

Mobility as a Service

By SYSTRA
and Usbek & Rica



SYSTRA

MaaS: redesigning mobility

The concept of MaaS, meaning *Mobility as a Service*, does not easily fit a strict definition. It reflects the trend towards offering everything “as a service” and the gradual shift from possession of objects to use. According to this somewhat magical thinking, everything is accessible, connected and digitised via the virtual digital world. An appealing idea, but one that, in the transport sector, is quickly dampened by the realities of infrastructure and regions. The mobility “as a service” concept first appeared as a theoretical principle in Finland in the mid-2010s, before its potential for improving movements within cities and rural areas - by providing more connected, fluid and sustainable ways of travelling - was realised. For SYSTRA, MaaS offers, above all, an opportunity to address the new challenges for the mobility sector.

As with many industries, the Covid-19 pandemic has shown that our travel habits are by no means set in stone. The sudden increase in remote working has profoundly challenged views on our transport needs, and has rendered “pay-as-you-go” mobility essential, alongside the positive moves towards account based ticketing. In this unprecedented situation, MaaS must be used to support these transformations and to redesign transport services at the same pace as the crises that are disrupting our world. To some extent, it is the perfect model of resilience.

For all the above-mentioned reasons, it seemed appropriate to devote a booklet to MaaS. To take the necessary time to reflect on more than the technological aspects, to which MaaS is too often limited, and to evaluate its potential, its limits and economic and social implications. To consider the issue from a worldwide perspective, with its local specificities and its global challenges. In short, to approach MaaS from all angles.

Developing a MaaS approach means, first of all, addressing mobility-related issues: congestion in cities, environmental challenges, accessibility, technical solutions via our smartphones, new travel options, the use of public space and data, as well as a review of financing for transport systems. Developing MaaS also means making sense of the web of interconnections linking different modes of transport, as well as untangling the “ball of yarn” represented by urban, economic and anthropological issues. Finally, talking about MaaS helps to forge links between all the stakeholders in the mobility sector, so that they can move forward together, in the same direction.

In the following pages, you can find out more about the work of forging these links. Our aim is to provide a comprehensive overview of the subject and the fundamentals required to grasp the main issues.

Enjoy reading!

•
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**MaaS
in figures**
p. 7

**The story
behind MaaS**
p. 8



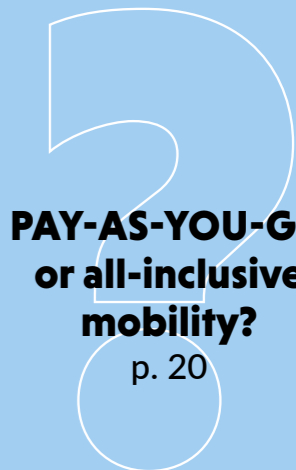
MaaS and regions
p. 11



**The MaaS social
contract**
p. 14



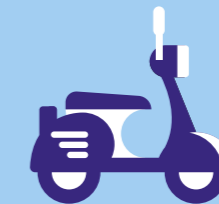
**Around the world
with MaaS**
p. 18



**PAY-AS-YOU-GO
or all-inclusive
mobility?**
p. 20



**That (former?)
object of desire**
p. 22



**Have a great
trip!**
p. 24



**A different kind
of city**
p. 26

MaaS in figures

Major players in the MaaS sector, which has experienced accelerated growth since the mid-2010s, are radically overhauling our modes of transport. However, citizens' behaviours can be strongly engrained, and there is still a long way to go before it will be possible to overcome all the challenges presented by new means of travel.

2010's 40 European cities

It was during this period that the group of acronyms relating to "as a Service (aaS)" first appeared, meaning the offer of technological services hosted via the Cloud (storage, intranet, payment services, etc.).

have an existing MaaS service, launched either by a local authority, or independently, by a private company. (source: MaaS-Alliance, MaaS in Action - MaaS-Alliance [MaaS-alliance.eu])

5,600%

The rate of increase in the average annual investment in e-hailing services (via which you can book a taxi online) between the periods 2010-2013 and 2014-2019, i.e. from \$0.2 billion to \$11.4 billion per year. (source: CapitalQ, Pitchbook, McKinsey)

x2

The global aaS market doubled in size between 2017 and 2020, increasing from \$150 billion to \$300 billion, with between 30% and 60% of organisations making use of these services. (source: Gartner)

€500

Monthly cost of the most comprehensive MaaS service, "Whim" (which includes taxi and bike sharing), offered by MaaS Global in Finland (source: MaaS Global). This is also the approximate monthly cost of owning and using a private car, however, the drivers of single-occupancy vehicles (SOV) tend to underestimate this cost by 50%. (source: nature.com)

80%

The average percentage of participants who stated they would like to use a MaaS service after the pilot phase, in Gothenburg in 2014¹, and in Sydney in 2019². Due to a lack of viable business models and the reluctance of private and public stakeholders to work with each other or with other solution providers, many pilot projects do not succeed.

33%

of French public transport users would be prepared to pay more for their season ticket to gain access to new mobility services. (source: Observatoire français des mobilités)

100 million

Chinese people use WeChat for public transport, i.e. 14% of the population. (source: Tencent press release disseminated by Siècle Digital, 2019)

According to another study on a European scale, 46% of users would be willing to pay for new smart mobility services. (source: Capgemini Research Institute)

¹ <https://research.chalmers.se/publication/204386>

² "The Sydney MaaS trial: design, implementation, lessons and the future", March 2021

The story behind MaaS



MaaS can refer to a simple app on a phone, but it can also mean major transformation projects for mobility. As Sabina Kauark, Innovation Director for SYSTRA Brazil, “MaaS is a brilliant and simple idea, but it brings with it a certain complexity. And this complexity lies more in its organisational and cultural dimensions than in its technological aspects.” MaaS represents a collection of stories, all at the same time.

A story about region(s)

One of the other promises made in relation to MaaS is based on its capacity to integrate all the transport services available to establish links between different regions. The reality of this promise can vary depending on whether someone lives in the hyper-centre of a city or in the suburbs, where their main problem is commuting, or in sparsely populated areas where there is no real alternative to using a car. MaaS alone cannot address underlying issues relating to poor transport links in a region, but the data outputs can support future decision making. Above all, the aim is to embrace its singular nature, rather than to impose a one-size-fits-all ready-made solution. It is vital to adopt a contextualised and balanced approach to each region “down to the last kilometre”.

A story about the environment

MaaS can be used to drive a modal shift towards adopting “new forms of travel” and more eco-friendly modes of transport. This can be achieved by providing mass, shared or “soft” modes of transport as an alternative to those which emit the most greenhouse gases and by providing journey planning that allows CO2 breakdown for each leg and potential for carbon offsetting initiatives.

TEXT

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A story about an economic model

In keeping with this approach to regulation and integration, MaaS must apply a pricing system that is adapted to usage, and based on a fair financing policy for the various types of transport models available on its platform. In order to strike the right economic balance, a pricing schedule must be established that is affordable for the community and profitable for mobility service providers, while offering a quality of service for which users are prepared to pay. In addition to this initial challenge, there is the need to fully review and standardise a range of pricing systems, varying from transport network season tickets to self-service vehicles paid for per use. Further to all these issues, it is important to keep in mind that the development and maintenance of existing or new types of infrastructure must be financed to ensure a quality service.

A story about digital applications

MaaS promises an additional benefit: ease of use and “smart” mobility. The aim of MaaS is to compile data from various transport service providers to offer an optimised service and a seamless user experience, via what is now the symbol of mobility: the smartphone. It is about optimising journeys, saving time and simplifying payment, as well as access to mapping and real-time information. However, delivering on this amazing promise means solving the complex issue of improving the interoperability of transport operators' systems.

A story about governance

The development of MaaS requires the organisation of governance between public transport authorities, transport operators, digital companies, regional stakeholders, and even citizens. As such, MaaS provides opportunities to establish new links between transport stakeholders in a given region. It also encourages positive behaviour, in line with public policy, to reduce the number of cars per household or to provide transport services for tourists to explore a city. In addition to the functional and utilitarian requirements, first and foremost, MaaS must be based on coordination and governance, enabling the adoption of a private or solely public approach, or a combination of the two.

A story about data

Data is key to the MaaS approach. Localisation, departure point and destination, a better understanding of uses, flows and rhythms: it is essential to make optimal use of mobility data, but also to ensure that it is disseminated. To develop a MaaS solution, all the suppliers involved, both public and private, must provide open access to certain types of data and give consideration to improving the interoperability of information systems. This kind of paradigm shift raises ethical questions about protecting passengers' private data and capturing value.

A story about transport combinations

MaaS is not just about passenger services. It also means improving mobility by integrating and combining all the transport services available, using an objective approach that appeals to users. Without an attractive transport offer, there is no MaaS. Lesser measures which include walking or carpooling are just as important as rolling stock and larger infrastructure projects that integrate complex notions of intermodality, transloading and the sharing of road space. The challenge is to offer the most attractive means of transport possible to passengers in terms of journey time, comfort and price. A broad definition that requires both the flexibility of new self-service transport options and a long-term approach to local and even national transport policy.

A story about use

MaaS is also about attracting user buy-ins, by helping them see the advantages. Where possible, it must be in step with current practices, such as the increasing trend toward remote working. Within all MaaS deployments the user should be at the centre of the design and decision making process. Existing psychological, sociological and technical barriers must therefore be overcome for MaaS to gain legitimacy and to influence our travel behaviour, in the same way that mobile phones are now integral to our daily lives: because they are useful.





MaaS and regions

TEXT
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MaaS was developed in the city. The concept was invented in Helsinki. In 2005, the Finnish Ministry of Transport and Telecommunications launched a strategic review of “intelligent transport”. In 2006, an organisation made up of public and private operators, ITS (Intelligent Transport Systems) Finland, developed the concept of Mobility as a Service¹, defined simply as a system that provides passengers with easy access to the services they need, from door to door, with a single payment device.

It was not until 2012, after countless meetings and brainstorming sessions, that a “pilot” was tested in Helsinki: a fleet of 15 minibuses with demand-responsive routes, based on real-time data. In 2015, two companies were founded, Tuup and MaaS Global, with the former conducting its first real-world testing in April 2016 in Turku, and the latter in November 2016 in Helsinki. The Whim app by MaaS Global, which provides access to a wide range of transport services with an all-inclusive subscription, has since conquered the market in Antwerp and Vienna, and has also reached further afield. *“In recent months, there has been an increase in the deployment of MaaS solutions worldwide,”* says David Alderson, Associate Director and New Mobility Services Lead for SYSTRA UK & Ireland. *Today, there are numerous “pure players” in the MaaS sector and they are mainly based in cities. The natural affinity of the MaaS sector for large cities is an important factor in this new way of understanding mobility. Cities offer particularly favourable conditions in this sense, with the density of local public and private stakeholders, the technological infrastructure, consumer habits, significantly higher than average purchasing power among inhabitants and, above all, the density and diversity of modes of transport.”*

Regardless of the continent in question or whether MaaS projects are designed for urban – as in the majority of cases – or rural

environments, they aim to promote intermodality. Naturally, this term has various definitions. Should the focus be on using several modes of transport throughout the day, or on one particular trip from one point to another? Should walking be included in the means of travel offered? In practice, the MaaS models currently being developed vary according to the specific features of regions and their diverse challenges.

However, all of these models retain a few common characteristics: the aim to develop services based on actual uses and needs; to place greater focus on use of public transport or active modes of travel (e.g. walking or cycling) depending on the region; and to give due consideration to the role of cars. In some regions, this last objective is the priority.

In practice, these three aims are dependent on two established facts. Firstly, intermodality is still viewed as a barrier to using public transport as opposed to the car, as reported by Cerema researchers (Centre for Studies and Expertise on Risks, the Environment, Mobility and Urban Planning) Cyprien Richer, Joël Meissonnier and Mathieu Rabaud². These researchers note that time spent walking or waiting for a vehicle to arrive is often perceived as two to five times longer or more “expensive” than the time spent travelling in one!

Walking is not generally considered →

as a “link” in intermodality. It is seen as “wasted time”, between two successive mechanised modes of transport - even though it is systematically included in the recommendations of health authorities. Lastly, in sparsely populated and rural areas, it is clear that on-demand services - often an integral part of MaaS - as well as private vehicles, must remain an integrated part of the mobility solution, where establishing public transport networks is not viable. Regardless of the region, in the first instance, a MaaS solution requires access to diversified and attractive transport services. In city centres, public transport naturally forms the backbone of the MaaS approach. However, while there is generally a wide range of services available in the city centres of major urban areas, this is not the case in suburban or rural areas, where, understandably, the driver of a single-occupancy vehicle still reigns supreme. Consequently, it should be noted that the potential and objectives of MaaS vary from one region to another. On a national level, the urban concentration of the MaaS sector poses a problem: it only meets the transport needs of a section of the population. Today, the challenge is to expand the range of services offered by MaaS and to connect interurban regions, to facilitate travel between suburbs.

Can MaaS offer new hope for mobility in rural areas?

Given the differences between rural and urban environments - sociology disparities, reduced options for walking in rural areas, and the lack of major transport infrastructure in rural areas - what, therefore, can MaaS bring to rural environments?

Developing MaaS in rural areas is all the more important because, as recently stated by researcher Jenny Milne³, a specialist in rural MaaS projects living in the North of Scotland, “Options are often limited to sporadic bus services [...], community transport or catching a lift with a friend or neighbour. Here, residents cannot always safely substitute walking or cycling due to distance or lack of pavements, street lighting and cycle lanes.” Developing a range of services and infrastructure for carpooling or carsharing, such as carpooling meeting areas or parking specifically for shared cars, and adapting existing bus services, are therefore obvious ways of not only reducing the inequalities in access to transportation between cities and rural areas, but also meeting the growing needs of rural communities. In Scotland, the Covid-19 pandemic has attracted more people to



“In recent months, there has been an increase in the deployment of MaaS solutions worldwide.”

David Alderson

rural areas, while at the same time, creating additional expectations and pressures in terms of digital connectivity and transport. In Scotland, the Tactran public partnership, which coordinates the public transport strategy for the Angus, Dundee City, Perth & Kinross and Stirling Council areas and is composed of representatives from these regions and advisors from civil society and the transport industry, plans to focus on these two drivers. It has developed three pilot MaaS projects, targeting three specific communities, for whom access to a more easily understandable and reliable transport network is essential: students at Dundee & Angus College, urology patients at the Perth Royal Infirmary and tourists visiting the region’s natural parks. “Our goal is to facilitate social inclusion, while promoting more sustainable modes of transport,” explains Jonathan Padmore, Senior Strategy Officer at Tactran. “However, all of these three pilot projects are focused on a specific region, and, in practice, the modes of transport on offer - train, bus, bicycle, transport on demand, etc. - are highly dependent on the nature of the region involved. For example, carpooling should play an important role in the project that is mainly located in rural areas.”

The complex nature of suburban areas

In suburban areas, MaaS projects must also coordinate complex needs, capacities and groups of stakeholders.

The PASS'Mobilités project in France, currently being implemented in the Grenoble metropolitan area by the Greater Grenoble Public Transport Authority (SMMAG), illustrates this point perfectly. Its primary goal is to facilitate access to alternative modes of transport to single-occupancy vehicles. The first part of this project makes use of car parks in the congested city centre, managed by the local authority, to drive an initiative targeting solo car drivers. The idea is to provide easy and free access to parking via a season ticket, in order to offer alternative modes of transport. “We want to encourage car users to explore alternative solutions, such as car-sharing and car-pooling,” explains Agnès Delarue, Director of Transport and Mobility for Grenoble-Alpes Métropole. “To this end, in September 2020, we opened rapid-transit carpooling lanes with our partner Ecov, for journeys between the different regions of the Grenoble Metropolitan area and the congested city centre.” The long-term aim is to provide the entire Metropolitan area with access to the public transport network, carpooling, bicycles, carsharing, etc. “It is a laborious and progressive task which involves reaching agreements with the various operators and holding discussions with the relevant local authorities, in particular, to develop a common pricing structure.”

Whatever the project scale, the key to deriving real benefit from MaaS in all regions is to listen to the practical needs of users and to involve all stakeholders (PTAs (Public Transport Authorities), operators, local government, users). In Australia, in the State of Queensland, this concept is central to the Department of Transport’s approach. As acknowledged by Ishra Baksh, Executive Director of the MaaS Program Management Office at the Queensland Department of Transport and Main Roads, “MaaS cannot be “one size fits all”. The diversity of communities in Queensland means that it cannot be presented as a readymade solution. First, we must identify the individual transport needs of each community. In Queensland, there are some very large cities and more remote areas. In the cities, the challenge is to connect the micromobility services, which are incredibly popular, to public transport hubs. In rural areas, the focus is on accessibility. For example, I believe that MaaS can help us to make more efficient use of existing means of transport, such as using school buses outside their usual hours.”

Defining a clear scope and objectives

Unsurprisingly, the many pilot projects currently being implemented around the world are primarily aimed at assessing the feasibility and real-world practicalities of the solutions available. Nevertheless, before a solution can be tested and rolled-out, public transport authorities, operators and service providers must come to an agreement on the project’s objectives. MaaS can serve a wide range of purposes: mitigating congestion in city centres, encouraging residents to choose more eco-friendly forms of travel, reducing inequalities in mobility (and therefore in employment and socialising), even operating for financial gain in the case of private MaaS companies, or providing better travel options for tourists (to festivals, iconic sites, etc.). Ultimately, MaaS is reliant on a series of political decisions (see section on “The MaaS Social Contract”).

Depending on the regions concerned, and once objectives and solutions have been defined, it is also essential that an appropriate economic model is selected. A variety of approaches can be adopted to achieve this. Regardless of the model selected (monthly season ticket, annual season ticket, fixed price or single payment tickets, etc.), the pricing strategy for MaaS projects must be adapted to the realities on the ground in each region, even if this simply means integrating aid policies aimed at certain user communities and implemented by local authorities. This is even more critical in rural areas where MaaS projects rely heavily on public funding. The so-called network effect, which in the city, encourages car-sharing and car-pooling operators, ride-hailing services and taxis to join such platforms by providing an opportunity to expand their customer base, is less effective in areas with low population density. Micromobility services, the biggest winners in the MaaS sector in cities, are not particularly suited to rural areas. The sudden increase in remote working and the commitment of companies to establishing transport practices with reduced environmental impact (this trend should be closely monitored), may also facilitate the development of MaaS models which involve transport authorities and operators, as well as human resources and corporate logistics managers.

1 <https://www.tipconsortium.net/wp-content/uploads/2019/04/finland-TLHC-v5.pdf>
 2 “Quelle(s) intermodalité(s) dans les mobilités quotidiennes?”, in *Transports et intermodalité*, ISTE éditions, coll. “Sciences, société et nouvelles technologies”, 2016, p. 261-288
 3 <https://theconversation.com/how-coronavirus-has-highlighted-the-need-for-better-rural-transport-155533>

The MaaS social contract

TEXT

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The expression “as a Service” is being used in a growing number of business sectors, and mobility, with MaaS, is no exception. The mobility industry is part of the fundamental trend towards the servicification of industries, which is a result of the increasing digitisation of activities. In this context, MaaS projects aim to provide widespread, equitable and simplified access to transport services. In addition to this major shift, the imperative need for environmentally-friendly solutions is also guiding many projects, whether concerned with reducing emissions or minimising the transport carbon footprint through less car use. Can MaaS projects effectively address these challenges? Are they the right tool to provide broader access to mobility, limit the disparities between the appeal of urban and rural areas, alleviate congested city centres, and reduce polluting emissions? On paper, it seems likely. However, such projects have not yet been proven in practice (see inset p. 17), and everything depends on the strategy of the stakeholders responsible.



D

Despite their extensive capacity for innovation, are pure players the most credible guarantors of a social, inclusive and eco-friendly MaaS approach? “It’s unlikely that private MaaS solution companies will aim to improve social welfare,” concludes economist Daniel Hörcher (Centre for Transport Studies, Imperial College, London) in a recent study¹, as this goal conflicts with maximising profits.

The Public Transport Authorities (PTAs), natural guarantors of MaaS “for good”

If MaaS aims primarily to be in the general interest, then the Public Transport Authorities (PTAs) would appear to be the natural

guarantors, if simply to ensure equitable access. In Grenoble, Agnès Delarue, Director of Mobility for the Metropolis, emphasises that “MaaS must have a single entry point, and be accessible to everyone, including those with little or no connectivity. That’s why we plan to develop our agency services and phone platforms in order to inform, advise and market the entire range of transport services.” It is hard to imagine “pure players” with no physical contact points and which, in the majority of cases, provide services via a smartphone, adopting the same strategy.

In addition to ensuring access for all, PTAs have a multifaceted role to play in terms of MaaS. As David Alderson, Associate Director and New Mobility Services Lead for SYSTRA UK & Ireland, notes: “MaaS opens up opportunities, but it requires a high level of vigilance: if there is not a coordinated effort by public authorities to oversee the roll-out of these new transport services, they could disrupt the market and tarnish the image of sustainable mobility.”



The key partners of PTAs

In practice, PTAs can develop and manage an attractive range of transport services for the user by defining the requirements and specifications of MaaS-integrated services, in close collaboration with transport operators, which represent the foundations of the mobility sector. MaaS offers PTAs an opportunity to increase the use of their services - provided, in particular, that the modal shift away from solo car driving is to their benefit and that combining it with other services for the first and last kilometres of a journey (walking, riding a scooter, cycling, etc.) constitutes a win-win situation for all the stakeholders - which specifically requires agreements to be established on pricing policy. Although the mass transport industry, which moved into services some twenty years ago, is still undergoing transformation, some operators have seized upon the opportunity offered by MaaS to become the main operator.

The public transport operator, Wiener Linien, has been testing a pilot project since 2010, which integrates the diverse range of Vienna's transport services². Following the success of this pilot, the operator purchased the technology developed for the project and set up the Upstream Mobility subsidiary which focuses solely on MaaS and is responsible for the MaaS WienMobil app. This subsidiary, which has now begun to break even, offers support to other cities aiming to develop a MaaS project based on an open platform. And what's the secret to this success? The strong connection between the public transport operator and the other MaaS stakeholders. "We must move away from a bunker mentality and adopt a collaborative approach to mobility. It must be possible to travel around a city in a quick and sustainable way; this requires combining our services with those of our partners," explains Alexandra Reinagl, Chief Financial Officer of Wiener Linien³.

Regardless of whether a MaaS project is being led by a public transport operator or by a PTA, it will not be successful unless it harnesses the innovative capacities of new mobility service providers. The technological efficiency and commercial agility of ride-hailing, car-sharing and free-floating vehicle platforms are no longer in question. While existing transport operators may fear competition, it is in the interests of new mobility companies to join a MaaS platform in order to benefit from the network effect and expand their customer base. However, any potential gain must be weighed against the risk of losing control over fares and customer relations.



"Integrating road transport into the overall pricing strategy for a region is key to this modal shift."

Edouard Naye

Technological innovation is not the answer to everything

It should not be taken as a given that the public institutions responsible for mobility and new transport companies will collaborate in an effective and seamless way. Technological innovation must be deployed to help drive institutional innovation. Nonetheless, Jean-Marc Offner, Director of the urban planning agency, a'urba⁴, warns that "it can sometimes reveal internal organisational issues and upset the power balances in relationships. However, on no account should it be considered a substitute for a necessary overhaul of the local technical and political culture."

In light of all these issues, how is it possible to get potentially competing service companies to cooperate and, above all, to ensure that the greatest number of people benefit from the potential advantages of MaaS? While at the same time, it is essential to remember that every MaaS project, no matter how socially and environmentally ethical it may be, must first and foremost meet the needs of its users. To achieve this, it is necessary to offer accessible functions and ergonomics that simplify travel, all at an attractive price. Overcoming all of these challenges requires efficient and equitable coordination of the aggregation of useful data, the quality of the user-based app, the transport services, the fare policies and the use of public space.

"PTAs are, a priori, best placed to assume the role of trusted third party to select suppliers, define and enforce specifications, and ensure data aggregation in accordance with public policy," notes Edouard Naye, MaaS and New Mobility Services Lead at SYSTRA. This key role requires an ability to rise above the individual interests of stakeholders. For a MaaS service to be successful, it must be based on data, a precious resource that organisations can be reluctant to share. For example, reservation data is mainly responsible for the revenue stream of digital platforms. The data collected by public transport operators, on the other hand, is used to form the basis of their customer relations and brand. How can stakeholders agree on which data must be shared and how much is sufficient in a way that protects the economic interests of private companies and improves PTAs' understanding of mobility, while also ensuring the privacy of users? Should transport operators, taxis, ride-hailing services, and

Is there any evidence of a successful MaaS solution?

How can we determine whether a MaaS project is actually having an impact on the social, economic and environmental issues it was designed to address? Jana Sochor, a Project Leader in Research, Department of Industrial and Materials Science, Division of Design and Human Factors, Chalmers University of Technology (Sweden), argues in a detailed study⁶ that the response must be systemic in nature if the authority leading the project is to effectively identify the barriers and drivers of success. Identifying appropriate performance indicators is therefore essential. The Kompis⁷ (created by Swedish researchers) and the SUMI⁸ assessment frameworks, a set of indicators defined by the European Commission, have recently been developed in order to standardise MaaS project evaluation. Some of the key indicators to be selected are those that document the environmental impact (modal shares, motorisation rate, externalities per passenger-kilometre, noise and atmospheric pollution levels, specific areas for free-floating vehicles, etc.) and those focusing on the socio-economic aspects (journey time, travel budget before/after MaaS, access to employment and education). Experience has now shown that the indicator to be prioritised above all others is the effective take-up by target users: this is the best indicator for determining the potential for deploying a pilot project on a wider scale.

startups operating fleets of bikes and scooters all retain their independence and develop MaaS solutions for their region as and when they see fit, or should they be viewed primarily as service providers for a "mobility aggregator", which sets the rules for all those involved?

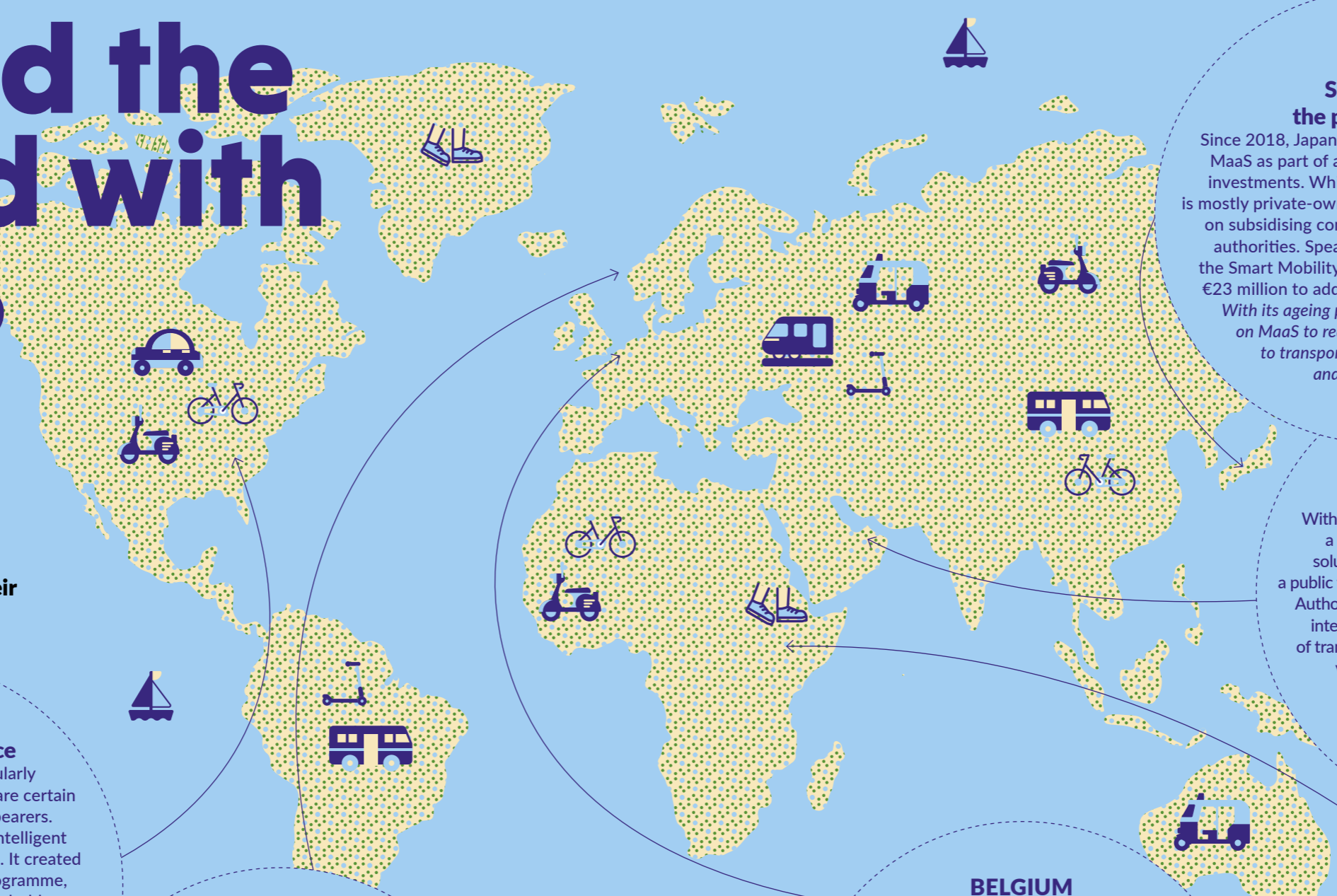
Clearly, PTAs would have to develop modes of governance and financing to provide a legal framework to respond to these issues. And the questions raised about MaaS governance go beyond just data: public space is equally important. The way that content for a MaaS solution is designed can have a major impact on the use of public space, and in some cases, to the extent where road infrastructure must be re-developed. The roll-out of new transport services has quickly led to questions about space management: e.g. what parking is available for self-service vehicles and are they allowed to use bus lanes? PTAs could therefore take on the dual responsibility of organising public transport and managing public space - as is the case in Oslo. As suggested by transport economist Yves Crozet, ⁵, PTAs could become "Multi-Modal Authorities" (MMAs). "In becoming "MMAs", PTAs will be able to exert greater influence over user behaviour by optimising the use of public space and reviewing the overall pricing structure," adds Edouard Naye. "Integrating road transport into the overall pricing strategy for a region is key to this modal shift."

Ultimately, the roll-out of a MaaS solution by an PTAs should not be limited to improving the passenger experience (more seamless) or offering the best journey (duration, price, environmental impact, etc.). For PTAs, the real added value of MaaS lies, above all, in how it is used to regulate the transport network in their region - not simply by introducing yet another app but by rethinking intermodality, matching the transport services as closely as possible to demand that will vary over time, as well as the travel fare policy in the region, via interfaces that are easy for customers to use.

- 1 D. Hörcher, D. Graham, "Pricing and efficient public transport supply in a Mobility as a Service context", Working documents from the International Transport Forum, n° 15, 2020. <https://doi.org/10.1787/79126b85-en>
- 2 http://www.cerema.fr/system/files/documents/2020/01/cerema_parangonnage_MaaS_fiche_synthese_vf.pdf
- 3 <https://www.wienerstadtwerke.at/documents/238130/1547172/Wiener+Stadtwerke+Annual+Report+2019.pdf/5bee830e-b4ba-ec36-d6a7-b0b42525f5ce?t=1612868903100>
- 4 <https://journals.openedition.org/quaderni/1172>
- 5 <https://halshs.archives-ouvertes.fr/halshs-03169744/document>
- 6 <https://www.itf-oecd.org/piecing-together-puzzle-mobility-service-user-and-service-design-perspectives>
- 7 <https://kompis.me/framework>
- 8 https://ec.europa.eu/transport/themes/urban/urban_mobility/sumi_en

Round the world with MaaS

The use of MaaS is gaining momentum almost everywhere in the world, but it is being developed in very different ways. From simple initiatives to global coordination, government authorities must establish their role in driving this change.



JAPAN Subsidising the private sector

Since 2018, Japan has been working to develop MaaS as part of a national strategy for future investments. While Japanese public transport is mostly private-owned, the government is focusing on subsidising companies and supporting local authorities. Spearheading its MaaS strategy, the Smart Mobility Challenge has been awarded €23 million to address regional mobility issues. *With its ageing population, Japan is banking on MaaS to reduce inequalities in access to transport, revitalise rural areas and boost tourism.*

DUBAI State management

With nearly 50% of Dubai's population not owning a car, the Emirate of Dubai launched a MaaS solution in 2017. As both a regulatory body and a public transport operator, the RTA (Roads and Transport Authority) directly owns the S'hail app and the DIMP integrated mobility platform. All available modes of transport in the Emirate of Dubai can be accessed via the app, as well as other services such as the Salik system which offers digital payment of road tolls. *Through data analysis, the bus routes and metro timetables have been optimised.*

BELGIUM MaaS in companies

In 2019, Belgium introduced a Mobility Budget, a mechanism allowing companies to provide employees with a sum of money rather than a company car, which they can spend on sustainable modes of transport. This measure has given new impetus to MaaS solution providers (which has only increased with Covid) to reinvent corporate mobility, with many developing new MaaS solutions. These services are specifically designed to centralise the payment of multimodal transport and facilitate the administrative management of these expenses between employees and their employer. *As a result, companies now have leverage to promote sustainable mobility.*

UGANDA The start-up

The initial development of MaaS in Uganda has essentially been driven by a digital bus ticketing start-up. While previously, ticket sales were mainly being handled locally in a more or less haphazard manner via intermediaries, the app now makes it possible to compare journeys, book a seat in advance at no extra cost and exchange or cancel tickets. Financed through commission on sales, it offers operators a software solution to provide their users with ticketing, accounting and optional services. *Initially designed to facilitate and secure the passenger experience, the Ugbus app is gradually attracting new bus operators in a number of East African countries.*

NORWAY Laying the foundations

In 2016, while restructuring its rail sector, Norway founded the public company, Entur. The initial mandate of this company was to manage the sale of transport tickets, but it quickly began to focus on passenger information, thus becoming a mobility data aggregator. It adheres to a single European standard and uses an open-source route planner that is easy for companies and regions to adopt. The legislature has made this standard mandatory for data producers. *Preferring to implement a progressive strategy, Entur is focusing less on the technological side and more on resolving organisational issues between stakeholders.*

UNITED STATES The stakeholder alliance

Although MaaS is not yet particularly advanced in the United States, there are certain organisations which are standard bearers. ITS America, an advocacy NGO for intelligent mobility, has been working in this field. It created the Mobility on Demand Alliance programme, comprised of public and private stakeholders and academic partners, in order to make better use of mobility data and to ramp up development of user-centred transport solutions. *Its main objectives are to identify barriers at the federal level, to develop recommendations for legislators and to support public-private partnerships at the local level.*

Pay-as-you-go?

There are two possible pricing strategies to choose from when developing a MaaS solution. Below, we examine how the Kurtzdorf and Idukka town councils are going to make a decision on this issue.

scenario 1

Meeting of the Kurtzdorf town council in Germany on 18 April 2025. The question of the day: should a monthly subscription model be offered, providing access to all of the city's transport options (including taxis and rental cars), or rather a pay-as-you-go formula, that also gives access to the entire range of services, but that is charged according to use? The city, which is home to a dynamic start-up ecosystem, has been attracting young entrepreneurs from all over Europe for several years now. Its population is growing at 6% per year, which is putting its train, bus and tram network under considerable strain. Several new lines are currently being constructed, but they will not be operational immediately.

"Organising a trip with family or friends on public transport should be as easy and as economical as taking the car."

"The challenge is to take some pressure off our transport fleet, and we must encourage people to walk or travel by bike for short journeys. However, a number of studies¹ have proven that when a subscription model is adopted, thus reducing the marginal cost of transport to zero, users make greater use of public transport, even for very short journeys, adds the deputy for ecology.

— The fact is we're not only trying to streamline transport use, but also to balance this use out over the day to avoid packed trams, trains and buses at rush hour, notes the mayor.

— I'm coming to that, states the deputy for ecology. With a pay-as-you-go model we could consider introducing a dynamic pricing structure in order to meet this objective...

— By increasing fares during peak hours to encourage users to travel during off-peak hours? That's one idea, however, we need to ensure complete transparency, otherwise users who end up with a higher bill than expected will be extremely

angry, and, even more so, if we introduce a post-payment system.

— Yes! A multimodal card and mobile ticketing could provide access to metros, trams, electric scooters and carpooling, and all this with a pay-as-you-go and post-payment system. We could even consider reducing fares during off-peak hours, or even making public transport free at certain times, replies the deputy for transport. What's more, with the increase in remote working, we would expect to see a decrease in the number of daily home/work trips, making the subscription option less attractive and less competitive than the pay-as-you-go offer, she continued.

— It's just that journeys to work and back only account for 20% of overall travel, if you look at the reasons given, the deputy minister for ecology adds. City dwellers also use transport in their free time. We must therefore offer transport services that are adapted to local nightlife or group trips. Organising a trip with family or friends on public transport should be as easy and as economical as taking the car... And with a pay-as-you-go solution, this would be possible!

— So, no one is in doubt about the benefits of a pay-as-you-go system. However, we shouldn't put all our eggs in one basket. I suggest that we also offer a weekly or monthly season ticket. Studies² have shown that the subscription model reduces individual car use, the deputy for equality explains.

— Some studies³ have shown just the opposite, objects the deputy for transport. Unfortunately, it's taxis or rental cars that win out over public transport when they are all integrated into a subscription-type offer. Let's opt for a 100% pay-as-you-go offer to avoid the risk of increasing road congestion and pollution, in addition to the other advantages already mentioned.

— I agree, adds the deputy for ecology.

— So, it's decided, we'll promote a new multi-modal, pay-as-you-go service, without a subscription offer. Thank you all for your contribution, concludes the mayor.

Or all inclusive?

scenario 2

Meeting between the public transport agency and independent consultants in Idukka, India, on 18 April 2025. This city in southern India has reported double-digit economic growth over the last ten years, enabling a large part of the population to become middle class, and causing a major headache for the director of the public transport agency. The first instinct of those whose purchasing power has increased is to buy their own car to get to work. Idukka's roads are saturated and air pollution is reaching critical levels. The director is hoping that the two consultants will help him to find a solution.

"You pay a fixed price every month, and in return, you have unlimited access to a brand new network."

"You've done an impressive job of modernising your transport network over the past few years..."

— It was essential, responds the director. There were various private bus lines, with no real coordination between them, and users never knew what time the next bus would arrive or what route it would take. Now, a single public transport agency oversees the bus and metro network. We have also opened several metro lines to offer better overall coverage of the city. This period of economic prosperity has definitely helped with finding the funding...

— You've taken a first step towards integration, but the system is still complex and confusing for users. There are different fares for different bus and metro lines, so it's easy to get confused. A single pricing structure is needed to make the system easier to understand.

— That could ruffle a few feathers, we've always had different pricing structures, and what about the shared electric rickshaws¹

that we've just introduced? They'll need their own fare structure... I must remind you that they're essential for encouraging people to stop using cars: public transport services are sometimes late, and workers want a reliable means of transport when they're on a tight schedule.

— They must absolutely be integrated into the network! We should offer a season ticket with a single fare for access to the metros, buses and electric rickshaws. We could even consider supplying this transport with energy generated from solar panels installed on the roofs of metro stations. Our idea is to make these vehicles the transport partner of the metro to facilitate access to it, making life easier for users. The all-inclusive package seems to be a perfect fit for this concept.

— In my view, our biggest challenge is to counter the prestigious image associated with cars, adds the second consultant. We have to show that transportation is also linked to prosperity, and, therefore, freedom. Passengers must be able to go anywhere, without limits or constraints. And what better way to do this than with an all-inclusive package? You pay a fixed price every month, and in return, you have unlimited access to a brand new network, including rickshaws.

— It's an idea... But do you really think it will be enough to dissuade the middle classes from driving their cars?

— Maybe not, which is why we've got another idea, replies the first consultant. For the new modern houses being built, we could offer to rent half of them without parking, but rather with a transport pass included in the rent! So, as well as reducing housing costs (since there will be less parking to build), car dependency will be limited directly at the source, establishing a link between prestige, wealth and public transport.

— It's a tempting idea... But it might not be easy to convince everyone. For this reason, could you provide me with an impact study at our next meeting to quantify the benefits associated with your proposals? This will put us in a stronger position when negotiating with the various stakeholders. For the moment, you have done a great job. Thank you!" ●

1 - www.itf-oe.cd.org/Pricing-and-Efficient-Public-Transport-Supply-in-a-Mobility-as-a-Service-Context-Discussion-Paper 2 - www.researchgate.net/Mobility-as-a-Service-and-private-car-use-Evidence-from-the-Sydney-MaaS-trial 3 - whimapp.com/Ramboll's-Whimapp-Study-Reveals-that-Public-Transportation-is-the-Backbone-of-Mobility-as-a-Service

1 - Tricycle vehicles for transporting people or goods



That (former?) object of desire

TEXT
Pascal Beria

ILLUSTRATIONS
Kévin Deneufchatel

Despite the cost, its low usage – parked 95% of the time - and its high propensity to cause congestion in city centres, the car has endured to this day. There are still valid reasons as to why people continue to prefer them. According to urban anthropologist Sonia Lavadinho, founder of prospective analysis firm, Bfluid, in order to remove the psychological barriers to MaaS-type mobility, you have to offer the same benefits as the car: sociability and pleasure.

→ Why are people so attached to cars despite their weaknesses?

Sonia Lavadinho The reason it's really difficult to give up your car, is simply because it operates on the best network available. A percolating network with very fine connections. The car would not exist, nor would it get such preferential treatment, if we had not made so much effort to create a favourable environment for it. The car is like

the Swiss Army knife of mobility. It can be used for long-distance journeys, for daily errands and holidays. It offers flexibility, and can be used once a year, at weekends or in the evenings. It offers freedom of movement in terms of space and time that only walking or cycling can compete with. The lack of control over time and space is a major barrier to forms of mass or shared transport, such as carpooling, where you are bound by certain constraints. It is a mistake to think that people will

readily accept the schedules imposed on them. The challenge is rather to make people masters of their own time.

→ Nevertheless, the car has become a symbol of independent mobility. Is it possible to imagine replacing it with a system more focused on shared transport?

S.L. The car raises the notion of the 'territory of the self', as defined by American sociologist, Erving Goffman, meaning the virtual bubble in which people delimit their own space. This concept can also be seen in our behaviour at the beach, with each person on their own towel under their own parasol. Cars define a very clear territory of the self. To knock the car off its throne, mobility solutions are required that reproduce this capacity to travel together, in an easy, comfortable and convenient way. Another reason why people refuse to give up their cars is for transporting goods. Innovation is therefore required in how we transport goods: cargo bikes, drones or autonomous suitcases could be used as alternatives in this field of personal logistics.

→ In response to arguments in favour of cars, how can we instigate a modal shift towards other means of transport through the adoption of a MaaS solution?

S.L. Sociological studies have shown that people do not choose a mode of transport solely on the basis of time or money but also for reasons of comfort, punctuality and sociability. These criteria should be taken into account when modelling mobility. For a MaaS system to be adopted, it must focus on more than just mandatory trips, such as travelling to work or school, or going shopping. MaaS must also address issues such as access to leisure activities, control of free mobility and provide solutions which allow people to travel together. Take carpooling, for example. This form of transport is suitable when travelling alone. However if you try to book carpooling as a family, you

will find that nobody wants to take you. As soon as you want to travel with several people, whether you're going to the cinema or a restaurant, people quickly resort back to their cars.

→ What ammunition can MaaS provide to overcome these challenges?

S.L. First and foremost, MaaS is based on a system of digital applications that provide access to real-time information. It represents a technological leap forward, providing passengers with information on whether a particular mode of transport is running late, if it may be unavailable one day or if it no longer exists. The system must offer alternatives in an instant, and especially solutions that you would not have thought of yourself, which can change your usual habits. As with Spotify, the content must adapt to you. For me, a MaaS system must have such in-depth knowledge of your schedule and habits that it can recommend the most suitable form of transport to meet your needs at that time, and, above all, to respond to your desires, because I believe that MaaS must go beyond needs, and encourage you to discover new things. Today, the issue of mobility remains too focused on the functional aspects.

→ Are there certain conditions required in urban areas for its development?

S.L. You cannot have a multimodal city without walking and cycling. The cities that have succeeded in this initially focused on individual modes of transport and then developed the public transport system. In the 1960s, all European countries were at the same stage in terms of mobility. Even the

most advanced cities today, such as Copenhagen, Amsterdam, Oslo or Bilbao, started out from the same point, being largely centred around cars. A great deal of work has been done on providing access to infrastructure and making public spaces more comfortable. The ideal size for an area in order to get rid of cars is between 200,000 and 1 million inhabitants in Europe. This is the critical mass needed to build tramway or metro networks. You then have a structure for the urban space that is conducive to multimodality.

→ Do you think that these strategic drivers are sufficient to make people prioritise MaaS?

S.L. MaaS must prioritise strategies that do not make people feel like they are wasting their time. The main issue is to offer something on a "full-time" basis: leisure, sociability. People opt to take the train so that they can listen to a podcast, read or work. None of these things can be done while driving a car. However, this is exactly what self-driving cars will be offering! Once they arrive on the market, it will be much harder to find strategies to convince people to give up their cars. In general terms, MaaS should always emphasise the benefits rather than trying to sell efficiency at all costs. Most importantly, it must appear to be desirable. It's like when you go to a restaurant and they set the table for you; whilst the action is appreciated, the main value is derived from the quality of the food and dessert, the music, and enjoyment from socialising. Once the emphasis is placed on enjoyment and sociability, then MaaS will really be able to fulfil its role as a facilitator of mobility. Our thinking in this field is still not imaginative enough. ●

Have a great trip!

MaaS and the passenger experience

TEXT
Pascal Beria

Like all mechanisms for transformation, MaaS must first be accepted. Without this acceptance, it may just end up being a nice idea that does not live up to its potential. Understanding the transformed passenger experience due to the implementation of MaaS is key to overcoming this challenge. The lack of detailed studies and historic data is the reason why it is currently difficult to assess the capacity of MaaS to respond to each use case from a global perspective. Only one thing is certain: there are as many MaaS services as there are user profiles.

Maxime
lives in the suburbs, close to the city centre where he goes to work every morning.

The journey takes an hour door-to-door by train and metro. When Maxime gets a new job, he realises that it takes him longer to get to his new workplace, even though it's closer to home. It's a good opportunity to get back on his bike and make the most of the many cycle lanes and large bike parks installed near train stations by the local authority. It's the perfect combination: by using the cycle lane that runs past his home, he can save time and even money on his commute. For less regular journeys, he uses an app to optimise his route, even if the functions are not always fully integrated into the public transport system. He does not get Google Maps or a connection with his public transport subscription, but generally speaking, it works well. And in winter, he sometimes uses a WhatsApp group for carpooling. He therefore has to juggle with several different platforms. And of course, cycling is a bit more complicated when taking his youngest son Jules to football. For this, the car comes out of the garage, because it's still the most practical way of transporting the whole family.



Kattaline
lives in the city centre, a luxury she continues to enjoy, even though remote working has significantly reduced the number of trips she has to take for her job as a consultant.

For her, integrated services such as Uber, Amazon and Deliveroo are the norm, where everything is just a click away. She stopped driving a car a long time ago because it was too restrictive. But she also had some qualms about public transport. However, once she had the opportunity to try Uber Transit, via which she can pay for all her transport fares and plan her route on a single interface (and with a single password!), she began to change her mind. It works well for carpooling, bike sharing, ride hailing and public transport, but there are still a few flaws in the system, particularly in terms of data interoperability. And recently, she has been preoccupied with the issue of data sharing: where does her data go? Is it well protected? She has nothing to hide, but she thinks about it every time she uses her app...

Icham
is a sociology student. He lives on campus and for him, transport is about utility and the cost incurred travelling to the company where he works to pay for his studies.

He receives financial assistance via his transport card, which gives him access to the whole of the public transport system, including the buses and metro, as well as shared bikes. However, there is not always a service that suits his late hours. He has tried riding his own bike, but with no secure parking at the train station, he has had three bikes stolen. However, since the local authority has expanded its transport network, with more regular timetables and a night service, Icham has gone back to taking the train and tram, which he combines with more individual means of travel such as skateboarding between connections. However, the timetable information provided



by the local authority's MaaS app is still not reliable, and more importantly, as soon as a problem arises, the system breaks down. This is the case with the tram line currently undergoing construction along its route. As a result, whenever he finishes late, he is always worried about running into problems. So, he gets back on his skateboard!



Chloé
lives in a small town and goes just about everywhere by car. This includes going to work, which is 30km away, and travelling to her house by the sea at the weekend.

Even though she has given up the second family car, the distance from the station, the lack of integrated services and, above all, a lack of knowledge about local transport services mean that she has never really considered giving up this means of transport. However, one day when her car broke down, she looked for a temporary solution: a monthly subscription set up by the local author-

Claudio
lives in an apartment a few kilometres from the city centre with all its services and shops. Claudio uses a wheelchair. Since his retirement, what he wants most of all is transport services which enable him to keep in touch with the outside world.

He uses just about every mode of transport made available by the local authority, which has opted for a green and hyper-connected transport network and ensured that most of its infrastructure is accessible to people with reduced mobility: partnerships with private car-sharing operators, trams, electric buses, etc. His grandson has shown him how to use the MaaS service set up by the local authority. Via this app, he can use geolocation to find his position with his smartphone and find the means of transport best suited to his needs, as well as the routes that are accessible to wheelchairs. This app has another great function: it reads the route out loud and displays it in large font on his screen. So, he doesn't need to put his glasses on at every intersection. A whole new world has opened up to him! The only slight issue is that the app always suggests the quickest route, whereas he would like to choose his own itinerary and get ideas for shows or exhibitions to visit. And there are still a few issues to be addressed, like the Lilas slope between the bus stop and the station. It's too difficult to go up with his wheelchair but he always finds someone to help him, which means he has some human contact on his journey!



ity offering a monthly mobility package which allows her to travel by train, bus or bike, and includes a defined amount of car-sharing. Thanks to the car-sharing offer, she can get to work and sometimes even go away for the weekend. She has also bought an electric bike for travelling to the train station when the weather is good, which she leaves in a bike park financed by the city and the transport authority. The only limitation is trying to find a contact person when there is a problem. When she found herself in the middle of the countryside waiting for a shared car that never came, there was no one to contact. And it's difficult to do the shopping or take the children with you when carpooling. She still has the car to fall back on if things get complicated.

A different kind of city

TEXT

Guillaume Renouard

ILLUSTRATIONS

Marie Casays

From different backgrounds and cultures, Xavier Desjardins, professor of urban planning at Sorbonne University, and Taru Jain, a researcher at Melbourne in urban planning and transport organisation, are both experts in urban transport. We met with them and asked about their views on how the cities of tomorrow can address new travel-related issues.

Taru Jain



Xavier Desjardins



“This means that there is no one-size-fits-all solution, and that we must develop different MaaS options for each type of population, always with the same aim of reducing dependence on cars.”

Taru Jain

→ What should be our key focus when thinking about the future of mobility?

Xavier Desjardins Until now, people have been using new modes of transport, ranging from the train to the car, to get around more, and urban planning has adapted accordingly. Cities have expanded, the distribution of facilities has been modified, and urban landscapes have been divided into different functions spread across the space: centres with a high level of activity, residential suburbs, commercial areas, etc. The city as we know it has therefore been patiently remodelled through transportation, and today, we must take this reality into account if we want to transform mobility. We cannot reduce the influence of the car without taking into account how close housing is to shops and places of economic activity, for example.

This is a tough problem to solve because land-use planning, required to make reducing car use more socially acceptable, takes a long time, whereas the constraints that have prompted the rethinking of mobility demand rapid action.

Taru Jain One of the main conclusions I came to in my PhD is that the main driver for people to travel is not available transport options, but rather individual identity and social roles. So, on the one hand, there is what I value as an individual: living surrounded by nature or in the city centre, having a lot of space or being where a lot is going on, whether I have children or not, and, on the other hand, the social norms related to my environment. A lot of people I spoke to during my research would say things like: “My parents expect me to buy a house and own a car before I even have a child.”

→ What does this mean from a Mobility as a Service (MaaS) perspective? Do we need to understand the sociology of those for whom these solutions are designed? Do you need to be an anthropologist as well as an engineer to do this job?

T.J. Absolutely. Of course, we have to take into account social and professional developments, such as working from home, as well as communities and their expectations. This means that there is no one-size-fits-all solution, and that we must develop different MaaS options for each type of population, always with the same →

aim of reducing dependence on cars.

For people living in city centres, this involves expanding the transport network and better integrating alternative solutions such as bikes and electric scooters. However, for those living in the suburbs, it may be more important to set-up solutions such as car-sharing to reach the train or metro station closest to their home... It should be remembered that MaaS is not a miracle solution: it will never be possible to persuade people living in the countryside to give up their car completely, but they can be encouraged to switch from two vehicles to one, for example. Cities evolve over time in line with the preferences of their inhabitants, the way they work and the prevailing social norms. While MaaS cannot transform these trends on its own, it can be used to support them and thus help the authorities with urban planning.

X.D. This sociological imperative is all the more important as the aim of transport policy is, for the first time, not to maximise travel but, on the contrary, to be more economical. If we consider the history of urban planning in Europe, the post-war period was the era of equipment manufacturers, due to the imperative to transform cities through transport and infrastructure. From the 1980s onwards, cities began to compete with each other, to become as beautiful and attractive as possible to attract investors. And since the 2010s, it has been about planning for scarcity, for land and energy, with the idea that we are (generally, but not all) rich, but that we must tighten our belts, otherwise we are heading for a collective disaster.

This is a complete reversal, because humanity's ambition was previously to move away from

"The aim of transport policy is, for the first time, not to maximise travel but, on the contrary, to be more economical."

Xavier Desjardins

scarcity. From now on, we are choosing to impose a frugal approach upon ourselves, and this requires a certain amount of planning, collective deliberation regarding our life choices and fairly refined management, particularly of the way we travel. Managing a mobility policy is no longer about simply increasing the supply of public transport, it requires all sorts of trade-offs, and involves working towards a new geography of facilities and local life to limit the obligatory use of the car, while at the same time ensuring these changes are accepted by the population.

→ What approaches do you think will be used to structure

MaaS management in the coming years?

X.D. The drive to combat climate change is very strong in the political field, at least in Europe, so we can assume that it will have a structuring effect. This issue is already driving innovations in mobility, with the electric car for example (even if there is some uncertainty about the true environmental benefits of electric motorisation).

Digital technology should also be considered, as it will also play a role in this restructuring. With remote working, people will be making fewer trips between the office and home, but this does not mean that those in the city will travel less: perhaps they will use the time saved to go and

play sport in a different part of the city or to visit friends... More generally, the traditional methods of dividing up our living spaces are changing: offices are now increasingly being installed in our homes. Are traditional shops combining a product display, a financial exchange and the delivery of goods gradually disappearing? Once again, this issue must be factored into mobility policy.

→ In practical terms, what measures can be adopted?

T.J. The problems and solutions are not going to be the same everywhere. For example, Melbourne is a very large and mainly residential city, and, furthermore, the car is an integral part of the Australian way of life, and thus the private car is the preferred mode of travel there. However, in New Delhi, many people also aspire to own their own car, but this is more for reasons of status: there is a certain stigma around taking the bus, it is seen as the mode of transport of the lower classes, and it is unthinkable for a successful businessman not to drive to work. These are realities that are important to bear in mind when improving mobility.

In addition, Delhi has a good and very modern metro system that covers a large part of the city. But unlike a city like Paris or London, getting to the nearest metro stop in Delhi can be problematic: the pavements are in very poor condition, cars regularly park on them, and as there is no lighting, they are dangerous at night. In view of this, an existing system for Uber two-wheeled vehicles has been further developed, which is very economical, allowing people to get to the nearest metro station or bus stop.

→ Will MaaS transform the city as previous transport revolutions have? Will it help to reduce urban sprawl?

X.D. Today, the main barrier to reducing car use is the distance between residential areas and people's workplace. This structure is the result of house prices, which drive people to live further and further away from their place of work. Therefore, mobility management cannot solve this problem and it must be dealt with at the source, through strong political decision-making on land-use planning. To answer your question, we would therefore see exactly the reverse: it is essential to reduce urban sprawl and decentralise the organisation of cities in order to transform our approach to mobility.

→ Can MaaS be useful in all countries, or do people of certain cultures or in specific geographical areas find it easier to adapt their travel habits?

T.J. I think it can be useful everywhere. However, it seems to me that this approach could be particularly effective in developing countries, where the car penetration rate is still fairly low. By offering an economical alternative to the private car, MaaS can be used to dissuade a section of the population from switching from public transport to the car. In countries such as the United States or Australia, it is harder to convince the public to get by without a car as they have already embraced this form of travel. Prevention is better than cure.

X.D. It is often said that people are not prepared to change their habits, but I don't share this view. They are certainly reluctant to change within a fixed system: if you tell someone who works 30km away from home that they have to cycle there from now on, they are not going to agree to do so. However, in reality, people are very flexible when our surrounding environment changes. A colleague of mine has demonstrated that about one in five English people change their transport habits completely every year, because they have changed jobs or moved house. I teach in Abu Dhabi, where the most affluent residents get around in 4x4s. However, as soon as they go abroad, they adapt to local customs, riding a bike in Amsterdam or an electric scooter in Paris... We can actually adapt our travel habits very quickly, and our perspectives on the social value of a form of transport can change rapidly.

Taru Jain specialises in urban planning and transport organisation. She has completed a PhD on how shared mobility options are changing user behaviour in terms of public transport and has worked on a number of mobility projects in the UK, China and India. She is now based in Melbourne, Australia, where she conducts research for the Transport Department in the State of Victoria.

Xavier Desjardins is a professor of urban and spatial planning at Sorbonne University's Geography and Planning Faculty. His research work focuses on the links between urban planning and mobility, regional development policy and urban planning concepts and methods.

Masthead

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