit maximizing firms might have little incentives to share their commercially sensitive information. While not subject to discussion among the expert panel members, an important question is whether governments should actively foster information sharing among the key players through, for example, regulation.

Mr Gray indicated that there remains large uncertainty around MaaS and thus there is no clear policy direction for government to specifically provide a MaaS platform itself.

But he said that there is scope for government more broadly to enable the MaaS market and journey planning tools, including the following.

- Facilitate the provision of more flexible transport services such as on-demand buses and commercial passenger vehicles
- Publish real time public transport data
- Enable ''on-selling' or integrated public transport fare paymentsManage and control risks to transport systems.

Mr Gray highlighted that a key role for the government is to remove barriers to an integrated transport system, with a focus on improving the user experience.

Collaborative requirements

Ms Harris discussed a report from ITS Australia on opportunities and challenges facing shared mobility options: free float car sharing (FFCS) and related parking issues. The report provides an evidence base and guidance to government and industry that may enable them to work collaboratively in a way that best suits the communities in the areas where they operate. It identifies key issues policymakers should consider to manage car sharing development in their cities and integrate it with public policy objectives and practices.

At this point, most car sharing services do not allow users to de-hire at point of destination, which would offer users greater flexibility. Ms Harris indicated that there is still more thought and consultation with levels of government and council to offering greater flexibility around parking to facilitate de-hiring at the point of destination, including greater co-operation between different levels of government, councils and car-sharing providers.

Dr Ho indicated that an important lesson from the Sydney MaaS Trial is that trust and collocations between the MaaS operator and the transport service providers are the key.

References

Amoretti, M, Belli, L & Zanichelli, F 2017, 'UTravel: Smart Mobility with a Novel User Profiling and Recommendation Approach', *Pervasive and Mobile Computing*, vol. 38, pp. 474-489.

Arentze, TA & Molin, EJE 2013, 'Travelers' preferences in multimodal networks: Design and results of a comprehensive series of choice experiments', *Transportation Research Part A: Policy and Practice*, vol. 58, pp. 15-28.

Docherty, I, Marsden, G & Anable, J 2018, 'The governance of smart mobility', *Transportation Research Part A: Policy and Practice*, vol. 115, pp. 114-125.

Luo, XG, Zhang, HB, Zhang, ZL, Yu, Y & Li, K 2019, 'A new framework of intelligent public transportation system based on the internet of things', *IEEE Access*, vol. 7, pp. 55290-55304.

Lyons, G, Hammond, P & Mackay, K 2019, 'The importance of user perspective in the evolution of MaaS', *Transportation Research Part A: Policy and Practice*, vol. 121, pp. 22-36.

Nelson, JD & Mulley, C 2013, 'The impact of the application of new technology on public transport service provision and the passenger experience: A focus on implementation in Australia', *Research in Transportation Economics*, vol. 39, no. 1, pp. 300-308.

Wong, YZ, Hensher, DA & Mulley, C 2019, 'Mobility as a service (MaaS): Charting a future context', *Transportation Research Part A: Policy and Practice*, vol.

ITS Australia (2018), Mobility as a Service in Australia: Customer insights and opportunities. https://its-australia.com.au/maas-report/

ITS Australia (2020), Unlocking Shared Mobility: Investigating free-flow parking for car-share in Australia. https://its-australia.com.au/unlocking-shared-mobility/