Mobility as a Service: Managing an Urban Revolution

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Introduction

The new paradigm of "mobility as a service" (MaaS)—offering myriad, integrated transportation options at urban residents' fingertips—promises to change how people move, with local and global ramifications. E-scooters, bike-sharing, ride-hailing apps, and other shared mobility services are gaining popularity with users worldwide, reshaping cities and travel patterns.

In cities across the world, populations are growing and traffic congestion is rising. Transportation makes up one of the largest sources of greenhouse gas emissions globally and contributes to poor air quality in cities. Proponents argue MaaS can address these problems. It could reduce the role of private cars in city transportation networks, replacing big, expensive, and inefficient vehicles with sustainable modes that make better use of existing capacity. Managed properly, new, integrated mobility services could lower the cost of transportation, expand service areas beyond fixed routes, generate fewer emissions, and improve the ability of urbanites to get where they need to go. A recent study by McKinsey & Company argues that "seamless mobility," allowing urban residents to choose the most appropriate modes for a trip with ease, could reduce traffic congestion even as urban populations continue to grow.[1]

For all the promise, however, new mobility services have also created new headaches. Ride-hailing, for example, has increased pollution, traffic congestion, and vehicle miles traveled—intensifying the presence of cars on city streets. Some companies have defied

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[1] Eric Hannon, Stefan Knupfer, et al, "An Integrated Perspective on the Future of Mobility, Part 3: Setting the Direction Toward Seamless Mobility," McKinsey Center for Future Mobility, January 2019.

city governments, regulators, and laws. On their own, cities have found these services difficult to manage; as a seamlessly integrated system, they could be pandemonium. Mobility as a service raises questions for cities about equitable access, safety, environmental impact, and regulation of the public way.

Big questions remain if the promises of MaaS are to be realized. How can cities work with the private sector to ensure MaaS improves the lives of residents? What kinds of innovative partnership and regulatory models can meet residents' needs and keep up with evolving technology? What do public and private-sector actors need to consider for MaaS to have positive effects on mobility, equity, and quality of life in cities?

Fad or Revolution?

Across the public and private sectors, transportation leaders agree that the changes wrought by mobility as a service are long term. This is not merely a passing fad. Traditional automakers, whose business models long depended on manufacturing and selling cars for consumers, are reimagining themselves as "mobility companies," selling services such as hailed rides and shared bicycle trips alongside physical goods like cars. This comes even as most mobility services have so far achieved little success in making a profit.[2]

Several factors have encouraged the private sector to embrace MaaS. First, the current model of individual car ownership is expensive, inefficient, and declining in popularity. Vehicles spend about 95 percent of their useful lives parked.[3] Shared mobility in the form of ride-sharing or ride-hailing allows for greater use of these assets.

But whether used for ride-hailing or simply transporting the driver, single-passenger cars take up much road space per occupant, often serving as the primary source of congestion. In many cities, cars are not likely to be the best mode of travel for all urbanites. An integrated MaaS platform—typically a smartphone app—could direct travelers to book services ranging from bike share to a subway ride to ride-hailing, depending on their needs and local conditions.

Companies are developing new technologies, services, and apps, and people are using them. Now cities – along with companies – need to figure out how to manage them.

Challenges for MaaS

Several challenges need to be overcome before MaaS can realize the promise hailed by advocates. Three of the biggest include ensure seamless integration, reorganizing street space, and overseeing regulatory and partnership policies. Devising considered, clever approaches to these challenges will help ensure MaaS's benefits.

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[2] Len Sherman, "Can Uber Ever Be Profitable?," *Forbes*, June 2, 2019.
[3] Donald Shoup, *Parking and the City* (Routledge, 2018), 1.

Promoting Integration

One promise of MaaS is the ability to offer citizens myriad transportation options through a single platform. Helsinki's Whim app, for example, allows users to plan and pay for trips across mass transit, carshare, taxis, and bike share, through pay-as-you-go purchases or monthly subscription options.[4] By streamlining a trip into a single app, users are able to create predictable, multimodal trips with ease. But this type of integration requires high levels of coordination among the constituent services, and a willingness from both the public sector and private mobility service providers to make it work.

Furthermore, integration depends on shared, open data. Mobility services generate huge amounts of data useful to city planners, including the location, duration, and cost of trips. Sharing this data and making it public certainly offers potential benefits to cities and business alike. To make the best use of data, many cities have embraced the Mobility Data Specification (MDS) upheld by the City of Los Angeles. For companies, this offers a standard data reporting procedure, rather than gathering and preparing different data according to different standards in each market they operate. For cities, MDS offers an easy to analyze source of information on travel behavior through anonymized data.

But open access data brings another set of challenges. Data privacy and security are critical issues. As cities, transit agencies, and departments of transportation make use of the data, they must be careful to recognize its limits. Private businesses serve customers; cities must serve all residents regardless of ability to pay for a service. Surveys show ride-hailing users, for example, tend to be younger and wealthier than the general population.[5] Policymakers must ask who the data represents, what it represents, and be conscious of its biases.

Street Space

New transportation technology can have profound ramifications on public space—especially streets, which make up about 30 percent of a city's land area and about three-quarters of its public space.[6] A century ago, as automobiles first proliferated in cities, municipal governments remade their streets—removing pedestrians from the roadway, regulating traffic, and designating the roadway for moving vehicles. In the effort to remake cities for cars, people suffered the collateral damage: from crashes, air pollution, and the co-opting of public space to ease the movement of cars. In dense cities such as London, more than half of street space is dedicated to cars, even as less than half of the population owns cars.

New mobility services are also poised to have profound ramifications for street space. Most MaaS services operate on streets. Some services, such as shared bicycles or electric scooters, need infrastructure such as bike lanes to be carved out from traffic or parking lanes. Even ride-hailing and rides-hailing, which use conventional cars and vans, require

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[4] David Zipper, "Helsinki's MaaS App, Whim: Is it Really Mobility's Great Hope?" *CityLab*, October 25, 2018.

[5] RJ Reinhart. "Snapshot: Who Uses Ride-Sharing Services in the US?" *Gallup*, July 25, 2018.

[6] *Streets as Drivers of Urban Prosperity*. UN Habitat, 2013.

space to load and unload passengers. Yet they do not require cities' vast supplies of parking—which, in Los Angeles County, for example, amounts to 14 percent of all land area.[7]

Because MaaS services are multimodal, they call for multimodal streets. A single trip might involve a walk, a scooter, a bus, and a shared ride. The growth of new mobility services adds new urgency to the longstanding pedestrian and cycling advocacy movements, which seek to repurpose street space away from cars and towards more sustainable, humane solutions. On-street parking can be repurposed to other uses, whether green space, bike lanes, or drop-off zones. With vision and good management, cities can reimagine their most plentiful form of public space.

Regulation and Partnerships

The mobility-as-a-service industry is in a transitional moment. Mobility start-ups, under pressure to establish a foothold, have flooded cities with devices such as scooters and undercut competitors with unsustainably low pricing.

After a slow, reactive start, cities and companies have begun to think more strategically about MaaS services. Some transit agencies have begun pilot programs with ride-hailing or ride-sharing companies to solve first- and last-mile problems, such as the Los Angeles Metro's arrangement with ridesharing company Via.[8] Others have taken a more aggressive tack in regulating these services, whether through taxes and fees, vehicle caps, or other means. Cities have yet to determine the ideal mix of regulations and partnerships, which will depend on local conditions as well as larger mobility goals.

Recommendations

In order for MaaS to deliver on its promise of improving mobility in cities by providing safe, sustainable, and equitable options for users, the following three recommendations need to be prioritized:

1. **The public sector must set the vision and guard the public interest.**

   Above all, the public sector—city governments and transit agencies chief among them—must articulate a larger mobility vision and goals. Mobility policy is a matter of public interest. If the public sector does not articulate a vision of MaaS's public benefits, the private sector will guide MaaS on its own—with different measures of success. Cities thus must regulate MaaS with a clear idea of the technology's benefits, rather pursuing new technology for its own sake.

   London, for example, has articulated a set of mobility goals focused on improving quality of life. These include creating healthy streets for healthy people, providing

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[7] Eric Jaffe, "How Parking Conquered LA," *CityLab*, December 3, 2015.
[8] "LA Metro Launches $2.5m ridesharing pilot program with private ride-hailing company Via," *San Gabriel Valley Tribune*, January 28, 2019.

a good public transportation experience for all, and using public transportation to create opportunity and equity. Rather than articulate specific goals for MaaS, London officials approach MaaS with the larger aim of achieving the city's general aims of improving public health and public transportation.

2. **Policies must take a systemic view and recognize traditional mass transit as the vital backbone of an efficient urban transportation system.**

   Mobility as a service can solve certain urban transportation problems. But unless policymakers think holistically, it is likely to create new problems.

   City leaders must recognize that when it comes to moving large numbers of people to a destination, no mode can approach the efficiency of traditional fixed-route mass transit: buses and trains. If cities fail to support public transportation as new mobility services proliferate, ridership could continue to decline, service could falter, and roads could become more congested as people with means switch to other modes. Buses and trains, moreover, will play an important role in an integrated mobility-as-a-service network.

   Cars, whether electric or gas-powered, hailed or owned, take up similar amounts of street space. Bicycles and other forms of micromobility can be integral parts of the transportation system. But trains and buses remain unrivaled in moving such large amounts of people quickly, safely, and efficiently with limited space Regulation of MaaS thus might involve a variety of mechanisms to fund transit while offering incentives for certain travel behaviors: for example, a ride-hailing or congestion charge that penalizes single-passenger trips downtown, with the proceeds going to fund public transit.

   Thinking systemically means more than thinking about transportation. It means thinking about land use, which plays a critical role in determining residents' travel patterns. It also means thinking regionally. One fruitful area to target for decreasing car dependence is the urban periphery, where MaaS platforms can provide suburban riders with data about multimodal trip options, including real-time bus tracking—allowing for more predictable trips.

3. **Engage the public to ensure public benefit.**

   Because mobility policy is a matter of public interest, the public must be engaged. Cities and companies must continuously engage the public in developing MaaS: citizens must be brought in early, and government must be structured to create citizen-participation feedback loops.

   This poses a challenge. City governments and companies must make decisions more quickly—sometimes too quickly to engage with private citizens through a series of well-publicized private meetings. Thus, policymakers should work to implement more responsive ways of engaging with the public to ensure MaaS's

public benefits, whether consulting with advocacy groups, creating citizen boards, using new technology, or other means.

Conclusion

Mobility as a service has undergone such rapid change in recent years that companies and cities are struggling to make order from the chaos. To move forward and realize MaaS's potential, they must devote effort to creating seamless integration, reorganizing street space in a sensible, equitable, healthy, and sustainable manner, and create effective regulatory and partnership models. Above all, the public sector has a responsibility to ensure the public benefits of MaaS. Traditional mass transit, unrivaled in efficiency, must be prioritized. With vision and good management, cities and companies can bring about a transportation system healthier, more sustainable, more efficient, and more affordable than what came before.

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