
MaaS business models: Emerging business models in the digital economy, and lessons for Mobility as a Service (MaaS) operators and regulators

Executive summary

Mobility-as-a-Service (MaaS) systems offer consumers access to multiple transport modes and services, owned and operated by different mobility service providers, through an integrated digital platform for planning, booking and payment. This potentially means significant changes to the way transport services are currently offered and paid for in New South Wales (NSW) and other jurisdictions.

Transport authorities such as Transport for New South Wales (TfNSW) are the owners and managers of transport infrastructure and the custodians of public transport service contracts in their respective jurisdictions. These authorities will play a key role in enabling the future development of MaaS, including its commercial and contractual frameworks. Consequently, these authorities are looking to increase their knowledge of the emerging commercial frameworks and business models that may be required to enable MaaS to operate.

This research¹ presents findings from an exploratory study that was undertaken with the following four broad objectives:

1. To examine the opportunities and challenges raised by MaaS in metropolitan and regional NSW from the perspective of consumers, businesses and government;
2. To identify emerging business models for the provision of MaaS;
3. To determine the key barriers to the emergence of MaaS in different contexts; and
4. To recommend pragmatic actions for public sector organisations, notably TfNSW, to enable and regulate MaaS.

MaaS opportunities and challenges

Consumers will benefit from MaaS by being able to plan, book and pay for travel using different services through a single integrated digital interface. Depending on the level of integration between different transport services, this research estimates these benefits to be worth between \$19 million and \$35 million annually across the state of NSW². Consumers might benefit additionally from MaaS through access to cheaper transport alternatives, through price discounts, subscription bundles, etc., that may help reduce their net transport expenditure and improve their mobility and accessibility. These benefits are reflected in

¹ This study was funded by Transport for New South Wales (TfNSW) and the iMOVE Cooperative Research Centre (CRC).

² This valuation only includes consumer benefits from improved planning, booking and payment functionality; it does not include consumer benefits that may accrue from changes in the price of use of different transport services through potential MaaS platforms

consumer willingness to use MaaS: studies^{3,4} estimate that roughly 20 to 50 per cent of the NSW population would be willing to adopt MaaS, depending on the service offering. However, our research also indicates that government support is likely to be necessary for operators to achieve a commercially viable level of market penetration.

Transport operators and other businesses interested in the provision of MaaS might benefit from MaaS through possible changes in their cost structures and revenue streams. MaaS could help strengthen potentially complementary relationships between services; allow operators to expand their customer base and reach newer markets; and increase asset utilisation through better matching between supply and demand. However, MaaS also poses a potential risk to existing service providers, as integration with possibly substitutive services could undermine profitability and cost recovery as MaaS is likely to change the market dynamics between various types of operators.

MaaS may also offer broader benefits through positive impacts on the economy, environment and society. Evidence from early MaaS pilots and implementations indicates that MaaS can help to reduce private car ownership and use⁵, and increase public and active transport use⁶. Further, MaaS could allow local governments to manage network demand and supply more efficiently, resulting in lower network congestion. Similarly, MaaS has the potential to improve mobility and accessibility for those who are disadvantaged, both by facilitating how customers plan, book and pay for transport; and by allowing operators and private citizens with underutilised transport assets to offer additional services to those in need. However, some of these wider benefits are speculative and will depend on the details of the MaaS offering, and more evidence is needed to draw conclusions.

Emerging business models for the provision of MaaS

The research identified three broad archetypal models for how MaaS is likely to be provided in the market. The most obvious model is the **brokered platform**, where different transport operators can choose to offer their services on the platform, and the platform provider has to broker individual deals with different transport operators on a case-by-case basis. The platform provider may charge a commission or a flat fee for every transaction made through the platform, usually a nominal amount, to cover their costs of building and running the platform. Several existing transport operators, as well as corporations and not-for-profits from adjacent sectors of the economy, such as motoring clubs, insurance and finance companies, and telecom operators, have already expressed interest in building and operating brokered MaaS platforms.

Large transport operators with high market shares are usually reluctant to join brokered platforms and integrate with other services that could erode their own core offering. They are

³ Ho, C. Q., Hensher, D. A., Mulley, C., & Wong, Y. Z. (2018). Potential uptake and willingness-to-pay for Mobility as a Service (MaaS): A stated choice study. *Transportation Research Part A: Policy and Practice*, 117, 302-318.

⁴ Vij, A., Ryan, S., Sampson, S., & Harris, S. (2018, December). Consumer preferences for Mobility-as-a-Service (MaaS) in Australia. In *Australasian Transport Research Forum (ATRF), 40th, 2018, Darwin, Northern Territory, Australia*.

⁵ Sochor, J., Strömberg, H., & Karlsson, I. M. (2015). Implementing mobility as a service: challenges in integrating user, commercial, and societal perspectives. *Transportation research record*, 2536(1), 1-9.

⁶ Perrau, C. (2017). How to find the best mix between urban transportation network and individual soft mobility? *Smart City Exhibition World Congress*, Barcelona, Spain.

more inclined to build MaaS platforms themselves that can act as **walled gardens**, where they can retain control over what products and services are offered through the platform. For example, rideshare companies such as Uber, Ola, Didi and Lyft have acquired and invested in a wide variety of transport services that they view as complementary to their core rideshare offering. Depending on the city and the company, rideshare customers have potential access to bikeshare, taxis and autorickshaws, car rentals, food delivery, etc. through an integrated digital MaaS-like platform.

To enable greater integration and to avoid asymmetries in the transport market, government can facilitate the creation of an **open marketplace** for the provision of MaaS. The open marketplace is characterised as a situation where any and all transport services can be sold and resold on any MaaS platform; no formal arrangements are required between the platform provider and the transport operator. The platform may include services that are in direct competition with each other, and individual operators do not have the power to withhold their services from a particular platform. The open marketplace model has primarily been championed by the Finnish national government⁷, which has enacted legislation that obliges all passenger transport operators in the country to provide free and unlimited access to all information relating to their services, as well as their ticketing and payment systems, to any actor interested in integrating it with other transport services.

Barriers to the emergence of different MaaS business models

The key barrier to the brokered platform business model is its commercial viability. Large transport operators with high market shares are hesitant to integrate with other services that could erode their own core offering. Small operators with low market shares are more open to joining a third-party MaaS platform, as they view it as an opportunity to reach newer markets and expand their customer base. However, they frequently do not have the capital resources or the technological capability to feed their services into a digital real-time platform, and are reluctant to take on the risk of being the first-mover. Additionally, due to low profit margins, both large and small operators are reluctant to share revenue from ticket sales with a third-party MaaS platform provider. Customers are typically unwilling to pay extra for integrated access to different transport services. Consequently, third-party providers are struggling to recover the costs of developing and operating a MaaS platform, and the brokered platform business model is unlikely to be commercially viable in the short-run without some form of government support.

The walled garden business model is more likely to be commercially viable in the absence of government support, but it is not an ideal solution as a MaaS strategy for multiple reasons. First, integration between services will be partial at best, as the (private sector) platform provider will likely be wary about integrating services that are in direct competition with their own core offering. Second, the business model may strengthen the monopolistic power of some operators, leading potentially to anti-competitive practices and reductions in consumer welfare. Third, walled gardens owned and operated by the private sector may lead to perverse societal outcomes where, for example, rideshare use can increase and mass public transport use can decline, resulting in greater congestion and higher emissions in certain contexts (e.g. inner-city neighbourhoods).

⁷ Smith, G., Sochor, J., & Sarasini, S. (2018). Mobility as a service: Comparing developments in Sweden and Finland. *Research in Transportation Business & Management*, 27, 36-45.

The open marketplace model attempts to address shortcomings to the other business models through proactive government regulations. The open marketplace is motivated by a strong concern for the wellbeing of consumers, and is premised on the “welfare state” model of government in which the state actively protects and promotes social policy goals. However, the model has been met with resistance from some transport operators. For example, rideshare service providers depend on their networks of drivers and passengers to distinguish their service from their competitors’ offerings. The open marketplace model would eliminate their network advantage, as competing firms will be able to leverage each other’s networks. Consequently, Uber has withdrawn their rideshare services from Finland, where the open marketplace model has been implemented, and there is a potential risk that other operators might respond similarly.

Role of government to enable and regulate MaaS

MaaS has been identified as a key component of NSW’s future transport vision by the 40-year plan outlined in *Future Transport Strategy 2056*⁸, and the 10-year roadmap articulated in *Future Transport Technology Roadmap*⁹. MaaS can also support the six state-wide outcomes identified by *Future Transport Strategy 2056* to guide investment, policy and reform, and service provision in the state. Since 2017, the NSW government has already launched a number of supporting initiatives to support the development of MaaS. These initiatives have sought to encourage both interest and investment from the private sector. For example, the TfNSW MaaS Innovation Challenge in 2018-19 offered cash and in-kind support to firms interested in developing local MaaS solutions. TfNSW also developed a MaaS data specification for the sharing of planned and real-time information between transport operators and MaaS aggregators. TfNSW has launched the Contactless Transport Payments (CTP) program, enabling customers to use credit cards or linked devices as a replacement for Opal smartcards, and allowing potential third-party actors to ‘resell’ public transport and integrate it with other transport services.

Trends of declining institutional capacity of the public sector, coupled with resource constraints in urban governance, are prompting cities and regions to support MaaS initiatives that encourage greater interest and investment from the private sector. However, this has left the development and provision of MaaS to the free market. Consequently, these initiatives alone will not be sufficient to develop a societally optimal MaaS solution, and risk leading instead to monopolies, power asymmetries and impact on societal goals such as sustainability and equity. Overseas experiences to date indicate that strong government involvement is essential to maximising consumer welfare and achieving societal goals¹⁰.

This research recommends that NSW government take an active role in the development of MaaS, to promote a business model that allows placing long-term societal goals at the core of the system offering. This approach will assist in regulating the favoured business model

⁸ TfNSW (2018). *Future Transport Strategy 2056*. NSW Government. Retrieved from https://future.transport.nsw.gov.au/sites/default/files/media/documents/2018/Future_Transport_2056_Strategy.pdf

⁹ TfNSW (2016). *Future Transport Technology: Roadmap 2016*. NSW Government. Retrieved from https://future.transport.nsw.gov.au/sites/default/files/media/documents/2018/Future-Transport-Technology-Roadmap_2016_.pdf

¹⁰ Pangbourne, K., Mladenović, M., Stead, D., & Milakis, D. (2019). Questioning Mobility as a Service: Unanticipated societal and governance implications. *Transportation Research Part A: Policy and Practice*.

accordingly. The research identified 19 specific actions for the NSW government. These actions acknowledge and build on previous government initiatives to support the development of MaaS in NSW. Research also recommends a continuation of the collaborative approach towards a comprehensive integration of the transport system across the state led by government but enabling private sector activity and innovation. NSW's approach to MaaS should be a cross-government initiative that is informed by an overarching strategy, with an emphasis on undertaking pilots, trials and other research activities that together can provide the relevant evidence and experience to support further decision-making, and that can allow the development of a roadmap to guide the implementation of a fully-integrated MaaS system over the next years.

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