

Mobility as a Service in a multimodal European cross-border Corridor (MyCorridor)

Deliverable 7.2

Socially responsible travel incentives and promotion schemes

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Abbreviation List

Abbreviation	Definition
AI	Artificial Intelligence
APIs	Application Programming Interface
B2B	Business-to-Business
B2C	Business-to-Consumer
ВКК	Centre for Budapest Transport
BMaaS	Business Mobility as a Service
BRT	Bus-Rapid-Transit
CEF	Connected Europe Facility
C-ITS	Cooperative Intelligent Transport Systems
D	Deliverable
DRT	Demand Responsive Transport
DSA	Digital Services Act
EC	European Commission
ECF	European Cyclist Federation
ECJ	European Court of Justice
EEA	European Environment Agency
EP	European Parliament
EU	European Union
FaaS	Fleet as a Service
FBAA	Belgian Federation of Buses and Coaches
GDPR	General Data Protection Regulation
ICT	Information Communication Technology
IRU	International Road Transport Union
IT	Information Technology
ITS	Intelligent Transport Systems
MaaS	Mobility as a Service
NAPs	National Access Points
OIS Regulation	Online Intermediation Services Regulation
PSI	Public Sector Information
РТ	Public Transport
SRT	Service Registration Tool
ТМ	Traffic Management
UITP	International Association of Public Transport
VEC	Vulnerable to exclusion user
WP	Work Package



Executive Summary

The Deliverable *D7.2: Socially responsible travel incentives and promotion schemes* serves as a descriptive and analytical document which discusses how incentives and promotion schemes could encourage and increase the use of MaaS solutions, including MyCorridor. The aim of this Deliverable is to provide recommendations on how to introduce a socially responsible incentive policy for MaaS. This policy is based on an overview of existing incentives and promotion schemes and from the knowledge obtained during the project pilots.

Chapter 1 introduces the purpose of this document, the anticipated interrelations and the target audience. **Chapter 2** gives an overview of the European transport market by providing insights on traditional transport operators and ones that have recently emerged due to technological disruption. Relevant regulation is also discussed and mapped according to new mobility service providers. **Chapter 3** looks into the opportunities and challenges that could impact the deployment of MaaS while **Chapter 4** lists relevant regulations and policies that MaaS will have to consider. The economic model influencing MaaS is identified in **Chapter 5** where different types of economies such as platform economy and sharing economy are analysed. **Chapter 6** discusses how MaaS could enhance a socially responsible travel behaviour.

Chapter 7 summarises existing travel incentives and promotion schemes in Europe and beyond, target groups for advertisement and other loyalty schemes across all transport modes are also discussed. Furthermore, in **Chapter 8**, travel incentives and promotion schemes applicable to MaaS are listed as well as advancing proposals on how to best incorporate them in a MaaS scheme.

The Deliverable concludes in **Chapter 9**, with a summary of the overarching aspects of the Deliverable as well as providing recommendations.

Socially responsible travel incentives and promotion schemes already exist in the mobility sector. Some are also being embraced by MaaS solutions to advance their customer base. Despite these early attempts at integrating incentives and promotion schemes, more has to be done to enhance MaaS' image and reputation. Socially responsible travel incentives and promotion schemes go hand in hand with how MaaS is branding itself due to its ambition to promote a more sustainable way of travelling. This Deliverable highlights how there are numerous opportunities but also challenges for MaaS in general. Undoubtedly, targeted and thought out travel incentives and promotion schemes have the ability to address many of the challenges listed in this Deliverable. Users are now more aware of the role that transport has and react more sensitively in order to curb their own carbon footprint. MaaS should learn from other sectors that already have been exposed to such incentives and promotion schemes. Overall, socially responsible travel incentives and promotion schemes data are an important enabler to achieve this.



1 Introduction

1.1 Purpose of the document

This Deliverable is prepared in the context of WP7: "Business models, incentives and legal issues" and aims to summarise and analyse existing socially responsible incentives and promotion schemes in the MaaS ecosystem and beyond. MaaS is a concept which is rapidly picking up across the EU due to technological disruption and advances that are currently taking place in the transport sector. MaaS is considered to be an enabler in promoting responsible, sustainable and environmentally friendly mobility and therefore it should be encouraged on a wider scale. For this reason, this Deliverable aims to produce suitable policy recommendations that can foster and speed up the uptake of MaaS. In order to achieve this, this Deliverable conducts a mapping exercise to address existing gaps and the current situation in the European transport market.

1.2 Intended audience

The nature of this Deliverable is public, meaning that it will be (upon approval by the EC) available through the website of the project (<u>http://www.mycorridor.eu/project-library</u>). Considering the various policy, research and technical aspects that this Deliverable touches upon, the following intended audience is the following:

Internally to the project:

- MyCorridor developers that are interested in understanding how to embed specific features in the back-end related to promotion schemes and incentives.
- MyCorridor partners working on the business modelling and legal aspects of the project (WP7).
- MyCorridor partners involved in piloting and testing activities (WP6) receive insights from this identification and analysis of socially responsible travel incentives and promotion schemes and vice versa (this Deliverable is substantiating the knowledge obtained during the pilots).
- Externally to the project:
 - Technology, content and service providers as well as transport operators that are interested in learning more on how to make their services more attractive to mobility users.
 - Policymakers, such as the EC and EP that aim to promote greener solutions related to personal mobility (European Green Deal).
 - Transportation authorities interested in applying MaaS schemes at city or regional level.
 - Researchers working in transport, mobility, ICT and ITS sectors dealing with green mobility.

1.3 Interrelations

The current Deliverable builds upon the work that is carried out in WP7 related to business models, incentives and legal issues. The main interrelations between this Deliverable are with *WP3: One stop shop implementation & modules, WP4: MyCorridor MaaS* and *WP6: Pilot realisation and impact assessment.* Considering the activities of WP3 which consist of examining and providing solutions for traveller feedback forms and mobility tokens, socially responsible incentives and promotion schemes are significantly relevant. Furthermore, the integration of individual mobility services in WP4 raise the question of how such services could include their own or collective incentives and promotion schemes. Lastly, in WP6, feedback from users during the piloting activities provide valuable knowledge coming directly from users' experience with the MyCorridor App.



2 European transport market

2.1 Traditional transport service providers

Traditional transport service providers consist of shared mobility schemes such as buses/coaches, trams and undergrounds while also including taxis (Sakai, 2020). Traditional transport service providers have been impacted by the emergence of novel technologies such as car-sharing, ride-sharing, and micromobility and are now competing with new players in the mobility ecosystem. These traditional transport service providers are now faced with new competition and are forced to reinvent their offers so to attract travellers. In many cases, their business models were impacted significantly with an most obvious case being the rise of Uber in the private-car for hire and taxi segment. To obtain a clearer picture of the different types of transport providers, Chapter 2.1 identifies and elaborates on traditional transport service providers and their role in the transport sector. Several existing travel incentives and promotion schemes are also highlighted in this overview.

2.1.1 Taxis

Taxis are considered an important component in any public transport system and their importance in being a flexible mobility option is widely recognised. Taxis are commonly known to be vehicles with a driver that provides a service by carrying passengers from one point to another. According to a study mandated by the European Commission (EC), taxis are licensed to operate in public spaces and to take passengers who either hail them on the street or make use of taxi stands/ranks (Frazzani, Grea & Zamboni, 2016, p.26). Alternatively, taxis can also be reserved by passengers via telephone with the assistance of a radio dispatch centre. The presence of taxis in European cities dates back to 1605 and therefore have always been a reliable way for passengers to reach their desired destination (The Transport Alliance, 2017). Taxis usually come in the form of licensed cars or vans with the main advantage being the flexibility and not having regular schedules or fixed routes.

According to Aarhaug & Skollerud (2014) four taxi market segments currently exist in the framework of traditional transport providers. These market segments include hail, taxi rank, pre-book and contract. The differentiation between each is mainly related to the way in which the passenger choses to use and order a taxi. The hailing market segment derives from the simple concept of flagging down a taxi on the street so that it can be used by the passenger to reach the desired destination. Once the final destination is reached, the payment is carried out usually by card or cash and most importantly via a taxi meter. In general terms, taxi companies usually hold a contract with the local city authorities and operate according to that agreement. This results in the taxi company hiring its drivers who then are paid a certain fixed fee. Aarhaug and Skollerud (2014) argue that this type of segment largely benefits from cities that are largely populated in which passengers are more prone to flag a taxi down.

The second taxi segment is characterised by the taxi rank which are used by taxis to pick up passengers. Taxi ranks are usually found in city centres and nearby other transport hubs which include central railway stations, airports or hotels. The taxi rank gives passengers the certainty of the availability of the service. Aarhaug and Skollerud (2014) note that taxi ranks differ from the hailing segment since they can be found in areas outside of cities. This strengthens the characteristic of taxis in the form of the flexible service that it provides. Similarly to the first segment, use of taxis at taxi ranks comprises the payment being carried out once at the final destination. In addition, the payment method can be either card or cash reflecting the price shown on the taxi metre.



Moreover, the third segment shifts away from street hail and focuses on the relationship between the passenger and the dispatching centre. Dispatch centres allocate a particular car to the passenger upon request and act as the intermediary between passengers and drivers. The introduction of this segment was characterised by the use of a phone since it is typically needed. Despite this, the recent development of Mobile apps have revolutionised this segment. Nonetheless, the importance of dispatchers remain and in the Netherlands and in Romania, taxi companies or taxi owner-drivers are required to be affiliated to a dispatch centre (Frazzani et al. 2016, p.9). The fourth and final segment focuses on the contractual relationship between taxis and public authorities. Contracts usually are specific in their nature but usually aim to complement the offer that the public urban transport system is providing to its citizens.

The International Road Transport Union (IRU) estimates that there are more than one million taxis in Europe and that they account for 5% of the European local public transport (International Road Transport Union, 2016). The figures symbolise the importance of taxis and the role that they play in European cities. Table 1 below gives an overview of the number of taxis present in several EU Member States. The information is part of a comprehensive report published by Svenska Taxiforbundet (Swedish Taxi Association) in 2018 which aims to provide detailed information on the taxi market and relevant legislation (Svenska Taxiforbundet - Swedish Taxi Association, 2018, p.4).

Country	Population	Number of taxis	Taxi density
Belgium	11.3 million	4,000	0.4 per thousand residents
Denmark	5.7 million	4,200	0.7 per thousand residents
Finland	5.5 million	9,500	1.7 per thousand residents
France	67 million	60,000	0.9 per thousand residents
Germany	83 million	53,500	0.6 per thousand residents
Sweden	10.2 million	17,800	1.7 per thousand residents
The Netherlands	17 million	9,000	0.5 per thousand residents
United Kingdom	66 million	75,900	1.5 per thousand residents

Table 1: Number of taxis currently operating in Europe (Svenska Taxiförbundet - Swedish TaxiAssociation, 2018).

2.1.2 Bus

City buses serve cities to transport citizens across urban and non-urban areas by having a fixed route and schedule. There are several types of bus services that exist in cities today which include fixed route service including Demand-Responsive Transport, Bus-Rapid-Transit (BRT), express bus service, shuttle bus service, internal and private bus service and tour bus service (Rohani, Wijeyesekera & Karim, 2013, p.168). There are several factors that determine the effectiveness and use of bus services across cities. As Rohani et al. (2013) claim, "Bus operation service depends on various factors such as population, culture, environment and economics. In London (UK), buses are by far the most used mode of public transport due to its flexibility, high availability and the accessibility. However, in Kuala Lumpur, Malaysia, public bus service is normally preferred due to its cheaper cost and the better coverage of areas compared to other types of public transport such as trains and air travel" (p. 168).

The traditional fixed bus route service is the most common type of bus service that is used in cities and in urban areas. The advantage of maintaining a fixed route service is the lower costs that are incurred and the low level of subsidy that the responsible authority needs to invest. It is a clear benefit to have a high passenger load capacity and the ability to have this carried out via collective transport by using a single vehicle. There are cases however in which traditional fixed bus route services have evolved to take into account demand responsive transport (DRT). This emerged as a result of traditional fixed route services not being able to satisfy mobility users' needs in terms of the location of the different stops. To increase



flexibility, cities have developed bus services avoid having the user transfer many times to reach their final destination.

BRT is an additional bus service that initially emerged in the Brazilian city of Curitiba in the 1970s (Cervero, 2013). BRT is defined as being "a rapid mode of transportation that can combine the quality of rail transit and the flexibility of buses" (Thomas, 2001 as cited in Levinson, Zimmerman, Clinger & Rutherford, 2002). This multimodal and flexible scheme is commonly used in city areas and is aided by dedicated bus lanes. BRT is considered to be a fast, efficient, safe, and cheap and user friendly service compared to traditional fixed route bus services (Rohani et al., 2013). The characteristics of BRT enable it to compete with light-rail and passenger cars while providing a form of collective transport that is environmentally friendlier. Istanbul for example possesses an extensive BRT system that sees 800,000 daily users. Reasons for the success of this scheme derive from the ease to cross the city and its integration with other transport modes. In addition, the implementation of a distance based fare is considered to also have promoted the use of BRT (Di Pasquale, dos Santos, Leal & Tozzi, 2016).

Express bus services or also known as long-distance coach services are services that cover long distances and do not have many stops during journeys. These services are different from traditional fix bus route services considering that they operate outside cities and are used for longer journeys. According to figures from IRU, buses and coaches account for 55% of public transport in Europe and over distances of between 500 and 1,000 kilometres, buses and coaches have the lowest cost per passenger of any kind of transport (International Road Transport Union, 2010). In Spain, ALSA operates a well-defined network of long-distance international routes along with domestic bus. This scheduled long-distance coach service covers all of Spain's autonomous communities while also providing mobility users 65 authorised international routes (ALSA, n.d.). In addition, in Belgium, members of the Fédération Belge Exploitation d'Autobus & Autocar (Belgian Federation of Buses and Coaches) offer organised, occasional long-distance coach services. These services consist in having private long-distance coach companies organise trips that include visits to cultural and historical sites, catering and accommodation (Fédération Belge Exploitation d'Autobus & Autobus & Autocar (FBAA), n.d.).

Shuttle bus services are services that use buses or coaches for mobility that is from one fixed point to another. The most commonly known form of shuttle bus services are airport ones. For example, Flibco operates different routes across Europe in Belgium, Cyprus, France, Germany, Hungary, Luxembourg, The Netherlands, Portugal and Spain (Flibco, n.d.). Usually, these types of services have their origin destination nearby a major urban transport station (bus, metro or train) and their final destination being the airport. This form of bus service encourages collective transport and represents a sustainable way for mobility users to reach their final destination. Specifically for MyCorridor, some of the Karhoo services were integrated into the MyCorridor MaaS Platform (https://www.karhoo.com/integrations/). Free shuttle bus services also exist, an example being the one operating at the University of Edinburgh where staff are provided a service that takes them across the campus (Rohani et al., 2013, p.169).

Internal and private bus services are services that a particular organisation or company might organise to allow its employees or customers to use. For example, the Singapore General Hospital in Singapore directly operates three bus shuttles inside the hospital (see Figure 2). The bus shuttles transport passengers to different health centres which also includes metro stations. A further example of how private bus services are being used is in the United States with BusBank. This particular company organises travel for corporates and employees with the aim to enabling them to arrive to work on time rather than relying on public transport (BusBank, 2020).





Figure 1: Internal bus service at Singapore General Hospital (Singapore General Hospital, n.d.).

Lastly, tour bus services mostly operate in large cities across Europe and abroad and provide tourists the opportunity to visit the main sights and attractions. There is a clear difference with the other types of bus services since tour bus services explicitly target tourists and operate according to the degree of demand that they have. According to Delle Site & Filippi (2020), "Tour operators may combine tourists who have purchased individual travel to provide greater comfort as well as better access to airports, hotels, restaurants, museums, and other attractions than public transport could" (p.923). Tour bus services are already integrating their own form of MaaS by bundling associated offers together with the transport one.

2.1.3 Metro rail

The metro is a transport service that operates on an electric railway underground. Metro systems are also known as rapid transit or mass rapid transit. Metro services are typically found in larger cities and operate at higher speeds compared to buses or trams. UITP, the International Association of Public Transport, specifies that metros operate on their own right of way and are segregated from general road and pedestrian traffic (http://www.railsystem.net/rapid-transit-subway-system/). Metros have been present in European cities as early as the 1800s. The oldest metro system in the world is the London Underground which began operating from 1890. London is one of three European countries (Madrid, Moscow) which competes with other metro systems globally in terms of length. In fact, London is ranked fourth globally with 436 km trailing behind Seoul with 466 km, Beijing with 590 km and Shanghai with 639 km (UITP, 2018). According to UITP, in 2017 there were metros in 178 cities in 56 countries, carrying on average a total of 168 million passengers per day globally (UITP, 2018). There are more than 150 metro systems worldwide (Citymetrics, 2015). At European level, figures from 2017 show that 10,750 million passengers use the metro annually in 46 cities. UITP estimates that there are 2,950 stations and 25,800 carriages in Europe in total. Moreover, ridership numbers increased 10% in Europe between 2012 and 2017 (UITP, 2018). However, metro systems are considered as a means of public transport which can serve central areas of cities with a high population density efficiently, fast and in big numbers. Below, the annual transits in the biggest metros on the planet:



City	Annual global metro ridership (billion)		
Beijing	3.4		
Tokyo	3.2		
Shanghai	2.8		
Seoul	2.6		
Moscow	2.5		
Guangzhou	2.3		
New York City	1.8		
Hong Kong	1.7		
Mexico City	1.6		
Paris	1.5		

Table 2: Annual metro transit in the world's largest cities (UITP, 2018).

Despite metros being the fastest way to reach a destination in a city, metro systems require costly spending on infrastructure and poses as a very long and difficult procedure for cities to invest in. Several European cities are currently developing new metro systems. The Greek city of Thessaloniki is scheduled to open its new metro system in 2023 which will have 9.6 kilometres and 13 stations (<u>https://www.themayor.eu/en/thessaloniki-subway-system-to-be-completed-by-2023</u>). The original opening of the metro system was scheduled to be in 2020, however, several difficulties presented themselves which delayed the overall process.

Automated metro lines are a phenomenon that are worth mentioning in the overall discussion related to systems. Automated metro systems first emerged Kobe, metro in Japan (https://rail.nridigital.com/future rail aug18/around the world in 1000km of fully automated metro s) and have proven to be an attractive alternative for cities' public transport operators. According to UITP, in 2019, 64 fully automated metro lines in 42 cities, operating 1026 km globally. This trend is justified by the benefits that automated metro lines show, which include greater flexibility and greater capacity of services. Countries such as South Korea, France, Singapore and Malaysia are at the forefront of adopting automated metro lines (UITP, 2019). Figure 2 shows that Europe accounts for 30% of automated metro lines globally. The Asia-Pacific region accounts for 50% with cities like Singapore and Kuala Lumpur in the lead. In Europe, the Paris metro line 1 has automated features that aim to modernise the command and control of the metro system (UITP Observatory of Automated Metros, 2011).



Figure 2: Share of automated metro lines globally (UITP, 2019).



2.1.4 Commuter rail

Commuter rail differs from metro systems since it serves areas between cities and their nearby suburbs. It operates above ground and the distances are not as lengthy the ones typically seen in national rail transport. According to the International Union of Railways (UIC), commuter and regional rail services make up more than 80% of total railway passengers (UIC, n.d.). This specific mode of transport represents an environmentally friendly solution compared to private vehicle usage. Commuter rail differs from metro rail systems as it shares the same rail tracks with other trains and is associated to general railway systems rather than public transport. The American Public Transportation Association (APTA) specifies that commuter rail services offer multi-trip tickets and each station has its own fares depending on the distance (American Public Transportation Association (APTA), n.d.).

According to a report compiled from UITP on commuter rail, approximately 9 billion journeys take place annually in Europe using commuter railways (UITP, 2018). In Europe, there are numerous examples of the coexistence between metro rail systems and commuter rail systems. In Paris, there is the Transilien¹ which serves the lle de France Region along with the city of Paris. The French National Railway Company (Société nationale des chemins de fer français) operates the trains which do not cross the city centre. Moreover, the Transilien has stations that are nearby or even the same as major stations in the region. Other examples of frequently used commuter rail services are Madrid's Cercanias² and Barcelona's Rodalies³ which are operate in their respective regions and suburban areas.

2.1.5 Light rail

Light rail or tramway operates aboveground and on fixed routes. These routes are directly integrated on the road and are an integral part of public transport systems. APTA defines light rail as "a mode of transit service operating passenger rail cars on fixed rails in right-of-way that is often separated from other traffic. Light rail vehicles are electric and driven by an operator on board the vehicle" (American Public Transport Association, n.d.). In addition, UITP (2020) figures from 2018 show that light rail total annual ridership in Europe amounts to 10,442 million. Remarkably, UITP highlights that light rail carries as many passengers as metros and commuter rail and 10 times more passengers than air travel in Europe alone (UITP, 2020). Apart from operating in cities, light rail services also link destinations in the same or different region. An example is RandstadRail which links The Hague to Rotterdam in the Netherlands by providing frequent service between the two cities. RandstadRail replaces already existing tram, metro and heavy rail services (van der Bijl & van Oort, 2014).

2.1.6 Train

Train services can operate at regional, national and international level. These types of lines and services generally compete against road transport and air transport due to the long distances that are covered. In its 2019 annual report, UIC stated that passenger rail accounts globally for 50% of rail activity and 8% of global passenger transport (UIC, 2020). More specifically for Europe, there are 9.5 billion passengers transported every year and 80% of Europeans take the train (CER, 2020). As mentioned previously, there are different types of rail lines that exist to serve passengers. The first are regional train services which operate nationally and connect cities with towns and vice versa. The second are national train services which connect cities with each other. National train services include high speed trains or intercity lines. The third type are international train lines which operate cross border from one country to another.

¹ <u>https://www.transilien.com/</u>

² <u>https://www.renfe.com/es/en/suburban/suburban-madrid</u>

³ <u>http://rodalies.gencat.cat/en/inici/</u>



2.2 New transport services

As well as a traditional range of transport service providers, MaaS is also able to encompass new transport operators. Many of these new operators and associated modes are linked to the 'sharing economy'. Rather than the user needing to own personal transportation, either the transport asset (e.g. a shared bike) or the journey itself (e.g. peer to peer rideshare) is offered by a public or private third party. This model of service or ownership has benefits in terms of offering access to vehicles and mobility to those who may not be in a position to own a, or have reduced access to fixed transport modes, for example in rural or poorer urban areas car (Lovejoy and Handy, 2011; Yan et al, 2019). Newer mobility services may also reduce the need to own a car or second vehicle. Finally, shared and newer mobility services may be useful when providing first- and /or last-mile connectivity when the journey involves a longer distances covered by public transit (Stiglic et al., 2018). In this way, use of a private vehicle for longer journeys can be discouraged in preference to a journey comprised of traditional and new mobility options.

Figure 3 provides a taxonomy of new mobility operators. These can be grouped as those related to the car, cycle and micro-mobility (i.e. e-scooter / e-bike), new configurations of taxi services, and bus. Specific forms of transport (and associated transport operator) are as follows.



Figure 3: Categorisation of new mobility services.

2.2.1 Micro-mobility

Despite micro mobility being a widespread phenomenon in cities across the world, its definition is largely debated upon. According to Shaheen, Cohen, Chan & Bansal (2020) micro mobility is a "broad term used to describe the shared use of a bicycle, scooter, or other low speed mode—is an innovative transportation strategy that enables mobility users to have short-term access to a transportation mode on an as-needed basis "(p.8). Additional definitions include the reference to small electric cars, electric mopeds, electric bicycles that can carry one or two passengers (MaaS Alliance, 2018). However, the recent presence of electric scooters parked in and around cities gave micro mobility its final boost in terms of its image as being part of an easily accessible service to mobility users.



2.2.2 Shared bicycles

Conventional bicycles are traditionally known to be part of micro mobility due to their simple use and availability. In several parts of the EU, cycling is strongly encouraged by cities and infrastructure in the form of bicycle lanes are being developed. In some cases, like in Brussels, Belgium, the width of car lanes are being reduced to make space for cycling lanes (Reid, 2019). In the Netherlands, out of 17 million inhabitants, there are 23 million bicycles. The European Cyclist Federation (ECF) estimated that in 2018, Copenhagen bicycles represented 49% of the modal share while in Amsterdam in 2017 it represented 35% (ECF, 2018).

2.2.2.1 Villo

Villo⁴ is Brussels' shared bicycle public-private scheme that provides bicycles throughout the city. Bicycles can be found at dedicated docks which are around 360 in total with around 5000 bicycles available (Becker Robles, 2018). Villo has several additional plans which include yearly, daily, weekly and business packs. The yearly subscription is €35.7 with the first 30 minutes free, the second half hour €0.50 and the third half hour €1.00. The daily and weekly plans follow the same logic and their subscription is €1.65 and €8.4 respectively. The business pack is identical to the yearly one with the employer covering the costs for employees. Villo has a smartphone app in which payment and subscriptions can be managed.

2.2.2.2 London Santander Bikes

The London Santander Bikes⁵ can be found at 839 stations throughout the city of London and has a large number of bicycles that amount to 13,600 (Becker Robles, 2018). The pricing for this public-private scheme is £2 for unlimited journeys up to 30 minutes. Similarly to Villo, for trips that exceed 30 minutes, each additional half hour costs £2. There are several plans that are offered to mobility users. These include the City Bike Hire scheme which is targeted to employees and employers. Moreover, students aged 18 or above can benefit from a 25% discount on a yearly membership. A smartphone app facilitates the payment and overall subscription management.

2.2.2.3 SEVici

Seville's public-private shared bicycle scheme SEVici⁶ was first launched in 2007 and there are currently 2,500 bicycles and around 250 docking stations (Brannigan, 2019). The scheme is well integrated in the city and figures from 2009 show that there were six million trips completed annually (Brannigan, 2019). The subscriptions offered range depends on the distance that mobility users would need to cover on a daily basis. The long distance package is offered at €33.33 while the one for short distances is fixed at €20. The first 30 minutes are free with the second half hour applying fees for long distances of €0.51 and for short distances €1.03.

2.2.2.4 MOL Bubi

The Hungarian MOL Bubi⁷ shared bicycle scheme is a public scheme that is owned by the Centre for Budapest Transport (BKK). This service was launched in 2014 with 1,100 bicycles and 76 docking stations and only two years later, this quickly grew to 1,300 bicycles and 112 docking stations (Brannigan, 2019). Daily and annual passes are offered to mobility users and overall, the service seems to be popular among tourists. According to Brannigan (2019), one third of registered users and 10% of trips are done by foreign tourists. The monthly pass is priced at 100 HUF ($\in 0.27$) at a discounted price since March 2020. After the first 30 minutes, additional fees apply.

⁴ <u>https://www.villo.be/en/home</u>

⁵ https://tfl.gov.uk/modes/cycling/santander-cycles

⁶ <u>http://www.sevici.es/</u>

⁷ <u>https://molbubi.hu/</u>



2.2.3 Shared electric bicycles

Electric bicycles are a relatively new part of the service offered by micro mobility. Electric bicycles have a distinct advantage since they possess an 'assist' function which allows the user to pedal easily. The speed of electric bicycles can reach approximately 30 km/h (Kazemzadeh, Laureshyn, Ronchi, D'Agostino & Hiselius, 2020) and the ECF estimated that around 3 million electric bikes were sold in 2019 in Europe (ECF, 2020). According to ECF, this represents a 23% increase when comparing the numbers with those of 2018. This indicates that electric bicycles are a growing trend among citizens in the EU and will most likely continue to grow as an alternative to public transport. Companies such as Uber for example recognise the attractiveness of electric bicycles. As a result, in 2013 Uber launched its own electric bicycles across Europe and beyond. Recently, in May 2020, electric scooter company Lime bought Uber's Jump bicycles which are now integrated directly on the Lime smartphone app (Hawkins, 2020). Cities across Europe are also using the image of electric bicycles to promote a more responsible and sustainable transport behaviour.

2.2.3.1 e-villo

The Villo shared bicycle scheme in Brussels includes the possibility to combine the subscription with using an electric bicycle. Villo offers both conventional and electric bicycles to mobility users. Mobility users who subscribe to the electric bicycle scheme receive a portable battery directly at home. The portable battery is then placed at the front of the bicycle which enables the electric feature. This ensures that the mobility user is responsible in taking care of their mobility needs. An additional \notin 4.15 are required to use electric bicycles in Brussels.

2.2.3.2 ebikeMi

In Milan, Italy, mobility users can use conventional and electric bicycles scattered across the city. The scheme⁸ is offered as a collaboration between the city of Milan and its local public transport authority. The tariffs are formulated based on the time that the bicycles are used for. The conventional bicycles are free for the first 30 minutes while each additional half hour is ≤ 0.50 . The electric bicycle tariffs differ as the first 30 minutes are charged ≤ 0.25 . Daily, weekly or annual passes are offered for $\leq 4/50$, ≤ 9.00 and ≤ 36.00 respectively.

2.2.3.3 MEVO

The Polish Gdańsk - Gdynia - Sopot Metropolitan Area introduced a large shared electric bicycle scheme in 2019 called MEVO⁹. This scheme was launched in 14 cities and communes across the metropolitan area with approximately 660 bicycle stations. MEVO provides 4080 electric bicycles with rental fees varying depending on their monthly or annual nature (Modijefsky, 2019). Renting a bicycle without a subscription will cost the user 0.10 Zloty (€0,022). The monthly and annual subscriptions are priced at 10 Zlotys (€22.21) per month and 100 Zlotys (€22.12) per year with mobility users making use for 90 minutes for free. The MEVO scheme is the largest system providing electric bicycles in Europe.

2.2.4 Shared electric mopeds

Electric mopeds are an additional transport mode that have emerged resulting from a general increase and interest from mobility users in micro mobility. Booking and using an electric moped follow the same logic as the one used with electric scooters. Electric mopeds can carry one or two passengers and come with one or two helmets, depending on the company. Companies such as Felyx, e-Cooltra, CityScoot and emmy developed their own type of electric moped and launched them across Europe. The popularity of electric mopeds is increasing and since it is considered to be environmentally friendly, mobility users are

⁸ <u>https://www.bikemi.com/</u>

⁹ https://nextbike.pl/en/mevo-has-been-launched/



more inclined to use them. In addition, the flexibility of using them and parking them in cities without having to worry where you park it, facilitates the users' experience. 62 cities globally host shared electric moped scheme with 55% of all shared electric mopeds being in France and Spain (Howe, 2018). It is noteworthy to mention that 71% of fleets worldwide are owned by only seven companies: COUP, eCooltra, CityScoot, Muving, WeMo, emmy and Scoot (Howe, 2018).

2.2.4.1 Felyx

Felyx¹⁰ is a start-up founded in 2017 in the Netherlands. Felyx initially provided its shared electric moped service in Amsterdam and then later expanded to Rotterdam, Groningen, Eindhoven, Delft and The Hague. In 2019, it started operating in Brussels, Belgium. Felyx users reserve their scooter for the first 15 minutes for free. The user then pays €0.30 per minute and can drop the vehicle off in a selected area which is visible through the App. Felyx does not charge its users any cost related to fuel nor parking. In addition, it offers customised packages to businesses who are seeking to shift away from providing their employees private vehicles.

2.2.4.2 e-Cooltra

e-Cooltra¹¹ is a shared electric moped company that is part of the company Cooltra. Cooltra is a scooter rental company that invested in electric moped usage in cities. e-Cooltra provides two different types of electric mopeds in Barcelona, Lisbon, Madrid, Milan and Rome. Each city has its own price range which ranges from €0.22 to €0.29 per minute. Similarly to Felyx, e-Cooltra gives its users the opportunity purchase customised packs that correspond to a discount and an unlimited duration to use the service.

2.2.4.3 CityScoot

CityScoot¹² is a French company currently operating in Barcelona, Milan, Nice and Paris. CityScoot's price per minute is €0.29. CityScoot stands out by having a Loyalty Bonus Programme (see Figure 4) that allows users to reach three different levels depending on the time that the scooter was driven. The Loyalty Bonus Programme represents a clear strategy to incentivise citizens to make use of more environmentally friendly mobility solutions such as electric mopeds.



Figure 4: CityScoot's Loyalty Bonus Programme (CityScoot, n.d.).

¹⁰ <u>https://felyx.com/be/en</u>

¹¹ <u>https://www.ecooltra.com/en/</u>

¹² <u>https://www.cityscoot.eu/</u>



2.2.4.4 emmy

emmy¹³ is a German start-up currently operating in Berlin, Dusseldorf, Hamburg, Munich and Stuttgart. emmy's riding costs range from $\in 0.23$ to $\in 0.27$ and two credit packages are available which significantly decrease the cost per minute. The credit packages are available for a period of four years after being purchased.

2.2.4.5 Muving

Muving¹⁴ is a Spanish electric moped sharing company that currently operates in Cadiz, Cordoba, Seville, Valencia and Zaragoza. Muving's prices and packs reflect the different mobility needs that users might have. Simple use results in $\notin 0.27$ per minute while the different packs are bundled up together to ensure that price per minute is reduced and the user saves money.

2.2.5 Shared electric scooters

Shared electric scooters dramatically changed the mobility landscape in European cities and beyond. The simplicity and availability of the service has opened the door to a wide use and presence of shared electric scooters. To make use of one, mobility users must register and provide personal information (must be 18 years old) which includes payment as well. Unlocking a scooter will cost the user a small fee and for the time of use, users will be charged a specific amount per minute. This fee is usually cheaper compared to the ones charged for using car sharing and shared electric mopeds. Once reserved, users scan the QR code of the particular electric scooter that they would like to use and start their ride. Most shared electric scooters have a fixed speed being able to reach a maximum of 25 km/h.

2.2.5.1 Lime

Lime¹⁵ was founded in 2017 and is present in over 100 countries across the world. As all shared electric scooter companies, Lime gives user the possibility to use electric scooters and bicycles at a fee per minute. The fee is usually fixed and an additional fee is charge to unlock the scooter. Based on the city in which the mobility user is in, different promotions and rates vary and apply accordingly. The small size of the scooter and the possibility to park it anywhere in a city has turned out to be extremely convenient for users. The electric nature of the scooter magnifies the sustainability of this transport mode. Due to its popularity, Lime expanded its services and now offers a programme targeting corporate partners¹⁶. More importantly, Lime recently acquired Uber's shared bicycle scheme which is now available to users directly in the Lime mobile app.

2.2.5.2 Dott

Dott¹⁷ is another player in the shared electric scooter market which is present only in European cities. Dott's business model is similar to Lime's and follows the same logic with the fee paid by the user to unlock and use the electric scooter. In Brussels for example, the price per minute is fixed at \in 0.19 per minute and the unlock fee being \in 1. This varies per city since in Paris it is fixed at \in 0.20 per minute. Dott strongly encourages its users to make use of rewards and promotions. By referring a friend to Dott, users get two free unlocks as well as their friend. In addition, Dott creates weekly challenges which can be completed and rewards are offered. Dott also offers passes in specific cities which bundle an amount of rides for a specific price and time.

^{13 &}lt;u>https://emmy-sharing.de/en/</u>

¹⁴ <u>https://www.muving.com/</u>

¹⁵ <u>https://www.li.me/electric-scooter</u>

¹⁶ <u>https://www.li.me/lime-corporate-partners-program</u>

^{17 &}lt;u>https://ridedott.com/</u>



2.2.5.3 VOI

VOI¹⁸ is a Swedish company that produces electric scooters as well as having its own shared electric scooter service. VOI's operations are focused only in Europe and approximately four million users use the service to commute to work or use it for touristic purposes. Similarly to Dott, VOI counts on users spreading the word to others and rewards them with free credits. VOI also has loyalty programmes that differ based on the country. In Italy, VOI's loyalty programme Voialty gives the chance to users to collect points and based on the amount of points collected from riding VOI scooters, different discounts apply at the end of the ride.

2.2.6 Ride-sharing

Ridesharing is not of itself a new mobility form. Intra-familial rideshare, social ridesharing and organisational ridesharing have been common practices for as long as there have been cars. What has changed this century has been the arrival of smartphones and improved routing and positioning capabilities to allow riders and drivers to be configured together. In some cases this is to form a relatively stable relationship. In the UK, liftshare.co.uk supports long (as well as short term) arrangements between travellers. However, such a service is not truly a transport provider, but rather a matching service. More recently, services such as BlaBlaCar offer a full transport provision by orchestrating specific rides in response to driver availability and rider requests. Such services may also orchestrate the payment mechanism (Stiglic et al, 2018).

2.2.6.1 BlaBlaCar

BlaBlaCa¹⁹r is a carpooling platform that operates in 22 countries and counts approximately 90 million members. According to BlaBlaCar, more than \in 1.4 billion was saved by members since the platform's creation. BlaBlaCar digitally connects users that need to travel nationally or internationally via its mobile app. The company is committed in decreasing CO₂ emissions and it claims that it saved 1.6 million tonnes of CO₂ were saved as a result of filling empty seats in cars.

2.2.6.2 Liftshare

Liftshare²⁰ operates in the United Kingdom and is a similar platform like BlaBlaCar. Since its creation in 1998, Liftshare saved approximately 192,650 tonnes of CO₂ emissions by its 722,390 members. Liftshare has its own corporate service which consists of providing companies a digital platform where employees can find others to share their ride to work with. This scheme has several advantages such as lowering emissions, reducing traffic congestion and the need for parking spaces.

2.2.7 e-Hail

A new form of taxi is the e-hail service. Examples include Uber or Lyft. This kind of travel is preferred by wealthy younger travellers, and while usage rates have not significantly impacted overall travel patterns, within the younger demographic Uber corresponds with lower use taxis and higher rates of active travel (Young and Farber, 2019). e-hail services disrupted the market due to the ease by which it is possible to now book a journey through a smartphone. Most notably, Uber and FREE NOW are popular platforms that emerged as the first to provide travel to any mobility user simply by booking their trip via their mobile phone. The characteristics of e-hail services is that real-time tracking is available, the contact information of the driver and the price which the user will pay at the end of the journey. e-hail challenged and managed to overcome the dominance of the traditional taxi market by combining technology and simple services together.

¹⁸ https://www.voiscooters.com/

¹⁹ <u>https://www.blablacar.fr/</u>

²⁰ <u>https://liftshare.com/uk</u>



2.2.7.1 Uber

Uber²¹ is a key player in the e-hail market and can be considered as being one of the first disruptors of the taxi industry. Uber was founded in 2009 with the mission to connect passengers and drivers seamlessly. Uber operates in 10,000 cities across the world and has become an important platform providing employment in passenger, freight and air transport. Corporate services are also offered by Uber to companies to manage the employees' corporate travel, meals and delivery services.

2.2.7.2 FREE NOW

FREE NOW²² is an e-hailing platform that emerged in February 2019 as a result of the joint venture established between BMW and Daimler. FREE NOW was previously operating under the name 'MyTaxi' and connects more than 14 million passengers with taxi services in 100 cities.

2.2.7.3 Taxi.eu

Taxi.eu²³ is currently present in ten European countries: Germany, Austria, Switzerland, Belgium, Luxembourg, France, Denmark, Netherlands, Czech Republic and Ireland. Via the Taxi.eu app, mobility users can order their taxi in approximately 160 cities.

2.2.8 Shared taxi

Shared taxi schemes, whereby two or more people coordinate to access taxis. Again, like rideshare this is an activity that has been around for many years but is being enabled at a new level due to technology (Sun et al., 2012). There is limited evidence of their uptake though emerging examples include split cab and those that include ride hail including the uberpool service. Key factors to consider include walking time to pick up, cost of journey, wait time and journey time. The relevance of these factors varies between travellers (Lo and Morseman, 2018).

2.2.8.1 Collecto

Collecto²⁴ is a Brussels-based shared taxi service which is known to be operating only in dedicated timeslots every day of the week. Collecto is a shared taxi scheme which revolves around the willingness of mobility users to share their ride with others going in the same direction. Collecto proves the flexibility of shared taxi services and its collective transport nature. This form of transport could significantly help in decreasing emissions caused by road transport.

2.2.8.2 VIA

VIA²⁵ provides a shared taxi service through its smartphone app. VIA uses licensed taxis to transport passengers that are travelling in the same direction. It is relevant to mention that each user gets 40% discount off the final price if that trip is shared with other people. The service is only available in the United States, however, Europe could follow due to the benefits that collective transport brings.

2.2.9 Shared bus sourcing

Shared bus sourcing is a service allowing people to collaborate to procure a coach to a required destination. Uber launched its Shuttle service in Kiev, Ukraine as a pilot project. Examples in the UK include Snap and Zeelo. This is currently a niche service though there is some evidence of their application in China (Liu and Ceder, 2015).

²¹ <u>https://www.uber.com/</u>

²² <u>https://free-now.com/</u>

²³ <u>https://www.taxi.eu/en/</u>

²⁴ <u>https://taxisverts.be/fr/collecto-fr/</u>

²⁵ https://ridewithvia.com/



2.2.9.1 Uber Shuttle

In May 2019, Uber launched its Uber Shuttle²⁶ service in Kiev, Ukraine to provide an affordable transport solution for employees. The service is currently undergoing its pilot phase and will be evaluated at a later stage to be implemented in full. Uber Shuttle is embedded directly into the Uber mobile app where the mobility user can view the routes. Users book their seat and walk to the pickup point where they board the bus. The service has fixed routes and passengers can be dropped off anywhere along that specific route.

2.2.9.2 Zeelo

Zeelo²⁷ is a UK-based company which focuses on providing transport solutions for mobility users going to work or passengers going to the same event. Zeelo concentrates its activities by targeting corporate companies and promote the use of collective transport. As a result, Zeelo works closely with private bus and coach transport operators to pick up employees along the way. In 2018, Zeelo reported to have operated 500,000 seats.

2.2.9.3 Demand responsive buses

Demand responsive buses is a mode of transport that flexibly adapts to the transport demands of mobility users (Hunkin & Krell, 2018). Examples of this include the Kutsuplus scheme in Helsinki, Finland or MOIA in Hamburg, Germany Appeal more to younger men, less to the old and to the women (in part because of the complexities of ordering). Demand responsive buses are seen as offering more options, but there are concerns around learning and the effort involved in the new service (Yan et al., 2019). This has been borne out in the final results of the Kutsuplus service, as was the need for constant support and subsidy to ensure the sustainability of the service (Weckstrom et al., 2018).

2.2.9.4 Kutsuplus

Kutsuplus was a demand responsive bus scheme operating in Helsinki, Finland from 2012 until 2015. Kutsuplus operated as a pilot project aiming to support a modal shift from car use to public transport. Car travel in the Helsinki Metropolitan Region accounts for 40% of all trips (Hagland, Mladenovic, Kujala, Weckstrom & Saramaki, 2019). Several reasons caused the scheme to end in 2015 which are related to the low density of the areas that the service served and a general lack of awareness by mobility users (Shared Use Mobility Center, 2016).

2.2.9.5 City Mapper

Similarly to Kutsuplus in Finland, City Mapper²⁸ launched its own demand responsive bus service in London, United Kingdom. City Mapper provides real-time information on a variety of public transport services across the world as well as serving as a trip planner. In 2017, it launched a few buses in underserved areas of London with the objective of providing a first or last mile solution to passengers. In 2018, it launched Smart Ride and with it a small fleet of vans offering rides on fixed routes. The service could change its routes based on customer demand. (Vincent, 2019). In 2019, City Mapper announced that it would end this service due to legislative and regulatory issues.

²⁶ <u>https://www.uber.com/en-UA/blog/ubershuttle-in-kyiv/</u>

²⁷ <u>https://zeelo.co/</u>

²⁸ https://citymapper.com/



3 Opportunities and challenges for the transport market

3.1 Opportunities for the transport market

New mobility service providers have the potential to further advance and promote urban mobility in Europe. Further digitalising and ensuring that systems are connected with one another will smoothen the mobility user's experience. MaaS is a concept that is at the forefront of this digital revolution. Shifting from traditional transport service providers to ones that are more digital and eco-friendly will foster a new and innovative way in which citizens view mobility. Personalised service, the ease of transactions, real-time information and journey planning are all opportunities for the transport market. Many more can emerge as a result of introducing new mobility schemes and systems across Europe.

3.1.1 Personalised service

A key opportunity for the transport market is the possibility for the user to personalise their journey. MaaS can play an important role in this domain. A user's journey using transport services that are not integrated do not offer the personalised service that MaaS can provide. It is therefore important to embrace an inclusive approach by integrating numerous and different mobility service providers. This inclusion will allow for mobility users to have more variety and can enhance the personalised service. Empowering users to plan and customise the travel experience according to their own needs will build and strengthen the relationship between the mobility user and the MaaS provider. Currently, the transport system is fragmented. Multimodal transport planning mobile apps are attempting to bridge the gap by giving mobility users the necessary real-time information needed to travel. MaaS has the potential to set up a wide marketplace in which mobility service providers compete with one another. Increased visibility for companies providing transport solutions could also mean that new concepts and technological advances will be introduced.

The personalised service that MaaS offers lies at the centre of the concept. The UNECE identified in a recent report that personalised services have become more common and almost have become the new norm (UNECE, 2020). Apart from MyCorridor that embraces personalization as one of its key differentiation points, the GoEzy mobile app is a good example of how personalised mobility options are being delivered to users. The app is used by traffic authorities to reduce congestion in several cities in the United States (Traffic Technology Today, 2020). As mobility is currently changing, MaaS should ensure that the personalisation of services be simple and seamless. Certain transport operators will also be affected since more demand will be more targeted rather than dispersed. Taxi companies will be able to organise themselves more efficiently if consumer trends show a recurrent behaviour in mobility needs.

3.1.2 Transaction

The possibility to complete a transaction directly via a smartphone has been one of the most disruptive changes affecting society as a whole. Smartphones but also smart watches and other new personal technological gadgets can be utilised to carry out a transaction. Lyons, Hammond & Mackay (2019) identified five layers of MaaS service integration that take into consideration the ease of transaction. Level 0 is characterised by no integration and each transport scheme has its own system with a low MaaS offering. Level 1 is labelled as basic integration with information being available for different modes of transport. Transactions are separate and mode specific. Level 2 features limited integration. Transactions can be carried out via the specific transport system's mobile app and its associated transport card. Level



3 sees partial integration with a single mobile app in which a journey can be planned, booked and paid for. The main distinction is that the mobility services available are limited. Level 4 has transactional integration through an intermediary, however, not all door-to-door journeys are available due to geographical coverage or still unclear levels of service. Lastly, level 5 is characterised by full integration of services. Currently, several public transport companies have their own systems to carry out a transaction. Examples are in Belgium with public transport operator STIB or in the United Kingdom with Transport for London.

3.1.3 Payment

Flexible digital payment options are already an existing phenomenon across Europe. The payment process when booking a journey in a city is typically offered digitally, with few exceptions. Mobility users have the choice to choose different forms of payment which range from single use, pre-pay or post-pay. In addition, monthly or annual subscriptions are available. The next logical step is to combine these forms of digital payment into a single payment which incorporates the different legs of the transport journey with different transport modes. Whim is a concrete example of how this is being offered to mobility users in cities like Helsinki, Finland, Birmingham, United Kingdom, Antwerp, Belgium and Vienna, Austria.

3.1.4 Real-time journey information

Real-time journey information is a useful feature that allows mobility users to be aware of any change in their journey. This is particularly useful when an unforeseen circumstance occurs and users need to adapt and change their initially planned journey. Transport systems in Europe are digitalising at a rapid rate, which generates vast amounts of data both coming from the user and from the offered services. Due to this increasingly digital environment, transport companies will be able to predict more accurately when a bus might be arriving or be better equipped to reroute others in case of an unforeseen circumstance. Certainly, real-time journey information has allowed mobility users to plan their commute more efficiently.

3.1.5 Journey planning

Journey planning is developing and diversifying based on the personal preferences of mobility users. More specifically, cross-border multimodal journey planning offers an additional layer of service to users. The long-term goal is to have users book their journey seamlessly while travelling from one country to another. In addition to the traditional factors such as time, convenience, price and comfort, mobility service providers are including the amount of carbon that the particular journey produces. This represents a novel way in which mobility is being approached which impacts the way mobility users and companies organise themselves. Employees are offered subscriptions which include public transport and other micro mobility solutions. This is driven by the willingness of companies to lower their overall emissions resulting from only employees commuting to and from work.

3.1.6 Reduce congestion

A concrete opportunity for the transport market is to reduce traffic congestion via an optimised and organised transport system. Tomaino et al. (2020) stress "MaaS offers substantial societal benefits, including the reduction of emissions, traffic congestion, road injuries, and the overall discomfort associated with travel, in addition to providing personalized transportation solutions" (p. 1). Collective transport and less reliance on private vehicles represent an attractive benefit deriving from MaaS. Alonso-González, Hoogendoorn-Lanser, van Oort & Cats (2020) point out that several studies which included combinations of on-demand services with public transport or individual on-demand services such as bike sharing concluded there to be a significant reduction of emissions and congestion" (p.3).



3.2 Challenges for the transport market

Despite there being numerous opportunities for the transport market based on the rise of digitalisation and the potential of MaaS, several challenges remain. The transport sector still experiences uncertainty with regards to regulation. Digitalisation has created opportunities but also uncertainty. Infrastructure development varies per EU Member State in which there are solid networks in place in some while others are lagging behind. Emissions caused by transport continue to be a challenge for the entire sector. The European Green Deal will look into and address this phenomenon. An additional challenge for the transport market is to be as inclusive as possible. Transport poverty is an issue which is being looked at as there is potential to expand transport outside of cities and in rural areas. In general terms, engaging users to use MaaS still remains difficult while recently COVID-19 has seriously challenged the transport sector as a whole.

3.2.1 Interoperability of services

Interoperability of technical standards remain a challenge for the uptake of MaaS. The same applies to roaming and the harmonisation of technical standards. For MaaS to work, all interested stakeholders in the MaaS supply chain need to come together to ensure that is recognised as a common responsibility. To address this, MyCorridor and the MaaS Alliance worked together to explore common APIs and to share lessons learned. Without interoperability, MaaS struggles to deliver the seamless transport experience to users. Given the high expectations that users have due to an increased digitalisation of transport services, it is essential that compatibility issues be resolved. Specifically for booking and ticketing, interfaces should be ideally accessible for all mobility service providers. Barriers remain, however, in getting stakeholders to agree and work together.

3.2.2 IT literacy

It is often forgotten that IT literacy plays an important role in the uptake of MaaS solutions. As already highlighted in *Deliverable 1.1 MyCorridor Use Cases*, people of older age are not necessarily familiar with current technologies and digital transport solutions. For this reason, MaaS should address all user groups and not solely focus on the younger generation. Even more importantly, if MaaS is to position itself as a socially inclusive concept, it is to clearly educate and inform those users that might have trouble at first using MaaS services.

3.2.3 Legal issues

Legal issues in the form of data protection and competition are additional challenges for MaaS. Legal uncertainty on the responsibility of transport service providers remains a grey area which MaaS has to address. The issue of liability has to be defined, especially when a user encounters difficulties during travelling and needs to resolve the problem to reach the final destination. The ownership of data at both user and service level is an additional challenge for MaaS. Transport operators are generally reluctant to share their data with others due to competitive advantages they might have over one another. From a user perspective, data protection remains something that might discourage users from adopting MaaS services.

3.2.4 Fragmentation of regulation applicable to transport

Fragmentation of regulation applicable to transport poses a challenge to the transport market. The emergence of new mobility services such as Uber for example caused the traditional taxi sector to completely change and become digitalised. On the one hand, this sped up the digitalisation process of taxi



services and private cars for hire with driver. However, the legal uncertainties regarding the service that is being offered to mobility users continue to hamper and further confuse the overall situation. A concrete attempt at settling the debate on whether Uber is deemed a transport service was made by the Asociación Profesional Elite Taxi in Barcelona, Spain in 2014 (Hacker, 2018). The Barcelona-based taxi association argued that Uber was carrying out unfair competition since it was making use of non-licenced drivers.

	City level	Country level	EU level
Ban on diesel and petrol vehicles			
Emissions standards			
Alternative fuels infrastructure			
Car-sharing			
Car-pooling			
Ride-sharing			
Walking and biking			
Public transport			
Public procurement			
Parking fee			
Congestion areas			
Speed limits			
Energy taxation			
Road charging			
Spatial planning			
Rail activity			
Maritime activity			

Table 1: The governance of road transport: who regulates what?

Source: Bruegel. Note: red for direct competence, orange for indirect competence.

Figure 5: Overview of governance of road transport (Bruegel, 2018).

This led to the European Court of Justice (ECJ) to issue a ruling in December 2017 where it declared that Uber, as an intermediation service, must be regarded as forming integral part of an overall service whose main component is a transport service" (p. 2). Figure 5 provides an overview of the competences that cities, countries and the EU have on a variety of topics and issues related to transport. This proves that cities and national governments play a significant role in regulating services such as car-sharing, carpooling, public transport, walking and biking.

Chapter 5 provides an overview of regulation that is directly or indirectly applicable to MaaS.

3.2.5 Infrastructure deficiency

Infrastructure investment in the EU was severely impacted by the global economic crisis in 2008. Adapting existing infrastructure is an additional challenge that has to be further looked into. New mobility services and the introduction and deployment of alternative fuels stress the need to modernise and take into account a rapidly evolving transport sector. Communication between vehicles, infrastructure and other road users will be crucial and at the same time, deploying interoperable cooperative intelligent transport systems (C-ITS) will guarantee that services operate seamlessly. In addition, adding new infrastructure capacity to relieve congestion can result in being slow and costly (Bonthron, Goodall, Dovey Fishman & Bornstein, 2017).

For MaaS to function effectively, Deloitte's report identified the integration of physical infrastructure to be important to allow the transfer between transport services (e.g. bus and subway or bike and carsharing spaces at stations). Recently, on the streets of many European cities, the emergence of micro-



mobility services such as electric scooters have caused given the lack of adequate parking spaces²⁹. This symbolises the need for more adequate infrastructure taking into account new modes of transport. This must come after suitable infrastructure is developed for the more traditional modes of public transport.

3.2.6 Lowering transport emissions

A further challenge is lowering emissions that derive from road transport. According to the European Environment Agency (EEA), "In 2017, road transport was responsible for almost 72 % of total greenhouse gas emissions from transport (including international aviation and international shipping). Out of these emissions, 44% were from passenger cars, 9% from light commercial vehicles and 19% came from heavy-duty vehicles" (EEA, 2019). The high percentage that is represented by passenger car emissions penalises the image of road transport. A further shift away from private vehicle ownership and an increased use of public transport, walking or cycling has the potential to improve the status quo.

MaaS promotes a socially responsible behaviour by making using of collective transport. A widespread adoption of MaaS could eventually change the current trends related to emissions. Moreover, measuring the occupancy rate of public transport through real-time information is an important factor to take into consideration. This will avoid having public transport operating at low occupancy rates and negatively contributing towards the environment.

3.2.7 Transport poverty

Persons with low income and unemployed or also known as those users vulnerable to exclusion (VEC) are affected by transport poverty. Considering their significant reliance on public transport services, an increased digitalisation and integration of services could pose a challenge to many users. Shifting from paper tickets to digital solutions in the form of mobile applications could also discourage users that do not possess a smartphone to shift to privately owned transport modes. Transport poverty also includes those users that live in rural or remote areas which public transport do not serve. An increase of reliance on car ownership could result as a major setback for shared mobility and MaaS in general. As a consequence, the high cost of maintaining a private vehicle could lead to limiting users to essential trips such as to work or health services, for example. The risk would then be that social inclusiveness would be limited while one of the benefits of shared mobility is to integrate numerous services to reach as many users living in urban and rural areas (HiReach project, n.d.)

3.2.8 User engagement

Engaging users to use integrated digital mobility solutions such as MaaS remains a challenge. It is generally difficult to convince users to abandon their habitual routines since the amount of trust in reaching a destination usually increases over time. In the framework of the MyCorridor project, 160 users registered and conducted 934 trips via the MyCorridor App. Considering the COVID-19 health crisis, user engagement was negatively impacted. However, the number of trips exceeded the planned figures. Matyas (2020) identified several barriers that arose when interviewing users in London and asking what they thought were the main obstacles to embrace MaaS. The respondents highlighted how safety was an important element to take into consideration. Users showed reluctance to trust a service that does not guarantee their safety. This is particularly relevant when cycling is integrated as a service in shared mobility solution. Matyas (2020) points out that the perception of cycling safety is a significant barrier in increasing the mode share of both personal cycle and cycle sharing use.

Users tend to be, in general, uncertain about the characteristics of the services. This can be traced back to the unawareness of developments being made in the transport sector and the increasing digitalisation of

²⁹ <u>https://edition.cnn.com/travel/article/electric-scooter-bans-world/index.html</u>



services. It is commonly agreed that younger generations are more prone to try new mobile apps than older ones.

3.2.9 Impact of health crises – COVID-19

COVID-19 discouraged many citizens from using public transport or other kinds of shared mobility. The risk of getting infected during a pandemic was a factor that in the vast majority of the countries drove to a decrease in usage of public means of transport. New measures went into effect in order to decrease the risk of transmission. In a report from McKinsey (2020), it is indicated that to avoid the risk of transmission, public transport has to operate at 15-25% of its capacity. This can only go up to 40% with obligatory use of face masks. Additionally, the new trend of tele-working and the restrictions put in place to reduce the transmission of COVID-19 have resulted to a major decrease of commuters all over the globe, which is studied in one of the after-Covid scenarios by Hensher (2020). If working from home becomes more popular as a practice after the end of this pandemic, MaaS has to respond with different offers for different needs, support a more hygienic environment in public transport and other solutions in order to be a trustworthy mobility provider.



4 Regulation applicable to MaaS

4.1 EU level

There are numerous policies and legislative proposals that directly and indirectly affect MaaS. At EU level, the EC identified MaaS in numerous legislative proposals as being an enabler to boost greener and more sustainable transport. Recent examples include the European Green Deal and the Smart and Sustainable Transport Strategy. There are still many barriers for MaaS to be deployed even if there are already some attempts by European cities to embrace it. Data ownership and access to data remain highly debated topics that need to be addressed. A balanced approach reflected by clear legislation will make it easier for MaaS to become mainstream. Policymakers are aware of the many benefits that MaaS brings, however, the sector must be consulted to gain a real understanding of user and business needs. In addition, the MaaS Alliance is working on several documents such as the MaaS Market Playbook and Tools for Cities, etc. which might influence regulation applicable to MaaS at EU and international level.

4.1.1 European Strategy for Data

The European Strategy for Data was published on 19 February 2020 and aims to advance the vision of a single market for data. The Strategy focuses on four pillars:

- Across-sectoral governance framework for data access and use;
- Investments in data and strengthening Europe's capabilities and infrastructures for hosting, processing and using data, interoperability;
- Competences: Empowering individuals, investing in skills and in SMEs;
- Common European data spaces in strategic sectors and domains of public interest.

Concerning MaaS, the Strategy represents a positive first step towards establishing a Single European Transport Area. However, barriers remain since aspects related to data governance, data sharing and data ownership are still unclear. For MaaS to become a reality, the following should be further addressed: access to data, open APIs (Application Programming Interface) and the interoperability of the systems. Digitalising the transport sector is both a challenge and an opportunity, however, it is important to have data in a digital and readable format for all (MaaS Alliance, 2020).

4.1.2 Digital Services Act (DSA)

The Digital Services Act³⁰ package was introduced by the EC on 22 June 2020. This package looks into improving the liability rules for digital platforms while also safeguarding fair competition between large and smaller ones. The Act serves to complete the EU Digital Single Market which is high on the agenda of the EC. The first step to defining the objectives of the Act was to launch a public consultation to gather the views of relevant stakeholders. The Act itself may symbolise an opportunity for MaaS which could result into more robust legislation while also protecting users and transport service providers. One of the risks that is associated to MaaS is the dominance of larger players that might aggregate transport solutions into their own App or digital solution due to their popularity. Therefore, to avoid unfair competition but also monopolistic MaaS market, the Digital Services Act is timely and needed.

³⁰ <u>https://ec.europa.eu/digital-single-market/en/digital-services-act-package</u>



4.1.3 European Green Deal

The European Green Deal³¹ was published on 11 December 2020 and is an ambitious policy plan that outlines how the EU will become 'a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use'. More specifically for transport, the European Green Deal sets as a target a 90% reduction in transport emissions by 2050. To achieve this, the EC will help develop systems for traffic management and MaaS solutions through the Connected Europe Facility (CEF). Promoting MaaS also means promoting socially responsible travel behaviour among users. The integration of cleaner transport solutions such as electric bikes, electric scooters and electric cars in a MaaS solution will further enhance its image to the public.

4.1.4 Smart and Sustainable Transport Strategy

The Smart and Sustainable Transport Strategy³² was announced in the EC's European Green Deal and is present in the EC's Adjusted Work Programme. The EC plans to release the Strategy before the end of 2020 and launched a public consultation to receive relevant feedback from stakeholders in the transport sector. The objectives of the Strategy are to increase the uptake of zero-emission vehicles, make sustainable alternative solutions available to the wider public and businesses, support digitalisation and automation and improve connectivity and access. Once published, the Strategy will replace the 2011 White Paper.

4.1.5 Artificial Intelligence

The EC's White Paper on Artificial Intelligence³³ (AI) published on 19 February 2020 acknowledges that transport will largely benefit from an increased presence of AI. Citizens will benefit by having access to safer and cleaner transport systems, businesses will be able to produce new products & services and the cost of providing public services will decrease with a simultaneous increase of sustainability. The presence of AI embedded into MaaS systems will mean that users will benefit from the presence of autonomous driving. Moreover, AI has the capability to optimise and coordinate autonomous vehicle fleets. Ride sharing will also be affected by AI since for example users will be connected and ride together with people that have similar interests.

4.1.6 Mobility Package 1

The EC Communication: An agenda for a socially fair transition towards clean, competitive & connected mobility for all³⁴ of 31 May 2017 describes how and what the EU should focus on to advance sustainable mobility. Consumer behaviour, when it comes to transport, is continuing to shift to more digital solutions. The EC Communication notes that European citizens are seeking multimodal transport solutions while also receiving reliable and correct travel information. The same year in which this EC Communication was published, three MaaS EU-funded Horizon 2020 projects began, namely; IMOVE, MaaS4EU and MyCorridor. This symbolises that the EC considers MaaS as an enabler to reduce transport emissions but also digitalise the sector.

³¹ <u>https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf</u>

³² https://ec.europa.eu/info/law/better-regulation/have-vour-say/initiatives/12438-Sustainable-and-Smart-Mobility-Strategy

³³ https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020 en.pdf

³⁴ <u>https://ec.europa.eu/transport/sites/transport/files/com20170283-europe-on-the-move.pdf</u>



4.1.7 Mobility Package 3

The EC Communication: On the road to automated mobility: An EU strategy for mobility of the future³⁵ published on 17 May 2018 links connected and automated mobility (CAM) to new digital transport solutions such as MaaS. The development of CAM goes hand in hand with the novelties that digitalisation is currently offering the transport sector. The EC Communication states that automated vehicles will have a positive effect on many other sectors in the value chain. New business models will emerge as a result of more connected and automated vehicles, paving the way for services like MaaS to serve users in a more sustainable and efficient way. Self-driving shuttles for example could in the future be available to users while booking their journey in their planners. The same is applicable to self-driving passenger cars which might be used for ride-sharing purposes. Despite the future being promising, further integration between vehicles and traffic management centres needs to take place. Equally important will be the management of public and privately owned data that is generated during each trip.

4.1.8 ITS Directive and ITS Action Plan

The ITS Action Plan³⁶ was adopted in 2008 to accelerate the deployment and use of ITS in road transport. The adoption of the ITS Directive (Directive 2010/40/EU) in 2010 meant to support and speed up the deployment of innovative transport technologies and coordinated implementation of interoperable and seamless ITS schemes across Europe. The most relevant priority actions for MaaS are the provision of EU-wide multimodal travel information services, the provision of EU-wide real-time traffic information services; and data and procedures for the provision, where possible, of road safety related minimum universal traffic information free of charge to users.

4.1.9 Multimodal Travel Information Services (MMTIS)

In the framework of the ITS Directive, Delegated Regulation (EU) 2017/1926³⁷ sets the requirements to ensure that EU-wide multimodal travel information services are available and accurate cross-border. Moreover, the Delegated Regulation required each EU Member State to establish National Access Points (NAPs) by 1 December 2019. NAPs will be responsible to gather travel and traffic data from all modes of transport, both public and private. Service providers will be able to use data stored by NAPs to create new travel information services (websites or smartphone apps). There are however, terms and conditions that need to be complied with for the use of traffic and travel data.

4.1.10 Public Sector Information (PSI) Directive

The Public Sector Information (PSI) Directive (Directive 2003/98/EC)³⁸ sets the foundations for a common legal legislative framework on the re-use of public sector information. The Directive encourages EU member states to make public sector information available for re-use if possible. The Directive was implemented in all EU Member States in May 2008. In 2013, the PSI Directive was revised and included the provision allowing the re-use of all content that can be accessed under national access to documents laws, among other things (limits the charges applied to marginal costs, extends the application area of the Directive to certain cultural institutions (libraries, museums, archives, etc.).

³⁵ <u>https://ec.europa.eu/transport/sites/transport/files/3rd-mobility-pack/com20180283_en.pdf</u>

³⁶ <u>https://ec.europa.eu/transport/themes/its/road/action_plan_en</u>

³⁷ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R1926&from=EN

³⁸ <u>https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003L0098&from=en</u>



4.1.11 General Data Protection Regulation

The General Data Protection Regulation (GDPR)³⁹ came into force on 25 May 2018. The Regulation sets the rules on how users' personal data is managed and processed by companies. The importance of data in MaaS is key since data is continuously being generated by the user while making trips. Under the GDPR, sharing personal data must be motivated by a specific purpose. Collecting data is somehow limited since the reason for collecting should reflect the actual necessity behind it. By doing this, the GDPR is protecting the privacy of users and preventing personal data from being shared further.

4.1.12 EU Payment Services Directive 2 (PSD2)

The EU's Payment Services Directive 2 (PSD2) or Directive 2015/2366/EU⁴⁰ takes into consideration new and innovative payment services which include digital payments (internet, mobile payments). Stricter security and better transparency requirements for payment services fall under the scope of the Directive. For MaaS to work, seamless and transparent payment services are needed for the user to further trust the service offering.

4.2 National level

At national level, countries such as Finland and the Netherlands stand out as being some of the most active EU Member States when it comes to MaaS. Regional initiatives are emerging in different parts of Europe such as in Belgium where both Flanders and Wallonia are strongly counting on new mobility solutions such as MaaS. In Sweden, MaaS is mentioned in several pieces of legislation while in the United Kingdom numerous policy reports have identified MaaS to be an enabler to promote shared mobility.

4.2.1 Belgium

In Brussels, the local government that was formed in July 2019 announced that it will look into regulating the use of shared bicycles and scooters while at the same time ensuring fair competition and allowing anyone to compete and enter the market. The Brussels local government also announced that it will develop a platform integrating all mobility offers and services. As a result, STIB-MIVB, the public transport operator operating in the Brussels-Capitale Region, launched a MaaS pilot in the spring 2020 to analyse the behaviour and your mobility habits of users in real conditions⁴¹.

In the Walloon Region, the local government adopted its Vision Fast 2030 on May 9 2019. This Vision outlines the regional strategy for mobility for the coming ten years. Several key areas are identified in the Vision which include developing digital technology, integrated pricing and optimising inter-modality (Conseil Central De L'économie, 2019). The Walloon Region seeks to boost other means of transport alternative to private car ownership. These include carpooling, car-sharing, electric scooters and scooters and transport on demand.

4.2.2 Finland

Finland has been at the forefront by promoting MaaS extensively. Concretely, The Act on Transport Services⁴² was ratified in 2018 with the aim to diversify the option of transport services and enable

³⁹ <u>https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679&from=EN</u>

⁴⁰ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015L2366&from=EN

⁴¹ <u>https://maas.stib.brussels/</u>

⁴² <u>https://www.lvm.fi/en/-/act-on-transport-services-955864</u>


freedom of choice. The Act on Transport Services foresees any provider of passenger transport services to provide essential information related to routes and stops for example.

4.2.3 The Netherlands

The Dutch Ministry of Infrastructure and Water Management launched seven MaaS pilot programmes across the country which will run from 2019 until 2021. The selected Dutch regions include: The Zuidas in Amsterdam, Utrecht Leidsche Rijn, Vleuten and De Meern, Twente, Groningen-Drenthe, Rotterdam-Den Haag (including Rotterdam The Hague Airport), Eindhoven and Limburg. According to the Dutch Ministry, each pilot site has a specific objective whether it's providing mobility to vulnerable users or making mobility more efficient and sustainable (Ministry of Infrastructure and Water Management, 2019).

4.2.4 Sweden

In Sweden, MaaS is a prominent topic which the Swedish Ministry of Enterprise and Innovation is closely following, leading it to propose it as one key area for boosting transport in the future. Smith, Sochor & Sarasini (2018) point out that Sweden took concrete steps in including MaaS at national level and by including policy documents such as the national roadmap for the development of MaaS in Sweden. The roadmap manages the implementation of additional strategies such as the Swedish Mobility Program and the Swedish Transport Administration's action plan for Intelligent Transport Systems. MaaS is prominently featured in this action plan and is given high priority.

4.2.5 United Kingdom

The Transport Committee in the United Kingdom is directly responsible for overseeing matters related to MaaS. The Committee was appointed by the House of Commons and produced a policy report in which it strongly encourages any mobility service provider to share data as long as it does not disfavour one actor over the other (MaaS Alliance, 2018). An additional recommendation is to update existing UK regulation focused on transport, data and consumer protection reflecting the changes that MaaS brings.

In addition, the UK Government Office for Science has engaged in an extended foresight initiative to understand policy-shaping factors for Future Mobility including MaaS⁴³. This is information is also being used to shape the Department for Transport's Urban Mobility strategy⁴⁴ which is in turn driving Government Industrial Strategy. Finally, MaaS and share mobility is key to the UK Government's Transforming Cities fund and the delivery of innovation through Future Mobility Zone funding.

⁴³ <u>https://www.gov.uk/government/publications/future-of-mobility</u>

⁴⁴ <u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/846593/future-of-mobility-strategy.pdf</u>



5 Economic model influencing MaaS

5.1 Platform economy

The rise of digital platforms have caused a shift in the way in which economies operate and base themselves upon. A key product of the emergence of digital platforms is the platform economy. Kenney & Zysman (2016) describe the notion of platform economy as the following "The platform economy comprises a distinctly new set of economic relations that depend on the Internet, computation, and data. The ecosystem created by each platform is a source of value and sets the terms by which users can participate" (p. 66). Digital platforms such as Google and Facebook offer users the possibility to socialise with one another but also lay the foundation for the platform economy and its third parties. In fact, by creating a universal digital environment, Google and Facebook are used by other platforms to promote themselves and reach a wide audience. This, inevitably, is in the interest of such platforms to generate revenue.

Two logical examples of 'platforms for platforms' are Apple's iOS and Google's Android. These two operating systems created an ecosystem on which many other business and applications depend on. This new marketplace revolutionised the way in which business is carried out and most importantly is defining a novel way of doing B2B and B2C. Moreover, Kenney & Zysman (2016) identify other types of digital platforms. These platforms include service providing platforms (Airbnb, Uber, and Booking.com), retail platforms (Amazon and eBay), platforms mediating work (LinkedIn), and platforms that enable the creation of other platforms via the availability of online digital tools (GitHub). Overall, platforms offer an important opportunity for new mobility services such as MaaS to further develop and gain traction.

More specifically for MaaS, there are concrete examples of online platforms that are being developed to gather users' mobility needs. An example is RegioMOVE⁴⁵, an initiative being developed by the city of Karlsruhe, Germany. This initiative is funded under the EU's European Regional Development Fund and aims to integrate multiple accounts and subscriptions for each mode of transport into a single application. The application is operated by the local public transport authority. The user will have the application take care of the trip planning, booking and billing. The particularity of this initiative is that it places emphasis on integrating users that live in rural areas.

5.1.1 Definition of a platform economy by the European Commission

The EC defines online platforms as "online intermediary services" which are "information society services that allow business users to offer goods or services to consumers, with a view to facilitating the initiating of direct transactions between those business users and consumers..."An "information society service" is "any service normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services".46

The EC identifies platforms as sharing key characteristics, which include the:

- "use of information and communication technologies to facilitate interactions (including commercial transactions) between users;
- collection and use of data about these interactions; and

⁴⁵ <u>https://www.regiomove.de/</u>

⁴⁶ <u>https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015L1535&from=EN</u>



- network effects which make the use of the platforms with most users most valuable to others." $^{\!\!\!47}$

5.1.2 Regulating a platform economy

The EC recognises the key role platforms have to play in Europe's digital society and economy; bringing increased consumer choice, together with opportunities for innovation and competition, and unique efficiencies for cross-border market access.

The aim of the MyCorridor mobile application is to offer a cross-border one-stop-shop platform, providing choice, efficiency and convenience to users, to enable them to book door-to-door travel solutions, using multiple modes of transport, via just one mobile application, with one payment and one e-ticket covering all the modes of transport selected by the user for that journey.

The EU Commission is working towards better protection for both consumers and business users of online platforms, which has led to the "Online Intermediation Services Regulation" ("OIS Regulation")⁴⁸, in effect from 12 July 2020.

The OIS Regulation aims to introduce an innovation-friendly regulatory environment for online platforms/online intermediation services within the EU, applying some of the principles of consumer law to the relationship between intermediaries and business users, requiring, for example, transparent terms and conditions as part of an overall movement to ensure that online platforms are regulated at an EU level in a fair and trusted online business environment.

5.1.3 Platforms and competition law

Where a platform acts as both a marketplace and a service provider, an inherent risk of competitive imbalance exists. A recent example is the Daimler and BMW merger, where the two already wellestablished automotive manufactures, each with existing on-demand mobility offerings, collaborated to expand their provision of mobility services. We discuss the EU Commission's investigation into this merger, and competition in MaaS more generally (including how access to data could inhibit or even stifle competition in MaaS), in MyCorridor's Legal Deliverable 7.4, '*Analysis of the legal and regulatory barriers in MaaS*'.

5.2 Collaborative economy

The sharing economy or collaborative economy is a topic that the EC is seeking to build upon. In 2016, it published a communication⁴⁹ with the overarching objective of harmonising EU legislation to new and emerging economic schemes. According to EC figures from 2015, gross revenue from collaborative platforms ranged around approximately \leq 28 billion (European Commission, 2016). The EC recognises that the mobility sector is a sector that will be closely looked at due to the impact that collaborative platforms have had.

5.2.1 Definition of a collaborative economy by the European Commission

The EC defines the collaborative economy as being "business models where activities are facilitated by collaborative platforms that create an open marketplace for the temporary usage of goods or services

⁴⁷ <u>https://ec.europa.eu/digital-single-market/en/online-platforms-digital-single-market</u>.

⁴⁸ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R1150&from=EN

⁴⁹ <u>https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0356&from=EN</u>



often provided by private individuals" (European Commission, 2016). Moreover, the EC outlines three different categories of stakeholders that are involved in a collaborative economy. The first are service providers, the second are the users of the services while the third are the intermediary actors which connect service providers with users. This is done via their online platform in which all transactions take place.

5.2.2 Regulating a collaborative economy

On 5 March 2020, the EC reached an agreement with leading online platforms such as Airbnb, Booking, Expedia and TripAdvisor (European Commission, 2020). The agreement foresees the possibility for Eurostat to collect and make publicly available the data related to short-stay accommodations in the EU. Regulating a collaborative economy has proven to be difficult. Several questions remain on the issue of market access, liability, data protection, workforce and taxation.

6 Enhancing a socially responsible travel behaviour

6.1 Enhancing a socially responsible travel behaviour

The growing demand for urban mobility has created over the years increasingly critical conditions such as severe traffic congestion, poor air quality, noise pollution and high levels of CO_2 emissions; according to the EC's statistics, this situation is expected to worsen in the coming years due to the foreseen 84% increase in the proportion of the population that will reside in cities by 2050.

Nowadays, the modal split sees a disproportionate increase in the use of the private car with conventional fuel, while the weight of public transport has gradually decreased in absolute and comparative terms; moreover, urban traffic is responsible for 40% of CO₂ emissions and 70% of emissions of other pollutants from road transport.

The challenge facing urban areas today is to ensure the sustainability of transport both in terms of environmental protection (CO_2 emissions, air pollution and noise) and competitiveness (congestion), in order to ultimately address social issues, respond to health problems and demographic trends, foster economic and social cohesion and take into account the needs of people with reduced mobility, families and children. To achieve these goals, cities need efficient transport systems that support the economy and the well-being of their citizens as well as mobility and infrastructure interventions.

Both spatial and temporal integration between shared mobility services of any type (including public transport) is a key aspect for both an efficiently delivered offer and to allow end-users reducing the private transport use to the point of giving up its ownership. Only the overall broadening of the range of shared mobility solutions and access to an integrated mobility offer to replace the use of the private vehicle can pursue the goal of resource-efficient, low-emission and socially inclusive mobility.

The resulting benefits for citizens are manifold, i.e. social, economic and environmental; in the first instance, favouring wide use of sharing services and integrated mobility offerings could lead to congestion being greatly reduced; the general accessibility of citizens to the city's services being substantially improved,; inequalities in accessibility to workplaces, schools or health services in urban areas being reduced or eliminated; to reducing individual travel costs due to the high occupancy rate of vehicles; and to freeing up urban spaces previously dedicated to parking lots which could be converted in order to improve liveability of the urban space or to deliver better quality cycle paths.



In addition to using sharing mobility services individually, opportunities and wide-scale benefits exponentially increase if combinations of them are used. More specifically, multimodal journey planners and MaaS platforms are able to open up integration possibilities that have not been explored until now. When planning a trip from home to work or a long-distance trip, users consider the cost, convenience and complexity of the entire journey from door to door, which could be improved by appropriately combining into one single platform the services offered by several different operators and modes of transport.

MaaS is based on existing technologies but brings a core innovation by the fact that it gives to a MaaS aggregator the opportunity to bring together standard Transport Operators and info mobility services, using a single access digital platform; the application of this model to transport services will provide meaningful and positive impacts to society, economy, environment and businesses.

According to survey results from the first Whim pilot ran during 2016-2017 in four key transport areas of Helsinki, Turku, Tampere and Tallinn, it was proved that a transition towards more sustainable forms of transport could be achieved with MaaS; particularly, a 20% reduction in private car trips was registered in the surveyed areas, while the increase in the use of Public Transport (PT) use was 26%. A significant proportion of Whim users recognised the app as the best local solution to leave the private car out. Notably, the research also demonstrated the ability for MaaS to generate business opportunities, in terms of potential revenue streams, for all transport service and data providers involved in the MaaS ecosystem.

First outcomes from MyCorridor piloting activities MaaS in cities also validate the previous work undertaken (i.e. *Deliverable 1.1 MyCorridor Use Cases*), which has already identified the impact areas of the MyCorridor one-stop-shop, i.e. environmental, economic and social impacts areas, and will be further explored in WP6 by conducting a cross-sector impact assessment of MyCorridor application. This information is further detailed in *Deliverable 6.2 Pilot results consolidation* and *Deliverable 6.3 MyCorridor impact assessment*.

6.2 Findings from 1st MyCorridor Pan European workshop

One of the objectives of the 1st MyCorridor Pan-European workshop which took place on 9 February 2018 in London, United Kingdom, was to gather the views and insights from the 50 experts that attended. An interactive session was organised where experts were asked questions through the Mentimeter tool (<u>https://www.mentimeter.com/</u>). Due to the work carried out in the project related to Business Models and socially responsible travel incentives and promotion schemes, dedicated questions were asked to gain an understanding from the industry. The MyCorridor Consortium put forth the following socially responsible travel incentives and promotion schemes as options for stimulating MaaS business success:

- Loyalty schemes.
- Promotion campaigns.
- Scaling discounts.
- Added value services.
- Tax reductions.
- Calculating CO₂ reductions by eco-driving.
- Comparing environmental benefits because of modal shifts.
- Other.

The participating experts were asked to rank the above according to the impact that they would have on influencing the traveller's behaviour. This mainly includes the traveller's willingness to embrace environmentally friendly mobility options. According to the responses, experts ranked scaling discounts, promotion campaigns and loyalty schemes as the most important strategies they consider to be more



important for stimulating MaaS business success. This points to the fact that users will initially expect to be accompanied to use MaaS and facilitate their travel experience. Considering the importance of promotion campaigns and loyalty schemes in Figure 6, MaaS service providers should focus on positioning MaaS as an enabler to decarbonise the transport sector. In addition, users expect to be rewarded, thus loyalty schemes should be up to standard and match expectations.



Figure 6: Participant responses based on promotion strategy in stimulating MaaS business success (D1.1 MyCorridor Use Cases, 2018).

Moreover, as a follow up, participants were asked to rank the above according to the impact that they would have on influencing the traveller's behaviour. This mainly includes the traveller's willingness to embrace environmentally friendly mobility options. The results below show that the top three strategies for encouraging more environmentally friendly mobility habits are scaling discounts, comparing environmental benefits because of modal shifts and tax reductions.



Figure 7: Participant responses based socially responsible travel strategies (D1.1 MyCorridor Use Cases, 2018).



7 Literature review of socially responsible travel incentives and promotion schemes

Chapter 7 broadly summarises interrelated aspects of socially responsible travel incentives and promotion schemes and their relevance to MaaS. These include existing mobility service providers that provide a semi or fully MaaS service, target groups for advertisement, examples of public-private partnerships, boosting use through promotion schemes and an overview of loyalty schemes that exist in other sectors. These other sectors can serve as examples to MaaS on how best to integrate socially responsible travel incentives and promotion schemes in the mobility sector.

7.1 Travel incentive and promotion schemes

The definition of promotion, according to McCarthy (1964), is "to increase awareness, create interest, generate sales or create brand loyalty". MyCorridor's MaaS application is in many cases a commercial venture which aims at increasing market penetration and enhancing customers' loyalty, therefore promotion schemes should be an integral part of the venture.

The incentives on the other hand is a method to influence user behaviour towards a pre-defined goal. In contemporary sustainable mobility era, the key objective is to introduce a new business model, in which all involved stakeholders (passengers and relevant legal entities) are incentivized with the common goal to minimize mobility impacts.

When these two, namely promotion and incentives schemes, are combined within an integrated MaaS strategy, the impact could be two folded: on the one hand achieve maximum financial profit for the private stakeholders and on the other to maximise societal benefits.

How this can be achieved? The incentive schemes would be used to influence user behaviour in favour of efficient, green and at the end sustainable decisions. The promotion schemes would lead to increased usage; while this is the main commercial goal, will on top and furthermore enhance the number of users adopting the sustainable decisions, which are the targets of the incentives schemes! As a result, the combined promotion and incentive strategy proposed by My Corridor, will produce an impact based_MaaS scheme, where "impact" is measured in terms of sustainability KPIs.

More specifically, there are three key objectives that could be fulfilled by the implementation of the combined schemes by MyCorridor platform, namely:

- Increase sales/profit of mobility products on the platform (Commercial Objective); the MaaS aggregator would like to attract more users and/or perform more sales by existing client base and/or increase profitability by selling more profitable mobility products.
- Influence users' travel behavior (Environmental friendly and Efficient Transportation Objective); the MaaS aggregator would like to convince users to shift modes and or use environmental friendly mobility (for example emobility) and or drive efficiently.
- Engage the users in the (MaaS) community (User engagement objective); the MaaS aggregator would like to convince the user to contribute with data and or with mobility means (for example for carpooling) and/or bring new friends to MaaS community.

In order to achieve this, the MyCorridor platform shall be an Open Tool to implement a variation of different incentive and promotion strategies. By "Open" means a flexible mechanism, which facilitates



different objectives and respectively incentive strategies (such as the ones described in previous bullet points).

If this is achieved, then MyCorridor platform could be assumed by different MaaS issuer profiles such as:

- City or Transport Authority
- Traffic Manager
- Publicly owned Mobility operator
- Privately owned Mobility operator
- An application service provider
- Association or alliance of the above mentioned

In all alternative cases, MyCorridor would need a robust win-win business model (referenced at *Deliverable 7.1 Mobility Services Aggregator business model*), as well as a clear and neutral governance structure allowing each stakeholder to assume their own objectives in the scheme.

On top, the main emphasis of MyCorridor is on the MaaS aggregator model, which can facilitate the cross border corridor target, also set by the project. The MaaS aggregator entity, in order to accomplish cooperation with local MaaS issuers and or Mobility Operators along the Corridors of operation, may use the Open Tool to implement incentive strategies both for the fulfilment of own objectives as well as of the local MaaS Issuers and Mobility Operators who are cooperating with the aggregator. This approach will lead to a win-win result and will facilitate synergies between the private sector, public sector and TM at local but also in European levels.

MyCorridor project is using the following tools to implement this approach:

- Overall business rule editor; a module that allows the MaaS aggregator to insert business rules to satisfy the desired incentive strategies
- Loyalty function; a module that allows the user to be rewarded of desired behaviour according to the defined incentive strategies

TM2.1; next multi modal generation of TM2.0 – an integrated traffic Management and service provision scheme. A proof of concept is demonstrated in My Corridor project.

7.2 Target groups for advertisement

MaaS has all the characteristics of an innovative service for commuters and travellers. The adoption of many innovations by new users has been described by the technology adoption lifecycle, a sociological model related to the acceptance by defined categories. The technology adoption lifecycle is a sociological model that is an extension of an earlier model called the diffusion process, which was originally published in 1957 by Bohlen, Beal & Rogers. The original purpose of the innovation adoption lifecycle was to track the purchase patterns of hybrid seed corn by farmers. The categories as described below and presented in Figure 8 include the following groups:

- Innovators (The ones who invent innovative solutions)
- Early adopters (Young people or mindset who are inclined to follow the trends and try new thing first. They are the ones waiting in the line when a new product such as a smartphone is released)
- Early majority (Young people or a bit older with an interest to try and use innovations in their daily lives)
- Late majority (People who have difficulties with technology and follow but with a delay)
- Laggards (Struggling to understand new trends or even deny to try)





INNOVATION ADOPTION LIFECYCLE

Figure 8: Innovation adoption groups (Everett Rogers Technology Adoption Lifecycle model, Wikipedia).

The focus of MaaS at this point should be to attract early adopters and early majority groups. The characteristics of those early groups which are almost half the population can be found in societal groups such as young adults, corporate employers and employees, frequent commuters, business travellers used to innovative solutions on transportation, tourists etc. Those groups are approached on the basis of travel incentives and promotion schemes with proposals for each category and relevant examples in the following subchapters.

7.2.1 Young adults

According to Alonso-González et al. (2020), young adults (18 years old or older) will be more inclined to adopt MaaS at an early stage. The study finds that this age group are more interested in new technology and are prone to test new mobility solutions that will help them move from A to B. The term 'digital native' is therefore important to consider and is defined as being "a person who is very familiar with digital technology, computers, etc. because they have grown up with them" (Cambridge Dictionary, n.d.). Digital natives are commonly thought to be in the age group between 18-35 years old, according to a study conducted by Salgues (2017). For this reason, research activities are currently looking into the behaviour of digital natives. An example is in Mallorca, Spain where a platform was launched to increase attractiveness of sustainable mobility with the help of real-time information. The main objective of this project was to attract digital natives and to encourage them to make use of the platform or also known as the MobiPalma mobile app⁵⁰. The project foresees that there will be a significant shift towards a more sustainable way of transport. An additional target group are young urban professionals or Yuppies usually are young, well-paid professionals that live in cities or suburban areas (The Free Dictionary, n.d.).

In addition, younger generations tend to be more aware of climate change and the threat it poses to the environment. Promoting MaaS as a sustainable and green mobility solution would result in being extremely popular among the youth. According to the EC (2017), younger generations (Generations Y, Z and Alpha) are choosing to shift away from using the car and are going for multimodal, public and active travel options. The EC argues that if this trend continues, these types of users can support the effort to

⁵⁰ http://www.emtpalma.cat/en/mobipalma-app



decarbonise the transport sector. It is the responsibility of digital platforms and service providers to ensure that greener vehicles are available to users (European Commission, 2017). That being said, Schikofsky et al. (2019) argue that in fact the environmental benefits of MaaS are still considered a weak motive for changing the behaviour of users.

Whim⁵¹, one of the first MaaS apps to be on the market in several European cities, targets students in Helsinki by integrating the student discount offered by the Helsinki Regional Transport Authority. Students over the age of 18 years old who are enrolled in a university are eligible to obtain the discount. Whim targets young adults by bundling the student discount which amounts to 45% off for a monthly ticket. Figure 9 summarises the different plans that Whim offers including the Whim Student 30 one. Bundling different services and offering a discount on public transport, Whim aims to promote multimodal transport across Europe.

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			Whim Urban 30 €59,70 / 30 days	Whim Student 30 €32,80 / 30 days	Whim Weekend €249 / 30 days	Whim Unlimited €499 / month
		Public transport	HSL 30-day ticket	HSL 3O-day student ticket	HSL 30-day ticket	Unlimited HSL single tickets
		City bikes	Included (max. 30 min per ride)	Season pass €24,90	Included (max. 30 min per ride)	Included (max. 30 min per ride)
		Taxis	4 x €10 (max. 5km rides), others normal price	Pay as you go	-15%	80 rides (max 5 km), other rides normal price
		Rental car	€49/day	Pay as you go	Weekends	Unlimited
		E-scooter	TIER Standard pricing	TIER Standard pricing	TIER Standard pricing	TIER Standard pricing
③ Support			Read more	Read more	Read more	Read more

Figure 9: Whim subscription including the Whim Student 30 (Whim, n.d.).

In the Netherlands, university students tend to apply for student grants throughout the duration of their studies. Included in this grant is the student travel product which is reserved for Dutch nationals only. The student travel product allows the student to travel either for free or with a discount. The options include free travel during weekdays and during specific hours while the discount is applied up to 40%. The student travel product includes the possibility to use the train, bus, tram, metro and waterbus across the entire country. Moreover, the Dutch Railways (NS) offers a 40% discount (when travelling during non-peak hours) or 50 euro discount on an NS annual season ticket to students that have recently finished their studies or will have to extend them for a longer period of time (NS, n.d.). Considering the size of the Netherlands, MaaS schemes are being increasingly piloted. This also derives from the geographical location of the country. The student travel product also includes a RailPlus card for 15 euro containing a 15% discount on train tickets throughout Europe.

⁵¹ <u>https://whimapp.com/</u>



7.2.2 Corporate companies

7.2.2.1 Case study: Belgium

Belgium is one of the most advanced EU Member States that is dealing with MaaS and corporate schemes.

MaaS could facilitate the shift away from having corporate companies provide a company car to employees as part of employment benefits. Not only would this help reduce emissions deriving from owning a car but would encourage more people to use public transport and shared mobility services. According to Bloomberg, in 2016, more than 10% of Belgium's 5.7 million automobiles were registered as company cars (Zipper, 2016). To tackle this, Skipr, a Belgian shared mobility service, is implementing a MaaS solution by selling subscriptions to corporates.



Figure 10: Skipr homepage (Skipr, n.d.).

Skipr⁵² promotes a socially responsible travel behaviour by making sure that the company and the employee are aware of the benefits of using the platform instead of a private vehicle. Users in Belgium are given numerous options which range from the National Railway Company of Belgium to shared scooter services. Skipr therefore represents a good example of MaaS solutions are used to encourage socially responsible travel incentives and promotion schemes.

Mbrella⁵³, another Belgian company specialised in providing MaaS services to corporate organisations in the form of a mobility budget. Mbrella aims to help companies transition from providing a company car to allowing employees to benefit from a mobility budget which can be used to obtain an electric car or a car that emits less than the current company car. In addition, through Mbrella, employees are given the option to spend the mobility budget on an electric scooter, electric bicycle, and public transport. Companies such as Skipr and Mbrella largely focus on the impact caused by company cars and urge companies to take action and move away from them by offering MaaS solutions.

⁵² <u>https://www.skipr.co/</u>

⁵³ <u>https://www.mbrella.eu/</u>





Figure 11: Mbrella MaaS options (Mbrella, n.d.).

Fleet as a Service (FaaS) is the main feature of MyMove⁵⁴, a service that allows companies to flexibly provide company (green) cars, bicycles, and scooters. Company employees can select and unlock different vehicles according to their mobility needs. Similarly to Mbrella, MyMove offers corporate companies to allow their employees to trade in their company cars in return with a mobility budget which can be used for different transport modes.



Figure 12: Planning trips with MyMove (MyMove, n.d.).

7.2.3 Corporate employees

Corporate employees should be targeted for advertisement together with corporate companies. The company car has represented an attractive bonus for employees to make use of and is commonly offered in employment contracts. However, the rise and emergence of smarter mobility systems coupled with political initiatives such as for example the European Green Deal changed this trend. MaaS has the

⁵⁴ <u>https://www.mymove.be/</u>



potential to make employees aware of their carbon footprint. The mobile application GOOptus⁵⁵ is an example of how mobile apps are targeting company employees and raising awareness of their personal carbon footprint. Moreover, it is possible to book a journey based on the carbon footprint of the modes being used throughout. This revolutionises the way in which transport is perceived by mobility users.



Figure 13: GOOptus showing how users can compare time, cost and carbon emitted by each journey (GOOptus, n.d.).

A Singaporean mobile app called Capture⁵⁶ was launched in January 2019. Capture works to raise awareness among people and corporate organisations and to help them track, reduce and offset their own carbon emissions. Particularly relevant is the feature of the mobile app that maps the transport modes that the user uses and then, as a consequence, calculates how much CO_2 is emitted. Moreover, there are several pilot projects funded by the EU that are looking into this. For example, in Finland the CitiCAP project is analysing mobility users' behaviour and giving them a weekly carbon budget to use. The budget should be used for trips made with public transport or cycling with the remaining unused carbon budget transformed to usable credit. The credit can then be used for discounts via the mobile app to purchase products or services.

7.2.4 Frequent commuters

Mobility users that are commuters in cities and who make use of different modes of transport should be targeted. This target group includes different age groups but also different social backgrounds which facilitates the reach that MaaS could have. According to Eurostat figures from 2019, 18.3 million employed persons with ages 20-64 commuted from their region to another in their own country. There is significant potential for MaaS to be adopted on a largescale and socially responsible incentives and promotion schemes can play a major role in achieving it. Currently, public transport is widely being used to commute in the EU's larger and capital cities. For example, Eurostat figures (2019) show that the share of people using public transport to go to work in Paris, France was 69.4% in 2011. The national average is instead around 17.8%. The availability of the infrastructure network tends to favour this and explains this trend. This is sharply contrasted by the mobility behaviour of people living outside cities which rely on the ownership of private vehicles. The figure below gives an overview of the share used of private vehicles,

⁵⁵ https://play.google.com/store/apps/details?id=au.com.optus.android.gooptus&hl=en_US&gl=US

⁵⁶ <u>https://www.thecapture.club/</u>



public transport, walking, and cycling in several European cities compared to the outskirts and national average. Apart from focusing in city centres and populated areas, MaaS should attempt to target suburbs and areas that are not currently being served by public transport. A flexible solution could be using taxis to reach such areas and use them as a first or last mile solution. In fact, the figure below confirms that the Greater cities of Dublin, Lisbon, Helsinki and Manchester have a private vehicle share above 50%.



Figure 14: Modal share according to commute in Dublin, Helsinki, Paris, Lisbon and Manchester (Eurostat, 2019).

In Amsterdam, the Netherlands, a MaaS app – Amaze - was launched in May 2020 targeting its business district in Zuidas. The Netherlands is carrying out seven MaaS pilot projects across the country aiming to further test the behaviour of citizens when faced with new mobility solutions. The pilot in Zuidas is attempting to change the behaviour of commuters who mostly work in the business district. The release of Amaze follows a similar MaaS pilot that was carried out in the same district. Users were told to give up their private vehicles and were given €250 to use as mobility budget. The results were encouraging since many of the participants chose to walk or cycle while the amount that they were given was not fully spent.





Figure 15: Amaze launching in Amsterdam's business district (FleetEurope, n.d.).

7.2.5 Business travellers

Business travellers distinguish themselves as being a type of traveller that is or isn't familiar with how the local public transport system is organised. This varies since some might be already aware of how it works. Despite this, Li and Voege (2017) highlight that business travellers tend to use simple mobility options such as hailing a taxi or renting a car. Both types of transport are usually more expensive than public transport and might cause problems to business travellers due to the varying degree of traffic they might encounter. It is worth noting that business travellers seek different mobility options depending on their needs. These needs, as Arias-Molinares, & García-Palomares (2020) argue, include reliability, punctuality, exclusiveness and privacy.

Several solutions are currently on the market that are targeting corporate companies' travel planning. A concrete example is Mobileo⁵⁷ which defines itself as the first MaaS technology platform entirely dedicated to business. Mobileo allows business travellers to book their travel which includes their mobility but also hotels. A specific feature that stands out is the possibility to book via a single payment, rather than booking each separately. The service that Mobileo is introducing revolves around the new concept called Business Mobility as a Service (BMaaS). BMaaS seeks to provide businesses ranging from self-employed to a multinational diverse mobility options which ultimately aim to shifting away from private vehicle use and ownership.

⁵⁷ <u>https://www.mobilleo.com/business/</u>





Figure 16: Mobileo's inclusive booking with single payment (Mobileo, n.d.).

Companies such as routeRANK⁵⁸ also offers businesses tailored travel and mobility solutions. routeRANK provides different travel options based on the type and size of the company. Moreover, routeRANK offers services for private customers following the same scheme as for corporates. routeRANK integrates modes of transport that range from air travel to car sharing while displaying the price, travel time and CO_2 emissions each particular journey emits.

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Figure 17: routeRANK (routeRANK, n.d.).

7.2.6 Tourists

Tourists could largely benefit from MaaS due to the seamless and single ticketing experience that they are exposed to. Li and Voege (2017) stress the importance of the difficulties that tourists usually encounter

⁵⁸ <u>https://www.routerank.com/en/</u>



trying to understand how the local public transport system works and where to purchase tickets. Several cities in Europe have different systems with some relying still on paper tickets while others implementing fully digital solutions.

7.3 Public-private partnerships

7.3.1 MobilityMixx

Mobility Mixx⁵⁹ was founded in 2001 in the Netherlands with the objective of integrating and aggregating numerous mobility services in an app and travel cards including the Dutch OV-chip card. MobilityMixx consists of an open platform to which transport service providers can connect and offer their services. Users have access to a variety of modes of transport which include taxis, car-sharing, electric bicycles and scooters. The application targets corporate companies by providing mobility budgets and loyalty programmes



Figure 18: MobilityMixx app.

7.3.2 HannoverMobil

HannoverMobil⁶⁰ first emerged in 2004 which was followed by the launch of 'Mobility Shop' in 2016 from a collaboration between the Hanover public transport operator üstra and the Transport Association of Greater Hanover. The service provides travellers online information related to routes, schedules and transport modes taking them from Point A to Point B. An integral part of the scheme is the subscription which is billed on a monthly or yearly basis. The subscription has several advantages which include promoting the use of alternative transport solutions such as car-sharing, taxi, car rental and rail transport. There are associated discounts and promotions that aim to encourage the user to make use of other means of transport. This includes a 20% discount on taxi trips or receiving 25% discount on trips made with the German Railways (Deutsche Bahn). HannoverMobil is a concrete example of how public-private partnerships have the capability of working together and providing attractive promotions and incentives schemes to boost MaaS.

⁵⁹ <u>https://mobilitymixx.nl/en/index</u>

⁶⁰ <u>https://www.gvh.de/en/mobility-shop/product-overview/hannovermobil/taxi/</u>





Figure 19: The HannoverMobil scheme advertised on the üstra website.

7.4 Boosting use through promotion schemes

Promotion schemes have the potential to increase use among mobility users. In May 2019, the electric scooter company Lime was actively involved during the 2019 European elections by offering free rides to every user during the Election Day. Attracting users with free mobility products can be an attention-grabbing strategy to get more people using the app and buying the service. This also could lead to a bigger customer base. Mobility users could introduce the service to friends, family and even share it online on their social media accounts. Therefore, contributing to the distribution of the app to a wider audience and letting them get familiar with it could stimulate users to use transport solutions. Such initiatives are commonly known in the field of new mobility services with loyal users being rewarded with discounts related to the usage.

7.4.1 Promotional push information

Promotional push information are ways to increase customer demand. When downloading an app, mobility users are confronted with promotional push information coming from that same app. This is usually encouraging users to make use of the service either by providing a discount or a reward. The mobility sector is a sector in which, considering the emergence of novel services, experiences numerous attempts by companies to push promotions on mobility users' smartphone.

7.4.2 Free products

Registration gifts, free registration or offers from partnering entities have been a common practice for new transport providers to bring novelties to the attention of mobility users. Examples come in the form of providing free helmets for example. The electric scooter company Lime motivates its own users to use the service more and at the same time travel safer by helping them with safety gear. This is beneficial for the distribution of the app and for improving safety in transport. Moreover, giving users presentments for using the application can be done in multiple ways. One of this is giving discounts for local museums or stores. The application will be interesting for more people and the local museums or stores can share the app when they share accessibility information. It's beneficial for museums, stores and for distribution of the app.



In addition, an additional example is obtaining a free beverage or food item when arriving early at the location with a train. This is to stimulate a certain modality and spread the arrival of people and to avoid problems during peak hours or peak minutes of arrival. This is a perfect promotion scheme for locations where the visitors mostly arrive all at the same time. For example a movie theatre, concert of sports event. Offering food and drink discounts will get people to arrive or leave earlier or later and be beneficial for both spreading the crowd and increase spending from visitors.

7.4.3 Free rides

Free rides are commonly used to induce frequent and prolonged usage of the app and the services provided through mobility providers. This is also can be used to incentivise by offering returning users an X ride/trip for free. This encourages uses to return to a service and use the service more frequently.

7.4.4 Invite a friend and get x for free

To trigger more people to use the service and attract new users to the system a resident user can invite new users and be rewarded for this through the offering of extra credit/free trips and rides. The new user can be encouraged to except the invite to the system with a first ride for free (as mentioned above).

7.4.5 Cheaper fares through taxi app

Since the arrival of Uber and its competitors (Lyft, Bolt etc.) in the taxi business there is much more competition. Traditional taxi companies are sometimes falling behind on app usage and staying in contact with both current and potential clients. Integrating the taxis in the multimodal app is beneficial for them. In return they could offer cheaper fares and get even more attractive. This is beneficial for the distribution of the app and usage of the taxi service.

7.4.6 Promoting MaaS and the power of data

Data has a central role in MaaS schemes due to the amount of different data that is generated. Ownership of data remains a debated issue, however, if managed in a responsible way, it might boost the use of MaaS. As many different MaaS providers are already offering mobility users the possibility to book their journey according to time, CO_2 emissions or price, companies might be in a position to move away from providing company cars to employees. Recently, companies have made efforts to portray themselves as socially responsible. For this reason, companies having access to the data of their employees are in a position to provide alternative solutions to company cars based on the amount of emissions, commuting time, for example. Gaining access to commuting data of employees, MaaS will be in a better place to optimise the way in which people get to work.

7.4.7 When traveling outside of rush hour for x amount of time you will get discount or points

Traveling off-peak is interesting for the sustainability of the transport system and network. By incentivising this behaviour more people can use the transport network and peak usages is reduced. Thoughts could be to have a fixed off-peak discount rate, or a reduced peak-hour rate in case someone has travelled x time or x distance off-peak. This is also relevant to the fight against the Covid-19 pandemic, when cities and governments tried to reduce peak hour commuting by suggesting flexible working hours for people.



7.4.8 Save points when using green modalities instead of private car

Being green can be promoted through a social oriented promotion scheme. The thinking is that the user can receive bonus points and/or badges while choosing green (or less polluting) solutions. Using green solutions can be rewarded and the frequent use of green solutions does. This would be the same thinking as with point 1. Making it a social game, triggers people to truly choose a green solution in a goal to be the best scoring user. This can complementary to other policies already existing at national level in Europe.

7.5 Loyalty schemes

Loyalty schemes are used in a variety of sectors to ensure that the customer feels a benefit when making use of a particular service and this benefit drives to recurring customers. Special rewards, discounts or other special incentives for the customers who use the service multiple times and are designed as a reward for brand loyalty. Jittrapirom et al. (2017) state that the customisation element that MaaS offers can increase customer's satisfaction and loyalty. Several OEMs have already introduced loyalty schemes for their customers. Hyundai⁶¹, Volvo⁶² and others offer deals ranging from reparation of vehicles to providing leisure and lifestyle options such as holidays or wellness centres. Uber introduced Uber Rewards (Figure 20) which allows Uber users to collect points based on their rides or the food ordered on Uber Eats.

	◆ Blue 0 pts	→ Gold 500 pts	Platinum 2500 pts	◆ Diamond 7500 pts
Earn points with every eligible ride or Uber Eats order	+ 🔶	•		•
Exchange reward points for rewards	+ 🔶	٠	•	٠
Priority support	+	٠	•	٠
Flexible cancellations	+	٠	•	٠
Favorite route point boost	+		•	♦
Priority pickups at airports	+		•	٠
Premium support	+			٠
Highly rated drivers	+			٠
Premium rides point boost	+			♦
Double points on Eats	+			

Figure 20: Uber Rewards scheme (Uber, n.d.).

In general terms, loyalty schemes are being rolled out slowly in the mobility sector. MaaS has an important opportunity to position itself in symbiosis with loyalty schemes, making them an integral part of the MaaS offer.

Industries like retail, tourism and aviation have a long history of loyalty programmes through which promotional schemes, campaigns, rewards, etc. are offered to the loyal customers using regularly their services. Such programmes that satisfy customers allow transport providers to have recurring revenues from the same customers. In order to use promotion schemes more efficiently, data collection on customers' preferences etc. in place help to promote targeted campaigns. In Chapters 7.5.2, 7.5.3 and

⁶¹ <u>https://membership.hyundai.co.in/</u>

⁶² https://www.volvocars.com/en-om/services/own-and-enjoy/ownership-services/loyalty-program



7.5.4, a few examples from other industries have been selected as a benchmark for MaaS future developed loyalty programme. Additionally, those examples are mainly globally oriented, which makes them relevant to MaaS.

7.5.1 Retail

Promotion schemes can be found in all the domains of our modern economy and the retail sector is characterized of the plurality of such initiatives and the different approaches followed. One of the most competitive industries existing has to make-up innovative ways to keep customers or bring new ones on board. Two leaders in this industry – Amazon as an electronic retail giant and Starbucks, a global coffee chain have their own loyalty programmes:

Amazon Prime: Amazon is the biggest retail platform worldwide and is known for their Prime membership program. For an annual subscription fee, customers can have access to unlimited free twoday shipping on millions of items, as well as other services as the streaming service and Prime Day sales. As a result, Prime members tend to spend an average of four times more than other Amazon customers taking a piece from the competition.

Starbucks Rewards: Starbucks was the first retailer who launched a loyalty program, the My Starbucks Rewards through the Starbucks app for customers to manage their loyalty benefits. Running the program through their app makes it radically easy for customers—no punch card to forget or lose, no sign-in required. In order to earn loyalty points (or stars, in their case), customers have to order or pay with the Starbucks app. Centralizing customer transactions this way creates a goldmine of data on customer preferences and behaviour. Starbucks can gather information on customers' preferences, habits and more empowering them to offer relevant promotions and communication.

7.5.2 Tourism and hospitality sector

The tourism sector is a good example of how different services are continuously being integrated to smoothen the travel experience of the customer. Booking.com is a valid example of how different services are integrated onto one platform. For this reason, Booking.com is commonly known as an aggregator, aggregating mobility services which include air travel, rental cars, travel experiences and others.

Company	Loyalty programmes	Benefits
Booking.com	Travel Rewards.	Members who achieve at least five bookings earn the "Genius" label, and get access to the program's separate customer service phone line. Other perks include "late checkout priority exclusively" for Geniuses, and, at select properties, freebies such as welcome drinks and free airport shuttles.
Hilton Hotels	Hilton Honours.	 Lowest price guaranteed. Free Wi-Fi. Earn points on transactions and get rewarded.

Table 3: Tourism and hospitality sector loyalty programmes



Company	Loyalty programmes	Benefits
		• Exclusive App features.
		• Discounts on hotel bookings.
		• Guaranteed room up to 3 days before arrival.
	Accor live limitless.	• Early check-in or late check- out.
Accor		 Upgrade to a next room category subject to availability.
		Complimentary breakfast on weekends.
		 Four Dining & Spa Rewards worth €25 each.

7.5.3 Aviation

The aviation sector is characterised by the loyalty programmes that are offered by airlines to the users. Airlines continuously encourage people to fly according to their travel needs which is done by presenting users with different travelling classes. Loyalty schemes reflect the amount of mileage that the trip creates which then adds on to the user's total amount. Collection of miles results and reaching different statuses allows the user to enjoy benefits and promotions on a variety of products and services. Airlines have also created a whole "one-stop-shop" for travellers, where except of airline tickets, one can book a hotel, rent a car, purchase bus tickets and even buy products (cosmetics, travel accessories etc.). The airlines can generate additional revenues, for example, booking fees and they reward customers with "miles" or "credits" for future free purchases or free flights. The aviation loyalty programmes is a concrete example of how an industry can expand its activities and bring benefits to both the operational profits and the loyal customers. Airlines have shaped alliances where if you are member of a loyalty programme of one participating airline, you can earn and spend loyalty points while flying with another member. Cities can apply a similar approach to the one airlines have developed rewarding travellers using MaaS services in cities all over Europe.

Airline	Loyalty scheme	Benefit	CO ₂ compensation	Number of members
Lufthansa group (Lufthansa, Austrian, Swiss, and Brussels Airlines).	Miles&More.	Tickets, goods purchases etc.	Yes	Over 20 million.
Air France, KLM.	Flying Blue.	Collecting award miles.	Yes	N/A

Table 4: Loyalty programme per airline



Airline	Loyalty scheme	Benefit	CO ₂ compensation	Number of members
		-Seat upgrades or		
		foast		
		-Partner henefits		
		on hotel stay or		
		car rental.		
		-Shop at the		
		Flying Blue Store		
		online.		
		Discounts on		
Ryanair	Fly Credit.	purchases and	Yes	N/A
		flight tickets.		
		-Miles.		
		-Extensive list of		
		partners.		
Aegean Airlines	Miles&Bonus.	-Benefits on	Yes	N/A
		board for		
		frequent		
		passengers etc.		

Similar loyalty and reward systems exist in other industries such as the fuel industry and other booking platforms.



8 Travel incentives and promotion schemes applicable to MaaS

Chapter 0 consists of different solutions and proposals on the integration of currently existing incentives and promotion schemes to the MaaS application. Several approaches on holistic incentives and promotions can be included in MaaS apps, starting from the one of MyCorridor, with the goal of growing the customer base. The already existing incentives and promotions presented in Chapter **Error! Reference source not found.** can be applied on MaaS apps and more specifically on MyCorridor. Chapter 0 provides a first discussion on the best suited plans, proposals and schemes. This should be revisited and updated in case of future developments and can serve as a living document. Subchapter **Error! Reference source not found.** serves as a business case for MyCorridor taking into consideration other MyCorridor deliverables and the research conducted in this document.

8.1 Examples of travel incentives and promotion schemes by transport providers applicable to MaaS

8.1.1 Integration of existing incentives and promotion from mobility providers

Transport providers might offer promotion campaigns for a short period of time, e.g. of a week, exclusively for the registration of new users or similar promotions related to the offered service and the extension of the customer base. There are currently numerous transport providers operating in Europe and competing each other with smart promotion campaigns. In the annex of this document, **Error! Reference source not found.**, 26 incentives and promotional campaigns have been listed from different kinds of transport providers. The integration of the existing offers in MaaS applications like MyCorridor is a challenge from both a business and technical perspective. How are promotions going to be provided to the MaaS users while choosing a combination of transport providers in the app and what kind of visibility is going to be given for the provider? How all the promotions are going to be integrated in the system? Are they going to be updated automatically? Mobility providers need to gain visibility when a promotion campaign is running. On the other hand, MaaS application users would benefit from the combination of different promotion schemes. The inclusion of all those plans is essential for the success of MaaS apps. Such incentives are provided by governments, health insurance companies and corporates or partnerships (energy suppliers investing on alternative fuels offering incentives for lower emissions).

8.2 Proposals on incentives and promotions applicable to MaaS as a whole

8.2.1 Holistic approach on incentives and promotions

MaaS applications differ from a service provider's business model in several ways. Firstly, the application is an aggregator of different transport providers (Amazon for transport solutions) and secondly, a MaaS application can serve as a route planning software providing several alternatives and comparison of competitive prices. The distinction between a MaaS application and a transport provider goes a step further to the way incentives and promotions are provided to the users. The MaaS applications can provide commuters with incentives and promotions that can apply to the whole transit and not only one specific mode or population groups. Certain environmental incentives by for example the government or the employer can be integrated to the application. Certain employer and governmental policies are already in place, for example, providing a financial benefit for commuters to switch to cycling by paying an amount of money based on the km travelled or similarly in the Table 5 below. The examples below



apply at country or corporation level and are based on the analysis for this Deliverable. These are examples that can also assist regulatory interventions tackling the issue of pollution, multimodality and congestion.

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Measure	Mode (s)	Subsidiser	Introduced by
Financial benefit for commuters to switch to cycling by paying an amount of money based on the km travelled	Subsidies for commuting by bicycle.	Employer incentives.	Government – employer.
Vouchers equal to a specific amount of money that can be spent only for the purchase of ecological products – services (Train tickets – purchase of electric scooters, bicycles)	Train, bicycle etc.	Ecological vouchers by the employer.	Promoted and tax relieved by the government – provided by employers.
Instead of providing a company car, the employer can provide employees with a budget to be spent on other transport modes as car sharing, public transport etc.	Alternative mobility budget – alternative / new modes of transport.	Budget available by the employer (low or non- taxed by governments) to replace the company car.	Promoted and tax relieved by the government – provided by employers.
Environmental incentives by the	"Green Modes" (public transport, bikes etc.).	Governmental schemes, "eco-cheques".	Governments – cities.
(10% discount on MaaS costs) if you pollute less than the average commuter (>30% less CO ₂) CO ₂ Compensation programmes	Modes emitting CO _{2.}	Air, sea, bus or train.	Corporates – compensated by commuters.
Promotions for students, socially excluded parts of the city population	Public modes of transport.	Government, city or transport provider.	Government – city.



Measure	Mode (s)	Subsidiser	Introduced by
Promotions on days or time-slots where there is no congestion	All transport modes.	Government.	Government or transport provider.
Discounts or free access to public transport by purchasing tickets at cultural events.	Public modes of transport.	Cultural or similar promotions.	Government – city.
Social responsibility or CSR plans targeting CO ₂ reduction	"Green Modes" (public transport, bikes etc.)	Corporate plans.	Corporates.

8.2.2 Business case for MyCorridor

The business case is solely discussed in relation to the potential incentivisation schemes, promotions and already implemented loyalty scheme in line with the context and purpose of this document. The business case is bilaterally personalised. In other words, each service provider can set their own incentivisation schemes within the MyCorridor platform that can meet each traveller's needs and preferences. Hence, it is not only flexible, but it further applies on microscopic (i.e. one trip) or macroscopic MaaS level (on service or bundle of services or even providers'/ aggregators' level).

The holistic approach of the one-stop-shop is evident in the provision of a business case for: a) the service provider (i.e. they can set simple or complex business rules, i.e. provision of promotions and/ or incentives) and through the Business Rules Implementer Module, they can view/ add/ update the rules of their service(s) (which was not possible to take place in the context of the research project) and b) the MaaS aggregator who can add/ update weights to a service or bundle of services and add/ update the rules applicable to the whole MyCorridor platform creating in this way incentivisation, as it was the case that was tested to a limited extent in MyCorridor (see more in *Deliverable 7.3 B2B master contract, B2C terms of use, privacy and cookie*).

Two dimensions define the weights, the goals (i.e. mobility efficiency, environmental friendliness, commercial success, and user engagement) selected by the service provider/ aggregator and the types of the incentives (promotional and/or push information, financial incentives, loyalty schemes, enhancing a socially responsible user profile). Hence, the travellers can receive personalised incentives and promotions if they decide to share their travellers' profiles with the service providers.

The incentives, their redemption process and any related vouchers as well as loyalty points collected and level achieved are available to the user through a dedicated menu (Figure 21(a)). The MyCorridor platform-based loyalty scheme allows travellers to access vouchers offered by the service providers (Figure 2122(b)), collect points and reach levels (Figure 22 (c, d)). Figure 2122 (d) show an example from the Greek pilot site, where the use got also a promotion through the validation of a voucher (Figure 2122(e)) and collected points into their loyalty scheme.





Figure 21. The 'Rewards' menu in the Android version of the MyCorridor app

For the specific strategies implemented and assessed for Loyalty in MyCorridor, refer to *Deliverable 7.3 B2B master contract, B2C terms of use ,privacy and cookie.*

The MyCorridor platform and specifically the Business Rules Implementer Module offer the possibility and flexibility to different service providers to create and implement their own incentivisation strategy with consideration for single, bundled and aggregated services as well as users' travel needs & preferences (as they create their personal traveller profile). This happens during the service registration process through the MyCorridor Service Registration Tool (SRT). Both the aggregator and single service provider are able to set their business rules even when they register their services on the MyCorridor platform through the Service Registration Form (Figure 23). As described in Deliverable 2.2 MyCorridor interoperable, open and seamless architecture and MyCorridor subsystems and modules specifications, the business rules a service provider can view and modify are the following: a) a short description of the service, b) tariffs per service expressed in Euro (\in), c) tariffs covering multiple services of the same service provider expressed in Euro (\mathbf{E}) , d) validity times or other special conditions for each tariff., e) terms and conditions per service, f) exclusive discounts per service, g) disclaimer, h) possible combination of a service with another service provider's mobility service, and i) strategy or promotional method that the service provider would like to allow or forbid to be used for some or all services. For further information on the functionalities and elements of the Business Rules Implementer Platform, please refer to D3.1 'MyCorridor cloud service delivery platform, service gateway, big data management module and business rules implementer module' (Chapter 7, p. 85).



ld new service	Please fill in the form						
	Name						
	Name of service						
	Website						
	Service's URL						
	Cluster 0						
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	Hability Bardard D						
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	Booking API						
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	Booking API Response Type						
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I	Fill is any huginess order						
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	Choose File No file chosen						
						_	_
						Submit	Cancel

Figure 22. Service Registration Form of the Service Registration Tool (SRT; The Business Rule(s) field in red box).

In a nutshell, the infrastructure for the incentivisation business case is implemented in MyCorridor app and is both flexible and technically ready to accommodate the rules and requirements of individual service providers (i.e. or a small scale) and/ or aggregators' level (i.e. on a large scale with a probable incentivisation strategy already in place), which can be further boosted by the loyalty scheme which is already offered by the one-stop-shop'.

Finally, this business case considers and anticipates socially responsible behaviour and behavioural change towards environmentally friendly mobility choices or combination of choices can be achieved through MyCorridor, as there is provision for their realisation in both the user's traveller preferences menu (i.e. the ecological footprint) and service providers' selection of weights (i.e. in both goals and criteria) but also, apart from that, specific example incentives have been applied and assessed.



9 Conclusion

The European transport market has seen a rapid transformation over the last ten years. Traditional transport service providers have witnessed the emergence of digitalisation that has directly impacted them. Some traditional transport services have adapted to the disruption while others have been impacted by platforms. Due to the rise of micro-mobility solutions and shared mobility solutions, the mobility sector is struggling to find the right balance between allowing new players to enter the market and regulating accordingly. Opportunities and challenges still remain in order to establish successful MaaS solutions. Mobility users are increasingly expecting seamless journeys as well as reliable real-time information. The personalisation of journeys and ease of payment are two elements that MaaS should further count on. On the other hand, fragmented regulation still remains a major hurdle to overcome. Going forward, MaaS will need to take stock of the opportunities and challenges and position itself as a reliable mobility solution.

Socially responsible travel incentives and promotion schemes and MaaS can go hand in hand with one another. It is up to MaaS mobility providers to intelligently include travel incentives and promotion schemes which look at decreasing emissions coming from the transport sector. MaaS has the potential to portray itself as enabling a greener and more sustainable way of thinking among mobility users. However, this effort should be a common one and should involve all relevant stakeholders in the mobility ecosystem. Corporate companies already began to shift from providing employees company cars to instead promoting the use of a mobility budget. Consequently, MaaS can play a significant role in this corporate transition. In general terms, it will be still challenging for companies to change mentality, however, examples and initiatives across Europe show encouraging first signs. As a result, Business Mobility as a Service (BMaaS) and Fleet as a Service (FaaS) are two concepts that have emerged from the interaction between MaaS and the corporate world. MyCorridor positions itself in the group of MaaS providers setting up the scene for a modern European mobility market by not only developing a MaaS platform but also by studying all those aspects that can bring added value and better market penetration. From the planning phase of the project, MyCorridor focused on building expertise on market aspects such as incentives and promotion schemes in this document in order to understand the market needs and practices.

Several sectors such as retail, tourism and hospitality and aviation offer concrete examples of how MaaS could offer meaningful loyalty schemes. A challenge for MaaS is to ensure that users are aware of new technologies and alternatives to private vehicle use. Loyalty schemes can play an important role in increasing awareness by rewarding loyal customers which could then lead to the creation of MaaS 'ambassadors'. It is significantly important for MaaS to grow and consolidate itself in parallel to the current regulatory uncertainty that there is at the moment. For this reason, cooperation between stakeholders typically involved in the MaaS supply chain is key. Cooperation is also needed to overcome any barriers and personal interests that stakeholders might have.

This Deliverable includes a short presentation of both the traditional and new innovative transport services in Europe, debating the opportunities and challenges for MyCorridor and the future transport market, while it doesn't exclude the regulatory framework for MaaS on EU and Member-State level. Moreover, the new economic models, such as the platform and collaborative economy have a clear impact on the trends influencing MaaS. The last chapters 6, 7 and 8 consist of the main proposals of the deliverable on incentives and promotional schemes for MyCorridor taking into consideration examples from both the transport providers MaaS collaborates with and other industries such as the aviation, where a lot of experience on loyalty programmes already exists. By utilising marketing strategies and tools such as the use of incentives, promotions and loyalty programmes, MaaS can have a competitive advantage during the process of attracting loyal users and the necessary amount of transport providers.



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Table 6: List of MaaS providers and their respective incentive or promotion (D1.1 MyCorridor Use Cases, 2018).

MaaS solution/application	Incentive/Promotion
Cambio	Users receive the Cambio chip card by post. Booking their vehicles is
	easily done via the Cambio app or website, for any duration
	necessary. At the end of each month, users receive a detailed invoice
	summarising the reservations made.
CapMetro	Users can turn their mobile phones into passes and they can use the
	app to buy passes for all services, on a pay as you go basis.
Car2Go	Car2Go is available in more than 30 cities worldwide. Users are
	charged per minute rate, and the offering includes discounted fixed
	rates applied to nourly and daily usage. Rates are basically all-
	Allerus can cover insurance, maintenance, rentai, parking and iuei.
CarUnity	Facebook friends etc.).
	Offers various monthly subscriptions as well as benefits for extra
Communauto	savings, such as making a family membership, better long distance
	fares and weekday use of vehicles at non-changing rates.
	Travellers can go from point A to point B, without having to return to
DriveNow	their original point. Vehicles are allowed to park on public parking
	areas wherever contracts between municipalities and the company
	are available.
	Provides the option to subscribe to a mobility contract, charged €20
EMMA	or €36 per month, with an unlimited access in tramways, buses and
	tramway-parking.
	Australian app integrating shuttle services with public transport
GOOptus	services such as bus, train, tram and metro. It also includes car
	sharing and indicates cycling routes.
	Provides discounts for car sharing, taxis, car rental and long-distance
Henry ever Meh :1	tan mahility shop with integrated mahila phone hilling as well as
Haimovermobii	discounts PT pass holders are offered discounts for car sharing taxi
	car rental and long-distance rail
Mhrella	Mbrella belos corporate companies to advance alternative mobility
Morena	solutions as for their employees by implementing a mobility hudget
Mobileo	MaaS platform for business travel. Mobileo provides companies a
	single solution in which travel and accommodation are directly
	included.
MobilityMixx	MobilityMixx supports companies and institutions in delivering cost
5	reductions and the ability to 'go green' by offering mobility budgets in
	combination with smart loyalty programs that substantially influence
	travel behaviour.
MOOVEL	Compares the mobility offers of different providers in terms of price
	and duration – for the optimum route from A to B.
Moovit	Provides users with real time transport information about public
	transport, news and alerts as well as schedules.



MaaS solution/application	Incentive/Promotion
Moovizy	Launched in St. Etienne, France, Moovizy provides users real-time
	multimodal routes and public transport timetables. It integrates into
	one single app the following services: bike sharing, car sharing,
	carpooling and taxi.
MyCicero	Provides PT, bus, taxi, metro information services in a unified
	payment system. An important asset of MyCicero is that it has
	integrated urban and national lines.
МуМоve	Mobility budget offered to companies and to be used by their
	employees. MyMove uses Fleet as a Service (FaaS) by giving
	employees the opportunity to use free-floating mobility services.
routeRANK	routeRANK ensures that mobility users are given the option to book
	their multimodal journey according to price, travel time and CO ₂
	emissions.
SBB & Mobility	Subscription prices include fuel costs, mobility parking space,
	insurance, repairs, service, tyres, etc. Also, users can pay on a monthly
	basis and receive one detailed invoice.
SHIFT	Customers pay on beforehand for monthly trip time (minutes) which
	they were then free to use on different transport modes. Additional
	trip time could be purchased if the customer ran out. Further to that,
	SHIFT aimed to use Tesla vehicles as their sharing mode of transport.
Skipr	Smart mobility solutions to employees with a mobility budget.
	Solutions integrated are public transport, micro mobility and shared
	vehicles.
SMILE	Provides attractive integrated solutions and packages with private car
	sharing, taxis, bus, etc.
Uber	Provides instant taxi services and booking through their app.
	Provides a subscription model to address different market segments,
	allows to share transport credit between household members and
Ubigo	transfer unused credit to the next month. For travellers, the main
	reason for joining was curiosity, with convenience, economy and
	environment falling a bit behind. MaaS offers great opportunities as
	mobility services adjust to their lifestyle, become dynamic,
	personalised, flexible and readily available at a competitive cost,
	without the financial obligations that come with owning a private
	vehicle. On the other hand, from the participating providers
	perspective, companies keep up with technology and market demand,
	attract and ensure a clientele (as fewer users will use their private
	venicies) and develop new, innovative and viable business models.
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	companies keep up with technology and market demand, attract and
	ensure a clientele (as rewer users will use their private vehicles) and
	uevelop new, innovauve and viable business models.
VAO Austria	Provides traffic information services, traffic alerts, travel time
	calculations and traffic situation for all modes (for cyclists,
	pedestrians, public transport, motor venicles, etc.) and depicts them
	In a digital, up-to-date, detailed map.
Whim	Provides a subscription model as well as a pay-as-you-go model for
	those who are testing the app.