SMART CITY INSTITUTE HEC Liège

MOBILITY AS A SERVICE (MaaS)

EXPLORATORY STUDY ON THE GOVERNANCE AND THE MANAGEMENT OF PROJECTS IN BELGIUM

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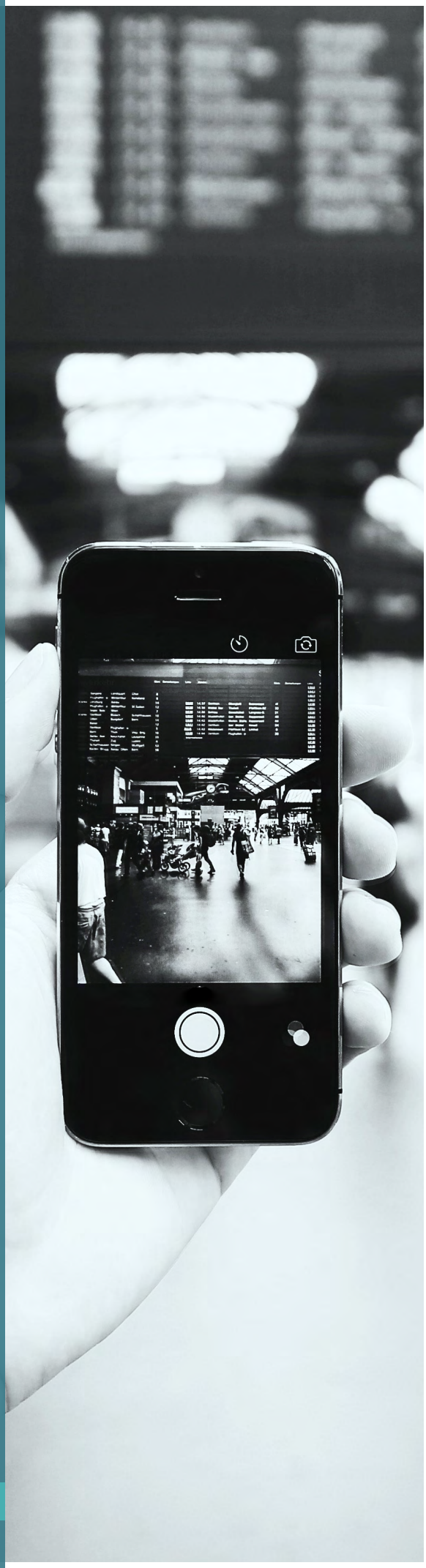

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EXPLORATORY STUDY ON THE GOVERNANCE
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ABBREVIATIONS

MaaS : Mobility as a Service

BCR : Brussels-capital Region

PTO : Public transport operator

PPP : public-private partnership

INTRODUCTION

Mobility is at a crossroads. The intensive use of the private car has had significant consequences on the environment and the health of citizens, but also social and economic impacts. At the same time, modes of travel induced by the sharing economy such as car-sharing and bicycle sharing have considerably disrupted the transport market[1]. As a result, the mobility debate is evolving, particularly in the context of smart and sustainable cities. The discussions concern, among other topics, the provision of transport networks, understanding the real needs of the citizens and how a more integrated approach may induce a modal shift from cars to other modes of transport[2].

In this context, Mobility as a Service (MaaS) is frequently put forward as a solution. MaaS can be defined as an intelligent user-centered mobility management and distribution system. MaaS allows the user to obtain information, book and purchase tickets for the widest possible range of mobility services through a single platform, usually in the form of a mobile application[3,4,5].

Originally from Finland, the concept of MaaS is quite recent. Although the generic idea of a combined mobility assistant can be traced back to 1996, it was not until 2013 that MaaS took its current form through a pilot project in the Swedish city of Gothenburg[6] followed by the creation of MaaS Global, the first MaaS operator resulting from a Finnish research programme[7]. Although MaaS was initially largely driven by the intelligent transport systems industries[8], many public authorities have taken up the concept today. MaaS is currently mainly used in urban areas because its implementation requires an availability and combination of services that is difficult to find in peripheral and rural areas. According to an estimate by Juniper Research (2020), revenues generated worldwide by the use of MaaS platforms will exceed US$52 billion by 2027, with growth starting in 2021[9]. How MaaS will unfold in the future remains uncertain and depends on a series of technological, social and legal trends and developments.

In Belgium, competences for mobility and digitalisation are shared between the federal level, the regional level and local entities. The Regions, which have the majority of these competences, have marked their strategic interests for MaaS with different degrees of intensity. The Flemish Region mentions MaaS as one of the 6 priority clusters of its Intelligent Transport System (ITS) action plan published in January 2019[10]. In Wallonia, MaaS is mentioned in the Regional Mobility Strategy adopted in May 2019[11]. In the Brussels Capital Region (BCR), the deployment of a MaaS service is explicitly defined as an objective in its own right in its Good Move strategy[12]. At the federal level, interest is also growing since the coalition agreement of September 2020 specifically mentions that « the government, in collaboration with the federated entities, will develop a framework for deploying mobility as a service »[13].

At the level of Belgian cities and municipalities, the strategic considerations remain more disparate. In this respect, we have identified a demand for more information about MaaS through our exchanges with a number of public authorities during the editing and after the release of our practical guide on the future of mobility[i].

In this context, the purpose of this report is twofold. On the one hand, we wish to demystify the concept of MaaS and the major issues related to its governance and management to a Belgian audience for whom the concept remains very abstract. On the other hand, we would like to make a first assessment of the interest and perception of the mobility representatives of Belgian cities with regard to MaaS, its implementation and governance.

This report therefore offers an information and discussion basis for public authorities and stakeholders with a view to the development, or not, of MaaS strategies and projects in Belgium in the short, medium and long term.

For this purpose, we interviewed mobility representatives from 8 Belgian cities (Antwerp, Bruges, Charleroi, Ghent, Hasselt, Leuven, Liège, Namur), 1 mobility representative from the Brussels-Capital Region and representatives of the 4 Belgian public transport operators (PTOs) (i.e. STIB/MIVB, NMBS/SNCB, TEC and De Lijn)[ii].

The report is divided into 3 parts: it begins with a theoretical part presenting the concept of Maas, its objectives and the possible management and governance models associated with it. After a methodological explanation, the empirical part of the report first analyses the conceptual perception of the MaaS by the local authorities interviewed (i.e. perception of the concept and the prerequisites for its implementation) before looking at their perception for practical deployment (i.e. role of the private and public sectors, choice of management model, distribution of roles between levels of power).

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[i] Lebas A., Basile, C. & Crutzen, N. La mobilité de demain : Quels enjeux pour nos territoires? Guide Pratique, Tome 4.

[ii] For more information, see *Méthodology* p. 12

01

MOBILITY AS A SERVICE : THEORETICAL INTRODUCTION

DEFINITION AND OBJECTIVES

MaaS can be defined as a user-centric intelligent integrated system of information, reservation, purchase and validation of tickets for mobility services. MaaS implies the integration of all mobility services available in a territory: public transport (e.g. bus, tram, metro, train) as well as shared modes of private operators (e.g. car-sharing, car-pooling, bicycles, scooters). In practice, the MaaS operator aims to propose the ideal combination of transport modes for each journey by knowing the network conditions in real time (supply) and the user preferences (demand)[4,5,14].

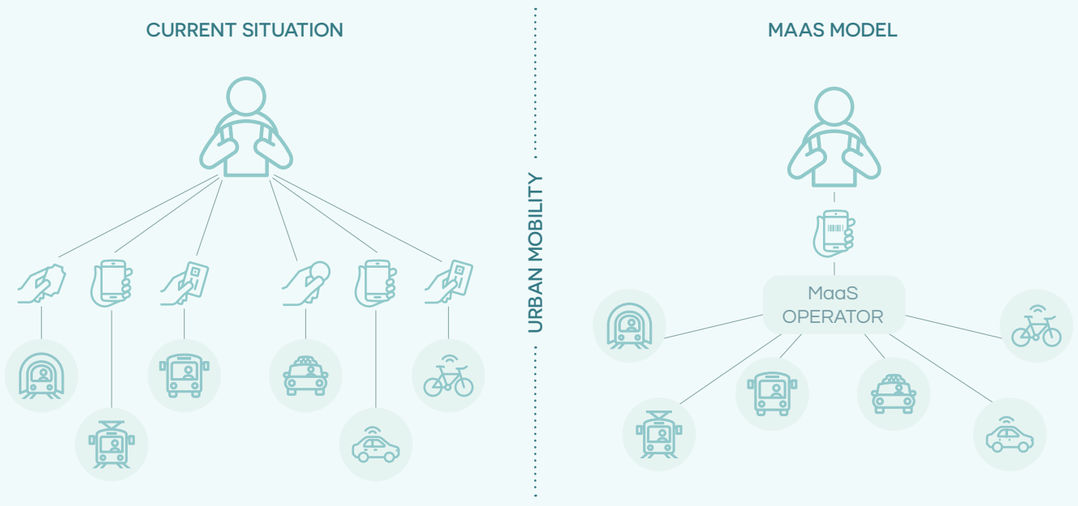

Fig. 1 - Visual representation of MaaS (adapted from Kamargianni & Mathyas - 2017) [i]

[i] Illustration from *La mobilité de demain : Quels enjeux pour nos territoires? Guide Pratique, Tome 4.* pp. 68.

There are different levels of MaaS integration as described in the table below.

NOT CONSIDERED AS MOBILITY AS A SERVICE		MOBILITY AS A SERVICE		
LEVEL 0	**LEVEL 1**	**LEVEL 2**	**LEVEL 3**	**LEVEL 4**
NO INTEGRATION	INTEGRATION OF INFORMATION	INTEGRATION OF BOOKING & PAYMENT	INTEGRATION OF SERVICES	SOCIETAL INTEGRATION
Services are provided separately for different means of transport.	Travel information is provided by (multimodal) travel planners.	Users can find, book and pay for their trips, regardless of the means of transport, through a single point of service.	Transport services are integrated through passes, bundles or packages. At this level, MaaS offers an alternative covering all daily mobility needs.	Supply and demand are now associated with societal objectives such as reducing car use or promoting habitability in cities.
E.g. The user has a monthly ticket for public transport, an app for each shared mobility service and must compare the travel information on all these different channels.	**E.g.** The user has a public transport season ticket, an application for each shared mobility service, but can plan their journey through a single platform that compares the different alternatives.	**E.g.** Users have a single platform on which they can plan their journey and compare mobility alternatives. They can also book individual journeys through this platform.	**E.g.** The user has a unique platform on which they can plan their journey and compare mobility alternatives. They have a monthly pass giving them unlimited access to public transport, shared bicycles in the city and a number of shared taxi and electric scooter routes.	**E.g.** In addition to level 3, the user receives bonus points that are converted into vouchers or discounts if they choose more environmentally friendly modes of transport.

Tab.1 - Levels of integration of MaaS (Adapted from Durand & al, 2018)

In theory, the implementation of MaaS seems desirable from the perspective of users, public authorities and transport operators:

- For users, MaaS offers easy access to a wide range of mobility services through a personalised approach, giving them more choice resulting in more user comfort, more flexibility and, ultimately, an alternative to the car[3].
- For transport operators, both public and private, MaaS offers new sales and information channels. The data collected also enables these operators to optimise their services.
- For public authorities, MaaS can be a tool for optimising access to mobility services and achieving certain policy objectives. As a matter of fact, a MaaS system may make it possible to collect more accurate data on mobility practices, which can contribute to better planning and adaptation to the needs of the transport supply in the territory[3]. In terms of policy objectives, MaaS has the potential to reduce the use, and even ownership, of individual personal vehicles and/or to promote sustainable modes of transport. From an economic and social point of view, the range of options available within MaaS is also a lever for developing an inclusive transport system, especially for those who have difficulties using traditional public transport.

MANAGEMENT AND GOVERNANCE MODELS

In theory, one can distinguish 3 management models: the MaaS operator can be a private commercial operator, a public operator (with a platform developed and managed by a public authority or a PTO) or a hybrid version: i.e. a public-private partnership (PPP) in which the private enterprise proposes a franchised model to a public authority or PTO. The public authority represents an asset in terms of legitimacy with private transport service providers, but the public sector generally faces long institutional processes that can slow down the implementation of projects. Conversely, private MaaS operators allow the MaaS market to develop more rapidly thanks to the innovation induced by competition, but are potentially difficult to include public transport operators who are afraid of losing some of their prerogatives towards customers[15].

In practice, many stakeholders agree that, beyond the specific management model chosen for the platform, MaaS cannot materialise without the active involvement of public transport operators (bus, tram, train, metro) and public authorities. Many even agree that public transport is the backbone of MaaS[4,8].

According to Polis (n.d.)[i], a balanced governance model with public sector oversight should be sought to ensure a fair, inclusive and sustainable transport system[8]. The implementation of a MaaS system requires the collaboration of public authorities with a large number of stakeholders both to allow fair competition between providers and to establish a relationship of trust between private and public actors. These collaborations include, but are not limited to:

- Shared mobility operators, taxi providers and car rental companies that fill in the gaps of existing public transport networks and provide individualised travel solutions ;
- Data providers, IT companies, ticketing and payment service providers, telecommunications services ;
- Investors, financing, insurance companies, etc. ;
- The research sphere such as universities and research centres.

A proper public governance is also crucial. In the specific case of Belgium, several intermediate levels between the Regions and local authorities play a decisive role even though they do not have legal competences in the strict sense of the term. These include the provinces, the dynamics of the Metropolis, and the *Bassins de Mobilité*[ii] in Wallonia or the *Vervoerregio's*[iii] in Flanders. These intermediate levels have a relevant role to play because they reflect the reality of the areas in which travel takes place. They are particularly relevant in a Belgium where travel has been strongly influenced by urban sprawl.

Finally, and more importantly, MaaS must be user-centred by understanding the mechanisms that encourage modal shift[16]. These mechanisms depend on multiple factors, including education, age, culture, current travel habits or individual digital skills[15]. In order to ensure uptake by citizens, MaaS operators must offer an added value over the current system in terms of cost, convenience, choice and personalisation[17]. This is why a number of experts consider that, in the medium term, only MaaS level 3 systems have the potential to encourage sustainable behavioural change[18,19,20].

[i] Polis is a network composed of European regional and local authorities working on the promotion of sutainable mobility through the developpement of innovative transport solutions (polis, n.d.).

[ii] A *Bassin de Mobilité*, translated as « mobility pool », is a geographical area comprising several municipal territories with one or more centres of attraction to which the inhabitants of the pool move on a daily basis. Wallonia is divided into 6 pools: Walloon Brabant, Charleroi, Hainaut, Liège-Verviers, Luxembourg and Namur.

[iii] Since January 1st 2019, Flanders has been divided into 15 *Vervoerregio's*, which can be translated as « transport regions ». These regions are groupings of municipalities that coordinate their mobility.

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METHODOLOGY

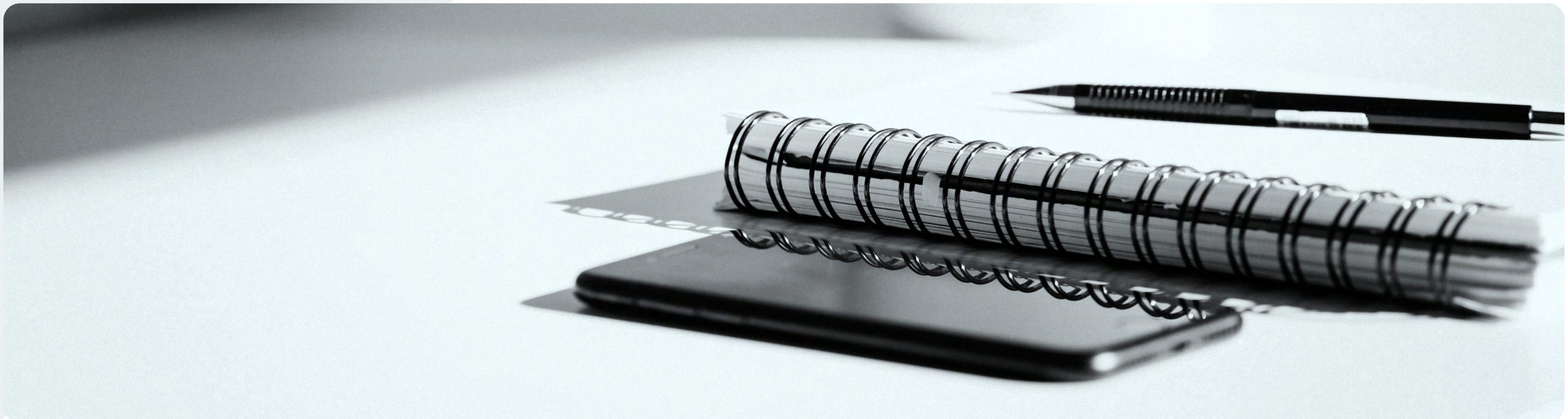
To better understand the interest, the perception and the specificities for MaaS in terms of governance and management in Belgian cities, we contacted the mobility aldermen and the heads of the mobility department of 12 Belgian cities. We chose to focus this exploratory study on the capitals of the 10 provinces and/or cities with more than 100,000 inhabitants (Antwerp, Arlon, Bruges, Brussels, Charleroi, Ghent, Hasselt, Liège, Louvain, Mons, Namur and Wavre). The choice to focus on the 'larger' cities stems from the need to have a sufficient density of mobility services. At this stage, we have made the explicit choice not to approach the regional authorities directly. Since MaaS is an urban concept, we initially want to focus on this scale and the wishes at the local level.

Nine cities have responded positively to our request (Antwerp, Bruges, Brussels, Charleroi, Ghent, Hasselt, Leuven, Liège, Namur). However, due to the federal political context specific to Belgium, and even more specifically to the territory of the Brussels Region, the representative of the city of Brussels was keen to redirect us to the Brussels-Capital Region for the sake of relevance, since the latter is currently piloting and coordinating a MaaS pilot project extending to the 19 different Brussels municipalities. We made an exception because of the practicality of the project. As the equivalent is not to be found at the level of the Flemish or Walloon Region, we have focused on the cities in the other cases.

We conducted semi-directive oral interviews with representatives of these 9 territories, between September 4th and November 16th 2020, by videoconference or by telephone because of the health situation. Depending on the territory, we had an exchange with the alderman or alderwoman in charge of mobility, an adviser and/or a person in charge of the mobility department. The questionnaire, available in the appendix, was composed of two parts: a part concerning the conceptual perception of MaaS and a part dedicated to the governance and management of MaaS specific to the territory surveyed. We then carried out a horizontal and vertical analysis of these results.

We also interviewed the 4 public transport operators in Belgium: STIB/MIVB, TEC, De Lijn and NMBS/SNCB. Public transport being considered as the backbone of MaaS systems, their opinions and insights are key to complete the reflection brought by the local representatives since they have a different field experience in terms of mobility management and governance. We decided not to contact private transport operators because of the impossibility to address an exhaustive list of the services operating throughout Belgium.

It should be remembered that the results of this report reflect the vision and opinion of the person interviewed and not the official vision of the local authority or operator. These people are either elected or employed within a structure, and therefore have a sufficiently enlightened view of the local context and the stake that MaaS represents in this context.



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RESULTS

In this section, the results of the interviews are presented in two parts. First, we look at the general perception of our interlocutors of the concept of MaaS and the elements perceived as prerequisites for its deployment. Secondly, we look at the practical considerations in terms of management and governance for the possible implementation of MaaS within those territories.

CONCEPTUAL PERCEPTION OF MAAS

GENERAL PERCEPTION AND OBJECTIVES

The 9 territories surveyed have a positive perception of MaaS as a concept. Five of them highlight the advantage that such a system would represent in terms of accessibility. The main reasons put forward are the centralisation and enhancement of the existing supply and services (and therefore ease of use).

Four of the territories surveyed explicitly mentioned MaaS as a real opportunity to develop intermodality and stimulate the use of sustainable modes of transport: thanks to its ease of use, MaaS offers a real alternative to the car and the associated difficulties such as parking and traffic jams. According to one of the interviewees, it is « an opportunity for mobility to become something positive and not a constraint ». The 4 PTOs also see this as an opportunity, since they all consider that MaaS represents a real societal interest in order to reduce car use and achieve a modal shift.

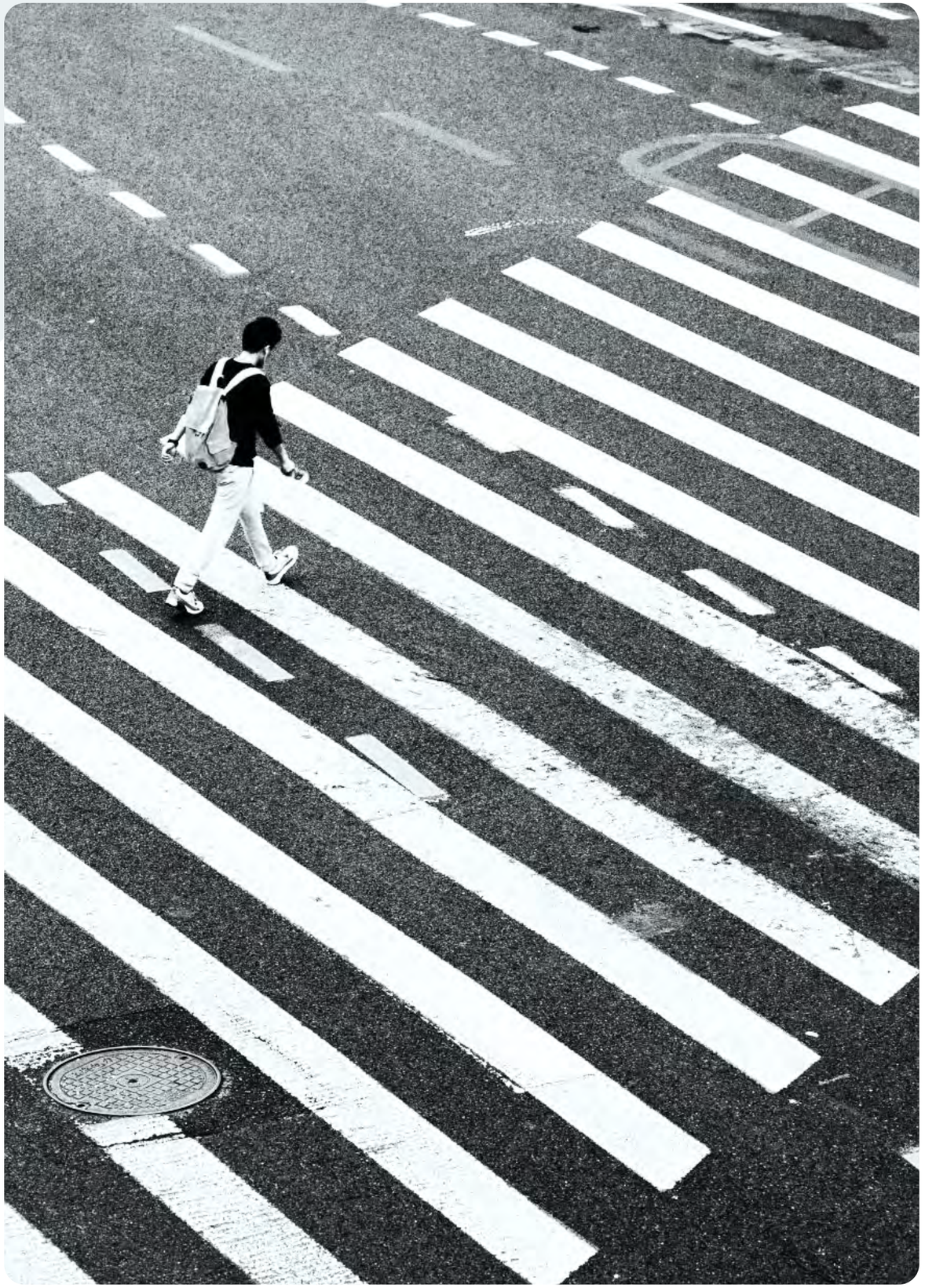
Several cities pointed out opportunities linked to their specific contexts, among which:

- In Wallonia, the city of Namur indicated that MaaS would allow the realisation of its Smart City objectives in terms of mobility, as inscribed in its transversal strategic plan (TSP)[i]. The city of Charleroi highlighted that the MaaS system would be a complementary asset to the local mobility centres[ii], whose scope is currently limited due to the only possibility of reaching them by telephone.
- In Flanders, the cities of Bruges, Leuven and Ghent have indicated potential complementarity with the current implementation of the *Vervoerregio's*. In this context, the city of Bruges considers that MaaS would be much more economical and profitable, for both the cities and the user, than the current system.

None of the public authorities or operators questioned mentioned being against this mobility system. Nevertheless, a number of them did mention that, even though the conceptual interest is strong, there are still a number of important prerequisites for these systems to be functional in Belgian cities. In particular, the BCR representative fears that too much ambition is being put behind the MaaS concept by considering it as the ultimate solution to intermodality and not as one tool among others in a global strategy.

[i] The Transversal Strategic Plan (PST) is a multi-annual governance tool to achieve the strategic objectives of the municipality. The PST aims to federate all existing sectoral plans (e.g. the municipal mobility plan, the rural development plan). This strategy is reflected in the choice of operational objectives, projects and actions, defined in particular with regard to the human and financial resources available (Wallonia, n.d.).

[ii] A local mobility centre is an inclusive mobility coordination platform whose function is to facilitate the mobility of users within a territory. The mobility centre provides information on mobility alternatives (public transport, parking for private vehicles, etc.) and offers various services (e.g. social taxis). This is usually done by telephone and is generally used more by people with mobility difficulties (e.g. people on low incomes, jobseekers, elderly people, people with reduced mobility) (Wallonia, n.d.).



PREREQUISITES

The territories and PTOs surveyed mentioned prerequisites in the following areas: stakeholder collaboration, data availability and openness, profitability and investments, physical infrastructure, regulation and inclusiveness.

Prerequisite #1. Stakeholder collaboration

The first prerequisite put forward is collaboration between the actors involved in MaaS at different levels.

First of all, 5 cities (Antwerp, Bruges, Charleroi, Liège, Namur) mentioned the importance of greater collaboration within the administration itself. This applies both to interdepartmental cooperation within the administration on the subject of mobility, and to cooperation with the PTOs in the city and the police[i].

Secondly, 4 cities (Charleroi, Hasselt, Liège and Leuven) mentioned the need for greater collaboration between the different levels of power: these cities consider that MaaS must be implemented at least at the level of the metropolis or province for it to become a reality.

Finally, 5 cities (Antwerp, Hasselt, Namur, Leuven, Charleroi) and the BCR discussed the need to improve collaboration and trust between public and private sector mobility actors to better understand each other's needs. The representative of the city of Antwerp believes that public authorities need to develop a corporate mindset to convince more private mobility operators of the added value of MaaS in terms of sales, as they fear that competition may be too great. The STIB/MIVB respondent highlights the fact that the combination of the business models of start-ups with the finality of the type of mobility service is not automatically in line with the accessibility needs of the territory. E.g. kick-scooter providers who gradually cover the territory for business model reasons or withdraw from certain neighbourhoods due to vandalism. In that context, there is also a opportunity for the government to support the business model of start-ups, e.g. through subsidies . Alternatively, the representatives of the city of Hasselt consider that the private MaaS operators should include the public authorities in their reflection to better understand their reality, ensure a qualitative approach and promote a good management of the public space. The city of Charleroi also evokes the need for a real involvement of all stakeholders when it comes to communication with citizens, as was the case with the release of the City Pass[ii].

It should be noted that existing structures such as UITP[iii] and the Belgian MaaS Alliance[iv] were mentioned as an asset to develop a common understanding of MaaS among the stakeholders and to ensure ownership of the concept by the citizens.

Prerequisite #2. Data availability and management

Six cities (Antwerp, Charleroi, Hasselt, Leuven, Liege, Namur) as well as the BCR have identified data as an important prerequisite. The first element put forward is the interoperability and standardisation of data in API[v] format to enable communication between the different applications, to enable the integration of the different mobility services and, ultimately, to enable tariff integration. In addition to compatibility, the interlocutors highlight the availability and proper management of this data. In particular, the city of Namur has pointed out the need for a strong IT solution, with a potential grouping of municipalities to finance it.

Prerequisite #3. Profitability and investment

Six interlocutors mentioned financial aspects as a prerequisite.

The lack of a clear economic model is seen by 4 interlocutors (Bruges, Ghent, Leuven, STIB/MIVB) as a major obstacle to an effective operationalisation. The interlocutor from the city of Ghent considers that an efficient economic model should be developed for the MaaS operators, but that it must be ensured that they do not exert too much power over the operators of transport services, both private and public.

In particular, the STIB/MIVB notes that the private actors often target the B2B market because of the business model (existence of mobility budgets or cafetaria plans). Furthermore, there is an opportunity for the government to support the private and public operators to create a MaaS solution that optimally supports the customer experience, including e.g. via the creation of mobility hubs.

The representative of the city of Bruges mentions the need to develop an economic model that guarantees a favourable price for the citizen, otherwise there is a risk of not adopting MaaS. The city of Leuven considers that the business case will only be possible when MaaS systems are deployed on a larger scale.

The cities of Liège and Namur finally pointed out the amount of investment needed to develop this type of project, both in terms of digitisation and physical infrastructure. The city of Liège also mentioned that it is particularly delicate, and yet crucial, to convince all the political forces that the implementation of a MaaS system is a beneficial investment, and not only in financial terms.

Prerequisite #4. Physical infrastructure

Three cities (Bruges, Charleroi, Liège), the BCR, and the 4 PTOs, pointed out important prerequisites in terms of physical infrastructure. Our interlocutors identify the need to develop the multiplicity of modes so that supply corresponds to demand. In addition to developing it, it must be maintained. The STIB/MIVB points out that the COVID-19 crisis impacts the business model of the players in the micro-mobility domain. The reduced mobility during this period also impacts the expected feedback in the framework of the pilot exercise of STIB/MIVB.

In addition to vehicles, our interlocutors address the needs of urban and regional planning that favour soft modes such as bicycle paths separated from traffic and secure bicycle parking. In addition to soft modes, they also advocate urban planning that allows easy transfer between the means of mobility present in the area, notably through multimodal exchange hubs[vi] or the generalisation of transfer nodes[vii]. Infrastructure also includes intelligent physical infrastructures such as sensors and terminals that can potentially be shared.

Prerequisite #5. Adequate regulations

Various elements concerning regulations were mentioned. The BCR and Ghent, as well as the STIB/MIVB and de Lijn, point out the lack of coherence between existing regulations (e.g. parking policies) and today's reality. These cities consider it appropriate to update and improve these regulations in order to allow innovative services to join and/or avoid commercial monopolies. For example, Ghent illustrates its willingness to maintain the peer-to-peer car-sharing initiatives that are emerging outside city centres but which risk disappearing if the big companies take over.

Liège and Namur also point to the regionalisation of mobility competences as a complicating factor in the establishment of intermodal projects at the local level.

Prerequisite #6. Inclusive approach

4 cities (Charleroi, Ghent, Hasselt and Liège) and the BCR insist on the need to develop MaaS in an inclusive manner. These platforms must be accessible and available to all so that they develop beyond early adopters. MaaS must be easy to use in order to avoid the digital divide among part of the population, especially older people.

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[i] Parking is a competence of the local police force.

[ii] The City Pass is a single ticket combining public transport travel in and around the cities of Antwerp, Charleroi, Ghent and Liège (NMBS/SNCB, n.d.).

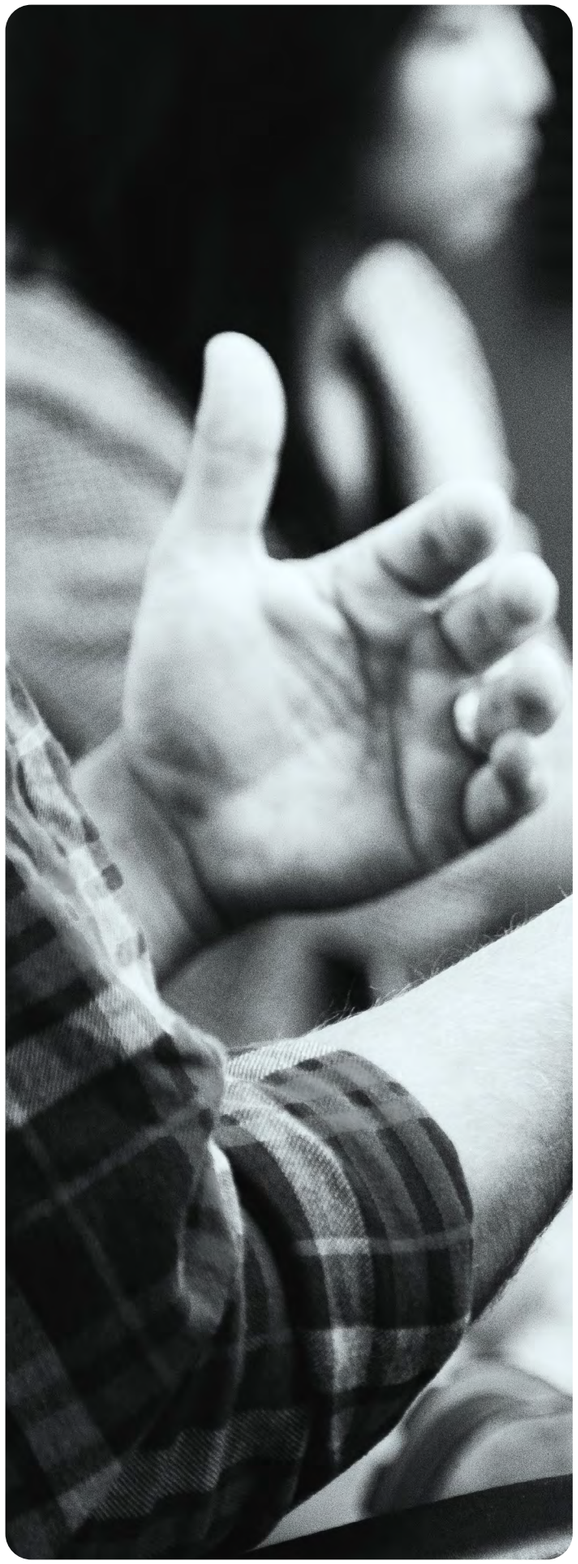
[iii] UITP is an international association of public transport authorities, operators, policy makers, scientific instiutes and demand/offer services.

[iv] The Belgian MaaS Alliance is a public-private Community focusing on the developpemnt of MaaS in Belgium.

[v] An Application Programming Interface (API) is a computer solution that enables communication between applications and mutual exchange of services and data.

[vi] Lebas A., Basile, C. & Crutzen, N. La mobilité de demain : Quels enjeux pour nos territoires? Guide Pratique, Tome 4. p.62.

[vii] For more information on the model of transfer nodes, please refer to https://www.integrato.be/nl/info/onze-aanpak/.



PRACTICAL IMPLEMENTATION

ROLE OF THE PUBLIC SECTOR AND THE PRIVATE SECTOR

Opinions on the role of the public and private sectors in the development of MaaS are broadly similar: the private sector has a role in deploying and providing technical solutions, while the public sector should act as a facilitator or coordinator.

More concretely, the 8 cities and the BCR consider that the private sector should be in charge of the deployment of mobility solutions. None of them consider that the public authority should be in charge of the operation of mobility services, apart from public transport (bus, train, metro, tram). The following reasons were mentioned:

- The material and financial resources available to private providers to deploy and operate quality shared mobility solutions;
- The expertise possessed by these private mobility providers that enables them to provide and manage mobility solutions in an adequate and optimal manner;
- The decision-making flexibility they enjoy, which enables them to innovate more rapidly;
- The access to data related to their services that they have at their disposal to optimise and improve these services.

As for the public sector, the 8 cities and the BCR have assigned it a coordinating and facilitating role. More specifically, the following actions have been specifically mentioned:

- Bring service providers around the table and stimulate exchanges and collaborations (5/9);
- Give political impetus, establish a vision and a legislative framework to facilitate the establishment of these services or regulate their use (5/9);
- Coordinate, or even monitor, the way in which MaaS develops in order to ensure that the system put in place respects local and regional mobility objectives (3/9);
- Act as an economic accelerator by financially supporting transport operators and/or citizens (3/9);
- Control or retain mobility data (2/9);
- Position itself as a field of experimentation to support the development of future technologies (1/9).

MANAGEMENT MODEL AND PUBLIC GOVERNANCE.

When asked about the management model that would best suit their specific context and about the distribution of governance roles between the different levels of public authorities, **the representatives of the territories** replied as follows (in alphabetical order).

Antwerp

The city of Antwerp was the first Belgian city to introduce MaaS in 2018. It has opted for the private operator management model. Since the start of the Smart ways to Antwerp program in 2015, the city established a marketplace for Mobility and a framework that allowed MaaS operators to settle in. More generally, this managemnt model was chosen because the city considers that competition stimulates innovation. The city believes that the mobile application used has the potential to be applicable to other cities, which is particularly attractive for tourists passing through Antwerp. In terms of public governance, the city considers that the city and other governments should create a framework so every operator can start. The Flemish region should have a role to play in the physical integration of mobility and in strengthening the digital transition on a larger scale. The city stressed it role as facilitator in this process and the potential of other local authorities to act in the same manner.

Bruges

For the city of Bruges, the choice of management model is a complicated choice. The respondent considers that a hybrid or private model would be more suitable for the city because of the lack of human and financial resources to guarantee a good ratio between the quality of the service and the price for the user. From a governance point of view, the interviewee considers that the regional authority should have a complementary role to that of the city: it should develop a vision at the regional level, choose the services that will be offered in the different cities and financially support the implementation of these services to guarantee a low price for the user. Bruges also considers that the regionalisation of competences and the establishment of the Vervoerregio's offers an opportunity to develop the physical integration necessary for MaaS.

Brussels-Capital Region

A pilot project is currently underway within BCR with a hybrid management model in which the STIB/MIVB is mandated as the operator of the MaaS platform. For the BCR representative interviewed, the optimal management model would be a hybrid model in which the BCR retains access to data to monitor objectives and monitor flows to ensure quality of service, inclusion, accessibility and modal share assessment follow-up.

Charleroi

The representative of the city of Charleroi would not have a favourite management model as long as the system put in place would allow the city to control the data in order to be able to control the flows throughout the territory of Charleroi Métropole. The representative would like the Walloon Region to take charge of setting up and coordinating this type of application because of its competences, while respecting an approach specific to each territory by highlighting the mobility options in the living area where the user is located.

Ghent

The representative of the city of Ghent did not give a clear-cut opinion but would rather prefer a private or hybrid management model for the sake of efficiency, with a general coordination role from the Flemish Region.

Hasselt

The city of Hasselt would advocate for a hybrid management model, common at the level of the province of Limburg. The Region would have a role in developing a common Flemish vision on Smart Mobility and act as an economic driving force, including the implementation of public-private partnerships on a larger scale.

Leuven

The interlocutors from the city of Leuven would prefer the implementation of a private management model but within which the city would retain control and access to data. They consider that the region has an important role to play in raising awareness and providing support, especially to some Vervoerregio's who are not familiar with the MaaS concept or do not have the financial and human resources to implement it because of their low population density.

Liège

The representative of the city of Liège does not have a clear-cut opinion but would favour a hybrid management model on the scale of Liège Métropole with a real PPP logic in which the public authorities would benefit from access to data. From a public governance point of view, the Region would have an important centralising role to guarantee the replicability of this type of initiative on a larger scale as well as the purchase of data sets for cities and municipalities. Our interlocutor also emphasised the important role that intermunicipal authorities should have in providing support as an intermediary level between the Region and the cities and municipalities.

Namur

the representative of the city of Namur would lean towards a public or hybrid management model in which the city retains control over the use of the infrastructure. She also wondered about the most relevant scale of implementation between the regional and the local level. In any case, the Region would have an important role to play in enabling MaaS to be implemented on a larger scale. It would also have a coordinating role for the development of combined transport tickets with large partners.

We also interrogated the **PTOs** as they are at the centre of the development of this type of initiative in the territory where they operate.

De Lijn

The contact person at De Lijn does not have a clear-cut opinion but would not like to see the development of a management model solely based on private companies. She believes that the role of the PTOs and the public authorities is to ensure the development of mobility alternatives through the STOP[i] principle , while some private MaaS operators might be striking to sell as many journeys

[i] The STOP principle reverses the hierarchy between different modes of travel in policy decisions. Priority is given to pedestrians (stappers), then to cyclists (trappers), then to public transport (openbaar vervoeren) and finally to private vehicles (privé vervoeren).

as possible, regardless of the mode of transport used. This could slow down the modal shift in Belgium. According to our interlocutor, the best scale of operation would be the regional or even federal scale, since citizens generally work in a different city from the one in which they live. She conceded that implementation at regional level can be complicated because mobility service companies usually start out on a city-wide scale in the first instance.

The TEC

Although the interlocutor does not have a clear-cut opinion, he considers that the hybrid model would be the easiest for citizens to use. In terms of governance, the respondent considers that the Region should create the conditions for the development of MaaS by encouraging cities to implement new forms of mobility, but that the development of MaaS should preferably be done at the scale of a city given that each city has its own particularities and its specific ecosystem.

The STIB/MIVB

The STIB/MIVB representative defends the role of a public MaaS platform emphasising public benefit and inclusiveness (e.g. needs of disabled people). This is in contrast to private models aiming for a profitable business model. She does note, however, that in the case of BCR the private actors tend to focus on the business market (B2B) and leave the setting up of a MaaS solution for private individuals (B2C) to STIB/MIVB.

The NMBS/SNCB

The NMBS/SNCB interlocutor does not favour a specific management model and considers that the model depends on what suits best the culture of the territory where it is implemented. However, the respondent believes that MaaS requires a certain control from the public authorities to ensure that it remains objective and meets societal challenges, i.e. it does not just favour the service that offers the greatest financial compensation to the operator. The representative considers that the chosen MaaS model must make it possible to choose the most economical, ecological or the fastest journey according to each user's preference. He considers that the implementation must be done either at the local or regional level but with a good understanding of local issues.

04

CONCLUSION

The aim of this report was twofold: to demystify the concept of MaaS and to make a first assessment of the interest and perception of the mobility representatives of Belgian cities with regard to MaaS, its implementation and its governance.

In the theoretical part, we put forward the definition of MaaS, its levels of integration and its theoretical advantages for users, transport operators (private and public) and public authorities. We looked at the possible management models - i.e. a private operator, a public operator or a hybrid model - while pointing out the need to ensure the involvement of public authorities and citizens regardless of the model chosen. Finally, we reviewed the potential stakeholders involved in the implementation of MaaS.

In the empirical part, we started by examining the general interest and perception of cities. The 9 territories and the 4 PTOs interviewed have a positive perception of MaaS, which they conceptually consider as a potential asset in terms of accessibility and/or modal shift towards alternative modes to the private car. However, a number of important management and governance prerequisites were highlighted for its operationalisation, including: greater collaboration and trust between stakeholders, interoperability and good management of mobility data, development of viable business models, development of a physical infrastructure allowing a modal shift, updating of existing regulations and an inclusive approach.

To finish, we looked at the way cities perceive the implementation of MaaS in their specific contexts. With regard to the respective roles of the public and private sectors, two elements stand out in particular: all the interviewees consider, albeit to different degrees, that the public sector should take on a facilitating or coordinating role in the implementation of mobility services, while the provision of these services themselves, apart from public transport, should be carried out by private operators. This choice is motivated on the one hand by the lack of financial resources and expertise within cities, but on the other hand by the need to ensure that policy objectives are respected. As for the choice of management system, the responses vary widely, but two trends emerge: most cities do not have a clear-cut opinion on the choice of management model, but there is a tendency among respondents towards a hybrid model, with a franchised solution, managed by public authorities or with a strong involvement of public authorities. Only the representatives of the cities of Antwerp and Leuven explicitly mentioned the desire to turn to a private operator management model, but not without the involvement of the public authorities. Conversely, only the representatives of the cities of Charleroi and Namur and the STIB/MIVB mentioned a potential management of MaaS by public authorities/public operators at the local or regional level. For their part, the PTOs point to the need to ensure that the model implemented respects local issues. As for the role of the Regions, all the interlocutors consider, to varying degrees, that they must play a role in the development of MaaS, whether in terms of digital awareness, replicability of projects or the introduction of PPPs on a larger scale. Finally, various interlocutors pointed out the need to develop MaaS at an intermediate scale between the local and regional levels in order to ensure its relevance.

To conclude, some reflections and limitations of this report should be mentioned. First of all, as explained in the methodology section, the opinion of each city reflects the opinion of the interviewee, which is potentially biased. This bias is also valid at the level of the function occupied by this person. Secondly, we focused on local authorities and PTOs. In order to complete this basis for discussion and to develop a systemic vision for the management and governance of MaaS, it will also be necessary in the future to include the views of more stakeholders such as private transport operators, regional authorities, MaaS operators and users. Finally, and as a complement to this last point, it should be noted that MaaS currently focuses mainly on urban centres that have a sufficient density of mobility services, hence our choice to focus on the 10 cities presented here.

APPENDICES

QUESTIONNAIRE FOR CITIES AND BRUSSELS-CAPITAL REGION

APPENDIX 1

1. INTRODUCTION

- Presentation of the Smart City Institute and reminder of the objective of this call for proposals
- Presentation of the structure of the interview
- Request authorisation for registration

2. GENERAL PERCEPTION

- What is your definition of MaaS (to ensure we share the same point of view) ?
- What is your general perception of MaaS ?
- What do you think are the prerequisites for MaaS to work? What are the brakes and levers to its deployment ?
- In your opinion, what respective roles do the private and public sectors have in the deployment of MaaS ?

3. MAAS IN YOUR CITY/IN THE BRUSSELS-CAPITAL REGION

- Are you interested in the development/the implementation of a MaaS system within your city/within the BCR ? Why ? Why not ?
- What are the prerequisites for MaaS to work in your city/within BCR ?
- Which MaaS model do you think is most appropriate for your city/the BCR: private operator, public operator (city, transport authority or Walloon region) or a hybrid model ? Why do you think so ?
- What is the role of regional authorities in the development of MaaS ?

QUESTIONNAIRE FOR PUBLIC TRANSPORT OPERATORS

APPENDIX 2

1. INTRODUCTION

- Presentation of the Smart City Institute and reminder of the objective of this call for proposals
- Presentation of the structure of the interview
- Request authorisation for registration

2. GENERAL PERCEPTION

- What is your definition of MaaS (to ensure we share the same point of view) ?
- What is your general perception of MaaS ?
- What do you think are the prerequisites for MaaS to work? What are the brakes and levers to its deployment ?
- In your opinion, what respective roles do the private and public sectors have in the deployment of MaaS ?

3. MAAS ON YOUR OPERATING TERRITORY

- Which MaaS model seems to suit the best the area in which you operate: private operator, public operator (city, transport authority or Walloon region) or a hybrid model ? Why do you think so ?
- What is the role of regional authorities in the development of MaaS on this territory ?

THE SMART CITY INSTITUTE

APPENDIX 3

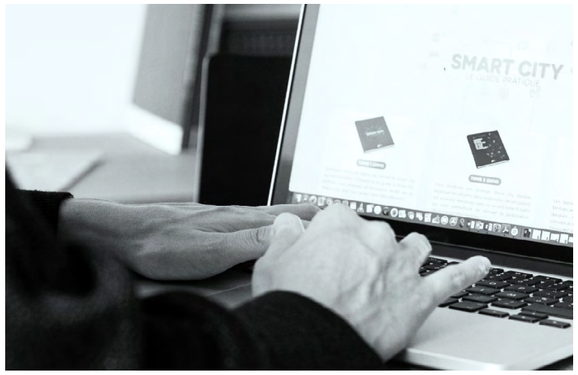
The Smart City Institute is a university research institute dedicated to sustainable and smart territories. It is based on an original partnership with ULiège (University of Liège, Belgium) and particularly with its faculty of Management (HEC Liège), with companies and with the Walloon Region (Plan Marshall 4.0 and Digital Wallonia).

The institute aims to develop research, training programs, and innovation, as well as raise awareness, in the field of Smart Territories using a managerial perspective (and not only a technological one) while ensuring a multidisciplinary approach.

To achieve its mission, the Institute hinges on 3 complementary pillars : research, training and innovation support. These are maintained thanks to cross-sectional awareness-raising measures.

Concretely the Smart City Institute :

- Studies the Smart City dynamics in Wallonia, as well as its evolution through annual barometers ;
- Provides a course in «Sustainabilty and Smart Territories» to students in the 2nd year of the master's degree at HEC Liège, which gives them the opportunity to collaborate with Walloon municipalities on concrete projects ;
- Organizes a continuing education course focused on Smart City Management, which covers the essential points of the Smart City, in particular through its six main axes while also dealing with technology, new business models, monitoring, strategy and change management ;
- Supports innovation and entrepreneurship in the field of Smart Cities ;
- Organizes an annual event that brings together scientists and practitioners to discuss and exchange views and their experience on the Smart Cities theme ;
- Develops educational tools to motivate (Belgian) municipalities to take part in the Smart City dynamic, including a collection of Practical Guides and methodological notes to guide them step by step in their approach ;
- Contributes to the Smart Region dynamics in Wallonia, as an academic reference and partner in this field alongside Digital Wallonia.



In terms of its geographical scope, while the Smart City Institute actively contributes to the « Smart Cities » and « Smart Region » dynamics in the Walloon Region, it also carries out national and international projects (in Chile, Texas, Canada, Argentina, Australia, Portugal, ...). It is also involved in various European projects (ERDF - Wal-e-cities Project and INTERREG - GROOF Project).

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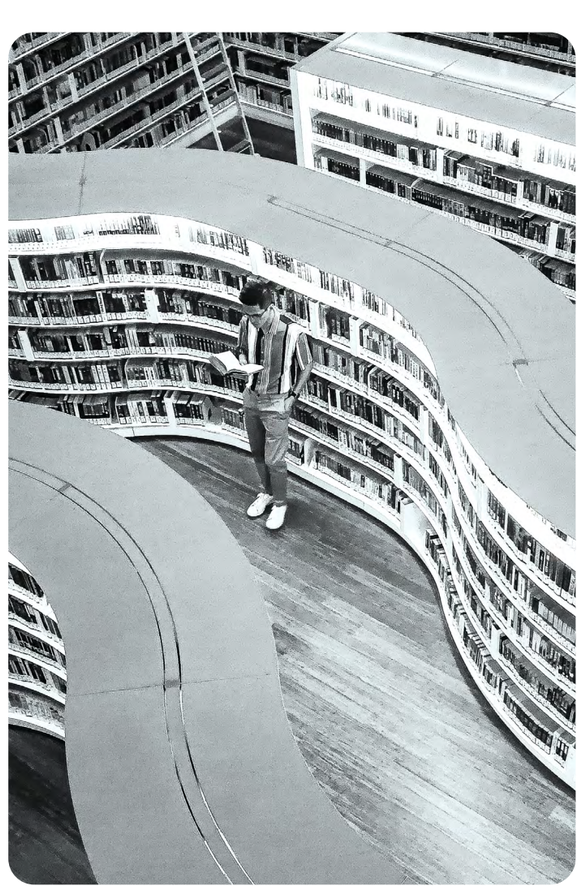

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