molière

MOBILITY SERVICES ENHANCED BY GALILEO & BLOCKCHAIN

D6.1 - Market and socioeconomic analysis of MaaS & Galileo geo-positioned applications for mobility (preliminary)

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Glossary

B2B	Business to Business
B2B2C	Business to Business to Consumer
B2C	Business to Consumer
B2G	Business to Government
B2G2C	Business to Government to Consumer
CSR	Corporate Social Responsibility
G2C	Government to Consumer
GSA	European GNSS Agency
KPI	Key Performance Indicator
MOLIERE	MobiLIty sERvices ENhanced by Galileo & blockchain
OBU	On Board Unit
OTA	Online Travel Agency
PA	Public Authority
P2P	Peer to Peer
PM	Particulate Matter
WP	Work Package
MaaS	Mobility as a Service
MDM	Mobility Data Marketplace
TCM	Total Cost of Mobility
TCO	Total Cost of Ownership
TSP	Transport Service Provider

1. Executive Summary

The present deliverable outlines the driving market forces and socio-economic trends that can influence the emergence and consolidation of Mobility as a Service (MaaS). It focuses, in particular, on the mobility data layer considered to be one of the main building blocks and cornerstone of the MaaS new mobility paradigm, the enabler of transformative applications and services that hold great potential for upending urban mobility planning and management as we know it today, and the consolidation of emerging new business models in urban mobility. A common feature of mobility data in Molière is its geo-location component, where travellers' and vehicles' latitude-longitude data points are acquired by combining signals from Galileo and other GNSS in sight.

It is worth noticing that this document provides a first overview of the previously mentioned topics, meant as a common ground and starting point to guide the early discussions among the Molière consortium, and to provide a sufficient context for the prioritisation and design of the most relevant and promising use cases. The full, in-depth analysis, including the economic value and competitive advantage of leveraging Galileo will be provided in the final version of this deliverable, scheduled in month 24 (November 2022).

2. About Molière

Urban mobility is becoming an issue of great importance in today's society due to the increasing population movements towards big cities and the exponential growth of cities in developing countries. Today, urban mobility schemes are evolving faster than ever mainly due to social, economic and technological changes. The traditional choice between walking, taking public transport or buying a car is being extended with a wide range of new flexible mobility services, such as vehicle sharing and ride-hailing.

In this context, a new mobility paradigm is needed - from disconnected mobility services to complementary mobility services. Promoting more sustainable, affordable, equitable, and accessible mobility is crucial, where micromobility and shared mobility services increasingly complement public transport. The ultimate goal is to reduce dependence on single occupancy private vehicles.

Molière will build the world's best open data commons for mobility services, the "Wikipedia of public transport and new mobility data", a Mobility Data Marketplace (MDM) underpinned by blockchain technology, raising the profile, visibility, availability, and utility of geo-location data from Galileo, and will test it to fuel and demonstrate a diverse set of concrete, highly relevant mobility scenarios and use cases where geo-location data is key, addressing the needs of cities, public transport authorities, mobility service providers, and end-users.

3. Introduction

Mobility data openness and decentralisation principles (i.e., enabled through the use of blockchain technology) are discussed in the present deliverable as critical factors to underpin frictionless, multimodal new mobility offerings combining public transport, active mobility (walking, cycling), shared mobility, but also including personal modes of transportation in the routing algorithm of the MaaS platform, with the ultimate goal of increasing user acceptance and traction, capturing a significant portion of the potential market, unlocking massive behavioural change towards more efficient, sustainable mobility patterns, and ultimately enabling willingness to pay factors, both from the end users', transport operators' (public or private), and private companies' perspectives.

It is important to notice that neither functional, technical, nor policy / legal aspects regarding blockchain and data sharing are in scope of this document[2], but rather the focus is on the related market and socio-economic factors. Different market segments are preliminarily identified, which will be further analysed, characterised, and dimensioned in the final version of this deliverable, from early adopters to new markets to be captured (mainly to private car based transportation), including barriers and levers for realising the projected market value of Molière.

4. The value of mobility data: for whom and for what?

According to the World Economic Forum: "*To unlock the value of data, organisations, whether in the public, private or third sector, must examine the ways in which they store, integrate and process data. Furthermore, there is untapped potential in data, that if harnessed, can have implications for helping to solve societies' biggest problems or creating new economic value*".

Molière is aligned with the previous quote, and argues that, in addition to curating more data, and of better quality, data should be openly shared to maximise its value, while ensuring adequate levels of integrity, privacy, and security. Therefore, **Molière will figure out where the value of public transport, new mobility services, and ultimately MaaS resides in, and identify and describe the mechanisms for generating value through data sharing, both from the socio-economic, and environmental perspectives**. Moreover, the value of mobility data will be analysed from the viewpoint of different stakeholders in the mobility ecosystem (see *Figure 1*).

Three types of value sources are typically used to fund mobility: public subsidies, user fees, and indirect, targeted funding such as development impact fees and land value taxes. Adding to these, Molière will introduce and pilot test the novel concept of "micro-subsidies", defined by Factual as "*targeted subsidies down to the level of very narrowly defined categories or even individual users that can be modulated according to categorical/personal characteristics (age, income, disability, socio-economical groups –like unemployed-, etc) and any relevant feature of the journey (like time, geolocation, mode of transport, type of motorization of the vehicle,*

[2] These are addressed in deliverables *D3.1* & *D3.2* – for the functional and technical design before implementation; *D4.1* & *D4.2* – for the technical specification of the actual implementation; *D6.4* – for the Data Management Plan, and *D6.5* for the Ethics & Regulatory aspects involved

occupancy, etc)"[3], and analyse the value created. Needless to say, data provided by MaaS platforms is key in designing and managing effective micro-subsidy programmes.

Figure 1 Stakeholders benefit from mobility data

5. Molière's Unique Value Proposition

Blockchain is regarded as a disruptive technology that holds great potential for unlocking *value*. Its inherent features, such as enabling a robust, immutable, secure, trustable data sharing environment, can contribute to break persistent mobility data silos, and so maximise the value of mobility data, especially when transformed into actionable insights.

Molière's UVP is presented around the so-called "Mobility Data Marketplace" (MDM), and it being deeply integrated with a MaaS platform and user-facing app provided by Iomob. In Molière, the MDM is conceptualised in WP3 (*Platform Requirements & Design*), implemented in WP4 (*System Development*), and piloted in WP5 (*Demonstration*). An estimation of the associated costs, potential economies of scale, and ultimately the economic value that can be unlocked by the MDM will be analysed from the multiple perspectives of the different actors in the mobility ecosystem producing and/or consuming data, and information / insights / Key Performance Indicators (KPI) derived from these data[4], and the distinct deployment alternatives.

We dissect different possible governance schemes for a MDM, and choose the latter for implementation of Proof-of-Concept (in *WP4*) and piloting (in *WP5*) in Molière:

(1) ***'G2C' (Government to Consumer)***: mobility data should be openly shared by Public Authorities (such as Cities, Public Transport Authorities, etc.) to consumers, i.e., citizens, developers, entrepreneurs, companies, etc. for transparency and accountability. This can enable data-rich mobility ecosystems where both individuals and companies

[3] The beauty of "Micro-Subsidies": a new era in the management of urban mobility?

[4] For the sake of clarity, this preliminary version of deliverable *D6.1* outlines the new avenues of value creation for mobility data through the implementation and exploitation of the MDM. An in-depth analysis will be addressed in the final version of *D6.1* (due in M24), which will incorporate all lessons learned, and inputs, from the Molière consortium partners

can generate new value by building applications and services based on data from public transport, as well as aggregated data on private mobility services operating in the public right of way. Public, open data portals have been available for long (covering not only transport and mobility, but many other areas), but not all of them have succeeded to generate actual value. The distinct characteristics that have underpinned the most thriving **publicly-led open mobility data sharing platforms will be analysed** (such as that from Transport for London[5], for instance), **and the best practices will be identified for an MDM under a governance scheme where the PA takes full leadership in implementing it, and mandating how mobility data and insights must be shared to and from the MDM**.

(2) ***'B2G' (Business to Government)***: some Public Authorities may not have the desire, technical competences, or budgetary resources to themselves manage the complex flow of an ever-changing landscape of new mobility operators, or the security requirements associated with protecting personal data. In this scenario, **a privately-operated, third party Software-as-a-Service (SaaS) access to the MDM would allow for cities to efficiently harness mobility data for important policy and planning decisions**. Many cities might find that this is a very cost-efficient path forward, as such third party solutions developed and maintained by private businesses can process data feeds from multiple mobility operators with economies of scale. Once the MDM would be set up to acquire and process the mobility data feeds that are relevant for a given PA, selected datasets, and insights, could be shared to the consumers, following the previous scheme (therefore a 'B2G' + 'G2C' = 'B2G2C' scheme)

Both under 'G2C', or 'B2G2C' schemes, mainly societal goals are pursued by Public Authorities, by creating and leveraging new value from mobility data. Better informed mobility planning and management policies can contribute to reducing negative externalities of transport (i.e., traffic congestion, CO_2 and particulate matter (PM) emissions, road safety issues), which can be estimated, and quantified, providing an order of magnitude of the positive socioeconomic impact generated. For instance, if more citizens use public transport or micromobility options for their daily commute thanks to the higher availability of mobility apps (which, in turn, are possible thanks to, and make use of the data from a MDM), and such citizens were previously commuting using their private cars, this will ultimately generate an aggregated positive impact in terms of reduction of traffic congestion, less wasted time, reduced emissions, all of which can be translated into economic figures; moreover, if more environmental friendly habits are nudged in the end users, including active mobility policies, the quality of air will improve, and there will be an aggregate positive effect in less health related issues (and the resulting costs for the public finances). Traditional, less cost-effective ways of obtaining data for planning and management purposes, such as surveying citizens on their mobility patterns, could be replaced by data analytics applied to new sources of data from moving devices made available through a MDM, and so generate significant savings for the public finances. A MDM will stimulate a burgeoning entrepreneurship environment, where emerging startups, but also more consolidated, nimble technology-based companies, will profit from the mobility data made available by the Public Authorities, thus generating a rich ecosystem of new applications and

[5] https://tfl.gov.uk/info-for/open-data-users/ A comprehensive international benchmark will be developed, including a summary of common best practices, and will be included in *D6.1* final version

services, and boosting economic activity[6]. New business opportunities and business models by private companies will be facilitated, as well as research and innovation from academia.

(3) ***'B2C' (Business to Consumer)***: user facing smartphone apps are transforming mobility by improving visibility, discovery, and seamless access to transportation services, provided both by incumbent operators (of public transport, taxi) and new entrants (of shared, on-demand mobility). These apps are spawning new businesses, services, and mobility models, and are an effective instrument to implement more sustainable mobility policies, enhance traveller engagement, and nudge behavioural change aligned with such policies. Using smartphones to facilitate mobility is becoming mainstream, and so smartphone apps have transformed the way that many travellers call for an on-demand ride, plan for trips, or get real-time transportation information, for instance. **The dispensing of real-time transportation data to smartphone users immediately after collection is one of the most important aspect of smartphone transportation apps to contribute to more efficient mobility, and such data will be eventually sourced by the MDM**. The availability of real-time information, such as traffic conditions, roadway incidents, parking availability, or public transport wait times, distinguishes newer apps from many early smartphone app services, such as those just providing static public transport timetables. The other way round, mobility apps generate a wealth of data from their users that, conveniently aggregated and anonymised, can be uploaded to the MDM for the benefit of the whole mobility ecosystem, generating a virtuous cycle enabled by an open mobility data sharing policy. With mobility data most often having a dynamic geo-location component, the superior accuracy of Galileo signals offers a significant competitive advantage. Luckily, Galileo-enabled devices are becoming commonplace in consumer devices used by travellers, such as smartphones, wearables and tablets (and a multiconstellation chipset is also increasingly offered in On Board Units (OBU) for tracking vehicle fleets[7]). According to the GSA, "*leading GNSS companies representing more than 95% of the chipset market produce Galileo-ready chips. Almost 500 million of Galileo-enabled phones were shipped until today from more than 20 global smartphone brands (e.g. Apple, Samsung, Huawei, Sony, …) that equipped Galileo in their new smartphone models. Moreover, Xiaomi recently launched the first dual frequency smartphone taking advantage of the benefits of the dual-frequency E1/E5 of Galileo in urban areas. In simple terms, multi-constellation GNSS receivers are the "standard": the price of a mass-market chipset with or without Galileo is the same. From a receiver point of view, it is unlikely that receivers will be developed for one preferred constellation only. Indeed, the signals coming from different systems can be used as a complement of each other and the more satellites signals are used, the more accurate and precise the determined position will be*".

Mobility apps can be classified into one of five common business models:

1. Sale of an app on an app marketplace (such as Apple's App Store, or Google's Play);

[6] London's open data approach is often referred to as a successful model, as it has stimulated a great deal of third party innovation using Transport for London's transport feeds. This has enabled start-ups like CityMapper (which has rapidly become a highly valued company) to create sophisticated route planners able to compare costs, times and active travel metrics with real time information (CityMapper have incorporated both TfL data and third party APIs - like Uber, Zipcar and Gett)

[7] https://www.usegalileo.eu/EN/inner.html#data=smartphone

2. Offering a free to download, periodic sale/subscription to use/update app (e.g., SaaS, news services);
3. Offering a free app, with in-app purchase features or the close variant 'freemium' model;
4. Offering a free app supported through advertising;
5. Offering a free app that provides access to paid services (e.g., Uber)

The mobility app marketplace is both broad and deep, with thousands of transportation apps available in the different marketplaces. In an attempt to identify a set of *common* features that build and rely on mobility data we categorise mobility apps into nine sub-categories:

1. *Shared mobility*: apps that sell the use of shared transportation vehicles from a business to an individual consumer, including one-way and roundtrip trip bike- moped- scooter- car-sharing
2. *Mobility trackers*: apps that track the speed, heading, and elapsed travel time of a traveller. These apps often include both wayfinding and fitness functions that are coloured by metrics, such as caloric consumption while walking
3. *Peer to Peer (P2P) shared mobility*: apps that enable private owners of transportation vehicles to share them peer-to-peer, generally for a fee
4. *Public transport*: apps that enable the user to search public transport routes, schedules, near-term arrival predictions, and connections. These apps may also include a ticketing feature, thereby providing the traveller with easier booking and payment for public transport services
5. *Real-time travel assistants*: apps that display real-time travel information across multiple modes including current traffic data, public transport wait times, and bikesharing and parking availability
6. *Ridesharing*: apps that provide a platform for sourcing rides, including services in which fares and rides are split among multiple strangers who are traveling in the same direction (carpooling)
7. *Taxi hailing*: apps that supplement street hails by allowing location-aware, on-demand hailing of regulated city taxicabs
8. *Trip aggregators*: apps that route users by considering multiple modes of transportation and providing the user with travel times, connection information, and distance and trip cost
9. *MaaS:* apps that offer multimodal trip planning (combining active mobility, public transport, and shared mobility), and integrated booking and payment of different mobility services from different operators or vendors. Different levels of integration of MaaS (see chapter 6 of this report) depend upon availability of data, which in "MaaS walled gardens" (such as Cabify, Uber, etc.) is kept in private silos, whereas in Molière we promote an open approach leveraging Iomob's industry leading MaaS platform.

Many of the *common* features identified depend on accurate geo-location data (e.g., of travellers and vehicles), and are critical in addressing well-known issues of MaaS, such as avoiding friction in accessing mobility services (i.e., in matching passengers with vehicles), particularly in multimodal trips. Indeed, navigating the city is a complex challenge, where leveraging Galileo is an enabler to increase user acceptance of MaaS, generate traction, and ultimately make it a viable model.

According to Juniper Research[8], commuters travelling via MaaS will save, on average, 37% of the baseline journey time, calculated at 67 minutes per day for drivers and 61 minutes per day across all modes. Other KPIs will be obtained building on data made available through the MDM (particularly in task *WP4400 – AI and Data Exploitation*) and will be described in the final version of this deliverable. KPIs will sustain the "business case for MaaS", as well as the potential societal impact. KPIs will provide actionable tools and evidence to decision makers, and guidance how to implement mobility policies that face inequality, increase access, and boost the economy.

Confronting the Total Cost of Ownership (TCO) of a privately-owned vehicle with the Total Cost of Mobility (TCM) of tailored MaaS offerings will increase the appetite for MaaS. Willingness to pay factors for app-based, highly customised, data-rich combined mobility bundles will be analysed, as well. TCO and TCM will factor in savings in travel time, as well as in CO_2 emissions, and so appeal to the increasing environmental awareness of consumers driving their travel decisions.

Citizens generating a wealth of mobility data as they travel (i.e., through their Galileo-enabled smartphones) is a largely untapped opportunity, at least for many stakeholders in the mobility ecosystem who do not have broad *access* to the data generated by end users, where some dominant players often abuse their market power. A blockchain based MDM will lay the foundation for more *democratised* access to mobility data, and enable monetisation schemes (e.g., through tokenization managed by smart contracts) to create new avenues of value creation, and the possibility to generate incentives to generate positive behavioural change.

(4) ***B2B (Business to Business)***: the majority of private vendors that offer MaaS-like applications (see classification in the previous point) carefully secure their mobility datasets and/or package them into anonymised, aggregated formats for use by urban planners and practitioners, and by Transport Service Providers (TSP), public and private. Purchasing such data (and more often, the insights deriving from these data) from these purveyors can be costly. However, the competitive advantage of using such market intelligence often pays off. Purchasers of mobility data insights include Online Travel Agencies (OTA), real estate developers, or retailers, to name a few, for which the importance of highly accurate geo-location data from current, and even more important, potential new customers is critical (what are their mobility, and consequently potential consumer patterns, how they move, where they come from, etc.). Businesses that purchase mobility data might use them to fuel their own user-facing apps, and so the resulting model would be *B2B2C*. As companies are increasingly concerned about, and committed to implementing Corporate Social Responsibility (CSR) programmes aimed at proving socially accountable – to themselves, to their shareholders, to the citizenship – available data (and, in particular mobility related data) will be an invaluable resource to sustain them. Corporate MaaS provides mobility budgets to employees to spend in a variety of mobility services, and is key to their CSR, as well as to cut costs. **The opportunity for Galileo-sourced geo-location data to be unlocked through the MDM and generate value to various businesses will be addressed** in the final version of *D6.1*.

[8] MaaS – The future of city transport 2027, Juniper Research (April 2020)

(5) ***Open data commons for mobility services***: Molière's proposed approach to a MDM is an open data commons with integrated tools for creating and editing mobility information (of public transport, and new mobility services), just like users can edit Wikipedia, and rely on blockchain technology to provide the required trust layer, as well as mechanisms to anonymise data, and automate data sharing, and value creation mechanisms. Typically, data creators are eager to contribute their time and effort to open, collaborative digital platforms. Molière will do for mobility data what OpenStreetMap[9] did for geographic data, and provide a neutral home for the whole mobility industry to publish, visualise, and explore mobility data. Moreover, Molière will stimulate the creation of a global community that scales up and supports urban mobility projects through open mobility data and peer-to-peer knowledge sharing, making a point that whenever geo-location is concerned, Galileo-sourced data is highlighted. Ideally, a non-profit organization, or a foundation, should be in charge of defining the governance of the MDM.

A compendium of applications leveraging Galileo-sourced geo-positioning data is detailed in *D3.1 - Use Cases Definition & Requirements*, where D6.1 final version will analyse their socio-economic implications.

6. Data makes MaaS happen, and… be economically viable

As an evolution, and variant of the frequently cited '*Topological approach to Mobility as a Service*'[10], the Boston Consulting Group distinguishes four levels of MaaS functionality (see *Figure 2*). Each level represents an increase in sophistication as companies expand their technological capabilities to **accomplish more with the same input data (multi-operator real-time data on capacity, pricing, and operations)**. But while each level is attractive to end users, MaaS providers struggle to achieve the right economic model. Each functionality level calls for a different business model, which has its own limitations and hurdles. It is only at level four that—eventually—the full potential of MaaS will be realized and that MaaS will be truly economically viable.

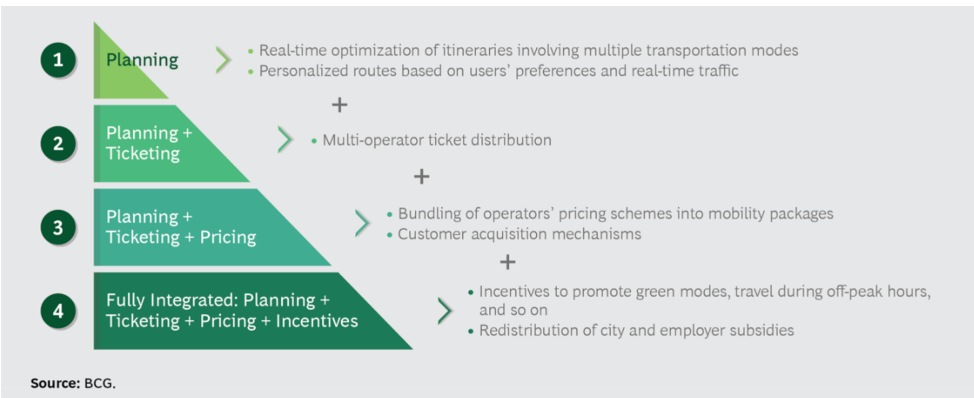

Figure 2 Four levels of MaaS build on the increasing availability of data

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[9] https://www.openstreetmap.org

[10] Jana Sochor, Hans Arby, I.C. MariAnne Karlsson, Steven Sarasini, *A topological approach to Mobility as a Service: A proposed tool for understanding requirements and effects, and for aiding the integration of societal goals*, Research in Transportation Business & Management, Volume 27, 2018, Pages 3-14, ISSN 2210-5395

- **Level One: Planning**. Initiatives at this level coordinate various modes of transportation and personalise routes. Level-one platforms offer free itinerary planning for users, and they **sell users' data to advertisers**. However, only monopolistic players with high penetration rates, such as Google and the Chinese Internet service giant Tencent (which is reportedly looking at MaaS options, by e.g., cooperating with industry leaders, such as MaaS Global), can afford such a business model.

- **Level Two: Planning + Ticketing**. At this level, platforms are able to aggregate mobility offerings from different operators, resell operators' tickets to individual commuters, and charge commissions to operators. Level-two platforms rely on a travel agent model. **Revenues are usually derived from commissions on each trip but can also be based on lead generation**. This model poses particular challenges for the mobility industry, because transport providers already operate in a low-margin context and cannot afford the distribution of funds to third parties. Travel apps can impose commission rates because hotels, for instance, need the attention of those apps, but the few current travel options won't feel that pressure. There are few operators in a given city for them to work with. So, third-party mobility distributors are left with limited bargaining power.

- **Level Three: Planning + Ticketing + Pricing**. MaaS initiatives at this level incorporate operators' pricing and means of attracting customers. Level-three platforms **bundle single transportation tickets into all-inclusive mobility packages**. They use various customer acquisition techniques to expand their user base. This is what Netflix and Spotify did in their respective industries, but they rapidly realised they had to take control of their unit costs in order to be sustainable. Netflix started to produce content, and Spotify indexed the royalties paid per stream to its own business targets. Bundling mobility solutions with very different unit costs is not an easy equation. All-inclusive pricing will motivate users to choose modes of transportation that are more convenient for them but also more expensive to operate, like ride-hailing and taxi services. **The level-three model is unsustainable because it lacks incentives to encourage users to choose less expensive transportation options** (for example, mass transit and free-floating bikes as well as travel at off-peak hours). This brings us to level-four platforms, which will provide incentives for users.

- **Level Four—Fully Integrated: Planning + Ticketing + Pricing + Incentives**. Only at level four will MaaS operators be able to achieve real success and economic sustainability. To reach this level, MaaS players must put in place incentives that will encourage commuters to use more economical, more sustainable transportation modes, and ultimately nudge behavioural change to MaaS as a competitive, convenient alternative to private vehicle based mobility, and to support mobility policies led by the public sector to maximise societal goals. MaaS operators, public but also private, will be the distributors of subsidies that encourage commuters to use MaaS offerings as well as incentives that prompt them to use those offerings in particular ways (traveling at off-peak hours, for instance, at a discounted price). This ultimate level is where the interests of public authorities meet the needs of private players.

Molière targets Level Four MaaS by piloting a micro-subsidy management, SaaS platform called "Rideal"[11], provided by Factual, which will be integrated with the MDM and Iomob's MaaS platform, and piloted in *WP5*.

Moreover, "*micro-subsidies have a huge potential to improve the efficiency of subsidies to urban transport, optimising the amount of resources disbursed by Public Transport Authorities (PTA), improving the operations of public transport operators, and broadening very significantly the scope of journeys eligible to be subsidised. Ultimately this should result in increased equity and in a significant reduction of the negative externalities of road mobility: environmental impact, congestion, and road crashes. Inasmuch as they can help flatten the demand curve in mass transit, they can facilitate physical distancing, thus improving safety in collective modes also. All in all, this can have very profound effects in urban mobility, mostly to the benefit of the end users and of PTAs*".

Factual's "Rideal" is designed to be integrated with any existing MaaS or TSP platform. In order for "subsidisers" (public, or private) to be able to effectively deploy and manage micro-subsidy programmes, "Rideal" requires data-rich environments, such as that enabled by Molière's MDM. Moreover, in order to reliably determine whether users are, according to a given micro-subsidy programme criteria, eligible to get discounted, or incentivised rides in given areas of the city (such as those that are insufficiently served by public transport) **geo-location data of where trips start and end is required (among other), where Galileo's superior accuracy, and authenticated signal (to avoid fraud), is a booster for more effective mobility policies for incentivising travellers, enabling accountability of how tax payer money, or mobility budgets from private companies are spent**.

7. Conclusion

Data rich MaaS holds great potential to help cities optimise transportation and meet objectives in three key areas:

- **Societal,** to make urban mobility more inclusive by improving access to all parts of the city, and for all citizens
- **Economic,** to optimize investments and foster a thriving digital ecosystem that generates economic prosperity, and a wealth of mobility options for citizens
- **Environmental,** to address negative externalities of transport, such as traffic congestion and road safety issues, and lower the use of personal vehicles, thereby alleviating air pollution

Particular attention will be given to the untapped value of Galileo-sourced geolocation data made available through Molière's MDM, and this will be addressed in detail in the final version of D6.1.

[11] https://rideal.mobi