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How can MaaS survive and what is the role of municipalities, public authorities, transport providers and employers? Experience report from 3 years of project work in DOMINO.

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Abstract

How can MaaS survive and what is the role of municipalities, public authorities, transport providers and employers? This experience report from the 3-years pilot project DOMINO-OOE (www.domino-ooe.at) focuses on the methodology of using all stakeholders' strengths to set-up and maintain a non-commercial private ridesharing solution. Ride sharing is a useful complement to other forms of mobility, but the behavioural changes required to achieve it are not easy and usually take time. Appropriate communication support for potential users is therefore necessary and can only be achieved through multipliers. These multipliers must be local or directly involved. Companies, associations, or communities can provide incentives in a targeted manner and thus leverage the basic infrastructure - however, closed communities are of high interest. The basis for meeting all these requirements and prerequisites is a structured approach and one responsible single entity to harmonise different stakeholder needs. This paper mirrors the authors' experience with such an approach to bring MaaS into reality.

Keywords: MaaS Mobility as a Service, Intermodal Services, New Mobility Services

Introduction

One of the goals of the Austrian national mobility master plan is to reduce private motorized transport by a quarter by 2040. But even in 2022, many people cannot imagine a life without their own car, either professionally or privately - whether out of habit or due to a lack of alternative options [Federal Environment Agency, 2022]. New mobility solutions are needed that include the flexibility, safety, and reliability of owning your own car in their offering. In recent years, in Austria Mobility as a Service

(MaaS) has developed into an alternative to owning a car by integrating various public and shared transport modes into a single platform. Non-household carpools (where two or more commuters from different residences travel together in the same private vehicle) bring public benefits. To encourage and incentivise it, transport practitioners and researchers must understand its private motivations and deterrents [Neoh et al 2015]. According to the RTI Mobility Strategy, there is a particular need for the development of new solutions for cooperation, coordination and sharing models [BMK 2020].

Structure of the paper

First, the research topic of how to involve all relevant stakeholders successfully into a MaaS project is presented with 14 experiential steps to foster innovative multi-stakeholder MaaS-projects. This is followed by an overview of (a) the stakeholder requirements and the necessary networks as well as (b) the close cooperation with the public transport operators, which were crucial for DOMINO Upper Austria. After that, (c) close cooperation with public transport providers a great advantage is mentioned and afterwards, (d) three years of project experience with the DOMINO Upper Austria app is shared with the readers as a basis for further steps. Finally, ideas for future further developments of the DOMINO app are presented in the Outlook.

Research topic

The main research topic to be discussed within this paper is the way to involve all relevant stakeholders into a MaaS process to successfully go the long way from research to pilot projects and at the end to implementation of MaaS services. The last years we have focused on this network approach to foster mobility innovation in our research group at the University of Applied Sciences Upper Austria. One of the core elements is our urban mobility lab (www.mobilab-ooe.at) which enables us to help all relevant stakeholders in different innovation phases – from very early research up to deployment processes. Within this fruitful innovation surrounding we came up with some lessons learnt to successfully support multi-stakeholder projects in public-private mobility domains. The following steps were gathered out of different mobility projects and were applied within the pilot project DOMINO Upper Austria. To better understand the following paragraphs, we start with a core description of the step followed by lessons learnt and approach of the DOMINO Upper Austria project.

14-steps to foster innovative multi-stakeholder MaaS-projects:

1. *Identify the one who is leading the project and organise friendly working conditions to let this person all necessary degrees of freedom* – only a person who is really willing to invest a lot of time into a topic like MaaS can be the head of a successful innovation project. This is by far the most important step to take and therefore should be the first to identify. In the DOMINO Upper Austria project, the coordinator of the Austrian Urban Mobility Lab ‘MobiLab’ (Mobility Lab Upper Austria, www.mobilab-ooe.at) was identified as project coordinator. MobiLab already has sufficient experience in its role as coordinator. Located at the Upper Austria University of Applied Sciences and funded by the Federal Ministry for Climate Protection, it supports

communities, companies, and other stakeholders with challenges in passenger and freight transport in its daily work. MobiLab is one of four Austrian mobility labs [www.mobilab-ooe.at 2022]. The labs are where key mobility innovations are put into practice. In this way, they support research and development and allow people to actively shape the mobility of the future. The labs take up ideas and methods that are treated in scientific discourse under the terms "living lab" or "real lab" [www.mobilitaetderzukunft.at 2022]. In the DOMINO Upper Austria project, MobiLab took over the main part of the exchange between the stakeholders and paid special attention to filtering out and prioritizing their different needs. The following figure shows the identified and involved stakeholders from different domains (transport operator; app developer Fluidtime, technology partner RISC Software; employers - industry; Austrian automobile, motorcycle and touring club, policy representatives, research, local communities, infrastructure operators like the Austrian Road Operator ASFINAG).

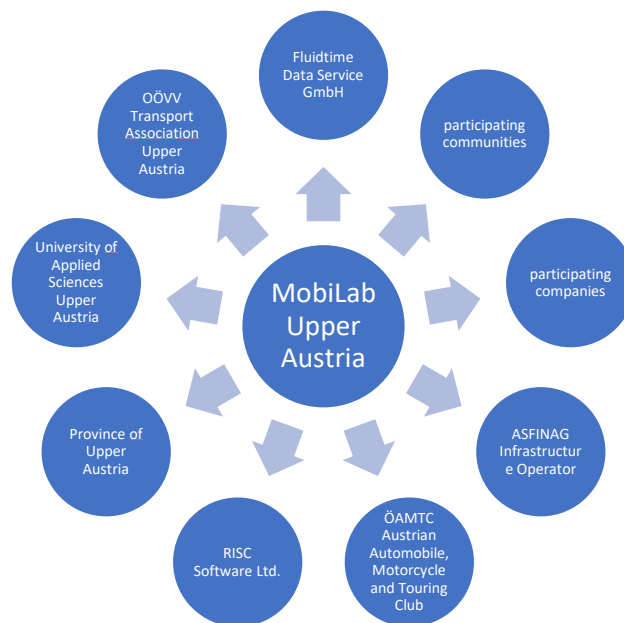


Figure 1: MobiLab's role of the caretaker

2. *Identifying the real problem of each stakeholder group* – not your research question is key – it is the necessary market need which brings you to a successful project end. In the DOMINO OÖ project, the common problem of all stakeholders is the daily traffic jam situation with its negative effects in Linz. Finding a common problem connects stakeholders with each other, gives a sense of belonging and thus strengthens the cohesion of project members. All these points increase the positive achievement of the project goal. It is also important that the project approach is comprehensible and sounds like a sensible solution approach.
3. *Putting all individual stakeholder problems onto a common board* - visualisation is extremely important to understand the whole problem field. It is important to have an overview of common major goals, but also individual smaller goals, to be able to set appropriate actions and not to

forget any important actions. As in DOMINO Upper Austria, this is best mapped in a common project plan to which all members have access. This way, it can also be supplemented or expanded, and everyone is up to date (co-working document).

4. *Set-up an architecture to help all stakeholders – do not forget anybody on the table.* Fig. 1 shows the architecture of the DOMINO Upper Austria pilot. It includes all tasks and its associated positions. It is clear and gives a good overview of the processes and correlations.

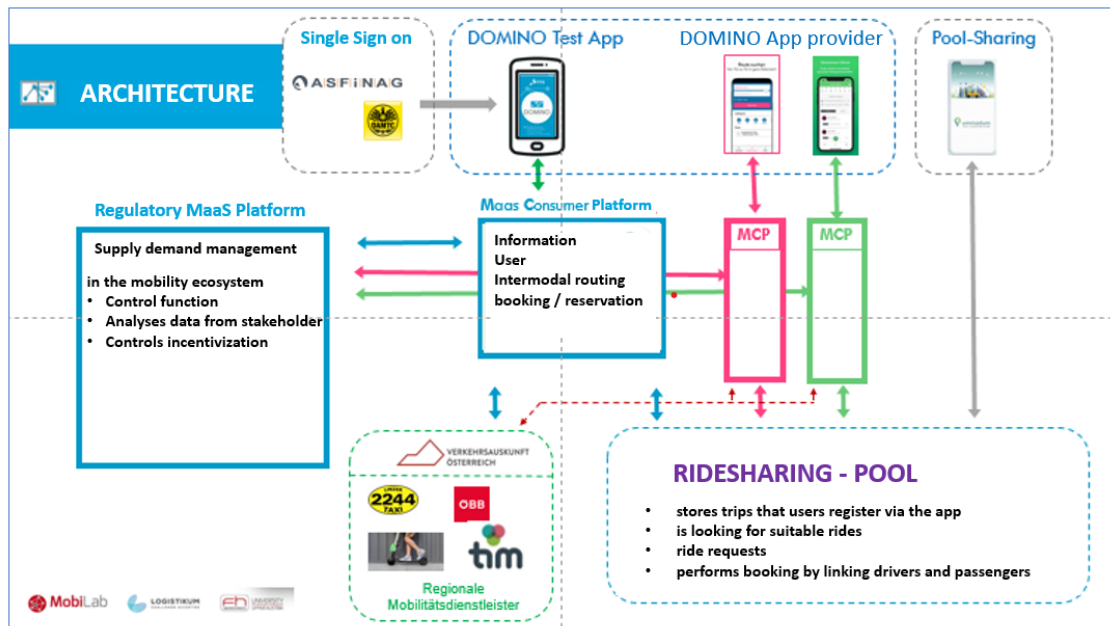


Figure 1: project architecture of the DOMINO Upper Austria pilot at project start

5. *Convince them all with the help of bilateral discussions.* Bilateral meetings or discussions are needed because not all stakeholders are concerned with every issue, and joint consultations must be completed within a certain time frame.
6. *After bilateral discussions bring them all together – as early as possible and do not try to put an almost complete solution to the discussion – lean innovation approaches can really speed-up the innovation approach.*
7. *Take the necessary time and iteration-cycles to come-up with a harmonised project design for all stakeholders.* Everyones buy -in is again needed to maintain a successful target course.
8. *Let all stakeholders confirm to have their top-management support for the project – only with this support an implementation after the pilot project is possible.* Above all, the high time commitment involved in a pilot project of such magnitude must also be accepted and approved so as not to jeopardize the desired output.

9. *Start your project with a common communication of all stakeholders and use the stakeholders' network to maximise the dissemination potential.* By doing so, you will magnify the success of your project outcome after the project ends and you will increase the success of your project results after the project is completed. Again, from DOMINO Upper Austria's experience, structured processes that are documented, filed, and made available to all stakeholders can be highly recommended. To promote dissemination, for example, paper submissions can be made at international conferences followed by a presentation.
10. *Keep the stakeholders on board during the project* – only with regular update meetings you can use the full power of all stakeholders. And do not forget – your project is normally not the only one and the most important one. Weekly or bi-weekly Jour fixe appointments can help to keep the regularity. In DOMINO Upper Austria, we had bi-weekly meetings 4 month before starting and during the complete pilot period. This is optimal for responding and reacting to short-term changes or current events, such as the Corona pandemic, especially when people are affected by the impact.
11. *Let the stakeholder help you during the pilot phases with their networks and expertise in communication with their customers and employees* – only a convincing communication can support a successful pilot phase. In our pilot at DOMINO Upper Austria, for example, we had a large Austria-wide network from ÖAMTC with their customers, as well as from ASFINAG with their customers. So, we were able to promote the app and the pilot launch well throughout Austria in the member magazines. MobiLab was also in close contact with Fluidtime and RISC to continuously develop the app in terms of user requirements.
12. *After the pilot phase, analyse the results and lessons learnt to discuss it with all stakeholders bilaterally and together in the group* – this is the basis for the real impact of your pilot project. In the case of DOMINO Upper Austria, the evaluations were carried out by the respective responsible stakeholders - this also means a time and personnel effort that should not be underestimated, and it is again important to coordinate with each other and share results.
13. *Define together with all stakeholders necessary next steps for research or deployment and especially bring the research results to a wider audience* – transparency of project results is the key for building trust in further MaaS-project steps. If there are any outstanding research or development issues, these can be addressed in a follow-on project.
14. *Bring the pilot results into a format to convince the top-management of all stakeholders of your approach* – only with clear messages and easy to understand benefits you can convince top managers to support you with your project ideas. This can lead to follow-up projects and synergies with other stakeholders or project partners or pave the way for implementing the deployed solution in the daily operation of MaaS stakeholder.

After this 14-steps to foster innovative multi-stakeholder MaaS-projects, we will provide some additional information on a few points, such as (a) the requirements of the players involved and the necessary networks, (b) the close cooperation with public transport providers which were decisive for DOMINO Upper Austria, (c) close cooperation with public transport providers a great advantage and (d) three years of DOMINO Upper Austria App project experience as a basis for further steps.

(a) Requirements of the players involved and the necessary networks

Identifying the real, actual requirements of stakeholders can be a success factor in specifying the offering of an app and thus taking the next steps in implementing or expanding the offering in MaaS. A common energy and language are a prerequisite for a successful and close cooperation. As an example of such a cooperation, the Regionalmanagement OÖ GmbH (RMOÖ) can be mentioned. RMOÖ is the regional development agency of the province of Upper Austria. As Upper Austria's competence center for regional development, it is the point of contact for communities, associations, institutions, and regional actors who want to implement initiatives to develop their region [RMOÖ 2022].

(b) RMOÖ is an important mouthpiece to communities and their citizens

The pilot project "Regional Mobility Management" was launched in September 2018 by the RMOÖ together with the Infrastructure Department of the Province of Upper Austria. The Mobility Managers act as a link between the province of Upper Austria, municipalities, businesses, and other actors in the field of local mobility. They support the municipalities in finding innovative and tailor-made solutions for the bridging the "last mile" in everyday mobility. In this context, the cooperation with the DOMINO project came into being. As a supporting tool for avoiding traffic jams, the app was presented to the municipalities, where it received very positive feedback and was supported in its use by the mayors. Because RMOÖ managers work closely with communities and their mayors, they know best about what citizens' needs and demands are. So, it was even more valuable to work with them in DOMINO.

(c) Close cooperation with public transport providers a great advantage

The OÖVG Transport Association Upper Austria can also be mentioned to be one of the central stakeholders. OÖVG is the coordinator, mediator, networker and contact for all public transport in Upper Austria, as well as the designer and commissioner for regional public transport services in the province. The legally anchored task is to ensure a qualitatively and quantitatively optimal offer of local and regional public transport for the population in Upper Austria in line with demand.

As the DOMINO app makes it possible to link each individual route with other mobility services, for example, a ride-sharing service can be used to cover part of the distance to the nearest train station and the subsequent routes can be mastered by public transport, bicycle, scooter, or on foot. These options can be perfectly combined with the public transport services of the OÖVG and support the use of these, which is why support for the project by the OÖVG was gladly given and very purposeful.

(d) Three years of DOMINO Upper Austria App project experience as a basis for further steps

The DOMINO project as part of the research, energy, and innovation program "Mobility of the Future", which is funded by the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK), developed a smart, intermodal mobility service [www.domino-maas.at 2022] in the past four years. The nationwide project is being tested in three pilot regions - Lower Austria, Upper Austria, and Salzburg. The DOMINO Upper Austria app is an offer for commuters in the central region of Upper Austria [www.domino-ooe.at 2022]. This offering for Upper Austria was supplemented with private rides in the DOMINO Upper Austria app in order to very specifically in a test area reduce congestion and increase the occupancy rate of private cars in a test area in Upper Austria. Achieving these goals required close collaboration with communities and businesses affected by commuter traffic. The close involvement of stakeholders can thus be named as a necessary step for the successful implementation of Maas.

After three years of preliminary work on the project, the app was developed, and the ideas associated with it were put into practice with the pilot in Upper Austria this March. The test period ran until the end of September, and the data collected from the users and the posted and shared journeys were evaluated, providing us with a deeper overview of the commuters needs, but also of the weak points that still need to be addressed. In total we counted: 1,700 app downloads, 1,400 offered rides by about 300 different users and about 6,000 route requests. The detailed results of the pilot phase are currently under review and will be published in a later stage.

As a further conclusion, three important points can be mentioned that are important for users to use the app:

1. there must be clear incentives (such as company parking spaces) or regulations, such as the possibility of only receiving the commuter allowance if trips are offered in the app.
2. the hurdle for users is often that they must take detours - a good network of transfer points can therefore be seen as a lever.
3. reliability must be given that one also comes safely back home. (Can I get to work and back home safely without my own car). This could be given by a carpooling guarantee.

Outlook

Once the project has ended and the entire pilot has been evaluated, the main objective of a possible follow-up project will again be to identify the real requirements of the app users. One of the core characteristics of MaaS is personalization where the objective is to provide individualized and tailor-made recommendations to each user based on his/her past behavior and preferences [Jittrapirom et al.]. In a published review from 2020 [Esztergár-Kiss et al.], the authors compared around 30 MaaS tools from 14 countries and concluded that given the importance of personalisation for increasing the acceptability of MaaS and promoting sustainable travel behaviour, future MaaS tools should be developed with the vision to improve this aspect for route recommendations. Accordingly, one of the main focuses will be on personalizing the app and storing the individual requirements of customers and tailoring the next search results to them.

Success factors for intermodal services.

Immediately implementable topics have already been implemented as part of the pilot project. Major or fundamental adaptation requests were collected and can/must be taken into account in further developments. Recognizing and meeting these requirements can be a success factor in taking the next step in MaaS.

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