ACTION PLAN FOR THE MAAS IMPLEMENTATION STRATEGY IN THE STYRIAN CENTRAL REGION (FUA GRAZ - AUSTRIA)

DELIVERABLE D.T1.2.3 ACTION PLANS FOR NEW INNOVATIVE LOW-CARBON MOBILITY SOLUTIONS & IMPROVED AIR QUALITY IN FUA	FINAL VERSION 05/2022

Project index number and acronym	CE1671 DYNAXIBILITY4CE
Lead partner	PP1 – Leipzig Transport Company (LVB)
Deliverable number and title	D.T.1.2.3 – ACTION PLANS FOR NEW INNOVATIVE LOW-CARBON MOBILITY SOLUTIONS & IMPROVED AIR QUALITY IN FUA
Responsible partner(s) (PP name and number)	PP13 – FUA: City of Graz PP4 – Redmint PP2 – RC
Project website	https://www.interreg-central.eu/Content.Node/Dynaxibility4CE.html
Delivery date	02/2022
Status	Draft
Dissemination level	Internal

Document history of revisions			
Date	**Name**	**Action**	**Status**
28/01/2022	Daniel Franco, Rupprecht Consult	Structure and brief content description	Template
28/02/2022	Magdalena Senger, City of Graz	Draft description of content	Draft version 1.0
30/03/2022	Magdalena Senger, City of Graz	Amendments	Draft version 1.1
14/04/2022	Magdalena Senger, City of Graz	Updating the content	Draft version 1.2
	Rupprecht Consult	Review	
	City of Graz (Transport Planning Department) / Holding Graz	Review	
	Magdalena Senger, City of Graz	Updating the content	Final version
20.05.2022	Anja Seyfert, Redmint	Final check	Final version

Development of action plans for new innovative mobility solutions & improved air quality in FUAs

The Dynaxibility4CE project (2020 - 2022) aims to prepare urban administrations and mobility operators more efficiently for current mobility trends that require dynamic and flexible planning in complex environments. New forms of mobility, such as Mobility as a Service (MaaS), changing ownership structures (sharing) and technologies (connected and automated driving) are increasingly blurring the classic boundaries between traditional mobility services and require new, integrated planning processes to ensure sustainable mobility in cities and urban regions. Therefore, the project develops strategies and tools for public transport authorities that strengthen planning capacities and thus the role of public transport as the backbone of an effective, low-emission mobility offer, thereby avoiding CO_2 emissions and thus contributing to improving air quality.

The Executive Office for Urban Planning, Development and Construction/EU-Unit coordinates the project participation of the City of Graz in coordination with the Department for Transport Planning. Within this framework, the City of Graz intends to advance the regional MaaS implementation strategy for the Styrian Central Region (FUA Graz). This includes the further development of the existing multimodal app 'GrazMobil' into a modern MaaS platform. The desired results are the reduction of motorized individual transport and the associated problems such as emissions, congestion and land consumption.

The present action plan for the regional MaaS strategy in the Styrian Central Region was developed based on studies and a stakeholder process. The aim was to check the feasibility, to set priorities, to define the target group and to determine measure packages. This action plan has a proposal character. Subsequently, it is necessary to coordinate the measures in the steering group, among others.

The following project activities contributed to the development of the action plan:

- D.T.1.2.1 - Scenario development for action plans in FUAs: In a workshop on June 30, 2020, the stakeholders involved (City of Graz, Holding Graz and Rupprecht Consult) decided to focus on the topic of 'MaaS incentive schemes.

- D.T.1.2.2 - Workshops for action plans' development in FUAs: In a stakeholder participation process, the focus was consolidated through regular meetings of the MaaS steering group and a thematic working group, and a feasibility study was conducted. Furthermore, initial conclusions for the model/operation in the Styrian Central Region were derived through a workshop in November 2021 on the topic of 'mobility flat rates' based on a presentation of best practice examples.

- D.T.1.1.2 - MaaS Topic Guide - Case Study Graz: In the SUMP 2.0 Topic Guides (MaaS Topic Guide), the Maas implementation process in Graz is presented as a case study.

Executive Summary

For several years, a MaaS strategy ('Mobility as a Service') has been worked on in the Styrian Central Region. It is planned to further develop the existing application 'GrazMobil' into a modern MaaS platform that combines various public and private mobility offers. Public transport plays a central role as the backbone of an effective, low-emission mobility service.

With a few small steps, more and more modules of the MaaS process are coming together. The continuous development of the concepts and their implementation is driven by the MaaS steering group, which is composed of various urban and regional stakeholders from public administration and transport companies. The project "Mobility as a Service for the Styrian Central Region", which has been financed from regional funds (StLREG 2018) since 2019 under the lead of Holding Graz also creates an important foundation. The project Dynaxibility4CE has additionally supported the MaaS process.

Connecting stakeholders and using all opportunities is considered central to MaaS implementation in the Graz region. The process must therefore be a dynamic and flexible one. It is also an aspiration to operate the MaaS platform publicly, thereby creating transparency and fairness.

The Styrian Central Region is a heterogeneous region. Therefore, the offer needs several components that can be flexibly combined with each other as needed in the sense of a modular system. In the entire implementation process and especially in the app development, the framework for a "mobility configurator" should therefore be taken into account.

In the MaaS implementation process, some preparatory steps for the technical implementation have already been taken. In addition, a usability test of the existing app GrazMobil was conducted in the course of the Dynaxibility4CE project to improve the customer experience and user satisfaction. For this purpose, users conducted specific use cases in order to identify occurring problems. Based on the findings, recommendations for further development were derived.

The individual needs of the population in Graz and the residents of the Styrian Central Region are central to the entire MaaS strategy process, because the mobility offers and the MaaS platform are to be designed in such a way that they meet the needs of the potential customers. Therefore, target groups were defined, and a user analysis was carried out in the course of Dynaxibility, from which possible elements for a MaaS-offer were derived.

The MaaS implementation process in the Styrian Central Region is based on three pillars: 'Technical implementation', 'User needs' and 'Organizational structures'. Therefore, the present action plan also puts together measures' packages on these levels. For each package of measures, actions have been defined that provide orientation for the subsequent process:

In the area of technical implementation, the in-depth integration of public transport, as the backbone of the MaaS app, has top priority. This is followed by the in-depth integration of tim, GUST Mobil and Taxi.at (in this order).

With regard to users, it is important to continuously focus on their needs, which is why a further survey with a focus on ride pooling is one action. A central next step is also to establish test regions. Cooperation with ITS Austria is recommended here. Target group-specific communication measures represent another action in this area.

MaaS implementation also requires preparation of organizational structures and capacity building. Also in this area lies the issue of financing. Therefore, on the one hand, additional human resources need to be built up, and on the other hand, awareness needs to be raised and convincing efforts need to be made among financiers and the responsible politicians.

1. Introduction

The city of Graz wants to use the new digital possibilities to create attractive, sustainable mobility solutions that respond even better to the individual needs of the FUAs residents.

For some years now, the concept of 'Mobility as a Service' has been elaborated in the light of these developments. It envisages combining various public and private mobility offerings in a single platform. In this sense, the term 'integrated mobility' is often used. According to the working group 'MaaS made in Austria', 'Mobility as a Service' is understood as follows:

> "Mobility as a service (MaaS) is a user-oriented, intermodal service that claims to complement the offerings of existing mobility providers in all modes within the core components of
>
> - intermodal travel information and
> - Use of the travel offer in consideration of
> - Booking, reservation, payment and billing
> - Including new forms of mobility (e.g. sharing mobility)
>
> to a large extent in an integrative service (e.g., as a one-stop shop principle) and at the same time act as a basis for new services."[1]

In this sense, the existing multimodal app 'GrazMobil' is to be further developed into a modern MaaS platform with public transport as its backbone. The desired results are the reduction of motorized individual transport and the associated problems.

The city of Graz is not considered isolated, but linked to its surrounding region. Therefore, the MaaS strategy is planned for the entire functional urban area - the Styrian Central Region (see figure 1). The area links the state capital with its suburbs and rural communities in the districts of Graz-Umgebung and Voitsberg.

MaaS development in the Styrian Central Region is a regional, dynamic process involving various actors at different levels. The MaaS steering group brings these levels together and guides the process. In stakeholder workshops and thematic working groups, focus points were elaborated. A feasibility study on mobility flat rates examined the set focus. Further insights were gained by conducting studies on user experience and target groups.

On this built-up basis, this action plan shows the distinct objective of the MaaS implementation strategy for the Styrian Central Region and defines the further course of action (incl. planning of measures, tools, capacity building and institutional structures).

2. Planning and policy framework

Urban/regional planning principles and transport policy

In Styria, the car is the predominant means of transport. 66 % of all trips are made by private motorized transport[2]. Especially in the metropolitan area around the city of Graz and at rush hours, the capacities of the existing traffic systems are exhausted - with the well-known consequences of noise, emissions and traffic jams.

According to the latest mobility survey in Graz (2018)[3], motorized private transport has the highest share of all trips (42%), followed by public transport (20%) and walking and cycling (19% each). The long-term observation shows a decreasing trend of walking, which, however, stabilized recently. In terms of a trend reversal in Graz's transport policy, the increasing rise in bicycle traffic is particularly positive. Since 2013, the share of private transport has decreased significantly in favour of active forms of mobility. However, public transport shares have stagnated since 2008.

The Transport Policy Guideline 2020 and the Mobility Concept 2020 together form the Mobility Strategy of the City of Graz[3] . These and the regional transport concept[4] Graz and Graz-Umgebung serve as the basis for the planning for the FUA Graz.

In its transport policy, the city of Graz focuses on sustainable, soft mobility, short distances and cooperation within the Styrian Central Region. Since Graz is closely interwoven with its surrounding region and traffic does not stop at the city limits, the future mobility strategy must be coordinated across regions and levels.

In accordance with the mobility strategy, public transport must be actively strengthened as the backbone and supplemented with multimodal offers (e.g. tim – multimodal transport hubs). The overriding goal is to create a diverse, fair mobility offer for the region that is adapted to individual needs in order to promote independence from the private car.

Strategic Process:

Already within the Interreg CE project SOLEZ (2016-2019), a strategic MaaS multi-stakeholder process for the Styrian Central Region was initiated by the City of Graz (representing the Department for EU Programs and International Cooperation and the Department for Transport Planning in cooperation with the Regional Management Styrian Central Region. The project "Mobility as a Service for the Styrian Central Region" (2019-2022, annual programs of the regional budget, project partners: Holding Graz, Regional Management Styrian Central Region, Transport Association Styria) together with the specially established steering group also creates an important basis for the continuous development of MaaS concepts and their implementation.

The project Dynaxibility4CE supported the regional process for implementing Mobility as a Service. It was possible to build on research results of these previous works.

In the preceding process, as already mentioned, important stakeholders were identified who have formed the MaaS steering group since 2020. It is composed of members of the city of Graz (transport planning/urban planning), the county, urban and regional transport operators as well as regional development agency.

One of the main tasks of the steering group is to develop a MaaS strategy with the further development of existing digital products and the development of new offerings.

3. Key results and findings

In interactive workshops with stakeholders and thematic working groups, possible components of a MaaS application were defined. External contractors checked the user-friendliness of the existing app and defined target groups and their mobility needs.

The following is a summary of the main analyses, results and conclusions from the Dynaxibility4CE project.

User Experience Evaluation of the multimodal app 'GrazMobil

For this study, the contractor FH Joanneum conducted eight user tests to identify usability problems of the application 'GrazMobil'. Based on the findings, recommendations (see figure 3) were derived. The users already find some of the app's features very attractive and helpful (ticket purchase, information on timetables, zones and ticket validity. The map used for the overview is also very intuitive and easy to use. There is room for improvement in terms of accessibility of the app as well as language settings. An autosave function (saving the data to the user account) could save time. The icons could be made even more understandable and appealing. In addition, only the most important information should be presented on the display in the simplest way possible.

Currently, other mobility services cannot be used in the app. The user analysis has shown that there is a desire to combine all the services offered in one app and also to include the purchase of tickets from other mobility services (e.g. car sharing, bicycle rental, etc.).

The objective of further developing the app 'GrazMobil' into a multimodal MaaS app in which all offers are bundled was thus confirmed. However, the user-friendliness should be continuously improved. The results of the evaluation can be used for this purpose.

Feasibility study for the implementation of mobility packages in the Styrian Central Region*

*with financial support of Holding Graz and regional funds within the StLREG2018; project "Mobility as a Service for the Styrian Central Region".

In some European cities, Mobility as a Service offers are being made more attractive to users through incentives and so-called 'mobility flat rates' or 'mobility packages'. The international pioneer is the Finnish company MaaS Global, which has broken new ground with the app 'Whim' and offered unlimited mobility flat rates in Helsinki, for example.

These developments were taken as an opportunity to examine this concept in more detail. In coordination with the MaaS steering group, a working group consisting of three stakeholders (Holding Graz, City of Graz (EU-Unit), Regional Management Styrian Central Region and Quintessenz organizational consulting) was formed to conduct a feasibility study on the focus topic 'mobility packages'.

In order to transfer the results of the research to the Styrian Central Region, three internal workshops were held with the members of the working group and a representative of the MaaS steering group.
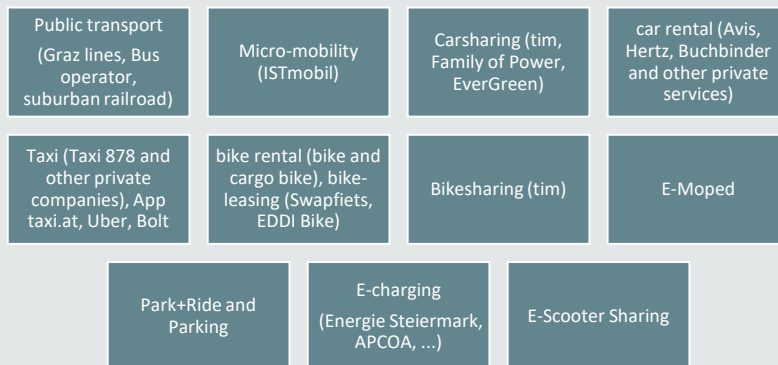
The lessons learned from the feasibility study can be summarized as follows:

- Flexibility and target group orientation are important success factors. Online configurators, such as SBB Green Class, are very user-friendly and enable users to design/configure an individual mobility product.

- A MaaS platform is only as good as its mobility services. The MaaS platform must be an alternative to private car use.

- Mobility packages have the potential to attract new customer segments. In Augsburg, a quarter of all mobil-flat users are new customers who previously had neither a public transport card nor a car-sharing subscription.

- Mobility packages are made up of various components. Public transport and car sharing are two very popular components. Public transport is seen as the backbone of the system. In addition to public transport and car sharing, cabs, car rental and charging stations for e-vehicles are also popular components of mobility packages.

- Many mobility packages are innovative and new products - but they still lack high demand. Two out of four case studies have fewer than 1,000 users. Only Whim in Helsinki is a positive exception.

The Styrian Central Region is a heterogeneous region. Therefore, several building blocks are needed, which can be flexibly combined with each other in the sense of a 'building block principle', depending on the needs. The following eleven offers were identified as potential cornerstones of a mobility flat rate in the Styrian Central Region (Graz, GU, Voitsberg):

Public transport (Graz lines, Bus operator, suburban railroad)	Micro-mobility (ISTmobil)	Carsharing (tim, Family of Power, EverGreen)	car rental (Avis, Hertz, Buchbinder and other private services)
Taxi (Taxi 878 and other private companies), App taxi.at, Uber, Bolt	bike rental (bike and cargo bike), bike-leasing (Swapfiets, EDDI Bike)	Bikesharing (tim)	E-Moped
	Park+Ride and Parking	E-charging (Energie Steiermark, APCOA, ...)	E-Scooter Sharing

The members of the working group cannot recommend 'the one mobility package' due to the heterogeneity of the Styrian Central Region and the multitude of MaaS target groups or their individual needs. Instead, it is recommended to offer a modular system based on the examples of Whim, UbiGo and SBB Green Pass.

Workshop mobility packages

In November 2021, a stakeholder workshop on the topic of 'mobility packages' was held, where the FUA Graz could learn from the presented best-practice examples: the individually configurable mobility subscription 'SBB Green Class' and the 'ABO Flex' tariff model of Leipzig's public transport company.

The customers were the focus of the examples presented. One conclusion was therefore to learn more about the users and their needs through surveys (questionnaires/interviews). Another finding is the need of a certain start-up mentality and culture of innovation. In addition, the decision-makers need to be more involved and feel responsible.

Study "MaaS comprehensible and target group oriented"

As part of the overall MaaS strategy process, MaaS target groups are to be defined. The mobility offers and the MaaS platform are to be designed in such a way that they meet the needs of potential customers. Therefore, a user analysis was conducted as part of the ongoing MaaS process.

The contractor FH Joanneum together with the subcontractor Quintessenz analyzed the mobility types of the Styrian Central Region in a detailed study and collected possible elements for the offer of a MaaS app. This study included an online survey and in-depth interviews with some of the participants. The study was supported by the regional management agency of the Styrian central region (Regionalmanagement Steirischer Zentralraum), which financed the in-depth interviews in the district of Voitsberg from regional funds (StLREG2018).

Despite the high level of participation (with 1211 participants in the FUA Graz), it must be pointed out that the survey (both quantitative and qualitative) is not representative.

Some of the key findings are described below, along with the mobility types and target-group-specific modules as an offer of the MaaS-App.

In the mode of transport choice, **time** is in the most important decision factor and relevant in all age groups. Furthermore, more than half of the participants stated **reliability**, **flexibility** and **independence**. For more than a third it is important, that the mode of transportation can be reached quickly (short walk). Environmental friendliness, cost (cheaper than the other alternatives) and ease of use are also relevant for some users.

Nonetheless the decision factors depend on the respective route and also the means of transport and are therefore not necessarily generalizable (for example: the demand for comfort increases with the duration of the trip, safety becomes more important when children travel along, or for bicycle routes the weather is very relevant).

A large number of comments regarding modes of transportation dealt with timing/frequency of public transport, especially in rural areas, at weekends and at off-peak times, but also with taking luggage, bicycles or dogs. Some comments also dealt - particularly relevant for MaaS - with linking different modes of transport or the use of apps: "better connection between bus/tram/micro-mobility or parking for private cars to make better use of public transport", "complicated booking and payment systems keep me from using", "Good information on one platform is important", "convenience is important (designers should use their products themselves"

A large proportion of respondents use smartphone apps as an information channel for mobility topics, followed by search engines and websites. For information on regular routes, **BusBahnBim** is the app most used by participants followed by ÖBB apps and navigation apps. Less than a fifth of the respondents use GrazMobil (note: it is a comparatively young application). Bike apps, car apps, the tim app and ISTmobil have lower shares. Established apps that have a broader geographic and, in some cases, mobility type scope seem to be more popular.

Mobility types and possible modules for a MaaS-offer:

Mobility types	Possible modules for offer
Main target groups	
'Families on the move'	• Tool for a night shuttle service • Possibility of reserving bike storage in suburban trains and regional buses
'Young calculators'	• Leisure platform • Fare calculator • Carpool tool
'Net-mobile individuals'	• Bike/pedestrian routing (+child safe connections) • Online registration for tim
Target groups with alternating potential	
'situation-based decision-makers'	• Intermodal integration of micro-public transport • Intermodal Park&Ride Routing • Possibility of reserving bicycle storage in suburban trains and regional buses
'car fans'	• Parking space finder • Carpool tool
Integrated use of all available offers is the basis and relevant for all target groups.	

The aim of the study, in addition to working out the target groups, was to prepare measures to communicate the MaaS-process and the resulting offers in a comprehensible way.

For this, Factsheets were designed that aim at three different target groups:

- Potential users of the MaaS platform in the Styrian Central Region

- Decision-makers in the House of Graz (consisting of Graz city administration and municipal companies) and in municipalities of the Styrian Central Region

- Representatives of transport companies, the Styrian Transport Association and the regional authorities of the State of Styria

In addition to the target group-specific factsheets, a general information sheet was created. The factsheets are listed in the Appendix.

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4. Action Plan towards MaaS in the Styrian Central Region

Maas Implementation Strategy - Objectives:

- ➤ **Low CO₂ mobility in the FUA Graz**
  The overarching goals for the functional urban area of Graz are derived from the Mobility Strategy of the City of Graz and the Regional Transport Concept, which envisage a shift in the relationship between motorized individual transport and environmentally friendly mobility. The goal is not to restrict the mobility of the population living in the urban region, but to shift the shares of motorized individual transport to public transport, cycling and walking.

- ➤ **Changed mobility behavior through MaaS**
  The users are at the center of MaaS. They should be offered a variety of mobility options and the use and combination of different means of transport should be facilitated. By providing users with the appropriate information, it is possible to encourage them to choose the most sustainable mobility solution. The goal of MaaS is therefore, amongst others, to promote a change of mind and to positively influence mobility behavior[5]

- ➤ **Cross-regional cooperation**
  A regional MaaS implementation strategy is sought by involving relevant local and regional stakeholders. The intention is to connect systems across the region (interoperability)[5]

- ➤ **Bundling of all mobility offers**
  A distinct goal is the further development of the existing multimodal platform 'GrazMobil' into a modern MaaS platform (with public transport as the backbone). All information as well as routing, booking and ticketing will be combined in one app in order to provide users with the easiest possible access to all mobility services.

- ➤ **Demand-oriented offer and target group-oriented communication**
  The MaaS-offering must be geared to the needs of the users. The goal is to enable target-group-specific service packages or modules. In addition, the different target groups should be systematically addressed and MaaS made comprehensible to them.

- ➤ **Dynamic process**
  MaaS implementation is a dynamic process and should be flexible as well as adaptively evolve with people's needs.

Scenario development of MaaS implementation:

In the initial phase of the project Dynaxibility4CE, a discussion took place about different scenarios and potential modules on which Dynaxibility4CE should focus. Finally, the stakeholders involved (City of Graz, Holding Graz and Rupprecht Consult) decided to choose the topic "MaaS incentive systems" for the further scenario development of the FUA Graz. Due to the heterogeneity of mobility needs in the Styrian Central Region, the appointed working group recommends in this sense the implementation of individual combination tariffs based on a **'mobility configurator'**. In view of this decision, this action plan focuses on the MaaS implementation process with the mobility configurator as a basic framework.

General success factors of MaaS implementation[5]:

- Joining forces: Cross-regional MaaS solutions.
- Policy, regulation and legislation: framework conditions at national and EU level.
- Transparency and data sharing: A MaaS ecosystem is based on transparency and data sharing, so all players in the ecosystem should provide and share data digitally and in a non-proprietary format.

- Awareness of MaaS and readiness for MaaS within the population: The introduction of MaaS requires a solid communication strategy. It is also important to involve citizens in order to understand the needs and desires of users (tailored offer models for target groups).
- Transport services and infrastructure: Public transport, together with active mobility solutions such as walking and cycling, forms the backbone of any MaaS implementation. A MaaS solution does not replace the necessary investments in public transport or infrastructure.
- Create a one-stop shop for MaaS and mobility stakeholders.
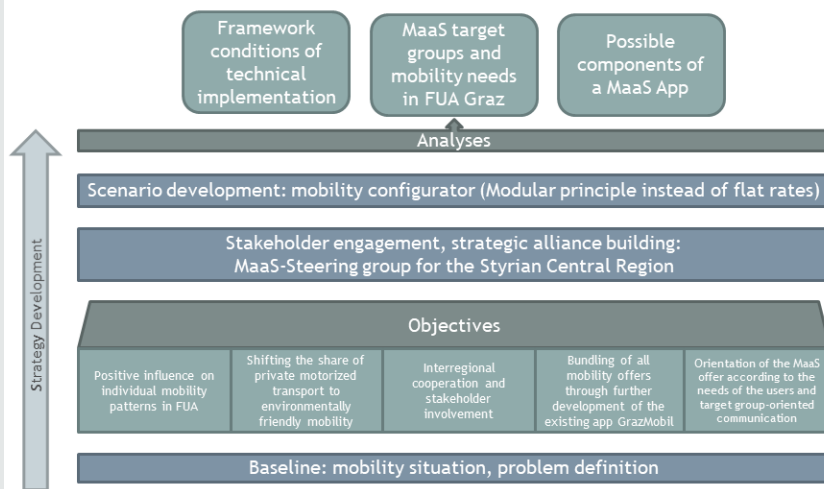- Promote and support cooperation between stakeholders at different levels and between all stakeholders.

Challenges in the FUA Graz planning region:

- Regulation:
  - Data sovereignty: issues of data management, analysis and data protection
- Organizational and Governance:
  - Clarification of the question of the operator of a MaaS platform (objective: public sector)
  - Elaboration of fair and transparent conditions for access to the MaaS platform
  - Multi-level governance for MaaS implementation in a regional context
  - Establishing political consensus with the new city government elected in September 2021
  - Several steps need to be considered and planned in advance, e.g. preparation of contracts with external mobility service providers
- Infrastructure and technical development:
  - A dynamic MaaS ecosystem that requires an agile methodology to address this challenge
  - Lack of definition and implementation of standard digital interfaces/lack of standardization of data
- Social:
  - "Mobility as a Service" (MaaS) is an abstract term - there is no unified image of a MaaS concept among the population of Graz. This makes target group-specific communication measures all the more important. The implementation of the MaaS study to identify target groups is therefore an important step in the regional MaaS process.
  - Risk of shift to the car as a means of transport
- Funding
  - High costs for platform construction
  - Running costs for the operation
  - Establishment of additional human resources necessary
  - Raising awareness and convincing financiers/responsible policy makers.

Particularly challenging are the still missing Austria-wide IT structures, such as uniform standard interfaces for the integration of sharing and ridepooling offers in order to be able to interoperably integrate different offers as quickly and uniformly throughout Austria as possible. This would combine the regional development of offers with Austria-wide linkage - regardless of who the platform operator is. In addition to the one-time investment costs, the high running costs of future networked IT systems also represent a challenge for MaaS initiatives in Austria.[6]

Preparatory steps for the action plan

Framework conditions of technical implementation	MaaS target groups and mobility needs in FUA Graz	Possible components of a MaaS App

Analyses

Scenario development: mobility configurator (Modular principle instead of flat rates)

Stakeholder engagement, strategic alliance building:
MaaS-Steering group for the Styrian Central Region

Objectives

Positive influence on individual mobility patterns in FUA	Shifting the share of private motorized transport to environmentally friendly mobility	Interregional cooperation and stakeholder involvement	Bundling of all mobility offers through further development of the existing app GrazMobil	Orientation of the MaaS offer according to the needs of the users and target group-oriented communication

Baseline: mobility situation, problem definition

Strategy Development

Main target groups of a MaaS app in the Styrian Central Region:

„Families on the move"	• characterized by complex, combined routes • affinity for new mobility offers, such as charsharing • role model function
„Young calculators"	• characterized by high public transport use and selective car use • most digital mobility type (already uses GrazMobil app) • important to create incentives to maintain the group
„Net-mobile individuals"	• characterized by stable use of the environmental-friendly transport modes • affinity for sharing, satisfaction with new mobility offers • car abandonment, therefore dependent on availability of public transport/bikes • this group should be rewarded (appreciation)
„Situation-based decision-makers"	• characterized by flexible mobility • different combinations of means of transport • however, new mobility offers hardly play a role due to car availability

Possible components of the MaaS app:

Target-group oriented components of a MaaS app (possible modules)

Intermodal park & ride routing that finds the optimal transfer point depending on the traffic situation	Easy online registration for all offers (carsharing, on-demand services, etc.)	Tool for a night shuttle service	Fare calculator
Leisure platform with information about destinations in the surrounding area of Graz	Carpool tool	Bike routing (safe and fast connections)	Footpath routing
Reservation option for bike transport in regional trains and buses	Usage Incentives		

Basis: Integrated use of all available offers (public transport, car sharing, …) - fully integrated up to booking and payment

The three pillars of MaaS-Implementation in the FUA Graz:

Three pillars of MaaS-Implementation in FUA Graz

technical implementation	User needs	organizational structure
• extension of the app "GrazMobil" to include further modes of transport • implementation concepts form the basis • framework condition of the technical adaptation: "mobility configurator" • in-depth integration of public transport services • integration of "tim" (carsharing) • integration of further specific mobility modules according to needs	• users are centerpiece of the MaaS strategy → Further elaborate target groups & Further survey of needs • further development of the offer in line with demand • pilot implementation in test regions • targeted communication of the service • incentives for users through a combination of fares, special offers and user benefits	• capacity building • establish intelligent organizational structures • political commitment and support • coordination/agreement with other authorities → administrative units of the city of Graz in cooperation with transport operators and regional actors • define main responsibilities • basic funding • orientation towards framework conditions at federal and EU level (national integration with regard to ITS Austria)

Packages of measures and actions:

Measure Package 1: Technical implementation		
Action 1	In-depth integration of public transport	Public transport forms the backbone of the MaaS app, which is why the in-depth integration of public transport is the measure with the highest priority. In addition to the far-reaching information including real-time data, the standard tickets can already be booked directly in the existing app (hourly tickets/daily tickets/weekly tickets). A season ticket for students (Top-Ticket) can also be booked. The next step is thus the technical integration of annual and half-year tickets.
Action 2	In-depth integration tim	Based on the public transport in-depth integration, the next step is to focus on the integration of the most important additional mobility services: tim (multimodal mobility hubs incl. carsharing), GUST mobil (micro mobility) and TaxiAT (Austria-wide cab app with special focus on rural areas) - in this order. In the case of tim, the integration must be carried out for all locations in the Styrian Central Region (Stage 1 - POI).
Action 3	In-depth integration GUST Mobil	Preparatory steps have already been taken: The click dummy for the user interface design of 'GrazMobil' with the integration of further offers such as tim, GUSTmobil, VOmobil, Taxi, etc. has been created and adapted to the needs. With this, a picture was drawn in which direction the app development should go from the user interface point of view. The technical concept for making tim, GUSTmobil and Taxi.at bookable in 'GrazMobil' has been created.
Action 4	In-depth integration taxi.at	
Mobility configurator is the basis of all considerations and represents the framework condition for app development.		

Package of measures 2: Users		
Action 1	Further surveys	The users and their needs are the focus of MaaS, so further surveys of potential user groups will provide insights for future service design. The focus topic that will be investigated next is ride pooling. Previous analyses have shown that there is a need for a ride pooling tool. The

		potential for such an application will now be surveyed in further interviews.
Action 2	Pilot testing	Test regions have already been defined in the Styrian Central Region (see figure 2). A pilot implementation could be the next step. Here, the focus should be on specific offers for the defined target groups.
		The results of the user analysis show, with which offers which target groups, are likely to be addressed. Cooperation with ITS Austria is recommended for testing in pilot regions, so the "MaaS made in Austria" ecosystem can be tested and validated. This can be followed by a gradual roll-out.
Action 3	Information/awareness raising	"Mobility as a Service (MaaS)" is an abstract term - there is no consistence image of a MaaS concept among the population of Graz. Therefore, target group specific communication measures are all the more important. The Fact Sheets designed in Dynaxibility4CE should be used as a communication aid.
		Information about the MaaS project could additionally be provided via a website. Awareness raising in general should take place in advance (for the existing mobility apps).

Package of measures 3: Organizational structures		
Action 1	Preparation of organizational structures for MaaS implementation	The public sector should be the operator of a MaaS platform in the Styrian Central Region to ensure fairness and transparency. This requires organizational structures and capacity building. To achieve the goal, there will be a lot of need for coordination with other actors.
		The organizational process and all organizational steps for the integration of external mobility providers have already been defined.
Action 2	Funding	Setting up a MaaS platform involves high costs. In addition to the one-time investment costs, the high running costs of future networked IT systems also represent a challenge for MaaS initiatives. It is therefore necessary to build up additional human resources on the one hand, and to raise awareness and convince

		financiers/the responsible politicians on the other.

The next general steps (short, medium and long term):

Next steps

Short-term	Determination of the further procedure in the steering group
	Further analysis of target group-specific offerings: Where could the greatest effects be achieved?
	Cost-benefit analysis
	Prioritize implementation phases (if possible)
	Integration of most-important transport modes into app „GrazMobil" (tim)
	Potential analysis ridesharing model
Medium-term	Break down measure packages into specific implementation steps
	Increase the number of people using carsharing
	Establish ridesharing model
	Cooperation with ITS Austria as a model region for MaaS
	Development of a MaaS campaign
Long-term	Continuous expansion and improvement of the offer (e.g. bikesharing)
	Gradual integration of other modes of transport into the app based on needs
	Payment function for intermodal trips
	Implement mobility configurator

5. Conclusions and recommendations for innovative low-carbon mobility planning In FUA

Many preparatory steps have already been taken for a MaaS in the Styrian Central Region. The step-by-step approach has (gradually) put together many small individual components in the MaaS implementation process. However, there are also some barriers to overcome. One challenge, besides the technical development itself (especially due to the still missing Austria-wide IT structures), is the financing. For the high costs - both the investment costs for the technical solution and the running costs of operation - a sustainable solution must be found in the future. So far, funding programs have provided a good opportunity. Pooling all the forces in the region has also proved successful. For the continuous development of the MaaS process, all stakeholders should continue to be involved in the future. On the one hand, it is promising to bring together the urban and regional actors (in the areas of public administration/transportation companies), and on the other hand, the needs of future users should continue to be the focus in order to further develop the service in line with demand. Another important objective is that the public sector should be the operator of a MaaS platform in order to provide a fair and transparent offer. It is also recommended that the MaaS process continue to focus on the three pillars of "technical implementation," "user needs," and "organizational structures.

6. Dissemination and exploitation plans

The action plan is to be presented in various panels. The presentation in the MaaS steering group is the first important step. Thereupon, the further procedure can be determined. Furthermore, e.g. the Austrian Association of Cities and Towns (Städtebund) could be a suitable framework for an exchange.

In addition, the topic should be brought to the attention of politicians, which also means an important contribution to raising awareness and convincing the responsible politicians.

The third component is to communicate the project to the public. First, however, an understanding of MaaS is needed. The fact sheets produced as part of the project provide a communication aid that is suitable for the target group.

Annex

Figure 1: FUA Graz: Styrian Central Region, source: Regionalmanagement Steirischer Zentralraum
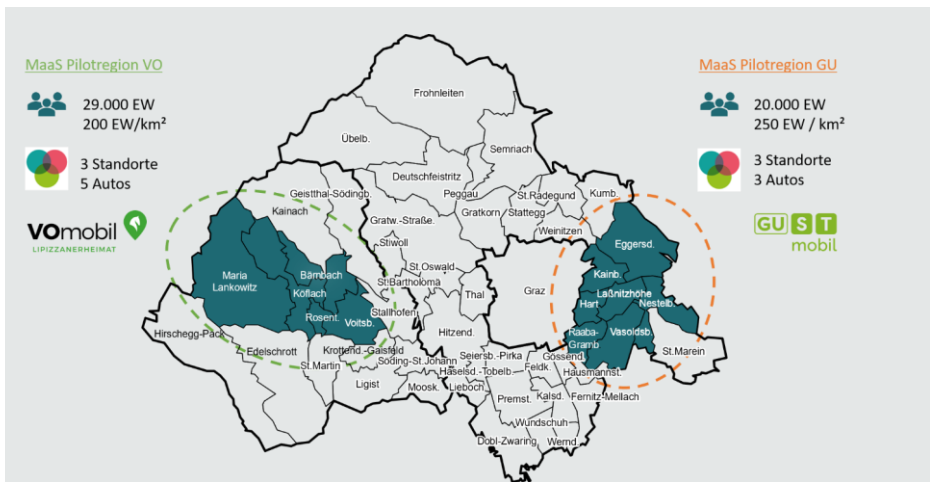
Figure 2: MaaS pilot testing regions, source: Regionalmanagement Steirischer Zentralraum
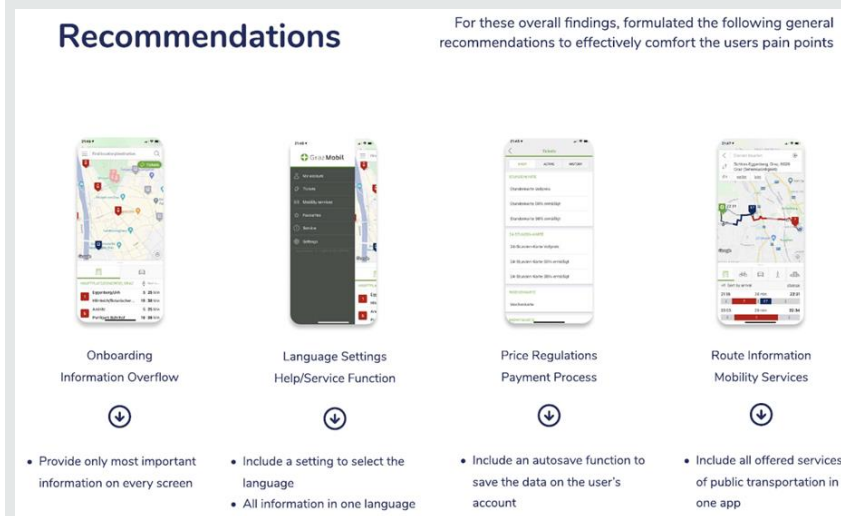

Figure 3: User Experience Evaluation – Recommendations for further development of the existing app 'Graz Mobil', source: FH Joanneum

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