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Driving Equitable and Accessible 15 Minute Neighbourhood Transformations

WP5. Living Labs

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Report on the Implementation of Living Labs (Brussels, Budapest, Munich, Paris, Utrecht, Vienna)

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. EXECUTIVE SUMMARY

This deliverable reports on the implementation of six Living Labs in Brussels, Budapest, Munich/Geretsried, Utrecht, Paris, and Vienna within the DREAMS project. Building on the concepts and intervention plans presented in Deliverable D5.1, the Living Labs were designed to explore how the principles of the 15-minute city can be translated into practice through targeted mobility, accessibility, and public-space related interventions in diverse urban and suburban contexts. The Living Labs served as real-world experimentation environments where local authorities, transport operators, researchers, community organisations, and residents collaborated to test solutions aimed at improving accessibility, reducing car dependency, and enhancing quality of life.

The implementation process demonstrated that the transition from concept to practice is highly dependent on local conditions. Across all six cities, interventions had to adapt to changing regulatory frameworks, procurement procedures, political decision-making processes, market developments, and stakeholder capacities. These external factors significantly influenced the scope, timing, and delivery of activities. While some Living Labs successfully implemented operational pilots and generated substantial user-based evidence, others progressed primarily through planning, design, and governance activities due to constraints beyond the control of project partners. The experience confirms that flexibility and adaptability are essential elements of Living Lab methodologies and are necessary for maintaining relevance under real-world conditions.

The Living Labs produced a diverse set of outcomes. Brussels tested shared mobility concepts through cargo-bike pilots and the integration of car-sharing into a volunteer transport service, while also identifying important regulatory barriers to peer-to-peer vehicle sharing. Budapest advanced the implementation of a suburban public bike-sharing system in Rákosmente, demonstrating how bike-sharing services can be adapted to lower-density districts and integrated with transport nodes. Munich/Geretsried developed and validated a detailed mobility-point concept and a citywide expansion framework, despite implementation being delayed by political and institutional factors. Utrecht explored the role of affordability, social business models, and innovative charging infrastructure in increasing access to shared mobility among vulnerable groups. Paris implemented multimodal accessibility interventions, including new shared mobility stations, affordability measures, and cycling infrastructure improvements linked to the T12 corridor. Vienna tested a temporary community hub and mobility offer through the Raum_Wagen intervention, generating valuable insights into neighbourhood activation, public space use, and local accessibility.

The Living Labs further showed that usability, simplicity, and accessibility are critical determinants of success. Interventions that reduced complexity for users, simplified registration processes, and integrated seamlessly into everyday travel behaviour generally achieved higher acceptance. Equally important was the role of local context. Similar interventions produced different outcomes depending on governance arrangements, spatial structure, population density, and existing mobility ecosystems. Consequently, successful transferability requires adaptation rather than replication. Solutions must be tailored to local conditions, particularly in suburban and peripheral areas where the assumptions underlying the 15-minute city concept differ significantly from those found in dense urban centres.

Overall, the Living Labs demonstrate that the value of experimentation extends beyond the delivery of operational pilots. In several cases, the most significant outcomes were validated concepts, governance models, planning frameworks, stakeholder networks, and institutional learning processes. The Living Labs generated practical evidence on how accessibility and mobility interventions can be designed, adapted, and implemented in complex urban environments, while also revealing the structural barriers that continue to hinder more sustainable and equitable mobility systems. Their key contribution lies in providing transferable lessons for cities seeking to implement 15-minute neighbourhood principles beyond dense city centres, offering guidance on how to address the social, organisational, infrastructural, economic, and spatial challenges that shape real-world implementation.

2. INTRODUCTION

This deliverable reports on the implementation of the Living Labs carried out within Work Package 5 (WP5) of the DREAMS project, presenting the experiences gained from six Living Labs implemented in Brussels, Budapest, Munich/Geretsried, Utrecht, Paris, and Vienna, and documenting their evolution from the intervention concepts defined in Deliverable D5.1 to their realization under real-world conditions. The report provides a comprehensive overview of how the planned mobility, accessibility, and public-space interventions were translated into practice, adapted to local circumstances, and assessed in collaboration with stakeholders and users.

The overall objective of WP5 is to test and evaluate interventions that support the transition towards more equitable, accessible, and sustainable 15-minute neighbourhoods. Within the DREAMS project, Living Labs function as experimental environments where innovative mobility services, infrastructure solutions, governance approaches, and community-oriented initiatives can be implemented, monitored, and evaluated in real-life settings.

The implementation phase represented a critical step in moving from conceptual planning to practical application. While Deliverable D5.1 focused on the design and preparation of the interventions, the present report documents how these plans were realised, modified, or reoriented in response to local opportunities and constraints. This includes documenting the final scope and design of each Living Lab, describing the implemented activities, infrastructure, and services, and reflecting on the lessons learned throughout the implementation process. Particular attention is given to understanding how interventions are performed in practice and to identifying transferable knowledge that can support future applications in comparable contexts.

To ensure comparability across the six cases, each Living Lab is presented according to a common structure covering four dimensions:

- the original plans and deviations from D5.1,
- the characteristics of the implementation area,
- the activities and services that were implemented,
- and the lessons learned during implementation.

This structure enables a systematic comparison of the diverse experiences gathered across the project while highlighting both context-specific and cross-cutting findings. The analysis reflects the diversity of contexts across the six cities. The Living Labs range from fully operational pilots with real users (e.g., Brussels, Paris) to planning-oriented or partially implemented cases (e.g., Munich/Geretsried), as well as adapted interventions responding to market or institutional constraints (e.g. Utrecht, Vienna).

The Living Labs demonstrate both the opportunities and the limitations of introducing new mobility services, public-space initiatives, and governance approaches in such environments. They also provide important evidence on user behaviour, service uptake, institutional cooperation, and implementation feasibility, offering practical insights for cities seeking to improve local accessibility and promote more sustainable mobility patterns.

A dedicated synthesis of cross-cutting lessons and conclusions are provided in a separate section. By comparing experiences from different geographical and institutional contexts, it identifies common barriers, success factors, and transferable practices that can inform future efforts to develop equitable and accessible 15-minute neighbourhoods.

3. BRUSSELS LIVING LAB

The Brussels Living Lab (LL) is located in Neder-over-Heembeek (NOH), a peripheral municipality in the north of the Brussels-Capital Region. The lab focuses on the role of shared mobility in reducing car dependency in areas where the 15-minute neighbourhood concept reaches its structural limits. Three pilots were initiated during the project: the Cozywheels vehicle-sharing concept (aborted), a shared electric cargo bike service, and the “Mobitwin by Cambio” social taxi pilot.

Table 1 Overview of Brussels Living Lab pilots

Pilot	Period	Location	Status
Cozywheels	2024–2025	Neder-over-Heembeek (NOH) / Haren	Aborted
Cargo bike pilot	Phase 1: May–June 2025 Phase 2: Sept–Oct 2025	Neder-over-Heembeek (NOH)	Completed
Mobitwin by Cambio	Dec 2025 – Feb 2026 (initial: Nov–Dec 2025)	Brussels region (expanded from NOH)	Completed

3.1. Living Lab plans

3.1.1. Original scope and objectives

The Brussels LL was designed to investigate whether shared mobility services can substitute private car ownership for residents living on the urban periphery, in contexts where walking and cycling distances exceed 15 minutes for key destinations. Three complementary approaches were planned:

- Peer-to-peer (P2P) vehicle sharing between organisations and residents via the Cozywheels platform.
- Shared electric cargo bikes, targeting everyday trips in Neder-over-Heembeek.
- Integration of commercial carsharing (Cambio) into the Mobitwin social taxi service for persons with limited mobility.

Deviations from the original plan

Three types of deviation occurred:

Minor operational deviations:

- The cargo bike pilot was extended with a second phase (September-October 2025) foll “Mobitwin by Cambio” timeline was extended from November - December 2025 to December 2025 - February 2026 due to slow volunteer recruitment.

Major strategic deviations:

- The Cozywheels P2P vehicle-sharing pilot was aborted. A market consultation with 25 organisations in NOH and Haren confirmed structural barriers (fiscality, insurance, key exchange, internal governance) that made viable implementation unfeasible within the project timeline. This decision was taken after the completion of a feasibility analysis (February 2025).
- The Mobitwin_by_Cambio recruitment area was geographically expanded beyond the original NOH living lab area to the Brussels region as a whole, in response to persistently low volunteer uptake mid-December 2025.

Table 2 Assessment of deviations

Deviation	Type	Assessment	Impact
Cargo bike pilot: Phase 2 extension (Sept-Oct 2025)	Minor operational	Operational improvements (provider, app, location, communication) resulted in higher usage: 3 trips by 2 users (Phase 1) vs. 9 trips by 5 users (Phase 2). Uptake remained structurally low, confirming limited demand regardless of improvements.	Positive
Cozywheels: pilot aborted (Feb 2025)	Major strategic	The original Cozywheels objective could not be achieved. The abort decision prevented resource loss on an implementation that faced insurmountable structural barriers. The feasibility analysis produced transferable findings on regulatory and institutional gaps in Belgian P2P vehicle-sharing policy.	Negative
"Mobitwin by Cambio": timeline extension (Nov-Dec 2025 to Dec 2025-Feb 2026)	Minor operational	The extension allowed the pilot to generate its first operational results (3 trips completed, January 2026) and complete the financial monitoring cycle. The additional two months did not resolve the structural recruitment and matching constraints but enabled collection of the minimum data required for impact assessment.	Neutral
"Mobitwin by Cambio": geographic expansion to Brussels region (Dec 2025)	Major strategic	Enabled recruitment of 4 volunteer drivers. Did not resolve the structural matching constraints (geographic mismatch between drivers and beneficiaries, time window restrictions). The pilot's departure from the NOH area reduces direct comparability with the original living lab scope.	Neutral

3.1.2. Achievement of objectives

- Fully met: feasibility of the Cozywheels concept assessed (negative conclusion documented). Cargo bike pilot operationalised and data collected across two phases. "Mobitwin by Cambio" operationalised with real trips completed and financial data collected.
- Partially met: demonstration of viable shared mobility for persons with limited mobility; financial viability of the "Mobitwin by Cambio" model not achieved at current trip volumes.
- Not achieved: scaling of cargo bike usage to a level sufficient to draw robust conclusions on market potential. Stable "Mobitwin by Cambio" volunteer pool.

3.2. Living Lab area as implemented – detailed description

Neder-over-Heembeek (NOH) was selected as the Brussels Living Lab area because it concentrates the conditions the DREAMS project seeks to address: a peripheral urban location where the 15-minute neighbourhood concept reaches its structural limits, higher-than-average car dependency, lower availability of shared and active mobility alternatives, and a resident population with a strong sense of geographic isolation from the rest of Brussels. The area thus provides a relevant and challenging testbed for investigating whether shared mobility services can reduce car dependency in contexts where walking and cycling alone are insufficient to access key destinations within 15 minutes. Additionally, NOH is administratively part of the City of Brussels municipality, giving the Living Lab an institutional anchor within the Brussels-Capital Region despite its peripheral character.

NOH is located in the northern part of Brussels, with lower population density than the city centre and limited micromobility infrastructure. A tram line connecting NOH to central Brussels opened in 2023, improving public transport access but not yet fundamentally altering mobility patterns.

The area has a socially and linguistically diverse population, including a significant proportion of residents speaking neither French nor Dutch as a first language. This linguistic diversity directly affected pilot design and communication strategy.

Spatial scope:

- Cargo bike pilot: both phases centred on GC Nohva (local community centre, centre of NOH). Phase 1 also used Ferme Nos Pilifs (northern edge of NOH); Phase 2 consolidated both bikes at GC Nohva.
- Mobitwin by Cambio pilot: initially scoped to NOH; expanded to the full Brussels region in December 2025 following low volunteer uptake. Cambio stations are distributed across the Brussels-Capital Region, enabling broader geographic coverage.
- Cozywheels pilot: market consultation covered NOH and the adjacent municipality of Haren.

Influence of area characteristics:

- User participation, low population density and low demand density made it difficult to recruit sufficient users for either pilot. The peripheral location limited the potential volunteer pool for the "Mobitwin by Cambio pilot".
- Service performance: for the "Mobitwin by"Cambio pilot, geographic mismatch between registered drivers and beneficiary locations was a persistent operational constraint. For cargo bikes, the placement of bikes (visibility, accessibility) had a direct impact on use.
- Data collection: the small scale of operations produced limited quantitative data. Three "Mobitwin by Cambio" trips and 9 cargo bike rentals (Phase 2) represent the full operational dataset for impact assessment purposes.

3.3. Implemented Living Lab activities, infrastructure and services – detailed description

3.3.1. Cozywheels pilot (aborted)

Cozywheels is a Belgian P2P vehicle-sharing platform operated by Mpact. The proposed pilot aimed to test whether organisations in NOH could share pool vehicles with local residents during off-peak hours, reducing private car ownership. A market consultation was conducted with 25 organisations in NOH and Haren (early 2025). Of 12 respondents, none agreed to participate. The single organisation that showed initial interest (Ferme Nos Pilifs) ultimately declined due to concerns around key exchange, insurance applicability, vehicle condition, and fiscal uncertainty around P2P vehicle sharing between enterprises and private individuals.

Key barriers documented:

- Fiscality: no clear legal framework for revenue from P2P vehicle sharing between enterprises and third parties (grey zone confirmed by a fiscal analysis commissioned by Autodelen.net, the Belgian knowledge centre for shared mobility, and conducted by Titeca, a Belgian fiscal consultancy firm; published in 2023 and reflecting the legal situation).
- Key exchange: no automated key handover system available in the Cozywheels platform at the time of the pilot.
- Insurance: despite solutions existing, many organisations cited concerns about liability and car policy compatibility.
- Internal governance: several organisations lacked internal capacity to manage external vehicle sharing.

The pilot was formally aborted in early 2025.

3.3.2. Shared electric cargo bike pilot

Objective: test whether a free-of-charge shared electric cargo bike service is viable and used in an urban periphery context (NOH), and identify barriers to adoption.

Phase 1: May-June 2025

Two electric cargo bikes were made available free of charge. One bike (Cambio) was placed at GC Nohva; one bike (Monkey Donkey) at Ferme Nos Pilifs. Booking was managed via the ShareABike application (Pro Velo). No active communication campaign was run.

Results: 7 registered users; 3 trips completed by 2 different users (see Table 3). Usage was negligible.

Table 3 Cargo bike usage data, Phase 1 (May-June 2025)

Date	Location	Rental time
05/04/2025	GC Nohva	0h15m
18/04/2025	GC Nohva	0h21m
26/04/2025	Ferme Nos Pilifs	0h19m

Phase 2: September-October 2025

Following lessons from Phase 1, a second phase was implemented with targeted operational improvements. Key changes are summarised in Table 4.

Table 4 Challenges identified in Phase 1 and mitigations implemented in Phase 2

Challenge (Phase 1)	Mitigation (Phase 2)
No communication campaign; potential participants unaware of pilot	500 flyers distributed to households; 39 residents personally informed (Sept 2025)
ShareABike application only in French; NOH population bilingual (FR/NL)	Switched to Monkey Donkey app, available in multiple languages, simpler registration
Project manager required to manually approve each registration	Automated registration; no intervention required
Bluetooth unlocking failures due to mixing providers (Cambio + Monkey Donkey) with third-party app	Single integrated system: Monkey Donkey bikes, locks and app
Limited visibility of bikes at both locations	Both bikes placed in front of GC Nohva, clearly visible from street
Inconsistent maintenance at Ferme Nos Pilifs	Daily maintenance managed by GC Nohva staff; repairs within 1-2 days

Monkey Donkey was selected as the single provider for Phase 2, integrating bikes, locks and application. Both bikes were positioned in front of GC Nohva. A proactive communication campaign was run: 500 flyers distributed to households and local businesses; 39 residents personally approached across 4 field visits (20/08, 03/09, 10/09, 17/09/2025). Participation was also open to community organisations.

Results: 10 registered users; 9 trips completed by 5 users over the pilot period (see Table 5).

Table 5 Cargo bike usage data, Phase 2 (September-October 2025)

User	# Rentals	Total rental time	Registration date
1	2	2h 46min	12/09/2025
2	1	0h 30min	13/09/2025
3	3	4h 32min	24/03/2025
4	1	7h 16min	10/09/2025
5	1	70h 03min*	16/09/2025
6	1	0h 21min	17/09/2025

** One user recorded a 70h+ rental period, likely due to a technical anomaly in the return process. User names anonymised for external reporting.*

3.3.3. "Mobitwin by Cambio" pilot

Objective: test whether providing volunteer Mobitwin drivers with access to a Cambio carsharing vehicle (at a 30% reduced B2B tariff) can sustain the Mobitwin social taxi service in areas with low private car ownership, and whether this model is financially viable for Mpact.

Pilot rationale: declining private car ownership in urban areas reduces the pool of eligible Mobitwin volunteer drivers, who are required to use their own vehicle. By giving drivers access to a shared Cambio vehicle during low-utilisation windows (weekdays 10:00-16:00), the pilot tests whether this constraint can be removed.

Table 6 Timeline

Phase	Period
Initial timeline	November – December 2025
Revised timeline	December 2025 – February 2026

The timeline was extended because, although communication began in November 2025, the first operational trips only emerged at the end of December 2025.

Operational setup:

An agreement was established between Mpact (acting as Mobitwin coordinator) and Cambio, registering Mobitwin as a B2B client with a 30% tariff reduction. The following conditions applied:

- Eligible drivers: registered Cambio clients for more than 6 months.
- Operational window: weekdays only, 10:00-16:00.
- Maximum 10 voluntary drivers enrolled.
- Vehicle type: small vehicles only.
- Insurance: formally verified with the relevant insurance provider prior to launch.
- Call centre: specifically organised to manage ride requests and driver coordination within the constraints of this pilot (eligibility checks, Cambio availability verification).

Ride flow:

- A beneficiary submits a ride request to the Mobitwin call centre.
- The call centre contacts an available driver, verifying compliance with Cambio conditions.
- The driver reserves a Cambio vehicle via the B2B account (no upfront payment). If available, the ride is confirmed.
- Post-ride: Cambio invoices Mpact via the B2B account. Mobitwin invoices the client separately under Mobitwin pricing. No direct payment between client and driver.

Pricing:

- Mobitwin: EUR 0.42/km + EUR 2.50-3.00 driver compensation for rides exceeding 1 hour.
- Cambio (pilot rate, 30% reduction): EUR 1.47/h (standard: EUR 2.10/h) + EUR 0.20/km (standard: EUR 0.29/km).
- Monthly Cambio subscription: EUR 10.00 incl. VAT (not included in the original financial model; integrated in the revised model below).

Volunteer recruitment channels:

- Facebook post on the Mobitwin page (November 2025).
- Cambio newsletter distributed to all Cambio members (December 2025).
- Dedicated flyers for potential drivers and Mobitwin clients.
- All registered volunteer drivers signed a formal agreement with Mpact.

4 volunteer drivers were registered by the end of the pilot period.

Financial viability assessment:

A profitability model was developed (Python and Excel) to simulate Mpact's margin per trip as a function of trip duration and distance. The model was revised during the pilot to include the monthly Cambio subscription fee (EUR 10.00), which had been omitted from the original calculation.

Table 7 presents a selection of key configurations from the revised model, distributing the fixed subscription cost across two monthly volume scenarios (20 and 30 trips/month).

Table 7 Profitability simulation (selected configurations), revised model including monthly subscription fee

Duration (h)	*Distance (km)*	*Cambio cost (EUR)*	*Client payment (EUR)*	*Original profit (EUR)*	*Adj. 10 trips (EUR)*	*Adj. 20 trips (EUR)*	*Adj. 30 trips (EUR)*
1	*5*	*2.49*	*2.22*	*-0.26*	*-1.26*	*-0.76*	*-0.59*
1	*10*	*3.50*	*4.45*	*+0.95*	*-0.05*	*+0.45*	*+0.62*
1	*15*	*4.52*	*6.67*	*+2.16*	*+1.16*	*+1.66*	*+1.83*
1	*20*	*5.53*	*8.90*	*+3.37*	*+2.37*	*+2.87*	*+3.04*
1	*40*	*13.07*	*17.80*	*+4.73*	*+3.73*	*+4.23*	*+4.40*
1	*50*	*15.97*	*22.25*	*+6.28*	*+5.28*	*+5.78*	*+5.95*
2	*5*	*3.96*	*2.22*	*-1.73*	*-2.73*	*-2.23*	*-2.06*
2	*10*	*4.97*	*4.45*	*-0.52*	*-1.52*	*-1.02*	*-0.85*

2	*15*	*5.99*	*6.67*	*+0.69*	*-0.31*	*+0.19*	*+0.36*
2	*20*	*7.00*	*8.90*	*+1.90*	*+0.90*	*+1.40*	*+1.57*
2	*40*	*11.06*	*17.80*	*+6.74*	*+5.74*	*+6.24*	*+6.41*
2	*50*	*13.09*	*22.25*	*+9.16*	*+8.16*	*+8.66*	*+8.83*
3	*5*	*5.43*	*2.22*	*-3.20*	*-4.20*	*-3.70*	*-3.53*
3	*10*	*6.44*	*4.45*	*-1.99*	*-2.99*	*-2.49*	*-2.32*
3	*15*	*7.46*	*6.67*	*-0.78*	*-1.78*	*-1.28*	*-1.11*
3	*20*	*8.47*	*8.90*	*+0.43*	*-0.57*	*-0.07*	*+0.10*
3	*40*	*12.53*	*17.80*	*+5.27*	*+4.27*	*+4.77*	*+4.94*
3	*50*	*14.56*	*22.25*	*+7.69*	*+6.69*	*+7.19*	*+7.36*

Red = net loss; Green = positive margin. All amounts in EUR.

Key findings from the financial model:

- Short trips with high duration-to-distance ratios are structurally loss-making regardless of volume.
- Profitability is primarily driven by distance: minimum viable profiles are approximately 15 km for 1-hour rides, 20 km for 2-hour rides, and 40 km for 3-hour rides (at 20+ trips/month).
- The monthly subscription has a meaningful impact only at low trip volumes; above 30 trips/month its per-trip weight becomes negligible.

January 2026 cost overview:

Table 8 Cambio invoice summary, January 2026

Description	**Amt excl. VAT (€)**	**VAT %**	**VAT (€)**	**Amt incl. VAT (€)**
Usage costs	18.00	21%	3.78	21.78
Monthly subscription	8.26	21%	1.74	10.00
Total invoiced to Mpact	26.26		5.52	31.78

Amount charged to beneficiaries: EUR 11.25. Net cost to Mpact: EUR 20.53.

January 2026 trip results:

Table 9 Mobitwin_by_Cambio trips, January 2026

Date	Duration reserved	Distance (km)	Cambio cost (€ incl. VAT)	Mpact profit (€)
05/01/2026	3h45	6	9.66	-3.20
09/01/2026	2h30	11	6.13	-0.52
28/01/2026	2h	8	4.67	-1.73
14/01/2026 (cancellation)	3h	0	1.32	-1.32

All three completed trips fall within loss-making configurations according to the profitability model. The pattern is consistent with the operational constraints of the pilot: the Cambio round-trip, station-based principle incentivises volunteer drivers to over-book time slots to ensure vehicle availability, inflating the duration-to-distance ratio. The cancellation of 14/01 generated a net cost of EUR 1.32 with zero revenue.

February 2026: No trips were recorded. The monthly subscription (EUR 10.00) remained payable by Mpact, resulting in a net financial loss for the period.

Total pilot result: 3 trips completed, 1 cancellation. All recorded trips were financially loss-making under the current pricing structure and trip profile.

3.4. Lessons learnt during Living Lab implementation

3.4.1. Governance and institutional aspects

- Multi-stakeholder operational agreements require detailed alignment on pricing, liability, insurance and operational constraints before launch. For the “Mobitwin by Cambio” pilot, insurance coverage had to be formally verified prior to any operational activity. The divergence between Cambio's and Mobitwin's cost calculation methods required a bespoke financial monitoring setup.
- For Cozywheels, the absence of a regulatory framework for P2P vehicle sharing between enterprises and private individuals was a decisive blocker. This is a policy-level gap that no individual pilot can resolve, and should be flagged as an external constraint for future replication.
- The monthly Cambio subscription fee was not included in the original project budget, illustrating the importance of fully mapping all fixed costs before pilot launch.

3.4.2. Stakeholder engagement

- Volunteer recruitment for the Mobitwin pilot was consistently the most challenging element of the pilot. Recruiting volunteers for Mobitwin has always been structurally difficult; the additional constraints set by Cambio (>6 months as Cambio client, weekday-only, 10:00-16:00 window) compounded this pre-existing challenge and significantly narrowed the eligible volunteer pool.
- For the cargo bike pilot, partnerships with local organisations (GC Nohva) for daily maintenance and informal promotion proved essential to Phase 2 performance. The contrast between Phase 1 (no local partner for maintenance at Ferme Nos Pilifs) and Phase 2 confirms the importance of embedding operational responsibility in a trusted local actor.

- Market consultation for Cozywheels showed that even socially oriented organisations in the area (NGOs, social enterprises) were unwilling to engage with P2P vehicle sharing, primarily due to institutional risk aversion rather than lack of interest.

3.4.3. User behaviour and acceptance

- Demand for shared cargo bikes in NOH appears to be structurally limited. Even with an intensive communication campaign (500 flyers, 39 personal contacts) and a simplified, free-of-charge service, Phase 2 generated only 9 rentals by 5 users over two months. Street-level feedback confirmed that safety concerns, perceived difficulty in handling cargo bikes, and uncertainty about parking and storage are barriers that communication alone cannot resolve.
- For the “Mobitwin by Cambio” pilot, the beneficiary population (persons with limited mobility) has specific trip profiles: relatively short distances with high waiting time, precisely the configuration that is structurally loss-making under the current pricing model. This mismatch between service design and financial viability is a fundamental structural issue.
- Geographic mismatch between registered drivers and beneficiary demand was a persistent constraint for Mobitwin. The matching algorithm favours the shortest possible distance between driver and client; while this is operationally logical, it further restricts the number of viable matches when driver locations are not aligned with demand areas, as was the case in this pilot.

3.4.4. Technical and operational feasibility

- The cargo bike pilot demonstrated that application usability and language accessibility are critical adoption barriers in linguistically diverse contexts. The switch from ShareABike (French only, complex registration) to the Monkey Donkey integrated system (multilingual, automated) materially improved the user experience between phases.
- The Cambio round-trip, station-based operational model is structurally misaligned with the Mobitwin service model: drivers over-book time slots to secure vehicle availability, inflating rental duration relative to actual trip distance and systematically pushing trips into loss-making configurations.
- Developing a bespoke profitability tool (Python/Excel) was a necessary step for financial monitoring and was integrated into the pilot from an early stage. This approach is transferable to similar hybrid service models.

3.4.5. Transferable lessons

- Free-to-use shared cargo bikes in low-density urban periphery contexts require sustained community anchor points for maintenance and promotion. Without a committed local partner, visibility and reliability rapidly deteriorate.
- P2P vehicle sharing between organisations and communities in Belgium faces a structural fiscal and regulatory gap. Advocacy for a clear legal framework is a prerequisite for scaling this model.
- Integrating commercial carsharing into volunteer-based social transport services is operationally feasible but requires a pricing model that explicitly accounts for the mismatch between time-based carsharing tariffs and distance-based social transport tariffs. A minimum trip distance threshold (rather than a minimum duration) should be built into eligibility criteria for future iterations.
- In linguistically diverse peripheral contexts, communication in multiple languages and active personal outreach significantly outperforms passive digital communication in generating pilot participation.

4. BUDAPEST LIVING LAB

4.1. Living Lab plans

The objective of the Budapest Living Lab is to prepare and test a public bike-sharing service (PBS) adapted to the urban structure of an outer district, providing a short-distance alternative in Rákosmente alongside private car use and local public transport services with lower service frequencies. The central element of the intervention is the testing of a pilot service area that is physically separate from the inner-city MOL Bubi bike-sharing service area. The project therefore does not merely aim to temporarily deploy bicycles, but also to examine what type of station network, operating model, and institutional cooperation are required for operating PBS in a district characterised by lower-density urban development, multiple subcentres, and significant feeder demand to railway and bus services.

According to the original D5.1 plan, the service focuses on the more densely populated parts of District XVII, which include cultural, institutional, and transport related destinations. The designated Mobi micromobility stations serve both as PBS pick-up and return locations and as public-space parking areas for other shared micromobility devices. The implementation scope can be divided into three components: the technical development of the site network, the integration into the Bubi 3.0 operational system, and the evaluation of user experience and acceptance. The primary target group is the local population, but commuters and visitors to institutions are also relevant user groups due to the presence of railway stations, educational, healthcare, retail and leisure destinations.

The actual operation of the three-month Rákosmente pilot starts in the summer period of 2026. During this period around 50 PBS bicycles will be available. Cycling in or out of the inner zone is not prohibited, so the number of bicycles may vary during the operation. However, given the distances involved and the time limitations on free usage, the likelihood of this occurring is quite low. The service integrates 11 Mobi micromobility stations into the Bubi application and apply the same terms of use and fare system as in the inner service area. The new stations are developed as integrated mobility points through an investment by the Municipality of Rákosmente.

The exact launch of the pilot depends on the readiness of the Bubi 3.0 implementation that is being realized in the whole city and is deployed by an external company. Still, the strategic content of the implementation has not changed. Moreover, there has been no change in main elements of the pilot design, the same target group is aimed, the pilot location of the PBS remains in Rákosmente, and the intention to examine an outer-district operation has been maintained.

The most significant operational deviation, with an impact on the schedule, is the reduction of the planned operating period from six months to three months, caused by the delay in the citywide launch of Bubi 3.0. At the time of procuring the system, an approximately eight-month lead time was expected until the contract signature, but the actual procedure lasted more than one year. The publicly communicated reasons included preliminary dispute-resolution requests, requests for supplementary information, ensuring the participation of foreign tenderers in negotiations, legal-remedy procedures, and changes in decision-making authority and corporate governance structure. Some of these could not be reliably anticipated when the procedure was launched, thus the delay can be interpreted as the materialisation of external and institutional procedural risks, rather than as a modification of the main concept of the Rákosmente pilot.

The timing deviation is not expected to affect the content of the testing. The 50 bicycles, the 11 stations, the application integration, and the three-month service period remain suitable for examining operational experience, station usage, and user feedback. The impact of the delay is expected to appear primarily in seasonal comparability. The summer and early autumn period may provide favourable cycling conditions. However, due to the school holiday, annual leave periods, and temporary changes in commuting patterns, the activity of certain target groups may be lower. This is currently a pending deviation risk, which must be addressed in the evaluation together with the weather, weekday, and school-calendar context of usage data.

Figure 1 A docking station of the previous Bubi system. Source: István Huszti / Telex, 13 March 2026.

Most of the planning and permitting objectives have been achieved. The macro-level site network has been prepared, followed by the micro-level detailed traffic engineering design for the 11 sites. Budapest Közút issued the road operator's approval, which sets out the conditions for construction, technical handover, building documentation, and subsequent management. Morerover, the indicative offer of BKK Transport Centre for Budapest is available to prepare the service, define the basic parameters of the fleet, duration, and digital integration. A citywide pilot operation of Bubi 3.0 had begun in late June 2026, and the full launch is scheduled for the second half of July 2026. However, the Rákosmente pilot depends on a separate contract and the construction of the local stations.

4.2. Living Lab area as implemented

The Living Lab is located in Rákosmente, District XVII of Budapest. The district lies on the eastern edge of the capital, physically separate from the inner-city PBS network. Its urban structure is defined by a combination of several historic settlement cores, suburban residential areas, housing-estate and institutional concentrations, and extensive transport corridors. Pesti út is the main axis of the district centre, while Ferihegyi út and Cinkotai út provide important north–south and radial connections. The railway stations are nodes for suburban trips towards the city centre, thus the first- and last-mile feeder function of PBS is particularly relevant here.

The pilot does not aim to provide continuous coverage of the entire district, but rather to create a network of destinations and transport nodes. The 11 stations are suitable for serving short trips between the district centre, the densest residential areas, two railway stops, and sports, educational, healthcare, and retail destinations.

Figure 2 Overview of docking stations in Rákosmente

Table 10 Locations and main design elements of the Rákosmente Mobi micromobility stations

ID	LOCATION	MAIN TECHNICAL CHARACTERISTICS
FT-01	Akadémiaújtelep railway station	Existing paved surface, 3 stands, 3.4 m^2 micromobility parking area
FT-02	Újlak swimming pool	Parking lane, 3 stands, 4.1 m^2 micromobility parking area, relocation of traffic sign
FT-03	Újlak sétány – Mákvirág Kindergarten	Pavement, 3+1 stands, 3.4 m^2 micromobility parking area
FT-04	Újlak sétány – Pesti út	Pavement, 3+1 stands, 3.4 m^2 micromobility parking area
FT-05	Cinkotai út – Pesti út	Parking lane, 3 stands, 8.4 m^2 micromobility parking area
FT-06	Riz Levente Sports and Events Centre	Pavement, 3+1 stands, 3.4 m^2 micromobility parking area
FT-07	Fő tér – Ferihegyi út	Pavement, 3+1 stands, 3.4 m^2 micromobility parking area
FT-08	Market, Kaszáló utca	Existing 5 and new 3+1 stands, 3.4 m^2 micromobility parking area
FT-09	Rákosliget railway station	Pavement, 3 stands, 2.0 m^2 micromobility parking area
FT-10	Gyökér utca – Ferihegyi út	Pavement, 3+1 stands, 3.4 m^2 micromobility parking area
FT-11	Egészségház utca – Földműves utca	Pavement, 3 stands, 3.2 m^2 micromobility parking area

The sites were developed not through the application of a uniform template, but with adaptation to the existing public-space cross-section environment. Some of the points are located on pavements, others in parking lanes or on existing paved surfaces. The standard element typically consists of three bicycle stands fixed by bolting or drilling, a green pavement frame and pictogram, and a separate micromobility parking area. In several locations, an additional stand closes off the edge of the micromobility parking area. At the Cinkotai út–Pesti út site, in addition to the larger, 8.4-square-metre micromobility parking area, two bollards and an existing pavement marking must also be removed. At the Újlak swimming pool, a road traffic sign must be relocated, while at two sites the plan includes compliance with static, drip-line and tree-protection zones connected to the tree stock.

Budapest Közút issued the traffic-related road operator's approval for the detailed designs. Budapest Közút undertakes the operation of the points located on capital-owned areas, while on district-owned public spaces it takes over the points for traffic-management purposes, but operation remains the responsibility of the Municipality of Rákosmente.

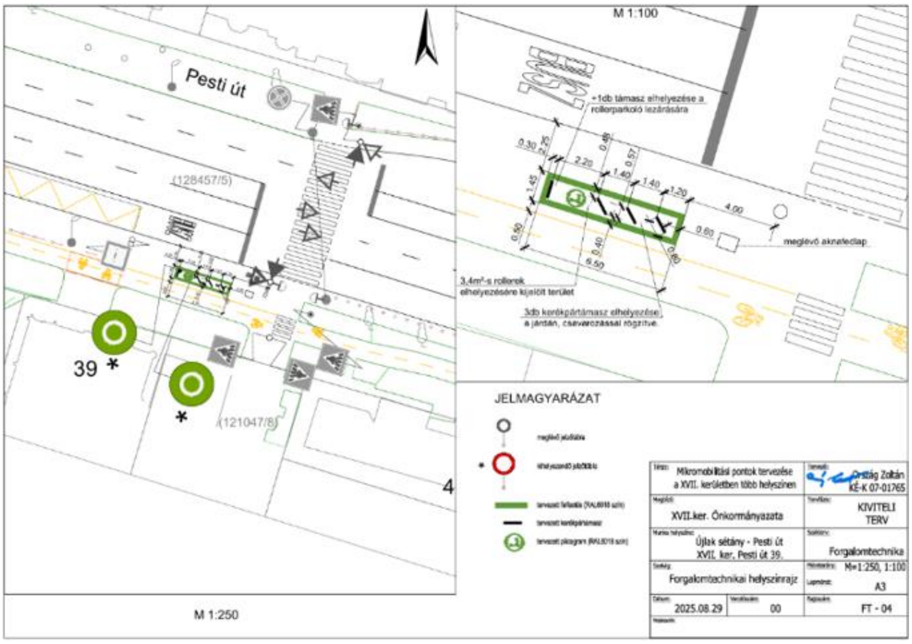


Figure 3 Example of an engineering design of the Újlak sétány – Pesti út Mobi micromobility station

Compared to the inner-city Bubi network, the suburban and polycentric structure may result in longer distances between stations and more concentrated travel destinations. At the railway stations and in the district centre, temporary peak and directional traffic is expected, while at sports, market, healthcare and educational locations, demand may be shaped by institutional opening hours.

The physical environment directly influences user acceptance. Highly visible points located close to the entrances of transport destinations reduce walking feeder distances. However, in the case of elements placed on pavements, an accessible pedestrian cross-section must be maintained. Points developed in parking lanes may create a clearer micromobility orderliness, but their traffic-engineering protection and visibility require particular attention. Digital monitoring is enabled by the location data from smart locks and the rental events recorded in the application. The accuracy of the physical points is important because returns can only be accepted within the designated geofence.

4.3.Implemented Living Lab activities, infrastructure and services

The first phase of implementation was macroscopic network planning. In this phase, the Municipality of Rákosmente, BME, BKK and KTI jointly identified the areas where the creation of Mobi micromobility stations was justified on the basis of population density, institutional destinations, public transport connections, and expected cycling accessibility. The result of the process is not an evenly distributed territorial grid, but a network built around functional nodes.

This step was followed by microscopic planning, which focused on the exact geometric and traffic-engineering design of each individual site. For each location, the designer recorded the dimensions of pavement markings, the number and fixing method of the stands, the size of the micromobility parking area, modifications to road traffic signs, and the constraints arising from trees, manhole covers, parking spaces and pedestrian routes. During expert consultations, service-related aspects had to be aligned with road-operator, ownership, accessibility and maintenance requirements. The design package was dated 29 August 2025, and the road operator's approval was issued in September 2025.

The service preparation proceeded as a separate workflow. This included clarifying the technical framework of Bubi 3.0, integrating the stations into the application, making the bicycle fleet available in Rákosmente, and defining operational responsibilities and financing. BKK's offer provides a three-month service, including 50 bicycles and the digital integration of at least 11 stations. The construction is a separate procurement and investment task, thus the contractual management of the station infrastructure and the PBS service is separated.

Figure 4 Technical site inspection of the installed Mobi micromobility stations

The third generation of Bubi is based on the complete renewal of the former system's equipment and IT infrastructure. The initial citywide fleet consists of 3,300 bicycles, including 2,500 mechanical and 800 electrically assisted vehicles; the system can later be expanded to up to 5,000 bicycles. The electric bicycles provide assistance up to a speed of 25 km/h. The vehicles are built with a low-step unisex frame, a front basket with a 10-kilogram load capacity, puncture-resistant tyres, and a more advanced smart lock capable of 4G data communication. According to the publicly available technical description, the smart lock provides more accurate positioning, which is a fundamental requirement for dockless, geofence-based returns at Mobi micromobility stations.

The system's station architecture relies only on public-space Mobi micromobility stations. At the time of the citywide launch 215 MOL Bubi stations will be available, and the network will gradually expand thereafter. The inclusion of Mobi micromobility stations enables bicycles to be picked up and returned without traditional docking equipment within designated, digitally geofenced, and physically painted areas. This reduces the mechanical and electrical infrastructure requirements for station installation, while increasing the importance of pavement markings, positioning accuracy, geofence management in the application, and compliant user parking. In the Rákosmente pilot, dockless Mobi micromobility stations are established.

User access is provided through a mobile application. Bicycles are picked up by scanning a QR code and opening the smart lock. The application displays available vehicles and station status. In the Rákosmente pilot the local Mobi micromobility stations will be integrated into the same digital environment. BKK's schedule includes a closed pilot operation, a transitional use for BudapestGO pass holders, and a full launch after a short technical transition, which is expected in the second half of July 2026. From the perspective of the Rákosmente pilot, the essential point is that the local stations can only be integrated for regular operation once the central platform is functioning reliably.

The Municipality of Rákosmente acts as the local area owner and investor. Its tasks include supporting the designation of sites, constructing and subsequently operating the points located on district-owned public spaces, and communicating with local institutions and residents. BKK is the professional and digital integrator of the PBS service. It defines the compatibility requirements of Bubi 3.0, provides the bicycles and application integration, and operates the service together with the partners involved in the operation. BME is the local coordinator of the pilot actions. It participates in the Living Lab's research design, planning support, and evaluation tasks. KTI contributes to the preparation of the legal, economic, and service-procurement framework as well as provides local support and expertise.

Figure 5 Testing of a Bubi 3.0 bicycle. Source: István Huszti / Telex, 5 March 2026

Budapest Közút provides traffic engineering operator control and the operation of the points located on capital owned areas. The external designer prepared the detailed designs for the 11 sites. The contractor is responsible for implementing pavement markings, stands, bollards and the necessary traffic-sign modifications. The role of local institutions primarily consists of supporting site-use considerations and user communication. Private e-scooter providers are not direct operators of the Bubi pilot, but they are users of the shared Mobi micromobility station infrastructure, thus their operation may affect the occupancy and orderliness of the stations.

The technical evaluation of the pilot is based on digital transaction data. The number, time, and duration of rentals, the origin and destination stations, the vehicle type, and temporal changes in station inventory can be measured. From these data, daily use per bicycle, the traffic balance of stations, typical travel relations, and redistribution needs can be determined. Comparing the use of electric and mechanical vehicles may be particularly important because of the distances in the outer district and the varying topographical and load conditions.

In addition to quantitative data, it is necessary to collect feedback from the users. This may cover the ease of registration and bicycle pick-up, the technical condition of the vehicles, the accessibility of the stations, the reliability of returns, the adequacy of road infrastructure, perceived safety, and the transport mode replaced by the service. To mitigate the bias of the summer pilot, the evaluation should separately address the school holiday, weather, weekdays and weekends, and major local events.

4.4. Lessons learnt during Living Lab implementation

The implementation of the Rákosmente Living Lab demonstrated that transferring a public bike-sharing service from an inner-city environment to a lower-density suburban district requires a fundamentally different planning approach centred on key destinations and transport nodes rather than continuous territorial coverage. The project highlighted the importance of a strong cooperation among local government, transport operators, and infrastructure managers as well as the need to align physical station development with service planning. The delayed rollout of the Bubi 3.0 system revealed how external procurement and governance processes can significantly affect the timeline, underscoring the importance of risk management and flexibility in pilot planning. At the same time, the implementation confirmed the feasibility of using the Mobi micromobility stations to support first- and last-mile travel in suburban areas, while emphasizing that user acceptance depends not only on service quality and digital integration but also on station visibility, accessibility, and proximity to everyday destinations.

5. MUNICH/GERETSRIED LIVING LAB

5.1. Living Lab plans

The Munich Region Living Lab was implemented in Geretsried, a mid-density municipality about 43 kilometres south of Munich in the district of Bad Tölz-Wolfratshausen. With 25,705 residents across 24.65 square kilometres, the city has a density of 1,043 inhabitants per square kilometre. Its demographic profile features a relatively high share of older residents, with those aged 60 and above comprising the largest age group at nearly 30 per cent, and a foreign-born community of approximately 19 per cent. Single-person households are the most common, accounting for 41 per cent of all dwellings (Statistisches Bundesamt, 2024).

Geretsried, established in 1950, is a relatively new city. Its urban form reflects its origins as a planned settlement for refugees and displaced persons, resulting in segregated land uses. Residential areas dominate, while commercial and institutional functions are concentrated along major arterial roads and around the city centre at Karl-Lederer-Platz. Despite the flat terrain, which favours walking and cycling, Geretsried remains predominantly car-oriented: approximately 68 per cent of all daily trips are made by private car (Planersocietät, 2024). Furthermore, the absence of a direct rail connection to Munich reinforces this reliance on private vehicles, as residents must travel to Wolfratshausen to access the S7 S-Bahn line. Local public transport consists primarily of buses, including four regional lines, one city line, and one express bus, with an average weekday frequency of 20 minutes. Survey data and field observations suggest that this level of service is insufficient to promote a modal shift away from private cars (ibid). During the project, shared mobility options were limited to a single electric car-sharing provider operating from two fixed stations, with no bike-sharing or micromobility services available.

The urban form and mobility infrastructure conditions mentioned above position Geretsried as a commuter city characterised by substantial car dependency and fragmented multimodal infrastructure, thereby increasing mobility-related social exclusion among groups (especially older adults and migrants). The intersection of these structural challenges, the limited public transport options, the high percentage of vulnerable groups, and the municipality's formal commitment to sustainable mobility (as stated in its Mobility Concept) served as the criterion for selecting Geretsried as the site for the Living Lab intervention within DREAMS in the Munich Region.

The initial plan for the Munich Living Lab in Geretsried aimed to develop, implement, and test micromobility hubs distributed across strategic locations in the urban fabric. These hubs were designed to integrate car-sharing and bike-and-ride infrastructure with existing public transport services, thereby providing residents with alternative mobility options. The primary objective was to evaluate the potential of these hubs to reduce private car dependency, improve access to essential services, and advance the realisation of the 15-minute city concept in a suburban context.

During the project, however, the Living Lab's initial scope changed significantly. The focus shifted from the physical implementation and testing of a new intervention to a participatory planning and design process. This process resulted in a detailed concept for a pilot mobility point at the B11 bus stop in Geretsried (in the commercial centre), which was approved by the city council, and a scale-up plan for other strategic locations as future mobility points. Although the final approach diverged from the original vision, the planning process was grounded in community feedback, refined through co-design sessions with local authorities, and directly aligned with the city's Mobility Concept vision. Therefore, the most significant outcome of the Munich Region Living Lab was to demonstrate that the planning process is an instrument that can contribute significantly to urban mobility governance, especially in contexts where institutional, infrastructural, and political factors constrain physical implementation.

The final proposal resulted from many deviations from the original plan, the most significant being the withdrawal of the two car-sharing partners, SIXT and E-Oberland, due to staff shortages. This development required reconsidering the Living Lab’s structure, timeline, and content. In response, the research team formulated an alternative concept centred on "*Mobility Paths*": a network of connected points of interest in the city centre, linked by wayfinding elements such as floor markings, informational panels, and artistic installations. This concept incorporated existing elements, including the E-Oberland car-sharing station, the B11 bus stop (with its bike-and-ride and repair station), the underground passage gallery, the playground area, and the Karl-Lederer-Platz pedestrian zone. The *Mobility Paths* concept was built around four interconnected goals. The first was to make navigation through the city centre more intuitive and enjoyable by using colourful floor markings and playful symbols. The second was to strengthen local identity by incorporating artistic interventions that referenced Geretsried's culture and history, thereby increasing residents' sense of belonging and the city's visibility as a place invested in its public spaces. The third was to foster social interaction by introducing design elements and decorated walls that would invite people to pause, engage, and spend time in the city's shared spaces. Lastly, the fourth was to encourage sustainable mobility choices through informative messages that communicated the environmental impact of different transport modes. Using AI, images were generated with the city of Geretsried as a background to illustrate the ideas to the population.

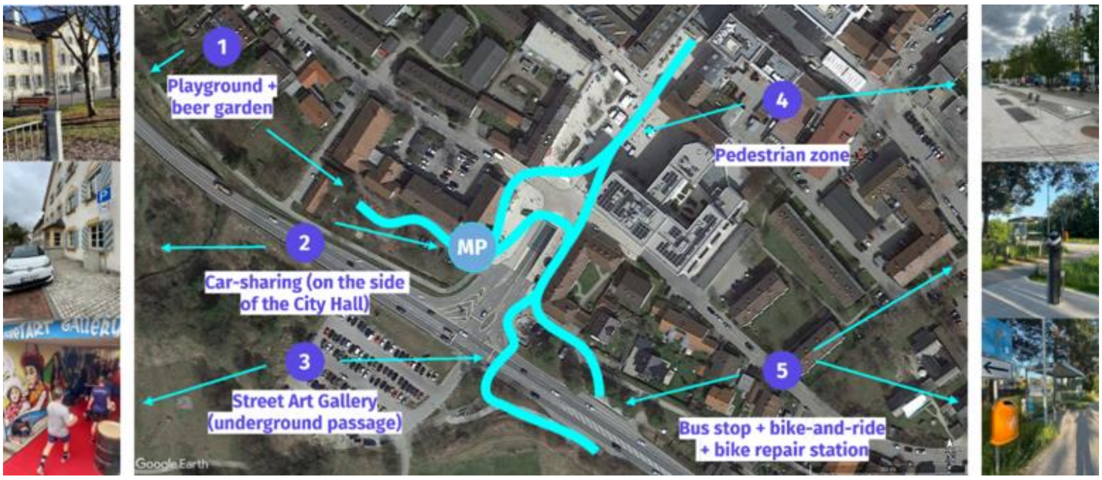


Figure 6 Elements envisioned to be integrated in the Mobility Paths concept

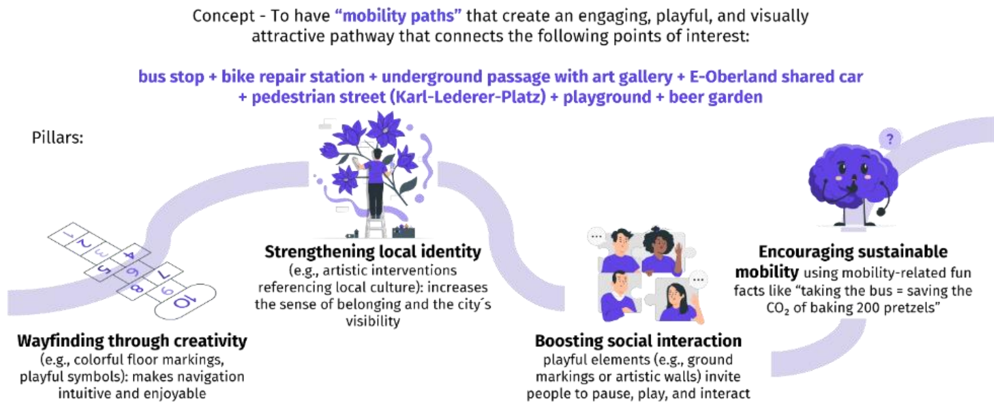


Figure 7 Mobility Paths concept

The *Mobility Paths* concept was introduced to the public during Mobility Day on 21 September 2025 in Geretsried. During this day, resident feedback led to a second major deviation. While they responded constructively, there was a strong preference for permanent physical interventions over artistic elements. Furthermore, the technical staff noted that the proposed floor markings did not meet regulatory guidelines and were unsure whether they should be executed. Consequently, the research team and city representatives agreed that a more concrete intervention was needed. Hence, a design revision started, and the *Mobility Paths* concept was discontinued.

After extensive deliberation, the Living Lab team reached consensus on a concept that revived the original idea: piloting and testing a mobility point that leveraged the existing infrastructure at one central location - the B11 bus stop. The city's mobility department presented a preliminary version of this mobility point to the Geretsried city council, which approved the general concept on 28 October 2025. In the subsequent months, the team developed a detailed pilot design that allocated specific zones within the B11 area for the different mobility services.

Despite support from the city council, residents, and planners, the Living Lab implementation encountered a third major setback due to the municipal electoral calendar. Approval from the city council was required to reallocate a 15,000-euro budget for piloting the mobility point, with the request scheduled for the January 2026 council meeting. However, the presentation was postponed at the mayor's request to avoid a politically sensitive debate before the municipal elections in March 2026 regarding the planned removal of seven parking spaces. Following the elections, a new mayor assumed office, making the original 2026 timeline for implementing the B11 pilot unfeasible. In response, the Living Lab team redirected its efforts toward a citywide scale-up planning exercise, identifying four additional locations across Geretsried's districts as potential mobility point sites. This adjustment preserved the practical relevance of the project's design work while acknowledging the institutional constraints that delayed implementation.

Taken together, the deviations described above had a mixed impact on the Living Lab's outcomes. The transition from the original micromobility hub concept to a more infrastructure-focused mobility point design can be assessed as broadly positive in terms of planning and policy relevance, as the resulting concept is more integrated with Geretsried's existing urban and infrastructure context, more responsive to community preferences, and more closely aligned with the city's Mobility Concept. The political and budget delays, however, negatively affected the project's ability to deliver a tested, operational intervention within the project timeline, thereby limiting the evaluation of hub effectiveness. It is worth mentioning that policy recommendations were developed through the scale-up network plan but remained at the planning stage and would not be tested in practice until the end of the DREAMS project.

5.2. Living Lab area as implemented – detailed description

The Living Lab planning process primarily concentrated on Geretsried's city centre, selecting the B11 bus stop at Karl-Lederer-Platz as the main pilot site (Point 01). This location was chosen for several reasons. Situated at the city's economic and social core, it already meets the barrier-free standards set out in the Geretsried Mobility Concept. It is served by three bus lines: regional lines 374 and 379, and the express line X970, which connects Geretsried to major public transport nodes in the Munich metropolitan region. The adjacent Karl-Lederer-Platz pedestrian zone, redesigned and reopened in July 2023, provides 132 metres of shared pedestrian and cycling space, creating a high-quality public environment that strengthens the stop's role as a destination point. The surrounding area also includes a concentration of daily services, such as restaurants, city hall, supermarkets, bakeries, clothing stores, and drugstores, situating it within the daily activity radius of a diverse range of residents. Complementing these qualities, the site already features a car-sharing station and existing bike parking facilities, which were expected to reduce the pilot's implementation costs. Together, these characteristics place the B11 stop at the heart of the Geretsried city centre district, home to approximately 7,800 residents, making the proposed mobility point directly accessible to the city's largest population concentration and reinforcing its position as the most strategically significant location for the pilot intervention.

Geretsried's car-oriented urban structure and the relative isolation of its districts influenced the Living Lab's priorities throughout the planning process. The lack of a direct rail connection to Munich, infrequent bus services in peripheral areas, and entrenched car-based commuting patterns highlighted the necessity for a multimodal mobility point strategy for future implementation beyond the DREAMS project's duration. The significant proportion of older residents, identified as frequent car users during field activities and community consultations, remained central to discussions on inclusive design and the accommodation of diverse user groups. These factors demonstrated that a single intervention in the city centre would be insufficient to address mobility challenges across Geretsried's varied districts, each characterised by distinct spatial, demographic, and service profiles. Consequently, the network planning process expanded the Living Lab's scope to include four additional locations across the city's districts (Points 02-05). Selection criteria included land-use characteristics, population coverage, public transport accessibility, and the potential to reduce private car dependency and enhance service accessibility. Collectively, these sites represent a phased strategy for expanding the mobility point network across Geretsried's principal residential districts, consistent with the city's Mobility Concept.

The Gelting stop (Point 02) serves the Gelting district, a mixed-use area of approximately 1,780 residents located around 2.7 kilometres northwest of the city centre. The district combines a historic residential core with a traditional village square and protected heritage buildings, with a significant commercial and logistics zone covering over 90,000 m^2 that hosts manufacturing firms, logistics operators, and service providers. This dual character generates mobility demand in both directions: residents travelling toward the city centre for daily services, and workers commuting into the Gelting commercial area from other parts of the city. Despite this, the district is connected to the city centre by a single regional bus line, which at the time of the Mobility Concept's analysis ran every 40 minutes, a frequency considered insufficient to attract regular users, encouraging the use of private cars, particularly for those working in the area. The resulting car dependency is pronounced among residents and commuters. A mobility point at this location would therefore complement the improved bus service by providing last-mile solutions for trips that are not feasible on foot, while also offering an alternative to the private car for the diverse range of users the district attracts.

The Lilienstraße stop (Point 03) is located approximately 1 kilometre north of the B11 pilot site. It is served by city bus line 310, which runs through a predominantly residential area connecting Steiner Ring, Schulzentrum, Fasanenweg, and Lilienstraße. The land use along this corridor is almost entirely residential, characterised by multi-storey apartment buildings set within green spaces, including social housing complexes that reflect the area's socioeconomically diverse character. The area is home to a diverse mix of family households, older residents, and lower-income groups, all of whom are priority target groups for the Living Lab's inclusive mobility agenda. A mobility point at Lilienstraße would expand bike-sharing provision and improve cycling infrastructure, particularly for the residents most likely to benefit from accessible, affordable shared services. At the same time, its position within the five-minute cycling catchment of the B11 pilot site also makes it a natural node in the broader citywide mobility point network.

The Am Stern stop (Point 04) is located on Sudetenstraße, the principal commercial corridor of the Gartenberg district. This street hosts a wide array of retail and daily services, including supermarkets, drugstores, department stores, discount fashion retailers, organic food markets, restaurants, cafés, bakeries, a post office, and various personal services such as hairdressers. These amenities attract significant car trips from both the district and the surrounding areas. Gartenberg is Geretsried's most populous residential district, with approximately 11,900 residents, nearly half of the city's total population. Developed primarily in the post-war period to accommodate refugees and displaced persons from Eastern Europe, the district features a dense mix of multi-family housing from the 1950s to 1970s, newer developments, assisted living apartments, schools, and social infrastructure. This composition highlights the presence of family households and a substantial older adult population. The stop is served by the X970 express bus, city line 310, and regional lines 370, 371, 376, 378, and 379, making it the best-connected public transport node outside the city centre. Based on these characteristics, the planning team identified Am Stern as a strong candidate for a mobility point.

The Stein stop (Point 05) serves the city's southernmost and most isolated district, a predominantly residential area with approximately 2,500 residents and a mix of single-family homes, terraced houses, and apartment blocks. The district is demographically significant as it has the highest concentration of migrants in the city, a pattern stemming from its history as the site of a transit camp for resettlers and refugees from the Soviet zone, established by the Upper Bavarian government in 1958 and operating until 2004 (Stadt Geretsried & TVJA, 2022). The stop is served by city line 310 and regional lines 370, 376, 378, and 379, providing connections to the city centre and nearby municipalities. However, the district's land use is almost exclusively residential, with commercial and service provision limited to a single bakery and two restaurants. This lack of daily services requires residents to travel to other parts of the city for essential needs such as grocery shopping, drugstores, and medical appointments, making car use a practical necessity for most households. The scarcity of local services, the district's distance from the city centre, and the presence of a population that may face barriers to private car ownership make Stein the district where alternative mobility options would have the most direct and equitable impact. Establishing a mobility point here would provide bike and car-sharing options for trips, while strengthening public transport connections and intermodality to the city centre and its services.

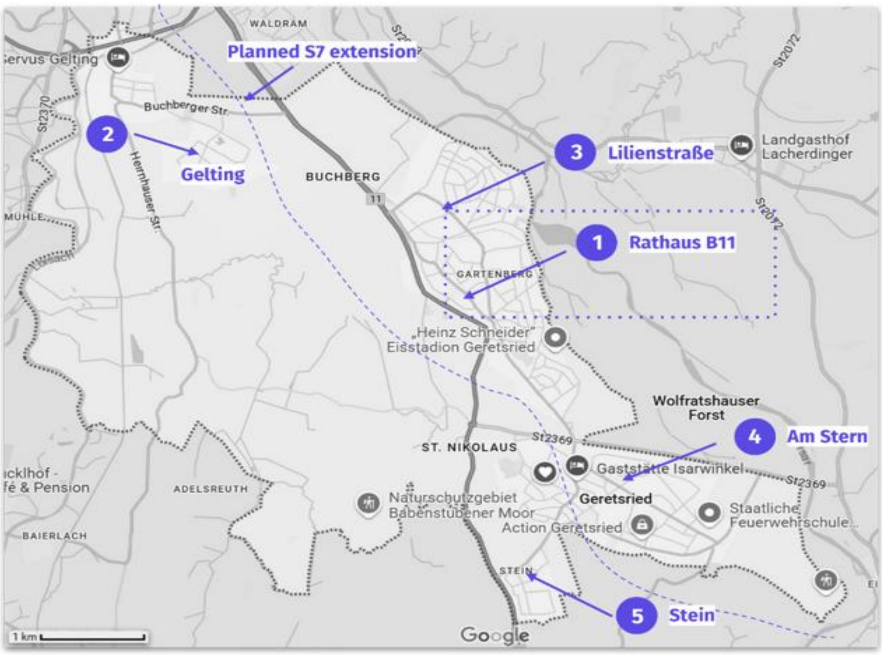


Figure 8 Proposed mobility points' locations

5.3. Implemented Living Lab activities, infrastructure and services – detailed description

The Living Lab implementation in Geretsried advanced through a sequence of interconnected activities, beginning with the initial survey phase and culminating in the scale-up mobility point planning exercise. At its core, the project sought to translate the principles of the 15-minute city concept into a suburban context, where car dependency, segregated land uses, urban sprawl, and limited public transport provision hinder equitable access to daily services for many residents. The Living Lab activities unfolded across three broad phases: a research and data collection phase focused on establishing the evidence base for intervention design, a participatory planning and design phase in which community consultation and iterative deliberation with city partners shaped the form and location of the proposed mobility points, and an institutional phase in which formal approval processes, electoral constraints, and strategic reorientation toward a citywide network defined the project's final outputs. Together, these activities involved a range of actors, including the TUM research team, the city of Geretsried's planning and mobility departments, the city council, private mobility operators, and the resident community. Although the project did not implement a mobility hub during the project period, it resulted in a detailed, council-approved pilot design, a validated assessment of community mobility needs, and a planning framework for future expansion. Collectively, these outcomes marked a substantive step toward translating the 15-minute city ideal into practice in a suburban setting where car dependency has long defined daily life.

Survey Design and Data Collection (August 2024 to September 2025)
Between August 2024 and September 2025, a standardised mobility survey was designed, tested, and implemented across all DREAMS project Living Labs to assess travel patterns, commuting preferences, and mobility service needs among residents. The survey instrument was collaboratively developed by all DREAMS partners through a comprehensive process of joint deliberation and iterative refinement, culminating in a final version for deployment. Within this framework, the primary responsibility of the TUM research team was to ensure adequate and representative survey coverage in the Geretsried Living Lab by coordinating local data collection and engaging the target population. Beyond its research function, the survey also served as an early touchpoint to raise awareness of the DREAMS project among Geretsried residents, introducing its objectives and fostering community involvement from an early stage. A pilot test was conducted in June 2025, followed by a broader data collection phase from 8 July

to 12 September 2025. On-site assisted surveys were administered to reach residents with limited digital access, including older adults and migrants, in alignment with the project's commitment to inclusive participation. The survey results provided baseline evidence on local mobility gaps and travel behaviour characteristics, directly informing subsequent goal setting and design phases.

Concept Development: From Mobility Stations to Mobility Paths (August to October 2025)
Concurrently with survey data collection and extending through October 2025, the project team implemented a structured process to define the objectives of the planned intervention and to elaborate potential design proposals. Two distinct conceptual directions were formulated. Plan A involved a conventional mobility station, integrating car-sharing, bike-and-ride, and bus connections at one of four potential locations: Am Stern, Rathaus B11, Gelting, and Stein. Plan B, formulated in response to the withdrawal of the original car-sharing partners, introduced the *Mobility Paths* concept described in Section 5.1. This concept was organised around five interconnected points of interest in Geretsried's city centre, linked by floor markings, informational panels, and interactive urban furniture. The core elements of this concept included innovative wayfinding, strengthening local identity through artistic interventions, fostering social interaction, and utilising mobility-related messaging to promote sustainable modes of transport.

Mobility Day & Community Consultation (21 September 2025)
On 21 September 2025, Mobility Day was held in Geretsried as the primary community consultation event for the Living Lab. The event convened residents, local stakeholders, and project team members to discuss proposed concepts and collect feedback on community priorities. The *Mobility Paths* concept (Plan B) was presented and discussed, with participants expressing support for the project's sustainable mobility objectives. However, as outlined in Section 5.1, residents preferred tangible, permanent infrastructure over floor markings or artistic elements. This feedback, together with technical objections from the city's mobility department regarding the regulatory compliance of the proposed floor markings, prompted the team to discontinue the *Mobility Paths* concept and redirect the design process toward a physical mobility point.

Mobility Point Pilot Design and City Council Approval (October to December 2025)
Between October and December 2025, the research team collaborated with the city's mobility and planning departments to develop a comprehensive physical design for the B11 Mobility Point Pilot. The concept aimed to transform seven existing parking spaces and their surrounding area at the B11 stop into a multi-functional mobility point. The design process was supported by a series of on-site visits that assessed the quality of existing infrastructure and evaluated the technical feasibility of proposed interventions. These visits guided critical decisions on the spatial allocation of each component, considering factors such as the presence of tree roots, the positioning of existing trees to avoid removal, and the location of underground utilities, including gas pipes and electrical wiring.

After defining the spatial arrangement of each element, the team obtained cost estimates for individual components, such as the covered bike-and-ride structure and the bike-sharing docking area, to establish the financial basis for the budget reallocation request to the city council. To facilitate stakeholder communication and enhance the clarity of the proposed transformation for non-technical audiences, AI-generated visualisations were produced to illustrate before-and-after views of the B11 area. These visualisations enabled residents, city officials, and council members to develop a concrete understanding of the proposed changes. The proposed layout comprised four primary components.

The first component designated one parking space for an electric vehicle charging point and another for a car-sharing vehicle. The second component allocated a dedicated area for the MyRadl bike-sharing system, with a planned space for 12 shared bicycles. MyRadl is the regional bike-sharing service coordinated by the Münchner Verkehrs- und Tarifverbund (MVV). The system launched across Munich and 36 surrounding municipalities on 7 May 2026, becoming the largest bike-sharing system in Germany by fleet size. The system offers standard bicycles with a daily cap of 9 euros and pedelecs (e-bikes) with a daily cap of 18 euros. The first 30 minutes of each rental are free for standard bicycles, and pedelecs are available at a reduced rate of 1.50 euros. Geretsried is scheduled to join the system in 2027, consistent with the phased expansion model for municipalities beyond the initial launch cohort.

The third component included a sitting and waiting area under the existing trees adjacent to the bike-sharing zone, intended to enhance the quality and comfort of the public space surrounding the stop. The fourth component consisted of a covered bike-and-ride structure near the Böhmwiese parking area, with a capacity for forty bicycles. This facility was designed to enable residents arriving by bicycle from surrounding neighbourhoods to transfer conveniently to bus services or other mobility options.

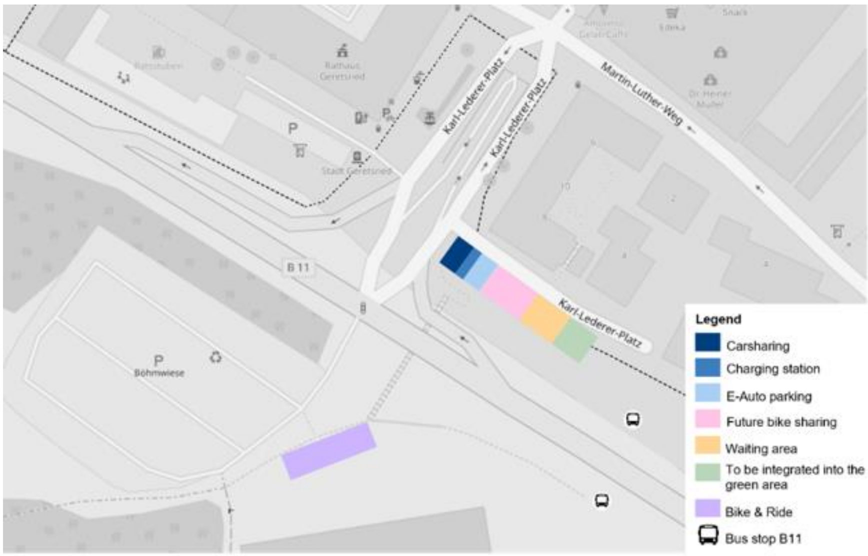


Figure 9 Proposed spatial layout of the B11 Mobility Point Pilot components

The mobility department presented the general concept to the Geretsried city council, which approved the proposal on 28 October 2025. This approval represented a formal institutional milestone for the Living Lab, confirming political support for the mobility point approach at the highest level of municipal decision-making during the project period.

Figure 10 Current state of the B11 stop and AI-generated rendering of the proposed intervention (before-after)

Figure 11 Current state of the B11 stop and AI-generated rendering of the proposed intervention (before-after)

Budget Process, Electoral Delay, and Scale-Up Planning (January to May 2026)
A budget reallocation request of 15,000 euros was prepared for formal submission to the Geretsried city council in January 2026 to support the physical implementation of the B11 pilot. As outlined in Section 5.1, this presentation was postponed at the request of the incumbent mayor to avoid a politically contentious debate regarding the removal of parking spaces prior to the municipal elections in March 2026. After the elections and the transition to a new mayor, the project team determined that the 2026 implementation timeline was no longer feasible and redirected efforts toward developing a citywide scale-up network plan in collaboration with the city's planning and mobility departments. Instead of treating the implementation delay as the conclusion of the Living Lab's planning contribution, this period was used to develop a spatial and systematic framework for expanding the mobility point network across Geretsried's districts. This framework defined the locational rationale for each future site, identified the core mobility services and infrastructure components suitable for each context, and positioned the B11 pilot design as a model adaptable to various urban conditions throughout the city.

The framework outlined a phased implementation sequence across five sites. The first phase focused on the physical implementation of the B11 pilot, followed by a structured monitoring and evaluation period to assess usage patterns, user acceptance, and operational performance. Findings from this phase would inform design refinements at subsequent sites. Lilienstraße was proposed as the second site due to its proximity to B11, its high residential density, its socially mixed population, and its infrastructure, which facilitates straightforward and cost-effective replication.

Am Stern was identified as the third site, justified by its status as the best-connected transport node outside the city centre, its large catchment population in the Gartenberg district, the high concentration of essential services in Sudetenstraße, and its designation as a candidate mobility point in the Geretsried Mobility Concept. Stein was proposed as the fourth site and was explicitly identified as the area of greatest social need within the network, given its limited services, spatial isolation, high car dependency, and the city's highest concentration of migrants. The framework recommended that planning and community engagement for Stein commence in parallel with earlier implementation phases to prevent the district from perceiving the phasing as a continuation of historical marginalisation.

Gelting was proposed as the fifth site. Compared with other locations within the network, Gelting presents a more complex implementation context due to its distance from the city centre, its mixed industrial and residential character, and its lower residential density. Despite these challenges, the justification for establishing a mobility point at this site remained strong, as the stop serves both residents travelling to the city centre and commuting workers. A mobility point at this location would therefore need to address two distinct sets of travel needs and trip patterns. There is potential to explore employer partnership agreements with firms in the commercial zone, enabling local employers to promote or subsidise the use of shared mobility among their employees. Although this is currently a recommendation for future consideration rather than a confirmed arrangement, such partnerships could accelerate adoption and support the long-term financial sustainability of the mobility point in a district where residential demand alone may not ensure high utilisation rates.

The five proposed mobility point sites were subsequently analysed to examine how the introduction of shared mobility services at each location would improve resident accessibility. The assessment compared walking, cycling, and driving across three time thresholds (5, 10, and 15 minutes), yielding a 3 x 3 matrix of accessibility scenarios for each site. The baseline scenario assumed the absence of mobility points and considered travel exclusively on foot. The two enhanced scenarios represented conditions after the implementation of the mobility point, providing access to bike and car-sharing.

The assessment employed OpenRouteService (ORS) to compute network-based isochrones along the street and path network, approximating real-world constraints of the built environment, such as road layout and topographic barriers. These constraints can significantly reduce the accessible area compared to straight-line estimations. For each of the five mobility point locations and the three travel modes, ORS generated three cumulative isochrones at 5-, 10-, and 15-minute thresholds. The population within each isochrone was estimated using the TOTAL_POP field, which ORS Tools automatically calculates by intersecting the isochrone polygon with a gridded population dataset to determine the resident population within the area. The spatial resolution of the underlying population grid was 100 metres, consistent with Census 2022 population grid published by the Statistisches Bundesamt (2024).

A walking speed of 5 km/h was used for calculations, translating 5-minute, 10-minute, and 15-minute thresholds to travel distances of approximately 417 metres, 833 metres, and 1,250 metres, respectively. For cycling, a speed of 15 km/h was applied, resulting in threshold distances of approximately 1.25 km, 2.5 km, and 3.75 km. An urban driving speed of 30 km/h was adopted for car-sharing to reflect average in-city speeds in German municipalities under tempo-30 and mixed-traffic conditions typical of Geretsried. This produced threshold distances of 2.5 km, 5.0 km, and 7.5 km. Table 11 summarises the complete population catchment figures for all five locations across all modes and time thresholds. Figures in parentheses indicate the catchment population as a percentage of the total Geretsried population of 25,705 residents. Values exceeding 100% mean that the catchment extends into neighbouring municipalities beyond the Geretsried administrative boundary.

Table 11 Population within catchment by location, mode and travel time

	W 5min	W 10min	W 15min	Cyc 5min	Cyc 10min	Cyc 15min	Car 5min	Car 10min	Car 15min
B11 Rathaus	953 (3.7%)	3,479 (13.5%)	6,568 (25.6%)	9,985 (38.8%)	17,566 (68.3%)	28,697 (111.6%)	11,967 (46.6%)	38,809 (151.0%)	52,353 (203.7%)
Lilienstraße	1,085 (4.2%)	5,057 (19.7%)	7,328 (28.5%)	8,101 (31.5%)	13,213 (51.4%)	31,126 (121.1%)	12,648 (49.2%)	40,332 (156.9%)	53,405 (207.8%)
Am Stern	2,125 (8.3%)	5,831 (22.7%)	8,664 (33.7%)	10,599 (41.2%)	16,782 (65.3%)	21,651 (84.2%)	14,741 (57.3%)	25,911 (100.8%)	59,535 (231.6%)
Gelting	935 (3.6%)	1,476 (5.7%)	1,954 (7.6%)	2,894 (11.3%)	9,647 (37.5%)	30,022 (116.8%)	3,664 (14.3%)	28,374 (110.4%)	48,045 (186.9%)
Stein	436 (1.7%)	1,073 (4.2%)	3,054 (11.9%)	6,497 (25.3%)	12,686 (49.4%)	21,149 (82.3%)	14,480 (56.3%)	25,823 (100.5%)	59,068 (229.8%)
W = Walking (5 km/h) | Cyc = Cycling / bike-sharing (15 km/h) | Car = Car-sharing (30 km/h).									

To advance the framework toward implementation, a governance pathway was developed in collaboration with the mobility department and is scheduled for formal presentation to the new city council in June 2026. The proposed steps include seeking in-principle political endorsement for the network, integrating the five mobility point sites into the city's official planning documents through the next revision of the Mobility Concept or a dedicated mobility point action plan, and assigning institutional responsibility within the planning and mobility departments for advancing each site from planning to implementation. Identifying funding sources is an additional step, with potential options including the Bavarian ÖPNV-Förderprogramm, national active mobility grants, and European structural funds to support implementation costs across the network beyond the budget allocated for the B11 pilot.

Stakeholder alignment was recommended for each site prior to implementation, involving residents, business owners, transport operators such as MVV and E-Oberland, and relevant employers, particularly in Gelting. For Stein, early and sustained community engagement was considered essential given the district's history and the need to ensure residents actively participate in the design process.

The framework for scaling up mobility points was structured as a learning system, in which evaluation findings from each implemented site would inform the design and programming of subsequent sites. As the DREAMS project is scheduled to conclude in December 2026 and the mobility points will not be operational within the project period, responsibility for data collection and monitoring would be transferred to the city of Geretsried after project completion. The proposed evaluation framework was therefore designed to be both realistic and manageable for a municipal mobility department, relying primarily on data generated by system operators and supplemented by an annual resident survey.

Evaluation was planned at three intervals: a baseline measurement immediately upon opening each site to establish reference conditions; a short-term assessment at six months to capture early adoption patterns and identify operational issues; and an annual review to track usage trends and inform decisions regarding subsequent sites in the network. The proposed monitoring indicators were organised into four dimensions. The first dimension addressed usage, including the monthly number of bike-sharing trips originating or ending at each site (collected automatically through the MyRadl system), monthly car-sharing rentals (collected by the car-sharing operator), and bicycle parking occupancy (assessed through periodic visual counts).

The second dimension focused on modal shift and user satisfaction, measured through an annual resident survey of no more than ten questions covering awareness of the mobility point, frequency of use, modes replaced, perceived improvement in access to daily services, and overall satisfaction. This should be complemented by passenger counts on serving bus lines, routinely collected by MVV. The third dimension concerned equity, with the annual survey including two demographic questions to track the proportion of respondents from priority groups, such as older adults and migrants, to ensure the mobility points reach the intended populations.

The fourth dimension monitored implementation performance across the network by recording the cost of each site relative to the budget and the time elapsed between planning approval and opening. This would enable the city to refine its implementation process as the network expands. Collectively, these indicators provided a practical and proportionate basis for assessing whether the mobility point network is achieving its core objectives: reducing private car dependency, improving access to daily services, and advancing equitable mobility.

Overview of implemented activities
The following timeline synthesises the sequence and duration of the key activities carried out during the Living Lab implementation in Geretsried, from the initial survey phase design in August 2024 through to the development of the scale-up plan in 2026.

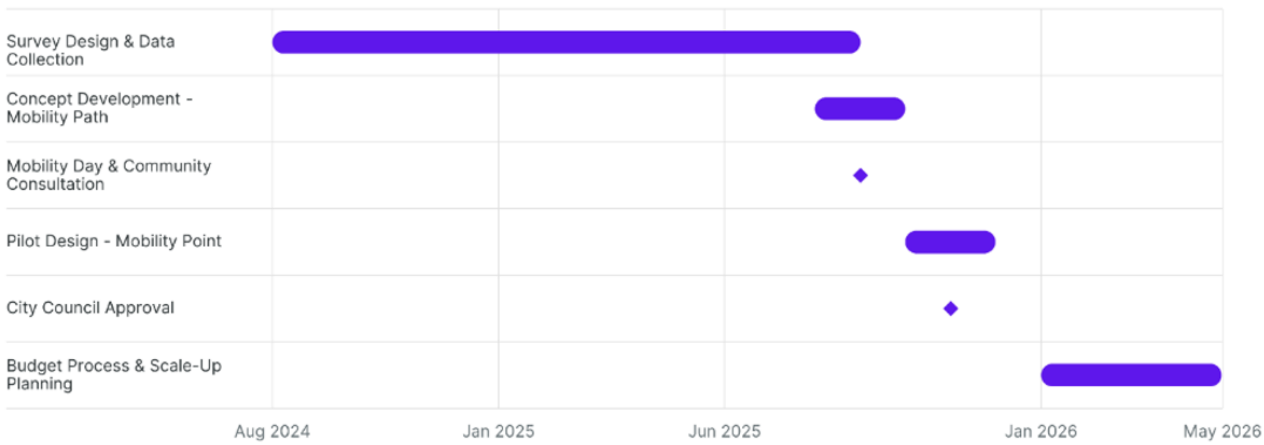


Figure 12 Overview of implemented activities

Stakeholder Roles and Contributions
Within the broader DREAMS project survey team, the Technical University of Munich (TUM) research group coordinated data collection in Geretsried, ensuring comprehensive respondent coverage and prioritising target groups, including older adults and migrants. Following the survey phase, TUM led community engagement, concept development, and scale-up planning throughout the project. The city

of Geretsried, particularly its planning and mobility departments, served as the primary local institutional partner, leading communications with the city council, actively contributing to the development of the pilot proposal, and ensuring compliance with local standards and regulations. The Münchner Verkehrs- und Tarifverbund (MVV) contributed by advising on regulatory requirements and design standards for the mobility point and offering expertise regarding the integration of the MyRadl bike-sharing system. The city council fulfilled a formal decision-making function by granting institutional approval for the mobility point concept during its October 2025 session. Although E-Oberland ceased to be a formal project partner after its earlier withdrawal, its car-sharing service remained operationally relevant, as the existing station at the B11 stop was incorporated into the pilot design as a central element of the proposed mobility hub. Residents of Geretsried participated as community stakeholders through the DREAMS mobility survey and the Mobility Day consultation, with their feedback substantially influencing the development of the intervention design.

5.4. Lessons learnt during Living Lab implementation

Governance and Institutional Aspects

A key governance lesson from the Living Lab concerns the relationship between project timelines and cycles of local democratic governance. The postponement of the budget reallocation request prior to the March 2026 municipal elections illustrates that Living Lab projects in municipal settings are frequently subject to unpredictable political constraints. The subsequent change in local leadership, which required rebuilding institutional relationships and re-establishing political support for the mobility point concept, underscores the importance of embedding Living Lab objectives within both formal planning documents and the broader mandate of elected local representatives. In this context, aligning the B11 mobility point concept with the Geretsried Mobility Concept and anchoring it in an adopted policy framework would help ensure its institutional relevance beyond the project period, regardless of changes in political leadership. The Mobility Concept formally recommends developing mobility points citywide and identifies the B11 stop and Am Stern as candidate locations. Consequently, the Living Lab's design work maintains institutional relevance despite changes in local politics. Future projects in similar contexts should prioritise formal anchoring from the outset.

Political constraints, however, were not the only governance challenge encountered. The issue of removing parking spaces revealed a broader structural governance challenge within German municipalities. Repurposing publicly available parking spaces requires both technical justification and political will, as well as effective public communication. This is especially important in suburban areas where car ownership is prevalent, and parking is widely regarded as a public good. Future Living Labs, undertaking similar interventions, should conduct early stakeholder mapping that incorporates the perspectives of residents, business owners, and elected officials regarding parking. Additionally, transparent communication strategies should frame parking reductions in terms of the accessibility, quality of life, and commercial benefits they provide to the wider community.

Stakeholder Engagement

The early withdrawal of planned car-sharing partners highlighted a critical lesson in managing private sector partnerships within Living Lab frameworks. The departure of SIXT and E-Oberland resulted in a substantial redesign of the intervention and required significant planning resources. Though the redesign ultimately strengthened the intervention's relevance, this disruption emphasised the need to formalise partner commitments early in the project lifecycle and to develop contingency plans for potential partner withdrawal. This consideration is particularly important in peri-urban or suburban contexts, where the commercial viability of shared mobility services is less certain than in dense urban areas, making it harder to secure and retain private-sector commitment throughout the project lifecycle.

While partner relationships tested the project's resilience, community engagement assessed its design flexibility. The Mobility Day consultation facilitated a substantive exchange between research-driven design proposals and community expectations. Residents preferred tangible, durable infrastructure over artistic or symbolic elements. This outcome demonstrated the effectiveness of the engagement process, as the community provided clear, actionable feedback that was incorporated into a revised design. The key lesson is that community engagement should be scheduled with sufficient lead time and design flexibility to enable meaningful revisions. Projects that treat community consultation solely as validation risk implementing interventions misaligned with the preferences of the intended population. The Geretsried experience demonstrates that when communities are genuinely heard, resulting interventions are more likely to address actual needs and foster lasting behavioural change.

User Behaviour and Acceptance

Community interactions revealed that residents are generally receptive to sustainable mobility solutions. However, their willingness to adopt these options depends on their tangibility, reliability, and design. Preferences for concrete infrastructure, short access distances to daily amenities, and perceptions of personal safety and comfort when navigating the mobility services and installed infrastructure indicate that interventions in similar suburban contexts should prioritise physical permanence, ease of use, and spatial quality. Locating multiple mobility services at a single, visible, and well-connected node, such as the B11 stop, exemplifies this strategy. Furthermore, concentrating services in one location reduces cognitive and practical barriers and is a key factor in encouraging users to adopt alternative mobility modes instead of private cars.

Technical and Operational Feasibility

The iterative design process demonstrated that leveraging existing infrastructure, rather than installing entirely new elements, is a pragmatic and cost-effective strategy in contexts with limited budgets and complex approval processes. The B11 stop's existing features, such as barrier-free access, established bus connections, an operational car-sharing station, and available bicycle parking, reduced the technical complexity of the intervention and facilitated city council approval. This approach also minimises disruption to current users and enables the mobility point to expand incrementally as new services are introduced. The planned integration with the MyRadl bike-sharing system exemplifies this strategy: by allocating space at the B11 stop for a future bike-sharing dock before the system's arrival, the pilot design allows the mobility point to become functional over time without necessitating additional planning approvals.

Transferability and Scalability

Many of the lessons identified in this report can be applicable to Living Lab implementations in other contexts. Embedding Living Lab outcomes within adopted municipal planning documents is a broadly transferable strategy for achieving durable institutional change beyond the project period. The iterative, community-responsive design process and the willingness to revise concepts in response to feedback represent methodological lessons relevant to any participatory planning exercise. Combining a focused pilot at a strategically selected location with a long-term citywide network plan provides a replicable framework for small and medium-sized municipalities aiming to expand sustainable, shared mobility options without immediately incurring large-scale infrastructure investment. Additionally, the experience of managing partner withdrawal, community feedback cycles, and electoral timing constraints offers a realistic perspective on the institutional complexity of Living Lab work in peri-urban contexts, which may inform future project teams in similar settings across the Munich metropolitan region and beyond.

6. UTRECHT LIVING LAB

6.1.Living Lab plans

The goal of this living lab was to examine how social business models can increase the uptake of shared ebikes by low-income population (low-income neighbourhood) in Overvecht. To achieve this goal the following research questions were formulated

1) Why are these populations not using shared e-bikes?
2) What are the trade-offs they consider when choosing their mode of transport?
3) What is the most convenient business model to increase the bikes' uptake?
4) What is the potential impact of different business models for shared e-bikes?

Throughout the implementation phase of the living lab activities there were not any major deviations from this aim. However, there were major changes made to the planned living lab activities due to external events. Many of these events happened throughout the original planned dates for the Utrecht living lab activities, leading to a complex timeline. An attempt to describe the events, and different activities that followed is made below:

- A major part of the living lab activities included experiments on tariff reductions for shared e-bikes operated by TIER. As described in D5.1. TIER's concession was ending in December 2025, which required a tighter deadline. Furthermore, neither TIER nor the municipality was willing to pay for reduced tariffs. Therefore, a shift was made to shared-cargo bike operator Cargoroo, which operates shared cargo-bikes in Utrecht. Unfortunately, Cargoroo faced bankruptcy. In August of 2025, Cargoroo was acquired and revived by MOBY, making 90 shared cargo bikes available in Utrecht. A reduced-tariff plan was implemented in seven neighbourhoods in Utrecht (non-DREAMS initiative). To measure the effect of these reduced tariffs on usage DREAMS offered to analyse Cargoroo data. In May of 2026 these reduced tariffs were communicated to the public through various news channels. The living lab activity has been ended in July 2026, after which the usage data from Cargaroo was analysed to measure the effect.
- When Cargaroo declared bankruptcy, and it became obvious their business model was not working, the living lab leader made a proposition to the municipality of Utrecht to develop new business models. These business models had as aim to be more accessible for vulnerable groups in the living labs (low-income, migrants) and were to be inspired by best-practice cases all over the world. This process was conducted together with students from HU. This DREAMS-led initiative resulted in promising results and positive feedback from stakeholders. The municipality of Utrecht has adapted the business model and started a round of subsidies to kick-start the business model.
- Also, an unplanned activity was proposed by TIER (whilst they were still active in Utrecht) to design and test modular solar charging stations for shared vehicles. This was done in cooperation with students from HU and was planned to be physically piloted. Although the design of these stations was finalized, the physical implementation and testing was not realised due to external delays regarding the property the charging station was to be piloted on.

Despite major hurdles caused by external events as described above, the overall impact of these deviations on the outcomes was neutral and illustrated the uncertain nature of market-led shared mobility platform. These unexpected events gave room to other, more novel living lab activities. Still, some data cannot be/was not gathered. This impacts the research questions as follows: 1) can be answered fully through several interviews with organisations, and many informal conversations with residents of Overvecht. 2) Can be partially answered. Cargoroo data will show whether reduced tariffs play a role in mode choice for shared transport. Due to a lack of survey data, nothing can be said about qualitative trade-offs (barriers). 3) Can be partially answered due to the positive reaction of the municipality towards the proposed business model. However, whether this business model increased uptake amongst the target-group will not be measured. 4) Can be fully answered through the explorative work done on business models by HU students.

6.2. Living Lab area as implemented – detailed description

The original spatial scope of the Utrecht Living Lab was expanded beyond the Overvecht neighbourhood due to changes in the implementation of the reduced-tariff intervention. While the original Living Lab focused on understanding barriers and opportunities for shared mobility uptake among low-income populations in Overvecht, the implemented intervention covered multiple neighbourhoods across Utrecht where reduced tariffs for shared cargo bikes were introduced. The number of cargo bikes and tariffs, together with the locations are illustrated.

Table 12 Number of cargo bikes and tariffs during the intervention Knoester, N. (2025, July 7).

Neighbourhood	Minimum number of cargo bikes per 1 August 2025	Minimum number of cargo bikes per 15 March 2025.	Tariff
Zuilen Noord	3	4	€3/u
Lunetten	4	5	€3/u
Leidsche Rijn	9	10	€4,20/u
Vleuten	0	4	€3/u
Overvecht	3	4	€2/u
Kanaleneiland	3	4	€2/u

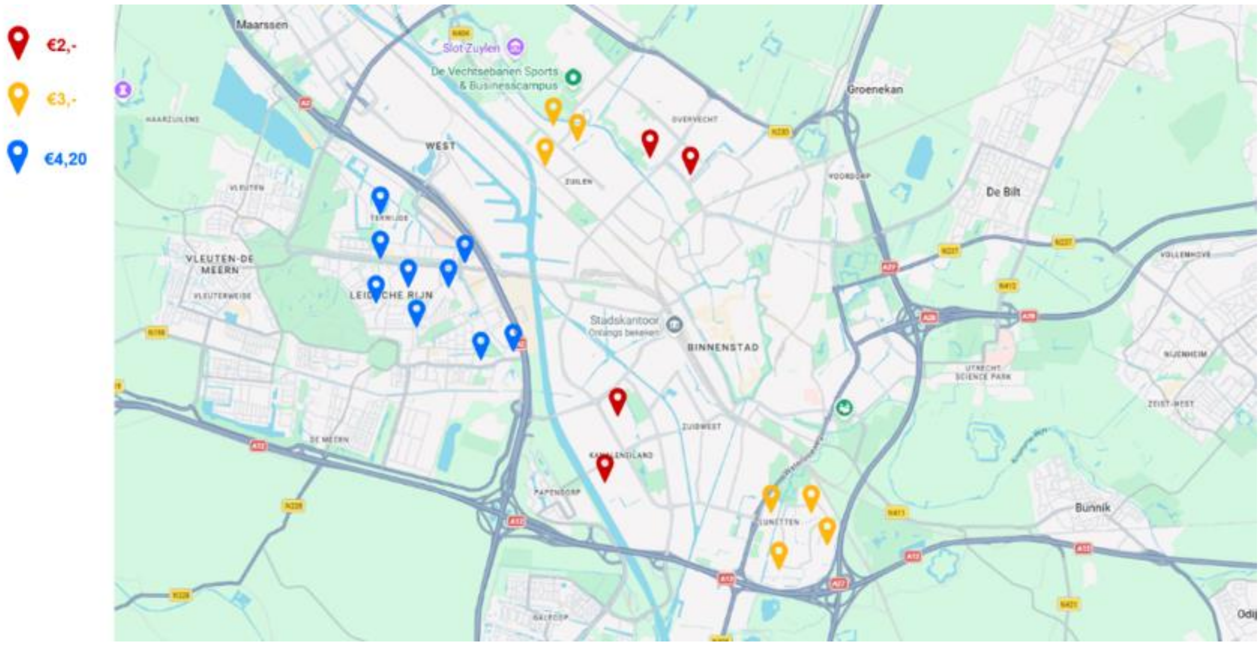


Figure 13 Location of cargo bikes and relative pricing Bruijs, K. (2025, October 1)

Exact location(s) and/or boundaries of the Living Lab area
The intervention was implemented in six Utrecht neighbourhoods: Overvecht, Kanaleneiland, Zuilen Noord, Lunetten, Vleuten and Leidsche Rijn. Different tariff levels were applied depending on the neighbourhood. The intervention therefore extended beyond the original Living Lab boundary and covered a broader set of urban contexts across the city. The selected neighbourhoods are located primarily at the edges of the existing shared cargo bike service area and were chosen to investigate whether reduced tariffs could improve accessibility and uptake in areas where shared mobility usage was relatively limited.

Key physical and urban characteristics relevant for the implementation

The selected neighbourhoods differ considerably in their urban and socio-economic characteristics. Overvecht and Kanaleneiland contain relatively high shares of social housing and lower-income households, making affordability a particularly relevant issue. Other neighbourhoods such as Vleuten and Leidsche Rijn are characterised by lower densities, greater distances to city-centre destinations and different mobility needs. This diversity provided an opportunity to assess whether reduced tariffs generate similar or different effects across neighbourhoods with varying demographic and spatial characteristics.

The intervention was implemented within an existing shared cargo bike network operated by Cargoroo-Moby. Availability of vehicles, proximity of parking hubs and neighbourhood-level differences in mobility demand were therefore important contextual factors influencing the implementation and outcomes of the intervention.

Influence of the area characteristics on user participation

The diversity of neighbourhoods enabled the Living Lab to engage with different user groups, including residents of lower-income areas who are traditionally underrepresented in shared mobility systems. At the same time, expanding the intervention beyond the original Living Lab area made direct engagement with users more challenging, as participants were distributed across multiple neighbourhoods. As observed throughout the Living Lab, recruiting participants for surveys and qualitative research activities remained difficult, limiting opportunities to collect detailed behavioural insights.

Influence of the area characteristics on service performance

The intervention was specifically designed to test whether affordability influences the performance of shared cargo bike services. Different tariff levels were introduced across neighbourhoods to investigate whether lower prices would lead to increased uptake, attract new users and increase usage frequency. The variation in socio-economic and spatial conditions between neighbourhoods also enabled comparison of service performance across different urban contexts.

Influence of the area characteristics on data collection and monitoring

The expansion from a single-neighbourhood Living Lab to a city-wide intervention increased the importance of operational platform data for monitoring and evaluation. Usage data supplied by Cargoroo-Moby became the primary source for assessing intervention effects across neighbourhoods. The larger geographical scope also complicated the collection of qualitative data, as direct engagement with users became more resource intensive. As a result, quantitative monitoring played a more prominent role than originally foreseen in the Living Lab design.

6.3. Implemented Living Lab activities, infrastructure and services – detailed description

The Utrecht Living Lab implemented three complementary activities: (1) a reduced-tariff intervention for shared cargo bikes, (2) the development of a social shared-cargo bike business model, and (3) the design of a modular solar-powered charging station. Together, these activities explored how affordability, governance arrangements and infrastructure innovations can improve the accessibility and long-term viability of shared mobility services. Table 13 shows an overview of all conducted living lab activities.

Table 13: Detailed description of the interventions

Activity	Description	Timeframe	Methods	Stakeholders (role)
Cargoroo price reduction	Reduced tariffs for shared cargo bikes implemented in six Utrecht neighbourhoods (Table 12).	May 2026 – July 2026 (running Aug. 2025-Aug 2026, but not communicated to the public till May 2026)	Analysis of operational usage data supplied by Cargoroo-Moby; comparison between intervention areas; qualitative user research where possible; monitoring	Municipality of Utrecht (client and funder of tariff intervention), Cargoroo-Moby (operator and data provider), HU University of Applied Sciences

			of unique users, usage frequency, rental duration and neighbourhood-level differences.	(research, monitoring and evaluation, coordination).
DREAMS shared-cooperative cargo bike social business model	Cooperative citizen and NGO run business model. Station-based and neighbourhood run.	Subsidy application to the Ministry of Infrastructure and Water management is being prepared by the Municipality of Utrecht in collaboration with HU before July 2026.	Qualitative assessment, models: ResiMOB method was used for comparative analysis (method developed in T4.1)	Municipality of Utrecht (client), HU students (research) HU (coordinating the intervention, impact evaluation)
DREAMS Solar powered charging station	Modular design which can be adapted to fit on existing public space.	No planned timeframe for implementation (yet).	Qualitative assessment, models: ResiMOB method was used for comparative analysis (method developed in T4.1)	HU students (material design and business model and environmental impact calculations). ROC students (vocational school students, build first prototype for the frame). TIER/Dott (client phase 1) Cargoroo by Moby (client phase 2) HU (coordinating the intervention, impact evaluation)

DREAMS Shared-Cooperative Cargo bike Social Business Model

The DREAMS shared-cargo bike social business model was developed in response to challenges encountered within the commercial shared mobility market. Following the bankruptcy of Cargoroo and uncertainties regarding the long-term viability of purely market-driven approaches, the Living Lab explored alternative governance and business arrangements that could improve accessibility for vulnerable groups while strengthening the resilience of the service.

The proposed model is based on a cooperative, neighbourhood-oriented approach in which citizens, local organisations and public stakeholders play a more active role in the governance and operation of shared cargo bike services. The model emphasises local ownership, community engagement, station-based deployment and stronger links with neighbourhood organisations. Particular attention was given to affordability, social inclusion and long-term financial sustainability.

The development of the business model was supported by students from HU University of Applied Sciences and conducted in close collaboration with the Municipality of Utrecht. Comparative analyses of international best-practice cases were undertaken using the ResiMOB framework developed within DREAMS WP4.1. The resulting business model received positive feedback from stakeholders and informed a subsidy application prepared by the Municipality of Utrecht to support future implementation.

The intervention illustrates how Living Labs can facilitate experimentation with alternative governance arrangements that complement or partially replace purely commercial mobility services, particularly in neighbourhoods where market-based provision alone may not achieve social and accessibility objectives.

DREAMS Solar powered charging station

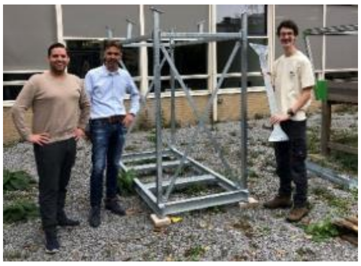
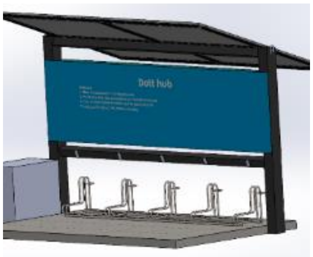
The solar-powered charging station was developed as an exploratory Living Lab activity aimed at addressing operational and environmental challenges associated with shared mobility systems. The concept focused on a modular charging solution that could be integrated into existing public space and adapted to different urban contexts.

The activity emerged through collaboration between HU University of Applied Sciences, vocational education students and shared mobility operators. Students were responsible for the technical design, environmental impact assessment and business model exploration, while vocational education students contributed to the development of a first physical prototype. Initially, the concept was developed in collaboration with TIER/Dott and later continued with Cargoroo-Moby following changes in the local shared mobility market.

The proposed charging station (Table 14) was designed to support the charging needs of shared electric vehicles while reducing dependence on conventional grid infrastructure. Through the ResiMOB assessment framework, the concept was evaluated with respect to its environmental, social and economic performance. Although the physical pilot could not be implemented during the project period due to external delays related to site availability and permissions, the activity generated valuable insights into the feasibility of renewable energy solutions for shared mobility services.

The intervention demonstrates how Living Labs can support the co-creation and testing of innovative infrastructure concepts, even when full-scale implementation is not achieved within the project timeframe. The developed concept remains available for future implementation and testing by local stakeholders.

Table 14 Prototypes of the DREAMS solar powered charging station

Build frame by ROC students	**Prototype version 1.0 by HU student group 1**	**Prototype version 2.0** **By HU student group 2**
		

6.4. Lessons learnt during Living Lab implementation

Due to the many deviations, much was learned from the implementation of the (planned) activities in the living labs. The first, and most important lesson learnt is the governance and institutional flexibility required when working in a market-driven mobility context. The unplanned disruptions (e.g., TIER's exit, Cargaroo's bankruptcy) required the living lab partners to pivot towards other relevant activities to keep in line with the living lab's aim. This flexibility kept the project relevant even though none of the planned activities could be conducted following the original plan. A positive outcome of this flexibility is the adaptation of novel solutions such as the DREAMS shared-bike social business model and the solar power charging stations.

Furthermore, stakeholder engagement and communication proved to be difficult. Residents are not eager to participate in surveys and other qualitative-data gathering techniques, this troubles behavioural validation of results. Also, research is not always the top priority for market-driven businesses and governments, meaning communication is often ad hoc rather than systematic and the question of 'who pays' for experiments is often difficult to answer. All this is reflected in failure to implement tariffs reductions with TIER, and the late communication of the reduced tariffs for Cargaroo as well as missing qualitative data. To improve other cities should strive for systematic communication with their stakeholders and up-front and concrete discussions on budget, communication and expectations. Furthermore, the volatile nature of market-driven parties means a clear commitment of these parties is important to maintain shared mobility solutions in other cities.

An additional lesson learned concerns the relationship between affordability and user adoption. While reduced tariffs are frequently proposed as a mechanism for increasing accessibility, lowering prices alone is unlikely to guarantee behavioural change. The Utrecht Living Lab demonstrated that communication and outreach strategies are equally important, particularly when targeting residents who have never used shared mobility services before.

Stakeholders highlighted the importance of understanding how to reach residents who do not regularly use mobility applications or digital platforms, which communication channels are most effective for engaging specific target groups, and how first-time users can be encouraged to experiment with shared mobility services. Future interventions should therefore combine pricing measures with targeted communication, local ambassadors, community-based outreach and user support activities.

Furthermore, the Living Lab highlighted the importance of monitoring not only usage volumes but also changes in user composition, travel behaviour and accessibility outcomes. Measuring the success of social tariffs requires a broader evaluation framework that captures both operational and social impacts.

7. PARIS LIVING LAB

7.1.Living Lab plans

The Paris Living Lab was initially designed in order to explore how accessibility along the T12 tram-train corridor could be improved through innovative mobility hubs supporting multimodality, active mobility, and first- and last-mile access. As outlined in Deliverable D5.1, the original scope covered several municipalities along the corridor, with a particular focus on Évry-Courcouronnes and Massy. At that stage, however, the overall vision remained broad, as relations with the municipalities and service providers were not yet fully established.

During implementation, several important adjustments to the original design became necessary. The most significant concerned the territorial scope of the Living Lab. Massy had initially been expected to be one of the main experimentation sites, but the withdrawal of Fifteen, the shared bike operator active in the area, made it impossible to maintain the planned interventions there. As the operator gradually scaled down and eventually discontinued its activities at the beginning of 2025, the conditions required for implementation in Massy were no longer in place. The decision was therefore taken to refocus the Living Lab exclusively on Évry-Courcouronnes, where Pony remained operational and cooperation with the municipality proved stronger and more stable.

A second major adjustment concerned the initial ambition to work on mobility hubs. This objective was ultimately abandoned, as discussions with local stakeholders and transport authorities showed that such an intervention was constrained by a complex institutional and regulatory environment, involving a large number of actors. The intervention was also too time-consuming to be realistically delivered within the project timeline and available resources. However, thanks to the stronger collaboration established with the municipality of Évry-Courcouronnes and Pony, the planned activities evolved and became more focused.

Building on local cycling policies and ongoing transformations in Évry-Courcouronnes, and discussions on active mobility accessibility around the T12 corridor, the Living Lab incorporated the implementation and evaluation of new shared mobility stations, special Pony subscription plans, and a new protected bi-directional bike lane. These interventions became the core of the final configuration, while remaining fully consistent with the original aim of the Living Lab.

7.2.Living Lab area as implemented – detailed description

The Living Lab is located in Évry-Courcouronnes, about 25 km south of Paris. With around 66,000 inhabitants, the city is one of the first new towns developed in the Île-de-France region and also serves as the prefecture of Essonne. It was largely built from the 1960s onwards, with a landscape shaped by high density slab blocks and tower buildings (today it has a density of approximately 5,200 inhabitants per km^2). Évry-Courcouronnes is connected to the RER network and benefits from a relatively wide range of facilities and business parks. But at the same time, it faces strong social contrasts, with unemployment and poverty rates of 17% and 25% respectively, both higher than the Île-de-France average. The city also has a relatively high share of social housing, >45%, and a student population representing nearly 10% of residents.

The interventions are focused on the surrounding economic activity areas of the T12 tram-train stations of Traité de Rome and Bois Briard, and on the Évry-Courcouronnes central station area. The LL territory presents several urban and mobility-related characteristics that strongly shaped the implementation of the interventions and the evaluation process. Although the municipality benefits from the T12 tram-train line, the RER D network, and numerous bus services, the peripheral sectors remain highly car-dependent, particularly around the Bois de l'Épine and Saint-Guénault activity areas (4,000 jobs). Also, cycling connections are still fragmented in some parts of the territory, and access between transport stations and employment zones often remains constrained by first- and last-mile connectivity gaps.

In this context, the relatively dispersed distribution of economic activity areas and the high level of car dependency made data collection, on-site recruitment for surveys and workshops, and more generally engagement with the target groups particularly challenging. These conditions also complicated the search for additional locations to expand the shared mobility station network, as much of the public space is allocated to car parking. By contrast, recruitment was easier at the university campuses, especially for student participation in the project survey and the affordability intervention.

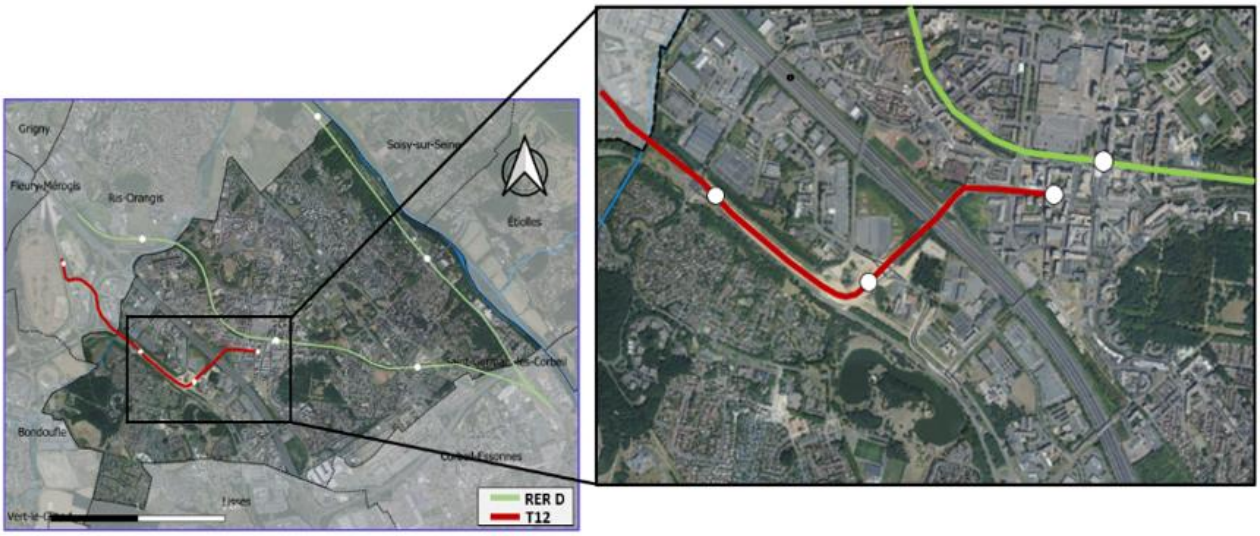


Figure 14 Location of the Paris Living Lab

7.3. Implemented Living Lab activities, infrastructure and services – detailed description

The final configuration of the Paris Living Lab consisted of three main interventions implemented in Évry-Courcouronnes in 2025 and 2026.

The first intervention concerned the deployment of **new virtual shared mobility stations** operated by Pony in the Bois de l'Épine and Saint-Guénault business areas, in the surroundings of the T12 stations of Traité de Rome and Bois Briard, in April 2026. The objective of this intervention was to strengthen the network in order to go from 400 to 200 meters between stations and to improve accessibility between public transport stations and the economic activity zones, allowing certain T12 users to reach their workplace using Pony, and to park their shared vehicle as close as possible to their final destination. The implementation process involved the identification of strategic station locations, discussions with municipal stakeholders regarding public space allocation, operational coordination with Pony, and monitoring activities based on trip data.

The second intervention focused on **the evaluation of discounted monthly subscription plans** targeting students commuting to and from university campuses in Évry-Courcouronnes.

Within the framework of the Living Lab, particular attention was given to the student subscription model proposed by Pony, which allows unlimited unlocking and unlimited use of shared bikes and scooters for users holding a valid student card. Through this activity, the goal was to assess the relevance and potential effects of this affordability-oriented offer in terms of accessibility, adoption, and sustainable usage patterns among student populations. More specifically, to better understand the extent to which reduced pricing structures may lower economic barriers associated with shared mobility services and encourage both experimentation and long-term adoption among younger populations.

Monitoring activities focused on subscription uptake, usage frequency, the renewal rates and the evolution of student participation within the overall user base.

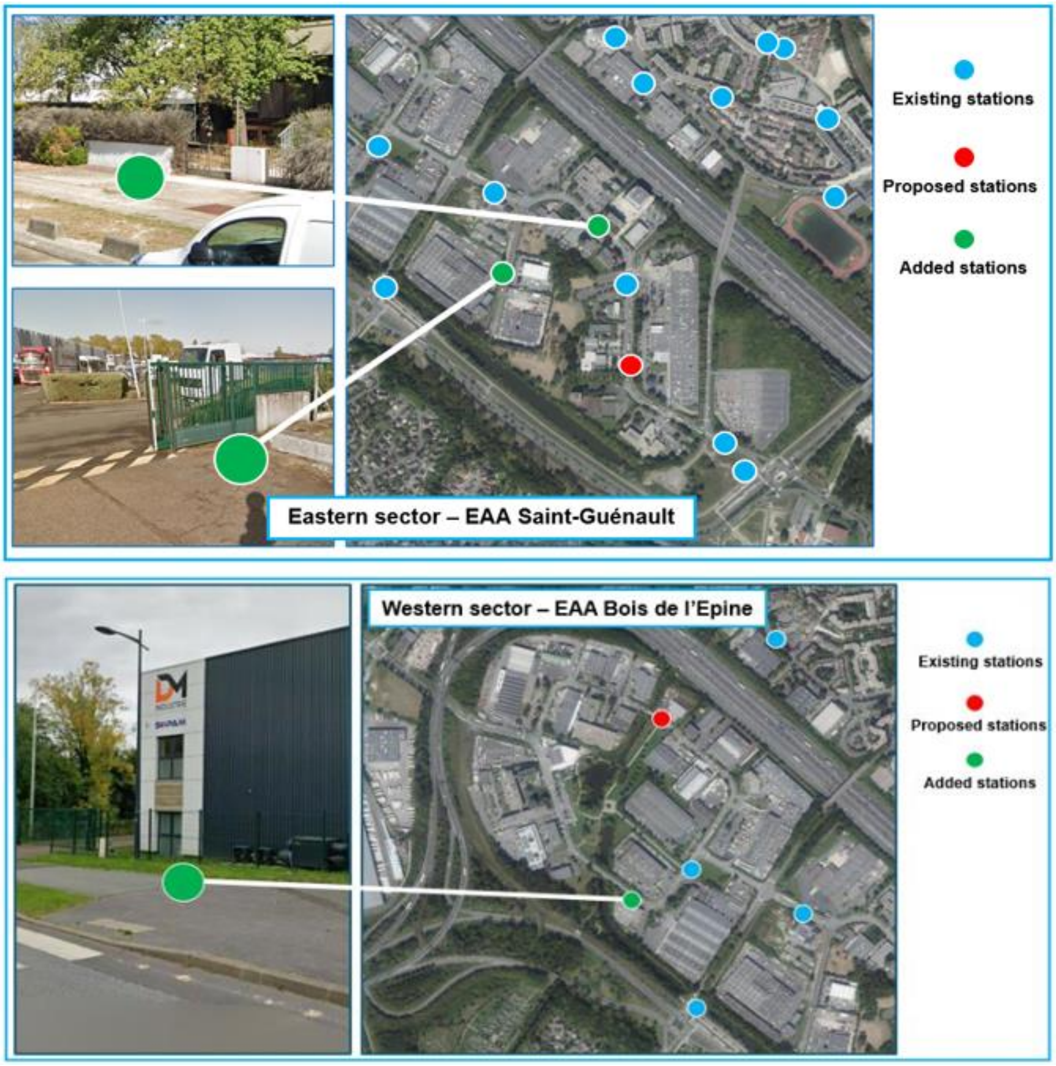


Figure 15 Locations of the proposed new shared mobility stations

The third intervention consisted of the implementation of a **new protected bi-directional bike lane** designed to improve cycling continuity and multimodal accessibility within Évry-Courcouronnes. On the Champs-Elysée Boulevard, which is a central and very important mobility axis of the city, around 500 metres of cycling infrastructure were added to the existing network. The new bike lane opened in December 2025, offering a direct connection to the cycle path running alongside the T12 tram-train line. The intervention improved cycling accessibility between peripheral neighbourhoods and the T12 corridor, the RER station area, and university campuses from one side, and the Courcouronnes-Centre district from the other side.

Figure 16 The new protected bi-directional bike lane

The municipality of Évry-Courcouronnes played a central role in the implementation process. The city was the main driving force behind the development of the new protected bi-directional bike lane and demonstrated a strong commitment to strengthening cycling infrastructure. Beyond the infrastructure itself, the municipality also expressed significant interest in the analytical and evaluation expertise that the Living Lab partners could provide regarding the impacts of the intervention. In particular, the collaboration opened perspectives for monitoring the evolution of Pony usage data in order to better understand changes in mobility flows and travel behaviours following the implementation of the bike lane. This approach also aims to provide insights into potential evolutions of multimodal practices combining cycling and public transport, especially in relation to the T12 line and nearby RER connection.

7.4. Lessons learnt during Living Lab implementation

Governance and institutional aspects

The withdrawal of a private mobility operator demonstrated the vulnerability of Living Lab implementation processes, especially since they usually rely on multiple external partners. The end of Fifteen's activities in Massy forced a major redefinition of the Paris Living Lab scope and highlighted the importance of implementation flexibility and good planning.

In the meantime, the stronger concentration on Évry-Courcouronnes facilitated coordination among stakeholders and improved local operational efficiency.

The implementation process also unveiled institutional and political challenges linked to public space allocation. While virtual shared mobility stations are technically easy to deploy, municipal resistance to converting car parking spaces into something else (especially in car-dependent areas) limited the options significantly and heavily constrained deployment possibilities. All requests to use car parking spots for new Pony stations were systematically declined, even though there was no data on the actual use of these parking spaces.

Stakeholder engagement

Stakeholder engagement revealed several operational and institutional challenges. Exchanges with companies located in the targeted economic activity zones remained difficult throughout the project. Communication channels within business parks were fragmented, which limited direct contact with commuting employees and local businesses. Coordination with the shared mobility operator was also not always straightforward, as its availability fluctuated during certain phases of the project because of its involvement in strategic public procurement procedures and calls for tenders in other territories.

Similarly, although the city played a central role in the implementation process, particularly by integrating the Living Lab interventions into ongoing local mobility policies, the responsiveness of municipal representatives varied over time. This was especially noticeable in the period leading up to, and during the municipal electoral cycle. During these periods, decision-making processes became less reactive, slowing down discussions and the validation of Living Lab interventions.

Overall, the implementation experience highlighted the importance of anticipating institutional calendars, political cycles, and the operational constraints faced by private mobility operators when designing and planning Living Lab activities. It also showed that strong institutional support from municipalities and higher territorial authorities is essential for reaching and mobilising other local stakeholders.

User behaviour and acceptance

At this stage of the project, the monitoring and evaluation phases are still ongoing, it remains too early to draw definitive conclusions regarding long-term behavioural change and sustained adoption patterns.

However, interventions like the new protected cycling infrastructure have already highlighted the potential importance of network continuity and perceived safety in supporting active mobility and multimodal practices. Early observations and the DREAMS choice experiment results suggest that improving the coherence and quality of cycling infrastructure may positively influence the attractiveness of cycling and active mobility options.

More broadly, the Living Lab underlines the importance of combining affordability measures, infrastructure improvements, and multimodal accessibility enhancements when seeking to improve the 15-min lifestyles.

Technical and operational feasibility

Paris Living Lab showed the relevance of combining several complementary interventions within the same territory. The mix between shared mobility deployment, affordability measures, and cycling infrastructure improvements contribute to creating stronger synergies between active mobility, shared micromobility and public transport accessibility. This approach may provide useful insights for other suburban territories seeking to improve multimodal accessibility to different services and amenities.

However, operational coordination with local authorities and private operators requires substantial anticipation and flexibility, especially in rapidly evolving shared mobility markets.

The combination of operational data from mobility providers with qualitative surveys and GIS analysis can be valuable for evaluating impacts and understanding user practices.

8. VIENNA LIVING LAB

8.1. Living Lab plans

This section documents the implementation of the Living Lab Vienna within the DUT DREAMS project, which tested a pop-up intervention — the Raum_Wagen and bike sharing station — in the peripheral Viennese neighbourhood of Siebenhirten-Liesing as a contribution to the realisation of the 15-minute city concept. It presents the intervention design, assessment of whether the living lab aims and objectives were achieved. activities implemented, stakeholders and lessons learnt.

Scope and topics of the Living Lab Vienna

The LL Vienna focused on two elements: (1) Mobility hubs and (2) Flexible activity hubs.

1. To enhance accessibility, a virtual bike sharing station should be established near the flexible activity hubs (see below). This station will provide a designated area for bike sharing, accessible through the WienMobil App, eliminating the need for physical docking infrastructure. By positioning the station close to the activity areas, easy bike pick-up and drop-off can be facilitated, promoting sustainable and flexible urban transportation options.
2. To transform underutilized (ground floor) spaces, flexible activity hubs through a co-creative approach are planned. By reactivating vacant storefronts or open areas, these spaces can serve as dynamic hubs for (community) events, pop-up shops, or social gatherings etc. A co-creative setup encourages community input in designing and programming the space, ensuring it meets local needs and fosters engagement.

Three deviations from the original intervention design occurred during implementation, both of which are documented here for transparency and discussed further in the lessons learnt section:

1. The first and more significant deviation concerned the location format of the activity hub. Despite active attempts to establish contact with owners of visibly vacant ground floor spaces in the area, this approach proved unfeasible: owners either did not respond or requested rental prices that exceeded the project budget. As a result, the intervention shifted from private ground floor activation to public space. This transition was facilitated by the establishment of a partnership with the Raum_Wagen Verein, whose mobile pop-up wagon proved well suited to the public space context and ultimately defined the character of the intervention.
2. The second deviation concerned the demand-responsive transport element. The WienMobil Hüpfer service was ultimately excluded from the evaluation scope, as it was determined that the service was not sufficiently connected to the hub's operation and catchment to yield meaningful comparative data. This element was therefore set aside, and the evaluation focused on the mobility and accessibility impacts of the activity hub itself. The following table summarizes the original research questions and asses which were fully met, partially met or not achieved.
3. A third deviation concerns the co-creative dimension of the intervention. Due to time and resource constraints, a full co-creation process with residents could not be realised as originally planned. Programming was instead developed based on the team's prior experience in the area, with resident input gathered informally through conversations at the Raum_Wagen. Additionally, the project's baseline survey could not be used as a comparative reference for evaluation, as it was conducted simultaneously with or after the intervention and was therefore not available in time to inform either the programme design or the data analysis.

The following table assesses the extent to which the original research objectives were achieved, drawing on the empirical findings, operational experience, and lessons learnt from the intervention at Wiener Flur.

Table 15 Overview research questions and assessment.

Objective / research question	Status	Assessment
Main research question		
What contributions do co-creative flexible hubs make to the 15-minute city, regarding local space and mobility?	Partially met	Preliminary evidence generated that pop-up hubs can improve local accessibility and shift modal behaviour in peripheral areas. Full causal conclusions not possible due to sample size and single-cycle design — consistent with Living Lab epistemology.
Making spaces usable and improving mobility		
How can vacant spaces be activated through funding, local networks, and cooperation?	Partially met	Ground floor activation proved unfeasible. The pivot to public space and partnership with Raum_Wagen Verein provided a viable alternative model. Key insight: mobile public space formats may be more accessible than private ground floor activation in this context.
How can low-threshold stakeholder networking sustainably revitalise spaces?	Partially met	Local Agenda Liesing subsequently adopted the Raum_Wagen concept. However, sustained institutional anchoring was not achieved within the project period. Network-building took longer than anticipated and requires earlier, more intensive investment.
How can a co-creative flexible hub be linked to mobility services (bike sharing and on-demand bus)?	Partially met	Bike sharing station was planned but uptake was limited. The on-demand bus (WienMobil Hüpfer) was excluded from the scope as it was not sufficiently connected to hub operations.
To what extent does the flexible hub influence residents' mobility behaviour?	Partially met	Survey data indicates shorter travel times and higher walking share among hub users compared to equivalent activities. However, small sample size limits conclusions.
Needs and acceptance of co-creative flexible hubs		
What needs and preferences do residents have regarding long-term use of neighbourhood spaces?	Fully met	Survey and observation data revealed clear resident preferences: cultural offer, regular programming, free access, and community-oriented formats. Explicit demand for permanence was expressed repeatedly. Rich qualitative insight gathered through direct conversations at the Raum_Wagen.
What is the level of acceptance for flexible hubs, bike sharing, and on-demand bus?	Fully met	Resident acceptance of the hub format and bike sharing was high. Acceptance and usage are however distinct dimensions — limited bike sharing uptake reflects the novelty of the service and the time needed to build awareness rather than a lack of willingness. On-demand bus acceptance could not be assessed following exclusion from scope.
Economic and social viability		

How can business models for flexible hubs be developed to be economically viable?	Not achieved	The intervention was funded by the DREAMS project and free to users. No business model was developed or tested. This remains an open question requiring dedicated investigation.
What factors influence longevity and success conditions of flexible hubs?	Fully met	Key success factors identified: regular programming, free access, local caretaker, co-operation with established local formats, early partner onboarding, and weather fallback infrastructure.
What barriers and success factors exist for stakeholder cooperation?	Fully met	Barriers clearly identified: late partner onboarding, unclear communication, permitting constraints, owner non-response for ground floor spaces. Success factors: established local formats, mobile format flexibility, Raum_Wagen Verein partnership.

Aims of the Living Lab Vienna

Table 16. Overview of aims from Deliverable 5.1.

Aim	**initiate networking and increase the visibility of local actors**	**support the utilisation of vacant/unused spaces & establish additional functions and activities that are missing**	**test co-creative flexible hubs in combination with mobility offers**	**reflect on long-term perspectives for co-creative flexible hubs**
strategic	Establish networks that enable local actors to better cooperate and make their offers visible.	Investigate the process by which residents and local initiatives are actively involved in the set-up of flexible hubs.	Assess the impact of flexible activity hubs on mobility patterns and life in the neighbourhood. Promoting the integration of spatial and mobility offers in terms of better accessibility and local supply.	Developing business models for sustainable space use that can continue to exist after the research projects have been completed.
operative	Organising low-threshold workshops and networking meetings to promote cooperation and the development of ideas.	Create ideas/ concepts for activating vacant/ underutilised spaces that involves local actors and stakeholders.	Find interested “makers” and their (entrepreneurial) ideas via the imgrätzl platform, find suitable spaces, initiate events	Identification of financing options and incentives (e.g. rental subsidies) to enable long-term utilisation.

The aim of **initiating networking and increasing the visibility of local actors** was partially achieved. Connections were established with the Raum_Wagen Verein, the Local Agenda Liesing, and cultural partners such as VOLXkino and Utopia Theatre. Low-threshold workshops and community events were successfully organised. However, the broader goal of establishing a self-sustaining local network that enables ongoing cooperation between actors was not reached within the project period. This requires more time and continuity than a single summer intervention allows.

The aim of **supporting the utilisation of vacant spaces** could not be achieved in its original form. Despite active attempts to contact owners of visibly vacant ground floor premises, none were willing to engage at accessible conditions. The operative goal of finding suitable spaces and activating them with local makers via imGrätzl did not materialise as planned.

The aim of **testing co-creative flexible hubs in combination with mobility offers** was partially met. The hub format was successfully tested and generated valuable evidence on resident behaviour, acceptance, and programming needs. The mobility integration component was weaker: bike sharing uptake was limited, and the on-demand bus was excluded from scope. The combination of spatial and mobility offers — one of the more innovative dimensions of the original concept — remains an important but underexplored question for the next iteration.

The aim of **reflecting on long-term perspectives** was addressed through the lessons learnt process and through direct resident feedback, which consistently expressed demand for permanent provision. However, the strategic goal of developing viable business models for self-sustaining space use was not achieved. No financing model, rental subsidy framework, or entrepreneurial concept was developed or tested.

Exact location and boundaries

The living lab is in the Wiener Flur residential complex, situated in the Siebenhirten neighbourhood of the 23rd municipal district (Bezirk) of Vienna, Liesing. The address of the core intervention site is Porschestraße 13–23, 1230 Vienna. The complex is bounded by Porschestraße, Karl-Tornay-Gasse, Akaziengasse, and Basler Gasse. The pop-up intervention — the Raum_Wagen — was placed directly on the grounds of the Wiener Flur complex, serving as a mobile, accessible focal point within the residential area. The spatial scope of the living lab corresponds to the immediate walkable catchment of this site, broadly encompassing the Siebenhirten neighbourhood and its approximately 8,000 residents.

Figure 17: Overview location (own illustration/ photos)

Key physical and urban characteristics

The Wiener Flur is the largest social housing complex (Gemeindebau) in Liesing. It comprises seven U-shaped buildings with six to eight stories arranged around a central green courtyard, containing 824 apartments, a primary school, two kindergartens, swimming pools, and multiple retail shops. Built between 1978 and 1980, it was designed as a postmodern interpretation of the Viennese social housing tradition.

The surrounding urban context is characteristic of Vienna's car-oriented periphery. To the northwest, the residential complex borders the Liesing industrial area, dominated by commercial, industrial, and office uses. The wider neighbourhood contains numerous single-family houses and allotment gardens, with newer cooperative housing developments and a medical centre along Basler Gasse.

In terms of public transport, the area is served by underground line U6. The U6 station Siebenhirten is located immediately adjacent to the Wiener Flur complex and includes a Park & Ride facility and a regional bus terminal serving connections from Lower Austria. Despite the solid PT, the area is characterised by a high share of car traffic, limited quality public space, single-storey commercial buildings, vacancies, and numerous barriers to pedestrian and cycling movement. It is a structurally representative case of the car-dependent urban periphery that the 15-minute city concept struggles to reach.

Figure 18 Raum_Wagen set-up

Relationship to the originally planned living lab area

The intervention area as implemented corresponds to the area originally planned within the DUT DREAMS project. However, originally it was planned as ground floor space.

The Austrian project partners — TU Wien, BOKU, Stadtland — set out to examine the impact of local pop-up interventions, demand-responsive transport, and flexible mobility stations on residents of urban outskirts, with Siebenhirten as the designated case study area. The Raum_Wagen at Wiener Flur represents the hub component of this broader intervention design. No significant deviations from the planned spatial scope are reported; the Wiener Flur site was selected precisely because it combines a large, dense residential population with the peripheral, car-oriented characteristics that define the research problem

User participation

The Wiener Flur complex consists of over 1,300 households within immediate walking distance. Residents passed the Raum_Wagen naturally as part of their everyday routines of some residents (on the way to the supermarket, returning from the U6, or taking a walk) which created regular contact with the offer but probably not that much like in the center of the complex. The summer timing was ambivalent in its effect, because on one hand, it is the season when the availability of local cultural infrastructure is appreciated. On the other hand, a notable share of residents was away on holiday during the intervention period, reducing the available population and limiting overall reach.

Service performance

The Raum_Wagen was positioned slightly off the main circulation routes, meaning it was not immediately visible to all passing residents and required active outreach to draw people in. Where the programme connected with established local formats, attendance was strong, demonstrating that residents are well able and willing to engage when the offer is relevant and well communicated. The bike sharing station was a new offer on this site of the complex (there is one station close to the underground). Building awareness of a new station takes time, particularly for a temporary installation.

Data collection and monitoring

The survey reached its intended target group which were visitors of the Raum_Wagen. The direct, personal approach by engaging residents at the Raum_Wagen, during event proved the most effective method and generated meaningful responses. Monitoring was done by filling in the observation protocol by the research team on-site.

8.2. Living Lab area as implemented – detailed description

Implementation: Activities, Infrastructure, and Stakeholder Roles

1. Overview of implemented activities

The Living Lab Vienna implemented one core intervention: the flexible hub at the Wiener Flur complex, Porschestraße 13–23, 1230 Vienna. The intervention combined a mobile wagon Raum_Wagen with a six-week programme of community events and activities, complemented by a virtual bike sharing station (which was installed for three month).

2. Timeline and duration

Table 17 Timetable of pop-up intervention

Activity	Period	Duration
Preparation and partner onboarding	January – June 2025	6 months
Raum_Wagen deployment at Wiener Flur	30 June – 8 August 2025	6 weeks
Community programme (Kultur im Wiener Flur)	1 July – 7 August 2025	6 weeks
Temporary bike sharing station operation	22 June – 22 September 2025	3 months
Survey data collection	1 July – 7 August 2025	6 weeks
Evaluation and reflection	August – December 2025	5 months

3. Activities in detail

3.1 Raum_Wagen infrastructure

The Raum_Wagen is a mobile, trailer-based unit operated by the Raum_Wagen Verein (https://raumwagen.info/). It was positioned on the grounds of the Wiener Flur complex and opened 3- 4 times a week during the intervention period. The wagon provided a shaded, furnished outdoor space functioning as a community meeting point, event venue, and visible anchor for the programme. It was equipped with seating, basic catering infrastructure (coffee, snacks), and materials for programme activities. Opening and closing of the wagon was managed daily by the on-site project team.

Figure 19 Closing event

3.2 Community programme (Kultur im Wiener Flur)

The programme ran for six weeks and offered a diverse range of free, drop-in activities targeting different resident groups. Programme elements included:

- Grätzlcafé (regular open community café)
- VOLXkino (open-air cinema)
- Utopia Theatre performance (was planned anyway)
- Circus workshop for children
- Graffiti workshop
- HipHop workshop for children
- Yoga sessions
- Puppet theater (cancelled because of bad weather)
- Capoeira (cancelled because of bad weather)
- Free bicycle repair service
- Community lunch/dinner

All activities were free of charge. Programme partners were responsible for delivering their respective activities; the project team coordinated logistics and was present on site throughout.

3.3 Temporary bike sharing station

A temporary bike sharing station was established in proximity to the Raum_Wagen, accessible through the WienMobil App. Unlike a conventional docked station, the virtual format designated a pick-up and drop-off area without physical infrastructure, besides a visual separation from the street space.

Figure 20 Bike sharing station next to Raum_Wagen

3.4 Survey and data collection

A resident survey was conducted throughout the intervention period to assess mobility behaviour, needs, and acceptance. In total, 72 completed surveys were collected (from counted 317 visitors). Data was gathered through direct personal engagement at the Raum_Wagen — approaching visitors during events and at the café.

In addition to the structured survey, informal conversations with visitors were documented throughout the intervention period as a complementary qualitative data source. These conversations and other information (e.g. number of people, gender, age group(s), duration of stay) were recorded through a systematic observation protocol.

Together, the survey, informal conversations, and observation protocol constituted a mixed-methods data collection approach consistent with the Living Lab epistemology: generating both quantitative indicators and qualitative insight from the same real-world intervention context.

4. Operational setup and methods

The intervention was staffed by the project 3-4 times a week during opening hours, with a minimum of two team members present at each session. The co-creative approach was operationalised through open programming — residents were invited to use the Raum_Wagen for their own activities via imgraetzl.at, though uptake of this offer was limited, with one community lunch/ dinner organised independently by a local resident being the notable exception. They got in touch with the team because they saw our offer to use the Raum_Wagen on imGrätzl. The imGrätzl platform was used as a digital communication channel for programme announcements and outreach. Physical flyer distribution was carried out within the Wiener Flur complex and a website provided with the program https://www.kultur-im-wiener-flur.at/.

5. Stakeholders involved in implementation

Table 18. Stakeholders and roles

Stakeholder	Role	Notes on changes vs. plan
TU Wien / Stadtland/ BOKU /	Research coordination, programme design, on-site team, data collection	Core project consortium — as planned
Raum_Wagen Verein	Provision and operation of mobile infrastructure	Not in original plan; partnership established following ground floor activation pivot
Cinema, theatre and workshop providers (circus, graffiti, HipHop, yoga, bicycle repair)	Delivery of programme activities	Co-operation initiated during implementation
WienMobil / bike sharing operator	Virtual bike sharing station	Co-operation initiated during implementation early in the planning
Bezirksvertretung Liesing	actively supported the intervention through promotion in the district newspaper (*Bezirkszeitung*) and by covering the costs of the VOLXkino open-air cinema	Active role as planned
Local Agenda Liesing	Local community network	Not formally involved in implementation, supported the afternoon activity by providing information on the neighbourhood and district
imGrätzl platform	Digital outreach channel	Used for promotion; response limited

8.3. Lessons learnt during Living Lab implementation

Overview

The Raum_Wagen pop-up intervention at Wiener Flur, implemented during the summer months 2025, provided empirical and practical insights into the opportunities and constraints of deploying temporary proximity interventions in a peripheral urban context. Following the conclusion of the intervention, a structured reflection workshop was held on 13 August 2025 with the team members responsible for the pop-up intervention in Wiener Flur. The workshop was conducted online via Zoom, using a shared Miro board as a collaborative working tool. Participants reflected collectively across six dimensions: what worked well, what worked less well, surprises, challenges, highlights, and implications for the 15-minute city concept in peripheral urban areas. The findings from this workshop form the basis of the lessons learned section of this report.

1. Governance and Institutional Aspects

The process of securing a suitable location for the intervention proved more complex than anticipated and unfolded in two stages. The original plan was to find a ground floor commercial space within or adjacent to the Wiener Flur complex. However, this proved unfeasible: property owners either did not respond or quoted prices beyond the project budget. The decision was therefore made to shift to public space, which led to the establishment of a partnership with the Raum_Wagen Verein which shaped the entire intervention format.

Within the public space option, a second location challenge emerged. The preferred site next to the playground, chosen for its child-friendly character, could not be secured due to permitting constraints. The Raum_Wagen was consequently placed in a less frequented location, which visibly affected both spontaneous drop-ins and overall visibility in the neighbourhood. Even though the location was a bit out of the way, the results were satisfactory, as many people stopped by and the events were well attended.

Lessons learned:

- The search for intervention space should begin as early as possible and pursue multiple location options in parallel (private ground floor, publicly owned spaces, and mobile formats)
- Living lab interventions require early and proactive engagement with permitting authorities, ideally during the project design phase.
- For scaling, municipalities wishing to support pop-up proximity interventions should consider establishing simplified, fast-track permitting pathways for temporary experimental uses in public space.
- The timing of deployment matters. Scheduling the intervention during the summer holiday period reduced the available resident population and constrained programme reach. Autumn or spring deployment, when community presence and engagement are likely to be higher, should be considered for future iterations.

2. Stakeholder Engagement

Stakeholder engagement emerged as both the greatest strength and the greatest challenge of the intervention. Partnerships with established cultural actors (e.g. open-air cinema, theatre) proved effective, drawing unexpectedly large audiences and demonstrating that co-operation with existing, trusted local formats significantly boosts attendance and community reach. The graffiti workshop similarly generated strong and unexpected demand, suggesting that creative, participatory programming resonates well with residents who might not engage with more conventional community formats.

However, building a local partner network before and during the intervention proved more difficult than anticipated. Recruiting and coordinating workshop providers required considerable effort, and communication between the project team and external programme contributors was at times unclear. Promotion and outreach was a consistent weakness: distribution of information materials was largely confined to the Wiener Flur complex itself, limiting reach into the wider Siebenhirten neighbourhood.

The imGrätzl platform generated limited response in using the Raum_Wagen for own formats. The Raum_Wagen itself was also underutilised as a communication medium — clearer on-site signage showing opening hours, programme, and project information would have increased both casual drop-ins and survey participation.

Lessons learned:

- Local partners should be identified and onboarded as early as possible in the planning process, with clear agreements about roles, responsibilities, and communication channels established upfront.
- Co-operation with established, trusted local formats is consistently more effective than building new programme formats from scratch.
- Relying on a single digital platform for outreach is insufficient. A diversified, multi-channel communications strategy should be planned well in advance and resourced accordingly.

3. User Behaviour and Acceptance

User behaviour yielded some of the most instructive and surprising findings of the intervention. Acceptance among residents who did engage was mainly positive: people expressed open enthusiasm, returned repeatedly, and in several cases explicitly stated a desire for a permanent offer of this kind. The removal of parking spaces to accommodate the Raum_Wagen expected to generate resistance in a car-oriented neighbourhood but instead produced largely positive reactions.

At the same time, a consistent gap emerged between expressed interest and actual participation. Many residents who regularly passed by, and who indicated interest in conversation, did not attend events or complete the survey. The visitor profile was also uneven: children and adults were well represented, but teenagers were largely absent, suggesting the programme mix did not adequately address the needs and preferences of adolescent residents.

Lessons learned:

- The gap between passive appreciation and active participation is a structural challenge for living lab interventions in residential neighbourhoods and should be anticipated in the programme and evaluation design. Passive presence (e.g. people walking by, observing, exchanging brief greetings) has value and contributes to the social atmosphere, but it should not be conflated with active engagement.
- A locally embedded caretaker like a resident of the neighbourhood is necessary if the project team does not live in the area. Someone able to water plants, check on the space, open up in an emergency, and simply be present as a familiar face. A local caretaker embodies the transition from an externally managed intervention to a community-owned one. Actively identifying and empowering such a person is both a practical necessity and a deeper expression of the Living Lab principle.
- The removal of parking spaces to accommodate the Raum_Wagen (and the bike sharing station) went largely unnoticed or unbothered by residents. Parking pressure in the area is moderate during the day, though residents reported it increases in the evenings. This suggests that in peripheral contexts where parking demand is not uniformly high, temporary reallocation of parking space for public use may be less contentious than assume.
- Diversifying the programme to include offers specifically designed for adolescents.
- Creating conditions for residents to use the space for their own purposes, not only to attend programmed events, requires active invitation. This co-creation dimension is central to the Living Lab approach and should be more explicitly designed for.

4. Technical and Operational Feasibility

Operationally, the Raum_Wagen itself performed well. Its physical design, which is open, shaded and flexibly furnished, created a quality of public space that the surrounding neighbourhood largely lacks, and this was consistently and spontaneously remarked upon by visitors.

Practical challenges centred on internal organisation and logistics. Clarity about what equipment was available on the wagon, what needed to be sourced externally, and who was responsible for which tasks was insufficient, particularly in the early phase. At least two staff members on site during opening hours was necessary but not always achieved. The absence of a weather fallback space limited programming flexibility on poor-weather days, and basic infrastructure needs (e.g. power supply, water access, toilet facilities for visitors) required improvised solutions that consumed time and attention.

Lessons learned:

- An internal onboarding workshop for the project team before the intervention begins — covering roles, logistics, equipment, communication protocols, and engagement goals — would significantly reduce early-phase confusion and is a straightforwardly transferable recommendation for any living lab of comparable format.
- A weekly internal coordination meeting throughout the intervention period is essential for maintaining programme quality, adapting to emerging challenges, and ensuring consistent communication between team members and external contributors.
- A dedicated weather fallback space should be identified and secured before the intervention begins. Weather dependency is a structural vulnerability for outdoor pop-up interventions and can be largely mitigated with modest advance planning.
- The physical quality and spatial generosity of the Raum_Wagen format is a genuine asset and worth the investment. A well-designed, comfortable, and openly accessible space can foster community-building, independent of the programmed activities.

Conclusion and outlook

The intervention at Wiener Flur generated resonance beyond the project itself. The district municipality responded positively to the Raum_Wagen initiative, recognising its value for the neighbourhood. However, given current budgetary constraints at city and district level, a direct repetition in the same format is not currently feasible. The local Agenda Liesing has since taken up the core ideas of the Raum_Wagen and is now operating a bicycle-based mobile programme in the district, bringing activities and community engagement directly into neighbourhood spaces.

In June 2026, the team will make a one-day comeback at Wiener Flur, bringing back the most successful programme formats from the original intervention like open-air cinema, free bicycle repair, the circus workshop, the Grätzlcafé, and a cargo bike activation around the 15-minute city concept. The event is designed to reconnect with residents who engaged during the summer 2025 intervention, reactivate the community relationships built then, and keep the idea of a permanent neighbourhood offer alive.

9. CROSS-CUTTING LESSONS LEARNED

This section synthesises findings across the six Living Labs and identifies patterns that are consistent across cities and relevant for transferability.

9.1. External conditions shape outcomes

Across all cases, implementation depended more on external conditions than on the design of the interventions. Regulatory constraints limited the deployment of certain services, while reliance on private operators introduced uncertainty due to changing priorities. Administrative procedures and approval timelines frequently exceeded the duration of the project, and access to public space further restricted implementation options.

These factors explain many of the deviations from the original plans, including delays, scaling down, or cancellation of activities. The results therefore reflect not only the performance of the solutions but also the constraints of the institutional and market context in which they were implemented.

Implication: Living Labs need to be designed with these constraints in mind from the outset. This includes realistic timelines, early alignment with authorities, and alternative implementation pathways where conditions change.

9.2. Demand, sparsity, and financial viability are structurally linked

A consistent finding across the Living Labs is that suburban and low-density areas impose structural limits on both demand and financial viability. Lower population density reduces the potential user base, while longer distances and dispersed activity patterns decrease service efficiency. In several cases, there was a clear gap between expected uptake and actual use, even where services were available and functional.

These demand constraints directly affect financial sustainability. Low utilisation levels make it difficult to cover operational costs, particularly for shared mobility services. As a result, several pilots relied on subsidies or could not be maintained beyond the test phase.

At the same time, some interventions showed that targeted approaches, strong local anchoring, and continuous engagement can partially mitigate these effects.

Implication: In suburban contexts, demand and viability must be addressed together. Service design should consider spatial structure, focus on clearly defined user groups, and include realistic assumptions about long-term funding needs.

9.3. Dependence on key actors creates implementation risk

The Living Labs often depended on a small number of key providers, including single mobility operators or specific local partners. This limited diversity increased implementation risk, as any change in commitment directly affected the pilot. In several cases, reduced engagement or withdrawal of a key actor led to delays, restructuring, or cancellation.

This pattern highlights a structural weakness in setups that rely on individual providers without sufficient redundancy or flexibility.

Implication: Increasing the diversity of providers and partners reduces vulnerability. Where possible, implementation should avoid single-provider dependency, formalise commitments early, and ensure that critical functions can be taken over if needed.

9.4. Simplicity and usability determine actual use

Across almost all Living Labs, usability emerged as a key factor influencing user uptake. Services that required complex registration, multiple interfaces, or high user effort consistently underperformed. In contrast, simpler and more integrated solutions were more likely to be used, even when implemented at limited scale.

This indicates that user experience is often more decisive than technical features in determining whether services are adopted.

Implication: Simplicity and ease of access should be treated as core design requirements. Reducing user effort is essential for achieving uptake, particularly in contexts where demand is already limited.

9.5. Transferability requires adaptation

The comparison across Living Labs shows that similar interventions led to different outcomes in different cities. Governance structures, market conditions, spatial characteristics, and institutional capacity all influenced implementation and performance. This confirms that results are not directly transferable without considering context.

At the same time, consistent patterns across the cases indicate that lessons can be transferred if these contextual factors are explicitly addressed.

Implication: Transferability should be based on adaptation rather than replication. Cities need to assess local conditions early and adjust both the design and implementation model accordingly. This is particularly relevant for applying the 15-minute city concept in suburban areas, where spatial structure, service availability, and user behaviour create additional constraints.

10. CONCLUSIONS

The implementation of the DREAMS Living Labs demonstrates both the opportunities and the challenges associated with applying the 15-minute city concept in diverse European urban environments, particularly in suburban and peripheral areas where accessibility patterns, travel behaviour, and service provision differ significantly from those found in dense city centres. Across the six Living Labs, the project tested a wide range of mobility, accessibility, public-space, and governance interventions under real-world conditions, generating practical evidence on what can realistically be implemented, adapted, and sustained in different local contexts.

The primary added value of the Living Labs lies in their ability to move beyond theoretical planning and explore the realities of implementation. Through experimentation in Brussels, Budapest, Munich/Geretsried, Utrecht, Paris, and Vienna, the project identified structural barriers that influence the deployment and scaling of innovative mobility solutions, tested adaptation strategies when original plans proved infeasible, and generated transferable lessons for cities facing comparable challenges. In doing so, the Living Labs provided valuable insights not only into the performance of specific interventions but also into the broader institutional, regulatory, and market conditions that shape urban transformation processes. Three overarching conclusions emerge from the implementation experience.

1. Implementation is strongly constrained by external factors

A key finding across all Living Labs is that implementation outcomes are often determined less by the quality of the intervention itself than by factors outside the direct control of project partners. Regulatory frameworks, procurement procedures, operator availability, political cycles, permitting requirements, and public-space allocation processes all had a significant influence on project delivery. Several Living Labs experienced delays, changes in scope, or the cancellation of planned activities due to market developments, changing stakeholder priorities, or institutional constraints.

These experiences underline the importance of flexibility as a core characteristic of Living Lab approaches. Successful implementation required continuous adaptation, stakeholder negotiation, and the ability to respond to unforeseen circumstances. Consequently, future Living Labs should place greater emphasis on risk management, contingency planning, and the establishment of alternative implementation pathways from the outset.

2. Technical feasibility does not guarantee uptake or long-term viability

Many interventions proved technically and operationally feasible, demonstrating that innovative mobility services and accessibility solutions can be implemented in a variety of contexts. However, feasibility alone did not ensure user adoption, behavioural change, or financial sustainability. Across several Living Labs, utilisation levels remained lower than anticipated despite the availability of functioning services and infrastructure.

This challenge was particularly evident in suburban and peripheral areas, where population densities are lower, travel demand is more dispersed, and mobility patterns are frequently shaped by long-established car-oriented behaviours. Under such conditions, shared mobility services often struggle to achieve sufficient utilisation rates to become financially viable without continued public support or strong local partnerships. The findings suggest that technological innovation must be accompanied by targeted communication, community engagement, affordability measures, and locally adapted service design if meaningful uptake is to be achieved.

3. Planning, governance, and institutional learnings are important outcomes

While several Living Labs successfully delivered operational pilots, some of the most significant outcomes emerged in the form of planning frameworks, governance innovations, and institutional learning processes. In a number of cases, external constraints prevented full-scale implementation, yet the work still resulted in approved concepts, detailed designs, strategic roadmaps, new business models, and stronger integration of sustainable mobility objectives into local policies and planning processes.

These outcomes demonstrate that the value of Living Labs extends beyond the direct testing of services and infrastructure. By bringing together diverse stakeholders, facilitating experimentation, and supporting collaborative decision-making, Living Labs contribute to capacity building and organisational learning. They help local authorities and stakeholders better understand implementation barriers, evaluate alternative approaches, and develop more informed strategies for future action.

Overall, the Living Labs confirm that the transition towards more equitable and accessible 15-minute neighbourhoods is a complex and context-dependent process. Rather than providing universally applicable solutions, the project highlights the importance of locally adapted approaches that respond to specific spatial, social, economic, and institutional conditions. The lessons generated through the Living Labs provide a valuable foundation for future initiatives seeking to improve accessibility, strengthen sustainable mobility options, and reduce car dependency in suburban and peripheral urban areas across Europe

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