

Improving lives by transforming travel

**UMP**

# Mobility as a Service

## A Practical Guide



## Foreword

The Urban Mobility Partnership is dedicated to supporting the development of multi-modal transport systems that place the consumer at their heart. Digital connectivity and the ability to plan, book and pay for a multi-modal journey in one application is a key part of this convenient and cost-effective future mobility system. It is also crucial to combatting some of the most pressing challenges facing our sector today, such as climate change and the impacts of COVID-19.

The potential benefits of Mobility as a Service (MaaS) deployed by local authorities for citizens are numerous. The innovation drives modal shifts towards sustainable travel and away from private car ownership- reducing congestion, air pollution, poor connectivity, and carbon emissions in the process. It is also rich in data, improving journey planning for the consumer and supporting public authorities with managing travel demand and transport planning. The adoption of MaaS will also encourage a safe return to public and shared travel post-COVID and combat reduced consumer confidence in these modes brought about during the pandemic. For consumers, MaaS also offers a seamless integrated transport service that, combined with the requisite physical integration of modes, enables them to get from A to B in a safe, cheap, convenient and accessible way. For cities, it enables public transport systems to be integrated with burgeoning modes of transport to support social and economic growth of the city.

However, these benefits of MaaS can only be achieved if public authorities encourage good practice and a sustainable and fair MaaS ecosystem. The members of the Urban Mobility Partnership are committed to working towards MaaS solutions targeted at residents and supported by local stakeholders that have maximum benefit for the consumer and society and, to show this commitment, have signed a MaaS Declaration of key principles to abide by.

UMP has also created this essential guide to Mobility as a Service deployed by public authorities for citizens. Across our unique membership, we have worked closely on MaaS pilots across the UK and are delighted to share our expertise with policymakers and public authorities. For example, members have collaborated with the Highlands and Islands region on the new Go-Hi app, which will improve the connectivity of sustainable transport modes and access to more reliable and up-to-date travel information in the Highlands of Scotland, making consumers more confident in planning journeys that consist of multiple sustainable modes, rather than using their private car. We have also seen the benefits of MaaS firsthand through our work with Transport for Greater Manchester on a MaaS pilot where 26% of the participants were more willing to use public transport and 21% were more willing to use active travel after experiencing MaaS.

Our guide introduces the concept of Mobility as a Service and the different routes local authorities can take in order to implement sustainable MaaS eco-systems for residents that achieve their desired social, economic and environmental benefits, such as contributing to net zero ambitions. It outlines how authorities can encourage a dynamic MaaS market; promote different delivery models; establish fair competition; operate viable platforms that support their aims and account for their abilities; support the development of MaaS with infrastructure and policy levers; and work collaboratively with the private sector.

The Urban Mobility Partnership is delighted to share this guide with authorities across the UK. Our members look forward to working with public authorities across the country to create local MaaS solutions that help deliver their transport strategies and put citizens first.

### **Founders of the Urban Mobility Partnership**

**James Lancaster, Enterprise Holdings,  
Steve Stewart, Stagecoach Group and  
Eman Martin-Vignerte, Bosch.**

## Executive Summary

Urban transport is facing significant challenges. There is an urgent need to combat congestion, air pollution and carbon emissions. The impacts of COVID-19 have also led to a rapid reduction in public and shared transport use and consumer confidence in these modes. To achieve the UK's environmental targets and build a transport system for the future, public and private sector bodies must collaborate to develop integrated, convenient and sustainable transport networks. Effective and well-designed Mobility as a Service is crucial to this.

Mobility as a Service (MaaS) is the integration of transport services into a single mobility service, which is accessible on demand, allowing the consumer to plan, book and pay for a multi-modal transport journey in one app. MaaS has the potential to revolutionise the way consumers travel, providing an unparalleled choice of transport modes and making journeys significantly more convenient and cost-effective.

It is estimated that the multi-modal travel driven by the adoption of MaaS will replace over 2.3 billion urban private car journeys annually by 2023<sup>1</sup>. This modal shift towards sustainable travel leads to further positive impacts on carbon emissions, congestion and pollution. For example, MaaS is forecasted to lead to annual time savings of over 500 million hours by 2023, through improved connectivity and reduced congestion. MaaS can also satisfy consumers' post-COVID need for safe and integrated demand-driven transport services and support transport planning.

In recognition of the benefits of MaaS and the pressing need for its adoption, the Urban Mobility Partnership (UMP) has established a Declaration that commits its members to good practice principles surrounding its implementation. However, for MaaS to live up to its potential, public authorities need to incorporate it within a clear vision and strategy. This paper by UMP is intended to support public authorities by providing insight into the challenges they face when implementing Mobility as a Service and exploring the different delivery models, regulatory frameworks, operating models and commercial models they can adopt and the benefits and drawbacks of these.

MaaS adoption is influenced by the role public authorities choose to take in its development and selecting the right approach for an area is essential to delivering social, environmental and economic benefits. Public authorities can remain passive, facilitate the development of the MaaS ecosystem, or be proactive and actively incorporate MaaS within their policy and strategy. Proactive authorities will also support MaaS by ensuring the development of complementary physical infrastructure, such as mobility hubs, as well as the prioritisation of the most sustainable modes of transport, both in terms of road priority and investment.

They can even incentivise the adoption of MaaS through a mobility credits scheme where consumers are able to scrap their old polluting vehicles for credits, exceeding the market value of their vehicle, that can be redeemed on sustainable modes paid for via the MaaS platform.

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<sup>1</sup> Maas - The Future of City Transport 2027, Juniper Research, April 2020

# 1

## Background

In these unprecedented times the transportation sector faces new challenges. In addition to continuing its key role in helping cities and regions curb greenhouse gas emissions to slow the rate of climate change and adapt and respond to changes and emerging trends, it needs to deal with the aftermath of the COVID-19 crisis. It is essential that the public and private sector collaborate to develop integrated transport networks and services that help achieve environmental and societal objectives, as well as being commercially sustainable. Cities will need to innovate and boost the availability and provision of integrated mobility services so that urban centres and surrounding areas can continue to function effectively without compromising the environment, public health, or the efficiency of the network.

Mobility as a Service (MaaS) is the integration of various forms of transport services into a single mobility service, accessible on demand. MaaS is a core component of the future of transport if we assume the desire for integrated, data and demand-driven transport services is only set to continue post-Covid. An advancement in the understanding of MaaS is urgently needed to support cities with the implementation and management of multi-modal mobility providers. It is therefore important to provide up-to-date information on MaaS solutions and access to best practices that make sense commercially and can be applied to this rapidly changing world.

This guide to MaaS will provide insight into the challenges that those embarking on MaaS will face and practical guidance to a successful MaaS implementation.



# 12

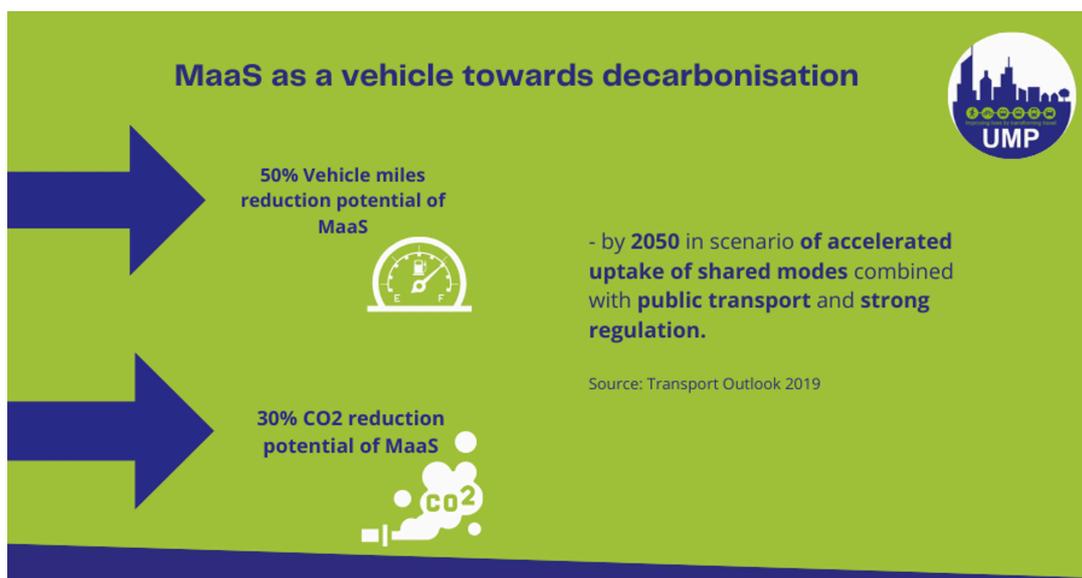
## Why MaaS?

This document acknowledges the considerable potential that MaaS has in helping cities achieve their policy goals and providing citizens with reassurances about the safety and broad benefits of using public transport. In addition to helping citizens get around more easily and contributing to environmental and health goals, MaaS can also provide information to local authorities to help them plan future transportation services and improvements. It can even contribute to a city's, town's or region's economy and generate new revenue for all transport stakeholders<sup>2</sup>.

The MaaS review undertaken by the House of Commons Transport Select Committee<sup>3</sup>, outlined the considerable potential benefits that MaaS could bring to a city or region if supported by the right policies. These included:

- Reduction in CO2 emissions.
- Reduction in road congestion.
- Improvement in air quality because of decreased car use and road congestion.
- Improvement in users' physical health by encouraging increased use of active modes of travel such as walking and cycling.
- Improvement in passenger travel experience by offering simplified ticketing and payment processes, and more bespoke and personalised journeys.
- Improvement in customer choice by facilitating awareness of, and access to, new transport modes, thereby improving people's understanding of the environmental impacts of their journeys and empowering them to make better and more informed choices.
- Facilitating better management of travel demand and transport infrastructure by utilising aggregated customer and travel data from the MaaS app. Transport planners can both optimise use of existing transport networks and better plan necessary infrastructure enhancements.

In order to obtain the benefits outlined above, authorities must have a clear vision and strategy aimed at providing the public with greater flexibility and the correct suite of both public and on-demand transport services. Any MaaS deployment should reflect this strategy and all stakeholders (Local Authority, MaaS Operators, Transport Operators) should understand the role they play in this joined up approach. MaaS also needs to fit into a wider approach to transport and air quality policy by the public authority. Addressing the transport needs of consumers in a holistic way is essential to fulfilling MaaS' full potential and ensuring it delivers on its environmental, social, economic and health benefits.



<sup>2</sup> Mobility as a Service: Implications for Urban and Regional Transport, POLIS, September 2017

<sup>3</sup> Mobility as a Service, House of Commons Transport Committee Report, December 2018

MaaS has been growing quickly in recent years and, through continuing development, it is starting to mature into a powerful mobility tool. Juniper Research<sup>4</sup> has estimated that the adoption of MaaS platforms means multi-modal travel will replace over 2.3 billion urban private car journeys annually by 2023, which is a rapid increase from 17.6 million MaaS journeys globally in 2018. Similarly, Juniper forecasts that MaaS will lead to annual time savings of over 500 million hours by 2023 through improved connectivity and reduced congestion – equivalent to 90 hours per annum per MaaS user. The COVID-19 pandemic understandably restricted the growth of MaaS platforms in 2020 and 2021, but we believe that MaaS initiatives will rebound quickly in 2022, as local authorities re-evaluate their transport strategies and consumers regain confidence in the safety and comfort of travelling sustainably. Until now, MaaS platforms have been primarily trialled on a smaller scale, often using models that are less sustainable for transport operators and MaaS platform providers in the long-term. However, there is now the technology, ambition, and public-private sector partnership opportunities to develop MaaS platforms that are commercially viable on a large scale. Transport authorities and local authorities should engage with MaaS platform providers and transport providers now to design pilots for 2022 and beyond, in order to properly understand how MaaS deployment can influence and improve urban and regional travel in the future.

## How MaaS changes transport networks



### By encouraging **modal shifts**:

- From single occupancy private vehicles to shared mobility
- Better information on active travel options
- Making multimodal trips more accessible, convenient and attractive
- Providing better information and access to tourists, public transport networks and services



### By making **transport network operations more efficient**:

- Less vehicles – less congestion, improved productivity and quicker public transport network
- "Fleet effects" (B2B market): Easier to implement measures through agreement with fleet operators
- Data gathered by MaaS app used for predictive traffic management services and network and capacity management



<sup>4</sup> Maas - The Future of City Transport 2027, Juniper Research, April 2020

# 3

## Understanding MaaS

For the user, MaaS offers added value through the use of a single application to provide access to mobility, with a single payment channel instead of multiple ticketing and payment operations. To meet a customer’s needs, a MaaS operator facilitates a diverse menu of transport options, be they public transport, car sharing or bike-sharing, car rental, or a combination thereof. A successful MaaS service also brings new business models, as well as ways to organise and operate locally available transport options, with advantages including access to improved user and demand information and new opportunities to serve unmet demand for transport operators offering user-centric business models.

**The aim of MaaS is to be the best value proposition for its users, providing an alternative to the private use of the car that may be as convenient, more sustainable, and even cheaper, while contributing to the achievement of societal and environmental goals.**

From a town or city perspective, MaaS needs to work for the end user, the city or town, and its commercial partners. There will not be widespread adoption nor anticipated benefits without a compelling product that provides constituents with the same freedom and flexibility that vehicle ownership does. Partnership between public sector authorities, transport operators and mobility service providers is key to MaaS delivering a wide range of modal choices. If deployed effectively, MaaS is a powerful instrument that can deliver a coordinated approach across all aspects of mobility in urban centres and surrounding areas. By providing local authorities and providers with better data, MaaS can aid future transport planning by recording when, where, and how people are moving (or want to move). Rich in data, MaaS can also help cities to ensure the right suite between public transport, new shared mobility services and active travel. It can also collate real time information on network usage, peak points and disruptions, which helps cities to use travel demand data to efficiently manage and plan the network.

**“MaaS is about providing easier mobility for citizens and better data for cities.”**



Fig.1: What is Mobility as a Service

By placing the user at the centre of the solution, MaaS can create an environment of incentives and behavioural change nudges for users, for example:

- Encouraging consumers to travel at different times and from different locations to efficiently manage the available transport infrastructure and network services.
- Shifting travel behaviour from single occupancy private vehicles to make better use of shared transport.
- Encouraging consumers to use active travel modes and incentivising a confident return to travelling by public and shared transport post-COVID.

The key to ensuring the consumer is at the centre of any MaaS eco-system is to develop socially-inclusive MaaS platforms. Well-designed MaaS has the potential to revolutionise the way consumers travel, providing an unparalleled choice of transport modes and making multi-modal journeys significantly more convenient, accessible and cost-effective. However, it is important that these benefits are accessible to all and barriers that make it difficult for people to utilise public transport, shared mobility services and active travel are removed. Public authorities must ensure that services can be used effectively by all consumers, including those less familiar or confident with technology, those from traditionally less well connected areas or those from low socio-economic backgrounds.

The MaaS marketplace is rapidly expanding but it is still a relatively new sector and the long-term commercial viability of MaaS solutions, that are accessible for all consumers, is yet to be determined. However, MaaS that is financially supported by public authorities with clear operating standards and as a tool to achieve policy objectives could help to ensure the commercial viability for platform providers and ensure public authorities achieve their public policy goals.

## Managing the Complex Mobility Environment with MaaS

MaaS has the potential to simplify the increasing complexity of the transport system for consumers. With multiple public transport operators, an ever-growing number of ride-hailing companies, bike-sharing services, ticketing, and payment options etc., streamlining and simplicity are required to deal with all the pain points that the transport environment currently has. Consumers also increasingly expect to plan, book and pay for key services, as well as manage other forms of administration, such as paying public sector bills, using their smart phones. MaaS meets this expectation within the transport realm.

The customer desire for integrated and safe demand-driven transport services is likely to increase post Covid. MaaS can act as an enabler of new agility in the mobility sector – it brings a much-needed variety to the demand side all the while helping with optimisation of the supply side. MaaS operators, as the interface between users and mobility providers, are in a strong position to understand and match the demand and supply, based on the preferences of the users and the prevailing circumstances. MaaS can be a valuable asset in reconstituting user trust in mass transit and shared modes by providing various public, private and shared mobility options and an optimised offering for every single journey. Detailed up-to-date information on various options is also becoming even more essential, as the importance of safety is increasing and consumer behaviours change. This provides a great opportunity for cities and mobility providers to offer a truly integrated and comprehensive service creating a “network effect”.

# 4

## Establishing MaaS

Establishing a robust framework that governs the delivery of MaaS within a given region, town or city is essential for the smooth operation of the MaaS ecosystem. Governance, commercial and service level agreements are the crucial elements that integrate the various operational levels of MaaS solutions. The role that the public and private sectors have at each level will depend on the level of control, service capacity and collaboration that already exists at a local level. This includes the willingness to build an effective partnership by the different public and private mobility players.

The role that transport authorities have can range from authorities being the MaaS lead through to authorities taking a laissez-faire approach and letting the market determine how MaaS develops. There are currently six delivery models, identifying the role of the public sector as one of trust and control and the private sector as innovative and agile.

The roles that both the public and private sector could play are detailed in the figure below.

### MaaS Delivery Models: Who plays which role?

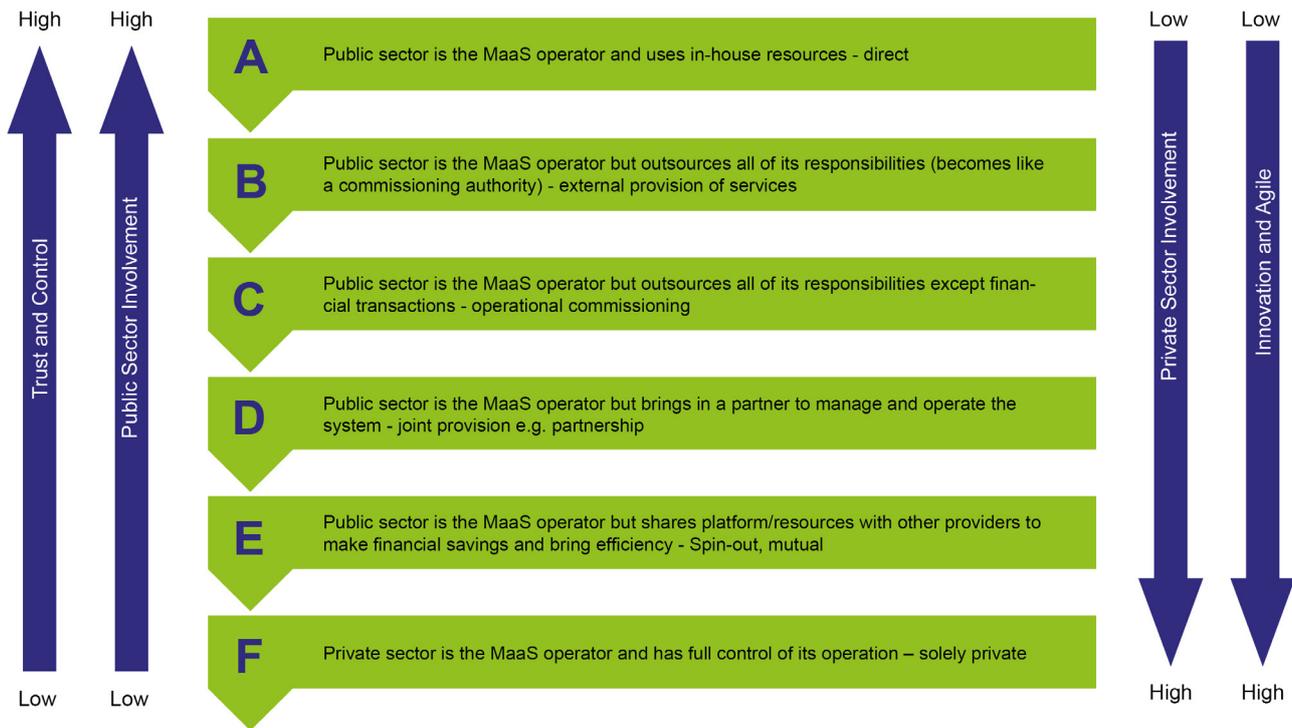


Figure 2. Urban Mobility Partnership – UMP.org.uk

Before detailing the different options, it is important to note that there is no single perfect solution fitting all environments. Each town, city and region needs to evaluate which option works best for them, taking into consideration aspects such as the local conditions, the relationship between public and private sector actors, the available resources, and the policy objectives. Close collaboration between the public and the private sector and active engagement from local and transport authorities and stakeholders is critical for the success of MaaS, regardless of the chosen model.

### Case Study of MaaS collaboration Greater Manchester (UK)

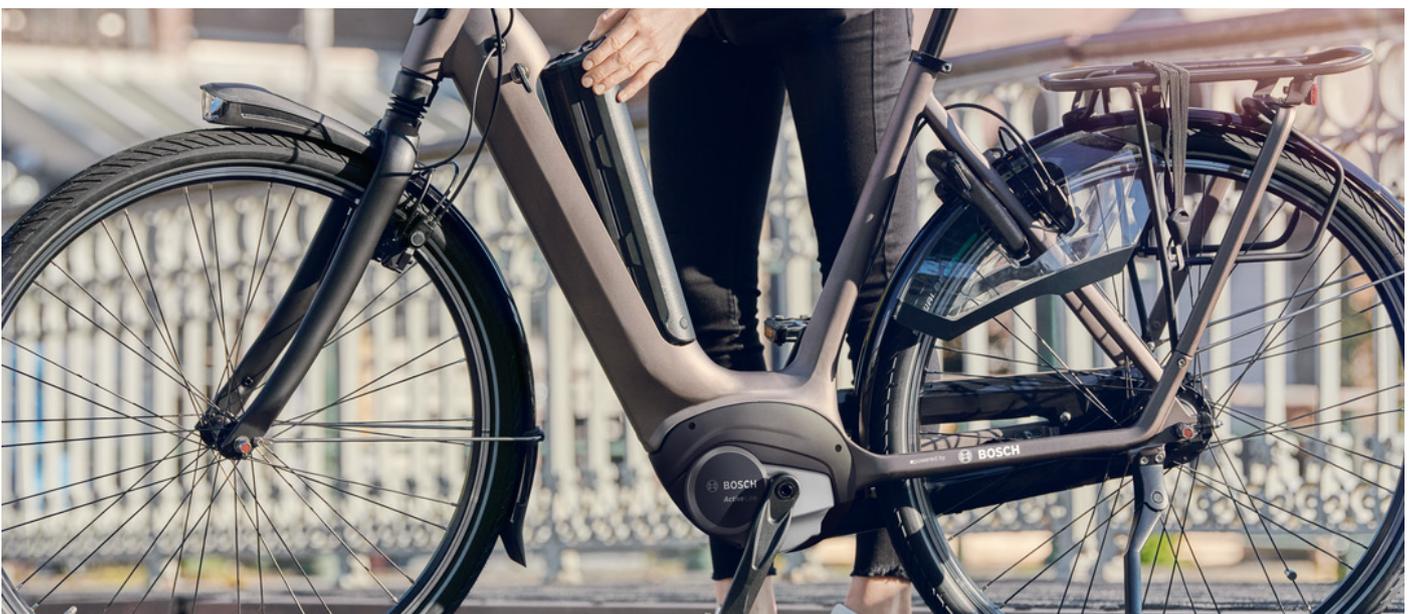
Transport for Greater Manchester (TfGM) has been working on Mobility as a Service since 2017 through directly commissioned work as well as using funding from European Union's Horizon 2020 Programme for its participation in the iMOVE and MaaS4EU projects. TfGM, along with its partners, undertook a MaaS Proof of Concept in early 2018 which manually integrated multiple services into a single offering for the end users and tested the MaaS experience. The results from the Proof of Concept (PoC) showed that 26% of the participants were more willing to use public transport after the Proof of Concept and 21% were more willing to do use active travel. 6 months after the PoC, 20% have started doing more active travel and 40% still sometimes travel via a new route or mode. These results are consistent with the findings from MaaS implementation in Finland. TfGM have already started to build an outline business case for MaaS in Greater Manchester that identifies the willingness to pay from user for MaaS and what the operational model for MaaS should be in Greater Manchester.

MaaS for Greater Manchester has strong support from stakeholders and external partners, including Stagecoach, Manchester Airport Group, Enterprise Holdings and commercial mobility provider, Mobilleo, as the platform to power the public/private MaaS solution for Greater Manchester.

### Striving for a Dynamic MaaS Market

The core function of MaaS is to act as the catalyst for the establishment of a new dynamic mobility market. It enables an ecosystem made of many different partners, sharing a common principle of delivering a door-to-door seamless mobility experience. The MaaS ecosystem allows for the delivery of new services to the end customer and the combination of various services into higher value offerings. Without a strong buy-in from the users the expected benefits of MaaS cannot be unlocked.

Public administrations play an important role in the development of a sustainable MaaS ecosystem, both at a local and national level, by removing initial development barriers and supporting the overall development of MaaS.



Public administrations could also create a single API repository and ensure that relevant data is made accessible by the respective operators and authorities through a data integration layer. This could include aspects like available routes, services, timetables, location for access, etc. This approach ensures control rests with the local authority and that the mobility strategy aligns with its environmental, commercial and operational aims. However, it can be potentially expensive and time-consuming. An alternative approach is for the authority to engage a MaaS operator with existing integrations into local transport operators and deploy a version of its platform that is configured to reflect the authority's aims. Under this model, the public authority does not have the same direct control over integrations but a properly structured agreement could ensure the MaaS platform presents options to end users in line with the aims of the authority.

This new digitally powered mobility requires an administration that works with the broad vision, helping to move from a standalone vision to an interoperable and interconnected picture for the benefit of the customer. To make this future a reality, the public authorities may need to establish new working methods within the industry, creating a level playing field and facilitating stakeholders' dialogue when necessary.

### **Recommendations for public administration to encourage MaaS:**

- Avoid enabling bottlenecks and monopolies and the development of closed systems.
- Ensure access to the mobility market for all operators, regardless of size.
- Work with open but secure digital architectures and standard interfaces.
- Support cooperation among the various members of the MaaS ecosystem.
- Take advantage of the opportunities offered by MaaS to improve the operations of transportation services to meet policy goals.
- Provide some of the initial investment necessary to jump-start the ecosystem, taking into account equity, sustainability and the economic and job creation benefits that MaaS deployment may bring.
- Collaborate with the private industry to develop innovative business models and new services.

## **Establishing MaaS**

Establishing a level playing field is at its core a question of fairness, that offers the various players the opportunity to succeed by following a set of rules that apply to all. A metaphorical playing field is said to be level if no external interference affects the ability of the players to compete fairly and this applies to both MaaS operators and mobility suppliers. It is vital that the implementation of MaaS does not lead to a reduction in the quality of service the consumer receives.

The regulatory requirements needed to establish an effective MaaS level playing field have been the focus of many studies and official hearings. KPMG<sup>5</sup>, in their review of the regulatory, governance and commercial arrangements required for MaaS, outlined three regulatory approaches that municipalities might take towards MaaS to promote healthy competition, recognising that these do not operate in silos:

- Open MaaS Market – regulation is light touch (if relevant at all) as modal choice does not correlate with risk factors around air quality and congestion.
- Light MaaS Regulation – modal choice is great, and the impacts are higher (e.g., congestion and poor air quality) therefore light regulation of private MaaS operators is in place, such as requiring operators to display all available travel options, not just their own.
- Full MaaS Regulation – intervention required to ensure policy objectives can be met. Substantial regulation is required with either the MaaS scheme being operated by the authority and the suppliers operating the transport services or MaaS schemes being tightly governed in terms of the pricing and services offered.

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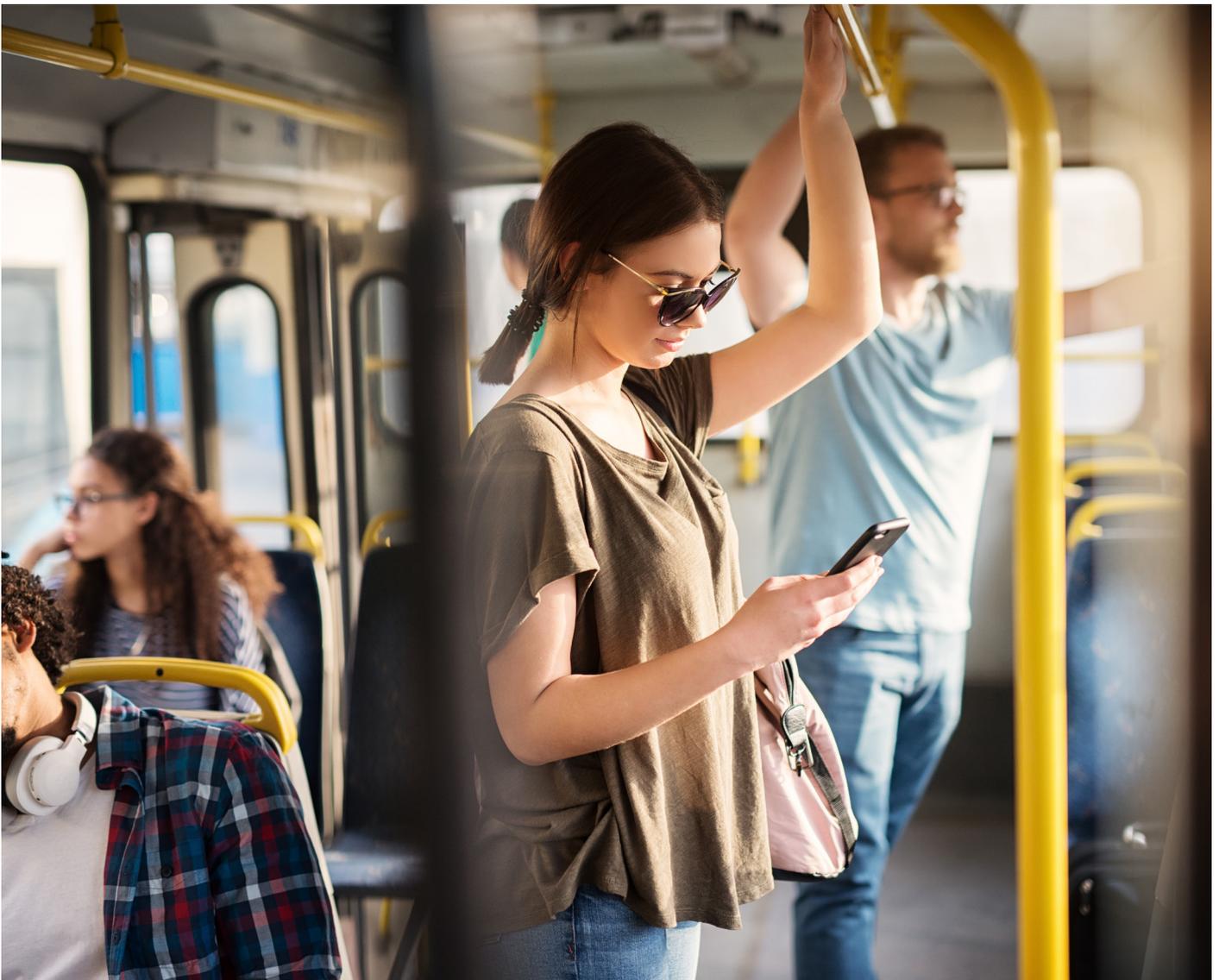
<sup>5</sup> Reimagine Places: Mobility as a Service, KPMG, August 2017

# 15

## Ways of Operating MaaS

Alongside the regulatory framework, a key part of the delivery of MaaS within a given town, city or region, is establishing the right operating model that ensures the quality and consistency of the service to its citizens, is supported by mobility suppliers and is compatible with the chosen regulatory approach and level of responsibilities by the municipality. As shown earlier, there are various roles that a public administration can take in relation to MaaS, from operator to regulator, or leaving the provision of MaaS to the private sector. Operating models are about the delivery of value through defining value chains. How stakeholders and key players wish to support and engage in this chain will define the way in which the MaaS operating model is implemented.

There are currently three main operating models which can be used by municipalities, as outlined below. In addition to the operational model chosen by the public administration, it is highly likely that the market supply will be complemented by other solutions that target specific market segments. The likelihood for this development is particularly high if the uptake and demand for MaaS services is promising.



## Operating Model 1: Private Integrators

In this model, private integrators act as MaaS operators in the context of a marketplace with bilateral agreements with the transport operators and mobility service providers.

The following benefits and inconveniences<sup>6</sup> could be expected from the private integrator model.

| Expected benefits                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Expected inconveniences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Focus of public sector intervention                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Customer oriented and innovative solutions encouraged by competition between integrators</li> <li>• Variety of differentiated offerings also targeting different market segments</li> <li>• Better choice possibilities for users</li> <li>• Geographical scalability beyond scope of local or regional offerings, possible through commercial organisations</li> <li>• Implementation costs and risks covered by private integrators</li> </ul> | <ul style="list-style-type: none"> <li>• Need for policy for data sharing important for informed policy making, regulation and effective infrastructure developments</li> <li>• High market entry barriers (contract negotiations with each Transport Service Provider, data and integration capabilities required)</li> <li>• Potential risk of reduced alignment of MaaS impact with public policy goals</li> <li>• Risk of market dominance of “the winner takes it all” which could lead to the preferential mobility supply chain being determined by a MaaS operator and a lack of competition</li> </ul> | <ul style="list-style-type: none"> <li>• Support for the integration of Public Transport Services within the MaaS platform</li> <li>• Providing a framework to ensure compliance with societal and environmental goals (sustainability, equity)</li> <li>• Monitoring of the market development and dynamics</li> </ul> |



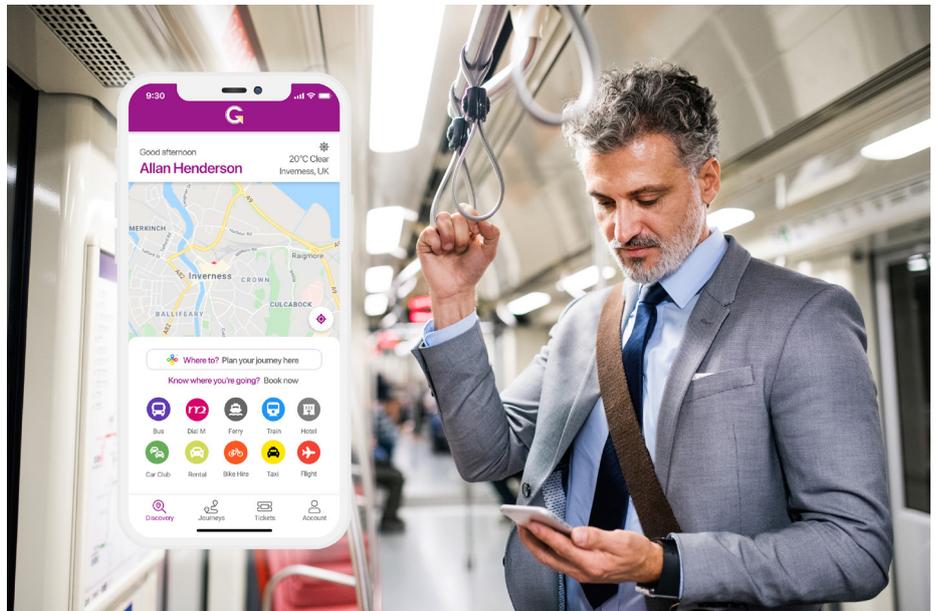
<sup>6</sup> Inspired by Mobility as a Service (MaaS) and Sustainable Urban Mobility Planning: [https://www.eltis.org/sites/default/files/mobility\\_as\\_a\\_service\\_maas\\_and\\_sustainable\\_urban\\_mobility\\_planning.pdf](https://www.eltis.org/sites/default/files/mobility_as_a_service_maas_and_sustainable_urban_mobility_planning.pdf)

## Operating Model 2: Open Back-End Platform

In this model, an open back-end platform would be set up by a public entity with rules determined by the public authority or another neutral party. The platform would serve as open infrastructure on which different MaaS providers can build MaaS solutions. All mobility services would have to open up their APIs to be integrated into the platform.

Expected benefits and inconveniences<sup>7</sup> are detailed below:

| Expected benefits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Expected inconveniences                                                                                                                                                                                                                                                                                                                                                                                                                                               | Focus of public sector intervention                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Variety of differentiated offerings that target different market segments</li> <li>• Better choice of possibilities for users</li> <li>• Scalability is possible since local, interregional, and international service providers can enter the market (according to the spatial coverage of back-end platform)</li> <li>• Low entry barriers: open, non-discriminatory access to integrated data and systems (e.g., ticketing, reservations, etc.)</li> <li>• Easier access to data for the public sector</li> <li>• Greater involvement in MaaS development by public authorities</li> <li>• Alignment with broader policy objectives</li> </ul> | <ul style="list-style-type: none"> <li>• Risk of slow and bureaucratic processes</li> <li>• Dependence of the public authority on technology organisations to develop and maintain the platform and keep up with the fast pace of technological advancement</li> <li>• Costs of the back-end platform (establishment and maintenance) on the public sector</li> <li>• Back-end platform does not solve issues related to complicated tariffs systems, etc.</li> </ul> | <ul style="list-style-type: none"> <li>• Data standardisation</li> <li>• Data availability: common, fair and non-discriminatory data sharing rules</li> </ul> |



<sup>7</sup> Ibis

### Operating Model 3: Public Transport as the Integrator

In this model, public transport would be the integrator. The MaaS service could either be developed and operated entirely by the public sector or be awarded or licensed to a private organisation for a specific amount of time. In order to not to block further market development, similar access to market, including access to tickets and favourable tariffs, should be provided to other potential operators.<sup>8</sup>

| Expected benefits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Expected inconveniences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Focus of public sector intervention                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Since public transport in many cases has the largest customer data base, in certain cases it would make sense for public transport to take the lead in integrating other mobility services</li> <li>• Easier alignment with public policy goals as a result of the close organisational or contractual relationship between the public MaaS entity and the authorities</li> <li>• Easier access to data for public sector</li> <li>• Helps to promote the brand of public transport services, creates opportunities to engage with the market</li> </ul> | <ul style="list-style-type: none"> <li>• A “one approach fits all” MaaS offering developed by the public sector may not be aligned with the needs and preferences of citizens that are not currently users of public transport</li> <li>• Lack of geographical scalability because the MaaS service would be covering the authority’s jurisdiction</li> <li>• Potentially a less customer-oriented and less innovative service if conventional public transport does not adopt a forward-looking approach, which may then hinder the attractiveness of services</li> <li>• Legal criticisms in the frame of European competitive law in relation to the roles and competencies of authorities</li> <li>• Costs of the development of the platform and services</li> </ul> | <ul style="list-style-type: none"> <li>• Ensuring competition neutrality relation to the roles and competences of authorities</li> </ul> |

**The long-term delivery framework and operating model is significantly dependent on factors such as the strength of established mobility services, the physical infrastructure available, the readiness of travellers, the institutional organisation, and the legal framework for the transport services. Given the complexity of the MaaS ecosystem and an optimal set up, it is clear that MaaS is about building a strong partnership and dialogue between the relevant stakeholders.**

<sup>8</sup> More about roles of public and private sector and market access and competition neutrality issues can be read here: [Study on market access and competition issues related to MaaS \(MaaS Alliance 2019\)](#).



# 6

## Understanding the Commercials Behind MaaS

A key question when developing a commercial model is “how do you plan to make money?”. Understanding the various business approaches can help municipalities engage in a more meaningful way with private sector partners. A number of MaaS commercial models considered by the industry<sup>9</sup> are outlined below:

- **Agency model:** Based on pre-paid bulk purchases with a volume discount. The profit margin is gained through reselling (at normal published rates or at higher-than-published rates)
- **Merchant model:** Based on commissions that transport operators pay for the reselling of their services
- **Transactional model:** The transport operators pay fees per click, per tap, per settlement or per invoice
- Contribution of B2B customer: For example, a service fee for aggregated billing
- **MaaS-as-a-Service:** Integration of a MaaS-offering in a non-mobility offering like in a banking

### Service to customers

In addition to these business models, MaaS operators can increase their market presence and revenues through delivering two models for consumers: 1) pay as you go (usage-based); and 2) subscription packages. These two models, discussed below, reflect some of the practices in the current MaaS market.

#### 1) Pay as You Go

MaaS vendors can offer usage-based pricing models that can be sold on a pay-as-you-go basis. In some cases, pay-as-you-go will be a good route to introduce users to the MaaS marketplace but for many it could be a long-term viable solution. Aligning product pricing with use can unlock latent demand by reducing the up-front cost associated with a subscription service for lower-use customers. It can also allow greater travel flexibility for the consumer, which is of increasing importance due to the impacts of COVID-19 on work travel habits. The pay as you go model will be important for the future of MaaS services. Over time, ad-hoc users will understand the benefit of the platforms and some will move to subscription models.

#### 2) Subscription Model

MaaS provides an opportunity to offer a multi-modal subscription package, which would entail a monthly charge for set package of selected transport services. This approach has multiple benefits:

- **Simplicity:** A subscription model simplifies the purchasing process and makes it very easy for both users and the MaaS operator. Users have easy access to the services available and allowances involved. The payable amount is known in advance, and this enables users to plan their budget well. The revenue predictability of the business also increases, and the MaaS operator can gauge where it is headed.
- **Incentives:** As MaaS is intended to improve environmental conditions, the operator can offer users incentives for changing their behaviour. This can include free miles or discounted subscriptions, which will further enhance the user experience. MaaS operators can align incentives with the policy objectives within a given region or city by encouraging the use of active travel, where the municipality wishes to encourage this mode, or reduce congestion and improve air quality by incentivising shared and public transport.
- **Higher Customer Retention:** A subscription model ensures that the customer can be reached and engaged with on a regular basis, providing them with tailor-made information on the services and also insights on their mobility and its impacts (like CO2 savings).
- **Possibility to integrate with mobility budget schemes:** Cities and employers can establish clear financial incentives that support the sustainability and affordability of MaaS subscription package.

<sup>9</sup> Report Mobility as a Service, UITP, April 2019

In addition to the two main models presented above, in future, we expect new initiatives in the area where MaaS is provided to be an addition to another service (added-service model). Then MaaS provides the opportunity for other services to provide access to a wide range of mobility solutions. Some examples have already emerged, especially from the financial sector, where banks have integrated MaaS services into their service offering.

## Provision of physical infrastructure to support MaaS

To enable the smooth operation of mobility offers, cities need to provide the right physical infrastructure to support MaaS, whilst unlocking the potential of encouraging commuters to use more sustainable transport options.

A number of key physical elements that support both MaaS and a more diverse mobility eco-system are identified below, and these enablers are important to also keep in mind in allocating funding to transport. The investment in the infrastructure supporting MaaS will enable a new range of shared, on-demand and connected services to be integrated with the existing transport market and can be used by the city to attract new emerging services suitable for inclusion in a more dynamic MaaS marketplace.

- **Basic infrastructure:** A key to the success of any mode is high-quality basic infrastructure. If the basic network for walking, biking, public transit, car hire etc. is not available, MaaS will not solve the challenges. It is crucial to keep in mind that the whole user experience is important, from the moment the user closes the door behind them until they are at their destination. MaaS can create multimodal users, but this also means that you can have less experienced users and people with different needs, including with regard to accessibility factors, using the infrastructure. Properly designing this infrastructure benefits all and provides an extra incentive for people to start experimenting with different modes.
- **Mobility Hubs:** The next generation interchange between longer distances and first mile/last mile modes are located at key parts in urban centres and surrounding areas, with highly visible focal points within the streetscape that seamlessly integrate public and shared mobility offers. These are modular in approach and scaled to local needs. Shared and on demand services operating from mobility hubs can include:
  - **Demand Responsive Transport:** Providing on-demand service systems supporting accessibility in towns and urban centres.
  - **Vehicle hire:** Accessing extensive branch networks to provide vehicles on demand as an option for users to access cars when longer trips are required.
  - **Car Clubs:** Building upon existing car clubs, the provision of on-street car/van share services with potential for EVs as they become commercially viable for such applications.
  - **Bike Share:** providing users with on-demand access to dock or undock (pedal and electric) bicycles at a variety of pick-up and drop-off locations for one-way (point-to-point) or roundtrip travel.
  - **Micro-consolidation and e-cargo bikes:** Small, secure, open access consolidation centres to transfer deliveries to e-cargo bikes for local deliveries.
  - **Open Access Parcel Lockers:** Provision at Mobility Hubs and other locations of parcel drop and pick-up lockers. Lockers operate on an open access basis where any commercial delivery operator can make use of them.
  - **E-Scooters:** E-scooter service provision on private campus-style developments, potentially expanding to other areas.
  - **Ride Sharing:** Ride-sharing services with charging stations for EVs.
  - **Van-sharing:** Van sharing with charging stations for EVs.
- **Future-proofed Infrastructure:** As a part of a MaaS plan, it is important also to ensure the provision of Electric Vehicle charging infrastructure to support the widespread adoption of shared electric vehicles as well as the necessary digital connectivity to enable autonomous vehicle operation.



# 17

## Policies and Incentives

The use of MaaS as a policy tool enables cities to adapt the MaaS delivery model to their strategic and policy priorities. Every city region has its own idiosyncrasies and local context, and it is clear that “one MaaS size” does not fit all. The first step is to define the main transport related issue or policy goal that the city would like MaaS to help with. In some cases, the city authority may wish to use MaaS for specialist applications benefiting different users, such as executive travel, students or suburban families, among others. This will depend in many cases on the policy drivers, geographical considerations, and active desire to drive a modal shift from private car ownership towards public transport, active travel, car hire, ride-hailing, e-scooters and car clubs.

With this in mind, MaaS adoption will, in part, be influenced by the role the transport authority in a city chooses to take in developing Mobility as a Service. Selecting the right approach is particularly relevant for cities pursuing a model of future mobility aimed at delivering the greatest social and economic benefit, whilst improving road safety, congestion, air quality and reducing emissions. However, it is recognised that without governance, such a scenario may not be realised. The figure below illustrates three possible positions of cities regarding the advancement of MaaS in their area.



Fig 3: Local Authority Positioning in MaaS

### Incentivising MaaS Behaviour

Incentives and marketing strategies can be helpful to accelerate MaaS uptake, and this can be particularly helpful in a post-COVID-19 context in terms of driving consumers back to shared and public transport.

Gamification and nudging,<sup>10</sup> for example, are elements of motivational techniques to be used with rewards as an incentive for recognised good travel behaviour. A MaaS platform offers a unique opportunity to apply them in a personalised way connected to attributes of time, cost, and convenience.

<sup>10</sup> From Game Design Elements to Gamefulness: Defining Gamification. Conference Paper, Detering ,S. et al, September 2011

Presented below are some key incentive options and some examples:

- Promotional and/or push information: The user is pushed information on sustainable mobility alternative choices either at purchase phase or on trip.
- Financial incentives: For example, retail and leisure discounts, discount codes, free rides, taxation exemptions, discounts on added value services etc.
- City-wide loyalty schemes: This could include loyalty points won through the use of sustainable mode choices.
- Enhancing a socially responsible user profile: The user is motivated by the awareness of his/her socially responsible behaviour. Similarly, the user could be praised for an active and healthier mobility user profile; for example, by using a bicycle or walking.
- Trial offers of certain mobility solutions

For example, in the iMOVE MaaS project<sup>11</sup>, gamification was used to encourage voluntary travel behaviour change by motivating the self-rewarding impulses and desires of the user to travel more sustainably rather than relying on the top-down approach in which travel behaviour change is compelled by dis-incentivisation (i.e., congestion charging) or restrictions on supply (i.e., reduced road space for traffic, higher parking charges, etc.). Gamification frequently, but not exclusively, takes advantage of digitisation and the increased use of smartphones and social media to amplify the experience.

Closely related to gamification, as an element of motivational techniques, is the use of rewards as an incentive for recognised good travel behaviour. An example where gamification and rewards or incentives have been used successfully with a high engagement rate, is the Beat the Streets<sup>12</sup> scheme developed by Intelligent Health. Beat the Streets encourages families to reduce their use of the private car by rewarding walking and cycling to school or work. Essentially, smart boxes, known as a ‘Beat Box’ are placed along identified walk/cycle routes. People are given smartcards to tap Beat Boxes along given routes over a period of time, which allow for recording individual active travel activity and useful data gathering. Schools and workplaces can also compete in teams which adds the gamification element by encouraging people to travel more actively than their contemporaries. By travelling sustainably, participants can earn points and win prizes or rewards. Further means of stimulating sustainable travel behaviour include bonus schemes, where travellers are rewarded for using shared or public transport. Rewards must be considered carefully: different segments may respond to different types of rewards such as free or discounted travel, partner discounts, or the use of sports cars. It continues to be the case that convenience appears to be the highest motivation for uptake of mobility initiatives. This reiterates the need to carefully develop appropriate rewards and incentives and in developing this, mobility service providers have a role in understanding what drives consumer behaviour.



<sup>11</sup> Sustainable MaaS Business Models: A Typology, iMOVE EU Project, July 2018

<sup>12</sup> <https://www.beatthestreet.me/>

## Mobility Credits

A Mobility Credits Scheme, of which Urban Mobility Partnership has been at the forefront of developing, is an excellent example of a way of attracting private car owners to a MaaS platform. The initiative asks participants to scrap their older diesel cars (Euro 1 to 5) to access 'credits' over a set period to spend on appropriate shared transportation options. As an incentive to consumers, the credits offered exceed the market value of the car and can be used on a range of sustainable and efficient modes of transport to suit their lives. Depending on the local area, the credits would include bus and active travel initiatives such as bike share or hire, car club and daily rental, rail, and tram. The scheme could be delivered through MaaS applications, with additional rules introduced concerning length of vehicle ownership and vehicle type.

### Mobility Credits in the West Midlands

The scheme is currently being piloted by Transport for the West Midlands and Coventry City Council as a means to reduce emissions by incentivising positive behaviour change in favour of other modes of transport over private car ownership. The reliance on private cars across the WMCA region is a leading contributor to air pollution, including harmful NOx emissions. It is estimated that a mobility credits scheme in the West Midlands would decrease car usage amongst participants by 70%, with an increase of 12% in bus use and smaller increases in car club, active travel, and train usage. The NOx emission savings would also be significant: analysis shows that an uptake of 70-100% in a mobility credits scheme would allow the West Midlands to reach within 15% of the EU Emissions limit. The Mobility Credits scheme could act as a game changing catalyst to improve air quality whilst encouraging a shift from private vehicles to more sustainable transport options.

## Network and Mobility Management

- **Dynamic and smart curbside and parking management** can be effective ways to support uptake of MaaS at local level. Dynamic Curbside management, including curb-space booking for car share, van share and freight deliveries within regional and town centres can incentivise shift to use of sustainable modes and better utilisation of our existing assets, helping to support local high streets. A detailed study published by the International Transport Forum<sup>13</sup> looks at the potential for a shift away from curb use focused on street parking to more flexible allocation that includes pick-up and drop-off zones for passengers and freight. It also provides insights from a modelling exercise to quantify the impact of re-allocating curb space from parking to pick-up and drop-off zones.
- By combining data, information, and several mechanisms of traffic management with those of Mobility as a Service, we can reach the desired high level of mobility management by focusing on and empowering the efficiency and sustainability of mobility. Predicting and adapting to passengers' flow variations and needs, and even being in position to manipulate them with incentivization techniques, could act as a means to regulate traffic flows, respond on the road network's bottlenecks and handle sudden incidents in real time. It is also the key to planning Traffic Management measures in advance. Furthermore, the concept of MaaS also brings new subjects to the scope of Traffic Management as it expands beyond vehicles also covering users of public transportation, cyclists, and even walkers.<sup>14</sup>

<sup>13</sup> The Shared-Use City: Managing the Curb, OECD/ITF, May 2018

<sup>14</sup> <https://tm20.org/wp-content/uploads/2020/10/TM-2.0-Maas-Alliance-report-for-Task-Force-on-Multimodal-mobility-final....-4.pdf>

# 8

## Regaining the Confidence of the Travelling Public Post-COVID-19

### Regaining trust to public transport and shared services

The mobility sector has been strongly hit by the COVID-19 crisis with a wide societal and economic impact. During the lockdown period the transport demand in almost all affected countries went to almost zero. The long-term impacts and their gravity are still difficult to predict; the most argued topics are the willingness of users to return to high capacity (high occupancy) mass transit systems, unforeseen consequences related to general economic uncertainties and long-term financial viability of some services.

While this crisis was something difficult to foresee, its consequences have included some positive aspects as well, such as an increase in cycling and the rapid take-off of remote working. These new habits might bring along a long-lasting impact on mobility patterns; for example, several studies have now indicated improved air quality and less emissions in major metropolitan areas. However, as we have come out of the most severe periods of the pandemic and citizens have begun to move around, we have seen a return to pre-pandemic levels of private car use. It is clear that, given efforts by Governments to disincentivise shared and public transport use during the pandemic, concerted and well-funded campaigns will be needed to rebuild confidence in public transport and proactively promote sustainable travel. Building consumer confidence in sustainable modes will be essential to maximising the consumer benefit of MaaS platforms.

However, MaaS can also be a valuable asset in reconstituting the user's trust through providing users with various public, private and shared mobility options and the optimised offering for every single journey. Detailed up-to-date information on various options is also becoming more and more essential as the importance of safety is hugely increasing. MaaS operators, as the interface between users and mobility providers, are in a very good position to understand and match the demand and supply, based on the preferences of the users and the prevailing circumstances.

With this in mind, resources should be put towards regaining the trust of the public by focusing on things that matter to customers and that encourage them to return to public and shared transport.

- **Safety-first:** MaaS can provide customers with information that gives passengers confidence on the measures taken to ensure their health and safety. It can provide loading information on bus capacity and bus stops and can help balance demand, it can allocate on-demand services and waiting slots and it can manage a track and trace facility that offers all passengers assurances regarding the use of the transport environment.
- **Personalisation:** MaaS can offer alternative routes/modes, encourage off-peak travel and deliver service or location-based offers and incentives.
- **Trustworthiness:** MaaS should guarantee correct real time information, a high level of quality, have a strong reputation/brand and offer or point to reliable transport services with a fair pricing.
- **Simplicity:** An easy, user-friendly, convenient service offering single sign-on access with integrated information all along the trip to help the traveller in the decision-making process.
- **Impartiality:** MaaS must be non-discriminatory and provide access to all available mobility options, keeping in mind efficiency and sustainability over commercial profitability.
- **Flexibility:** MaaS must be able to adapt to changing traveller needs and thus should consider fair pricing and personal preferences.



# 19

## Mobility as a Service Declaration

Over reliance on the private car, particularly for short distance single occupancy journeys, has resulted in road congestion and higher pollution, leading to economic, environmental and health problems for our regions and cities. MaaS aims to encourage modal shift towards sustainable transport by simplifying access to transport operators and in turn providing easier mobility for citizens and better data for cities.

The Urban Mobility Partnership has developed a series of goals designed to facilitate MaaS and established a Declaration for MaaS signed by our members.

1. MaaS is about providing easier access to mobility for citizens and better data for cities.
2. MaaS has the customer at its centre by providing a customised, safe, and sustainable way of travelling and giving consumers the multi-modal options they need and want.
3. MaaS is an integral part of modern transport policy at local, regional, national, and European level.
4. MaaS promotes the use of active and sustainable transport modes, to improve quality of life in cities and regions.
5. MaaS can lead to 'quick wins' in transport policy (good results with low investment costs in the short term).
6. MaaS recognises the importance of the car in society but seeks to provide viable and sustainable mobility alternatives that reduce the need for car ownership.
7. MaaS brings together a variety of stakeholders, including city authorities, transport operators, data providers, technology and platform providers, insurance companies and regulatory organisations. The effectiveness of MaaS depends on the cooperation of these stakeholders and the involvement of the private sector in MaaS delivery is essential.
8. Mobility should be considered as central to spatial planning - the integration and implementation of MaaS practices in spatial planning helps to create better cities and regions.
9. MaaS makes for more efficient public transport services.
10. Quantifying and planning for the public benefits of MaaS is an important foundation that would benefit from quality time, attention and commitment.

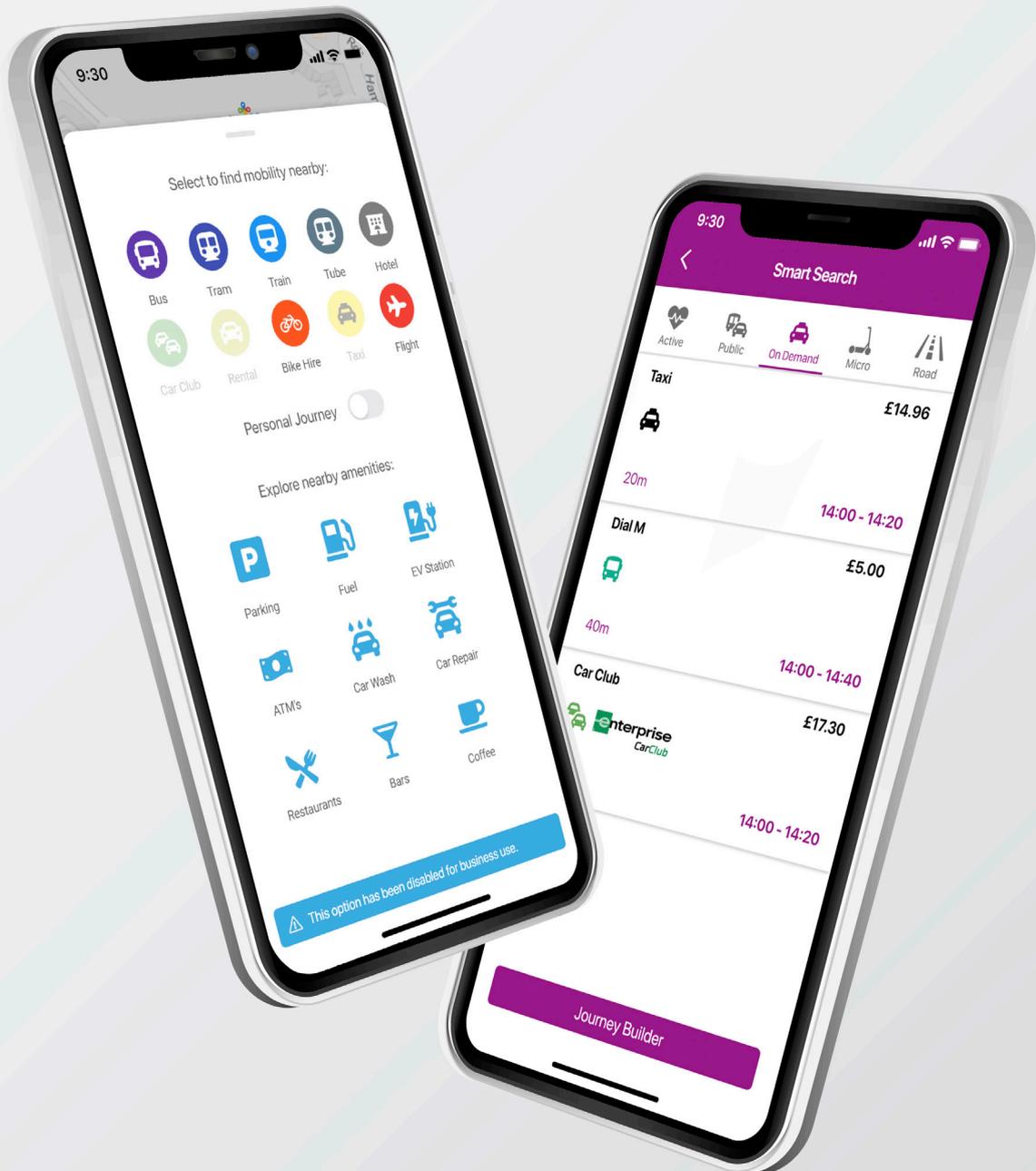
### Advancing the Declaration for Mobility as a Service

There are many ways of driving forward the Declaration for MaaS. We welcome a broad range of creative activities, which MaaS professionals have already practiced. For policy makers and professionals not deeply involved in MaaS, one basic and very effective way to support the Declaration is to embrace MaaS practices and the principles of the Declaration.

### Urban Mobility Partnership Pledge

The Urban Mobility Partnership pledge to support the Declaration for Mobility as a Service in our activities. Specifically, we will:

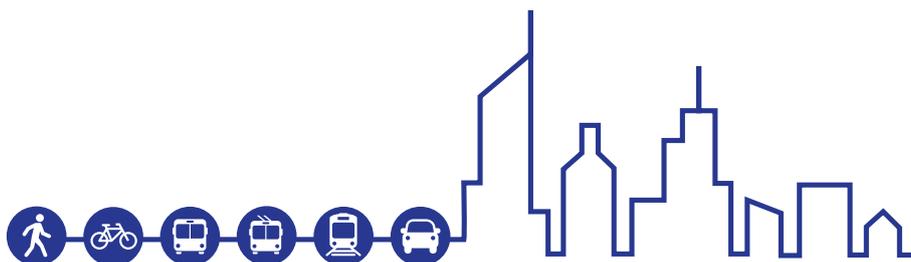
- Promote transport policies that support the Declaration's principles.
- Help establish MaaS solutions to increase quality of life in our cities and regions.
- Promote the Declaration for MaaS in our public and professional environment.



## Founding Members



## Partners



Improving lives by transforming travel

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