RECIPROCITY

Policy Paper on MaaS

The RECIPROCITY project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°101006576

Introduction

The RECIPROCITY project aims to address the challenges posed by urbanisation, climate change and digitalisation in the field of mobility. To this end, the project employs an innovative four-stage replication approach aimed at showcasing and disseminating best practices in urban development and mobility. As RECIPROCITY progresses, it becomes increasingly evident that facilitating a continuous flow of knowledge and information among cities, municipalities, and policymakers is important to ensuring the widespread replication of successful mobility solutions in the future.

One of the core objectives of RECIPROCITY is to stimulate conversations and foster learning between various stakeholders, including cities, municipalities and policymakers. To achieve this, the project has implemented a range of strategies, including the organisation of webinars and workshops between cities, municipalities and regions and policymakers. Additionally, the project recognises the importance of position papers as a powerful tool for facilitating exchange with policy and regulation entities. These position papers will effectively combine some of the key learnings accumulated throughout the RECIPROCITY project.

This position paper is specifically directed towards local and regional authorities, European Institutions, and MaaS providers, delivering a set of recommendations to enable **the development of Mobility as a Service (MaaS) solutions**. RECIPROCITY highlights the pressing need for increased MaaS utilisation to optimise transportation resources effectively. It calls for measures to be implemented at local and European levels to facilitate the seamless integration of sustainable and multimodal transportation options into digital platforms. By embracing these recommendations, stakeholders can foster a more sustainable, efficient, and interconnected transportation ecosystem, leading to enhanced mobility experiences for citizens and communities.

RECIPROCITY acknowledges the crucial role of decision-makers with the political mandates to shape the future of mobility. In summary, RECIPROCITY's position papers serve as an instrument to disseminate the project's learnings and recommendations for policy and regulation. By capturing the valuable insights gained from the replication projects and engaging with decision-makers, RECIPROCITY aims to impact the future of smart and clean mobility in European cities.

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Challenges for smart and clean mobility

As outlined in the European Commission's (EC) New Urban Mobility Framework, cities still face major challenges to further improve mobility and transport system and their negative impact on the environmental quality and attractiveness of cities.

Traffic congestion is a significant challenge in urban and peri-urban areas, with clogged roads causing delays and stress for drivers. According to the EC's Directorate-General for Mobility and Transport (2019), the delay costs caused by road transport in the EU-28 amounted to some 271 billion € in 2016, with 74% of these costs related to road passenger transport. Additionally, the heavy use of conventional vehicles contributes to **air pollution and greenhouse gas emissions,** which have a negative impact on the environment and human health. It is estimated that 23% of transport CO_2 emissions occur in cities[1]. Moreover, the **accessibility and inclusion** of mobility services are crucial issues, as individuals with reduced mobility and other vulnerable groups may face difficulties in accessing public or private transport options. Also, the **inefficient use of transport resources**, such as underutilised vehicles and wasted energy, poses economic and environmental challenges. Finally, **the lack of integration between different modes of transport** further exacerbates the problem, making it challenging for users to plan multi-modal trips efficiently.

Innovative solutions are required to promote the use of sustainable means of transport by the citizens, encouraging vehicle sharing, improving accessibility also from peri-urban areas and facilitating multimodal journey planning.

Mobility as a Service, the backbone of a sustainable and inclusive urban mobility system

Mobility as a Service (MaaS) aims to address those challenges and contribute to the EC Urban Mobility framework's objective of "Attractive public transport services, supported by a multimodal approach and by digitalisation" by shifting from personally owned modes of transport towards mobility provided as a service. This approach has garnered support from various stakeholders throughout the European Union, as it offers a potential solution to improve accessibility, sustainability and the overall quality of urban and peri-urban mobility services.

[1] "The first and last mile – the key to sustainable urban transport. Transport and environment report 2019", EEA Report, No 19/2019 https://www.eea.europa.eu/publications/the-first-and-last-mile

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Through **the integration of various transport modes into a single digital platform**, MaaS provides users with a wide range of transport options, allowing them to easily plan and book tailored multimodal journeys according to their needs.

This promotes the **more efficient use of transport resources** by reducing the number of vehicles on the road and alleviating traffic congestion.

Furthermore, MaaS encourages the adoption of **more sustainable means of transport**, such as electric or low-emission vehicles, thereby helping to reduce air pollution and greenhouse gas emissions, in line with the EU Green Deal, which aims to make European climate, energy, transport and taxation policies fit for the purpose of reducing net greenhouse gas emissions by at least 55% by 2030.

By facilitating access to diverse transport options, MaaS also improves **accessibility and inclusivity**, enabling people with reduced mobility or disabilities to benefit from transportation solutions that meet their specific needs.

Finally, MaaS facilitates **the planning of multimodal routes**, allowing users to efficiently combine different modes of transport, reducing travel times and improving the overall travel experience.

Mobility as a Service (MaaS) integrates different transport modes and services into a seamless and on-demand mobility experience. It is built around a single account that allows users to access information, make reservations and purchase tickets across different modes. MaaS combines public transport, ride-sharing, bike-sharing and more, providing a comprehensive view of options through a digital platform. It offers a user-centric approach and simplifies the management of transport demand for a more convenient travel experience.

MaaS in Europe has gained significant momentum and interest in recent years. Some cities and regions have implemented pilot projects and MaaS services[2] to provide integrated transport solutions to their citizens:

Regiomove in Germany aimed to connect public and private mobility service providers through a single app, allowing passengers in the Karlsruhe region (Baden-Württemberg) to plan, book and pay for various transport options, while also establishing a legal framework and creating mobility hubs.

The **DOMINO project** in Austria focused on developing an integrated and accessible mobility system that supports the public sector's climate goals, with a focus on user needs, cooperation between sectors and the integration of rural mobility services.

The **Trento and Rovereto Viaggia Play&Go** project in Italy incentivised sustainable mobility by creating a game-based app that tracked and rewarded users for their integrated and multimodal trips, resulting in over 240,000 sustainable kilometers covered.

[2] See Annex - RECIPROCITY Case studies focusing on MaaS.

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Main barriers to the development of MaaS

However, despite progress, there are still significant challenges related to the integration and widespread use of MaaS. One of the main obstacles is the **fragmentation of services and transport providers**. Integrating different transport modes requires collaboration and cooperation among public and private operators, which can be challenging to achieve.

Another key barrier to MaaS adoption is the **lack of quality, limited functionalities and generic offerings.** This can be addressed by providing multiple interoperable offerings tailored to customers' needs. Analysing mobility patterns and segments helps to fulfil the specific requirements of user groups and improve the overall customer experience, driving acceptance of the MaaS concept.

Additionally, there are issues related to **data and payment system standardisation**, which need to be resolved to ensure a seamless MaaS experience. Some users may be hesitant to adopt MaaS due to a lack of awareness, preference for personal modes of transport, or concerns about **data security and privacy**. Furthermore, MaaS may not be **economically accessible** for all, with subscription or usage costs that can be a barrier for some individuals.

Overcoming these issues requires political commitment and adequate regulation to foster service integration, data openness and economic accessibility. At the same time, it is crucial to educate and engage users, providing clear information about the benefits of MaaS and data security while ensuring privacy protection.

Policy recommendations

As MaaS continues to gain momentum and become an integral part of the mobility landscape, it is important to ensure that it is implemented in a way that **benefits both users and providers.**

Policy recommendations have been developed through discussions with MaaS experts who are aware of the challenges and opportunities associated with the implementation of MaaS solutions. By taking into account different perspectives and experiences[3], these recommendations provide a comprehensive set of guidelines for local and regional public authorities, European institutions and MaaS providers to create an environment that fosters sustainable and innovative mobility solutions.

[3] The document includes the outputs from the following project activities: RECIPROCITY Mobility Assembly in Barcelona (16/11/2022); RECIPROCITY Webinar: Mobility as a Service (MaaS) (27/06/2022); ERRIN Transport Working Group Meeting on Multimodal Digital Mobility Services (MDMS) (23/01/2023); RECIPROCITY Capacity Building Workshop – Linz Mobility Mission (30/03/2023).

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For local and regional authorities:

- Include **the right set of mobility policies and regulations** within a broader mobility vision to facilitate the deployment of MaaS.
- Ensure that MaaS services are **accessible to all**, including people with disabilities, low-income communities and those living in remote areas (e.g. peri-urban and rural areas).
- Encourage the adoption of MaaS by offering **incentives and subsidies** for their use to encourage behavioural change and reduce reliance on private vehicles.
- Develop a **framework for data privacy, protection and exchange** to ensure that users' personal information is not misused.
- **Invest in infrastructure**, such as mobility hubs, to enhance multimodal customer accessibility and experience.
- Consider the **environmental impact of MaaS services** and aim to minimise their local carbon footprint.
- **Collaborate with the private stakeholders** to develop innovative business models and new services based on the users' needs (e.g., by establishing a legal framework between the local authority, the transport operators, the customers, and mobility service providers).
- **Avoid bottlenecks and monopolies** and the development of closed systems.

For European Institutions:

- Establish clear regulations for **the quality and safety** of mobility services offered through MaaS platforms.
- Establish a **supportive framework** for **the development and replication** of MaaS solutions at the local and regional levels.
- **Harmonise regulations and standards** across different European countries to enable interoperability and seamless cross-border mobility.
- Provide **financial support and incentives** for the implementation and replication of MaaS projects. In particular, provide some of the **initial investment** needed to kick-start the ecosystem, taking into account equity, sustainability, the benefits to the local and regional economy and job creation benefits that MaaS deployment will bring.
- Facilitate **data sharing** and **collaboration among different stakeholders** to promote MaaS innovation and improve user experience.
- Foster **research and development** in MaaS technologies and solutions to drive continuous improvement and innovation in the sector.

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For MaaS providers:

- Adopt a true **need- and experience-based approach**: Customers' needs should be understood and taken into consideration in order to improve the customer experience and encourage the adoption of the MaaS concept.

- Include in the app/platform the **one payment system** for all the transportation modes and allow a **single account** for multimodal bookings. **Adapt pricing models** to align with the flexible and multimodal nature of MaaS services.

- **Collaborate** with other transport providers to offer integrated and seamless mobility options.

- **Invest** in the necessary infrastructure and technologies to support MaaS integration. Budget the costs associated with **digitalisation** and implement it incrementally to support the deployment and operation of MaaS services.

- Engage with MaaS providers and participate in **pilot projects** to gain insights and experience in delivering integrated mobility services.

- Include **parking**, as well as park and ride options, in the MaaS system.

- Incentivise MaaS behaviour through **gamification and nudging.**

It is essential for all stakeholders to work collaboratively and proactively to address the challenges and embrace the opportunities of Mobility as a Service. By implementing these policy recommendations, it will be possible to create a sustainable and user-centred mobility ecosystem that benefits individuals, local communities and the environment.

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Annex - RECIPROCITY case studies focusing on MaaS

Three RECIPROCITY case studies focusing on MaaS are analysed to give an overview of the key elements for MaaS deployments and good practices.

TRENTO AND ROVERETO VIAGGIO PLAY & GO (ITALY)[4]

Getting around Trentino is a **child's game,** according to the application's website: "Play&Go - High School Challenge" is a competition between high school classes (third, fourth and fifth) as part of the **Trento and Rovereto Play&Go** sustainable mobility campaign.

In order to participate in the game, the students download the **Viaggia Play&Go app**, register themselves and create their own teams in order to track their sustainable travels and receive green leaves points. The team with the highest number of Green Leaves points, calculated as an average value over the team members, wins. The winning team have the chance to play a match with a local top-level sports team. All students of the 2020 winning team **received free season tickets for provincial public transport** for the 2020/2021 school year.

It is important to mention that **Trento and Rovereto Play&Go** is a game based on the use of an App that allows tracking the movements made in **integrated and multimodal mobility hubs** (car, bus, train, bike, walking and combinations of these) and assigns points and prizes based on the movements correctly recorded. In order to enable the game to take place, it is necessary **to collect and process the information** on planned and saved trips, the tracking of trips made via the **Viaggia Play&Go** app and the results of the game. Personal data are processed in **full compliance with current privacy legislation.** The Municipality of Trento, with the support of the Bruno Kessler Foundation (FBK), organised the game as an effort to promote the sustainable mobility campaign led by the municipality.

The game results in numbers.

The **'Trento and Rovereto Play&Go'** app recorded over 240,000 sustainable kilometres between 26 October 2019 till 15 May 2020 (8 months). FBK announced on their website[5] that "Trento and Rovereto Play&Go had a setback between mid-March and mid-June due to the limitations imposed by the Covid emergency. The numbers, however, confirm the interest in the game: 738 registered users, 505 active ones, 55,506 total valid trips, and 240,009 sustainable kilometres covered throughout the province. Of these, there were 50,963 km by bike, 13,459 journeys by bike, 65,813 km by bus, 11,153 journeys by bus, 66,929 km by train, 3,352 journeys by train, 56,304 km by foot, 26,753 journeys by foot, 475 km per active user (there were 426 in the previous edition). The greatest number of kilometres was travelled in the pre-lockdown period (201,028 km, 678 registered users, of which 477 were active)."

[4] https://www.smartcommunitylab.it/playgo-high-school-challenge/ ; https://play.google.com/store/apps/details?id=it.smartcommunitylab.viaggiatrento.playgo&hl=fr&gl=US

[5] https://magazine.fbk.eu/en/news/trento-e-rovereto-playgo-oltre-240-mila-km-sostenibili/

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The municipality of Trento, with the support of FBK, succeeded in **incentivising MaaS behaviour** through **Gamification and nudging,** which are examples of motivational techniques to be used with rewards as an incentive for recognised good travel behaviour.

Regiomove (GERMANY)[6]

Regiomove[7] aims to connect public and private mobility service providers to enable passengers to benefit from a homogeneous chain of mobility services over the Karlsruhe region, integrated into one unique source. It provides a bunch of mobility services connecting 7 cities in the region and, for instance, allows to identify alternative solutions when there is an accident. In other words, passengers are able to make itinerary planning, reservation and payment through one single app: the **Regiomove** App!

The development of **Regiomove** relied on 3 pillars:

The PACT: establishing the **legal framework** between the city/the transport operator, the customers and the Mobility service providers. The PACT also includes the payment system and the IT service provider to define which tariff can be implemented in the platform.

The development of the **Regiomove app Platform** includes multimodal real-time information, a single account for multi-modal booking, and one payment for all services.

The creation of the Regiomove Ports, which are mobility hubs where passengers have a variety of choices when it comes to transportation means in one single place. The **Regiomove** ports integrate different services, for example, it might have information terminals, electric charging stations, bicycle service stations or conditioning stations - everything is conceivable.

The state of Baden-Württemberg (Germany) and the European Regional Development Fund (ERDF) funded the Regiomove project with its three pillars as a lighthouse project of TechnologieRegion Karlsruhe GmbH with around 4.9 million euros.[8]

DOMINO (AUSTRIA)[9]

The main objective of the **DOMINO** research project is **to develop an integrated, publicly accessible mobility offer.** It can be used by all users with as few barriers as possible and, at the same time, supports the mobility and climate goals of the public sector.

In three pilot regions, new offers have been created based on user needs and existing services to be integrated into a "MaaS made in Austria" system.

To achieve these goals, DOMINO relies on three innovation fields:

[6] https://www.kvv.de/mobilitaet/regiomove.html
[7] https://www.regiomove.de/fuer-kommunen
[8] https://www.kvv.de/mobilitaet/regiomove/zum-projekt-regiomove.html
[9] https://www.domino-maas.at/de/projekt-domino

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1. **Social:** The needs of mobility users are in the focus and the starting point for designing the offer.

2. **Institutional and organisational:** New forms of cooperation between the public sector and players in the private sector will be defined and regulated.

3. **Technical:** The focus is on the integration of rural mobility services (micro-transit, ride-sharing, etc.), the development of intermodal traffic **management** and the development of algorithms to ensure a “mobility service guarantee”.

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RECIPROCITY (Replication of innovative concepts for peri-urban, rural or inner-city mobility), coordinated by R-Tech (Germany), involves 10 partners including clusters, regional development agencies, innovation accelerators and universities. The project started in February 2021 and will run for 32 months.

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