# Outreach, Transferability and Recommendations Handbook

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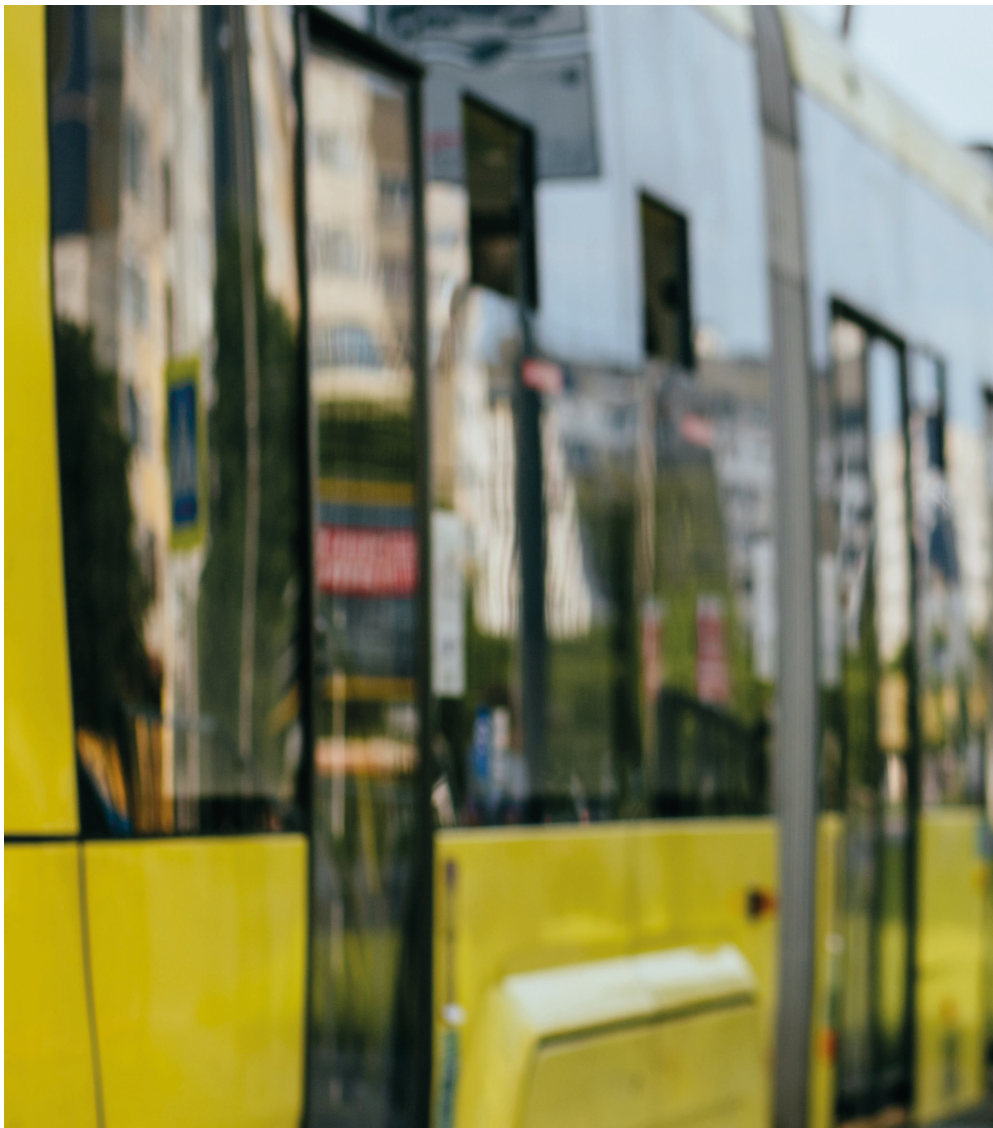
IP4MaaS

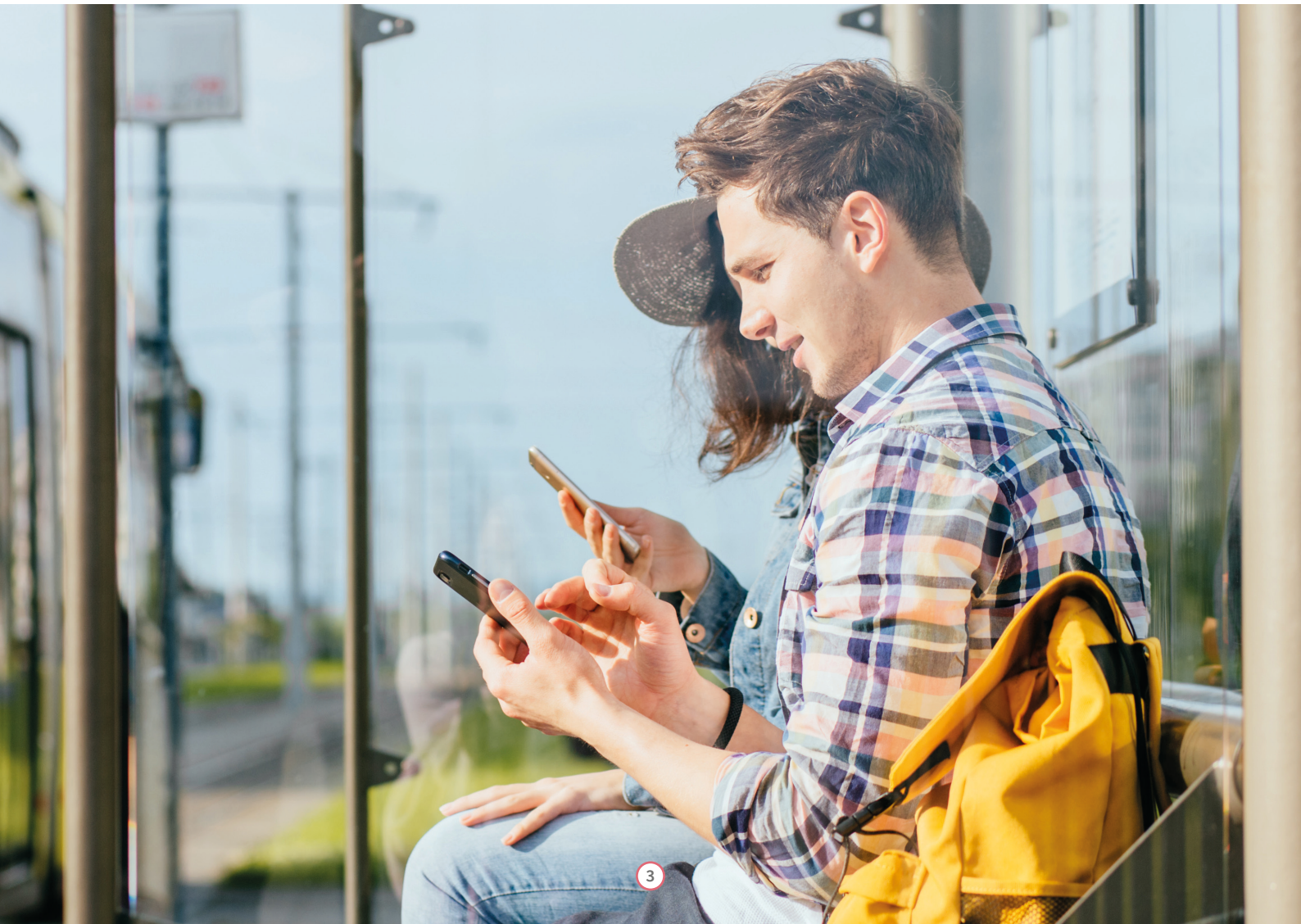


# Introduction

Creating a more sustainable, seamless and inclusive mobility system by advancing digital intelligent mobility tools: from late December 2020 to June 2023 this was the mission of IP4MaaS. This research project, funded under the Europe's Rail Joint Undertaking, analysed and tested a set of Mobility as a Service (MaaS) solutions, assessing them in terms of effectiveness, market acceptance, and user satisfaction.

While results of the IP4MaaS project have been disseminated through various channels (project website, various deliverables and communication materials), this Outreach, Transferability and Recommendations Handbook specifically aims to transfer project developments and outcomes to other relevant mobility stakeholders for further take-up and roll-out.

Although technical developments advancing sustainable mobility were central in the IP4MaaS project, this Handbook does not merely focus on the transferability of technical aspects, but also on business and market uptake aspects, as well as user engagement. A longer version of this Handbook will be made available on the IP4MaaS website.



# The IP4MaaS project

The IP4MaaS project acted as a bridge between the needs and requirements of Transport Services Providers (TSPs) and travellers, and the technologies developed within the Europe's Rail Joint Undertaking (previously Shift2Rail). Its challenge was to provide the individual IT solutions developed in Shift2Rail/Europe's Rail projects, combining them into solutions suitable for specific demonstration scenarios in real environments across Europe. These IT solutions are of different nature and are targeted to facilitate travellers all over Europe to plan, book, execute, track, and manage all phases of their trips.

Instead of developing new technologies, the IP4MaaS project tested solutions developed under the Innovation Programme 4 (IP4) of Europe's Rail. IP4 is a framework addressing and designing IT solutions for attractive railway services, with the ultimate aim of making rail the real backbone of the multimodal, door-to-door and seamless transport system of the future.

By collecting and analysing data in real environments, IP4MaaS provided an evidence-based assessment of the research outcomes of IP4 from multiple points of view:

- The effectiveness of the deployment of these IT solutions;
- Their adaptability to satisfying the diverse requirements of both travellers and transport operators through a common set of building blocks;
- The equity of their deployment in society;
- The potential for their acceptance by the transport and mobility market, and in particular by railway operators and their ecosystem.

## The IP4MaaS demos

IP4MaaS tested IP4 technologies in six European demo sites (Athens, Barcelona, Liberec, Osijek, Padua, Warsaw) involving different transport operators. A long-distance connection from Liberec to Warsaw was also tested. For each demo site, the mobility pain points were identified, seeing how IP4 solutions could solve them. The tested technologies, like Journey Planning, Trip Tracking, Trip Sharing, are all brought together in the so-called Shift2Rail **Travel Companion (TC) application**, which was the interface of the IP4 ecosystem, an application passengers got to test. In each demo site, different functionalities of the app were tested.

The variety of the demonstration sites meant the involvement of various stakeholders at local level. In addition to long-distance and urban/suburban rail and bus operators, shared and private travel modes representatives have participated to demo activities, as well as transport authorities and ancillary services providers, supported by universities and research centres involved at demo level.

# Transferability recommendations

The recommendations in this Handbook were taken, among others, from lessons learned on the field by those involved in the project demos, from surveys completed by participants, as well as from the evaluation and impact assessment performed after each demo. They were set up for transferring project results to other relevant stakeholders, hereby aiming to improve the IP4 ecosystem and its tools, making them more user-friendly, attractive, reliable, multimodal and inclusive.

In addition, this Handbook has been drafted taking advantage of the results collected in similar experiences (in particular other EU Rail projects RIDE2RAIL and Shift2MaaS project) and has been enriched using insights collected in the discussions happening during a Stakeholders' Workshop.

## Recommendations

The recommendations in this Handbook have been categorised according to different aspects of the IP4MaaS project. While a certain focus lies on the technology within the IP4 ecosystem and attractiveness of the Travel Companion application, a special focus is also on the integration process of operators and Transport Services Providers into another ecosystem, stakeholder engagement and communication activities. A final set of recommendations to facilitate the MaaS deployment after the project lifetime are also included. The recommendations are categorised as follows:

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### IP4 ecosystem and Travel Companion application

- Technology
- User-friendliness

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### Integration process

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### Demo execution & Communication

- Demo execution
- Stakeholder engagement

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### Additional recommendations on European rail-focused MaaS deployment

# IP4 ecosystem and Travel Companion application

## Technology

**Despite the fact that the overall feeling about the tested IP4 solutions was very positive, TSPs and travellers also reported some issues that occurred. The vast majority of comments were linked to technological issues affecting the app malfunctioning and the rigidity of the system.**

**Recommendations:**

- Any application to be tested should be available on all operating systems. The Travel Companion was only available on Android and could only be downloaded via a link provided to testers.
- Loading times should be as short as possible, in trip/connection searching but also when loading photos or videos in a collaborative space for travellers.
- In a travel application such as the TC route information should be solid and correct. IP4MaaS encountered various challenges in this area:
  - The position of the user/localisation should always be indicated with high accuracy;
  - An increased number of route variants should be displayed; some testers found that too little route options were given;
  - The application should allow to scroll and see earlier/later connections;
  - The system should also be able to recognise certain places indicated as starting/ending points. In some cases, this was reported as not happening;
  - The system should be able to recognise a change in travellers' route while using the app, recording and displaying this update;
  - The TC should be always able to find accurate and precise addresses in the demo area. In some cases, the system suggested addresses with the same name but in other cities/villages in the area;
  - The POIs (Points Of Interest) indicated in the app should always be precise and belonging to the demo area. In some cases, the app indicated POIs belonging to another demo area or previous demos.
- Travel itineraries shown should be realistic: the TC sometimes suggested waiting times of up to six hours.
- The app should avoid suggesting very long walks. While soft modes like walking and cycling need to be encouraged, walking for more than 1km is considered not ideal.
- On-route info: Once the ecosystem has access to real-time data, information more relevant to the current situation should be provided. For example, the navigation function should provide high quality and detailed information about approaching the destination/interchange and about time to get off a vehicle, as well as intermediate stops and operator info.
- User should be able to delete saved journeys.
- The app should be customised for each demo, in order to allow travellers to see only the functionalities active in that specific site.

## Attractiveness & user-friendliness

**To succeed in the competition with other already existing applications, any digital mobility solution must be easy and intuitive to use. A strong focus should be put on user experience, in particular in a mobility context populated by several applications which might be already satisfying mobility needs of users. The experience of IP4MaaS proved that travellers understood the high potential of the Travel Companion, its multiple functionalities, and the ecosystem itself. However, they also agreed that some adjustments need to be made on the app in order to make it more mature.**

**Recommendations:**

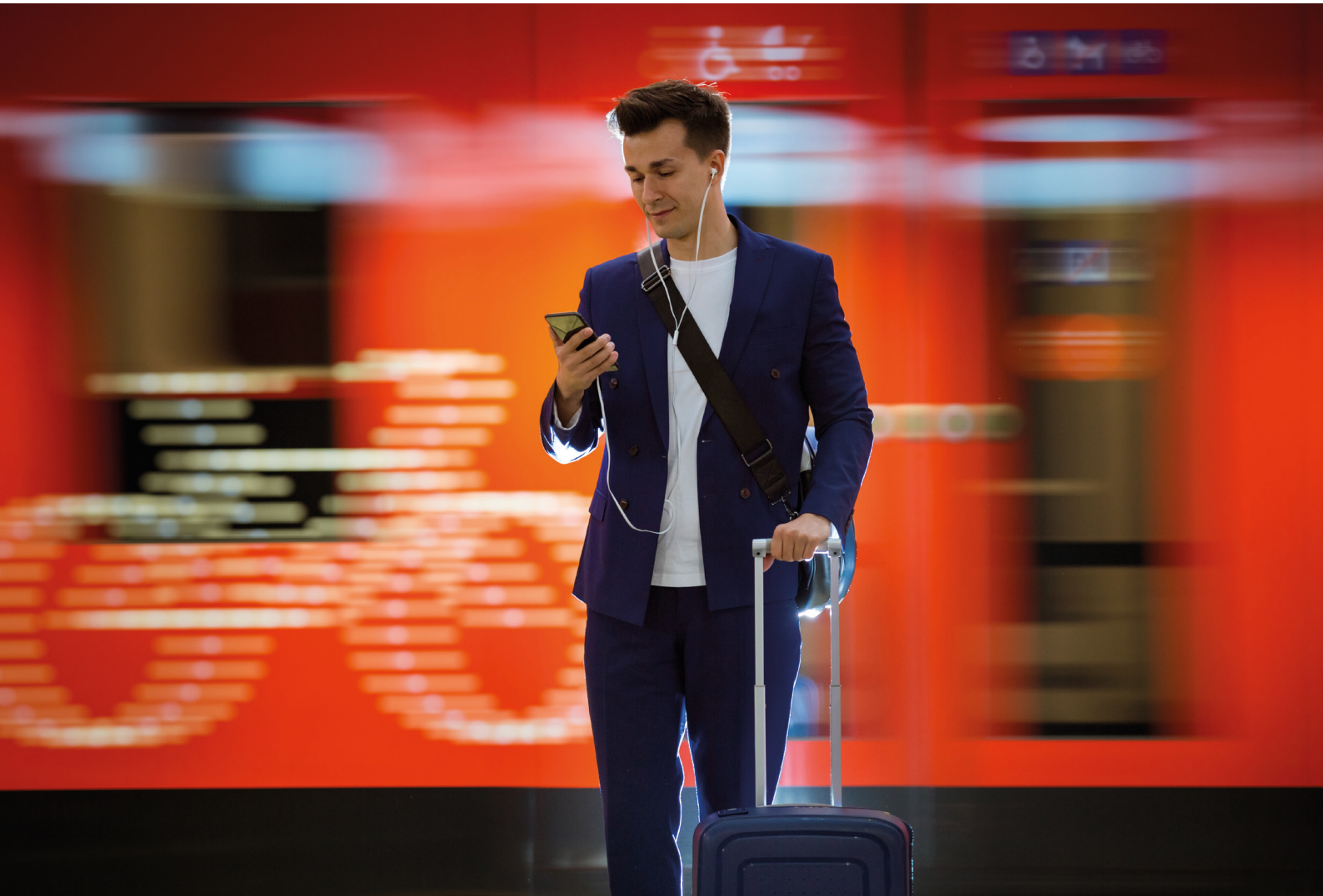
- The installation process should be extremely easy and possible without any user guide, specific training or even a verification link sent via email.
- Accessing the app should be possible without first logging in (or, alternatively, login process should be easier and faster).
- More notification messages (e.g. confirmation of actions, notifications about successful ticket purchasing, etc.) can better help in navigation of a user and make him/her feel more comfortable in the travel experience.
- Connections should always be showed by mapping the actual route, in some cases the route was displayed in straight lines (beelines).
- Provision of information in the local language is essential. The app should be translated in all its sections/subsections, involving professional translators for an increased user experience.
- Inclusivity of persons with reduced mobility (PRM), provision of information about transport infrastructure limitations is essential, such as a large gap between the platform and the train doors or updated information on buses in service with the accessibility ramps. This information should be included in the application, to allow all categories of travellers to properly prepare and execute their trips.
- Users should be provided with sufficient guidelines in case of questions. Preferably, easy-to-read user guides, possibly in the format of video, should be provided.
- Testers should be able to use their real, personal credentials (such as email address) in full compliance with GDPR.

# 2 Integration process

**The more data is used, the more TSPs and operators are involved, the more after-sales and other additional services are integrated into the ecosystem, the better. In order to attract the user's attention, various travel modes should be used for connection search, so that the travel offers are multimodal, i.e., including transfers between different modes within the same journey. Besides public transport, other transport modes including shared mobility should be included as well.**

**Recommendation:**

- The IP4 ecosystem needs to be further developed to be more flexible and allow the integration of all kinds of TSPs, particularly in the case of on-demand and shared modes. No TSP should be left behind.
- Integration in the IP4 ecosystem should not require the TSP to adapt (part of) their processes.
- Data sharing is important. It should be easy to understand for all TSPs what are the requirements that an operator or a service provider needs to fulfil to be successfully integrated in the ecosystem.



# Demo execution & communication

## Demo execution

**When organising its demos, the IP4MaaS consortium ran into various challenges, some of them being related to operational aspects. Some recommendations that can help organisers of future demos to make the most out of the testing period are presented below.**

- It is important to leave sufficient time for users to test any application. In IP4MaaS testing periods were sometimes one week, which is too short to get acquainted with all the specificities of the tools, and to become experienced enough to smoothly serve the testers.
- It can be beneficial to organise training sessions, possibly video tutorials, to allow users to get familiar with the tool and to ask questions.
- Proper internal communication among the technical partner managing the ecosystem and the demo teams is very important. In IP4MaaS there was a "continuous learning" process, with demo teams and other involved stakeholders constantly interacting.
- Keep the communications restricted to a small core team of key stakeholders to ensure smooth and fast exchanges.
- Consider that technical issues might delay activities and therefore establish from the very beginning a constant dialogue with the technical partners managing the ecosystem.
- Timing and the local context are both key factors that can affect the potential impact of the solutions and their attractiveness. Factors such as weather (heat waves etc.), time of year (summer/public holidays) can greatly influence people's willingness to take part in the testing, and how they evaluate the solutions.

## Communication and stakeholder engagement

**A proper engagement and communication strategy is key in ensuring a solution or tool is properly used, or in the case of IP4MaaS, tested.**

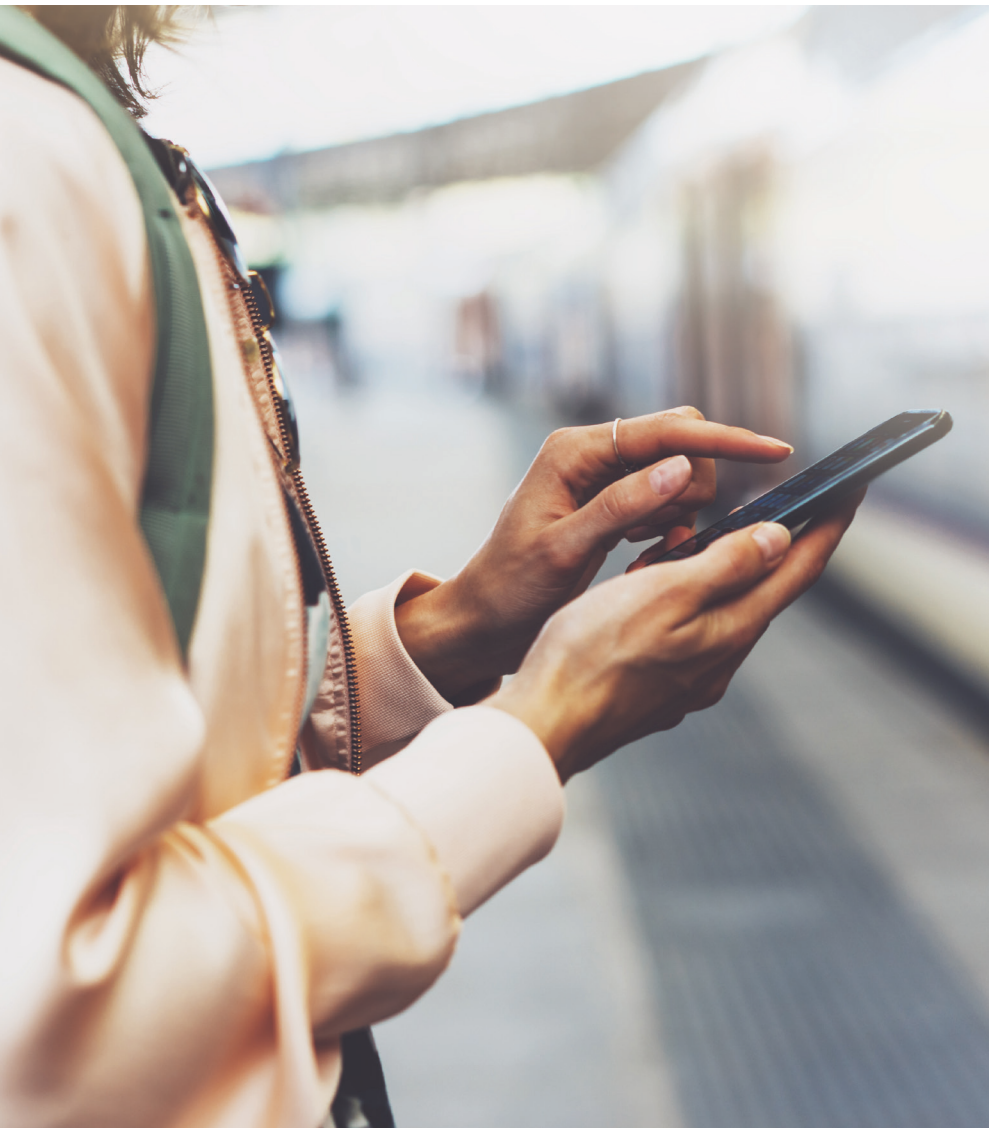
- The organisation of a dissemination campaign is essential to reach as many users as possible. Materials need to be tailored to the target group. These can include posters, social media, website pages, newsletters and press articles.
- Social media proved to be one of the best communication channels, much used by young people interested in testing new solutions.
- Incentives have been utilised in several demos for increasing the attractiveness of the project, and numbers confirm that this was particularly useful.
- A detailed user engagement strategy, with a clear assignment of roles/responsibilities and well defined and easy-to-use communication channels proved to be a key success factor to attract people. Therefore, it is important to dedicate a significant portion of the preparation phase to the definition of the engagement strategy, tailoring it on the different peculiarities that different geographical contexts have. A "one size fits all" engagement strategy, uniform for all contexts, can negatively impact the participation rate.
- Information sent in the demo period should be clear, simple and optimised: sending info too much and too often will work aversive.

# Additional recommendations on European rail-focused MaaS deployment

**The outcomes of the project, and in particular the demos' evaluations, allow the formulation of additional recommendations for the future definition and deployment of European rail-focused MaaS offers that can be taken into account in future research activities.**

- To make MaaS a reality and increase benefits for citizens and transport services providers, it is needed to build and maintain a **community of practice.** IP4MaaS demonstrated that through collaboration of a broad set of different actors in the mobility ecosystem, valuable tools for improving travellers' mobility experience can be delivered.
- The MaaS community works around the "user-centric" approach. Making transport more accessible and sustainable, reducing use of private vehicles and their negative externalities are the **MaaS' societal objectives**. The IP4MaaS evaluation demonstrated that these objectives are highly considered by end-users and should be key aspects when designing transport offers.
- The prerequisite for successful MaaS offers is a clear **data sharing policy**: services, tariffs and mobility packages can effectively address user needs if they are built on open and balanced access to information in the ecosystem. IP4MaaS defined standards for data sharing at EU level by successfully integrating heterogenous transport systems and several different operators.
- Among all possible MaaS models, IP4MaaS tested and demonstrated the feasibility of the **Open Backend platform**[1] , a reference model when a centralised environment acts as an aggregator around shared interests, allowing efficient door-to door mobility.
- The identified Open Backend platform requires as key actor the **MaaS aggregator**, which is the orchestrator ensuring MaaS functioning by coordinating partners' relationships, ensuring that principles and rules are well-applied and facilitating data and services intermediation. IP4MaaS demonstrated that the IP4 community may have a role beyond project lifetime.
- MaaS communities are evolving ecosystems in a very competitive market. The **open approach** is a requirement to be met to avoid monopolies or exclusivities and incentivise service evolution to always address user needs.

1. UITP - Ready for MaaS? Easier mobility for citizens and better data for cities – availab le at https://www.uitp.org/publications/ready-for-maas-easier-mobility-for-citizens-and-better-data-for-cities/

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