



**UNLOCKING LARGE-SCALE ACCESS TO COMBINED MOBILITY
THROUGH A EUROPEAN MAAS NETWORK.**

Deliverable D4.4 IMOVE Living Labs: high-level progress report (initial)



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D4.4 - IMOVE Living Labs: high-level progress report (initial)

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Executive Summary

The present document is a high-level report about the status of the five IMOVE Living Labs at the end of the first of the three iterations planned in the project.

IMOVE implements four MaaS Living Labs in strategical geographical areas - Turin, Greater Manchester, Berlin and Gothenburg - and one Living Lab dedicated to roaming, where at least two of the aforementioned IMOVE Living Labs will collaborate in order to investigate the main issues and pave the way for a “roaming” service for MaaS users at the European level. In the next iteration, an additional Living Lab, selected through an open call launched in May 2018, will join IMOVE and be also executed in the frame of the project.

The document is organized as follows:

Chapter 1 introduces the overall IMOVE ambition about MaaS development and deployment, and the five specific ambitions of each Living Lab, all contributing to achieve the overall IMOVE goals.

Chapter 2 describes the current status of each Living Lab, and how the interactions with the IMOVE project activities (Work Packages) are advancing. Barriers and enablers for Living Lab progress are highlighted at the end of this section.

Finally, chapter 3 describes from a technical perspective the interoperability schemes of the IMOVE software framework with the ICT platforms of local MaaS providers and identifies the level of integration of mobility services in each Living Lab (where 0 is no integration and 4 maximum integration, including societal goals such as policies and incentives). This includes cross-linking the Living Labs, detecting synergies between them and showing how each LL complements the other ones.

Finally, conclusions summarize the main findings and outcomes illustrated in the deliverable.

Abbreviations and Acronyms

B2B	Business to Business
B2C	Business to Customer
GM	Greater Manchester
KPI	Key Performance Indicator
LL	Living Lab
PT	Public Transport
WP	Work Package

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INTRODUCTION

The overall objective of the IMOVE project is to accelerate the deployment and unlock the scalability of MaaS schemes in Europe, ultimately paving the way for a “roaming” service for MaaS users at the European level.

To this end, IMOVE investigates and validates advanced solutions for improving MaaS deployment and operation and their underlying business models. Core ITS elements enabling MaaS development are being developed and will be delivered, including enhanced real-time collection of data about user needs, habits, preferences and tools for the (controlled) exchange of information enhancing interoperability among service components and across different MaaS initiatives.

The three major pillars of IMOVE are:

1. **Scalability Unlocks:** IMOVE is investigating and developing a set of Scalability Unlocks, i.e. measures, organisational frameworks, operational and business models enhancing the framework conditions for MaaS development and operation. This activity will last for the entire duration of the project and is highly linked to the Living Labs in order to investigate and design specific sustainable business models.
2. **Software Enablers:** IMOVE is designing and implementing a software framework consisting of an integrated set of interfaces, protocols and ready-made software artefacts (Software Enablers) that ease the implementation of MaaS schemes and support the creation of a cross-border MaaS ecosystem.
3. **Data exchange and sharing:** a crucial aspect of IMOVE is the collection and analysis of data, in order to gain a deep and supported understanding of the actual effectiveness of actions and business models on specific and different profiles and environment, as well as the identification of technical and non-technical issues concerning data collection processing and sharing (such as data privacy, security, visibility of internal business, “fears”, trust, regulatory frameworks, etc.).

The IMOVE impact is being tested at four sites (Turin, Greater Manchester, Berlin and Gothenburg), all strongly engaged in the MaaS domain and setting specific actions on existing or new MaaS schemes. The sites were selected according to their complementarity, where success and failure factors for any specific measure and context are being investigated and evaluated. Additionally, a new site will be included in November 2018 after the finalization of an open call process.

The resulting knowledge and lessons learned will be made available and shared with any interested MaaS operator (while respecting privacy and business constraints).

1 OVERALL AMBITION

In this chapter, the overall ambition of IMOVE about the development and deployment of MaaS schemes in Europe is illustrated together with the specific ambition of each of the 5 Living Labs. It is important to have always in mind which are the main ambitions of the involved LLs, as they are a crucial part of the overall project goals that have to be achieved.

The overall project ambition is defined below. Each specific Living Lab shall work on the Living Lab specific ambition and individual stakeholders' ambitions, keeping always as a background reference the general project ambition:

IMOVE ambition

Accelerate the deployment and unlock the scalability of MaaS schemes in Europe, ultimately paving the way for a “roaming” service for MaaS users at the European level.

From this overall ambition, the LLs specific ambitions are stated below:

Turin LL ambition

The ambition of the Municipality of Turin Living Lab is to foster the growth of a local MaaS scheme introducing technological and regulation enablers. The objective is to involve all mobility services currently existing in the city. Several IMOVE software enablers will be used to aggregate user profiles, complete the integrated ticketing, deploy mobility packages, implement environmental certification and related incentive mechanisms. One key point will be the development and roll out of a software framework composed by the IMOVE software enablers, allowing the full integration of public transport facilities and services with the local MaaS operator platform.

Greater Manchester LL ambition

IMOVE allows the exploration of partnership agreements, technical specifications and building a supportive community of operators willing to participate in a collaborative and integrated mobility system. IMOVE allows TfGM and wider partners to set detailed risks to delivery and subsequent mitigation to overcome these challenges, a testing of a multi-modal solution that could later be developed in full as part of TfGM's current plans for a core sustainable transport network.

Berlin LL ambition

Thanks to IMOVE, URBI – acting as a MaaS operator in Berlin Brandenburg area – will be able to build a supportive community of mobility operators willing to participate in a collaborative and integrated system. URBI currently works with many of the mobility service providers operating in Berlin, however the goal within IMOVE is to build a MaaS offer, with a strong level of technical integration, where at least one provider per transport mode among those available in the area is available through URBI services.

Gothenburg LL ambition

The ambition at Västtrafik and the Västra Götaland Region, where Gothenburg is the largest city, is to enable and stimulate the establishment of various MaaS services through enabling 3rd party reselling of digital tickets. A vital part for Västtrafik is the development of new business agreements and business models supporting these new sales channels and thereby enabling new combined mobility solutions.

Roaming LL ambition

The overall ambition of this cross-site Living Lab is to pave the way for a MaaS integration and cooperation at the European level, preparing and enabling a concrete take up of cross border roaming of MaaS services.

Overall, these specific ambitions are very complementary and can contribute from different perspectives to the global ambition of the project.

2 HIGH-LEVEL STATUS OF LIVING LABS

The chapter outlines the current situation of the IMOVE LLs and the interaction of the LL activities carried out in Work Package 4 with the activities conducted in the other WPs of IMOVE. The enabling factors and the main barriers to implementation of the planned MaaS activities encountered in the sites have been identified and described at the end of the chapter.

2.1 QUICK SUMMARY

The section describes the current situation of the LLs and the interaction of the LLs with the other WPs of IMOVE project.

2.1.1 TURIN

Turin administration has selected work-to-work and home-to-work mobility as the focus of the local MaaS Living Lab. The City of Turin has been working on this theme over the years, acting on the behaviour of citizens moving to offices zones, and considers this is a crucial aspect for the reduction of traffic and pollution in the urban area. In order to set up the user group for testing in the LL, a public tender has been launched aimed to choose a company interested in adopting the proposed solutions for its employees. In addition, MaaS solutions for home-to-work/work-to-work mobility in the Living Lab will be also tested by Turin Municipality employees. Finally, agreements with car-sharing and bike-sharing companies are ongoing, though not yet finalised.



Figure 1. Turin Living Lab

2.1.2 GREATER MANCHESTER

During the initial months of IMOVE, activities in Greater Manchester have been focused on understanding how best MaaS could be explored using the project. Greater Manchester does not currently have a MaaS platform provider, and so is free to explore different business models and options. This opportunity brings in some uncertainties but also poses a lot of challenges to be taken up in this Living Lab, as Greater Manchester is willing to test most of the scenarios envisioned in IMOVE.

At the end of the 1st iteration TfGM is finalising the process to select the provider for the base data level repository which will power the enablers and the MaaS APPs.



Figure 2. Greater Manchester Living Lab

2.1.3 BERLIN

The main objective of Berlin LL is to include at least one mobility provider per each means of transport, and then, in a second phase, to include all the transport operators available in the Berlin and Brandenburg area. At this stage of the project, the objective of the first phase has been achieved, a taxi service provider being the only transport mode in the LL area not yet not available in URBI solution. The crucial aspect of this LL is the integration with VBB, that has been custom-developed for IMOVE and allows for the reselling of public transport tickets within the urban area of Berlin and the adjacent region of Brandenburg.



Figure 3. Berlin Living Lab

2.1.4 GOTHENBURG

During the first half of 2018, in Gothenburg LL an integration with the Göteborgs Stads Parkeringsbolag AB has been done, enabling this 3rd party to sell Västtrafik's tickets as a reseller, allowing the user to buy the PT ticket together with the payment for a parking spot. In this first phase, the Gothenburg LL has validated an initial MaaS concept allowing a combination and integrated payment of PT and parking services.

Starting in November 2018, an integration with two other pilots will be done. The 2nd pilot is a concept that delivers Combined Mobility solutions for residents/tenants of an area in Gothenburg. 132 new apartments have been built and instead of building parking spaces, inhabitants will be provided with a Combined Mobility solution, including local carpool and bike pool, mobility management and a community solution.

The 3rd pilot is a B2B concept for local business trips, providing support for corporate MaaS solutions. In the service platform, employees in an organisation can search for trips from A to B and get suggestions including an internal carpooling, car sharing, taxi and public transport. Concept owner is a company called SpaceTime, but the integration to Västtrafik's API will also here be done by SmartResenär.



Figure 4. Gothenburg Living Lab

2.1.5 ROAMING

During this first project phase, various aspects and options about how roaming, an innovative and strategic concept for MaaS deployment, should be addressed in IMOVE have been investigated. Scenarios to be tested have been identified and discussed. A target scenario will include a business trip and/or a single "ad-hoc" traveller, focusing on the different aspects that have been described above, particularly the most challenging aspects of payments across different MaaS sites/operators.

The traveller, as customer of an IMOVE federated MaaS-operator in his/her home city, can access some of the services supplied by local MaaS providers, given they have partnership agreements and are part of the IMOVE roaming infrastructure, just as if he/she was a regular domestic user.

The scenario will encompass different cooperation/payment models, including:

- **pay-as-you-go**, essentially a marketing cooperation where the user's App based on location, recommends the user to download the local MaaS mobile application, explain the features etc.;
- **monthly billing by the traveller own MaaS Operator**: the abroad user is supplied mobility services by a federated local MaaS and is charged by its home MaaS provider at the end of the month (with payment clearing among different operators).

Roaming across LLs highly depends on the progress of the other four LLs. The LLs in Turin, Berlin, Gothenburg and Greater Manchester shall start the execution first and once they are consolidated, testing roaming issues and capabilities will follow.

2.2 INTERACTION WITH OTHER WPs

One of the main objectives of the Living Lab Management process is to guarantee that proper inputs/outputs are considered in all LLs from other WPs and vice versa:

1. new innovative business models developed in WP1.
2. proper integration of WP2 and WP3 developments into LLs. It also guarantees that the results achieved in all LLs are properly linked and reported to other WPs.
3. appropriate data is gathered and provided for evaluation in WP5 and evaluation results shared between WPs.

This section outlines how this cooperation between WPs is evolving.

2.2.1 WP1 – SUSTAINABLE BUSINESS MODELS

IMOVE is investigating and developing a set of Scalability Unlockers, i.e. measures, organisational frameworks, operational and business models enhancing the conditions for MaaS development and operation. This activity will last for the entire duration of the project and is highly linked to the Living Labs in order to find sustainable business models in all of them, analyse and compare feedbacks from the LLs, take advantage of this more comprehensive knowledge to evolve the most relevant Scalability Unlockers for the specific context.

Each LL has worked in cooperation with WP1 extracting the main conclusions illustrated below:

2.2.1.1 TURIN

With regard to the MaaS business models the following elements have been identified:

1. MaaS Users: workers have been selected as the target users' segment for IMOVE piloting in Turin. Given the size of the entire working population of the metropolitan area of Turin (about 700,000 people) and the resources of the project, it has been decided to involve the employees of one private company and one public administration. The users will be, therefore, the employees of the City of Turin and of the company that will be selected through the tender call that will be finalized by the end of September 2018.
2. Delivery entity for MaaS: Turin's proposal to join the IMOVE project had already implicitly included the proposal to make URBI (as partner of IMOVE) the reference MaaS operator for Turin, with its APP

and its management tools. The City of Turin simply had to create the technical conditions for interoperability and integration between URBI and transport operators and monitor the adequacy of the solutions provided to the project requirements.

3. Operators: as analysed in the design phase of the LL of Turin, the output of IMOVE will have real value only if public transport (GTT) is available to LL users. Additionally, the administration is working to add bike sharing and car sharing to the services included in the Living Lab.
4. 3rd party revenue: at the moment there are no incentive mechanisms and the commercial agreements between MaaS operator and transport operators foresee only the resale at cost price of the rides. If the Living Lab is successful, a future large-scale expansion of the MaaS to all citizens may lead to more profitable trade agreements for the MaaS operators.

Users may get mobility vouchers and bonuses according to the sustainability score of their travelling choices and to their use of services.

2.2.1.2 GREATER MANCHESTER

The MaaS business model has specific interdependent elements which together compose the overall MaaS eco-system. These elements are:

1. **The MaaS users:** both their fee for MaaS and the value they derive from using the service.
2. Greater Manchester's **delivery entity for MaaS:** how TfGM envisions MaaS being delivered in Greater Manchester.
3. **Operators and multi-modal delivery:** service concessions and incentives to support MaaS.
4. **3rd Party Revenue:** further income that can be raised to contribute to ongoing MaaS costs.

These four elements working together will create an effective and cohesive MaaS solution which should be operationally and commercially successful for all participating entities.

2.2.1.3 BERLIN

In Berlin LL, URBI has a fundamental role: the platform in which the various services will be integrated, offering to the market, a practical and tangible MaaS solution. Consequently, the ambition is to serve the users with the most complete and holistic offer, at the best price possible, considering also the potential high price-sensitivity of the common customer.

Considering that there are several parties involved, the business model is articulated on two different levels:

1. The first one is focusing on the return that needs to be guaranteed to the Operators.
2. The second one is guaranteeing a long-term financial stability for URBI.

Based on the agreements that URBI is developing with the transport service providers, URBI will operate on a commission-based scheme, or by potentially applying a mark-up.

In the upcoming iteration, the ambition is to optimize URBI platform based on end users' needs, to increase the number of providers and to adjust pricing. It is also believed that URBI will potentially automatize its offering and partnership, by proposing a firm and standardized agreement to the various partner companies that would like to cooperate in the successful development of an innovative MaaS product in Berlin.

2.2.1.4 GOTHENBURG

There are several areas / business models which are emerging in the Swedish mobility landscape, each of them probably important for the continued upscaling of MaaS:

1. Entrepreneurial MaaS (B2C).
2. Level 2 MaaS (Integration of payment, see section 3.2) supporting other services (hotels, entertainment industry, shopping malls, etc.).
3. Mobility broker in dense residential areas where mobility services can be offered instead of parking spaces.
4. Corporate Mobility as part of the employment package, as an alternative to “company car”.
5. Rural MaaS.

The ambition is that services of all these categories, and even more, will be developed in the Gothenburg Living Lab, however, none of these will actually be developed in/by the project, but instead supported by the different activities in the project. There is a close link between Gothenburg Living Lab and WP1, working together in the generation of new and sustainable MaaS business models.

2.2.2 WP2 – SOFTWARE ENABLERS

IMOVE is designing and implementing a software framework consisting of an integrated set of interfaces, protocols and ready-made software artefacts (Software Enablers) that will ease the implementation of MaaS schemes and will support the creation of a cross-border ecosystem for a “roaming” service for MaaS users at the European level.

Each Living Lab has expressed the interest in a set of enablers that is detailed in the below table.

Table 1. IMOVE Software Enablers

Software Enablers	TORINO	GM	BERLIN	GOTEBORG
Identity Manager	✓	✓	✓	
User Tariffs Manager	✓	✓	✓	
Mobility Tracker		✓		
Preferences Manager	✓	✓	✓	
Notification Manager		✓		
Roaming Manager	✓	✓		
Price Manager	✓	✓	✓	
Mobility Organizer	✓	✓	✓	
Booking Manager	✓	✓	✓	
Incentives & Gamification Manager	✓	✓		

At this stage of the project, Gothenburg does not expect to integrate any Software Enabler, as the approach of this LL is to stimulate the MaaS ecosystem with the implementation of distinct MaaS pilots by 3rd party providers.

2.2.3 WP3 – DATA ANALYSIS

A crucial aspect of IMOVE is the collection and analysis of data available from the Living Labs. This will lead to a deep and supported understanding of the actual effectiveness of actions and business models on specific and different profiles and environment, as well as the identification of technical and non-technical issues concerning data collection processing and sharing (such as data privacy, security, visibility of internal business, “fears”, trust, regulatory frameworks, etc.).

In a first stage, the high priority is to:

1. Define a common data model inspired by current MaaS initiatives beyond IMOVE scope, supporting the creation of a cross-border MaaS ecosystem, paving the way for a “roaming” service for MaaS across Europe.
2. Identify which are the possible motivation, barriers and triggers for data sharing, which are the possible data of interest for IMOVE and what can help unlocking the data sharing.
3. Learn which incentives, business models and measures have a positive or negative influence on user behaviour, depending on the user habits, needs and preferences and on the specific context.

For the time being, this cooperation is in a very preliminary stage; once the Living Labs start the execution phase the data sharing process will be sped up in order to achieve WP3 objectives.

2.2.4 WP5 – EVALUATION

The main objective of WP5 is to define and implement the overall evaluation methodology for assessing the impact generated by IMOVE innovations in the MaaS Living Labs, in relation to the project objectives.

At this stage of the project, jointly with the Living Labs WP5 has defined the Key Performance Indicators that will measure the success of each Living Lab.

The work is focused on the measurement of the baseline KPIs that will be used as references. It is based on questionnaires and interviews administrated to the Living Lab actors directly responsible for data collection and validation.

2.3 BARRIERS & ENABLERS

The ‘Do’ phase, part of the Living Lab methodology composed by the ‘Preparation’ and ‘Execution’ building blocks, is currently ongoing. In order to reach the ‘Execution’ in a good position, the correct ‘Preparation’ of the LLs is crucial to achieve the desired results. Each LL has its own level of maturity that has to be respected in order to prepare the LL correctly and do not perform the execution until the preliminary phase is successfully completed.

During this period, some barriers and enablers in each of the LLs that are influencing the ‘Preparation’ phase have been identified.

Table 2. Barriers and enablers of Turin Living Lab

Barriers
Commercial agreements with car-sharing and bike-sharing providers are delayed
Tender process in order to select an organization to test the LL has been delayed to September 2018
Enablers
Municipality of Torino is highly involved in the case
The objectives and the scenario of the LL are clearly identified
The MaaS provider is a partner in the consortium (URBI) and also has a crucial role in technical WPs

Table 3. Barriers and enablers of Greater Manchester Living Lab

Barriers
The LL is lacking a MaaS provider at the beginning of IMOVE project
The deregulated nature of transport provision in the Greater Manchester region means that for any trial it is unlikely that all providers will be ready to buy into the concept
Enablers
LL partners and stakeholders are open-minded and enthusiastic, willing to test as most innovative solutions as possible
Agreement with MaaS provider is close to be reached and integrations with SW Enablers can be started soon

Table 4. Barriers and enablers of Berlin Living Lab

Barriers
Agreements with taxi service providers are being delayed
Enablers
The MaaS provider is a partner in the consortium (URBI) and also has a crucial role in technical WPs
Agreement with Public Transport Authority, a critical factor of success, has been reached
Integrations with car, scooter and bike-sharing, and public transport ticketing already available

Table 5. Barriers and enablers of Gothenburg Living Lab

Barriers
Complex business models can delay the evolution of the pilots
Enablers
The execution of different pilots allows to explore different solutions from different perspectives
Involvement of Västtrafik in the pilots acting as transport provider
Close cooperation with WP1 allows exploring different sustainable business models

Table 6. Barriers and enablers of Roaming Living Lab

Enablers
Priorities and scenarios in the roaming solution have been clearly identified
Barriers
This LL depends on an advanced level of maturity in the other LLs

3 CROSSLINKING THE LIVING LABS

This chapter describes the LLs from a more general point of view, focusing not only on the current situation of the LL, but describing the approach and level of integration that is desired at the end of the project. This provides an overall vision about MaaS initiatives from different local perspectives and highlights how each Living Labs complements each other in getting valuable insights and adopting good practices.

3.1 LIVING LAB INTEROPERABILITY SCHEMES

From a technical perspective, the IMOVE framework will provide an interoperability layer between the ICT platforms of transport service providers (MaaS operators and/or transport operators) and the backends of user mobility apps. Since IMOVE is not going to implement neither a MaaS platform nor a mobile app, these two components are considered outside the scope of the project.

In this section the interoperability schemes between IMOVE and the MaaS provider are described.

3.1.1.1 GREATER MANCHESTER

Greater Manchester started the project without a MaaS platform provider. After checking different options, the MaaS ICT platform provider selection will be closed at the start of the 2nd iteration.

The MaaS ICT platform will implement all the business logics to operate the MaaS, as well as the user interface (web and/or mobile app); IMOVE is isolated from underlying service/transport operators and can only access data and services exposed by the platform. For this purpose, there are four sub-cases (from left to right in the figure below):

- a) A given enabler does not need to access any field data: no field adapter is required.
- b) A given enabler only needs to access data (or to invoke services) that are exposed by the native API of the underlying platform: the enabler must implement a simple field adapter that performs all required data translation and functional abstraction (i.e. mapping internal functionalities to the proper calls on the underlying API). No changes required at the MaaS platform side.
- c) A given enabler needs to access additional data that are not exposed by the native platform API: like for the case before, the enabler must implement a field adapter that performs all required data translation and functional abstraction; on the other hand, the provider of the MaaS platform shall modify the native API to expose additional data.
- d) A given enabler needs to invoke additional services that are not exposed by the native platform API: like for the two cases before, the enabler must implement a field adapter that performs all required data translation and functional abstraction; on the other hand, the provider of the MaaS platform shall modify the native API (and likely its kernel) to implement and expose additional services.

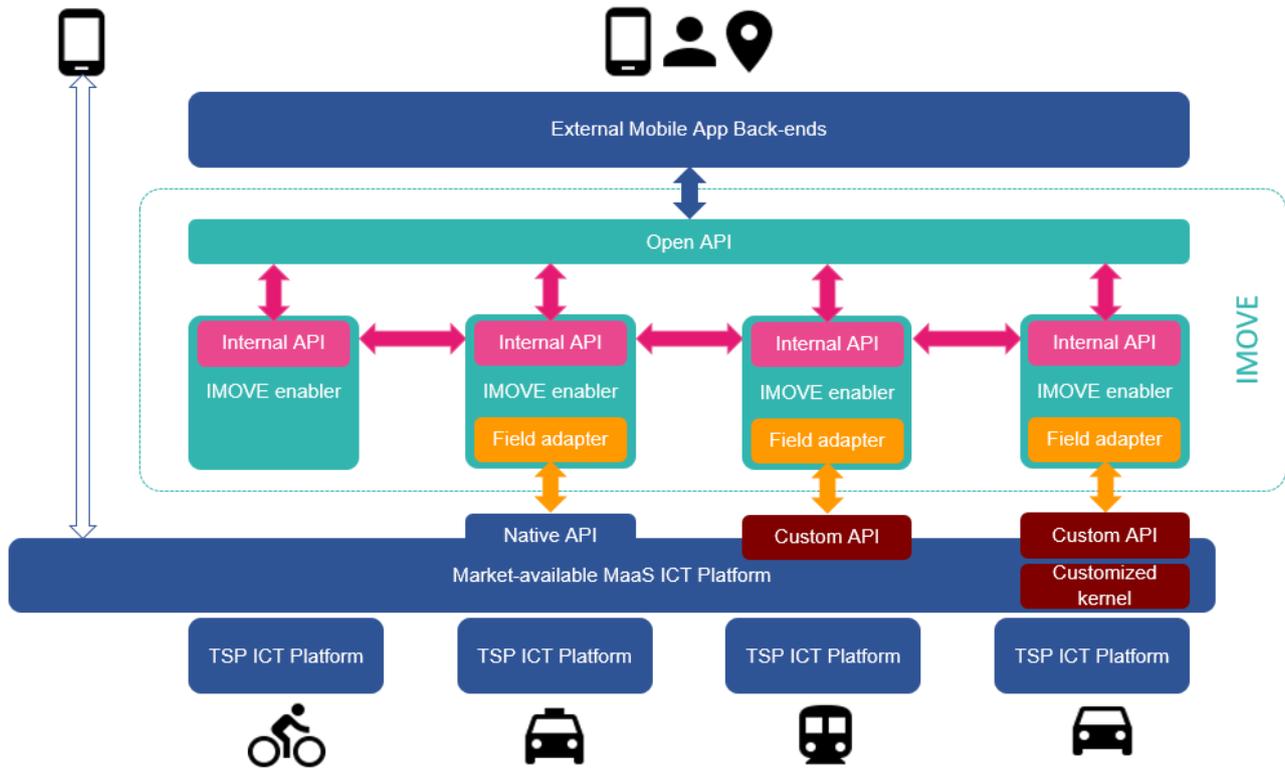


Figure 5. Interoperability Scheme 1

In this case, although the underlying ICT platform could operate a MaaS in standalone, the interoperability with the IMOVE framework would significantly enhance it. More precisely, having a “platform-abstraction layer” (the set of selected IMOVE enablers) that communicate through a well-known internal API (which is independent from the underlying platform) would bring the following benefits:

- i. Additional features offered by IMOVE enablers and not natively available on the MaaS platform (e.g. the Incentives Manager) can be easily plugged-in through the internal API.
- ii. All the MaaS platform functionalities encapsulated by IMOVE enablers (through the field adapters) can be made available to multiple external applications and/or mobility apps (e.g. Google Maps) through the Open/B2B API.
- iii. The whole set of selected enablers at a given Living Lab support the roaming of compatible services with all IMOVE-federated Living Labs (through the Roaming Manager).

Since the provider of the MaaS platform is not part of the consortium, it is important to make an early assessment of the exposed data and services, in order to identify possible required changes to be applied to the underlying API/kernel (dark red blocks). Depending on the level of engagement of the provider, the effort needed to implement the IMOVE adapters may vary; in the worst case some enablers could not be put in place simply because the required data/services are not provided by the underlying platform. In order to mitigate such issues, the Living Lab manager could include the compliance to IMOVE as a mandatory clause to adopt the platform. The proprietary user interface does not necessarily need to be adapted to comply with IMOVE (although it would be desirable), as most of the interactions happen at back-end level. Field adapters (orange blocks) will be implemented by the partners in charge of the relevant enablers (mostly within WP3), while platform-side customizations (dark red blocks) should be implemented by the provider of the platform and are outside the scope of IMOVE.

3.1.1.2 TURIN

Turin LL features a strong leadership by the city municipality and the local MaaS operator is a partner inside the IMOVE consortium (URBI).

In this scenario, the MaaS ICT platform implements all the business logics to operate the MaaS, as well as the user interface (web and/or mobile app), and IMOVE is isolated from underlying service/transport operators; the main difference here from the integration scheme in Manchester is that, as the MaaS platform is property of an IMOVE partner, part of the functionalities that were previously provided by IMOVE enablers are now implemented within the MaaS platform, with an “interface adaption layer” that emulates the behaviour of IMOVE internal API. In other words, if in previous case IMOVE enablers were adapted to comply with the underlying MaaS platform, in this case the platform is adapted to comply with IMOVE enablers.

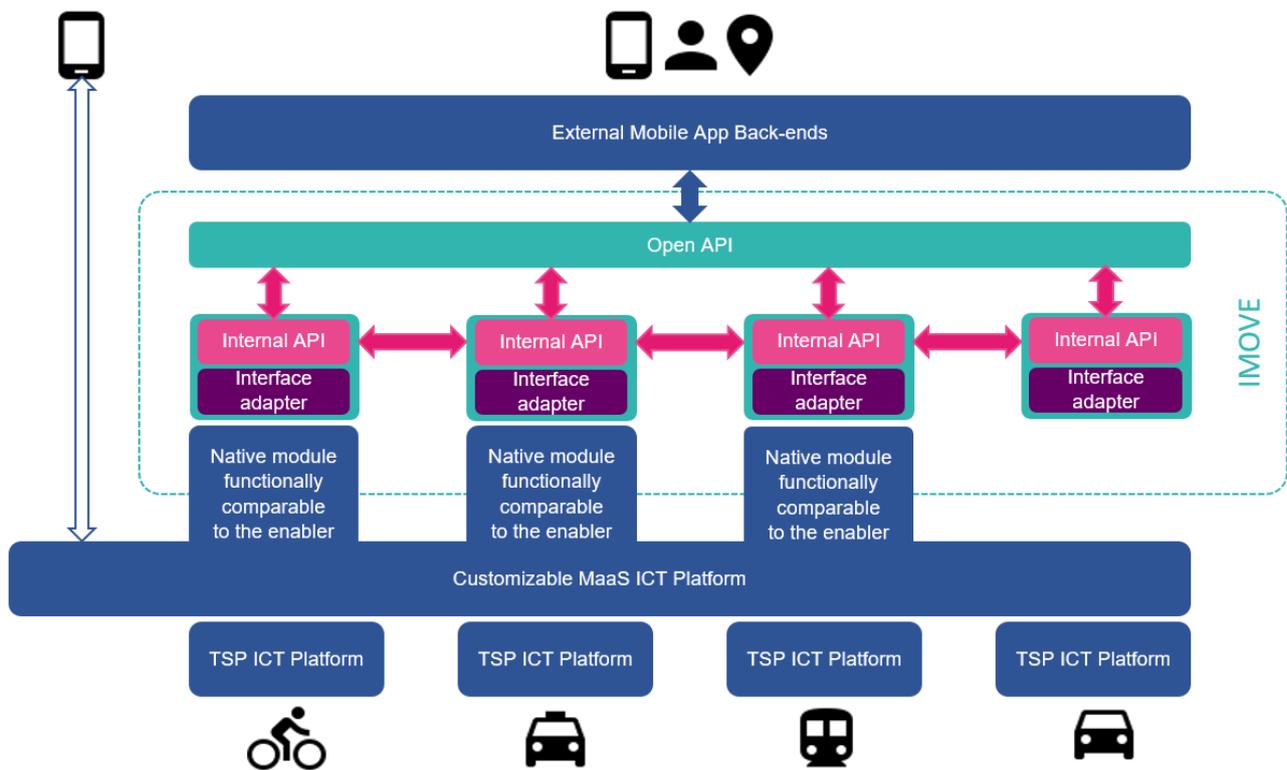


Figure 6. Integration Scheme 1B

The interoperability with IMOVE enhances the underlying MaaS platform through (i) the provision of additional services (e.g. the Incentives Manager), (ii) the integration with external applications (e.g. the mobility platform operated by 5T in Turin) and (iii) the native support to IMOVE roaming.

In this case, the proprietary user interface could be slightly adapted to bring more visibility to IMOVE-specific features. Interface adapters (purple blocks) will be implemented by the provider of the MaaS platform (e.g. URBI on Turin and Berlin Living Labs), together with other required customizations (e.g. the interface towards public transport operators, wherever possible), mostly within WP4.

3.1.1.3 BERLIN

Berlin LL adopts the same integration scheme as in Turin.

3.1.1.4 GOTHENBURG

Gothenburg LL will implement different pilots but will not use an interoperability scheme with IMOVE software enablers. Gothenburg LL is focused on the definition of sustainable business models.

3.2 LIVING LAB TOPOLOGIES

The below figure depicts the different MaaS levels of integration into a MaaS ecosystem. These levels go from level 0 (no integration) to level 4 (maximum level of integration reaching policy integration level).

In this section the current level of integration of each LL will be specified, together with the desired level of integration to be achieved at the end of IMOVE project.

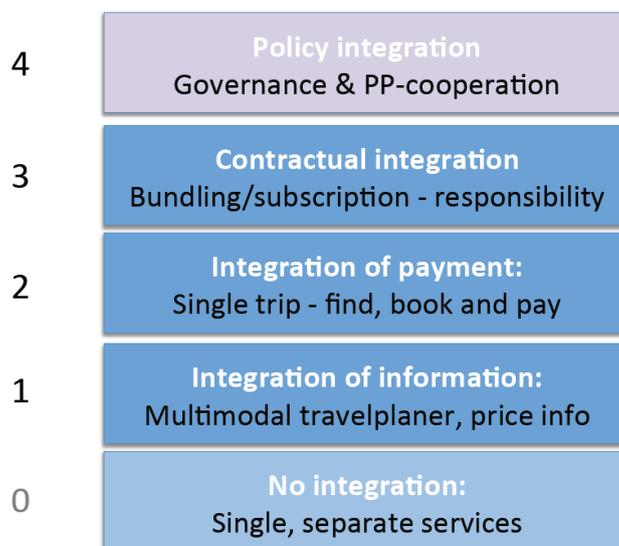


Figure 7. MaaS topology (Sochor, Arby, Sarasini, Karlsson, Holmberg)

Table 7. Turin Living Lab level of integration

Turin LL
Current level of integration: 1 URBI application integrates different transport modes and provides pricing info.
Expected level of integration: 2 In Turin LL several functionalities will be deployed and will include trip setting/planning/monitoring as well as payment and incentive/gamification practices.

Table 8. Greater Manchester Living Lab level of integration

Greater Manchester LL
Current level of integration: 0 Currently the existing services in Greater Manchester are not integrated into a single solution.
Expected level of integration: 1-3 During the LL Greater Manchester will reach Level 1, with ambitions to progress this through Level 2 to potentially Level 3, such as a trial or limited number of subscribers potentially using bundling/subscription services. Given the large number of de-regulated operators providing services, any single payment facility will require extensive negotiation and alignment activity.

Table 9. Berlin Living Lab level of integration

Berlin LL
Current level of integration: 1 URBI application integrates different transport modes and provides pricing info.
Expected level of integration: 3 Berlin plans to have a subscription model with the MaaS users in the city, starting the pilot first with loyal URBI users.

Table 10. Gothenburg Living Lab level of integration

Gothenburg LL
Current level of integration: 1-3 Today, 3 rd parties in some cases are able to sell tickets valid at Västtrafik, though not as digital tickets. Hence there are MaaS level 3 services up and running today.
Expected level of integration: 2-3 Services both in level 2 (Pay as you go) and level 3 (subscriptions) are anticipated, however, they will be run by commercial or public 3 rd party service providers.

CONCLUSIONS

This document provides an overview of the 5 Living Labs and extracts synergies at the end of the first iteration of the project.

The first iteration is dedicated to the preparation of the Living Labs to start the execution in the 2nd iteration, depending on the level of maturity of each Living Lab and, however, as soon as all the preliminary activities are completed.

Firstly, in order to put the reader in the context, this report describes the specific Living Lab ambitions that all together contribute to the overall project ambition.

Secondly, the document provides a high-level summary of the Living Labs status at the end of the 1st iteration, highlighting the cooperation with the various Work Packages of IMOVE and identifying the main barriers and enablers for Living Labs progress.

In the last section, Living Lab interoperability schemes from a technological perspective are described, and the MaaS Level of Integration each Living Lab is willing to achieve at the end of the project is pointed out (where 0 corresponds to no integration and 4 to maximum integration including governance, public/private sector partnership, societal goals such as policies and incentives).

In summary, the IMOVE Living Labs are very complementary and give a very good spectrum of MaaS solutions:

1. Gothenburg Living Lab is focused on exploring complex sustainable MaaS business models.
2. Turin has a strong leadership of the municipality, a MaaS provider inside the consortium and a clear scenario to test.
3. Greater Manchester Living Lab explores a different perspective, the MaaS provider will be outside the consortium and is enthusiastic to test as many innovations as possible.
4. Berlin Living Lab considers as the key point the integration with public transport and wants to test a subscription model, with the MaaS platform provider (the IMOVE partner URBI) pushing for the success of the Living Lab.
5. Roaming Living Lab has identified the scenarios to be tested. A target scenario will include a business trip and/or a single, "ad-hoc" traveller focusing on transportation services provision across different MaaS sites/operators. It will be the last step to achieve the overall ambition of the project, and the different Living Labs, after their execution and consolidation, should cooperate to achieve this ambition.

The next months will be spent on testing the solutions developed in the frame of IMOVE on the Living Labs.

The next high-level progress report – titled 'D4.5 IMOVE Living Labs: high-level progress report (mid-term)' – will be delivered at Month 24 (May 2019) and will extract the conclusions after a first round of Living Lab executions, referring to this document to assess the evolution of the synergies and conclusions extracted here.

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- [1] Freixanet, Josep “D4.2 IMOVE Living Labs scoping document”, *IMOVE project deliverable*, released 15/12/2017.
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