SEAMLESS SHARED URBAN MOBILITY

Guidelines for successful integration of new and shared modes into SUMPs

Project deliverable D5.6

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Project Executive Summary

The objective of the SUM project is to transform current mobility networks towards innovative and novel shared mobility systems (NSM) integrated with public transport (PT) in more than 15 European Cities by 2026, reaching 30 by 2030. Intermodality, interconnectivity, sustainability, safety, and resilience are at the core of this innovation. The outcomes of the project offer affordable and reliable solutions considering the needs of all stakeholders such as end users, private companies, public urban authorities.

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Deliverable executive summary

Deliverable 5.6, developed under the leadership of POLIS within Work Package 5 (WP5) of the Seamless Shared Urban Mobility (SUM) project, focuses on integrating new cooperative and co-created shared mobility business model approaches into sustainable urban mobility planning processes (SUMPs). These approaches refer to the main business activities and associated push and pull measures relating to the mobility innovations implemented in the nine Living Labs of the project (in Rotterdam, Krakow, Fredrikstad, Jerusalem, Munich, Coimbra, Geneva, Larnaca and Penteli). These approaches are based on the business activities identified in Deliverable 5.4, which builds on the theoretical and structural foundation established in Deliverable 5.3. This report establishes guidelines for successfully integrating new and shared modes into SUMPs based on the SUM project's learning and findings.

The main contributions include:

- a systematic integration framework that bridges shared mobility modes, enablers and policy objectives across SUMPs' thematic scopes.
- practical business model packages that combine shared mobility solutions with strategic push and pull measures (e.g. congestion charges, parking restrictions, mobility hubs, MaaS integration and dynamic pricing).
- phase-by-phase integration guidance that is aligned with the 12-step SUMP methodology.
- evidence-based best practices from SUMP Living Labs and stakeholder insights.
- validation through a dedicated workshop at the Barcelona Smart City World Expo 2025.

In summary, Deliverable 5.6 provides a SUMP-like, step-by-step planning guide for the successful integration of business model approaches. It is a guiding document on integrating shared mobility approaches into SUMPs, with a particular focus on making urban mobility ecosystems more cooperative, co-created, technology-driven, accessible and human-centred. The work carried out in this deliverable lays the foundation for evidence-based policy recommendations for the transferability of successful new shared mobility solutions across urban areas in Europe.

Key words

New and Shared Mobility, Public Transport, Innovation, Mobility Planning, SUMP

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List of abbreviations and acronyms

Acronym	Meaning
APIs	Application Programming Interfaces
BA	Business Activity
B+R	Bike and Ride
BRT	Bus Rapid Transit
BSS	Bike-sharing scheme
DRT/ODM	Demand Responsive Transport/ On-Demand Mobility
EC	European Commission
EU	European Union
FUA	Functional Urban Area
GA	Grant Agreement
GTFS	General Transit Feed Specification
ICT	Information and Communication Technology
IT	Information Technology
KPI	Key Performance Indicator
LL	Living Lab
LRT	Light Rail Transit
MaaS	Mobility as a Service
MCDA	Multi-criteria decision analysis
MoU	Memorandum of Understanding
NSM	New Mobility Services
PT	Public Transport
PTA	Public Transport Authority
PPP	Public private partnership

RET	Rotterdamse Elektrische Tram (Rotterdam Electric Tram)
SUM	Seamless Shared Urban Mobility
SULP	Sustainable Urban Logistics Planning
SUMP	Sustainable Urban Mobility Plan
TEN-T	Trans-European Transport Network
WP	Work Package

1 Introduction

Urban mobility in Europe is undergoing a significant transformation, shaped by rapid technological advancements, evolving infrastructure, and ambitious policy and regulatory reforms. While European countries benefit from mature transportation systems and a strong orientation towards active and smart mobility, persistent challenges remain. Passenger cars still account for more than 80% of total passenger kilometres travelled on average, resulting in elevated emissions, urban congestion, and inefficiencies across the transport network (Eurostat, 2024). These conditions highlight the urgent need to accelerate the transition toward sustainable, multimodal, and user-centric mobility systems.

The Horizon Europe project SUM – Seamless Shared Urban Mobility—developed in response to these systemic challenges—aims to increase the competitiveness and adoption of shared mobility solutions across European urban areas. SUM's approach focuses on developing and testing technological innovations, co-creation methodologies, and supportive policy instruments that reduce the appeal of car ownership and increase the acceptance of new and shared mobility modes. At the core of the project are nine Living Labs (Rotterdam, Krakow, Fredrikstad, Jerusalem, Munich, Coimbra, Geneva, Larnaca, and Penteli), where a diverse array of push and pull measures is being deployed to encourage behavioural change and enable a modal shift towards shared and sustainable transport options.

A critical element of SUM's ambition lies in creating robust, transferable shared mobility business model approaches that underpin the operational sustainability of shared mobility services. Deliverable 5.6, developed under the leadership of POLIS within Work Package 5 (WP5), addresses this objective by focusing on the integration of cooperative, co-created shared mobility business models into Sustainable Urban Mobility Plans (SUMPs). These business models build on the conceptual and empirical insights gained from earlier project deliverables (notably D5.3 and D5.4) and aim to support cities in embedding shared mobility innovations within established urban mobility planning frameworks.

Through the lens of the SUM project's Living Lab experiences, Deliverable 5.6 identifies key shared mobility business models and presents them in a structured, SUMP-compatible format. Business model approach packages are integrated into each of the four SUMP phases, aligned with the 12-step SUMP methodology, and with SUM's living labs' best practices. Expert interviews conducted under Tasks 5.3 and 5.4 further inform the deliverable by capturing the enablers and barriers to integration as experienced by stakeholders both inside and outside the SUM project.

Ultimately, Deliverable 5.6 offers a practical, evidence-based planning tool for cities aiming to foster more cooperative, accessible, technology-enabled, and human-centred urban mobility ecosystems. It also serves as the foundation for future policy recommendations and capacity-building workshops, supporting the transferability of successful shared mobility solutions across Europe.

1.1 Purpose of this deliverable

The objective of this deliverable is to provide a SUMP-like step-by-step planning guide for facilitating the integration of new and shared mobility approaches into sustainable urban mobility planning, based on the key learnings and findings of the SUM project. This guide will focus on the integration of new shared mobility business model approaches emerging from the mobility innovations tested in the SUM project's living labs (Rotterdam, Krakow, Fredrikstad, Jerusalem, Munich, Coimbra, Geneva, Larnaca, and Penteli) into the SUMP planning process. The aim is to make mobility ecosystems in European cities and beyond more cooperative, co-created, technology-driven, accessible, and human-centred by identifying the key planning elements and activities needed to successfully achieve seamless urban transportation.

The guide targets policymakers and practitioners to facilitate the transferability of new shared mobility business approaches across European cities, emphasising how they can be successfully integrated into the SUMP planning process to achieve seamless urban mobility. The guide will serve as the basis for two SUMP workshops for SUM cities and follower cities, where the cities will design SUMP-proof shared mobility policy plans. Finally, this guide, further complemented with expert interviews conducted in tasks 5.3 and 5.4, will be the basis for SUM's policy recommendations aiming at the transferability of successful new shared mobility solutions across urban areas in Europe.

1.2 Intended audience

Deliverable 5.6 is intended to reach a wide range of stakeholders engaged in sustainable urban mobility planning and the implementation of innovative shared mobility solutions across European cities. The primary target audience includes:

- **Local and Regional Policymakers:** Particularly those responsible for the development and implementation of SUMPs. This group will benefit from the updated SUMP topic guide, which provides a structured methodology and practical tools for integrating cooperative, co-created shared mobility business model approaches into each phase of the SUMP process.
- **Transport and Mobility Planners and Practitioners:** Professionals working at the local or regional level who are directly involved in planning, managing, and implementing mobility initiatives. Deliverable 5.6 supports their work by offering an evidence-based, step-by-step guide aligned with the established 12-step SUMP methodology, enriched with real-life examples and best practices from nine SUM Living Labs.
- **Public Transport Authorities and Operators:** Entities involved in the provision, regulation, or coordination of public and shared transport services. This group can use the deliverable to better understand how to align their service models with emerging shared mobility business model innovations that are human-centred, technology-driven, and collaborative.
- **Local and Regional Decision-Makers in Follower Cities:** Stakeholders from cities beyond the nine Living Labs who are interested in adapting and transferring proven shared mobility business model approaches. The deliverable's insights and recommendations are particularly useful for these cities as they seek to design and implement "SUMP-proof" shared mobility strategies.
- **European and National-Level Institutions:** Including the European Commission and national transport ministries, who can leverage the findings to inform policy development, funding strategies, and broader regulatory frameworks that promote sustainable, inclusive, and integrated urban mobility ecosystems.

- **Researchers and Academic Institutions:** Engaged in urban mobility, transport economics, and innovation studies. Deliverable 5.6 builds on a strong theoretical and empirical foundation built by the SUM project research, offering an updated knowledge base for ongoing research into shared mobility and urban planning integration.

By addressing these audiences, Deliverable 5.6 aims to foster cross-sectoral collaboration, facilitate the transferability of innovative mobility solutions, and support the transition toward more accessible, cooperative, and sustainable urban transport systems throughout Europe.

1.3 Structure of the deliverable and links with other work packages/deliverables

This report contributes to WP5 titled **"Impact Assessment, Knowledge Utilisation, and Policy Recommendations"**. Specifically, it addresses Task 5.4 **"Guidelines for successful integration of new and shared modes into SUMPs"**. The methodological approach used for Deliverable 5.6 is organised into the following Chapters:

- **Introduction:** Chapter 1 of deliverable 5.6 explains the objectives of this report and the links with other WPs.
- **SUMP basic principles:** Chapter 2 of deliverable 5.6 introduces the concept of Sustainable Urban Mobility Plan (SUMP), briefly explaining its methodology and the reference materials that support its implementation. It also addresses how the SUM project's outputs, i.e., the project's implementations, can be included in a specific SUMP reference material.
- **Defining cooperative, co-created NSM business model approaches and associated concepts:** Chapters 3 and 4 of deliverable 5.6, provide the key definitions and analytical framework of the present report. Specifically, Chapter 3 defines the cooperative, co-created NSM business model approaches to be integrated into the SUMP planning process. It does so by grouping the project's business models identified in Task 5.3 with the project's push and pull measures to form the cooperative, co-created business model approach packages that will be integrated. Subsequently, in Chapter 4, the integration process is outlined by explaining how the NSM business model approaches packages are integrated into the four phases of the SUMP planning process through the identification of key activities and integration questions tailored for mobility planners and practitioners. This process is complemented with a set of structured interviews conducted in the framework of T5.3 and T5.4 with experts from and outside the project. These interviews researched the governance and policy structures of the validated business models defined in Task 5.3 in the context of the living labs' mobility ecosystems, which provide further understanding of how the different NSM business model approach packages can be integrated into SUMPs.
- **Phase-by-phase overview of the integration of NSM into the SUMP planning process based on key integration questions and structured interviews with experts:** Chapters 5, 6, 7, and 8 of deliverable 5.6 provide the phase-by-phase integration of the NSM business model approach packages into SUMPs. Each chapter is subdivided into key activities and integration questions, and the information is sourced from the structured interviews that researched the governance and policy structures of the validated business models defined in Task 5.3 in the context of the living labs' mobility ecosystems.
- **Conclusions:** Chapter 9 of deliverable 5.6 provides the summary of activities conducted within the present report together with an outlook on the relevance of the present SUMP reference material for cities and regions seeking to embrace seamless urban mobility based the integration of new and shared mobility services.

1.3.1 Link with other work packages and deliverables

This deliverable, as part of WP5 (Task 5.4) activities, is connected to several components of the project and contributes to the overall project replication strategy as well as with the policy recommendations and integration guidance. It is directly aligned with WP4, responsible for the implementation of push and pull measures across the living labs. These push and pull measures contribute to the identification of the validated business models researched in T5.3. In this regard, it is also linked to Deliverable 5.4, where the validated business models and supporting business activities are identified and evaluated in the context of the living labs' mobility ecosystems. These business models are the basis of the cooperative, co-created business model approach packages to be integrated into the SUMP planning process. Furthermore, insights from the structured interview conducted with experts from and outside the project in the context of Task 5.3, will offer perspectives on the policy and governance structures of the validated business models, which are essential to understanding how to integrate them into the SUMP planning process. Deliverable 5.6 aims to provide SUMP reference material that supports cities and regions in integrating new and shared mobility services into SUMPs by incorporating these diverse inputs.

2 What is a SUMP?

The concept of a Sustainable Urban Mobility Plan (SUMP) originated from a desire to transform urban transport systems and improve quality of life through sustainability. A decade ago, cities began asking what infrastructure, innovations, and organisational changes were needed for such a transformation: this question remains at the heart of SUMP processes today.

A SUMP is an integrated, strategic, and long-term approach to transport planning. At its core, a SUMP is built on three defining principles:

- **Sustainability**: The plan should address the mobility needs of both current and future generations at municipal and regional levels.
- **Strategic Vision**: It requires going beyond policy statements by establishing a well-defined process paired with a concrete action plan.
- **Integration**: It should ensure cohesive planning across spatial areas, sectors, and timelines.

To be effective, SUMPs must be well integrated into already existing local and regional planning frameworks: they should align with municipal strategies, regional development plans, and broader urban policy objectives.

While the final output of SUMP processes is not always referred to as a SUMP itself, it typically results in a strategic document tailored and branded according to local contexts. Indeed, in some cases, cities may brand their SUMP under a local name (e.g., "Good Move" in Brussels), but the underlying principles and structure remain consistent with the broader SUMP methodology. These documents draw on existing plans and frameworks and are meant to guide broader sectoral planning in areas such as housing, health, and energy.

The SUMP process: A 12-step methodology

The development of a SUMP follows a structured 12-step methodology. Each step ensures that planning is inclusive, evidence-based, and aligned with urban development goals. More information on each step is provided in the visual below.

Figure 1. Wheel of the SUMP process. Source: Ruprecht (2019).

To support these steps, various topic guides have been created[1]. These guides are not meant to replace the SUMP but provide essential complementary material to support its effective integration and implementation.

The SUMP reference materials provide comprehensive planning recommendations on established topics and are organised under different thematic areas. They have been developed through EU co-funded projects and are available to all cities to support them in preparing and implementing their individual SUMPs. These reference materials are grouped into four main scopes: geographical, policy objectives, mobility modes, and mobility enablers.

Several SUMP reference materials can support the update of the present topic guide. Some of these include:

- Sustainable Urban Logistics Planning (SULPs) – Mobility modes scope.
- Decarbonisation of Urban Mobility – Policy objectives scope.
- Integrating Mobility Management for Public and Private organisations into SUMPs – Mobility enablers scope.
- Harmonisation of Energy and Sustainable Urban Mobility Planning – Policy objectives scope
- Planning for More Resilient and Robust Urban Mobility – Policy objectives

[1] For more information, refer to: https://urban-mobility-observatory.transport.ec.europa.eu/sustainable-urban-mobility-plans/expert-corner-sump-reference-materials_en

The SUM Topic Guide: Integration of new cooperative, co-created shared mobility business models into SUMPs

One such guide is the envisioned SUM Topic Guide on integration of new cooperative, co-created business models into SUMPs, developed under the umbrella of the project and outlined in the present report. This guide focuses on integrating new shared mobility business models into every stage of urban mobility planning. Its goal is to ensure that all transport systems are:

- Cooperative and co-created to guarantee seamless urban mobility.
- Technology-driven and conceived as a cooperation effort between the public, the private sector, and civil society.
- Prioritise accessibility, equity, and adaptability.
- Support sustainable, inclusive, and human-centred mobility solutions.

3 Making clarity – defining SUM pillars and creating NSM business model's packages to integrate in the SUMP planning process

The integration of shared mobility into Sustainable Urban Mobility Plans has been the focus of numerous EU-funded research and policy projects over the past decade. Notably, the 2019 SUMP Topic Guide on "Integration of Shared Mobility Approaches into Sustainable Urban Mobility Planning" laid important groundwork in this field by clarifying concepts and outlining strategic directions. However, while these and other SUMP Topic Guides (MaaS, public transport, micromobility, urban logistics, safety, health, resilience, and finance, ...) provide valuable thematic insights, they tend to treat shared mobility or enablers as stand-alone components, often in a fragmented manner. What has been missing is a systemic, cross-cutting vision of how these elements interact and how they can be embedded into the full planning cycle of a SUMP.

SUM takes a step forward by advancing from introduction to integration. It does so by grounding its approach in a combination of theoretical framing (Deliverable 5.3), empirical Living Lab experimentation (Deliverable 5.4), and robust multi-criteria evaluation (Deliverable 5.1). This document brings those elements together to present a holistic analytical framework that cities can use to embed new shared mobility business models into all stages of the SUMP planning cycle. It complements and enhances the broader corpus of SUMP reference materials by offering a synthesis across **modes**, **enablers**, and **policy objectives**, while anchoring the analysis in real-world cases and tested methodologies of the project.

To facilitate this, SUM applies the concept of **business activities** as a tool for organising and integrating shared mobility solutions. These activities combine specific modes, enabling mechanisms, and policy goals, and are embedded in the real-world experiences of nine Living Labs. To make this structure actionable for cities, we have aligned the analysis with three main pillars widely used in SUMP guidance materials: **mobility modes**, **mobility enablers**, and **policy objectives**.

3.1 Clarifying the Role of Business Activities

The concept of **business activities** is used in SUM to identify and assess shared mobility solutions in real-world settings, with the goal of informing their potential integration into urban mobility. These business activities serve as a central framework for understanding how new shared mobility services across nine Living Labs can contribute to more accessible, sustainable, and integrated urban mobility systems.

Rather than focusing on isolated services or commercial products, SUM defines business activities as **ecosystemic configurations**. These bring together mobility modes, enabling tools, governance models, push and pull policy measures, and specific urban policy objectives. By doing so, they are designed to reflect the **interdependent roles of public and private actors**, with a strong emphasis on co-creation, inclusiveness, and transferability.

Business activities in SUM are not theoretical constructs, but the result of a **structured and multilayered analytical process**, as detailed in Deliverable 5.4. Their development began with an examination of the concrete **push and pull measures** implemented in each Living Lab, the local objectives those measures were meant to address, and the ecosystem of stakeholders involved.

Push and pull measures in the project include several actions, such as regulatory changes, pricing policies, communication and behavioural campaigns, and infrastructure upgrades. These measures, although being developed outside the project by local actors, are not isolated interventions but are integrated into the overall configuration of the business activity. They are selected to support specific policy objectives, influence user behaviour, and enable the viability of mobility services and enablers. In SUM, push and pull measures are thus understood as the practical policy tools that bridge strategic goals with on-the-ground implementation.

Push/pull measures introduced in the Living Labs
PUSH INTERVENTIONS
Congestion charges
Parking charges
Restricted parking
Limited traffic zone / Pedestrianization of streets
Parking supply management
Speed limits
PULL INTERVENTIONS
Mobility hubs
Scheduling integration in MaaS services
Ticketing integration in MaaS services
Improved NSM infrastructure, e.g. bike lanes & "park & ride"
On demand vehicle sharing action plan
Nudging (gamification or rewards)
Dynamic pricing of NSM
Improved information about the availability of shared modes
Introduction of new NSM services (ex. bike-sharing)
Introduction of new PT infrastructures/lines (ex. e-buses, LRT)
Streets retrofitting/introduction of priority lanes
Dedicated parking spaces for carsharing/micromobility
Widening PT geographical area
Central PT planning and construction program

Table 1. List of Push and Pull Measures. Sources: VEDECOM (2025).

The resulting business activities were grouped into **primary** and **supporting** types. Below are the primary business activities identified, which in the project correspond to the strategic domains around which new mobility services are structured and that relate to different modes and enablers. These are:

- **Integrated Mobility Service Platform (MaaS)**
- **Demand-Responsive and On-Demand Mobility (DRT)**
- **Mobility hubs development**
- **Integration of shared mobility into the broader ecosystem**

These examples demonstrate that business activities are not purely modes or enablers, they often combine both. For instance, a MaaS business activity involves enabling platforms (apps, APIs, payment systems), but also directly supports shared modes like bike-sharing or carsharing. Similarly, a mobility hub integrates shared and public transport modes physically, while also acting as a behavioural and spatial enabler. This dual character makes business activities particularly well-suited to mirror the structure of SUMP Topic Guides, which categorise recommendations by **mobility modes**, **mobility enablers**, and **policy objectives**.

Ultimately, business activities in SUM serve as a **translational tool**: they connect innovative shared mobility services and integration mechanisms with the strategic ambitions and planning cycles of cities. This systemic approach reflects the planning logic promoted in SUMPs, where modes, enablers, and policy measures are integrated to achieve broader urban mobility goals. Business activities, therefore, make it possible to translate the complex and often experimental configurations tested in Living Labs into actionable planning elements. They allow cities to draw lessons from real-world cases involving diverse actors, territorial scales, and governance settings, and to embed these learnings into the structured planning and implementation cycle of a SUMP. In this way, business activities serve as a bridge between innovation and long-term policy integration.

In the following subsections, we classify these business activities into three interlinked pillars: **mobility modes**, **mobility enablers**, and **policy objectives**. This structure mirrors that of SUMP Topic Guides and makes it easier for planners and policymakers to translate business model thinking into the 12-step SUMP methodology.

3.2 Mobility Modes

Mobility modes encompass the various forms of transport used to move people and goods around urban areas. These include active modes like walking, wheeling, and cycling, as well as public transport, shared mobility, logistics, parking, and emerging options like urban air mobility. In the context of SUM, the emphasis is on strengthening attractive alternatives to private car use, by improving access to flexible, efficient, and user-friendly options that serve diverse urban and peri-urban needs.

The integration of these modes, through infrastructure, digital platforms, and coherent policies, is essential to achieve the goals of policies. By combining service innovation with inclusive planning, cities can address transport gaps, improve connectivity, and build more resilient and multimodal transport systems.

Within SUM, particular focus is placed on three modes, public transport, bike-sharing, and demand-responsive transport (DRT), while car sharing also appears briefly.

Bike sharing

Bike-sharing[2] refers to a service that allows people to rent bicycles for short-term basis, offering locally adapted bicycles through either subscription-based or pay-as-you-go models. Nowadays, they have become an established element of urban mobility systems across Europe, supporting both residents and visitors in accessing short-distance travel options within cities. Different models exist, such as roundtrip, station-based, free-floating, including different types of bikes, and can be operated by public or private actors. When well-designed, these schemes are a perfect complement public transport networks by improving first- and last-mile connectivity and promoting cycling as a regular mode of travel.

Demand-responsive transport (DRT)

On-demand and **demand-responsive transport (DRT)** offers flexible mobility solutions where traditional public transport falls short, particularly in low-density or rural areas. These services adjust their routes and schedules in real time based on demand, making them cost-effective and user-friendly. DRT is increasingly seen as a practical way to bridge the first- and last-mile gaps. It often complements public transport networks, facilitating multimodal journeys (Krell and Hunkin, 2024). By connecting users to mobility or transfer hubs, DRT facilitates transitions to conventional public transport or new shared mobility).

[2] A more complete guide on bike sharing system, and shared mobility modes can be found at: https://share-north.eu/wp-content/uploads/2022/05/Shared-Mobility-Guide_ENGLISH.pdf

Public transport

Public transport can be defined as any kind of collective passenger transport by motorized rail and road vehicles, as well as boats, as is the case in Fredrikstad within SUM, operated in consistent services patterns and available to the public at set fares (EGUM, 2024). In SUM, public transport is not treated as a separate system but as a core element to be enhanced and better connected with new shared mobility services. The focus is on improving accessibility, reliability, and integration with flexible services like demand-responsive transport or bike sharing, especially in areas with lower service coverage.

Car sharing

Car sharing[3] began with small groups sharing private vehicles, later developing into formal systems involving hourly rentals and designated return points. Today, free-floating services, where cars can be picked up and dropped off anywhere within a service area, have grown in popularity, making car sharing more accessible and appealing (Ramos et al., 2020).

3.3 Mobility Enablers

Urban mobility enablers refer to the tools, policies, technologies and practices that facilitate the development of sustainable, efficient and pleasant cities.

The following core enablers have been identified within the project as making NSM viable and integrated:

[3] For a more complete report on the types of car sharing, their business models and deployment, check: https://stars-h2020.eu/wp-content/uploads/2019/06/STARS-D2.1.pdf

Mobility as a Service (MaaS)

With the rapid growth of mobility services, there is an increasing interest in integrating them into a single, user-friendly platform or apps. Mobility as a Service (MaaS) aims to simplify travel by combining public transport, car and bike sharing, e-scooter hire and ridesharing in a single digital system. Rather than constructing new infrastructure, MaaS coordinates existing services, enabling users to plan, book and pay for multimodal journeys via a single application. MaaS is considered a user-centric, intelligent mobility management system that provides seamless access to transport options via flexible pricing and service models (Polydoropoulou et al., 2020).

MaaS is widely seen as a means of encouraging modal shift and reducing car dependency by broadening access to sustainable alternatives and improving convenience. (Arias-Molinares, García-Palomares, & Gutiérrez, 2022).

Mobility hubs

Mobility hubs are designated locations where multiple transport modes, such as public transport, bike-sharing and carsharing services, as well as other shared or electric mobility options and associated infrastructure, including charging and docking stations, are co-located and coordinated (Aydin et al., 2022; Rongen et al., 2022). The aim is to encourage the use of shared, low-emission transport over private cars, with the objective of reducing greenhouse gas emissions and improving accessibility and social inclusion. Typical features of mobility hubs include physically integrating various transport services to support intermodal travel, redesigning public spaces to prioritise pedestrians and limiting car dominance, and establishing a strong visual and digital identity to connect each hub to a wider mobility network.

Integration of new and shared mobility into ecosystems

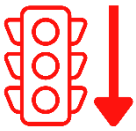
Integration of shared mobility into the ecosystem refers to the process of embedding services like bike sharing, e-scooter hire, car sharing, and ride-hailing into the broader urban transport system in a coherent, user-friendly way. This involves both physical integration, but also and digital integration via journey planning tools, real-time information, and unified payment systems. In SUM, integration is not treated as a background condition but as an active enabler of multimodal travel and shared mobility uptake. However, integration must be intentional: without coordinated planning and digital interoperability, shared mobility risks remaining fragmented or competing with public services.

3.4 Policy Objectives

Policy objectives represent the strategic goals that cities seek to achieve through their mobility systems. They provide the normative direction for planning efforts and act as reference points for evaluating the effectiveness of mobility interventions. In the context of SUM, policy objectives are the priorities that living labs are expected to contribute to based on their local needs.

While mobility modes and mobility enablers form the core of what is implemented, policy objectives define why these services are introduced. Modes and enablers are therefore tools or strategies to deliver on urban mobility goals. Each of the LLs implemented a set of push and pull measures, designed to activate these modes and enablers in service of broader objectives. Structuring business activities around clearly defined policy objectives helps ensure that innovation is not only operationally feasible but also meaningful in terms of public value.

Across the nine SUM Living labs, eight shared policy objectives were identified as central to the project:



Reduction of Congestion

Reduction of Emissions

	**Noise Hindrance Reduction**
	**Improved Accessibility**
	**Improved Mobility Services**
	**Enhanced Multimodality**
	**Improved Safety**
	**Improved Public transport**

Table 2. List of policy objectives.

These objectives were used as a framework to assess the impact of business activities and the push and pull measures implemented in each local context. While cities may weigh these objectives differently based on local challenges and priorities, they serve as a common foundation for planning, monitoring, and evaluation.

To measure progress toward these goals, the SUM project relied on a set of Key Performance Indicators (KPIs) drawn from both academic literature and practical city-level use cases. These indicators were consolidated in Deliverable D1.2 (KPI Review) and used across the Living Labs to evaluate impacts before and after the implementation of business activities. The PROMETHEE-GAIA multi-criteria decision analysis (MCDA) framework, described in Deliverable D5.1, helped contextualise and interpret KPI results in light of stakeholder priorities and planning trade-offs. This methodology also allowed cities to explore conflicting goals, assess trade-offs, and understand which interventions best aligned with local planning values.

The table below illustrates how specific KPIs were used to assess each policy objective. These are examples that cities can adapt depending on their own context, data availability, and strategic focus:

Goals	KPIs used to evaluate goals (from D1.2_KPI Review)				
Reduction of Congestion	Average congestion and delay index	Car access to city centre	Usage of parking spots		
Reduction of Emission	Modal split	CO2 emissions	Energy efficiency	Air pollution	
Noise Hinderance	Modal split	Type of vehicles	Noise Hindrance		
Improve Accessibility	Level of integration	Acceptance rate	Intend to use	Access time by walking	Accessibility ratio
Improve Mobility Service	share (%) of road length adapted for active mobility	Number of mobility hubs	Number of bicycle parking space	Number of P+R parking spots	
Improve Multimodality	Number of available service per mobility hub	DTD travel time for multimodal transport modes sequences	Travel cost ratio	Level of integration	
Improve Safety	Perceived safety	User satisfaction			
Improve Public Transport	Travel time	Perceived travel time in NSM +PT	Perceived affordability	Social welfare	

Table 3. List of policy goals and KPI related.

These indicators align strongly with the EU Urban Mobility Observatory's SUMP Reference Materials on policy objectives, which frame urban mobility planning around strategic goals such as decarbonisation, safety, social impact, health, energy integration, and inclusiveness. SUM complements these guides by offering a hands-on, evidence-based approach to integrate shared mobility into that same policy architecture.

Moreover, SUM aligns its policy objectives with broader EU strategic frameworks, including the **New EU Urban Mobility Framework**, the **EU Road Safety Framework**, **European Green Deal**, the **Trans-European Transport Network (TEN-T) regulation**, and the upcoming **EU Urban Agenda**. These policies collectively call for a just transition to climate-neutral, smart, and inclusive mobility systems. In particular, the Urban Mobility Framework highlights the need for multimodal integration, demand management, and the inclusion of active and shared mobility options in local planning. SUM responds to these imperatives by offering cities a tested approach for assessing how shared mobility business models support decarbonisation, accessibility, and resilience.

By grounding policy objectives in measurable indicators and embedding them in a structured multi-criteria evaluation methodology such as PROMETHEE-GAIA, SUM supports cities in building SUMP-compliant strategies that are evidence-based, user-oriented, and EU-policy aligned. This enables local authorities to prioritise actions, monitor progress, and demonstrate impact in a transparent and consistent manner, while ensuring coherence with evolving EU policy goals.

Each Living Lab in SUM has focused on one or more business activities that combine various mobility modes with supporting enablers already mentioned above. This combined approach recognises that the effectiveness of a given mode often depends on the quality and presence of enabling conditions. For instance, a demand-responsive service can only deliver on accessibility and efficiency goals when supported by tools such as booking apps, multimodal integration, or physical infrastructure like mobility hubs.

The **Coimbra Living Lab** illustrates this dynamic well. Its business activity integrates a flexible on-demand minibus service (mode) with booking platforms and a planned mobility hub (enablers), improving first- and last-mile connectivity in peripheral areas. This supports goals such as accessibility, multimodality, and enhanced public transport use.

To better understand these relationships, the table below presents an overview of business activities across Living Labs, showing their connection to specific mobility modes and enablers. It also indicates which policy objectives each combination is primarily designed to address. While not all objectives are targeted by every activity, the table illustrates how each configuration contributes to the overall strategic vision of sustainable urban mobility.

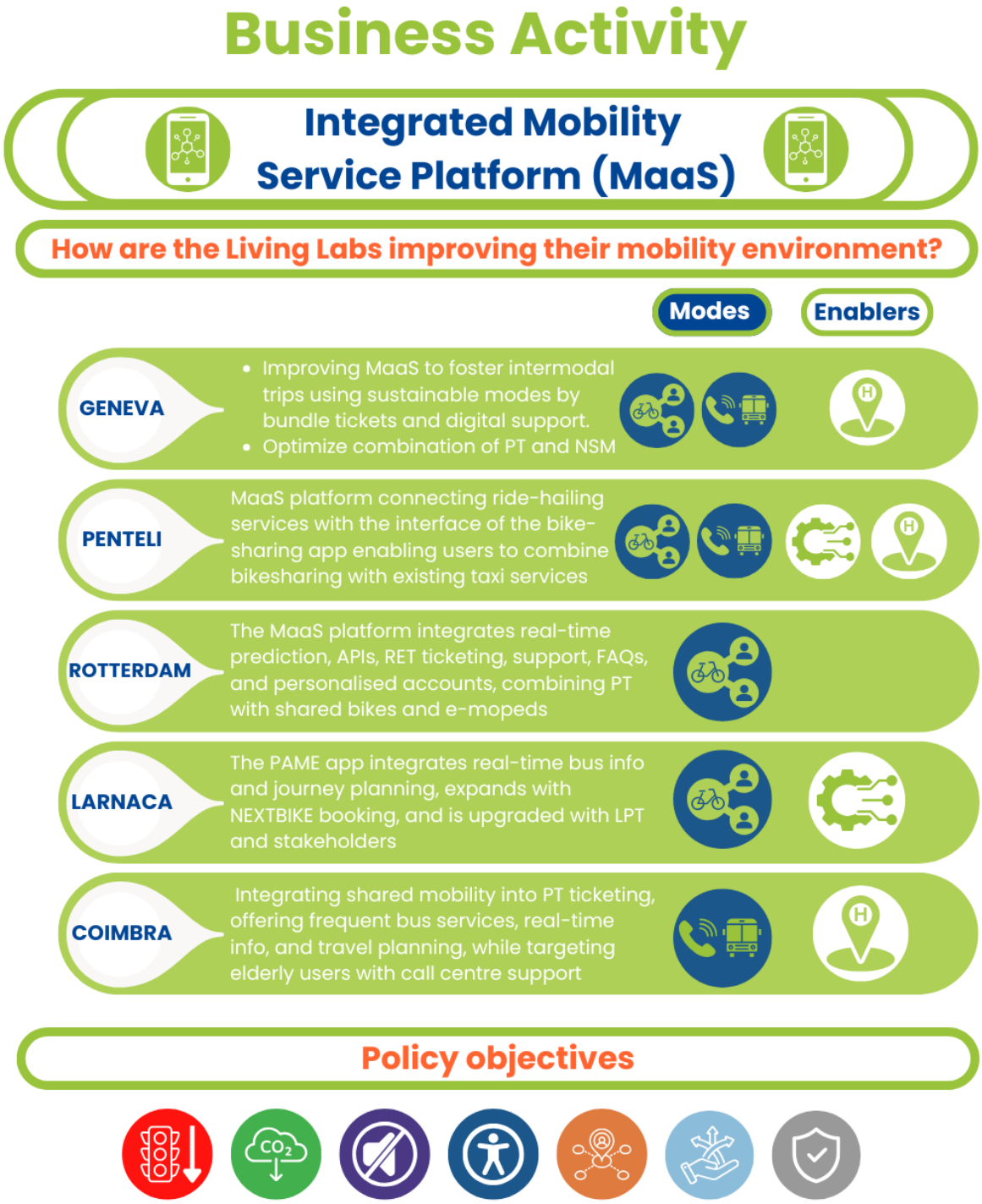


Figure 2. Cooperative, co-created package NSM BA package connecting MaaS with Living Labs interventions and policy objectives.

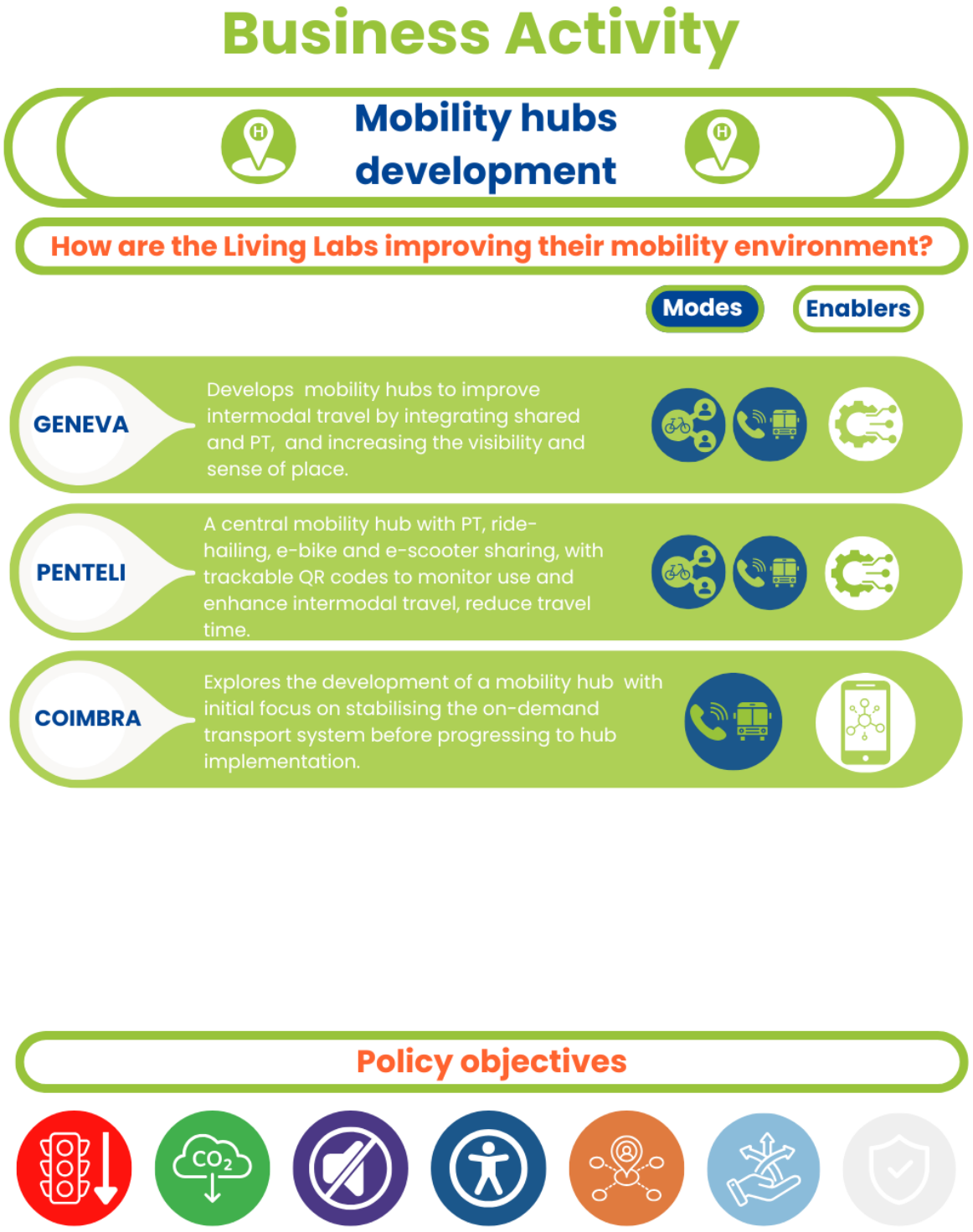


Figure 3. Cooperative, co-created package NSM BA package connecting Mobility Hubs with Living Labs interventions and policy objectives.

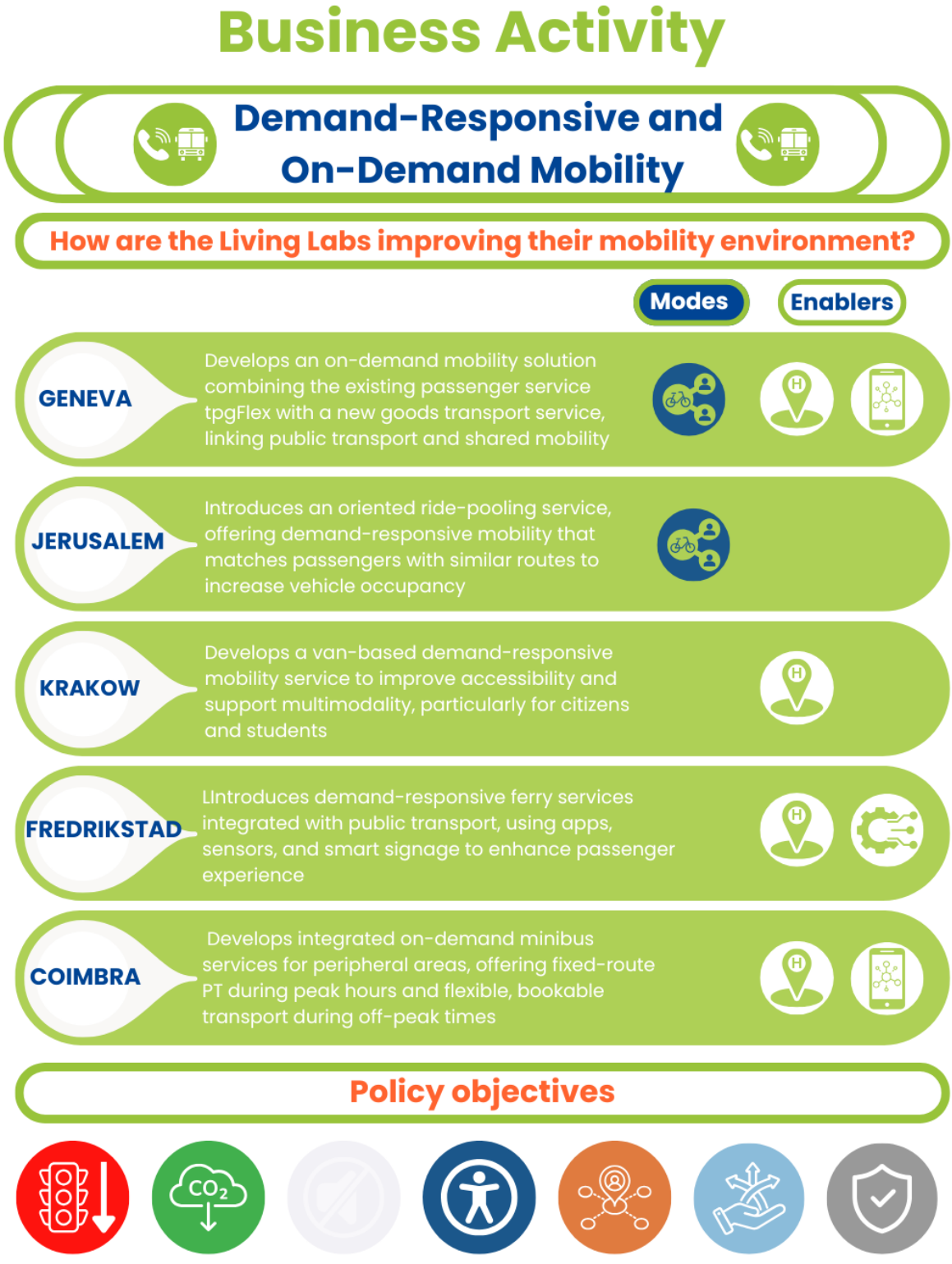


Figure 4. Cooperative, co-created package NSM BA package connecting DRT with Living Labs interventions and policy objectives.

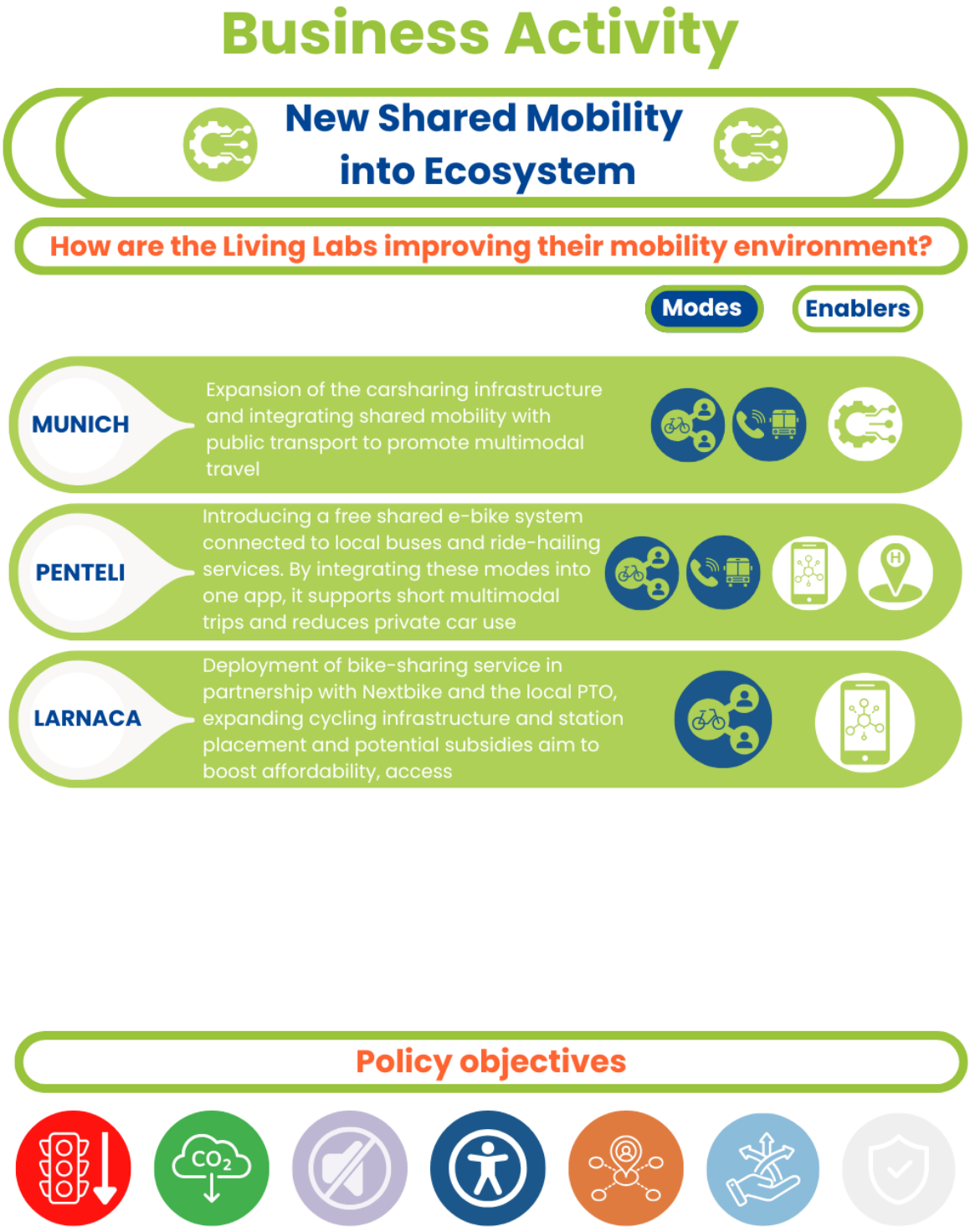


Figure 5. Cooperative, co-created package NSM BA package connecting Shared Mobility Integration with Living Labs interventions and policy objectives.

4 Integration SUM's new cooperative, co-created shared mobility business models into the SUMP planning process – phase-by-phase overview

The main objective of the present report is to present SUM project guidelines aimed at offering a practical framework, supported by SUM living labs' practical experiences, to both planners and policymakers to help cities implement the new cooperative, co-created shared mobility business models identified in SUM by following the phases and steps of the SUMP planning process.

The guide follows the SUMP planning process, covering the four main planning phases and their respective steps, i.e., preparation and analysis; strategy development; measure planning and co-design of solutions; implementation, monitoring and evaluation. The objective is to highlight how cities and regions can implement the new cooperative, co-created business model packages identified in chapter 3 by following the SUMP planning process, that is, to implement the SUMP planning phases and steps to facilitate that all transport systems are:

- Technology-driven and conceived as a cooperation effort between the public, the private sector, and civil society.
- Cooperative and co-created to guarantee seamless urban mobility.
- Prioritise accessibility, equity, and adaptability.
- Support sustainable, inclusive, and human-centred mobility solutions.

To do this integration, three main actions were taken:

- Identification of key activities and actions that can support the integration of the identified business model packages following the four main SUMP planning phases.
- A dedicated workshop with SUM cities and follower cities, and external stakeholders was conducted on 5 November 2025 at the Barcelona Smart City World Expo 2025 to teach cities and regions how to successfully integrate shared mobility into their Sustainable Urban Mobility Plans (SUMPs). Participants gained practical insights into how new mobility services, such as Mobility as a Service (MaaS), demand-responsive transport (DRT), and mobility hubs, can be effectively embedded into the SUMP process. The session combined expert presentations and real-life experiences from POLIS members Madrid, Budapest Centre for Transport (BKK), and Leuven, with interactive discussions to support local authorities in applying these concepts in practice. An interactive World Café discussion closed the session, inviting participants to exchange perspectives on embedding shared mobility within the four SUMP phases. These perspectives are included within the key activities and actions to integrate NSM business model packages into SUMPs in the following chapter.
- Structured interviews with experts from and outside the consortium were conducted in the contexts of tasks 5.3 and 5.4 to provide insights on the governance and policy structures dimension of the SUM living labs' mobility ecosystems. The interview questions followed the SUMP planning phases, seeking to obtain information on how different actors of an urban mobility ecosystem intervene to shape the process of planning, implementing, and evaluating new and shared mobility systems integrated with public transport. The structure of the interview included four questions for each of the main business activities identified in SUM, namely, the Integrated Mobility Service Platform (MaaS), Demand-Responsive and On-Demand Mobility, Mobility Hub Development, and the Integration of New Shared Mobility into the Ecosystem, that follow the SUMP planning phases and steps. Each question corresponds to one of the four main planning phases and was linked, at the interviewer's

discretion, to one of the three steps within that phase. The figures below show the interview letter sent to all living labs.

WP 5 -" Impact Assessment, Knowledge Utilisation and Policy Recommendations"
Second round Living Lab team interviews (Cooperative Business Activities and SUMP)
October 2025

Group Interview Invitation Letter – Coimbra LL

Dear Melissa,

As part of our ongoing work in WP5.3 "**Designing business models to leverage on the experience gained in the living labs**" and WP5.4 "**Guidelines for successful integration of new and shared modes into SUMPs**" of Project SUM, we are pleased to invite you to the **second round of Living Lab interviews**. These **group interviews** will last around **2-hours**, take place in **October 2025**, and will include you as the Living Lab representative together with selected colleagues with in your organization who are directly involved in leading the **main business activities** being implemented in your Living Lab.

The objectives of this interview are threefold:

1. **T5.3 -** To fine-tune the findings from the first round of interviews with LL's stakeholders and fill any gaps, and validate the structure of the stakeholder map and business activity ecosystem (30 min)
2. **T5.3 -** To Evaluate the maturity levels of business activities across three dimensions:(30 min)
   - **Scientific Readiness Level (SRL) –** underlying methods (e.g., optimization, routing, pricing).
   - **Technological Readiness Level (TRL) –** technologies used, from prototype to operational deployment.
   - **Integration Readiness Level (IRL) –** how well your activity is integrated into the wider mobility ecosystem, including governance, data and technology interoperability.
3. **T5.4 -** To discuss the integration of your measures into the Sustainable Urban Mobility Plan (SUMP). (30 min). This pool of questions seeks to understand how other cities and regions can implement the business activities present in the living labs following the SUMP planning process, that is, to apply the SUMP planning phases and steps when implementing the business activities and associated mobility services to facilitate that all transport systems are:
   - **Technology-driven and conceived as a cooperation** effort between public, private, and civil society.
   - **Cooperative and co-created** to guarantee seamless urban mobility;
   - **Prioritise** accessibility, equity, and adaptability;
   - **Support sustainable**, inclusive, and human-centred mobility solutions.

We kindly ask you to nominate participants from your LL who can best contribute to the discussion:

- A representative working on Business Activity: **Integrated Mobility Service Platform (MaaS)**
- A representative working on Business Activity: **Demand-Responsive and On-Demand Mobility**
- A representative working on Business Activity: **Mobility Hub Development**
- A representative with specific knowledge of **SUMP**

To facilitate the scheduling, please select a suitable time slot via the following Doodle poll:

https://doodle.com/group-poll/participate/a9EiG1b

To support you in identifying the right colleagues to join this session, we have prepared an **overview page (see the appendix)** summarizing the business activities in your LL and question expected to be discussed during the interview. We kindly ask you to complete your availability by **3rd of October 2025**, so we can finalize the schedule promptly.

Thank you for your continued collaboration, and we look forward to the discussion with you and your colleagues.

Best regards,
Hassan Mahdavi (Institute VEDECOM) & Daniel Herrera (POLIS)

APPENDIX

Information for Living Labs (Coimbra)

Business Activity: Canvas Fine-tunning

Objective: Detailing out the Business model Canvas Building blocks which was filled by LL representatives.

Business Activity: Readiness Levels and Maturity

Objectives: One of the main goals of the group interview is to **evaluate the maturity levels of the business activities** being developed and tested in your Living Lab. This exercise will help us to better understand how advanced your solutions are and how well they are positioned for transferability and integration into the wider mobility ecosystem. The evaluation will be structured around three complementary dimensions:

1. **Scientific Readiness Level (SRL)**
   This dimension focuses on the maturity of the **scientific and methodological foundations** of your business activities. We will look at the extent to which underlying models and methods (e.g., optimization models, vehicle routing approaches, pricing frameworks, demand forecasting techniques) have been developed, validated, and applied in your Living Lab. The aim is to assess whether these scientific components are still at the conceptual stage, in early development, or already established and informing operational decision-making.
2. **Technological Readiness Level (TRL)**
   This part examines the **maturity of the technologies** that are being used in your business activities. For example, we will discuss whether the tools and systems are still at prototype stage (such as early applications or data repositories), validated in controlled experiments, demonstrated in real-world environments, or already fully operational. The focus will be on the actual deployment status of these technologies and their capacity to support the LL's business activities in practice.
3. **Integration Readiness Level (IRL)**
   The third dimension evaluates how well your business activities are **integrated into the broader mobility ecosystem**. This includes technical aspects (e.g., data sharing, interoperability between platforms, system compatibility), as well as organizational and governance-related aspects (e.g., coordination with public authorities, integration into SUMPs (WP5.4), or collaboration with external stakeholders). The aim is to capture both the quality and the depth of integration between the different components and actors involved in your LL in relation to your business activities.

Business Activity: SUMP

Structure of the questions: Each of the main business activities identified in SUM—namely, the Integrated Mobility Service Platform (MaaS), Demand-Responsive and On-Demand Mobility, Mobility Hub Development, and the Integration of New Shared Mobility into the Ecosystem—includes four questions that follow the SUMP planning phases and steps. Each question corresponds to one of the four main planning phases and is linked, at the interviewer's discretion, to one of the three steps within that phase.

SUMP process planning phases:

SUMP Phase 1: Preparation & Analysis

Integrated Mobility Service Platform (MaaS)
Analyse mobility situation
- How interoperable are existing services (ticketing, data standards, platforms)?

Demand-Responsive and On-Demand Mobility
Determine planning framework
- How will DRT/ODM be integrated with existing public transport and other mobility services (e.g. ticketing, information)?

Mobility Hub Development
Determine planning framework
- Do you need external support (e.g. design expertise, technology providers, funding partners) to develop your hubs?

Integration of New Shared Mobility into Ecosystem
Set up working structures
- What governance and cooperation rules are being considered to ensure fair participation of new and existing providers?

SUMP Phase 2: Strategy Development

Integrated Mobility Service Platform (MaaS)
Build and jointly assess scenarios
- Have you developed different scenarios for how MaaS and new shared mobility business models could evolve in your city/region? - Do your scenarios include both desired and challenging futures (e.g. high market uptake of shared mobility vs. continued dominance of private cars)?

Demand-Responsive and On-Demand Mobility
Develop vision and strategy with stakeholders
- How will roles and responsibilities be shared among stakeholders (local authorities, operators, technology providers, communities)?

Mobility Hub Development
Develop vision and strategy with stakeholders
- How will mobility hubs be designed to ensure safety, accessibility, and user-friendliness (e.g. lighting, barrier-free design, clear signage)?

Integration of New Shared Mobility into Ecosystem
Build and jointly assess scenarios
- Have you developed scenarios for how shared mobility services could evolve in your city/region (e.g. different fleet sizes, service areas, market uptake)?

SUMP Phase 3: Measure Planning & Co-Design of Solutions

Integrated Mobility Service Platform (MaaS)
Select measure packages with stakeholders
- Have you defined integrated packages of measures that combine MaaS with public transport, shared mobility, and traffic management?

Demand-Responsive and On-Demand Mobility
Agree actions and responsibilities
- How are you ensuring political backing and public support for introducing or expanding DRT/ODM?

Mobility Hub Development
Agree actions and responsibilities
- How are you ensuring political backing and public support for mobility hub development, especially in areas where space reallocation may be sensitive?

Integration of New Shared Mobility into Ecosystem
Prepare for adoption and financing
- Have you developed a financial plan for implementing shared mobility measures, including cost sharing between municipalities and operators?

SUMP Phase 4: Implementation, Monitoring and Evaluation

Integrated Mobility Service Platform (MaaS)
Monitor, adapt and communicate
- How are you engaging citizens and stakeholders with progress and adapting measures where needed?

Demand-Responsive and On-Demand Mobility
Monitor, adapt and communicate
- How are you adapting services based on performance data (e.g. adjusting service areas, vehicle supply, booking methods)?

Mobility Hub Development
Monitor, adapt and communicate
- How are you adapting hub design, services, or operations based on monitoring results?

Integration of New Shared Mobility into Ecosystem
Monitor, adapt and communicate
- How are you informing and involving citizens and local communities to build acceptance of new services (e.g. information campaigns, consultations)?

Figure 6. Invitation letter for expert contributions in task 5.3 and 5.4.

4.1 What are the new cooperative, co-created shared mobility business models to be integrated in SUM?

The analysis of the SUM Living Labs shows that the integration of shared mobility into urban mobility systems depends on **interconnected business activities** that combine multiple modes and enablers under coherent governance and planning frameworks. These interconnections illustrate how digital, spatial, and operational dimensions can be aligned to strengthen multimodality and support the implementation of SUMPs.

Across several pilots, **digital integration** emerges as a primary enabler. In **Geneva**, **Rotterdam**, and **Larnaca**, MaaS platforms interlink public transport with shared modes and real-time information, creating a single access point for intermodal travel. **Penteli**'s platform connects ride-hailing and bike-sharing, while **Coimbra** complements its digital services with tailored support for specific user groups. These cases demonstrate how digital integration enhances interoperability and inclusiveness, allowing cities to coordinate data, ticketing, and service layers within their SUMP processes.

Spatial integration complements this digital layer through the development of **mobility hubs**, which physically anchor shared and public transport services in strategic locations. In **Geneva** and **Penteli**, hub development is coupled with data-based monitoring and service bundling, while in **Coimbra**, hub planning is sequenced with the stabilisation of on-demand transport services. This illustrates the importance of aligning infrastructure delivery and digital enablers within a unified planning timeline, ensuring consistency between spatial planning and service design.

The **deployment of new shared mobility services** further reinforces these connections. **Munich**, **Penteli**, and **Larnaca** integrate new shared modes—such as car-sharing and bike-sharing—into existing transport networks, coordinating with local public transport operators and MaaS providers. This joint implementation strengthens first- and last-mile connectivity, supports decarbonisation, and widens modal choice in line with SUMP objectives.

Finally, **on-demand and demand-responsive services** demonstrate how flexible and data-driven operations can link to both physical and digital integration layers. **Geneva**'s combination of passenger and goods transport, **Fredrikstad**'s digital ferry system, and **Coimbra**'s hybrid minibus service exemplify how such models can extend accessibility beyond fixed routes and interface with MaaS platforms or mobility hubs. These experiences underline the potential of adaptive services to fill spatial and temporal gaps in public transport coverage.

Taken together, these interlinked activities form the basis of **cooperative shared mobility models** that cities can incorporate into their SUMPs. They show that effective integration is achieved through **combined packages** of digital enablers, spatial infrastructure, and shared mobility services, co-created with local operators and users. For SUMP practitioners, the SUM experience highlights the need to plan shared mobility not as isolated services but as interconnected system components, embedded in long-term objectives for accessibility, inclusion, and sustainable urban travel.

5 SUMP Phase: Preparation & Analysis

The first phase of a Sustainable Urban Mobility Plan (SUMP) involves establishing the institutional, organisational and analytical foundations necessary for successfully integrating shared mobility systems. This process comprises three key steps:

1) **Establishing working structures**: creating an interdepartmental core team; allocating professional staff responsible for shared mobility; involving relevant stakeholders and potential cooperation partners; and securing political and institutional ownership.

2) **Defining the planning framework**: setting the spatial and temporal scope; establishing timelines and available financial resources; linking with regional and national framework conditions; and coordinating with other planning processes.

3) **Analysing the mobility situation**: assessing the current mobility landscape; checking locally available transport and environmental data; and surveying existing sharing services to identify specific potential, challenges and needs for action.

Key activities for integrating

Integrated Mobility Service Platform (MaaS)

This initial phase is particularly important for Mobility as a Service (MaaS), as its success depends on the cooperation between public and private actors. Cities and regions must therefore establish mechanisms that enable continuous collaboration among all stakeholders, including public transport authorities and operators, shared mobility providers, and digital platform developers. The need for closer collaboration between public and private organisations was identified as a priority by the public transport authorities, municipalities and research institutions involved in the SUM workshop.

Such cooperation can only be effective when supported by a multidisciplinary team within the city or region, ensuring that planning, IT, data management, finance, and operational departments work together rather than in silos.

A clear and coherent planning framework should then guide the integration of MaaS into the wider sustainable mobility strategy. This includes assessing the legal, regulatory, and financial requirements, and determining the geographical scope of the MaaS system - whether at city level or across the wider functional urban area, potentially extending beyond administrative boundaries.

MaaS planning must be aligned with related processes (public transport development, digitalisation policies, and climate and environmental goals). A detailed work plan and timeline should be established to define milestones and track progress. Open consultations with stakeholders should be organised to develop a shared vision for MaaS that clarifies incentives, risk- and profit-sharing arrangements, and the specific benefits for each stakeholder group. Building and maintaining trust is critical, and cities should introduce mechanisms that promote transparency and long-term cooperation. Where needed, external expertise from consultants, research organisations, or technical partners may be sought to strengthen planning and implementation capacity.

The first phase also provides an opportunity to identify potential barriers. During the SUM workshop, participants highlighted challenges such as limited interoperability between platforms and services, inadequate cooperation and ambiguous roles between public and private stakeholders, further emphasising the importance of this phase.

Before launching a MaaS platform, cities should assess the existing mobility and digital landscape. This includes identifying available data sources and establishing cooperation with data owners to ensure reliable information exchange. The analysis should define the main challenges and opportunities where MaaS can deliver added value, for example by improving accessibility, connectivity, and multimodal coordination.

Existing transport services - such as public transport, shared mobility, and demand-responsive offerings - should be evaluated in terms of their availability, level of integration, and interoperability across ticketing systems, data standards, and digital platforms. The maturity of the local mobility market should also be assessed, considering the number and diversity of providers, competition levels, and prevailing business models.

Finally, national and regional frameworks, including data regulations and funding programmes, should be reviewed to identify both enablers and constraints. The city's or region's technological readiness should be assessed, taking into account the quality of digital infrastructure, data exchange capabilities, and the uptake of digital mobility tools by users.

Insights from the Living Labs interviews

Building effective working structures

- **Rotterdam** Living Lab has demonstrated the importance of tightly coordinated teams between IT, ticketing, planning, legal and data-governance units. Without internal alignment, technical barriers become organisational barriers.
- **Geneva** underscored that MaaS requires cooperation across entire mobility value chains: public transport, shared mobility, data companies, campus-level actors, and regional authorities. They have found that early alignment on roles, data access, branding, and responsibilities avoids friction later.

Defining the planning framework

- **Rotterdam** clarified that MaaS must account for differing municipal regulatory systems.
- **Larnaca** defined a city-wide framework based on realistic integration opportunities (bus + bikes only), illustrating that a MaaS framework should not exceed local technical readiness.
- **Geneva** emphasised that the MaaS framework must reflect regional governance. Their planning framework integrates data governance, brand rules, passenger information and regional fare policy to ensure cross-jurisdictional consistency.

Analysing the mobility & digital landscape

- **Rotterdam** benefits from one of Europe's most advanced open-data ecosystems: complete GTFS, real-time PT feeds, disruption data, and strong private API provision. This makes Rotterdam a high-readiness territory for multimodal planners. However, they emphasise that even with data availability, full integration still requires costly internal upgrades (gates, validators, back-office).
- **Geneva** analysed the availability of public transport, shared mobility (scooters, bikes, car-sharing), and strong regional PT services. They also evaluated their digital twin and passenger-information systems, which support integrated trip planning across modes.
- **Coimbra** is working within a complex mobility landscape: multiple operators (municipal and regional), an urban PT reform, and new infrastructure (BRT). Their analysis identified both opportunities (large PT upgrades) and risks (fragmented systems, limited digital integration between operators).
- **Larnaca** showed how analysis must match scale: they mapped PT usage heatmaps, surveyed users, and assessed digital readiness. Their MaaS system currently integrates only buses and bikes because the local shared mobility ecosystem is intentionally simple.

Demand-Responsive and On-Demand Mobility

To plan for the effective introduction of demand-responsive and on-demand mobility, cities and regions must first ensure that the necessary organisational and institutional frameworks are in place. This includes sufficient capacity in terms of staffing, expertise, and budget, as well as the establishment of a multidisciplinary team covering transport planning, IT, data management, finance, and operations. Political and institutional support is essential to provide strategic direction, secure long-term commitment, and ensure that DRT/ODM is integrated within the broader sustainable mobility agenda.

A structured planning process should then guide the rollout of DRT/ODM services. This involves defining clear objectives, such as addressing service gaps, improving accessibility, reducing operating costs and emissions, and determining the geographic focus of operations. This may include specific neighbourhoods, rural or peri-urban areas, or the functional urban area as a whole.

The framework should define how DRT/ODM services will integrate with existing transport systems, including ticketing and passenger information. It should also review the relevant regulatory and contractual frameworks to identify any necessary adaptations. This need was emphasised by the municipalities participating in the SUM workshop. A detailed work plan and timeline should guide the design, piloting, and evaluation of services. Where appropriate, cities may seek technical assistance from software providers, consultants, or research institutions to ensure that service design and integration are robust and effective.

As participants in the SUMP workshop highlighted, an analysis of the current mobility situation should determine where DRT/ODM services can provide the greatest added value. This involves reviewing data on unmet mobility needs, particularly in low-density areas, during off-peak hours and in zones with limited accessibility. The performance and availability of existing DRT/ODM services should also be assessed, as well as their level of integration with fixed-route public transport — for example, through joint ticketing or real-time information systems.

The local market context should also be examined, mapping private operators and technology providers as well as their business models. National and regional policies (subsidy schemes, public service obligations, or digitalisation regulations) should be considered to understand enabling conditions and potential constraints.

The analysis should assess both the technological readiness of the area — including data platforms, booking and payment systems as well as user readiness, taking into account factors such as digital literacy, smartphone access, and openness to new shared mobility solutions.

As mentioned earlier, this phase should also serve to identify potential barriers. During the SUM workshop, participants highlighted various challenges, including low user readiness (limited digital literacy and smartphone access), insufficient organisational capacity, and weak coordination between public and private operators. The lack of dedicated legislation and funding was also mentioned as a barrier, particularly given the high costs of maintaining such services.

Insights from the Living Labs interviews

Establishing organisational capacity

- **Krakow** demonstrated that DRT requires a dedicated cross-department unit that can manage planning, dispatching, monitoring and procurement. They built an internal operations team while outsourcing the fleet algorithm — a model many cities can replicate.
- **Coimbra** runs a DRT pilot and organises internal coordination between the city and technical partners and operators to run operations.

Defining the planning framework

- **Krakow** stressed that national legislation did not yet recognise DRT formally. Cities should therefore map legal gaps early. Mapping legal and budget constraints is key: national legal ambiguity around DRT was flagged early as a risk to scale. The city therefore prioritised securing local political buy-in and defining pilot budgets before committing to larger roll-out
- **Coimbra** emphasised defining clear pilot boundaries (geographical, temporal, ride types) and specifying objectives (reduce rejection rate; limit waiting time; maximise pooling) before procurement or full service design.

Analysing the mobility situation for unmet needs

- **Krakow** combines university simulation with user surveys and operational heatmaps to select the pilot zone and design virtual pick-up points. The data tasks included obtaining GTFS for rail, measuring demand gaps, and checking vehicle availability from rental markets.
- **Coimbra** used simulations and historical booking data to estimate rejection and waiting rates and to decide whether adding vehicles would improve pooling without generating excessive idle capacity.

Mobility Hub Development

As with other innovative mobility measures, cities and regions must ensure that they possess the necessary human, technical, and financial resources before embarking on the planning of mobility hubs. A multidisciplinary team should be established, bringing together expertise in urban planning, transport, architecture, IT, energy, and finance, to coordinate design, delivery, and long-term operation. Strong institutional and political support is essential to align mobility hub development with broader strategic objectives and to secure sustained commitment. Early engagement with stakeholders, including public transport and shared mobility operators, real estate developers, local businesses, and user groups, is crucial to ensure shared ownership and local acceptance.

The next step is to develop a planning framework. This should define the main objectives of the hubs (enhancing multimodal connections, reducing car dependency, and supporting urban regeneration) and establish the geographical focus of interventions. Mobility hub planning should be closely linked with other

policy areas, including land use, parking management, public transport strategies, and active mobility networks.

Clear, transparent criteria for selecting hub locations must be defined, taking into account demand patterns, accessibility, available space, and equity considerations. A detailed work plan and timeline should set out the steps for design, piloting, and full-scale implementation. Where necessary, external support may be sought from design specialists, technology partners, or financial institutions to strengthen the development process.

A sound understanding of the current mobility landscape is essential to inform hub planning. This includes analysing existing data on travel demand, land use, and accessibility gaps, and identifying current weaknesses and opportunities in multimodal connectivity. The availability and integration of existing services (public transport, shared mobility, and charging infrastructure) should be reviewed, as well as the interoperability of ticketing, payment, and information systems. During the SUM workshop, interoperability was also highlighted, with participants noting that services would not be used effectively if they were not interoperable. Standardisation and seamless integration, which enable easy use through a single ticket or platform, were identified as essential for the successful development of mobility hubs.

Cities should also identify potential partners and participating service providers, along with their business models, to anticipate possible collaborations. Relevant national and regional frameworks, including land use policies, funding schemes, and energy transition strategies, should be examined to understand their implications for hub development.

Readiness assessments should consider both physical and digital infrastructure, real-time data management capacities, and the spatial and social needs of users, as identified through surveys, pilot projects, or public engagement workshops.

In terms of barriers, participants identified several key challenges. These included a lack of organisational capacity and coordination with stakeholders, as well as leadership, ownership and responsibility issues. Differences in municipal size, needs and capacities within regions, together with language barriers and limited availability of space, were also mentioned as complicating factors. Additionally, the slow adaptation of legislation to new technologies and challenges in data standardisation, monitoring, usage and the development of viable business cases were highlighted as significant obstacles to implementation

Insights from the Living Labs interviews

Building effective working structures

- **Geneva** created a multi-stakeholder team linking university administrations, PT operators and municipal planners. This governance mix allowed hubs on campuses to be tested quickly while aligning facilities, services and digital information.
- **Coimbra** integrated hub planning into the wider BRT/Metrobus reform teams so that hub siting and functions were considered with the new corridor design.
- **Larnaca** municipal teams coordinated with Nextbike and PT operators to select micro-hub locations aligned with expected national bike infrastructure.

Defining the planning framework

- **Geneva** defined hub typologies (major interchange vs neighbourhood node) and assigned responsibilities for each type.

Analysing the mobility & digital landscape

- **Geneva** ran on-site audits and user surveys 1 to identify transfer friction (lighting, signage, walking distances) and prioritise low-cost fixes.

- **Larnaca and Coimbra** aligned hub choices with already existing and forthcoming infrastructure projects and transport nodes (bike lanes, BRT stops) to avoid stranded or poorly used facilities.

Integration of New Shared Mobility into the Ecosystem

To integrate new shared mobility services into the urban mobility system, cities and regions must establish strong coordination and governance structures. This begins with the creation of an interdepartmental working group involving transport, urban planning, IT, finance, and environmental departments to ensure policy coherence and cross-sectoral collaboration. Dedicated staff should be assigned to oversee planning, management, and monitoring, ensuring accountability and continuity.

Early engagement with stakeholders, including public transport operators, shared mobility providers, property developers, technology companies, and user organisations, is essential to identify synergies and build partnerships. Potential private partners capable of operating or supporting shared mobility services should be involved from the outset to align objectives and ensure a coordinated approach. Clear governance and cooperation principles must be established to guarantee fair participation and balanced competition between traditional and emerging mobility providers.

The planning framework for shared mobility integration should establish a realistic timeline, budget, and implementation scope. It should define the geographic coverage (city centre, region, FUA) and ensure alignment with national and regional frameworks, including legal, financial, and spatial planning regulations.

Participants in the SUM workshop emphasised that establishing these elements from the outset is essential in order to guide effective and coordinated action.

The framework should also set out a conceptual approach for how shared mobility will complement public transport and other sustainable modes. Implementation, scaling-up, and integration of shared mobility services should be guided by a clear work plan, coordinated with related strategies such as parking management, digitalisation, and climate action. Where needed, cities may draw on external advisory or technical expertise to strengthen capacity in service planning, regulation, or evaluation.

The SUM workshop helped to identify several barriers to implementation, including difficulties in reallocating space and infrastructure to accommodate shared mobility, and low public awareness and resistance to changing travel habits. It is important to assess such issues from the outset to ensure they can be effectively addressed during implementation.

Insights from the Living Labs interviews

Building effective working structures

- **Larnaca** has adopted a simple municipal-partner model (municipality purchases minutes / operator runs fleet). This kept roles clear in Phase-1 and allowed fast service launch with limited governance overhead.
- **Geneva** has ensured early involvement of campus managers and operations to agree fleet placement rules, operating hours and liability / insurance responsibilities.

Defining the planning framework

- **Coimbra** insisted shared mobility must be planned in parallel with major public transport reforms (station footprints, parking changes), otherwise integration becomes last-minute and ineffective.

Analysing the mobility & digital landscape

- **Larnaca** documented minimal data exchanges with the bike operator (minutes accounting vs full telemetry) as a pragmatic Phase-1 approach to get integration started while preserving data governance simplicity.

CHECKLIST for preparation and analysis

- Form a small, **multidisciplinary core team** (planning, IT, operations, finance, legal).
- **Map legal & procurement constraints** early (national law, permits, procurement timetables).
- **Create a market map** with existing operators, fleet size, permit renewal cycles).
- **Run targeted analytics** with surveys to select pilot areas.
- **Define realistic scope** and start with limited modes or areas if capacity is limited.
- **Plan governance for scale** with inter-municipal coordination where FUA spans different permit regimes.
- **Design simple data agreements** initially (e.g., availability/minutes accounting) with stepwise escalation to richer data sharing.

6 SUMP Phase: Strategy Development

The second phase of a Sustainable Urban Mobility Plan focuses on developing strategies for integrating sharing systems into urban mobility planning. This process comprises three key steps:

1) Creating scenarios and setting targets: Defining service areas, fleet sizes, and expansion scenarios based on expected impacts and market developments.

2) Engaging stakeholders and building partnerships: Involving sharing providers, charging infrastructure operators, and public transport actors to optimally link transport offerings through integrated information, booking systems, and intermodal connections.

3) Establishing a long-term vision: Developing a shared vision of future mobility culture that enables political groups, citizens, and institutions to identify common goals, prioritise shared modes, and set measurable targets for implementation.

Key activities for integrating

Integrated Mobility Service Platform (MaaS)

Developing and assessing alternative scenarios is an important step in understanding how Mobility as a Service (MaaS) and new shared mobility business models could evolve within a city or region. Authorities should prepare a set of scenarios reflecting different possible futures, both positive and challenging, such as widespread adoption of shared mobility or continued reliance on private cars. These scenarios should be discussed with citizens, transport operators, shared mobility providers, and other relevant stakeholders to gather a diversity of perspectives and identify both opportunities and risks.

Within these scenarios, different governance and operational models should be explored (public-led, private-led, or hybrid) to determine what best suits local conditions and institutional capacities. Data availability and quality are critical for scenario development; therefore, cities should assess what datasets are accessible and identify any gaps that may limit inclusiveness or hinder participation from smaller providers.

Setting clear objectives and measurable indicators is essential for monitoring the performance and impact of MaaS. These indicators should align with broader transport and climate policy goals, such as increasing public transport efficiency, reducing private car ownership, and promoting modal shift towards sustainable modes. Participants in the SUM workshop also reaffirmed the importance of aligning MaaS development with related mobility and sustainability objectives.

Both system-level and user-level indicators should be considered, including affordability, reliability, ease of use, and accessibility for residents and visitors. A monitoring framework should be established to collect data, evaluate progress, and integrate regular feedback from users and stakeholders. Measurable targets should be linked to each indicator, such as increases in shared mobility trips, reductions in car kilometres, or higher public transport occupancy rates.

Cities should also explore incentive mechanisms to promote behavioural change, such as fare discounts, loyalty rewards, or other benefits encouraging the use of sustainable mobility options. These should be adapted to the needs of different user groups to maximise inclusiveness and effectiveness.

INPUT FROM PILOT INTERVIEWS

Creating scenarios and setting targets

- **Rotterdam** treats MaaS scenarios as constrained by regulatory fragmentation (different municipal permit regimes). Scenario work therefore included “limited” vs “regional” integration options and tasked to map which scenario is feasible given permit cycles.
- **Larnaca** uses a staged scenario: start with bus + bike integration and expand only after infrastructure (bike lanes, parking) is in place. Targets are pragmatic (increase last-mile bike trips, not immediate modal shift to MaaS).

Engaging stakeholders and building partnerships

- **Rotterdam** engaged municipal permit authorities early and stakeholder work aimed at creating inter-municipal agreements to reduce fragmentation when scaling MaaS**.**
- **Larnaca** used a compact partnership model (municipality + Nextbike + app developer) to create formal agreements clarified billing, minute-pool accounting and customer support responsibilities.

Establishing a long-term vision

- **Rotterdam** sees MaaS as a tool for targeted interventions (P+R, disruption management) rather than a universal replacement, visioning emphasised use-case prioritisation.
- **Larnaca & Coimbra** both see the integration of ticketing as an easier way to provide multimodal alternatives with imminent infrastructure deliveries (bus, bike lanes, BRT) so the vision remains realistic and sequenced.
- **Geneva** shaped a MaaS vision built around *customer journey quality*, not full transactional integration: clear information, reliability, and reduced friction across modes.

Demand-Responsive and On-Demand Mobility

Developing realistic scenarios for the introduction of demand-responsive and on-demand mobility helps cities and regions to evaluate how these services can meet unmet mobility needs. Scenarios should consider the potential roles of DRT/ODM, such as improving coverage in low-demand areas, providing night-time or off-peak transport, or facilitating first- and last-mile connections.

Each scenario should be evaluated in terms of its costs, benefits, accessibility, and environmental performance. Public discussions with citizens, operators, and community representatives can help assess social acceptance and identify potential barriers. The planning process should also evaluate operational approaches, like advance booking, real-time booking, app-based systems, or call-centre models, as well as different service configurations, including fixed stops, semi-flexible routes, or fully flexible operation. The geographic coverage of DRT/ODM should reflect areas of identified mobility gaps while maintaining complementarity with other sustainable modes.

A clear and shared vision should define the long-term purpose of DRT/ODM services within the wider transport ecosystem. This vision should be co-developed with stakeholders - municipalities, transport operators, technology providers, and communities - and set out objectives such as inclusivity, cost efficiency, sustainability, and territorial coverage.

Target groups, such as commuters, students, elderly people, and rural residents, should be identified, and their specific needs reflected in service design. The strategy should also define appropriate vehicle types, fare structures that balance affordability and financial viability, and funding models combining public subsidies, user fares, and private partnerships. Governance and contractual models should clarify operational responsibilities, whether managed publicly, through delegated operation, or via public–private partnerships. Coordination mechanisms between authorities, operators, and technology providers are necessary to ensure efficiency and accountability.

To evaluate progress, cities should establish performance indicators covering operational, financial, and user experience dimensions (ridership, cost per passenger, coverage, waiting times, and user satisfaction). Service-level indicators like booking response time and pick-up reliability are equally important. Measurable targets, for instance, maximum waiting time, minimum occupancy rates, or the share of the population within DRT coverage, should be defined and monitored. Evaluation should assess whether DRT/ODM complements other sustainable modes and contributes to wider mobility objectives. Regular feedback loops with users should be maintained to support continuous improvement and ensure that services remain aligned with evolving mobility needs

INPUT FROM PILOT INTERVIEWS

Creating scenarios and setting targets

- **Coimbra** uses operational data to develop realistic DRT scenarios: waiting time, rejection rate and pooling rate are explicitly used to set targets. Their scenario strategy tests fleet sizes and service areas based on simulations and real user feedback

Engaging stakeholders and building partnerships

- **Coimbra** coordinates operators, municipal planners, booking providers and community users in scenario discussions. They ensure inclusion of non-digital booking options (phone + web) so strategy remains socially inclusive.

Establishing a long-term vision

- **Coimbra** builds a vision where DRT complements PT in low-demand areas and acts as an access tool to core corridors (especially the future BRT). They emphasise: “DRT should not replace PT; it fills coverage gaps and supports accessibility.”

Mobility Hub Development

Developing mobility hub scenarios is fundamental to understanding their potential role within a city or region’s transport network. Different types of hubs (major multimodal interchanges, neighbourhood hubs, rural transfer points) should be examined to compare their functions, service offerings, spatial impact, and user accessibility. These scenarios should be discussed with citizens, local businesses, and service providers to ensure alignment with local needs and to test feasibility and acceptance.

For each scenario, cities should clarify the role of the hub within the wider mobility system for example, serving as a feeder to public transport, a last-mile connector, or a focal point for car-free living. The potential impacts on land use, parking availability, public realm, and green space should be evaluated. Inclusivity and equitable access should guide scenario development to ensure that hubs serve all user groups, including those with limited mobility or low digital literacy.

A shared vision and coordinated strategy should guide mobility hub planning and delivery. This vision should be co-created with public transport authorities, shared mobility operators, developers, municipalities, and citizens, setting clear objectives such as improving multimodality, reducing car dependency, promoting active travel, and revitalising public spaces.

The strategy should specify hub functions and services (shared mobility, charging facilities, parcel lockers, and community services) while ensuring safe, accessible, and user-friendly design. Governance and management structures should be defined, whether public-led, concession-based, or implemented through public–private partnerships. Financial arrangements should combine public funding, private contributions,

and commercial activity to ensure sustainability. Integration with land-use and urban development plans is essential for maximising benefits and long-term coherence.

Performance indicators and measurable targets should be established to assess progress for example, modal shift rates, shared mobility usage, accessibility improvements, or user satisfaction. Continuous monitoring should ensure that hubs adapt to evolving needs and technologies while remaining aligned with broader sustainability objectives.

INPUT FROM PILOT INTERVIEWS

Creating scenarios and setting targets

- **Penteli** adopted a step-by-step hub strategy: first implement one central hub, test signage/totems, evaluate acceptance, then expand. Their targets are simple and behavioural (does signage work? do residents use the hub?).
- **Geneva** designed different hub scenarios for different types of locations (PT interchanges vs neighbourhood nodes). They evaluated them with user surveys and stakeholder consultations before defining functions (bike parking, lockers, parcel points, micromobility)

Engaging stakeholders and building partnerships

- **Penteli** used participatory methods, involving residents, planners, accessibility groups, and service providers in deciding hub location and design**.**
- **Geneva** coordinated PTA, shared mobility operators, campus managers, and regional authorities. Their experience shows hubs only work when *ownership and roles are jointly defined* early**.**

Long-term vision formulation

- **Penteli** frames hubs as “community nodes” combining mobility, safety, and basic services with a vision is small-scale but holistic.

- **Geneva** embeds hubs in cantonal and regional mobility strategies, ensuring long-term continuity and avoiding “isolated pilot” status.

Integration of New Shared Mobility into the Ecosystem

Scenario development helps cities anticipate how shared mobility services might evolve and how they can be integrated effectively into the broader transport system. These scenarios should account for different fleet sizes, service areas, and levels of market uptake, as well as possible restrictions or expansions based on demand and policy priorities.

Each scenario should analyse the potential impacts on accessibility, public space, environmental outcomes, and social equity. The discussion of scenarios with citizens, operators, infrastructure providers, and public

authorities ensures transparency and helps to balance stakeholder interests. Integration with public transport, shared booking systems, and charging infrastructure should be considered from the outset to support operational and digital interoperability.

A shared, long-term vision for shared mobility should be developed collaboratively among stakeholders, citizens, and political actors. This vision should define the strategic role of shared mobility, whether as a complement to public transport and active modes, as a last-mile connector, or as a means to reduce car ownership.

Stakeholders should agree on governance principles and partnership models that facilitate cooperation across transport modes and infrastructure providers. Formal coordination with public transport operators is essential for coherent planning, ticketing, and service integration. The overall strategy should also outline guiding principles for sustainable growth, accessibility, equity, and environmental performance, ensuring consistent policy direction over time.

Cities should establish clear objectives, indicators, and measurable targets to evaluate the progress of shared mobility integration. These should include operational measures such as fleet size, service coverage, and usage intensity, as well as behavioural and system-level indicators such as modal shift, car ownership reduction, and shared mobility uptake.

Monitoring frameworks should assess contributions to broader urban goals (emission reductions, congestion management, equitable access, and the efficient use of public space). Regular evaluation enables authorities to refine strategies, adapt to technological change, and maintain accountability to citizens and partners.

INPUT FROM PILOT INTERVIEWS

Scenario development & target setting

- **Coimbra** integrates shared mobility scenarios directly into broader PT reforms (e.g. BRT), ensuring shared mobility strengthens rather than competes with the main network.
- **Larnaca** adopts a narrow, feasible integration scenario: buses + bikes first, with expansion only when infrastructure exists.
- **Geneva** tests integration at the campus level, exploring how shared mobility can complement high-quality PT and reduce private-car dependence.

Stakeholder engagement & partnership building

- **Larnaca** has clear, simple contractual cooperation with its bike-share operator (minute-pool model) — a pragmatic approach that reduces coordination complexity.
- **Coimbra** involves operators, regional PT authorities, and simulation partners to co-design integration steps.

Long-term vision formulation

- **Coimbra** sees shared mobility as a *feeder* for core corridors and as a support to PT usage.
- **Larnaca** envisions growing from an initial bus-bike combination to a fuller multimodal system once infrastructure and ridership justify it.
- **Geneva** positions shared mobility as part of an “enabling environment” for less car-dependent urban life, starting in dense and high-activity nodes.

CHECKLIST for strategy development

- Develop **2–3 realistic scenarios** per business activity (minimal pilot, phased scale-up, full integration).
- Base **scenarios on actual readiness**: infrastructure timelines, contracting cycles, data availability.
- **Align scenario milestones with major mobility projects** (PT rollout, bike-lane delivery, hub construction).
- Bring all key actors into **a structured scenario workshop** (PT operator, shared mobility providers, tech partners, planners, legal).
- **Clarify roles** for each scenario (who provides data, who operates, who maintains infrastructure).
- **Engage cross-municipal partners** early if the FUA includes multiple permit regimes.
- **Document cooperation terms** (data access, branding, responsibilities) in simple MoUs or governance sheets.
- Build a shared long-term vision stating **how business activities support PT** and sustainability goals.
- **Ensure accessibility and inclusion** are explicit components (e.g., non-digital booking options where relevant).
- **Define 5–10 year strategic goals** with 2–3 year stepping stones that reflect institutional and technical reality.

7 SUMP Phase: Measure Planning & Co-Design of Solutions

The third phase of a Sustainable Urban Mobility Plan (SUMP) focuses on translating strategic goals into concrete measures for integrating shared mobility systems. This process comprises three key steps:

1) Identifying and selecting measures: Creating a comprehensive list of appropriate and effective measures for shared mobility, developing tailored measure packages that consider zoning concepts, station locations, repositioning strategies, and integration with local public transport.

2) Assigning responsibilities and securing financing: Coordinating across municipal departments (traffic planning, city planning, civil engineering, regulatory offices, and mobility/environmental management) to clarify roles, ensure legal compliance with parking regulations and pavement standards, and develop a detailed financing plan.

3) Preparing for implementation: Finalising the SUMP document, securing political and public support, and establishing a monitoring and evaluation plan to track the performance of shared mobility measures once implemented.

Key activities for integrating

Integrated Mobility Service Platform (MaaS)

The transition from planning to implementation requires the definition of coordinated measure packages that link MaaS with public transport, shared mobility, and traffic management systems. These packages should promote multimodal coordination, support modal shift, and improve overall network efficiency.

MaaS-based data exchange mechanisms can help cities transition from traditional traffic management to integrated, multimodal mobility management. To ensure service reliability and user protection, common quality standards should be harmonised across all mobility service providers. Policies governing the use of algorithms should be agreed upon to guarantee transparency, maintain competition, and avoid biases that could promote less sustainable modes. Monitoring and evaluation should accompany implementation to assess impacts on modal split, accessibility, emissions, and equity, allowing for iterative improvement.

Clearly defined actions and responsibilities are essential for successful MaaS implementation. Each planned action, whether technical, regulatory, or operational, should be detailed and assigned to the appropriate actor, such as a public authority, transport operator, MaaS provider, or technology partner. Funding sources must be identified and diversified across public budgets, EU or national grants, private investment, and public–private partnerships.

Authorities should assess the financial capacity of all partners and establish joint priorities, responsibilities, and timelines. Transparent communication with stakeholders and citizens will help build public and political support by demonstrating how MaaS contributes to broader goals of sustainability, accessibility, and innovation.

Long-term institutionalisation of MaaS requires a stable financial and governance framework. Cities should develop financial plans outlining cost- and revenue-sharing mechanisms, including subscriptions, commissions, and subsidies. Governance and quality assurance systems must ensure transparency and accountability, safeguarding public interest and service quality. Sustainable funding streams should be

secured for MaaS-enabled services such as real-time travel information and dynamic traffic optimisation, ensuring continuity and long-term impact.

INPUT FROM PILOT INTERVIEWS

Selecting Measures

- **Rotterdam** shows that MaaS measures must start from real technical constraints. RET can provide multimodal routing and shared mobility availability, but full booking/payment is not feasible today due to API costs and platform limitations. Therefore, Rotterdam's measure package prioritises: P+R integration, shared mobility visibility, and future-ready API architecture — instead of unrealistic full integration.
- **Larnaca** illustrates how small cities should pick measures proportional to local maturity: their MaaS strategy focuses on linking public transport with the planned public bike service, avoiding over-complex bundles.
- **Geneva** demonstrates the need to embed data governance as a measure. Early decisions on data access, responsibilities, and branding prevented delays during platform integration on the university campus.

Responsibilities & Financing

- **Rotterdam** highlights that MaaS requires role clarity: the public transport operator manages routing + ticketing, the municipality regulates shared mobility, and private providers manage vehicle data.
- **Geneva** shows that MaaS financing depends on institutional partnerships; data platforms and campus-based MaaS require shared funding models across universities, PT operators, and regional authorities.
- **Larnaca** indicates that smaller municipalities may rely on local budgets.

Implementation Preparation

- **Rotterdam** shows that MaaS roll-out needs realistic public communications — mass adoption is unlikely without early incentives or bundled products**.**
- • **Geneva** demonstrates that MaaS pilots should implement continuous monitoring, especially on user feedback and interoperability performance.

Demand-Responsive and On-Demand Mobility (DRT/ODM)

To ensure that demand-responsive and on-demand mobility services effectively support broader accessibility and sustainability goals, cities and regions should define integrated packages of measures. These packages should combine DRT/ODM with public transport, active travel, and last-mile connectivity to strengthen network efficiency and service inclusiveness.

Service parameters, such as booking methods (pre-booked, real-time, or hybrid), route flexibility, coverage area, stop locations, service frequency, and fleet size, should be agreed upon collaboratively among stakeholders. Fare structures must balance affordability and cost recovery, while ensuring equitable access for different user groups. Monitoring and evaluation frameworks should be in place from the outset to assess performance in terms of accessibility, ridership, emissions, and financial sustainability. Collected data should inform adjustments in service design and support the ongoing integration of DRT/ODM into the wider mobility system.

Successful implementation requires clearly defined roles, responsibilities, and operational structures. Each action, from service design and digital platforms to regulatory adjustments and operational management, should be detailed and assigned to the relevant actors, including local authorities, transport operators, private providers, and technology partners.

Funding sources should be identified early, combining public budgets, EU and national programmes, private investments, and public–private partnerships. Assessing the financial capacity of each stakeholder helps ensure that services are viable and sustainable. Clear agreement on priorities, implementation timelines, and coordination mechanisms supports consistency throughout the rollout phase. Communication and engagement with citizens are also essential to build understanding and acceptance, demonstrating how DRT/ODM contributes to sustainable mobility and improved accessibility.

Financial planning should define cost-sharing, subsidy schemes, and revenue models that reflect local demand and capacity. Governance structures and quality assurance mechanisms should ensure transparent management, reliable service delivery, and user protection.

Sustainable financing, through a combination of ongoing subsidies, integration into public transport budgets, or commercial partnerships, is key to long-term operation. Regular monitoring and evaluation should enable adaptation to changing user needs, technologies, and travel behaviours, ensuring that DRT/ODM services remain effective and relevant.

INPUT FROM PILOT INTERVIEWS

Selecting measures

- **Krakow** provides the strongest operational reference: all measures (fleet size, virtual stops, pooling targets, waiting-time thresholds, and rejection-rate caps) were derived directly from pilot KPIs and simulations. Kraków's approach shows that measures should be based on real service performance, not assumptions.
  • **Coimbra** demonstrates that DRT measures must be aligned with *existing PT reforms* (network restructuring, future BRT). Their measures focus on coverage gaps and feeder functions, not duplicating bus services.

Responsibilities & Financing

- **Krakow** shows the importance of separating responsibilities clearly: the PTA handles dispatching and monitoring, while drivers come from contracted third-party providers**.**
  • **Coimbra** highlights the need to involve multiple institutions (PT operator SMTUC, municipality, and university) in a coordinated manner.

Implementation Preparation

- **Kraków** emphasises the use of simulations to test expansion scenarios before implementation.
- **Coimbra** demonstrates that user surveys must be repeated (pre- and post-pilot) to refine service measures and adapt to real demand.

Mobility Hub Development

Integrated packages of measures are essential to ensure that mobility hubs deliver their full potential as multimodal access points. These packages should combine public transport, shared mobility, active travel, and complementary services such as charging infrastructure, parcel delivery, and public amenities. Planning for mobility hubs should be coordinated with related urban policies (land use, parking management, and public space design) to maximise their spatial and social value.

Different hub typologies should be considered based on context: large intermodal hubs in central areas, smaller neighbourhood hubs, and rural interchange points serving low-density regions. Each typology should be assessed for its spatial footprint, accessibility, cost implications, and potential benefits for connectivity and inclusion. Design principles should ensure accessibility, safety, and usability, barrier-free layouts, adequate lighting, and clear wayfinding. A monitoring framework should accompany implementation, tracking performance indicators such as intermodal trip numbers, user satisfaction, space reallocation, and emission reductions.

Clear allocation of roles and responsibilities is fundamental for effective hub delivery. Each planned action, including site selection, design, construction, operation, and digital integration, should be assigned to the

relevant authority, operator, or partner. Funding sources must be diversified, combining public budgets, EU and national programmes, private contributions, and public–private partnerships. Assessing the technical and financial capacities of each stakeholder ensures project feasibility and long-term success.

Political commitment and stakeholder support are crucial, particularly in cases where space reallocation or land-use change may be sensitive. Joint agreements on priorities, implementation steps, and timelines strengthen coordination and accountability.

A robust financial plan should cover all stages of hub development, from construction to long-term maintenance and operations. Cost- and revenue-sharing arrangements between public and private actors should be formalised, including potential revenues from commercial services at hub locations. Governance and quality assurance mechanisms should ensure that hubs remain safe, adaptable, and aligned with evolving mobility needs and technologies.

Sustainable funding streams, for example public subsidies, operator contributions, or revenue from ancillary services, should be secured to maintain functionality and service quality over time.

INPUT FROM PILOT INTERVIEWS

Selecting Measures

- **Geneva** shows that hub measures must account for spatial constraints and land-use realities: limited space near stations required precise design choices, not generic hub templates.
- **Penteli** demonstrates that small municipalities need modular, low-cost hub measures — light infrastructure, marked micro-mobility areas, simple signage — rather than high-complexity structures.

Responsibilities & Financing

- **Geneva's** experience shows hubs require multi-agency agreements (railway company, PT operator, land authority).
- **Penteli** shows that small municipalities must prioritise measures with feasible maintenance and low operating cost.

Implementation Preparation

- **Geneva** show that space reallocation requires strong political backing and early communication with residents.
- **Penteli** demonstrates that early engagement with local businesses helps avoid conflict over parking and curb space.

Integration of New Shared Mobility into the Ecosystem

To ensure that shared mobility becomes an integrated component of the transport ecosystem rather than a stand-alone service, cities should establish comprehensive and coordinated measure packages. These should include the definition of service zones, parking and charging infrastructure, redistribution systems, and integration with public transport and mobility hubs. Shared mobility measures should draw upon best practices from other cities and be adapted to local needs and governance frameworks.

Special attention should be given to parking management — ensuring dedicated, well-located parking and charging areas — and to the alignment of shared mobility planning with broader transport, land-use, and climate strategies. Close collaboration with stakeholders, including public transport operators and private providers, is necessary to enable shared ticketing, co-location at hubs, and integrated booking systems. Continuous monitoring should track the effects on modal shift, public space use, equity, and environmental performance.

Successful implementation depends on clearly defined responsibilities and coordination between all relevant municipal departments, including urban planning, transport, infrastructure, environmental protection, and regulatory offices. Tasks related to infrastructure delivery, such as the installation of stations or charging points and the reallocation of parking space, should be explicitly assigned and communicated. Equally crucial is the ongoing maintenance of infrastructure facilities, which must be planned for and resourced from the outset. Coordination mechanisms must ensure efficient information exchange and timely implementation.

Funding sources should combine municipal budgets, national and EU funding programmes, private operator contributions, and public–private partnerships. All stakeholders should agree on priorities, financing arrangements, and timelines. Legal and spatial planning frameworks must be respected — including accessibility requirements, safety standards, and environmental protection.

Embedding shared mobility within urban policy requires a stable financial and governance framework. A financial plan should define cost-sharing mechanisms among municipalities, operators, and other partners. Agreements should regulate the use of public space and parking areas for shared mobility, ensuring fairness and transparency. Governance structures must guarantee compliance with regulations, equitable access, and service quality.

Shared mobility should be anchored in broader city strategies — including those on transport, land use, environment, and climate — to ensure alignment with long-term policy goals. Sustainable financing mechanisms, such as operator fees, permits, or reinvestment of revenues, should secure continuity. Once implemented, systematic monitoring and evaluation will help measure outcomes, guide necessary adaptations, and strengthen accountability.

INPUT FROM PILOT INTERVIEWS

Selecting Measures

- **Jerusalem** shows that shared mobility measures must match infrastructure readiness: bike-sharing rollout was aligned with cycling-lane expansion and LRT station catchment areas**.**
- **Penteli** shows that local conditions drive measure selection: shared mobility needs precise micro-zoning, parking management, and safety considerations in small neighbourhoods.

Responsibilities & Financing

- **Jerusalem** demonstrates that city-wide cycling integrations require the municipality, national transport ministries, and private bike operators to share responsibilities.
- **Penteli** shows that financing for shared mobility support infrastructure (parking, signage) must be small-scale and phased.

Implementation Preparation

- **Coimbra and Penteli** both show that resident acceptance depends heavily on how parking space is reallocated. Communication is a central implementation measure.
- **Jerusalem** demonstrates that new cycling and shared mobility measures require continuous user education and safety messaging.

CHECKLIST for planning & co-design of solutions

- Translate scenarios into concrete, **deliverable measures** per mode (MaaS, DRT, hubs, shared mobility).
- Bundle measures so that **shared mobility reinforces public transport** (not competes).
- Ensure **spatial feasibility**: confirm station locations, kerbside allocation, hub footprints.
- Evaluate **technical feasibility**: integration level, API readiness, data standards, ICT needs.
- **Incorporate user feedback** and pilot data into final measure selection.
- Define **accessibility and inclusion requirements** early (digital + non-digital access).
- Map **responsibilities clearly** across departments (planning, traffic, IT, legal, operations).
- Define **data-sharing duties**: who provides data, frequency, format, permissions.
- **Coordinate with procurement teams** to ensure legal compliance (permits, tenders).
- Identify funding sources for each measure (municipal, regional, EU, PPP, operator fees).
- **Prepare operator obligations** (performance standards, reporting, customer service).
- Produce an **implementation roadmap** with milestones and dependencies.
- Develop a **communication and stakeholder plan** (political briefings + public messaging).

8 SUMP Phase: Implementation, Monitoring and Evaluation

The fourth phase of a Sustainable Urban Mobility Plan (SUMP) involves implementing shared mobility measures and continually assessing their effectiveness. This process comprises three key steps:

1) **Establishing data collection systems:** Securing anonymised usage data from sharing operators through contractual agreements, building a robust database to track bookings, system utilisation, customer satisfaction, and broader impacts such as modal shift effects, parking situations, and air quality.

2) **Engaging citizens and stakeholders:** Informing the municipal population and local residents about new offers through communication channels (citizen information services, posters, media), collaborating with service providers to identify optimal station locations, and ensuring high acceptance of shared mobility initiatives.

3) **Monitoring, evaluating, and adapting:** Checking whether measures were implemented as planned and objectives achieved, making data-driven decisions about expanding or adjusting services, and applying lessons learnt to readjust system infrastructure, parking space allocation, or introduce incentive schemes based on user behaviour.

Key activities for integrating

Integrated Mobility Service Platform (MaaS)

Successful implementation of a Mobility as a Service (MaaS) platform requires a dedicated management structure equipped with adequate resources, technical expertise and decision-making authority. This structure should ensure alignment between project delivery and the wider sustainable mobility objectives of the city or region. It should also facilitate continuous dialogue among all relevant stakeholders, including public authorities, operators and technology providers. Therefore, it is essential that evaluation processes verify the existence and effectiveness of such a structure and pinpoint areas where adjustments are required to ensure proper coordination and accountability.

Procurement processes should be designed to promote openness, interoperability and the use of standardised application programming interfaces (APIs), thereby enabling data exchange between systems while avoiding monopolistic practices or vendor lock-in. The management framework should support collaboration across public and private actors, ensuring that MaaS evolves within a fair, competitive and user-centred ecosystem.

Monitoring the progress and performance of MaaS is essential to ensure that implementation contributes to broader policy goals. Cities and regions should establish a monitoring framework that tracks relevant indicators, such as modal shift, reduction in private car use, accessibility improvements and emission reductions. Feedback from users and data from the MaaS platform should be continuously analysed to adapt measures and ensure services remain effective and inclusive. Transparent communication with citizens and stakeholders is key to maintaining trust and demonstrating how MaaS developments respond to local mobility needs. Regular progress updates, stakeholder engagement and participatory evaluations can reinforce ownership and collective learning.

Ongoing evaluation allows cities to identify successes, challenges and lessons learned. Authorities should systematically assess whether MaaS is delivering on the objectives defined in the Sustainable Urban Mobility Plan (SUMP), including sustainability, efficiency and equitable access to mobility. The lessons drawn from this evaluation should feed into future planning cycles, strengthening institutional learning and facilitating the replication of successful approaches in other contexts.

INPUT FROM PILOT INTERVIEWS

Implementation & Operational Management

- **Rotterdam** shows that MaaS implementation depends on a stable operational team with clear internal division of labour (IT managing routing, planning handling multimodal logic, city authority managing shared-mobility permits). RET's reality demonstrates that lacking internal alignment slows delivery more than technical barriers.
- **Geneva** demonstrates that data governance must be operational from day one. Their MaaS work required continuous coordination between PT operator, shared mobility providers and the region, and implementation progressed smoothly because roles and data ownership had already been negotiated.
- **Larnaca** shows that small cities benefit from simple, phased implementation: bikes first, basic PT information second, with limited technical complexity. Their approach illustrates that starting small improves the feasibility of monitoring and evaluation.

Monitoring, KPIs & Adaptive Management

- **Rotterdam's** experience reinforces that adoption barriers must be monitored continuously: many residents still use separate apps, so monitoring focuses on usage, awareness, and the effectiveness of incentives.

- **Geneva** shows that continuous user feedback is essential: they track usage intensity on campus, station-level behaviour, and interoperability glitches to feed into iterative improvements.

Demand-Responsive and On-Demand Mobility (DRT/ODM)

Effective implementation of demand-responsive and on-demand mobility (DRT/ODM) requires a dedicated management body with the authority, resources and expertise to oversee service operation and coordination with other mobility providers. This structure should ensure that DRT/ODM is integrated into the wider transport system, complementing public transport timetables, interchanges and shared ticketing systems.

Procurement and contractual frameworks should encourage flexibility, interoperability and scalability to allow for integration with existing and emerging digital platforms, such as MaaS. Coordination between public authorities, operators and technology providers should be maintained throughout implementation to ensure that services are efficient, reliable and aligned with policy objectives.

Monitoring and evaluation are central to maintaining service quality and improving performance. Key performance indicators should include ridership levels, waiting times, service coverage, cost per passenger and user satisfaction. Data collected through operations and passenger feedback should be used to adjust service parameters, such as routes, fleet size, booking systems and pricing models, to optimise performance and efficiency. Transparent and continuous communication with users and stakeholders fosters trust and helps demonstrate the contribution of DRT/ODM to accessibility and sustainability goals.

Regular review and evaluation processes should assess how DRT/ODM contributes to broader SUMP objectives, including accessibility, environmental performance and network efficiency. Authorities should document and share lessons learned to guide future replication and scaling. Preparing for the integration of DRT/ODM into the wider MaaS ecosystem is a long-term goal. This involves developing shared data standards, open APIs and interoperable ticketing systems to ensure that DRT/ODM becomes a seamless component of an integrated, flexible and sustainable mobility system.

INPUT FROM PILOT INTERVIEWS

Implementation & Operational Management

- **Krakow** provides the clearest example of structured DRT implementation: dispatching is automated; drivers use a dedicated app; intervention occurs only for exceptions. Kraków's operational model shows the importance of a supervisory team that monitors KPIs in real time (pooling, waiting time, rejection rate).
- **Coimbra** demonstrates the need for institutional coordination: their DRT operates within a wider PT reform, so the PTA (SMTUC), municipality, and stakeholders maintain joint oversight. Implementation had to align with ongoing bus network improvements.

Monitoring, KPIs & Adaptive Management

- **Krakow** systematically monitors KPIs (waiting time, pooling rate, rejection rate) and uses these to adapt service boundaries and fleet size, proving that DRT implementation must be both data-driven and politics-driven by providing the resources needed.
- **Coimbra** repeats user surveys before and after pilot phases to understand changes in perception, use cases, and mobility needs, showing the value of continuous qualitative monitoring, not just operational KPIs.

Mobility Hub Development

The successful delivery of mobility hubs depends on strong organisational capacity and coordinated management of planning, design, construction and operations. Cities should establish dedicated teams with clearly defined mandates and responsibilities covering both physical and digital integration. Procurement procedures must be transparent and clearly allocate responsibilities for infrastructure development, service coordination and data systems.

Ensuring effective connectivity between hubs and other transport modes (public transport, shared mobility and active travel) is essential to achieving seamless multimodal journeys. Continuous monitoring of performance indicators, such as user numbers, intermodal trip volumes, accessibility improvements, spatial reallocation and user satisfaction, provides insights into the effectiveness of hubs and supports evidence-based decision-making.

Adaptive management processes should be in place to adjust hub design, layout and service offerings based on monitoring results and user feedback. Engagement with citizens, communities and stakeholders should be maintained throughout the operational phase to build trust, ensure transparency and encourage behavioural change towards shared and sustainable mobility.

Regular evaluation of mobility hub operations should identify successful practices, challenges encountered and opportunities for improvement. Demonstrating the contribution of hubs to SUMP objectives, such as reducing car dependency, enhancing multimodal connectivity and improving the quality of urban life, helps justify ongoing investment and policy support. Lessons learned should be systematically documented and applied to future projects to support continuous improvement and ensure long-term sustainability.

INPUT FROM PILOT INTERVIEWS

Implementation & Operational Management

- **Geneva** shows that implementation requires *tight coordination across landowners, rail operators, and the city*: limited space near major stations meant designs needed rapid adaptation and close dialogue during construction.
- **Penteli** demonstrates that smaller hubs need *simple implementation models*: lightweight infrastructure, painted parking areas, wayfinding and safety improvements — all manageable by small municipal teams.

Monitoring, KPIs & Adaptive Management

- **Geneva** tracks user flows, intermodal transfers and operational hot-spots at campus and rail stations, using results to adapt layout or move shared-mobility spaces.
- **Penteli** monitors conflicts over curb space and adjusts micromobility parking, accordingly, proving that even small hubs require regular evaluation.

Integration of New Shared Mobility into the Ecosystem

Also, in the integration of New Shared Mobility into the ecosystem, coordinating the rollout of shared mobility measures requires clear organisational structures and the allocation of responsibilities among city departments and partner organisations. Roles in planning, infrastructure provision and operator coordination must be well-defined to ensure coherence and accountability. Contracts with shared mobility operators should include obligations to share anonymised data to support planning, monitoring and performance evaluation.

Collaboration between public authorities and operators is essential for selecting and adapting suitable locations for stations and parking spaces, ensuring that services align with accessibility standards and urban design principles. Effective coordination helps integrate shared mobility with public transport and active modes, strengthening the overall mobility ecosystem.

Monitoring shared mobility services is essential for managing their impact and fostering long-term acceptance. Indicators (usage rates, bookings, modal shift, customer satisfaction, parking impacts and environmental effects) should be regularly tracked. The establishment of centralised databases and analytical tools enables systematic evaluation and data-driven policy decisions. Transparent communication through awareness campaigns and public engagement initiatives promotes public understanding and acceptance.

Authorities should collaborate with service providers to adjust operations in response to user feedback and demand trends, ensuring continued relevance and efficiency. Regular evaluation allows cities to determine whether shared mobility initiatives are meeting their objectives and contributing to SUMP priorities. Lessons learned from implementation, including infrastructure design, incentive structures and communication strategies, should be documented and disseminated. Demonstrating how shared mobility contributes to reduced car ownership, improved modal shift and better use of public space will strengthen both political and public support for sustainable urban mobility policies.

INPUT FROM PILOT INTERVIEWS

Implementation & Operational Management

- **Jerusalem** demonstrates that implementation of shared micromobility must be coordinated with *infrastructure delivery*: bike deployment, LRT expansion and bike-lane rollout are synchronised to ensure safe, attractive first/last-mile connections.
- **Penteli** shows that in smaller municipalities, integration relies on *precise micro-zoning*: defining legal parking, using markers, enforcing rules, and managing local sensitivities around space reallocation.

Monitoring, KPIs & Adaptive Management

- **Jerusalem** monitors station usage, network gaps, and safety interactions between cyclists and LRT access points, and adapts deployment accordingly.
- **Rotterdam** tracks parking behaviour, demand clusters and distribution problems; monitoring data informs both enforcement and next permit-round requirements.
- **Penteli** reviews citizen feedback continuously to adjust shared mobility rules, locations, and communication.

CHECKLIST for implementation, monitoring and evaluation

- Set up **automated data feeds** (usage, availability, KPIs) in agreed formats.
- Collect both quantitative (usage, availability, emissions, waiting times) and qualitative data (surveys, feedback).
- Monitor **performance against targets** weekly/monthly depending on the service.
- Track **unintended impacts** (parking conflict, safety issues, street clutter).
- Use **dashboards or shared tools** for real-time performance tracking.
- Maintain **continuous dialogue** with operators to quickly resolve operational issues.
- **Engage vulnerable users and communities** to ensure inclusiveness.
- Check whether implementation **follows the SUMP action plan** (timelines, budgets, roles).
- Adjust service **parameters based on data** (fleet size, virtual stops, station placement, pricing).

9 Conclusion

This report presents a comprehensive, evidence-based guide for embedding cooperative, co-created shared mobility business models into SUMPs. Drawing on the experiences of nine Living Labs and building on previous project deliverables, these guidelines offer a structured methodology aligned with the 12-step SUMP process to support cities in transitioning toward more sustainable, inclusive, and human-centred mobility ecosystems.

A summary of the key integration elements in the present report for embedding co-created shared mobility business models into SUMPs includes:

- Developing the analytical framework: The deliverable introduces a systemic approach that integrates shared mobility across SUMP's thematic scopes—mobility modes, enablers, and policy objectives—bridging theory and practice.
- Definition of the new and shared mobility Business Model Packages: These packages combine shared mobility modes, enabling mechanisms, and policy objectives into actionable planning tools. They reflect real-world configurations tested in Living Labs and are designed to be transferable across urban contexts.
- Link with SUM Living labs' push and pull measures: linked to the business model packages, the integration relies on strategic interventions such as congestion charges, parking restrictions, mobility hubs, MaaS integration, and dynamic pricing. These measures are essential for influencing user behaviour and ensuring service viability.
- Four-phase SUMP Alignment:
    - Preparation & Analysis: Identifying local mobility needs and stakeholder ecosystems.
    - Strategy Development: Aligning shared mobility goals with urban policy objectives.
    - Measure Planning & Co-Design: Co-creating solutions with public and private actors.
    - Implementation, Monitoring & Evaluation: Embedding business models into operational plans and assessing impact.
- Expert insights: Structured interviews with stakeholders inside and outside the SUM project provide critical perspectives on governance, policy structures, and integration barriers.
- Validation workshop: A dedicated workshop with SUM cities and follower cities, and external stakeholders at Barcelona Smart City World Expo 2025, was conducted to teach cities and regions how to successfully integrate shared mobility into their Sustainable Urban Mobility Plans (SUMPs).

With regards to impact and transferability actions, this guide empowers local and regional authorities, transport planners, and public transport operators to design "SUMP-proof" shared mobility strategies. It supports the replication of successful models beyond the Living Labs and lays the groundwork for future policy recommendations and capacity-building workshops.

By embedding shared mobility into every phase of the SUMP cycle, cities can foster more cooperative, accessible, and resilient urban transport systems—advancing the European vision for seamless, sustainable mobility.

10 Future work

The next steps in this work package and in the project will be to host a second SUMP workshop, in this case, online, to continue supporting SUM cities and follower cities with integrating cooperative, co-creative new and shared mobility business models into SUMPs, and on drafting and finalizing the SUM policy recommendations targeted at the European Institutions, European, national, and regional/local institutional stakeholders in shared mobility, industry and service providers. These recommendations will be based on the expert interviews conducted in the present deliverable as part of activities in task 5.4. Finally, the draft recommendations will be validated in an expert workshop. The recommendations will focus on creating favourable conditions for the take-up of the shared mobility innovations that SUM has developed at the EU and national level and incorporating the experiences of the SUM cities.

The key areas of future work include:

- An online SUMP workshop to continue supporting SUM cities and follower cities with integrating cooperative, co-creative new and shared mobility business models into SUMPs. This workshop is planned to take place in February 2026.
- In coordination with the work package 4 lead and the SUM living labs, key input on the challenges, success factors, and lessons learned of the living labs' interventions will be collected. This input will serve as a basis for drafting the policy recommendations.
- The draft policy recommendations will be further complemented with the expert interviews conducted with experts from and outside the SUM consortium in the context of task 5.4.
- Finally, the draft policy recommendations will be validated in an expert workshop planned to be co-organised in cooperation with the SUM sister project GEMINI, and to take place in March 2026. In this workshop, both projects will present their policy recommendations as impact pathways, focusing on presenting coherent policy scenarios adapted to specific policy contexts and ambitions, and the level of uptake of shared mobility services.

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