Deliverable D 1.2: Cross-fertilization and transferability framework and guidelines

WP1

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Abbreviations and Acronyms

ACRONYM	Description
CF&T	Cross Fertilization & Transferability
WP	Work Package
T-LLs	Trailblazers Living Labs
F-LLs	Follower Living Labs
UC	Use Case
BIGM	Business Innovation & Governance Model
TPA	Transferability Potential Assessment
KPI	Key Performance Indicator
SIEF	Standardised Impact Evaluation Framework

Background: About the metaCCAZE project

Transport is the second largest source of greenhouse gas emissions (GHG) and accounts for more than 30% of the total energy consumption. A series of global crises highlight the need for a significant shift from conventional vehicles to well-integrated, energy efficient, connected and automated passenger and freight services that meet the ambitious EU goals. To do so, a paradigm shift is required in the operations of electric vehicles that tackles their inherent vulnerabilities, including: the electric fleet-grid supply mismatch, the slow charging times, and the vehicle delays at charging stations. This requires automated charging processes, intelligent scheduling operations and matching to the grid, interconnectivity and automation of transport operations, and a shift from private cars to shared modes.

metaCCAZE is a Horizon Europe MISSION project co-funded by the 2Zero, CCAM-and Cities' Mission partnerships. It participates in the CIVITAS Initiative, an EU-funded programme working to make sustainable and smart mobility a reality for all and contributes to the goals of the EU Mission Climate-Neutral and Smart Cities.

The metaCCAZE project aims to revolutionise mobility in European cities, serving both passengers and freight, with innovative electric, automated, and connected solutions designed to make transportation smarter, net zero, and more efficient for all. It builds on the expertise of 44 partners from 12 different European countries and contributes to the green metamobility era that the Green Deal, 2ZERO, CCAM, Cities Mission, CIVITAS and other EU initiatives aim to reach by 2030. In the vibrant streets of four trailblazer cities – Amsterdam, Munich, Limassol, and Tampere – metaCCAZE implements, tests and demonstrates cutting-edge technologies and services that support shared zero emission mobility solutions for people and goods, contributing to climate neutrality. Successful technologies and activities are transferred and implemented to six Follower Cities – Athens, Krakow, Gozo, Milan, Miskolc, and Poissy, Paris.

metaCCAZE organises a series of metaDesign activities and develops a toolkit called metaInnovations. This toolkit is pioneered in passenger and freight services (public transport, on-demand minibuses, bike and scooter sharing, deliveries) and related infrastructure (mobility and logistics hubs, traffic management centres, charging infrastructure, transport and energy integration) and widely demonstrated in our four trailblazer cities for a whole year. Successful metaInnovations and metaServices are transferred, implemented and demonstrated in the 6 follower cities for up to 8 months, to ensure their transferability and resilience potentials.

Executive Summary

This deliverable constitutes the main outcome of Task 1.6, within Work Package 1, and provides the framework and guidelines used to define an appropriate transferability and cross-fertilization process and to ensure that metaCCAZE Use Cases, Business Innovation and Governance Models, initially fertilized through LL metadesign, can be efficiently replicated in any interested city, within and outside metaCCAZE project.

The methodological framework has been set considering the main literature on the topic and relevant outcomes deriving from previous European projects and initiatives, all proving that cocreation, knowledge and experience sharing are key for an optimal design and implementation of innovative measures in urban contexts.

The cross fertilization & transferability activities are designed to be deployed throughout the metaCCAZE project life and to address all Living Labs, both Trailblazer and Follower ones, in a multilevel iterative process.

First target is the definition of a cocreation process within each Living Lab, to obtain ed Use Cases and their Governance Models; second target is the design of systematic and structured opportunities for cross fertilization among metaCCAZE cities having the final aim of supporting the transferability process of UCs and BIGMs from Trailblazer LLs to Follower ones.

Ten observer cities, selected and welcomed to assist during the CF&T process, are part of the process, and will receive necessary input and guidelines to eventually begin their replication process outside metaCCAZE.

An important role is played by the set of Transferability Potential Assessment Key Performance Indicators (TPA KPIs) proposed within the CF&T framework to evaluate CF&T process development and outcomes; these indicators focus on socio-political dimensions and are complementary to the Impact Indicators included in metaCCAZE Standardised Impact Evaluation Framework (SIEF).

1. Introduction

The cross fertilization & transferabilty process, in line with metaCCAZE's vision to:

- accelerate the deployment of smart systems combining electric automated and connected mobility and related infrastructure, by developing SUMP consistent, resilient and transferable technologies;
- test, deploy and monitor them in 10 Mission Cities;
- streamline and adapt generated knowledge to any city to build capacity and skills to implement smart shared and zero-emission mobility systems and pave the way towards climate neutral, safe and smart EU cities,

ensures that all metaCCAZE activities are appropriately designed and implemented for the Living Labs to maximize efficiency and effectiveness of their UCs.

This first happens by cocreating at the city level and exchanging knowledge among metaCCAZE LLs. Then, the ground is set for optimal replication of Trailblazers UCs to the Follower sites, and finally, advice and information are provided to any interested city within and outside the project.

The process's structure allows, in fact, a gradual but constant integration of fertilization activities in the design and implementation of UCs and BIGMs, first in the Trailblazer LLs and then, thanks to their input, in the Follower cities.

However, the ambition of this original process goes beyond metaCCAZE project framework: as a first immediate step, once the CF&T process is deployed and validated by the 10 participating living labs, 10 more observer cities, invited to follow its development, will be designing the process in their turn building on metaCCAZE experience and fertilization. Guidelines and documentation will be made available through the channels identified by metaCCAZE dissemination & exploitation plan, to enhance the transferability and replication of successful use cases deployed in any international project or initiative in the field of urban sustainable mobility.

1.1. Objectives of the Deliverable

Among the six metaCCAZE objectives, CF&T activities are primarily targeting Objective 4:

To validate that the metaCCAZE UCs, BIGMs and MetaInnovations are transferable, resilient, and flexibly adjustable to the context of different cities, users and SUMP-needs, by transferring them in six Follower LLs, while setting up a transferability and cross-fertilization method that can benefit any city.

For the scope, this deliverable provides a methodological framework to guide and support the Living Labs during the entire CF&T process.

First focus is on ***LLs fertilization*** activities, offering guidelines to maximize the efficiency in the metadesign process and ensure that all stakeholders are involved and committed to the project. The ***cross-fertilization*** framework then provides a methodology supporting the efficient and effective exchange of knowledge and experience among all metaCCAZE LLs, setting also the ground for the transfer of UCs from the Trailblazers to the Followers. Finally, the ***transferability*** approach proposes a set of activities that all LLs should realize to effectively transfer UCs from the original Living Lab to those interested in replicating them.

To obtain an evaluation of the transferability contribution to the project success, within the CF&T framework, a set of Transferability Potential Assessment Key Performance Indicators (TPA KPIs) and an algorithm to calculate the potential for transferability are proposed, using the Trailblazer

Use case implementation as a benchmark. The TPA KPIs focus on the socio-political dimension, and their consistency has been cross-checked with previous EU research projects.

The methodology outlined in this deliverable should also be considered a basis for developing a CF&T process outside the metaCCAZE project framework. Once the approach is validated, guidelines and a framework will be included in the dissemination/exploitation material of metaCCAZE and made available for public consultation.

1.2. Structure of the Document

The first chapter of this document provides background on the structure, purpose and target audience of Task 1.6 on Cross Fertilization & Transferability, and the main definitions. It defines the basis for a more detailed description in the following sections.

The subsequent chapters outline the approach and its development throughout the project's life. All process phases are defined and described, providing details of the different roles of the Trailblazer and Follower Living Labs during the development of the UCs and BIGMs, from the very beginning, through the metadesign for prototypes, cross-fertilization and transfer until test and final demonstration, to achieve the CF&T process final validation.

Finally, a set of Annexes provides more details about important aspects of the process:

- **Annex 1** shows the questionnaire used for the Pre-Assessment Survey to Follower LLs.
- **Annex** 2and **3** are dedicated to describing Transferability Assessment Key Performance Indicators (TPA KPIs). Their scope, and the calculation model proposed to LLs' scientific supporters to evaluate and monitor them alongside the project, are described. It also presents the methodology for ex ante, during and ex post monitoring and assessment to be deployed within WP in charge of F LLs demonstration, using as a benchmark, the output arising from WP dealing with T LLs demonstration.

1.3. Relation to Project Documents

Activities described in this deliverable are strongly dependent on the fulfilment of several metaCCAZE tasks, in WP1, WP3 and WP4, and will provide, in turn, significant information for a successful execution of various activities in these WPs and in WP5.

In particular, D1.1 *Trailblazer LLs: Status Quo Map, Prototype ZESM use cases for passengers and freight* (M9) and D1.3 F*ollower cities: Status Quo Map* (M14), which provide descriptions of the Status Quo in all metaCCAZE LLs, constitute the necessary basis for assessing the potential of transferability between T LLs and F LLs.

D3.2 *Trailblazer LLs: co-design activities, implementation preparation, monitoring plan* (M18) and D4.2 *Follower LLs: co-design activities, implementation preparations, monitoring plan* (M26), which refer to the evaluation of co-design and engagement activities, and to the implementation plan of demos for T LLs and F LLs, respectively, will also provide an evaluation of the CF activities with reference to the same groups of LLs. D3.2 and D4.2 are essential milestones in ensuring that CF&T is effectively implemented and evaluated. Strengthening their linkage with KPI-driven assessments and risk mitigation strategies will improve the robustness of CF&T evaluation across F-LLs.

D1.6 *MetaDesigned use cases and the SIEF* (M41), is also crucial as it will deliver the final metadesigned UCs, BIGMs and SIEF with social embracement, and will also serve as the final evaluation report for the Cross-Fertilization & Transferability (CF&T) activities and framework.

D4.3 *Follower LLs: impact evaluation* (M41), which will provide the final impact assessment for F LLs, will also consider lessons learned, barriers encountered, what worked and what did not work, while assessing the effectiveness of transferability.

Figures 1 to 4 show details about main phases of T 1.6, with indication of activities and their interrelation among WPs to achieve a complete execution of the CF&T process.

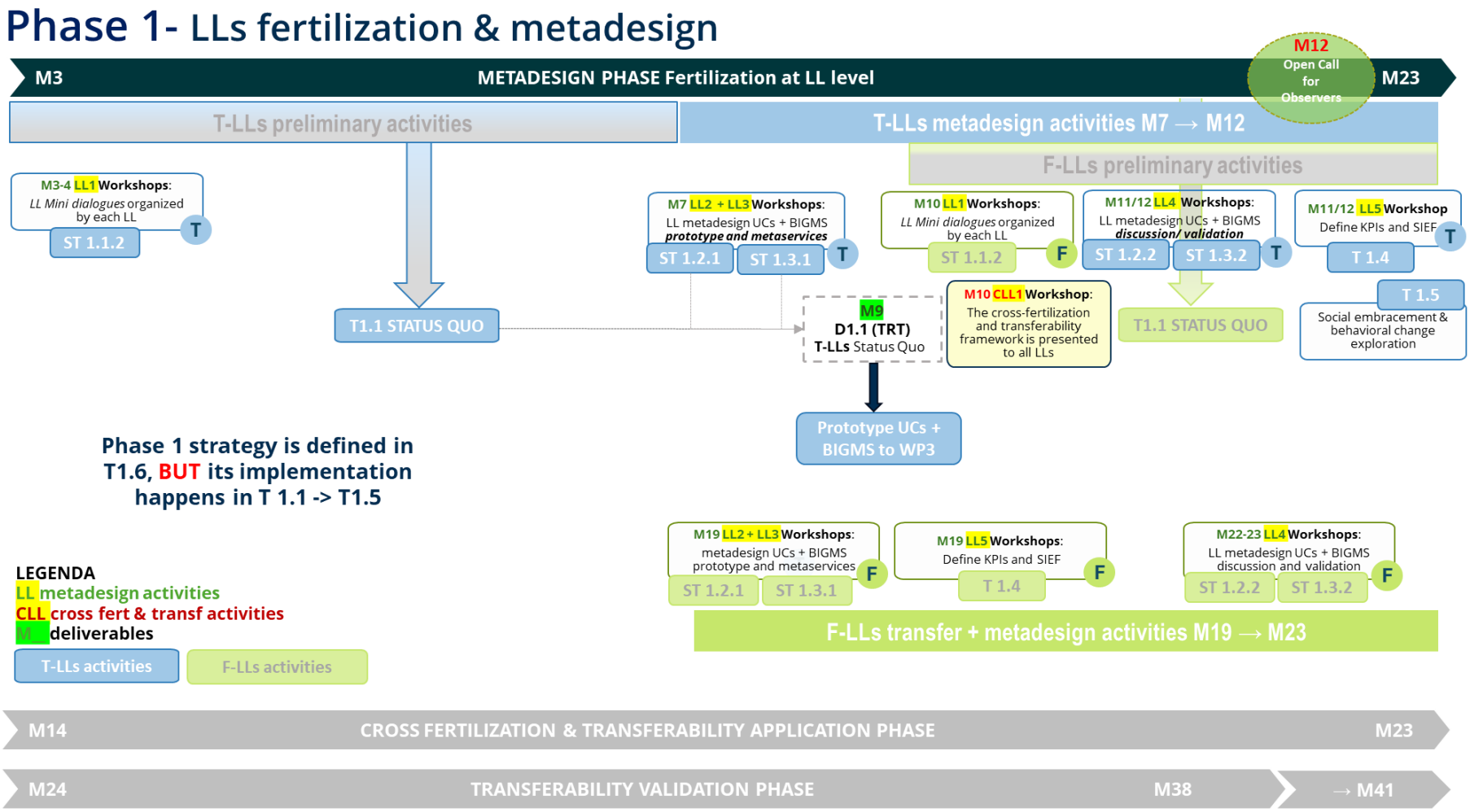

Figure 1: T1.6 PHASE 1- development and interrelation with other project Tasks and WPs

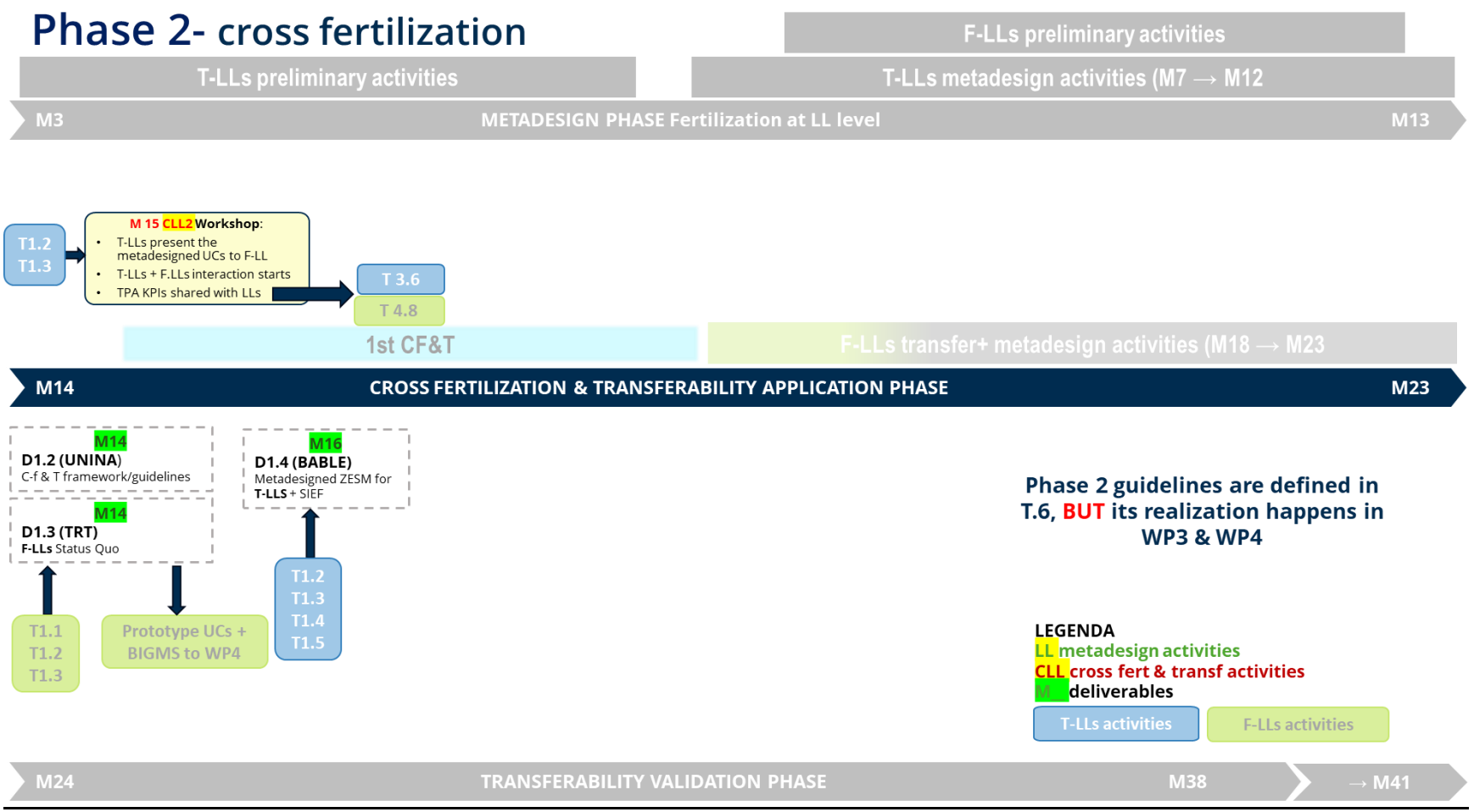

Figure 2 T1.6 PHASE 2 development and interrelation with other project Tasks and WPs

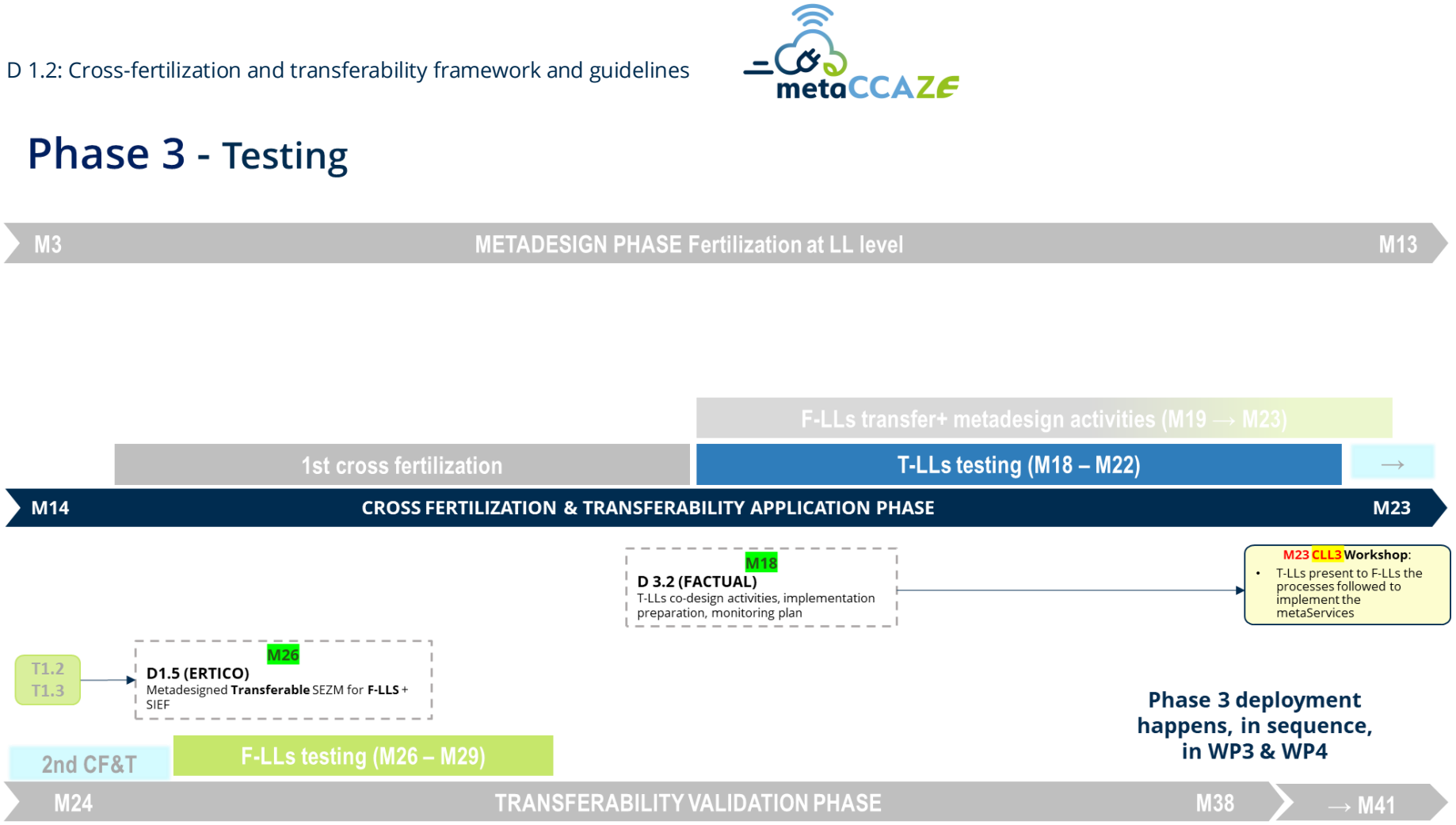

Figure 3: T1.6 PHASE 3 development and interrelation with other project Tasks and WPs

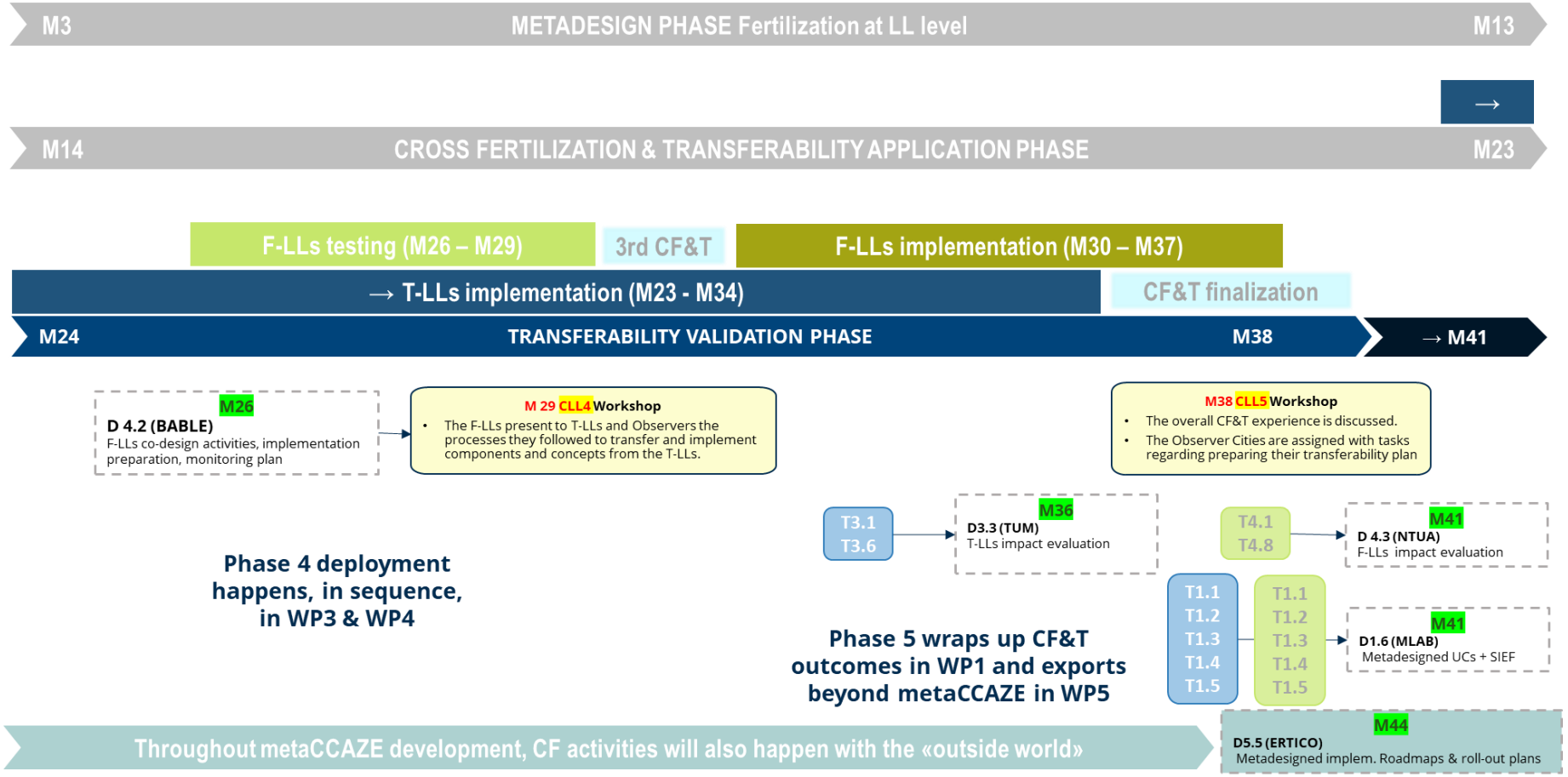

Figure 4: T1.6 PHASE 4 development and interrelation with other project Tasks and WPs

1.4. Overall Approach

The purpose of this document is to describe the process developed to ensure that the Use Cases and Business Innovation & Governance Models metadesigned and implemented in metaCCAZE project can be successfully transferred in any other city, within and beyond the project.

Given the scope, metaCCAZE (cross) fertilization and transferability activities address a big audience, including Living Labs leaders, scientific supporters and local stakeholders.

Due to the complexity and the novelty of the approach, preliminary discussions among project partners (metaCCAZE WP1, WP3 and WP4 leaders) allowed to collect opinions, find synergies and refine the process. Once the methodology was finalised, a first event (CLL1) was held to share it with all Living Labs, fertilising it and gathering queries and ideas from different perspectives.

During the CLL1 event, Followers LLs were also invited to participate in a preliminary survey (details in Annex 1), to expose their expectations about the Cross Fertilization and Transferability. Theseimportant inputs have been used to select the best methods and tools to implement the process.

Since the fertilization phase, LLs teams and stakeholders have a leading role, being supported by the metadesign guidelines. In fact, the of UCs and BIGMs prototypes (delivered in WP1 T1.2 and T1.3) provides the foundation to realize an effective roadmap for cross fertilization and transferability.

Once the Trailblazer LLs have completed their metadesign process and started the cross-fertilization process with the Follower LLs, an iterative process of cross-fertilization and transferability ensures that knowledge and experience are shared among Living Labs, allowing a more effective implementation of Use Cases and metaservices.

The iterative process of cross fertilization and transferability is possible only if the project develops according to the plan, since the subsequent phases of CF&T process are strictly linked with the design/testing/demonstration activities planned in WP3 and WP4.

In addition to metaCCAZE cities, the process involves ten Observer cities, selected through a public call, invited to follow, learn and, finally, try to apply the approach, as a first step for the exploitation beyond the project. In fact, at the end of the CF&T process, the framework and guidelines, assessed and validated, will be made available at European level for any interested city.

It is worth stressing that the CF&T process is strictly dependent on the timeline of WP3 and WP4: potential delays in design or testing phases may disrupt the iterative process, affecting transferability timelines.

2. Cross-Fertilization and Transferability Framework

2.1. Cross-fertilization and Transferability: synergic but not synonyms

The concepts of **cross-fertilization** and **transferability** represent two distinct but complementary approaches within the metaCCAZE framework. While both aim to facilitate the exchange and implementation of innovative solutions, they differ fundamentally in the direction of knowledge flow, nature of interaction, scope of application, and overall outcomes.

Cross-fertilization is inherently collaborative and dynamic, driven by the mutual exchange of ideas, experiences, and insights among Living Labs (LLs). Unlike a linear process, it fosters a *bidirectional* flow of knowledge, where stakeholders actively engage in sharing their expertise and learning from each other. This interaction is characterized by a focus on creativity and innovation.

The emphasis is not on implementing predefined solutions but on co-creating new ones. Through collaborative learning, Living Labs benefit from diverse perspectives, enabling them to explore fresh ideas, identify opportunities, and enhance their solutions collectively. The flexibility of cross-fertilization allows it to evolve iteratively, adapting to new insights and challenges as they arise.

Its ultimate outcome is the generation of new ideas and mutual improvement, fostering an environment where creativity thrives, and innovation is co-designed through shared efforts.

In contrast, **transferability** takes a more structured and goal-oriented approach, focusing on the practical adaptation of successful solutions from one context to another. Here, the flow of knowledge is *unidirectional*: solutions, tools, and practices that have been validated in a Trailblazer Living Lab (the "origin") are transferred to Follower Living Labs (the "destination").

The emphasis is on implementation and contextual adaptation rather than on co-creation. The process ensures that proven measures are applied in new environments with the necessary adjustments to account for local conditions. This practical focus prioritizes feasibility and suitability, aiming to replicate success with minimal barriers and reduced efforts.

Unlike cross-fertilization, which is exploratory and iterative, transferability aims for effective application, ensuring that what works in one setting can deliver tangible results in another.

In essence, **cross-fertilization** acts as a creative engine, driving innovation through collaboration, while **transferability** serves as a bridge, enabling the structured dissemination of validated solutions. Together, these two processes form a robust framework (see Figure 5): *cross-fertilization enhances solutions through shared learning and innovation, and transferability ensures their broader adoption and scalability across diverse urban contexts*. This dual approach allows Living Labs to combine creativity with practicality, achieving both innovation and impact.

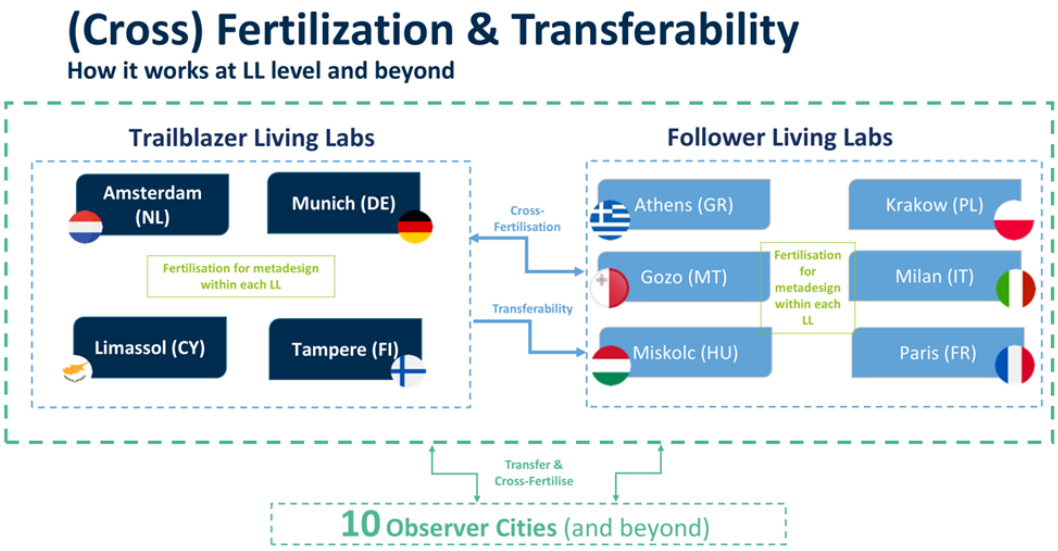

Figure 5: CF&T process framework

2.2. T1.6: the ratio behind the approach

Starting from the theoretical concepts just described, Task 1.6 is designed to foster innovation, collaboration, and knowledge transfer, gradually defining, testing and implementing fertilization, cross-fertilization, and transferability activities within metaCCAZE participant cities.

The task focuses on three main objectives.

First, it supports **fertilization** activities within each Living Lab (LL), ensuring that all relevant stakeholders and citizens actively participate in metadesign processes to co-create innovative solutions tailored to local needs.

Second, it promotes **cross-fertilization**, where Living Labs exchange knowledge, experiences, and innovations to learn from one another and enhance their collective capacity for solving urban mobility challenges.

Finally, it ensures **transferability**, facilitating the structured flow of knowledge, data and experience coming from successful use cases from trailblazer Living Labs—those that pioneer the development and testing of solutions—to follower Living Labs, that will adapt and implement these solutions in their local contexts.

To achieve these objectives, Task 1.6 is organized into two distinct sub-tasks.

The first, **ST1.6.1**, focuses on communication, metadesign, and fertilization activities within individual Living Labs, emphasizing local-level engagement and collaboration.

The second, **ST1.6.2**, coordinates cross-fertilization and transferability activities across the entire project, ensuring alignment and knowledge sharing among all participating Living Labs.

Task 1.6 structured process begins in **month M3** and extends until **month M41**, involving the active participation of all project partners, and both trailblazer and follower Living Labs. By combining local innovation with broader cross-Lab collaboration and transferability, Task 1.6 lays the groundwork for replicable and scalable solutions that can be applied across multiple urban contexts.

2.3. A multilevel, iterative approach: Overview of the framework

The **metaCCAZE CF&T approach** is built on a **multilevel iterative scheme** that ensures the effective implementation of cross-fertilization and transferability processes across diverse urban contexts.

A phase of critical **preliminary self-assessment** for each Living lab precedes the beginning of the CF&T process.

In this phase, each Living Lab (LL) evaluates the **sustainability maturity**, the existing **governance model**, and the overall **roadmap to sustainable mobility** of its city. This self-assessment serves as a foundational "**STATUS QUO MAP**" (delivered, as stated in previous paragraph, by T LLs and F LLs in deliverables D 1.1 and D 1.3, respectively) which helps Living Labs to understand their starting point and identify areas where interventions are needed. Hence, it is evident that the map represents a necessary basis for a sound definition of successful cross-fertilization and transferability activities.

Once the starting point for each metaCCAZE LL is defined, the CF&T process unfolds across **five key development phases**, subsequently contributing to the iterative refinement and dissemination of innovative solutions:

1. **UCs and BIGMs Metadesign**: Local stakeholders engage in the design and development of tailored solutions within each Living Lab, fostering a collaborative environment.
2. **Cross-Fertilization**: Living Labs exchange ideas, methodologies, and experiences to enhance solutions through mutual learning.
3. **Testing and Transfer**: Solutions are tested within Trailblazer Living Labs, refined, and transferred to follower Living Labs for adaptation.
4. **Implementation and validation**: Proven solutions are deployed in Follower Living Labs, ensuring contextual alignment and practical outcomes; the CF&T process is then validated.
5. **Finalisation**: Results and experiences are discussed, and the CF&T framework and guidelines are finalised. Observer cities start to prepare their transferability plans. Outcomes from the CF&T process will be included in D1.6 together with overall evaluation results.

The scheme operates on **two systematic iterations**—the first one led by **Trailblazer Living Labs** and the other by **Follower Living Labs**.

Trailblazer Living Labs in the cities of **Amsterdam (NL)**, **Munich (DE)**, **Limassol (CY)**, and **Tampere (FI)** act as first movers, developing and testing innovative solutions. These solutions are then shared with the **Follower Living Labs**—**Athens (GR)**, **Gozo (MT)**, **Miskolc (HU)**, **Krakow (PL)**, **Milan (IT)**, and **Paris (FR)**—for adaptation and implementation. This exchange ensures that follower cities benefit from the knowledge and results generated in trailblazer cities, while also contributing feedback to refine the approach further. After initial adaptation from Trailblazer Living Labs, Follower LLs test and refine the solutions based on local conditions. Adjustments made during this phase contribute to the finalization of scalable models, which are then recommended for use in Observer Cities and beyond.

To get to the cross fertilization with concrete designs and prototypes, the approach foresees a first set of fertilization **activities for metadesign**, a process at both Trailblazer and Follower Living Lab levels, which focuses on stakeholder engagement and co-creation.

In essence, the metaCCAZE CF&T approach combines structured self-assessment, collaborative learning, testing, and targeted implementation across multiple cities. By fostering innovation and enabling the replication of successful solutions, the approach drives sustainable urban mobility while ensuring scalability and adaptability across diverse European cities.

3. Detailed Framework Design: the CF&T Masterplan

T1.6 presents a thoroughly orchestrated process that balances innovation, testing and replication. It ensures that the solutions developed in trailblazer cities are effectively adapted and implemented by the follower cities, while iterative CF&T activities foster continuous learning and collaboration.

Its plan provides a comprehensive structured roadmap for achieving the goals of cross-fertilization and transferability within the metaCCAZE project.

Designed to operate iteratively, it connects the work of Trailblazer Living Labs and Follower Living Labs, allowing the development, exchange, and implementation of innovative solutions to address urban sustainability challenges. This masterplan is built on the five-phase approach presented in the previous paragraph, moving from preparation and collaboration to testing, implementation, and validation.

3.1. Laying the Foundations: The Metadesign Phase (M1-M13)

Prior to the process beginning, a Status Quo Map is created primarily through workshops and collaborative discussions. This ensures that each Trailblazer and Follower Living Lab has a deep understanding of its local context before developing new solutions.

From **M7 to M12**, the focus shifts to the **metadesign phase**, where Trailblazer cities, first move into intensive activities for co-creation of solution. In this phase, stakeholders, technical teams, and experts are engaged in a series of workshops to brainstorm and design **Use Cases (UCs)** and **Business Innovation and Governance Models (BIGMs)**. These early prototypes serve as the foundation for the broader CF&T activities.

Annex 1 reports the Guidelines for metaCCAZE's metadesign activities, designed for T-LLs within ST1.6.1.

While Trailblazer Living Labs advance their solutions, **Follower Living Labs** begin their own preparation work, mapping their status quo in anticipation of the next phases. This ensures that the follower cities are equipped with the insights and readiness needed to adapt the solutions developed by their trailblazer counterparts. A critical milestone at the end of this phase is also the **Open Call for Observers (M12)**, where additional cities are invited to engage with the project, expanding its impact and scope beyond the core participants.

This is the time to introduce the CF&T approach and share the methodology with all metaCCAZE LLs (**CLL1**). The goal of this first event is to discuss the process, collect suggestions and finalise it, cross-fertilising the cross-fertilization and transferability approach!

3.2. Collaboration and Testing: The Cross-Fertilization Phase (M14-M23)

With the foundational work complete, the process moves into its second phase, where the focus turns to **cross-fertilization**. Cross-fertilization represents a key element of the process, enabling Trailblazer and Follower Living Labs to share knowledge, experiences, and insights in a collaborative manner.

During this phase, the Trailblazer cities begin the **testing process (M18–M22)**. The solutions developed during the metadesign phase are tested and refined to ensure their feasibility and effectiveness. This is not done in isolation; continuous feedback and discussions with other Living Labs play a crucial role in improving these solutions.

Simultaneously, **Follower cities** begin their **transfer and metadesign activities** around **M19**, where they adapt the prototypes and concepts shared by the trailblazer cities to their own local contexts. This iterative exchange—characterized by the **first cross-fertilization event (CLL2)** — serves as a bridge, allowing solutions to evolve through mutual collaboration and shared learning. By **M23**, the outputs from both trailblazer's testing and follower's transfer activities are aligned, ensuring readiness for large-scale implementation.

3.3. Moving to Action: Testing and Transfer Phase (M24–M29)

The third phase marks a shift toward practical application. Trailblazer Living Labs, which have refined their solutions through earlier testing, proceed with **full-scale implementation (M24–M34)**. This is a pivotal moment in the process, as it moves beyond design and testing into real-world application.

In parallel, Follower cities begin their own **testing phase (M26–M29)**, validating the solutions transferred from trailblazer cities. This period allows Follower Living Labs to assess the feasibility and adaptability of these solutions within their specific urban contexts, identifying any necessary

adjustments or improvements. By M29, a structured interim review will assess F-LL implementation challenges, allowing for last-stage refinements in Trailblazer applications before their full-scale deployment.

At this time, the **second cross-fertilization event (CLL3)** occurs. This phase of knowledge exchange ensures that both Trailblazer and Follower Living Labs continue to share their experiences, challenges, and progress, fostering a dynamic learning environment that strengthens the overall process.

3.4. Full-Scale Deployment: The Implementation Phase (M30–M37)

With solutions tested and validated, the fourth phase focuses on large-scale **implementation**. For Follower cities, this marks the culmination of their preparatory and testing efforts, as they now deploy the adapted solutions in their local contexts. From **M30 to M37**, Follower cities focus on practical implementation, working closely with stakeholders to ensure the transferred solutions are aligned with their governance models and local sustainability goals.

At the same time, Trailblazer cities complete their own implementations, bringing their solutions to maturity. Throughout this phase, workshops and collaborative discussions play a critical role in addressing challenges, monitoring progress, and ensuring that the transferability process remains smooth and effective.

At this time, the third **cross-fertilization event (CLL4)** occurs. In CLL4, the Follower Living Labs are the main protagonists, presenting their implementation work and engaging with other project participants to validate the transferability framework.

3.5. Discussing the Outcomes: Finalisation and Dissemination (M38–M41)

The fifth and final phase is dedicated to **finalizing the CF&T outcomes**. By **M38**, the final **cross-fertilization event (CLL5)** takes place, allowing all Living Labs to share their results, lessons learnt, and implementation experiences. This phase is as much about reflection as it is about action, with workshops providing a platform to discuss successes, challenges, and areas for improvement.

The final months of the project focus on **formalizing the outcomes**. Reports, guidelines, and roadmaps are prepared to document the CF&T process, ensuring that the lessons learned are accessible for broader dissemination. Observer cities, engaged earlier in the project, play a critical role at this stage, helping scale the solutions beyond the core Living Labs.

By **M41**, the process concludes with a set of validated, replicable, and scalable solutions ready for transfer to other cities and regions across Europe (see D4.3 and D1.6).

Figure 6 shows T1.6 high level Gantt, synthetising the two-level iterative process involving Trailblazer and Follower Living Labs.

It is a highly structured and collaborative approach: by systematically progressing through the phases of preparation, collaboration, testing, implementation, and validation, the plan ensures that solutions are not only innovative but also practical, adaptable, and scalable. The iterative exchange of knowledge between trailblazer and follower Living Labs creates a dynamic ecosystem for learning and implementation, with outcomes that have the potential to impact cities well beyond the scope of the project.

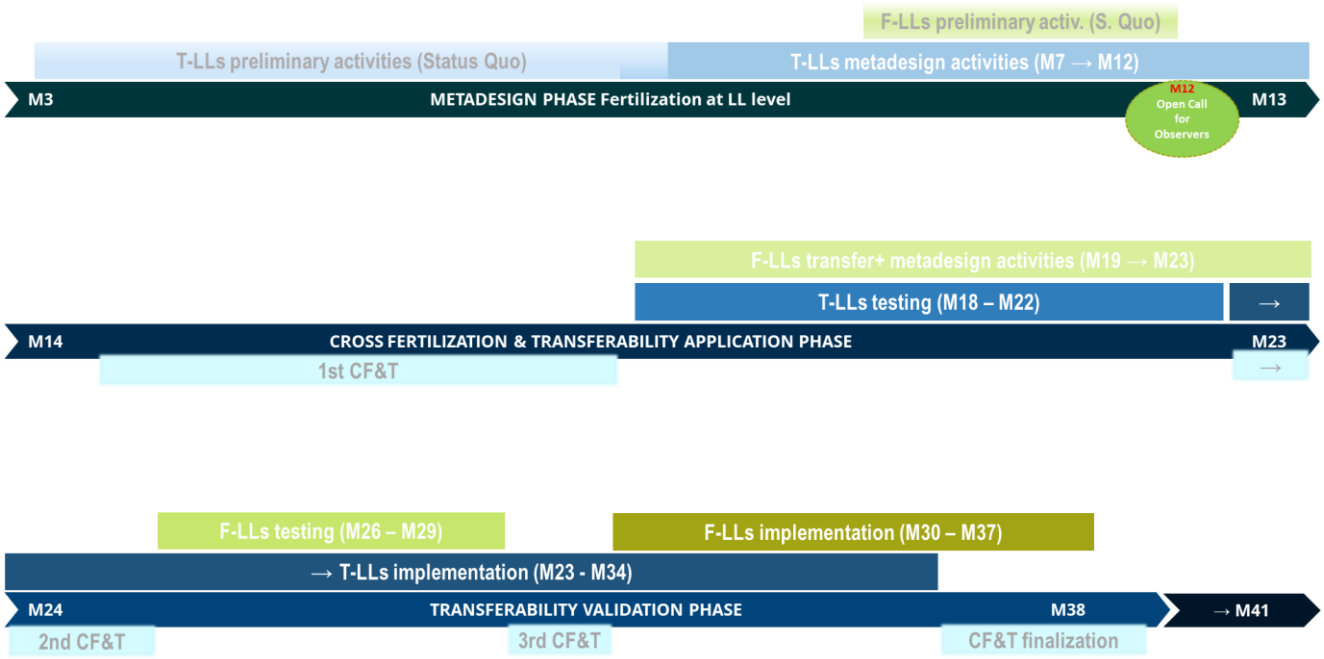

Figure 6: T1.6 Gantt

In the following chapters, each phase of the Cross Fertilization & Transferability process is described in detail, with indication of characterising actions and activities.

4. Phase 1: LLs Fertilization & Metadesign

The objective of the first phase of the process is to collaboratively define and prototype Use Cases (UCs) alongside Business Innovation and Governance Models (BIGMs) through a systematic, multi-step process, engaging local communities and stakeholders. This phase emphasizes **cocreation** and refinement of solutions to meet smart city and climate neutrality objectives.

1. **Cocreation Groups Definition and Mini Dialogues (LL1)**:

   The process begins with **mini-dialogues** (M4–M5 for Trailblazer Living Labs; M11-M12 for Follower Living Labs). These events engage stakeholders and citizens to discuss needs, expectations, and challenges for smart systems and services. Facilitated by guidelines and materials, discussions cover project goals, current conditions, and anticipated barriers, ensuring a collaborative starting point for prototyping.

2. **Metadesign Use Cases (UCs) + BIGMs and Maximizing the update of metaservices (LL2, LL3)**:

   This stage, occurring in M7–M9 for T-LLs and M19–M23 for F-LLs, involves physical workshops to both iteratively design and refine UCs and BIGMs, and maximize their uptake. Key activities include:

   - Discussions with stakeholder and citizens about on prototypes.
   - Fine-tuning UCs from operational, legal, and usability perspectives.
   - Developing business models and governance frameworks.

- Gathering, together with the citizens insights for further refinement and potential marketing strategies.
- Workshops ensure stakeholder perspectives are integrated to enhance transferability potential.

3. **Validation of Metadesigned Use Cases and BIGMs (LL4)**:

   The focus shifts to validation, where finalized UCs and BIGMs are verified with citizens and stakeholders through additional workshops (M11–M13 for T-LLs; M22–M23 for F-LLs). This step checks the feasibility, robustness, and alignment of UCs with identified needs and objectives.

4. **Define KPIs and Impact Evaluation Framework (LL5)**:

   Concluding the phase, specific **Key Performance Indicators (KPIs)** and a **Standardised Impact Evaluation Framework** (SIEF) are defined. This ensures the UCs align with climate neutrality and other overarching goals. T-LLs finalize KPIs in M11- M13, while F-LLs define theirs in M22.

Overall, Phase 1 ensures a participatory and iterative approach where knowledge and insights flow between stakeholders, leading to well-refined Use Cases and governance models. The sequential timing—starting with T-LLs (M7–M12) and transferred to F-LLs (M19–M23)—facilitates learning and transferability, preparing for the next phase of cross-fertilization.

5. Phase 2: Cross-Fertilization

Phase 2 of the metaCCAZE project is a key turning point where the focus shifts from internal activities within the Trailblazer Living Labs to outward-facing collaboration and exchange with Follower Living Labs and Observer Cities. This phase emphasizes the start of a **collaborative path** and the definition of the **transferability framework**, laying the groundwork for the eventual adaptation and implementation of innovative Use Cases across diverse urban contexts.

Through knowledge sharing, discussion, and evaluation, cities collectively explore the potential for transferability and address the challenges associated with adapting solutions to different socio-political, cultural, and technical environments.

At the heart of this phase is the **CLL2 workshop**, a physical event designed to facilitate knowledge exchange, showcase innovative mobility solutions, and assess their transferability potential. The workshop is divided into two structured sessions, ensuring a balance between presentation, discussion, and interactive collaboration.

5.1. The CLL2 Workshop

5.1.1. Session 1: Trailblazer Presentations and Panel Discussion

The first session focuses on the Trailblazer Living Labs presenting the Use Cases they have developed through the metadesign phase. These presentations provide a detailed breakdown of the Use Cases, including their scope, implementation processes, and the challenges encountered. Trailblazer leaders also emphasize the solutions devised to address these challenges, offering actionable insights for Follower cities.

Following the presentations, a panel discussion provides a forum for deeper engagement. Participants, including leaders from Follower Living Labs, are encouraged to ask questions and explore specific aspects of the Use Cases. The discussion highlights key areas such as implementation feasibility, resource requirements, and scalability, enabling Follower cities to assess the relevance and potential of each solution within their contexts.

Trailblazer focused **presentations** should include**:**

- Overview of each UC, including objectives, design process, and implementation progress.
- Presentation of Business Innovation and Governance Models (BIGMs) associated with each UC.
- Challenges encountered during the design phase and solutions adopted.
- Key outcomes, lessons learned, and results achieved to date.

The purpose of these presentations is to provide a clear understanding of the design and implementation journey of UCs, enabling F-LLs and Observer Cities to identify relevant practices and lessons for transfer.

Panel Discussion aims at:

- Deep diving into cross-cutting themes such as governance challenges, stakeholder engagement strategies, and innovative solutions for climate neutrality.
- Openly discussing on specific barriers to implementation, transferability considerations, and opportunities for scaling UCs.

The outcome is to establish a shared understanding of the UCs and BIGMs, fostering connections and setting the stage for interactive collaboration in the next session.

5.1.2. Session 2: Interactive Cluster Workshops and Co-Creation Sessions

The second session adopts an interactive format, with participants divided into smaller **thematic cluster workshops** based on Use Case categories. These workshops enable Follower Living Labs to collaboratively discuss the transferability of specific solutions with Trailblazer cities.

Key activities include:

- **Co-creation discussions**: Identifying potential barriers to transferability and brainstorming strategies to overcome them.
- **Adaptation planning**: Outlining initial pathways for implementing the Use Cases in Follower cities while addressing contextual requirements such as governance structures, societal needs, and available infrastructure.

  The co-creation sessions foster peer-to-peer collaboration, enabling cities to refine their understanding of the Use Cases and develop preliminary transfer plans tailored to their needs.

During the workshops, T-LL representatives facilitate discussions, focusing on:

- Identifying similarities and differences between T-LL contexts and F-LL needs.
- Analysing the transferability potential of each UC (operational, legal, technical aspects).
- Defining required adaptations to align UCs with F-LL priorities.

Workshops can employ various facilitation methods, including Scenario Mapping to compare T-LL and F-LL urban contexts; Role-Playing Exercises: Simulation of stakeholder negotiations; Interactive Canvases & Digital Tools: Collaborative brainstorming.

In the second part of the workshops, Co-Creation Sessions are organized, where participants from F-LLs work collaboratively with T-LLs to draft their first action plans.

Activities have the scope of adapting governance and implementation strategies to local infrastructures, identify quick-win actions for immediate testing of UCs in F-LL contexts and propose adjustments to business models for local feasibility. The **result** is represented by drafted **action lists** for each F-LL, outlining a list of key priorities, immediate actions, and challenges to address during the post-workshop activities.

The CLL2 Workshop is expected to deliver significant outcomes that lay the foundation for successful cross-fertilization and transferability. First, it aims to ensure a clear understanding of the Use Cases (UCs) and Business Innovation and Governance Models (BIGMs) developed by the Trailblazer Living Labs (T-LLs). By presenting these projects in detail, participants will identify key lessons, challenges, and innovative approaches that can be transferred or adapted to other contexts.

Moreover, the workshop provides an opportunity to assess both the similarities and differences between Trailblazer and Follower cities, fostering a deeper understanding of the conditions under which UCs can be implemented. This exchange will help identify the potential for transferability while highlighting any required adaptations to local infrastructures, governance structures, or cultural contexts.

The workshop also aims to produce tangible outputs, such as draft roadmaps and action plans for Follower Living Labs. These roadmaps will outline concrete steps for adapting and implementing the presented UCs, prioritizing key actions and addressing immediate challenges. Lastly, the event strengthens collaboration and trust between participating cities, creating an iterative and dynamic ecosystem where knowledge sharing, feedback, and innovation can continue beyond the workshop. This sets the stage for practical implementation and long-term success in achieving climate-neutral and sustainable urban solutions.

5.2. Transferability Potential Assessment (TPA) Criteria and KPIs

A crucial aspect of Phase 2 is the introduction of **Transferability Potential Assessment (TPA) criteria** and related KPIs, which serve as tools for evaluating the feasibility and scalability of Use Cases. The TPA criteria focus on the socio-political dimensions that influence the successful adaptation of solutions, including:

- **Political Support and Stability**: assessing governance stability and political backing for mobility initiatives.
- **Regulatory and Policy Alignment**: evaluating alignment with existing local, regional, and national policies.
- **Institutional Capacity for Implementation**: analyzing resource availability, staffing expertise, and budget allocations for implementation.

- **Stakeholder Engagement and Participation**: measuring the extent and quality of stakeholder involvement in decision-making.
- **Public Perception and Acceptance**: capturing citizens' feedback and acceptance through surveys and media analysis.
- **Cross-Cultural and Social Adaptability**: understanding cultural norms and identifying potential social barriers to solution adoption.

The KPIs linked to these criteria are quantitative and qualitative indicators that provide measurable insights. For example, metrics include the number of stakeholder meetings, the percentage of positive citizen feedback, regulatory amendments required, and the percentage of qualified staff to project scope. These KPIs allow cities to systematically assess patterns, challenges, and opportunities for transferability. In **Annex 2** the TPA KPIs are reported alongside their calculation model, ensuring clarity and consistency in their application across the Living Labs.

In **Annex 3** a methodological framework is also proposed to assess and monitor the TPA KPIs in coherence with the Impact KPIs (ex ante – during – ex post)

By combining knowledge sharing, interactive collaboration, and a structured assessment framework, Phase 2 provides the tools and insights needed for cities to evaluate and plan the transferability of innovative mobility solutions effectively. This phase sets the stage for the subsequent testing and transfer processes, ensuring that cities move forward with a solid understanding of their opportunities and challenges.

5.3. Proposal of activities to be performed after CLL2 Workshop

Following the **CLL2 Workshop**, a set of activities should be put in place to guarantee **collaborative refinement and local adaptation** of the UCs presented by Trailblazer Living Labs (T-LLs).

These activities aim to ensure that the knowledge shared during the event is actively integrated into the Follower Living Labs and aligns with their specific urban contexts, needs, and challenges; they can be understood as an ongoing process of **cross-fertilization**, where cities engage in sustained dialogue, iterative design, and co-creation to customize solutions for implementation.

1. Continuous Communication Between Trailblazer and Follower Cities

The foundation of post-CLL2 activities is maintaining open and **continuous communication channels** between T-LLs and F-LLs. This ongoing dialogue serves as a platform to exchange lessons learned, feedback, and insights as F-LLs begin to adapt the UCs.

- *Regular Exchanges***:** Formal and informal meetings (virtual or in-person) are to be scheduled to address progress, challenges, and opportunities for refinement.
- *Feedback Loops***:** T-LLs should act as mentors, offering guidance on the technical, operational, and governance aspects of UCs. F-LLs, in turn, should provide feedback on the feasibility and adaptability of the solutions to their local contexts.
- *Knowledge Repository:* A shared digital space (e.g., an online platform) can facilitate the storage and exchange of resources, including documents, implementation guidelines, and data, ensuring transparent access to all project participants.

These actions ensure that F-LLs receive tailored support to refine the UCs while fostering a collaborative learning environment between cities.

2. Local meetings

Building on the knowledge shared during the CLL2 event, local workshops can play a critical role in enabling Follower Cities to adapt and fine-tune the UCs collaboratively with local stakeholders and T-LL representatives. These meetings should bring together diverse actors—such as policymakers, planners, technical experts, and citizens—to align the UCs with local needs, priorities, and challenges. They will provide:

- *Interactive dialogue and collaboration:* Workshops should be organised to be hands-on and participatory, with T-LLs providing real-world insights into UC implementation.
- *Local Stakeholder Engagement:* Local actors should be actively involved in the process, ensuring the solutions are context-specific and address community needs.
- *Use Cases Customisation***:** Participants collectively brainstorm and propose solutions to operationalize the UCs, addressing legal, financial, and infrastructural barriers.

These meetings can serve as **local innovation hubs**, where the transfer of knowledge evolves into tangible steps for implementation, ensuring the adapted solutions are both practical and impactful.

3. Adaptation of Trailblazer UCs by Follower Cities

The final activity post-CLL2 focuses on the **local adaptation** of UCs to Follower Living Labs' unique urban environments. Leveraging the insights from continuous communication and co-creation workshops, F-LLs customize the UCs to align with their **specific needs, infrastructure, and governance frameworks**, through:

- *Contextual Customization:* UCs are fine-tuned to address local conditions, such as regulatory environments, technical capacities, cultural factors, and existing mobility infrastructures.
- *Alignment with Local Priorities***:** F-LLs prioritize elements of the UCs that align closely with their immediate urban challenges, ensuring the solutions remain relevant and feasible.
- *Stakeholder Validation***:** Local stakeholders validate customized UCs to confirm alignment with community goals, paving the way for broader acceptance and implementation.
- *Implementation Roadmaps***:** Action plans are developed to outline step-by-step pathways for UC deployment, identifying necessary resources, timelines, and responsibilities.

By the end of this phase, Follower Cities will have a **tailored version of the Trailblazer UCs**, ready for piloting or further testing, supported by clear implementation strategies and feedback mechanisms.

The post-CLL2 activities are pivotal for achieving meaningful cross-fertilization and transferability. By facilitating continuous communication, fostering interactive co-creation, and enabling local customization, these activities bridge the gap between shared knowledge and practical implementation. This process ensures that solutions developed in Trailblazer cities are not only transferred but also **adapted and integrated** into the diverse urban realities of Follower Living Labs, promoting long-term sustainability and scalability.

6. Phase 3: Testing and Transfer

This is a critical phase within the metaCCAZE project, focused on activating the transferability process for Use Cases and metaServices. This phase builds on the groundwork laid by Trailblazer Living Labs, who have tested innovative solutions in their own contexts. It aims to share these experiences with Follower Living Labs and Observer Cities, enabling them to adapt and implement the solutions within their unique settings. The phase facilitates both knowledge exchange and practical application, ensuring that tested solutions can address urban mobility challenges effectively across different cities.

The key event in this phase is the **CLL3 workshop**, which serves as the main platform for cross-fertilization between cities. The workshop is structured into **two focused sessions** to maximize impact and engagement.

6.1. The CLL3 workshop

The **CLL3 workshop** is the cornerstone of Phase 3, designed as a collaborative event that facilitates the transferability of tested Use Cases and metaServices from T-LLs to F-LLs and Observer Cities. The workshop is structured into two distinct sessions, each serving a specific purpose to ensure the effective sharing of knowledge, challenges, and strategies.

Session 1: Trailblazer Presentations and Panel Discussion

The first session of the workshop focuses on presenting the experiences of the Trailblazer Living Labs and serves as a platform for T-LLs to share their step-by-step implementation processes, including challenges encountered and the strategies developed to overcome them. The session unfolds in two key parts:

In the **Trailblazer Presentations,** leaders and supporters from T-LLs provide detailed presentations outlining the processes they followed to implement and test their Use Cases and metaServices. Each presentation highlights the following aspects:

- *Implementation steps*: The structured approach taken by each city to execute their Use Cases.
- *Challenges encountered:* Practical difficulties or barriers faced during testing, such as technical issues, governance challenges, or stakeholder resistance.
- *Solutions developed*: Innovative or adaptive solutions used to address these challenges.
- *Key results*: Outcomes and successes achieved, demonstrating the value and potential of the Use Cases.

Following the presentations, a moderated **panel discussion** provides an opportunity for deeper engagement and interaction. Follower Living Labs, Observer Cities, and other stakeholders can pose questions to the T-LL presenters, exploring specific aspects of their processes.

Topics of discussion may include:

- Applicability of Use Cases to different urban contexts.
- Technical feasibility and resource requirements.
- Transferability challenges and strategies.

The combination of structured presentations and interactive discussions ensures that Follower cities gain practical insights and a clear understanding of how the tested solutions can be adapted to their unique local contexts.

Session 2: Breakout Groups and Co-Creation Sessions

The second session of CLL3 moves from general presentations to focused and collaborative discussions. It is organized into smaller, thematic **breakout groups** that address specific Use Case and areas of interest. This session emphasizes co-creation and knowledge exchange among participants.

Each group includes representatives from Trailblazer Living Labs (as facilitators) and Follower Living Labs (as active participants), alongside Observer Cities and relevant stakeholders.

The breakout groups aim to facilitate a more in-depth, hands-on discussion about the Use Cases, their challenges, and transferability potential. Key activities include:

- *Deep-diving into Use Cases:* Exploring implementation details, tools, and methods used by Trailblazer cities.
- *Identifying transferability pathways*: Assessing how the Use Cases can be adapted to the specific contexts and constraints of Follower Living Labs.
- *Discussing challenges and adaptations*: Addressing potential barriers and proposing adjustments to ensure effective implementation.
- *Co-creating action plans*: Drafting initial plans and steps for Follower Living Labs to begin their testing processes.

The breakout sessions encourage direct interaction, enabling participants to collaboratively address challenges and tailor solutions to their local contexts. By the end of Session 2, Follower cities have concrete ideas and preliminary strategies for testing and transferring the Use Cases.

Together, the two sessions of the CLL3 workshop create a structured and dynamic environment for knowledge sharing, discussion, and collaboration. While Session 1 builds the foundation through presentations and dialogue, Session 2 allows participants to take ownership of the transferability process through focused and action-oriented discussions.

6.2. Proposal of activities to be Performed After the CLL3 Workshop

Following the conclusion of the CLL3 workshop, the Follower Living Labs (F-LLs) should embark on a series of structured activities to ensure the successful transfer, adaptation, and implementation of the Use Cases presented by the Trailblazer Living Labs (T-LLs).

These activities are essential to prepare F-LLs for small-scale testing while maintaining continuous knowledge exchange with Trailblazer cities. The post-workshop phase is marked by three primary activities: establishing feedback loops, conducting readiness checks, and fostering stakeholder engagement.

The first activity involves setting up **feedback loops** between Trailblazer and Follower Living Labs, working in small groups on specific topics/themes, and could include site visits. Feedback loops serve as continuous communication channels to monitor the initial application of the Use Cases and metaServices. Through periodic data collection and feedback exchange, Follower cities can

report on their progress, share initial results, and flag challenges encountered during the testing process. In return, T-LLs provide guidance, share their own experiences, and propose solutions based on their tested approaches. These feedback channels ensure that Follower cities are not working in isolation but are actively supported by Trailblazer cities, fostering a collaborative environment to refine processes and address implementation issues as they arise.

The second key activity is the **readiness check**, a preparatory step to assess technical, organizational, and operational feasibility before small-scale testing begins. Follower Living Labs should complete a structured Use Case checklist to evaluate their capacity to implement the proposed solutions effectively. This checklist covers several dimensions, including infrastructure readiness, available resources, and governance frameworks. By identifying gaps or constraints, the readiness check allows cities to address critical issues early on, ensuring that they are well-prepared to initiate the testing phase. This systematic evaluation reduces the risk of implementation delays and enhances the likelihood of success.

The final activity focuses on **stakeholder engagement**, a critical step in building broad-based support for the Use Case testing process. Follower cities should work to identify and involve key local stakeholders, including citizens, businesses, public authorities, and mobility operators. Effective stakeholder engagement ensures that the Use Cases are adapted to the local context and that there is sufficient buy-in from those directly impacted by or involved in the solutions. Activities during this phase may include organizing awareness campaigns, hosting collaborative workshops, and conducting consultations to gather feedback and input from stakeholders. By fostering active participation, cities can create an inclusive and supportive environment that contributes to the successful implementation of mobility solutions.

Together, these post-CLL3 activities establish a robust framework for Follower Living Labs to initiate their testing and transfer processes. The combination of continuous feedback, technical readiness, and stakeholder involvement ensures that cities are equipped with the knowledge, capacity, and local support needed to implement the Use Cases effectively, paving the way for sustainable and impactful urban mobility solutions.

7. Phase 4: Implementation and CF&T Framework Validation

Phase 4 represents the culmination of the cross-fertilization and transferability processes, where Follower Living Labs (F-LLs) present the processes they followed to implement and test Use Cases transferred from the Trailblazer Living Labs (T-LLs).

The focus shifts toward validating the overall transferability framework through shared experiences, outcomes, and lessons learnt. This phase provides a comprehensive opportunity to assess how the Use Cases were adapted, replicated, and integrated within Follower cities, while simultaneously refining the framework to ensure its robustness and applicability across diverse contexts.

At the heart of this phase is the **CLL4 workshop**, which acts as a forum to consolidate knowledge, share results, and collaboratively finalize the transferability process.

7.1. CLL4 Workshop

The **CLL4 workshop** is a pivotal event where Follower Living Labs take center stage, presenting their implementation efforts and engaging with other project participants to validate the

transferability framework and observers gain a more active role. The workshop is organized into two main sessions: a detailed presentation and discussion session, followed by interactive breakout groups aimed at refining the framework further.

Session 1: Follower Cities' Presentations and Panel Discussion

In the first session, representatives from Follower Living Labs present the processes they followed to transfer and implement mobility concepts and Use Cases developed by the Trailblazer cities. Each presentation provides a comprehensive overview, structured around key elements:

- *Implementation Process:* A step-by-step explanation of how the Use Cases were transferred and adapted to the local context, including any adjustments made to fit technical, societal, or governance frameworks.
- *Successes and Outcomes*: Highlights of the results achieved through the testing phase, showcasing measurable impacts on urban mobility challenges.
- *Challenges and Lessons Learnt:* A reflection on barriers encountered during implementation—whether technical, operational, or stakeholder-related—and the strategies used to overcome them.

Following these presentations, a **panel discussion** allows participants to ask questions, seek clarification, and share insights. This interactive session fosters dialogue between Trailblazer cities, Follower cities, and Observer participants, creating a collaborative environment to explore the replicability and scalability of solutions.

Session 2: Breakout Groups and CF&T Framework Validation

The second session shifts toward smaller, focused discussions through thematic breakout groups. These groups aim to refine and validate the Cross-Fertilization & Transferability (CF&T) Framework based on the experiences shared by the Follower Living Labs. Key activities in this session include:

- *Thematic Discussions*: Participants divide into groups addressing specific themes or Use Case of common interest to examine the framework's strengths, gaps, and areas for improvement.
- *Validation of Framework Components*: Follower cities provide feedback on the CF&T process' applicability, clarity, and usability, drawing from their real-world implementation experiences.
- *Recommendations for Refinement*: Participants collaboratively propose adjustments and enhancements to ensure the CF&T framework and process remains flexible, robust, and universally transferable.

By the end of the workshop, the combined efforts of both sessions result in a validated, refined transferability framework that reflects the collective experiences of Trailblazer and Follower Living Labs. The CLL4 workshop thus serves as a milestone in consolidating the project's progress and preparing for the final phase of framework finalization and transferability assessment.

7.2. Proposal of activities to be performed after CLL4 Workshop

Following the CLL4 workshop, the Follower Living Labs (F-LLs) enter a critical phase of **implementation refinement and knowledge consolidation**. The activities undertaken during this period are aimed at fine-tuning Use Cases, facilitating continuous collaboration, and documenting key lessons to ensure a robust and replicable transferability framework. This post-

workshop phase is crucial as it solidifies the groundwork laid by the testing process and prepares for future scaling of successful solutions.

The first activity involves **Use Case fine-tuning**, where F-LLs should focus on adjusting and refining the implemented solutions based on feedback and data collected during the earlier testing phases. This iterative process entails continuous cycles of testing, data gathering, and analysis to identify what works well and where improvements are needed. By systematically addressing technical, operational, or contextual challenges, cities can adapt the Use Cases more effectively to their local environments. This activity also emphasizes re-testing refined solutions to validate their outcomes, ensuring they meet desired performance standards and are scalable to other urban contexts.

The second key activity is **continuous knowledge sharing**, which prioritizes ongoing collaboration between Trailblazer Living Labs (T-LLs) and F-LLs. Throughout the implementation phase, Follower cities maintain communication channels with Trailblazers to exchange insights, address emerging challenges, and share best practices. This collaboration is instrumental for troubleshooting unexpected issues and leveraging the experience of T-LLs to identify effective solutions. Regular communication sessions, such as virtual meetings or knowledge-sharing forums, allow for real-time exchange and foster a culture of collective learning. Such practices ensure that all participants benefit from a shared pool of knowledge and experiences.

The final activity centers on **preparing documentation on lessons learned**, which serves as a crucial step for consolidating the knowledge gained during the testing and implementation phases. Follower cities need to document the key successes, challenges, and lessons encountered while adapting and implementing the Use Cases. This process involves recording detailed insights, such as technical adjustments, stakeholder engagement strategies, and solutions to specific challenges. By capturing this information, cities create a repository of knowledge that can guide future implementations and support other urban areas looking to adopt similar solutions. The resulting documentation also contributes to refining the transferability framework, ensuring that it reflects practical, real-world experiences and remains robust for future scaling.

These post-CLL4 activities—Use Case fine-tuning, continuous knowledge sharing, and lessons-learned documentation—are interconnected steps that strengthen the overall implementation process. Together, they enable Follower Living Labs to optimize their solutions, support continued collaboration with Trailblazers, and contribute to the refinement of the transferability framework.

8. Phase 5: CF&T Framework Finalization

The final stage of the metaCCAZE project gathers the outcomes of all previous efforts and it is where the Cross-Fertilization and Transferability (CF&T) framework is finalized. This phase focuses on drawing conclusions from the metaDesign, testing, and implementation processes conducted by both Trailblazer (T-LLs) and Follower Living Labs (F-LLs).

The phase also emphasizes knowledge exchange, reviewing the collective experiences, and setting clear follow-up actions for Observer Cities. Central to this milestone is the **CLL5 workshop**, a physical one-day event where participants collectively evaluate the CF&T process and assign responsibilities for future transferability plans.

8.1. CLL5 Workshop

The **CLL5 workshop** serves as the final gathering of project participants, marking the conclusion of the CF&T journey. The workshop provides a structured environment for discussing overall experiences, sharing insights, and agreeing on next steps. By combining presentations, group discussions, and targeted tasks, the workshop ensures that the transferability framework is finalized with consensus and that Observer Cities are equipped to develop their own transferability plans.

Session 1: Presentations and Framework Finalization

The first session of CLL5 focuses on reviewing the overall experiences of both Trailblazer and Follower Living Labs. Leaders and supporters from T-LLs and F-LLs deliver **presentations** summarizing their journeys through the metadesign, testing, and implementation phases. These presentations emphasize the following key elements:

- *Overall experiences*: Reflections on the processes undertaken, including successes, challenges, and adaptations made throughout the CF&T process.
- *Key insights:* Highlights of what worked well, innovative solutions developed, and lessons learned that can inform future transferability initiatives.
- *Framework contributions*: Suggestions for refining and finalizing the transferability framework based on the real-world experiences of participating cities.

Following the presentations, a **group discussion** is conducted to collectively finalize the CF&T framework. Participants provide feedback on its structure, clarity, and applicability, ensuring that it reflects the collective learning of the project and is adaptable to a wide range of urban contexts. This session ensures that the framework is robust, practical, and ready for broader application.

Session 2: Discussion on Transferability Plans and Follow-Up Actions

The second session focuses on future-oriented discussions, specifically targeting the next steps for Observer Cities and project participants. The session begins with a focused **discussion on key insights** and expectations for the transferability plans.

Observer Cities are assigned specific tasks, including the preparation of their transferability plans, with clear deadlines and deliverables. This structured task allocation ensures that cities are equipped with actionable steps to adapt the finalized framework to their contexts.

The session concludes with a **panel discussion** to clarify follow-up actions for all participants, including Trailblazer and Follower cities. This discussion addresses:

- Responsibilities for ongoing knowledge exchange and collaboration.
- Timelines for implementation and reporting by Observer Cities.
- Final reflections on the collective achievements and future potential of the CF&T framework.

By the end of CLL5, the transferability framework is finalized through a collaborative process, integrating feedback and experiences from all participating cities. Observer Cities leave the workshop with clear guidance and assigned tasks for preparing their transferability plans, ensuring the continuation of the project's impact. The workshop serves not only as a moment of reflection

but also as a forward-looking event, setting the foundation for future replication of innovative urban mobility solutions across cities.

8.2. Finalizing the Use Cases: Activities for Living Labs

As the metaCCAZE project reaches its conclusion, the final activities focus on documenting and sharing the outcomes of the implemented Use Cases.

These activities ensure that the results of the Cross-Fertilization and Transferability (CF&T) process are thoroughly reviewed, recorded, and disseminated. It also serves as an opportunity for cities to consolidate their efforts, gather stakeholder input, and plan for the future sustainability or replication of the tested solutions. Four key activities mark this final stage: *stakeholder reviews, lessons learned documentation, support to results dissemination,* and *project closure events*.

The first activity includes the Stakeholder Final Reviews, a critical step to validate that the implemented Use Cases meet the intended local needs and project objectives.

Living Labs organize final review activities involving all relevant stakeholders, such as local authorities, citizens, and mobility operators. These workshops provide a platform for stakeholders to share feedback on the performance and impact of the Use Cases. By gathering diverse perspectives, cities can confirm whether the solutions delivered their expected outcomes and identify any final areas for adjustment or improvement. This activity ensures that the implemented solutions are contextually relevant and well-aligned with local priorities.

The second key task, in alignment with WP5, involves organising Lessons Learned Documentation, reports capturing the experiences, challenges, and successes encountered throughout the project lifecycle.

Living Labs systematically document the insights gained during the implementation and testing phases, focusing on both technical and operational aspects of the Use Cases. This activity involves compiling detailed reports on:

- *Challenges faced*: Barriers encountered during implementation, including technical limitations, stakeholder resistance, or contextual constraints.
- *Solutions applied*: Adaptive strategies and innovative approaches used to overcome challenges.
- *Key successes:* Achievements and impacts observed, particularly in addressing urban mobility challenges.

This documentation serves as a valuable resource for future projects, enabling other cities or stakeholders to replicate and adapt the Use Cases based on the lessons learned.

The third activity considers Support to Results Dissemination, focusing on preparing clear and concise documentation of project outcomes for broader dissemination.

Living Labs work on summarizing their Use Case results, impacts, and lessons into formats suitable for sharing with wider audiences. This activity may include discussions within the project's communication work packages (e.g., WP5), ensuring alignment with the overall dissemination strategy. The goal is to maximize the visibility of the project's achievements, promote knowledge sharing, and inspire other cities to adopt similar solutions.

The final activity in this phase involves hosting **Project Closure Events** to formally conclude the local implementation efforts.

Living Labs organize final events at the local level to present the project's overall outcomes, achievements, and plans for sustainability or replication. These events serve as a podium to showcase the tested solutions to stakeholders, celebrate the project's successes, and outline future pathways for scaling or maintaining the implemented Use Cases. By engaging stakeholders and decision-makers, these closure events ensure that the momentum created by the project continues beyond its formal conclusion.

Together, these final activities ensure that the Living Labs' Use Cases are fully validated, documented, and shared for broader impact. By incorporating stakeholder feedback, recording lessons learned, and disseminating results, the Living Labs solidify their contributions to urban mobility innovation and lay the groundwork for sustained success and replication across other cities.

9. Conclusion and Way Forward

The **Cross-Fertilization and Transferability (CF&T) process** will serve as the methodological foundation of the metaCCAZE project, enabling the structured development, testing, and implementation of innovative urban mobility solutions across Trailblazer and Follower Living Labs. Designed as a systematic and iterative process, it will develop through four key phases—metadesign, testing and transfer, implementation, and finalization—each ensuring the effective exchange, adaptation, and validation of Use Cases and metaServices.

By fostering collaboration between cities, the CF&T process will lay the foundation for scalable, transferable solutions capable of addressing Europe's most pressing urban mobility challenges.

The **main scope** of this process is to empower cities by facilitating knowledge exchange, solution transfer, and collaborative problem-solving. Trailblazer Living Labs will lead the process by testing and demonstrating successful Use Cases and metaServices within their own contexts, offering practical lessons and insights to Follower Living Labs. Follower cities will, in turn, adapt and replicate these solutions, ensuring they fit their local technical, societal, and governance conditions. Observer Cities will also play a vital role in the process, absorbing the knowledge and preparing their own transferability plans for future adoption.

Ultimately, the CF&T process will establish a model that enables cities to collectively innovate and replicate effective mobility solutions across Europe.

The **expected outcomes** of the CF&T process are both comprehensive and impactful. Trailblazer Living Labs will successfully **test and validate innovative Use Cases**, providing clear examples of how urban mobility challenges can be addressed through sustainable and intelligent solutions.

Follower Living Labs will adapt and implement these solutions, demonstrating their transferability and ensuring that barriers encountered during implementation—such as technical constraints, stakeholder resistance, or resource limitations—are addressed through collaborative feedback loops.

The project will result in a validated **transferability framework**, capturing methodologies, tools, and lessons learned throughout the process.

This framework will act as a practical, actionable guide for cities across Europe, enabling them to replicate solutions and adapt them to their local needs. Furthermore, detailed **documentation of lessons learned**, challenges overcome, and key successes will provide a robust knowledge base that cities, policymakers, and mobility stakeholders can use as a reference for future initiatives.

Looking **forward to dissemination and exploitation at the European level**, the project's outcomes will be positioned to ensure maximum visibility and adoption. The transferability framework will be disseminated through targeted tools such as policy briefs, reports, and scientific publications, as well as presentations at European conferences and urban mobility forums. The involvement of Observer Cities will be particularly important, as they will prepare and implement their own transferability plans, acting as champions for the next wave of replication. This phase will also encourage further collaboration with EU initiatives, research networks, and innovation platforms, ensuring that the project's solutions reach decision-makers, mobility operators, and urban planners at both local and European levels.

By combining shared knowledge, tested methodologies, and collaborative problem-solving, the CF&T process will establish a robust foundation for innovation transfer in urban mobility.

It will equip cities with the tools, strategies, and frameworks needed to collectively tackle mobility challenges, ensuring that tested solutions are scalable, adaptable, and sustainable. As the project progresses, its outcomes will pave the way for a broader European impact, driving forward urban mobility innovations and creating smarter, more accessible, and more resilient cities across the continent.

10. Literature /References

The development of the metaCCAZE cross-fertilization and transferability (CF&T) methodology is grounded in established approaches from previous European Union projects and key academic studies. Among these, the **CIVITAS initiatives**, such as CIVITAS METEOR and POINTER, provided essential frameworks for advancing sustainable urban mobility and assessing the feasibility of innovative solutions. Complementing this, projects like **NICHES+** and **TIDE Coordination Action** under the FP7 Transport program offered valuable insights into fostering knowledge exchange and implementing innovative transport measures.

To further strengthen the methodology, modern Horizon 2020 initiatives, such as **SPROUT**, **MOVE21**, and **NetZeroCities**, contributed contemporary perspectives on urban innovation and transferability. These initiatives emphasize the importance of adaptability across diverse urban contexts while addressing challenges such as governance, stakeholder engagement, and climate neutrality goals.

In addition to practical experiences, the approach draws on influential academic works.

Studies by **Macario and Marques (2008)** and **Lah et al. (2015)** explore the transferability of sustainable urban mobility measures, offering theoretical insights into replicating solutions effectively. Further, the works of **Gonzales-Pinero et al. (2021)** and **Marques (2021)** highlight the challenges and opportunities in scaling urban innovations, emphasizing the role of collaborative ecosystems in enabling knowledge transfer.

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11. Annex 1- Pre-Assessment Survey to Followers Living Labs

WP1 – T 1.6 Cross Fertilization & Transferability Activities

Pre-Assessment Survey to Followers Living Labs

Date of document 21/10/2024

Dissemination Level:	**Public**
Document Author:	**UNINA - UNIVERSITY OF NAPLES FEDERICO II**

metaCCAZE Project–Task 1.6 Cross Fertilization & Transferability Activities

FOLLOWERS LIVING LABS PRE-ASSESSMENT SURVEY

Objective:

The objective of this questionnaire is to gather insights and expectations from Follower Cities and their scientific coordinators regarding the Cross-Fertilization and Transferability process. The responses will help us better design and implement a collaborative and effective framework that addresses the needs and ambitions of all project partners.

Instructions:

For each question, please select the option(s) that best reflect your views.

IMPORTANT NOTE: please, use the blank rows and report details useful to understand your local context and the reason of your choice.

1. PRELIMINARY INFORMATION

LIVING LAB:

- Athens (GR)
- Gozo (MT)
- Krakow (PL)
- Milano (IT)
- Miskolc (HU)
- Paris (FR)

RECIPIENT OF THIS QUESTIONNAIRE:

- **Living Lab Leader (organization):**

_____

Referent compiling this survey (name and surname)

_____

Role of the Referent in the leading organization:

- General Management
- Administrative Area
- Technical Area
- Other (please specify)

_____

- **Local Scientific Supporter (organization):**

_____

Referent compiling this survey (name and surname)

_____

2. PRELIMINARY SURVEY ABOUT FERTILIZATION & TRANSFERABILITY EXPECTATIONS

1. What are your main expectations from the Cross-Fertilization and Transferability process in this project?

(Please select all that apply and provide additional explanatory comments)

- A. Gaining access to innovative solutions and best practices.
- B. Improving local governance and decision-making processes.
- C. Enhancing capacity building and knowledge transfer.
- D. Establishing stronger partnerships with leading cities.
- E. Learning how to test and validate new use cases from Trailblazer cities.
- F. Other (please specify): _____

Comments (please explain the reason behind your choice):

_____

_____

_____

_____

2. What specific information or support would you find most beneficial to enhance the transferability of innovative use cases to your city?

(Please select all that apply and provide additional explanatory comments)

- A. Detailed case studies and best practice documentation.
- B. Technical guidelines for implementation.
- C. Workshops and training sessions on use case adaptation.
- D. Access to digital platforms for data and resource sharing.
- E. Continuous technical support and consultation from trailblazer cities.
- F. Other (please specify): _____

Comments (please explain the reason behind your choice):

_____

_____

_____

_____

3. In your opinion, what are the most effective methods and channels for knowledge sharing and communication between Trailblazer and Follower cities?

(Please select all that apply and provide additional explanatory comments)

- A. Physical face-to-face meetings and site visits.
- Virtual meetings
- Webinars
- Online collaboration platforms (e.g., shared drives, project portals).
- Peer-to-peer technical workshops.
- Regular newsletters and progress reports.
- F. Other (please specify): _____

Comments (please explain the reason behind your choice):

_____

_____

_____

_____

4. What challenges or barriers do you foresee in the Cross-Fertilization and Transferability process, and how do you suggest addressing them?

(Please select all that apply and provide additional explanatory comments)

- Differences in local governance and policy frameworks.
- Cultural and language barriers.
- Limited technical capacity or resources.
- Resistance to change or innovation.
- Lack of clarity in roles and responsibilities.
- Difficulty to engage stakeholders and citizens
- F. Other (please specify): _____

Comments (please explain the reason behind your choice):

_____

_____

_____

_____

Any other suggestions (Optional)

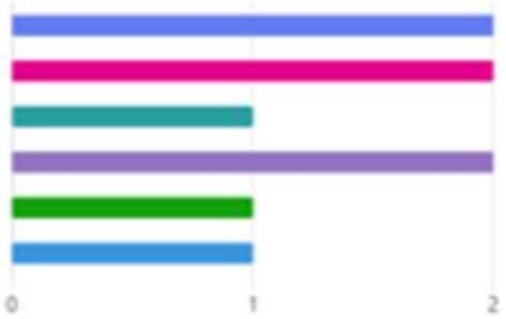
Thank you for your participation!

Your insights and suggestions are highly valued and will play a key role in enhancing the effectiveness of our collaborative efforts.

About the participants

1. **LIVING LAB:**

Athens (GR)	2
Gozo (MT)	2
Krakow (PL)	1
Milano (IT)	2
Miskolc (HU)	1
Paris (FR)	1



2. **RECIPIENT OF THIS QUESTIONNAIRE:**

Local Scientific Supporter	4
Living Lab Leader	5

Co-funded by the European Union

3. **Role of the Referent in the leading organization:**

General Management	2
Administrative Area	1
Technical Area	2
Altro	0

2

About expectations

6. **1) What are your main expectations from the Cross-Fertilization and Transferability process in this project?**

Knowledge transfer

Learn from different situations

Insights from the application of metaInnovations

Gain access to new technologies and best practices

Governance and regulatory structures

Learning about success and failure

Identify areas for improvement

Learning from the pilot's mistakes and corrections

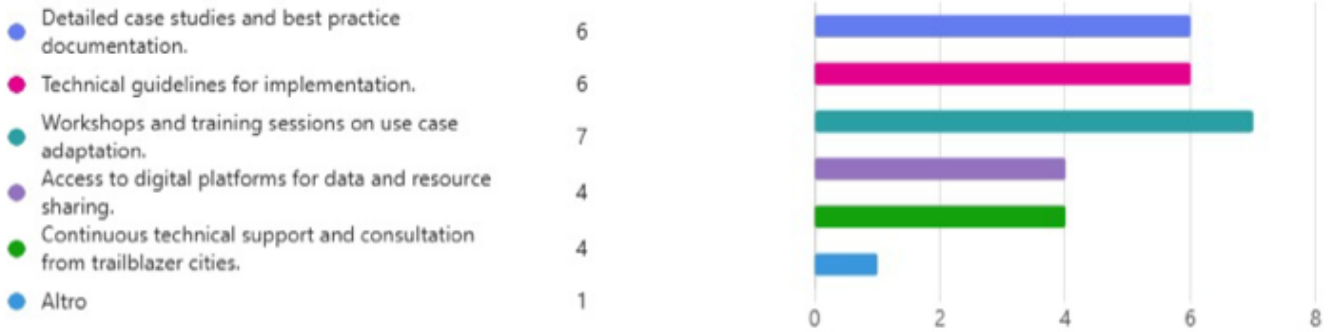
Co-funded by the European Union

Create partnerships between cities

Best practices to make more effective decisions

About information and support needed

8. **2) What specific information or support would you find most beneficial to enhance the transferability of innovative use c ases to your city?**



Guidelines, legal notices and any technical documents

Physical on-site demonstrations and workshops

Detailed Case Studies and Best Practice Documentation

Workshops and training sessions

Practical guidance and ongoing support

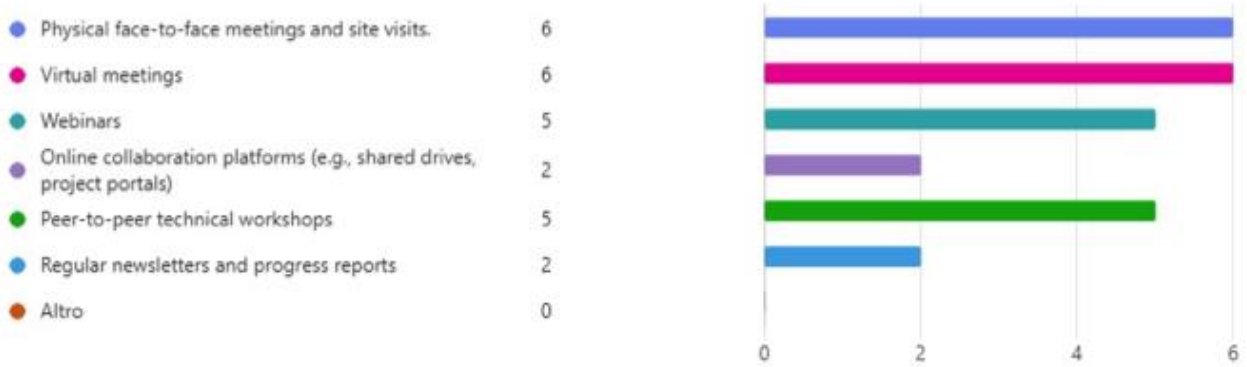
Co-funded by the European Union

Access to Digital Platforms for Data and Resource Sharing

4

About sharing methods & channels

10. **3. In your opinion, what are the most effective methods and channels for knowledge sharing and communication betwe en Trailblazer and Follower cities?**



Webinars

Online discussions

Face to face site visits

Peer-to-peer technical workshops

Direct meetings with Q&A sessions

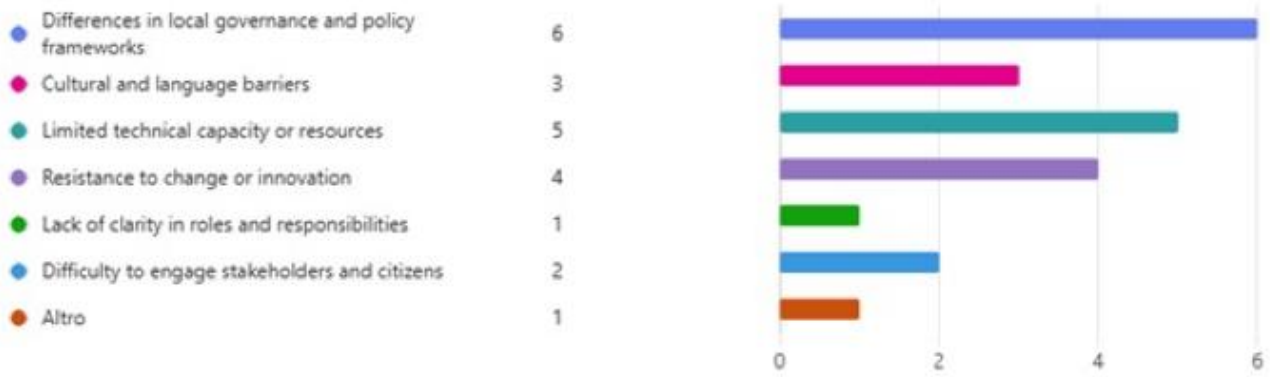
Co-funded by the European Union

Virtual meetings and technical workshops

5

About potential challenges

12. **4) What challenges or barriers do you foresee in the Cross-Fertilization and Transferability process, and how do you suggest addressing them?**



Differences in governance and policy

Limited budgets

Limited technical experience

Lack of Clarity in Roles and Responsibilities

Resistance to change

6

Co-funded by the European Union

12. Annex 2- Assessing the transferability potential of Use Cases among metaCCAZe Living Labs: Key Performance Indicators for Transferability Potential Assessment (TPA KPIs) and related calculation model.

Date of document 13/11/2024

Dissemination Level:	**Public**
Report Author:	**UNINA - UNIVERSITY OF NAPLES FEDERICO II**

***Assessing the transferability potential of Use Cases among metaCCAZe Living Labs: Key Performance Indicators for Transferability Potential Assessment (TPA KPIs) and related calculation model*.**

In this document is proposed a set of TPA KPIs to assess the transferability potential of urban mobility use cases among metaCCAZE Trailblazers and Followers Living Labs, and an algorithm to calculate the potential for transferability, using the Trailblazer Use case implementation as a benchmark. KPIs focus is on the socio-political dimension, and the proposal consistency is cross checked with previous EU projects and research.

Transferability Potential Assessment KPIs

1. **Political Support and Stability**:

   Description: Measures the level of support from local and regional political bodies, as well as the stability of governance structures. This KPI considers whether political leadership backs the mobility initiative and how consistent this support is over time.

   Rationale: Political support is critical for long-term project success and scalability. Initiatives with strong political backing are more likely to secure funding, overcome legal barriers, and be maintained through electoral changes. *This is highlighted in the CIVITAS projects, which emphasized the need for local political buy-in for sustainable transport measures*.

   Example KPI: Percentage of city council meetings that address urban mobility initiatives or public statements in support of the project.

2. **Regulatory and Policy Alignment**:

   Description: Measures how well the mobility Use Case aligns with existing local, regional, and national regulations and policies, including those related to urban planning, environmental standards, and transportation.

   Rationale: Transferability is enhanced when a project fits into the existing policy framework of a city. *Projects like CIVITAS Pointer have underscored the importance of alignment with broader EU mobility policies for effective knowledge transfer*. Ensuring compatibility reduces friction in the adaptation process.

   Example KPI: Number of regulatory amendments required for project implementation or compliance rate with local transport policies.

3. **Institutional Capacity for Implementation**:

   Description: Assesses the capacity of local institutions (municipal authorities, transport agencies) to implement and manage the mobility Use Case, including staffing levels, expertise, and available resources.

   Rationale: The ability of institutions to manage complex projects is key for transferability, especially when adapting a leading city's Use Case to a new context. *Research by Macario and Marques highlights how institutional readiness affects the successful replication of sustainable mobility measures*.

   Example KPI: Ratio of qualified staff to Use Case scope or percentage of budget dedicated to capacity-building activities.

4. **Stakeholder Engagement and Participation**:

   Description: Evaluates the extent to which stakeholders (residents, local businesses, mobility operators, etc.) are involved in decision-making processes related to the mobility initiative.

   Rationale: Inclusive participation is often linked to the successful adaptation of urban mobility projects, *as demonstrated in SUMPs-Up and the TIDE projects, which emphasized stakeholder workshops for adapting measures to local needs*. A higher level of participation can facilitate smoother adaptation by ensuring that the community's needs and concerns are integrated into the project.

   Example KPI: Number of stakeholder meetings held per year, or percentage of stakeholders expressing satisfaction with their level of involvement.

5. **Public Perception and Acceptance**:

   Description: Captures the general public's perception and acceptance of the mobility Use Case through surveys and media analysis.

   Rationale: A positive perception by the public is essential for the adaptation of mobility measures, *as seen in the acceptance of measures in the CIVITAS and SUMPs-Up projects.* Public support can help mitigate resistance to changes in urban mobility systems, making the initiative more transferable.

   Example KPI: Percentage of positive feedback from citizen surveys or the number of public protests against the initiative.

6. **Cross-Cultural and Social Adaptability**:

   Description: Measures the extent to which the cultural and social norms of the recipient city align with the practices and norms embedded in the mobility Use Case.

   Rationale: Cultural differences can influence how mobility solutions are perceived and adopted. *This was a significant factor in the transferability analysis of NICHES+ FP7 and CIVITAS Satellite projects, which addressed the adaptation of mobility solutions to diverse cultural contexts*.

   Example KPI: Number of culturally adapted community engagement activities or percentage of cultural barriers identified and addressed during the adaptation process.

These KPIs focus on the socio-political dimensions of transferability, considering political stability, stakeholder engagement, public acceptance, institutional capacity, and cultural adaptability.

The selected indicators are based on lessons learned from previous EU projects and research, which highlight the critical role of socio-political factors in adapting innovative mobility solutions to different urban contexts. These metrics are vital for ensuring that Follower cities can successfully adapt and sustain the use cases designed by the leading Trailblazer cities.

Evaluation Model

To evaluate the transferability potential of metaCCAZE Use Cases using the socio-political KPIs outlined, is proposed a **Multi-Criteria Decision Analysis (MCDA)** model. This approach can systematically analyze the diverse and qualitative nature of socio-political indicators, providing a balanced and data-driven method for transferability assessment.

1. Overview of the MCDA Approach

MCDA is a structured decision-making process that helps evaluate options based on multiple criteria, allowing for both quantitative and qualitative factors to be included. This is especially beneficial when dealing with socio-political KPIs that may not all be directly measurable but are critical for the successful adaptation of mobility projects.

It involves assigning weights to each KPI based on its importance in the context of transferability and then scoring each potential project or initiative against these criteria. The final score indicates the relative suitability of a mobility Use Case for transfer.

2. Key Steps in Applying MCDA for Transferability Assessment

- **Step 1: Define Criteria and Indicators**: Use the proposed socio-political KPIs such as political support, stakeholder engagement, and public acceptance. Each criterion should be clearly defined to ensure consistency in assessment.
- **Step 2: Assign Weights to KPIs**: Different criteria will have varying levels of importance depending on the local context of each follower city. For example, in cities with a history of political instability, political support might be weighted more heavily. Assigning weights could be done through expert consultations and/or stakeholder workshops.
- **Step 3: Score the KPIs**: Each KPI is scored using a standardized method, to assess its potential contribution to successfully transfer the UC to the follower cities. Scoring can involve surveys, expert panels, or data analysis.
- **Step 4: Aggregate Scores**: Calculate a weighted sum of the scores to determine an overall transferability score for each potential use case. This aggregation reveals which projects are most likely to succeed when adapted to the new context.

3. Advantages of Using MCDA for Socio-Political Transferability Assessment

- **Flexibility**: MCDA accommodates different types of data (qualitative and quantitative), making it suitable for socio-political indicators like public acceptance or stakeholder engagement.
- **Transparency**: The process of assigning weights and scoring can be made transparent, involving stakeholder input to ensure that the decision-making process reflects local priorities and concerns.
- **Comparative Analysis**: MCDA allows for direct comparison between different Use Cases, making it easier to identify those that align best with the socio-political context of each follower city.

An Algorithm for MCDA with Socio-Political KPIs

- **Step 1: Define the Decision Problem**

  Goal: To evaluate the transferability potential of urban mobility Use Case between Trailblazer and Follower cities.

  Criteria (KPIs): A set of socio-political KPIs, each with a defined weight based on its relative importance. In metaCCAZE case, there are 6 criteria defining KPIs:

  - Political Support and Stability (Weight: w^1)
  - Stakeholder Engagement and Participation (Weight: w^2)
  - Regulatory and Policy Alignment (Weight: w^3)
  - Public Perception and Acceptance (Weight: w^4)
  - Institutional Capacity for Implementation (Weight: w^5)
  - Cross-Cultural and Social Adaptability (Weight: w^6)

- **Step 2: Establish the Weighting Scheme**

  Assign a weight w^i to each KPI such that the sum of all weights equals 1:

  $$\sum_{i=1}^{n} w_i = 1$$

  where *n* is the number of KPIs (in this case, 6). These weights represent the relative importance of each KPI in the context of transferability.

- **Step 3: Collect Data for Each KPI**

  For each urban mobility initiative (e.g., a Use Case), collect scores S_{ij} for each KPI *i* (where *i* ranges from 1 to 6). Scores measure the level of readiness of the Living Lab on each KPI, assessing how well the LL meets the requirement of that KPI for transferability.

  The scores are typically on a standardized scale (e.g., 0 to x) and can be derived from expert evaluations, surveys, or available data.

  It is proposed to use a 1 to 5 Likert scale, where:

  - 1 = Very Low
  - 2 = Low
  - 3 = Moderate
  - 4 = High
  - 5 = Very High

- **Step 4: Calculate the Weighted Scores**

  For each Use Case *i* calculate the weighted score for each KPI *j* as follows:

  $$WS_{ij} = w_i \text{ x } S_{ij}$$

  where:

  - w_i: weight assigned to KPI *j*
  - S_{ij} : score of Use Case *i* on KPI *j*.

- **Step 5: Compute the Overall Transferability Score**

Sum the weighted scores across all KPIs for each Use Case to determine the overall transferability score T^i:

$$T^i = \sum_{j=1}^{n} WS_{ij} = \sum_{j=1}^{n} (w_i \, x \, S_{ij})$$

the overall score T^i provides a measure of the transferability potential of each Use Case, considering all the socio-political criteria.

- **Step 6: Rank the Initiatives**

  Rank the Use Cases based on their overall transferability scores T^i. Higher scores indicate a greater potential for successful transferability.

Key Considerations

- **Stakeholder Input**: Involve stakeholders in the process of defining weights to reflect the priorities of the cities involved.
- **Data Quality**: Ensure that the scores for each KPI are derived from reliable sources, such as surveys, expert evaluations, or case studies.

Summary

This MCDA model is designed to provide a structured and transparent way of assessing the transferability potential of urban mobility solutions, focusing on the socio-political perspective. By weighting each KPI according to its importance and scoring each initiative, the model allows decision-makers to evaluate and rank the suitability of various mobility solutions for adaptation in different urban contexts. The model's flexibility in weighting and sensitivity analysis ensures it can be adapted to diverse project requirements and local conditions.

Challenge - The Limitations of a Single Aggregate Score

- **Loss of Detail**: When KPIs are aggregated into a single score, the nuances and specific strengths or weaknesses in each criterion are lost. For example, a Use Case might have a high score overall due to strong political support, but it could still face significant challenges in stakeholder engagement or regulatory alignment.
- **Identifying Barriers**: Without a breakdown of scores, it's difficult to pinpoint which specific socio-political factors (e.g., public perception, policy alignment, or institutional capacity) are hindering the transferability of a particular Use Case.

To better understand the challenges and opportunities in transferring a mobility Use Case, it is beneficial to look beyond the single score and analyze the scores of each KPI.

➔ **Gap Analysis**:

- **Compare KPI Scores** Between the Trailblazer city (the one where the measure originated) and the Follower city (the one adopting it). This allows for an analysis of gaps that need to be addressed.
- **Example**: If the Trailblazer city had high scores in institutional capacity, but the Follower city scores low in this area, it could indicate a need for capacity-building efforts in the Follower city before implementing the mobility measure.

Literature /References

CIVITAS projects Documentation: Provides real-world case studies on the adaptation of mobility solutions and the importance of socio-political factors.

CIVITAS Programme Official Reports: Detailed reports from projects like CIVITAS Pointer and CIVITAS Satellite provide insights into the importance of stakeholder engagement and political support in the adaptation of urban mobility measures.

Macario, R., & Marques, C.F. (2018): This research offers insights into the use of multi-criteria frameworks for evaluating sustainable mobility transfers and emphasizes the role of institutional readiness and policy alignment.

SUMPs-Up Project Reports: Discuss the integration of stakeholder perspectives in assessing the adaptation of urban mobility solutions.

SUMI Initiatives: offer frameworks for evaluating sustainable mobility with an emphasis on social and governance metrics.

Barcelona Superblock case study https://www.c40.org/case-studies/barcelona-superblocks/

Example Use Case: Superblock Use Case Transferability Potential Assessment from Barcelona to Hamburg

Contextual Overview

Hamburg: Focused on digitalization and smart city initiatives, Hamburg is advancing urban mobility with projects like autonomous transport, comprehensive public transport management systems, and integration of data platforms for real-time traffic management.

Barcelona: Known for its human-centric urban planning, Barcelona has strong community engagement and sustainable mobility measures, such as superblocks (superilles), bicycle-friendly infrastructure, and an emphasis on reducing car usage through public transport expansion.

Goal: Assess Hamburg's potential to adapt the "Superblock" initiative successfully, using Barcelona's context as a reference point to understand the conditions under which the initiative thrived.

1. Assign Weights to KPIs: Prioritize KPIs based on their importance in the two local contexts.

KPI	Hamburg Weight	Barcelona Weight	RATIONALE FOR DIFFERENT WEIGHTS
POLITICAL SUPPORT AND STABILITY	0,25	0,15	Political backing might be more critical for Hamburg, where large-scale changes could face more scrutiny. Barcelona already has established support for the Superblock model.
REGULATORY AND POLICY ALIGNMENT	0.2	0.2	Aligning the initiative with existing policies is equally important in both contexts.
INSTITUTIONAL CAPACITY FOR IMPLEMENTATION	0.1	0.2	Barcelona's successful experience with Superblocks suggests institutional capacity is crucial for scaling, whereas Hamburg has the resources but needs to focus more on other factors.
PUBLIC PERCEPTION AND ACCEPTANCE	0.2	0.15	In Hamburg, building public support might be more challenging and thus requires more emphasis. Barcelona has already achieved significant acceptance of the Superblock model.
CROSS-CULTURAL AND SOCIAL ADAPTABILITY	0.05	0.1	Cultural adaptation is slightly more important for Barcelona as it integrates diverse community dynamics, while Hamburg's challenge is more in regulatory and political areas.

2. Score the Superblock Use Case TPA KPIs in Each City

Hamburg (EX ANTE):

- Political Support and Stability: 3 (Moderate)
- Regulatory and Policy Alignment: 3 (Moderate)
- Institutional Capacity for Implementation: 4 (High)
- Stakeholder Engagement and Participation: 4 (High)
- Public Perception and Acceptance: 3 (Moderate)
- Cross-Cultural and Social Adaptability: 3 (Moderate)

Barcelona (EX POST):

- Political Support and Stability: 4 (High)
- Regulatory and Policy Alignment: 4 (High)
- Institutional Capacity for Implementation: 4 (High)

- Stakeholder Engagement and Participation: 5 (Very High)
- Public Perception and Acceptance: 5 (Very High)
- Cross-Cultural and Social Adaptability: 4 (High)

3. Calculate KPIs weighted scores and total score for each city

KPI	*Hamburg Score*	*Hamburg Weight*	***Hamburg Weighted Score***	*Barcelona Score*	*Barcelona Weight*	***Barcelona Weighted Score***
Political Support and Stability	3	0.25	0.75	4	0.15	0.6
Regulatory and Policy Alignment	3	0.2	0.6	4	0.2	0.8
Institutional Capacity for Implementation	4	0.1	0.4	4	0.2	0.8
Stakeholder Engagement and Participation	4	0.2	0.8	5	0.2	1.0
Public Perception and Acceptance	3	0.2	0.6	5	0.15	0.75
Cross-Cultural and Social Adaptability	3	0.05	0.15	4	0.1	0.4

Hamburg's total Score: 0.75+0.6+0.4+0.8+0.6+0.15 = 3.30

Barcelona's total Score: 0.6+0.8+0.8+1.0+0.75+0.4 = 4.35

NOTE: Barcelona's scores, calculated after the demonstration, can be used as a **benchmark** to highlight areas where Hamburg needs improvement. This balanced method allows to maintain comprehensive insight from Barcelona's successful experience while directly addressing Hamburg's needs. It creates a **targeted roadmap for adaptation** that leverages what has worked in Barcelona, offering a more strategic and informed transfer process.

Key Insights

Hamburg's Score (3.3) reflects moderate readiness but places more emphasis on political support and public perception, where it needs to improve.

Barcelona's Score (4.35) shows strong suitability for the Superblock model, with its strengths in community engagement and institutional capacity standing out.

Hamburg's Focus: Needs to concentrate on increasing political support and public acceptance, which are weighted higher due to their critical role in the local context.

Barcelona's Reference Role: Offers insights on how effective stakeholder engagement and strong institutional frameworks contributed to success, which Hamburg can use as a model.

GAP ANALYSIS

KPI	Hamburg Weig. Score	Barcelona Weig. Score	Gap Analysis
Political Support and Stability	0.75	0.6	Crucial to strengthen political support further, despite already giving this high importance.
Regulatory and Policy Alignment	0.6	0.8	Aligning policies to support Superblocks is an area for improvement in Hamburg.
Institutional Capacity for Implementation	0.4	0.8	Hamburg has a strong institutional foundation but could benefit from Barcelona's best practices in implementing new models.
Stakeholder Engagement and Participation	0.8	1.0	Barcelona excels in community involvement. Hamburg could enhance engagement efforts to match this.
Public Perception and Acceptance	0.6	0.75	Hamburg requires more efforts in building public acceptance through communication strategies.
Cross-Cultural and Social Adaptability	0.15	0.4	Cultural adjustments are less critical for Hamburg but should still be addressed to ensure local acceptance.

Key Findings

Hamburg's Total Score (3.3) is lower than Barcelona's (4.35), indicating several areas where Hamburg needs to make adjustments to effectively adopt the Superblock model.

The largest gaps lie in stakeholder engagement, public perception, and institutional capacity.

Political support is already emphasized in Hamburg's context, but continuous efforts are necessary to secure stable backing for the initiative.

Recommendations and Action Plan for Hamburg

Based on the analysis, a targeted action plan can be outlined for Hamburg to optimize the transfer of Barcelona's Superblock concept:

1. **Strengthen Political Support (0.75 vs. 0.6)**
    - **Action**: Host roundtable discussions with local political leaders and city council members, focusing on the long-term benefits of Superblocks, such as improved air quality, public health, and local economic activity.
    - **Leverage Barcelona's Example**: Use Barcelona's success story to illustrate how political support contributed to the initiative's acceptance and expansion. Focus on case studies from Barcelona to demonstrate potential benefits.
2. **Align Policies and Regulations (0.6 vs. 0.8)**
    - **Action**: Review existing urban planning and transport policies in Hamburg to identify legal barriers to implementing pedestrian-friendly zones and car-restricted areas.
    - **Leverage Barcelona's Example**: Study the regulatory changes Barcelona made to accommodate Superblocks, including adjustments to zoning laws and traffic regulations, to streamline policy adjustments in Hamburg.
3. **Improve Institutional Capacity (0.4 vs. 0.8)**
    - **Action**: Invest in training programs for city planners and municipal staff on the Superblock model, focusing on project management and implementation strategies.
    - **Leverage Barcelona's Example**: Seek collaboration with Barcelona's urban planners to gain insights into their project management approach and consider a study tour to experience the operational aspects of Superblocks firsthand.

4. **Enhance Stakeholder Engagement (0.8 vs. 1.0)**
    - **Action**: Increase the number of community workshops and public forums specifically focused on the Superblock concept. Engage residents, local businesses, and NGOs in the planning phase.
    - **Leverage Barcelona's Example**: Learn from Barcelona's inclusive decision-making processes by involving a broader range of stakeholders early on and maintaining open channels for feedback throughout the planning and implementation stages.
5. **Build Public Support and Perception (0.6 vs. 0.75)**
    - **Action**: Launch a public information campaign highlighting the benefits of Superblocks for quality of life, environmental health, and social cohesion. Use multimedia tools, including local press, social media, and neighborhood events.
    - **Leverage Barcelona's Example**: Use visual and data-driven examples from Barcelona to show the tangible improvements seen in neighborhoods with Superblocks (e.g., before-and-after comparisons of air quality and noise levels).
6. **Address Cultural Adaptability (0.15 vs. 0.4)**
    - **Action**: Adapt the design of Superblocks to align with local preferences for public space in Hamburg, such as incorporating spaces for cultural events and local markets.
    - **Leverage Barcelona's Example**: Study how Barcelona adapted the concept to different neighborhoods and applied varying degrees of pedestrianization, then adjust these principles to fit Hamburg's unique urban landscape.

Conclusion

By using Barcelona's scores as a benchmark, Hamburg gains a clear understanding of where to focus its efforts for adapting the Superblock concept. This tailored approach emphasizes the importance of political stability, stakeholder engagement, and regulatory alignment, while providing actionable steps to address specific gaps. Using Barcelona's experiences as a guide, Hamburg can better navigate the challenges of implementing a large-scale urban transformation, ensuring that the transfer is effective and sustainable.

13. Annex 3 - Trailblazer LLs to Follower LLs Use Case Transferability Process: a methodological approach for ex ante – during – ex post monitoring and evaluation.

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This simple data-driven methodology allows to monitor and evaluate the transferability process, and to understand whether the Follower Living Labs are effectively adapting the Trailblazers use cases to their local contexts.

Throughout the three stages, the methodology will rely on:

- **Stakeholder Involvement**: involve stakeholders at all stages, especially in defining weights for KPIs and providing feedback during implementation.
- **Comparative Use Case Analysis**: use the gap analysis between the trailblazer and follower cities to continuously refine the transfer process, addressing key barriers as they emerge.
- **Data-Driven Decisions**: leverage quantitative and qualitative data to make informed decisions about adjustments to the transfer strategy.

Note: the framework is based on the 6 TPA KPIs and the Multi-Criteria Decision Analysis (MCDA) approach proposed in the *TPA KPIs T1.6 internal report*.

Phase 1. Ex Ante (Before Implementation)[1]

This phase focuses on evaluating the readiness of Follower cities and identifying any potential barriers or enablers to the successful transfer of use cases.

Key Steps

1. **Data Collection**: collect baseline data on the follower city's current socio-political, regulatory, and institutional landscape using surveys, interviews, and public data (*LLs Status Quo*).
2. **Weight Assignment**: assign weights to KPIs based on the local context of each Living Lab to enable application of the MCDA model: involve local stakeholders to ensure the weights reflect local priorities
3. **Gap Analysis**: conduct an assessment comparing the Follower city's KPIs (e.g., political support, stakeholder engagement, regulatory alignment) against those of the trailblazer city[2].
4. **Preliminary Scoring**: score the transferability potential of each Use Case based on ex ante data.

Examples of techniques and tools to be applied for each TPA KPI

a. <u>Political Support and Stability</u>:

Stakeholder Interviews: conduct interviews with political leaders to understand their long-term support (*as done in **SATELLITE** to assess political backing before the project*).

Document Analysis: review city council meeting records and public statements to measure the frequency of mobility discussions. (*this was an effective technique in **SUMPs-Up** projects*).

b. <u>Stakeholder Engagement and Participation:</u>

Surveys of Key Stakeholders: use surveys to assess the involvement of community and business groups, (*as done in **POINTER***).

[1] The ex-ante phase coincides with the definition/calculation of scores as per the methodology presented in *TPA KPIs T1.6 internal report.*

[2] This means that the TPA KPIs are to be assessed in both T and F LLs

Participatory Planning Tools: engage stakeholders through public forums or workshops (*method used effectively in **TIDE**, where stakeholder engagement was key to adapting mobility solutions -in Sustainable Urban Mobility Futures, book 2023*)

c. **Regulatory and Policy Alignment:**

Gap Analysis: conduct a regulatory gap analysis to assess alignment with existing policies *(this method was used in **ELIPTIC** to identify necessary policy adjustments*).

d. **Public Perception and Acceptance:**

Baseline Public Surveys: use initial public surveys to gauge support for new mobility solutions (***NICHES+** utilized this method to measure public sentiment prior to implementing innovative mobility solutions*).

e. **Institutional Capacity for Implementation:**

Institutional Readiness Audits: conduct internal audits of the institutions responsible for project implementation, focusing on staffing, skills, and resources (*this method was outlined in **ECCENTRIC**, where local capacities were assessed before implementation*).

f. **Cross-Cultural and Social Adaptability:**

Cultural Sensitivity Workshops: engage local communities in workshops to understand cultural barriers (*technique used in **NICHES+** to ensure mobility solutions were socially adaptable*).

Outputs

- **Transferability Potential Score (Ex Ante)**: preliminary score based on the MCDA, highlighting the readiness for transfer.
- **Actionable Insights**: areas where the Follower city needs to invest or adjust (e.g., improve political support or institutional capacity).

Phase 2. During (Implementation Phase)

This phase focuses on monitoring the ongoing adaptation and implementation of the different use cases in the follower cities.

Key Steps

1. **Feedback Mechanism**: set up a structured feedback loop between Trailblazer and Follower Living Labs to facilitate knowledge exchange and problem-solving in real-time.
2. **Real-Time KPI Monitoring**: track changes in KPIs (political support, public perception, institutional capacity) during the implementation phase, using regular stakeholder engagement and public surveys to assess shifts.
3. **Score Updates**: continuously update the MCDA model with real-time data to monitor whether the transferability potential improves or declines.
4. **Adaptive Management**: if significant gaps or challenges emerge, adjust the implementation approach by modifying stakeholder engagement strategies or policy alignment.

Examples of techniques and tools to be applied for each TPA KPI

a. **Political Support and Stability:**
Monitoring Political Statements: use media monitoring tools to track public statements from political leaders during the project (*methods used in **SUMPs-Up** to assess ongoing political backing*).

Politicians Feedback Forums: organize feedback sessions to ensure continuous political support as political circumstances evolve, *which was critical in **TIDE***.

b. **Stakeholder Engagement and Participation:**
Ongoing Stakeholder Workshops: continue holding workshops to ensure ongoing stakeholder input (***CIVITAS ECCENTRIC** used this approach to adjust strategies based on stakeholder feedback during the project*).

Satisfaction Surveys: conduct regular surveys of stakeholders to gauge satisfaction with their level of participation, *as done in **SUMPs-Up***.

c. **Regulatory and Policy Alignment:**
Policy Monitoring Tools: monitor any changes in local or national regulations that might affect project implementation (*technique used in **ELIPTIC** to ensure regulatory compliance*).

d. **Public Perception and Acceptance:**
Real-Time Public Sentiment Analysis: utilize sentiment analysis tools to track media coverage and public opinion as the project unfolds (*technique used in **SUMPs-Up** to assess how public sentiment evolved during implementation*).

e. **Institutional Capacity for Implementation:**
Capacity Development Assessments: periodically assess whether local institutions have developed the necessary skills and resources during the project (*as outlined in **ECCENTRIC** to ensure readiness*).

f. **Cross-Cultural and Social Adaptability:**
Cultural Engagement Programs: run mid-term cultural engagement activities to assess how well the mobility solution fits within local social expectations (*NICHES+ used such programs to adapt projects to different cultural contexts*).

Outputs

- **Mid-Process Transferability Score**: an updated score reflecting ongoing progress, allowing for mid-course corrections.
- **Implementation Dashboard**: a visual tracking tool (perhaps KPI-based) for real-time monitoring of transferability challenges and successes.

Phase 3. Ex Post (After Implementation)

This phase evaluates the success of the transfer post-implementation and identifies lessons learned.

Key Steps

1. **Post-Implementation KPI Scoring**: reassess the Follower city's performance across all KPIs using the same MCDA approach.

2. **Compare Ex Ante and Ex Post**: conduct a comparative analysis between initial expectations and actual outcomes.
3. **Success Factors Analysis**: identify key factors that contributed to successful transfer or those that caused difficulties.
4. **Transferability Validation**: validate whether the use case is sustainable in the follower city based on political support, public acceptance, and long-term institutional capacity.

Examples of techniques and tools to be applied for each TPA KPI

a. **Political Support and Stability:**
Post-Implementation Political Surveys: conduct follow-up surveys to assess whether political support has been maintained *(technique used in **CIVITAS SATELLITE** to assess long-term political stability*).

b. **Stakeholder Engagement and Participation:**
Stakeholder Feedback Assessments: conduct final surveys or interviews with stakeholders to evaluate their satisfaction and continued involvement (*method highlighted in **SUMPs-Up***).

c. **Regulatory and Policy Alignment:**
Regulatory Compliance Check: conduct a final assessment of whether the project complies with all local and national regulations (*as done in **ELIPTIC** to evaluate regulatory success post-implementation*).

d. **Public Perception and Acceptance:**
Public Opinion Polls: use final public opinion polls to measure acceptance of the project after full implementation (*as seen in **NICHES+** to assess how the public adapted to the new mobility solution*).

e. **Institutional Capacity for Implementation:**
Institutional Learning Reviews: review whether institutions have retained the skills and capacities developed during the project (*method from **ECCENTRIC** to ensure long-term project sustainability*).

f. **Cross-Cultural and Social Adaptability:**
Cultural Impact Studies: conduct studies to measure the long-term cultural fit of the project within the community (*cultural assessments was used in **NICHES+** to assess the adaptability of mobility solutions across different regions*).

Outputs

- **Final Transferability Score (Ex Post)**: a final assessment of how well the transfer was achieved.
- **Best Practices Report**: document best practices and lessons learned for future transferability processes.

Summary of Techniques for all Phases

KPI	EX ANTE	DURING	EX POST
POLITICAL SUPPORT AND STABILITY	Political leaders' interviews (SATELLITE)	Media monitoring, feedback forums (TIDE)	Political surveys (SATELLITE)
STAKEHOLDER ENGAGEMENT	Stakeholder surveys (CIVITAS Pointer), workshops (TIDE)	Ongoing workshops (ECCENTRIC), surveys (SUMPs-Up)	Stakeholder feedback assessments (SUMPs-Up)
REGULATORY AND POLICY ALIGNMENT	Policy gap analysis (ELIPTIC)	Policy monitoring (ELIPTIC)	Regulatory compliance checks (ELIPTIC)
PUBLIC PERCEPTION AND ACCEPTANCE	Public surveys (NICHES+)	Sentiment analysis (SUMPs-Up)	Opinion polls (NICHES+)
INSTITUTIONAL CAPACITY	Institutional audits (ECCENTRIC)	Capacity assessments (ECCENTRIC)	Institutional learning reviews (ECCENTRIC)
CROSS-CULTURAL AND SOCIAL ADAPTABILITY	Cultural workshops (NICHES+)	Engagement programs (NICHES+)	Cultural impact studies (NICHES+)

SOURCES

1. **ECCENTRIC**: This project focused on innovative mobility services in suburban districts and clean city logistics. A key output is the **Replication Package**, which offers guidelines for implementing concepts like Mobility-as-a-Service (MaaS) in local contexts. It details factors such as stakeholder engagement, regulatory frameworks, and readiness indicators, which can help cities replicate successful mobility innovations.
2. **ELIPTIC**: This project explored the electrification of public transport systems. It provided guidelines for optimizing existing electric transport infrastructure to support broader electrification efforts, including business models for cost-efficient adoption of electric vehicles. The **Policy Recommendations** from ELIPTIC offer insights on how cities can integrate multi-purpose electric charging infrastructure, making it easier to transfer electrification solutions to other cities.
3. **MOMENTUM**: This project developed data-driven methods and transport models to assess the impact of emerging mobility solutions, such as shared mobility services and connected automated vehicles. It provided a set of decision-support tools aimed at helping cities plan and evaluate these new transport technologies for local adaptation.
4. **SATELLITE** was a project designed to facilitate the knowledge exchange between cities and advance sustainable urban mobility through stakeholder engagement and political support.
5. **SUMPs-Up** focused on the development and implementation of Sustainable Urban Mobility Plans (SUMPs) across Europe. It emphasized stakeholder participation and real-time public sentiment analysis.
6. **TIDE** was focused on fostering the deployment of innovative urban mobility measures across European cities through stakeholder engagement and policy alignment.
7. **NICHES+** dealt with adapting innovative mobility solutions across diverse cultural contexts, with an emphasis on cross-cultural adaptability and public engagement.
8. **POINTER** aimed at evaluating sustainable urban mobility projects and their alignment with political and regulatory frameworks.
9. **Sustainable Urban Mobility Futures**, book 2023 SpringerLink

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