ELABORATOR

Deliverable 3.1

Feasibility and action plans for the ELABORATOR interventions – version I

CIVITAS Sustainable and smart mobility for all

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Project Executive Summary

ELABORATOR stands for 'The European Living Lab on designing sustainable urban mobility towards climate neutral cities. The EU-funded project uses a holistic approach for planning, designing, implementing and deploying specific innovations and interventions towards safe, inclusive and sustainable urban mobility. These interventions consist of smart enforcement tools, space redesign and dynamic allocation, shared services, and integration of active and green modes of transportation.

They will be specifically co-designed and co-created with identified "vulnerable to exclusion" user groups, local authorities and relevant stakeholders. The interventions will be demonstrated in a number of cities across Europe, starting with six Lighthouse cities and six Follower cities with three principal aims:

I. to collect, assess and analyse user needs and requirements towards a safe and inclusive mobility and climate neutral cities;
II. to collect and share rich information sets made of real data, traces from dedicated toolkits, users' and stakeholders' opinions among the cities, so as to increase the take up of the innovations via a twinning approach;
III. to generate detailed guidelines, policies, future roadmap and built capacity for service providers, planning authorities and urban designers for the optimum integration of such inclusive and safe mobility interventions into Sustainable Urban Mobility Plans (SUMPs).

ELABORATOR Lighthouse cities

- Milan (Italy)
- Copenhagen (Denmark)
- Helsinki (Finland)
- Issy-les-Moulineaux (France)
- Zaragoza (Spain)
- Trikala (Greece)

ELABORATOR Follower cities

- Lund (Sweden)
- Liberec (Czech Republic)
- Velenje (Slovenia)
- Split (Croatia)
- Krusevac (Serbia)
- Ioannina (Greece)

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Project Partners

Organisation	Country	Abbreviation
INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS	EL	**ICCS**
POLIS AISBL	EL	**POLIS**
EVROPSKI INSTITUT ZA OCENJEVANJE CEST	SI	**EURORAP**
MULTICRITERI-MCRIT AIE	ES	**MCRIT**
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INTERNATIONAL ROAD ASSESSMENT PROGRAMME	UK	**IRAP**
UNIVERSITY OF BRISTOL	UK	**UBRIS**

List of abbreviations and acronyms

Acronym	Meaning
KPI	Key Performance Indicator
WP	Work Package

Contents

1 Introduction

This document presents the initial version of the Feasibility and Action Plans (Deliverable D3.1) for the ELABORATOR project, an EU Research and Innovation initiative focused on enhancing urban mobility in 12 pre-selected cities. The key objective of this deliverable is to assess the feasibility of proposed interventions and to help develop exhaustive action plans tailored to the unique needs and contexts of each city.

This version focuses specifically on a template that can be adapted for all participating cities. The results of this are added as annexes in a city-wise fashion.

The ELABORATOR project aims to innovate urban mobility, making it more inclusive, efficient, sustainable, safer and responsive to the needs of the population. This deliverable is an integral part of this effort, laying the foundation for the practical implementation of methodologies and solutions identified by the project.

The introduction of new mobility solutions is driven by the principle of sustainable development and aligns with the broader objectives of the ELABORATOR project. This involves addressing current challenges while anticipating future needs and trends in urban mobility.

The conclusion of this deliverable will offer insights into the next steps and recommendations for all 12 cities, setting the stage for the final version of the feasibility and action plans in the ELABORATOR project.

1.1 Overview of the deliverable

This document outlines the initial analysis of the current state of the mobility problems areas in the city as a foundation for the need-gap analysis and defining the Feasibility and Action plan for enhancing urban mobility in 6 lighthouse cities and 6 follower cities, as part of the ELABORATOR project. In preparing this document, a thorough analysis of the urban mobility landscape in their respective living labs is being conducted. This includes reviewing existing infrastructure, policies, and user needs, and engaging with key stakeholders to ensure a comprehensive understanding of the local context.

This document is structured to first provide an overview of the current state of urban mobility in participant cities, which will be followed by a detailed feasibility analysis of proposed interventions in D3.2, while engaging with the diversely identified stakeholders; ensuring they are practical, effective, and aligned with the city's overall urban development strategy.

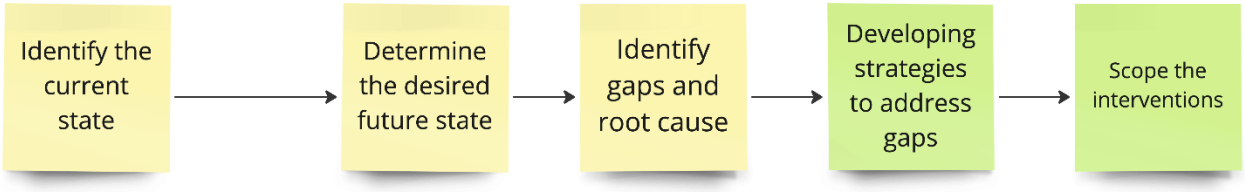
1.2 Purpose and Scope

The purpose of this deliverable is to conclude the Discovery Phase of the project, showcasing the details of the Living Labs, various stakeholders identified, problems to tackle and any actions taken in the past to improve the conditions. It also aims to assess the feasibility of proposed urban mobility interventions in participant cities and to outline actionable steps for their implementation. The scope includes aspects such as mobility problems and challenges of the city, interventions planned to tackle them, Living Lab details, stakeholder engagement, past interventions dealing with similar challenges, and more.

1.3 Need Gap Analysis Approach

The core objective of this task is to initiate the discovery phase of the project, assist with identification of all relevant stakeholders, capture details of the Living Labs, and then help cities run a Need Gap Analysis cycle to identify the gaps between the current state and desired future state. So that they can implement appropriate strategies to fill the gaps identified and scope the relevance of their proposed interventions altogether.

For this purpose, we have structured our approach on the Need Gap Analysis Cycle. As a result, the deliverable "D3.1 - Feasibility and Action Plans (initial)" focuses on the discovery of the current state, meaning identification of stakeholders and actors, various vulnerable to exclusion citizen groups, characteristics of the living lab, relevant past actions and associated data.



This deliverable will be used as a base to initiate various participatory activities with all the identified stakeholders and actors in the upcoming months, and document their needs and expectations from the proposed interventions. The cities will also evaluate whether their proposed interventions are satisfying the KPIs of the ELABORATOR project (mandatory and desirable). This will help the cities conclude the necessary need-gap analysis of their proposals and consolidate their intervention definitions, resulting in documenting the follow-up deliverable "D3.2 - Final Feasibility and Action Plans." The results of the Need Gap Analysis, the resulting strategies for solidifying interventions and their scope, and the finalized interventions; all will be part of D3.2.

1.4 Links to the other tasks and Work Packages

Task T3.1 "Discovery of stakeholders, needs, practices, and data," is crucial in the initial phase of understanding and cataloging the specific requirements and expectations of each participating city about urban mobility interventions. Here's how T3.1 and its deliverables D3.1 and D3.2 interconnect with other tasks and deliverables in the project:

1.4.1 Support from WP2

Deliverables **D2.1 (Inclusion Plan)** and **D2.2 (Evaluation Plan)** from WP2 provide structured approaches to ensure that all interventions are inclusive and effectively evaluated. These plans ensure that the needs of diverse stakeholders, including vulnerable groups, are considered in T3.1, influencing the refinement of action plans in D3.2 to be inclusive and comprehensive.

D2.3 (ELABORATOR Co-creation Playbook) includes guidelines for engaging stakeholders and co-creating solutions. This provides the necessary infrastructure for engaging stakeholders in T3.1, ensuring that their inputs are effectively incorporated into the feasibility and action plans developed in D3.2.

For T3.1, the methodologies and tools developed in WP2 provide a clear pathway for identifying, engaging, and maintaining dialogue with stakeholders, which is critical for developing the action plans outlined in D3.2.

1.4.2 Influence on Subsequent Tasks in WP3

Task T3.2 (ELABORATOR Twinning) and **Task T3.3 (Interventions Definition and Solutions' Twinning)** utilize the outputs from T3.1 (D3.1 and D3.2) which provide detailed local context and preliminary action plans. These are essential for matching Lighthouse cities with Follower cities effectively, ensuring that the twinning process is grounded in a solid understanding of each city's specific challenges and intervention strategies. **Task T3.4 (Multi-stakeholder Governance in LLs)** expects to uncover key factors and mechanisms influencing the governance of LLs by interviewing main stakeholders from Lighthouse and Follower cities as identified in the discovery phase of T3.1.

1.4.3 Feeding into WP4 (Mobility Intervention Data Sharing and Cross-Benchmarking)

The data collected (and that which could not be collected as well) and analyzed in T3.1, especially that related to stakeholder needs and local mobility problems, feeds into **WP4**, where it supports the establishment of a mobility intervention data framework (D4.1). This work package aims to enable data sharing and benchmarking across cities and can use the local data inputs from T3.1 to enrich the overall data pool.

1.4.4 Contributions to WP5 and WP6 (Implementation Phase)

The feasibility and action plans developed in D3.1 and D3.2 are crucial for **WP5** and **WP6**, which handle the implementation of solutions in Lighthouse and Follower cities, respectively. The groundwork laid in T3.1 informs the selection and customization of interventions that are demonstrated and evaluated in these cities.

1.4.5 Supporting WP7 (Evaluation and Impact Assessment)

Finally, the insights from T3.1 help in **WP7**, which focuses on evaluating the social, environmental, and safety impacts of the implemented interventions. The initial analysis conducted in T3.1 provides a baseline from which changes can be measured and assessed, contributing to the comprehensive impact assessment reports in D7.1.

Below this, is the template designed for the cities to document information related to their current state.

2 Template for the city's D3.1 deliverable

Discovering the current state

Mobility problems

Use this table to share the mobility problems that your city has been facing and you want to solve (or address to an extent) in ELABORATOR. You can start from a high level, and then go deeper as you move to the next columns.

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects

Proposed intervention #		

Proposed interventions

The cards below are supposed to capture the clear, concise details about the interventions that you have planned so far for the ELABORATOR project. This doesn't need to have multiple page details, but all the key info to easily understand the solution immediately.

Intervention name	
Brief description	
Infrastructure targeted	
Services to be used	
Monitoring needed	
Who is expected to benefit	
What Stakeholders are affected	

Living Lab

Living Lab characteristics

Provide a comprehensive overview of the current state, challenges, and opportunities within the identified area(s).

Maps of the area(s) where interventions are planned	
Current mobility aspects of this area	
Infrastructure and services existing	

Safety aspects of the area	
SUMP guidelines for this area	

Stakeholders and Actors

This section helps cities systematically identify, categorize, and understand the role of different stakeholders, particularly emphasizing the inclusion of end-users and groups traditionally marginalized or neglected/disregarded in urban mobility planning, such as Vulnerable Road Users (VRUs) and those Vulnerable to Exclusion.

This is crucial in ensuring that your city's mobility interventions are inclusive, impactful, and well-supported across the board. Engaging with a broad spectrum of stakeholders; not just during the planning and implementation phases but throughout the project lifecycle; enhances the relevance, sustainability, and acceptance of mobility solutions.

A dedicated tool to map your stakeholders is in Annex I.

Stakeholder or actor	Proposed intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Offices in municipalities				
Private companies in mobility and urban development				
Businesses				
NGOs (non-gov) and NPOs (non-profit)				
Local communities				

Experts				
General citizens' segments				
Vulnerable road users				
Vulnerable to exclusion users				
Migrants' segments				
(Your category)				

Past interventions to tackle the problems

Brief overview

Here, we need to document and analyze previous mobility interventions, highlighting successes, challenges, and lessons learned. By offering a concise yet comprehensive account of past projects, cities can pave the way for more informed, strategic, and effective future interventions.

Previous intervention #
About the intervention

Within the context of ELABORATOR, an intervention refers to a specific action or set of actions (WHAT) aimed at advancing inclusive, safe, affordable, and sustainable urban mobility solutions (WHY). These interventions involve collaborative efforts of multiple stakeholders to address needs, challenges, and opportunities within the urban mobility sector (HOW). Accordingly, interventions may encompass, among others, the creation of new infrastructure, the development of policies, or the introduction of innovative technologies.

Please categorize your past interventions based on these criteria:

- How relevant is it to what you are trying to achieve in ELABORATOR?
- How much data (good, systematic data with clear insights) do you have for an intervention? More data means high priority.
- How recent of an intervention is it? 5 - 7 years max.

Problem	Specific challenge	Intervention has been done during the past 5 years

Detailed analysis of each of the past interventions

This part provides a crucial historical context for your city's mobility efforts, serving as a reflective lens through which current and future plans can be evaluated and informed.

Here, we aim to facilitate a critical assessment of past mobility interventions, including their objectives, implementation processes, outcomes, and any unforeseen impacts or challenges that arose.

Aim for clarity and conciseness, providing enough detail to convey the essence and impact of each intervention.

Intervention name	
Problem	
Specific challenge	

Data collected		
Year of implementation		
What was the context of this challenge?		
Why was this intervention selected for tackling this specific challenge?		
What were the KPIs to be achieved by this intervention?		
How was the intervention implemented?		
What technologies were used for this intervention?		
What tools and methods were used for this intervention?		
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**

How was the data collected?	
What technology was used?	
How was it monitored?	
Who did apply this?	
Who was participating in it?	

Who owns the collected data?	

Results	
What results have been achieved? Describe with concrete metrics.	
What lessons have been learned?	
What recommendations can be given for future interventions tackling this specific challenge?	

End of Template

Annex I: Stakeholders mapping guideline for cities

What is it

A stakeholder is a person, group or organization with a vested interest, or stake, in the decision-making and activities of a project / Living Lab / intervention.

Stakeholders mapping is an exercise which helps you to define the network of such people who are directly or indirectly affected by the mobility problem, and those who can help you to solve this problem and participate in the intervention.

Results

The result of this exercise will be a list of stakeholders grouped by their types with an overview of their participation scale.

Value and how to use the results

The understanding of the stakeholders' map will help you to plan further analysis of their needs and expectations from the interventions and organize a collaboration within the Living Lab in the most efficient way.

How to do it

When doing a stakeholders' map, the usual steps are the following:

Step 1. Identify who all the involved stakeholders are, or which stakeholders might be involved in the interventions.

For the Elaborator project we suggest looking at these specific groups:

- Offices in municipalities
- Private companies in mobility and urban development
- Businesses
- NGOs and non-profit organizations
- Local communities
- Experts
- General citizens' segments
- Vulnerable road users
- Vulnerable to exclusion users
- Migrants' segments
- (And other segments relevant to the challenge or intervention)

Providers or CBOs	City of New York	Queensbridge Residents
Queens Library	Community Programs & Development	Tenant Association president
Queens Library at LIC	NYCHA Communications	Tenant Association sub-committee
Mayor's Office of Operations	NYCHA Resident Engagement	Jacob A. Riis Neighborhood Settlement's senior group
Community Mediation Services	DCA OFE	Community Mediation Services youth group
Citi Community Development	NYCHA REES	
Urban Upbound	NYCHA Research & Analytics	
OATS	NYCHA Public Private Partnerships	
Jacob A. Riis Neighborhood Settlement	NYCHA IT	
	Digital Vans Mgmt.	
	Digital Vans	
	Mayor's Action Plan	
	Community Affairs Unit	

Example: List of stakeholders to talk to about broadband service in Queensbridge houses[1]

Step 2. Define the participation scale of each of the stakeholders in the intervention.

Participation scale will show who is supposed to take part in the co-creation process and at which level.

For example:

- Inform
- Consult
- Involve
- Collaborate
- Empower

This can vary along the different stages of co-creation (co-design, co-production, and co-evaluation). For example, a specific stakeholder may be collaborating during the co-design phase but being just informed during the co-production and co-evaluation phases.

Next steps

After all the stakeholders are mapped, you can plan analysis to define their needs and expectations regarding challenges and proposed interventions.

References

1. Servdes.org - Stakeholder map https://www.servdes.org/wp/wp-content/uploads/2018/07/48.pdf (11.04.2024)

[1] https://www.servdes.org/wp/wp-content/uploads/2018/07/48.pdf

2. Organizing Engagement – Spectrum of public participation https://organizingengagement.org/models/spectrum-of-public-participation/ (11.04.2024)

Annex II: Copenhagen Feasibility and Action Plan

Discovering the current state

Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
Climate change / GHG emissions. Poor air quality. Too many cars in motion and parked. Low traffic safety.	Allocation of street scape area is not aligned with public space uses. Low bikeability in narrow streets.	Climate change. Road Deaths increase and safety issues. Urbanization. Air quality standards are still breached. Obesity and Population ageing

Proposed interventions

Proposed intervention #1	
Intervention name	Reduction of Car Parking in Streets
Brief description	Today there are approx. 820 regular parking spaces in the streets. Of these, 600 will be relocated. There will then be approx. 220 parking spaces left, which everyone can use. They are especially located on the edge of the medieval city. The current 138 business spaces for cars on yellow plates will be expanded by 12 extras, so that in future there will be 150 business spaces. In the time period 17.00-07.00 and at the weekend, everyone can use these places.

	The current 68 spaces for visitors with a disabled parking card will be expanded by 7 extras, so that in future there will be 75 spaces. The current 15 disabled places reserved with a number plate will be pre-reserved.
Infrastructure targeted	Parking spaces.
Services to be used	Not applicable.
Monitoring needed	Modal share, car traffic, air quality.
Who is expected to benefit	Citizens except for car users.
What Stakeholders are affected	Car users.

Proposed intervention #2	
Intervention name	Enhanced bicycle parking
Brief description	There will be 1,080 new bicycle racks on the freed-up street areas, including 80 specially designed racks for cargo bikes. The historic sites and squares are released for approx. 500 bicycle racks, which will be moved out into the adjacent streets.
Infrastructure targeted	Bike parking, squares, streets.
Services	Not applicable.
Monitoring needed	Public space usage.
Who is expected to benefit	Citizens, public space users, local businesses.
What Stakeholders are affected	Cyclists who use these bicycle parking areas.

Proposed intervention #3	
Intervention name	Vehicle traffic flow adjustments
Brief description	Reverse one-way direction of Gåsegade (minor street).

	Rådhusstræde will be unidirectional for cars from Nybrogade to Brolæggerstræde (major street).
Infrastructure targeted	Streets, signposts.
Services	Not applicable.
Monitoring needed	Modal share, car traffic, OpenTrafficCam.
Who is expected to benefit	Cyclists, pedestrians.
What Stakeholders are affected	Car users.

Living Lab

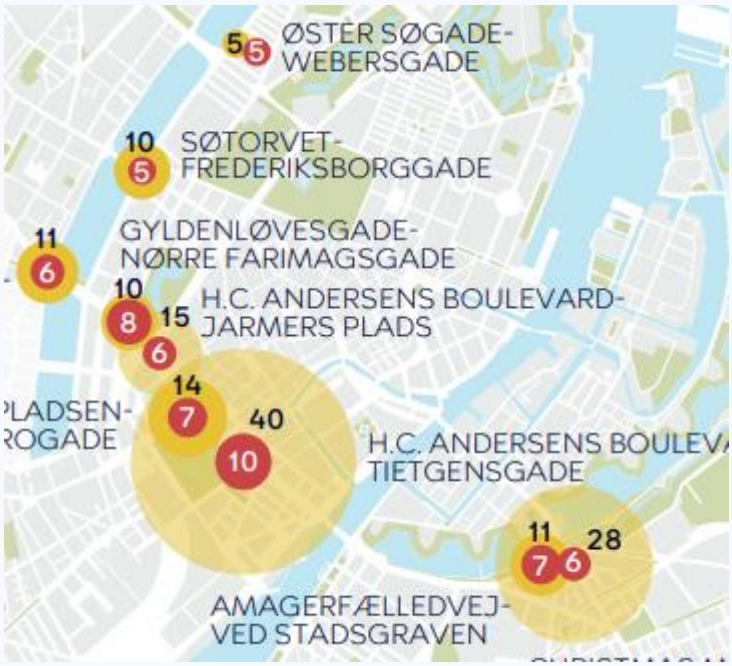
Characteristics

Maps of the area(s) where interventions are planned	Medieval City (Green area)

Current mobility aspects of this area	High share of pedestrians and cyclists, pedestrian areas, limited space and narrow streets.
Infrastructure and services existing	Bicycle infrastructure, public transport infrastructure, road infrastructure, pedestrian streets, bike-sharing services.
Safety aspects of the area	Traffic Safety In general, for Copenhagen not solely the Medieval City: Political Zero-vision: No serious injuries or killed road users 2025. Today: 81% of all serious injuries and killed in traffic are VRU. 63% of accidents with a serious injured cyclist involves motorized vehicles.

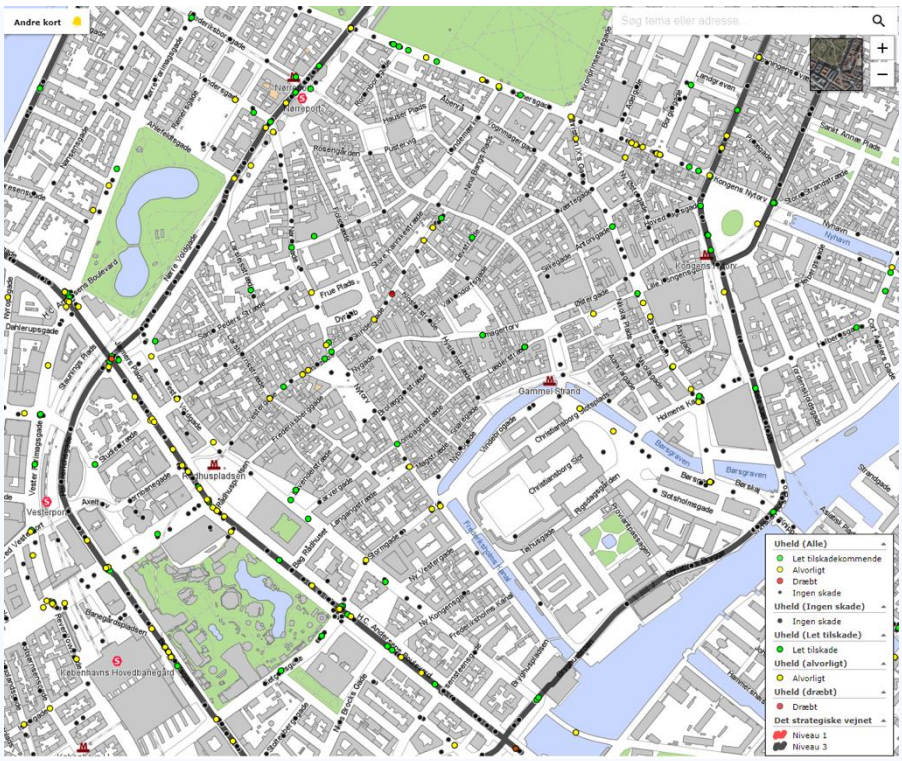
Accidents registred by the police:	2019	2020	2021		
dead	7	7	7		

Serious injuries	195	156	168		
Less serous injuries	187	130	121		
Person injuries		277	285		
Material damage		1.233	1318		



The medieval city center does not have the most police registered accidents in Copenhagen – but the area around it has. Picture above (yellow is number of accidents and red is number of injuries between 2017-2021). If and when accidents registered from hospitals will be available, the picture for the medieval city center can easily change.

Picture below: Injuries 2018-2022 in the Medieval City and surrounding areas (Red=killed, Yellow= serious injured, Green= light injured)

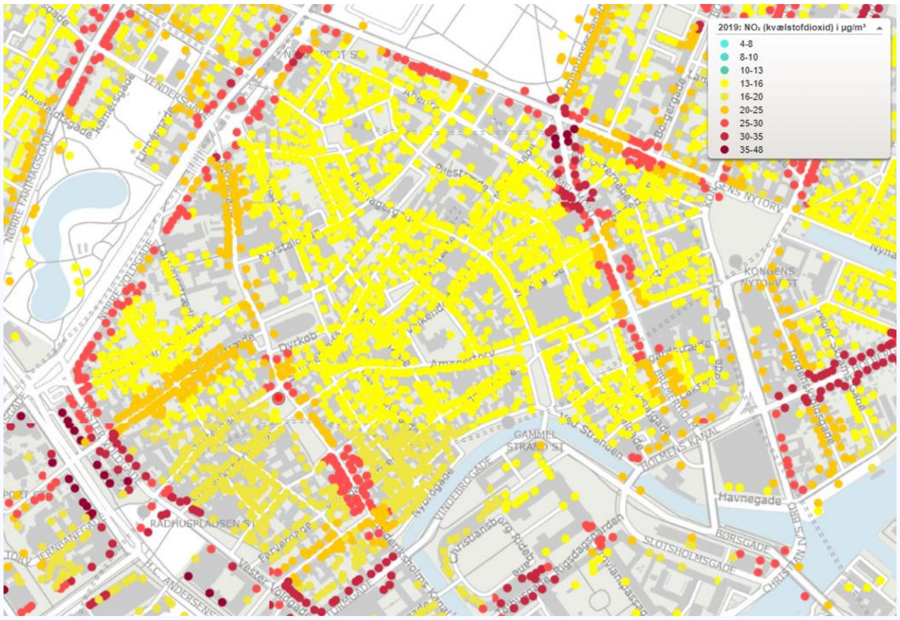


Air pollution

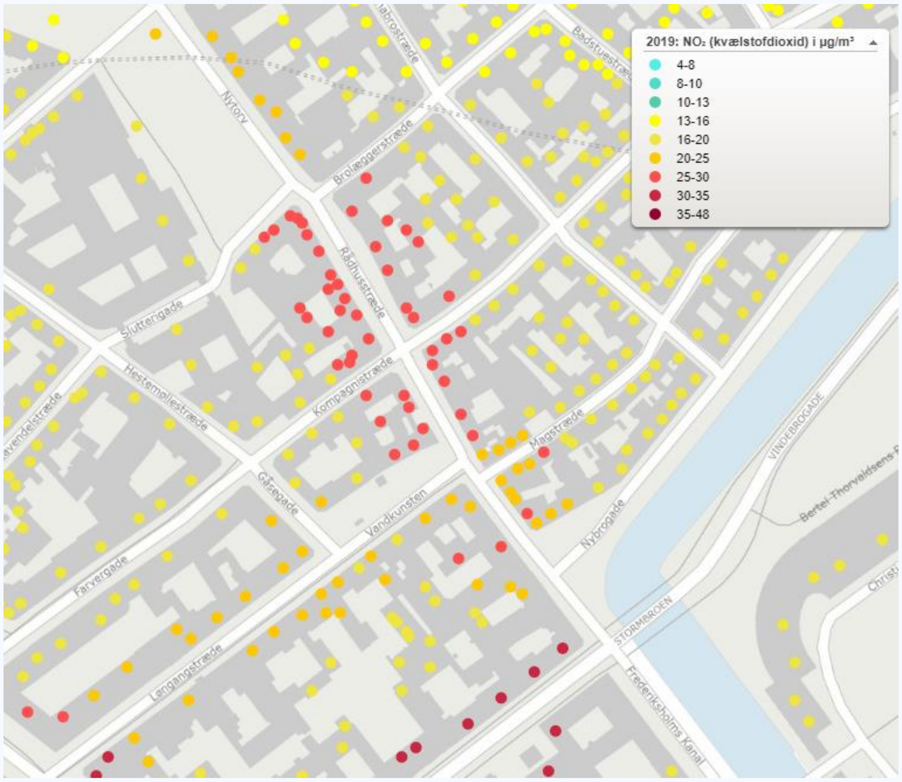
Each year an estimated 400 deaths are due to air pollution related causes (in the City of Copenhagen). Only part of that is from traffic, the rest from other sources.

The picture illustrates the concentration of NOx in the Medieval City 2019. Source: National Centre for Environment and Energy

Medieval City:



Area around the square 'Vandkunsten'



SUMP guidelines for this area	https://urbandevelopmentcph.kk.dk/mobility-cycling/mobility-how-we-get-around-in-the-city Copenhagen has a goal, that 75 % of all trips in the city should be on foot, on a bike, and with public transport. We have three focus areas for reaching that goal: Fewer using cars, better metro and better traffic management.

	It has been politically decided that the Medieval City shall have limited car traffic and instead more room for pedestrians and bicyclists.

Stakeholders and actors

Stakeholder or actor	Intervention (No 1-3)	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Offices in municipalities				
Technical and Environment Administration. Parks and Urban space unit	1	Consult Involve	All main stakeholder groups' behaviors, perceptions, needs and recommendations must be included in the co-creation activities.	That the goals of the interventions are full-filled, and that the majority of citizens/stakeholders are satisfied with outcomes/impacts.
Technical and Environment Administration. Analysis unit	1, 2, 3	Involve Collaborate	All main stakeholder groups' behaviors, perceptions, needs and recommendations must be included in the co-creation activities.	That the goals of the interventions are full-filled, and that the majority of citizens/stakeholders are satisfied with outcomes/impacts.
Technical and Environment Administration. Roads and Cycling unit	1,2,3	Involve Collaborate Consult	All main stakeholder groups' behaviors, perceptions, needs and recommendations must be included in the co-creation activities.	That the goals of the interventions are full-filled, and that the majority of citizens/stakeholders are satisfied with outcomes/impacts.
Technical and Environment Administration. Mobility unit	1, 2, 3	Consult (Involve)	All main stakeholder groups' behaviors, perceptions, needs and recommendations must be included in the co-creation activities.	That the goals of the interventions are full-filled, and that the majority of citizens/stakeholders are satisfied with outcomes/impacts.

Technical and Environment Administration. Communication unit	1,2,3	Consult	The vocabulary applied in co-creation activities for describing the interventions goals and their expected impacts is aligned with the discourse of the politicians.	That the goals of the interventions are full-filled, and that the majority of citizens/stakeholders are satisfied with outcomes/impacts.
Technical and Environment Administration. Parking unit	1	Consult Involve	All main stakeholder groups' behaviors, perceptions, needs and recommendations must be included in the co-creation activities.	That the goals of the interventions are full-filled, and that the majority of citizens/stakeholders are satisfied with outcomes/impacts.
Businesses				
Business owners (restaurants, shops, industries)	1, 2, 3	Consult Involve	Ensure good accessibility (physical) for customers and employees	Same as needs
Employees in business (daily work in the area)	1, 2, 3	Consult Involve	Ensure good accessibility to place of work	Same as needs
Persons skilled in handicraft (plumbers, carpenters, etc.) and other workers with occasional work duties in the area	1	Consult Involve	Ensure good parking possibilities near places of work	Same as needs
NGOs (non-gov) and NPOs (non-profit)				
Copenhagen Elderly Council (Københavns Ældreråd)	1, 2, 3	Consult Involve	Ensure good accessibility (physical) and high security for elderly car users, cyclists, pedestrians and urban life participants.	Same as needs
Danish Chamber of Commerce (Dansk Erhverv)	1, 2, 3	Consult Involve	Ensure good accessibility (physical) for customers, employees and business owners	Same as needs

Copenhagen Youth Council (Ungeråd KBH)	1, 2, 3	Consult Involve	Ensure good accessibility and high security for youth pedestrians, cyclists and urban life participants.	Same as needs
KBH Commerce and Culture - KCC (Handelstandsforening)	1, 2, 3	Consult Involve	Ensure good accessibility (physical) for customers, employees and business owners	Same as needs
Danish Cyclists' Federation - DFC (Cyklistforbundet)	1, 2, 3	Consult Involve	Ensure good accessibility, parking facilities and high security for cyclists	Same as needs
Danish Pedestrians' Federation (Dansk Fodgængerforbund)	1, 2, 3	Consult Involve	Ensure good accessibility and high security for pedestrians	Same as needs
Project Outside (Projekt Udenfor)	2, 3	Consult Involve	Ensure good accessibility (physical and social), and high security for homeless people	Same as needs
Local communities				
Local Committee of Inner City (Indre By lokaludvalg)	1, 2, 3	Consult Involve	Ensure the right balance between noise & peace; commercial & non-commercial; green & urban; cars & soft road users	Same as needs
General citizens' segments				
Elderly	1, 2, 3	Consult Involve	Ensure good accessibility (physical) and high security for elderly car users, cyclists and pedestrians and as urban life participants.	Same as needs
Youth	1, 2, 3	Consult Involve	Ensure good accessibility and high security for youth pedestrians and cyclists	Same as needs

			and as urban life participants.	
Residents	1, 2, 3	Consult Involve	Ensure the right balance between noise & peace; commercial & non-commercial; green & urban; cars & soft road users	Same as needs
Business owners	1, 2, 3	Consult Involve	Ensure good accessibility (physical) for customers and employees	Same as needs
Employees	1, 2, 3	Consult Involve	Ensure good accessibility to place of work	Same as needs
Car users	1, 2	Consult Involve	Ensure good parking possibilities	Same as needs
Cyclists	1, 2, 3	Consult Involve	Ensure good accessibility, parking facilities and high security for cyclists	Same as needs
Pedestrians	1, 2, 3	Consult Involve	Ensure good accessibility (physical), and high security for pedestrians	Same as needs
Vulnerable road users				
Children in day care (1-5 ys)	2, 3	Consult Involve Empower	Ensure good accessibility (physical), and high security for toddlers	Same as needs
School children (6-12 ys)	2, 3	Consult Involve Empower	Ensure good accessibility (physical), and high security for children	Same as needs
Disabled persons	1, 2, 3	Consult Involve Empower	Ensure good accessibility (physical and social), and high security for disabled people	Same as needs
Caretakers with strollers	2, 3	Consult Involve	Ensure good accessibility (physical), and high	Same as needs

		Empower	security for pedestrians with strollers	
Vulnerable to exclusion users				
Homeless people	2, 3	Consult Involve Empower	Ensure good accessibility (physical and social), and high security for homeless people	Same as needs

Previous interventions to tackle the problems

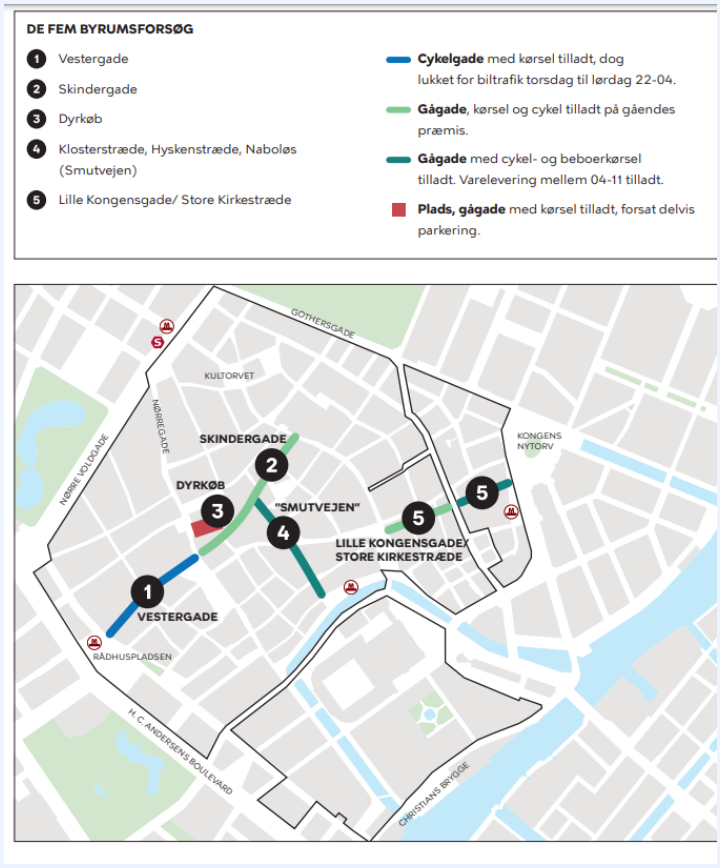
Past interventions brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years
Lack of space for pedestrians and bikes in the Medieval city.	Need for an attractive city center with better space for pedestrians, cyclists and exciting urban space.	2021 'Experiments of Urban Space'

Detailed analysis of each of the past interventions

Previous intervention #1	
About the intervention	
Intervention name	Experiments of Urban Space in Medieval City
Problem	Lack of space for pedestrians and bikes in the Medieval city
Specific challenge	Need of an attractive city center with better space for pedestrians, cyclists and exciting urban space
Year of implementation	June 2021 – September 2021

What was the context of this challenge?	Less car traffic and more attractive urban space with better space for pedestrians and cyclists
Why was this intervention selected for tackling this specific challenge?	To gain an idea in a small scale of the effect of traffic changes in the Medieval City
What were the KPIs to be achieved by this intervention?	Gain knowledge for recommendations for future interventions by experiments. The aim of the experiments was: - To create debate and conversations about the medieval city and the potential of urban space. – To examine which urban life, everyday life, movements and behavior that may occur when the car park is removed. – To test the recommendations of the citizens' assembly No. 1, 2, 3, 4, 7, 8 and 9 in practice and highlight different opportunities. – To make visible that the various stakeholders (residents, Copenhageners, businesses, cultural life etc.) have different needs, wishes and interests. – To examine the right balance in the concrete urban spaces between, for example, noise and peace, commercial and non-commercial, green and urban, cars and soft road users. - To explore opportunities for cooperation with residents, business and cultural institutions. – To gain experience for use in the urban space and traffic plan, both in the concrete urban space trial as well as the medieval city as a whole
How was the intervention implemented?	The design of the urban space experiment consists of four elements that together should result in less car traffic and more attractive urban space with better space for pedestrians and cyclists in it temporary period during which the experiment took place. – Signs (traffic boards) with restrictions on car traffic to different extents – Decoration of the road surface with wide, white stripes – Trees in white big bags placed on top of the pavement in the disused parking lots – Traditional, green Copenhagen benches on some of the disused parking lots Areas of the urban space experiments, five areas (Vestergade, Skindergade, Dyrkøb, Klostergade, Lille Kongensgade) Blue: Cycle street with driving allowed, however closed to car traffic Thursday to Saturday 22-04 Light green: Pedestrian Street, driving and cycling allowed on foot premise

Stakeholders involved in the intervention		
	Dark green: Pedestrian Street with bicycle and resident driving permitted. Delivery of goods between 04-11 allowed Red: Square, pedestrian street with driving permitted partially paved parking 
What technologies were used for this intervention?	Perhaps none.	
What tools and methods were used for this intervention?	Signs, decorations, trees, benches.	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**

Data collected		
Follow-up group with representatives from a wide range of interest organizations	Participate	Meetings, workshops, evaluation
The Kulturkvarter, Inner City local committee, actors in Lille Kongensgade, Hyskenstræde etc.	Participate	Meetings
Four design studios: BIG, Gehl, Lendager and Tredje Natur	Present experimental ideas.	Prior to the urban space experiments, the administration held a small parallel assignment and an idea seminar.
Panel of external and municipal experts: • Rane Willerslev from the National Museum, museum director. • Mads Nørgaard from Mads Nørgaard Copenhagen, owner/founder. • Nanna Hjortenberg from CHART, director. • Svante Lindeburg from Golden Days, director. • Klaus Bondam from Danish Cycle Association, director/CEO. • Bent Lohmann from Indre By Local Committee, chairman. • Marianne Spang Bech, Miljøpunkt Indre By & Christianshavn, center manager. • Camilla van Deur, city architect.	To comment on the experimental ideas from the four design studios	Prior to the urban space experiments, the administration held a small parallel assignment and an idea seminar
How was the data collected?	1. Urban life records: Movement counts, and residence counts. 2. Questionnaire. 3. Spot interviews. 4. Urban space conversations. 5. Observations from night hosts and the police. 6. Event permits.	

Results	
	7. Noise measurements. 8. Mailbox for inquiries.
What technology was used?	Residence and movement counts have been completed by use of Gehl's app: Public Life App. The questionnaire was sent out as a link to all residents or business in the Medieval City and the link was shared on social media, including that of Copenhagen Municipality profile on Facebook and LinkedIn. Noise measure equipment from one address.
How was it monitored?	Various ways, depending on the specific method.
Who did apply this?	City of Copenhagen and subcontractors.
Who was participating in it?	Citizens, a follow-up group with representatives from a wide range of interesting organizations, trade.
Who owns the collected data?	City of Copenhagen.
What results have been achieved? Describe with concreate metrics.	Parking All in all, the experimental streets have been temporarily closed down 66 parking spaces. Less car traffic There has been an experience of less car traffic. Cyclists and pedestrians The majority have experienced that it was easier to bike or walk around in the streets included in the experiment. Better urban space The majority experienced that the experiments created better urban spaces than before. The overall aim of the urban space experiment was to investigate how urban space is experienced and consumed when the car traffic is limited, and the car park replaced with trees or benches.
What lessons have been learned?	**Parking** According to the questionnaire survey, 32% (out of a total of 2,570 respondents) have experienced that it has become more difficult to find car parking in the area below the experiment (26% agree and 6% partially agree), while the majority (52%) answer 'don't know' to the question. Just like in the other streets in the city, there was also illegal parking in the experimental streets. The municipal parking wardens issued fines (charges) for parking offenses on all the trial streets during the trial

	period. However, data from the parking attendants suggests that there has been less illegal parking in the trial streets. Despite the temporary closure of 66 parking spaces, there has thus not been an increase in illegal parking. **Less Car Traffic** The combination of signage, disused parking spaces, stripes on the carriageway as well as trees and benches in the parking spaces have resulted in a clear tendency for less to be experienced car traffic. Two out of three have experienced less car traffic. The questionnaire shows that a majority of 66% of the respondents have experienced less car traffic - fully (40%) or partially (26%) on the test sections overall. There are 9% which has experienced neither more nor less car traffic, while 22 % have experienced more car traffic (in whole or in part). The experience of less car traffic is supported by the fact that the movement counts generally show relatively few cars number of cyclists and pedestrians at the times when the counts have been completed. However, it is not possible to conclude how much less car traffic there has been during the trial period, as it has not been possible to make accurate pre-measurements due to the situation with Corona restrictions leading up to the experiment. **Cyclists and pedestrians** According to the questionnaire survey, 53% of 2,570 respondents felt that it was easier to get around as cyclists on the test routes, agree (32%) or partially agree (21%). At the same time, 19% experienced that it was not easier to get around as a cyclist, agree (14%) or partially agree (5%). Just like the pedestrians have a majority of the cyclists experienced that it has become a better experience cycling through the streets in the experiment **Better Urban Space** According to the questionnaire survey, the majority experienced that the experiments created better urban spaces than before. 77% of those in a total of 2,550 respondents experienced (completely or partly 62% and 15%) that the experiments have created better urban spaces than before.
What recommendations can be given for future interventions tackling this specific challenge?	Involvement of local stakeholders is important.

Annex III: Helsinki Feasibility and Action Plan

Discovering the current state

Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
Increase in road deaths as well as serious injuries and safety issues The number of deaths and injuries among pedestrians and cyclists - although not high compared to many other European cities - remains a cause for concern for Helsinki. They are, along with children and youth, the main target groups for Helsinki's Traffic Safety Development Program 2022-2026 The importance of serious injuries is rising, especially in urban areas (since deaths have become less common due to e.g. lower speeds and improved infra) and their societal costs are substantial. When examined by age group, young people are highlighted in the accident review. Relative to the population, there are clearly more 15-24 year old victims of accidents than other age groups. Although relative to the population, their number of victims has decreased since the beginning of the 2010s, the situation is still weaker than other age groups. A challenge is the lack of data on where exactly accidents are happening. Not all serious injuries come to the	The number of deaths and injuries among pedestrians and cyclists remains a cause for concern for Helsinki. Almost 70 % of crashes with pedestrians happen on a pedestrian crossing. The Helsinki pilot will focus on shared mobility. The challenge is the lack of data on where exactly all accidents are happening and a lack of data on injuries related to the use of e-scooters and single bicycle accidents. The areas of interventions have been defined in spring 2024. Intervention related to e-scooter parking will be tested in a central area that is not part of the parking restriction area. Real-time warning system in an intersection will be tested along the newly opened (2023) light rail line where there have been some challenges with safety. A considerable number of e-scooters are in use in Helsinki and the City of Helsinki has done a lot to reduce the negative effects. There is a notable lack of data on injuries related to the use of e-scooters. To influence traffic safety measures of the city we need to find new ways to collect, analyse and visualise data on single crashes (and near-misses).	Climate change. Traffic accidents including vulnerable road users. Urbanization. Air quality standards are still breached. Obesity and Population ageing. Covid-19 pandemic mind shift.

attention of the police, in which case data is also missing from the city. There also is a notable lack of data on injuries related to the use of e-scooters (mostly single vehicle accidents or accidents with minor injuries).	The city decided to restrict the parking of shared-use electric scooters in the city centre and limit the number of e-scooters in 2023. We need to specify what we can influence in the Helsinki pilot. Piloted solutions can be technical (AI and computer vision to analyse how these vehicles are ridden and parked) and soft measures like engaging users to report accidents. We need to collect more and better data about safety perceptions by vulnerable user groups. We can build on DVECE and Urbanage projects learnings and learn from ongoing CommuniCity project pilot #4 and EIT UM pilot (2024). The City of Helsinki wants to make more use of the benefits of AI technology to improve traffic safety. We expect to cover 3-5 intersections (based on accident data) and one intersection will be selected to implement an intelligent active real-time warning system. The aim is to test camera-based observations to understand the interactions involving VRUs. Helsinki pilots underlying challenges: Traffic safety of VRUs – road deaths and – notably – serious injuries. Lack of data on single accidents and/or accidents with e-scooters and shared bikes.	
Population ageing According to forecasts, the number of people over 65 in Helsinki will increase by more than 60,000 by 2050. Traffic and the environment from the perspective of the ageing population's well-being, ability to function and independent living at home safely play an important role. Currently, only less	Young people highlighted in the accident review.	

than 10 percent of the elderly exercise enough for their health. Also, due to the COVID pandemic a large group of elderly residents stopped moving by public transport altogether and the return to pre-covid times should be encouraged and facilitated. The ageing population will increase the need for more versatile transport needs as the role of commuter traffic grows smaller. Facilitating the individual mobility of the elderly decreases costs and enables them to live at home longer, but also places more demands on the local environment and accessibility of transport.		
Climate change/CO2 emissions The City of Helsinki approved the Carbon-Neutral Helsinki 2035 action programme in 2018. In 2021, the target was updated to become carbon-neutral already by 2030. This programme presents 143 measures targeted at different sectors, through which the City of Helsinki will attempt to become carbon-neutral. The City will attempt to cut traffic emissions by 69%, compared to the level of 2005. Climate change has multifaceted effects, some of which are due to actual changes in Helsinki's climate, but more significantly due to policies and measures used to mitigate or adapt to climate change, such as striving towards low emissions of transport.	Helsinki can improve conditions for e.g. pedestrians, cyclists and e-scooter users and thereby facilitate the acceleration of zero-emission mobility.	
Urbanisation increase Urbanisation will lead to the city's growth, which is a very important goal to the City of Helsinki. However, this growth cannot lead to increasing car traffic, not only due to already limited street space but also – and especially –		

due to the other detrimental effects of cars.		

Proposed interventions

Proposed intervention #1	
Intervention name	Testing new solutions for collecting, visualizing and analyzing accident-related information
Brief description	Improving traffic safety in the city requires knowledge of the risks associated with traffic. In addition to accident analysis, the feeling of insecurity, near misses and risk situations that are not covered by accident statistics should be taken into account. In the Helsinki Living Lab, we are responding to this by testing new technology, new ways of data collection and visualization. The project pays special attention to accidents involving shared-use bicycles and electric scooters. Elements of the intervention: Citizen survey - Extensive map-based traffic safety survey for citizens of Helsinki. The survey will be done in September 2024 and in cooperation with the City of Helsinki. Proof of concept - Aim is to test a new technological solution for collecting data, that typically remains outside official statistics. The solution will be purchased as an external service. The solution can be e.g. platform based or safety tech case study.
Target	Collect and analyze data on single accidents and other accidents that typically remain outside official accident statistics (e.g. with shared e-scooters).
Infrastructure targeted	Identify the areas where large numbers of risks (unsafe acts, near misses, accidents) are present in Helsinki.
Services	Testing new technology, data collection and visualization. Using sensors, innovative AI tools and user engagement activities.
Monitoring needed	In the first phase of intervention, perceptions on safety are collected from the citizens. The second phase will build on the results of the first phase when a new technological solution is tested (proof of concept). Data from safety risks are being collected.
Who is expected to benefit	Traffic planners / urban planners (City of Helsinki, Urban Environment Division) / City officials. Support the City of Helsinki planning traffic safety measures and instructions issued to light electric vehicle service providers.

	E-scooter operators. E-scooter riders. VRUs (pedestrians, cyclists, people with mobility impairments).
What Stakeholders are affected	City of Helsinki - Urban Environment Division - Traffic and street planning. Business Helsinki. Mobility Lab (Forum Virium Helsinki & Business Helsinki). E-scooter operators. Technology providers.

Proposed intervention #2	
Intervention name	Optimizing parking locations for shared e-scooters
Brief description	The operation of e-scooters has undergone changes in recent years and will continue to do so. In 2022 there were around 18 000 e-scooters in the city center and this was too much. In 2023, the city of Helsinki decided to restrict the parking of shared-use e-scooters in the city center and in 2024, the restricted area widens. Elements of the intervention: Background study in eastern city center - Background study on parking of e-scooters done through observation, videoing and interviews. E-scooter parking: testing new geofencing solution - Optimizing parking locations for shared e-scooters, testing new technologies. The solution will be purchased as an external service.
Target	Optimize dynamic space relocation of parking locations for shared mobility services (e-scooters, free-floating shared bikes) virtually and physically
Infrastructure targeted	E-scooter parking locations in eastern city center. This will be done mostly virtually (geofencing), some parking locations maybe physically.
Services	New ways to make use of real-time traffic data (e.g. in the area where the restriction area on electric vehicles will be extended in summer 2024). Technological solutions: geofencing solutions, real-time monitoring.
Monitoring needed	Public space usage will be monitored. Background study will be done, and parking of shared e-scooters will be monitored in 2024 and 2025.
Who is expected to benefit	Decisionmakers, planners City of Helsinki - Urban Environment Division - Traffic and street planning

What Stakeholders are affected	City of Helsinki - Urban Environment Division - Traffic and street planning E-scooter operators E-scooter riders Cyclists Pedestrians People with mobility impairments

Proposed intervention #3	
Intervention name	Improving safety at intersections
Brief description	One of the priorities of the Helsinki Traffic Safety Program 2022-2026 is to improve the safety of junctions and intersections. Most road accidents involving pedestrians, cyclists or children, happen at junctions and intersections. Jokeri Light Rail started to operate in October 2023. It was built between Itäkeskus in Helsinki and Keilaniemi in Espoo (source). The length of the line is 25 km.  The recently opened Jokeri light rail line, in neighborhoods which did not have a tramline before, has raised safety concerns among VRUs. Especially at light rail crossings in which the light rail has the right-of-way. New kinds of crossing points have appeared along the light rail line route. The crossing points differ from regular pedestrian crossings. Pedestrians and cyclists must always give way to approaching light rail vehicles. Elements of the intervention: Baseline data collection on selected intersections / pedestrian crossing point - VTT will conduct conflict study and this requires baseline camera-based data collection. In addition, state-of-the art software will be utilised to analyse the conflicts. FVH will

	conduct other data collection (e.g. Lidar). Helsinki Living Lab will utilize AI and digital twins to improve traffic safety. Real-time warning system (for one intersection / pedestrian crossings in Viikki district) - Leasing of equipment for VRU tracking and conflict detection (at least 6 months). Data collection for the evaluation of intersections - Deploying innovative online applications, AI, Digital Twins using Lidar, 3D models for the evaluation of intersections.
Target	Improving intersection safety can improve VRU's traffic safety and sense of security.
Infrastructure targeted	One intersection with an intelligent active real time warning system (with cameras, warning sounds & lights).
Services	Build intervention on existing services / devices. Observations at accident-prone intersections to understand the interactions involving VRUs.
Monitoring needed	Camera / Drone / LiDAR-based data collection and machine vision-based tools to gather information on intersections before, during and after the intervention. Collection and analysis of information on used safety margins, frequency of conflicts, severity, etc. Build intervention on existing services / devices - but improve or train existing tools.
Who is expected to benefit	VRUs: Cyclists, pedestrians, people with mobility impairments, elderly, children.
What stakeholders are affected	City of Helsinki - Urban Environment Division - Traffic and street planning. Mobility Lab Helsinki (Lidar-based data) Citizens of Viikki district, students in nearby campus Cyclists Pedestrians

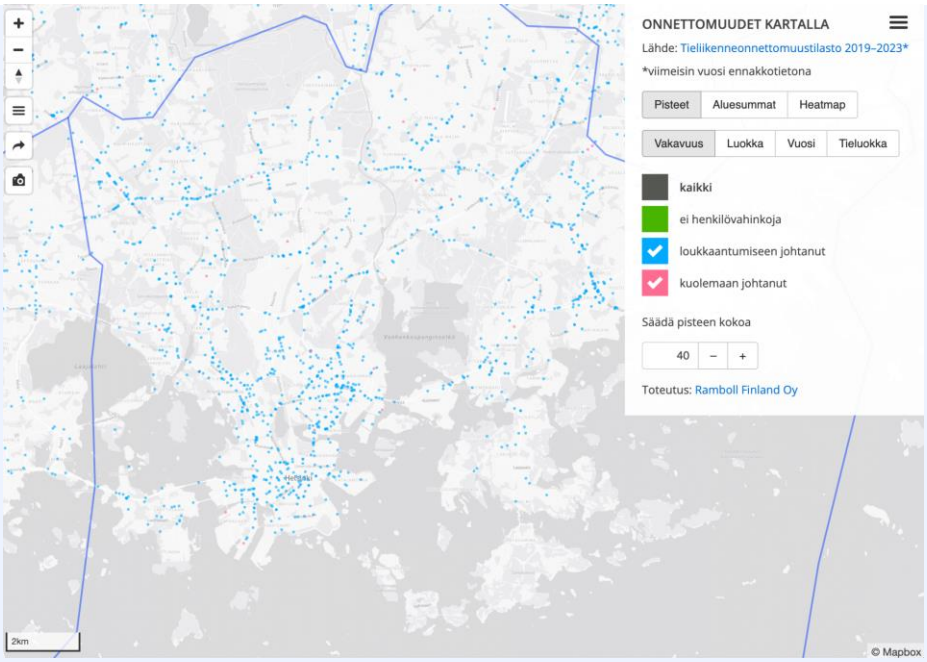
Proposed intervention #4 (will be integrated into other interventions)	
Intervention name	Collect ideas on mobility and perceived traffic safety by engaging people with mobility impairments, pedestrians, cyclists, children and elderly.
Brief description	Interventions link to the traffic safety measure of the city: The specific target groups of the Helsinki Traffic Safety Program are pedestrians and cyclists and by age group children and young people. Enabling these target groups to move safely will contribute to road safety for all. Perceived traffic safety affects mobility and immobility is a major social problem. Identifying traffic safety needs can influence traffic safety measures.

Target	Better traffic safety (perceived and measured) for vulnerable road users in selected areas.
Infrastructure targeted	Accident and conflict risk locations
Services	Safety improvements in selected areas with VRUs Areas and interventions planned with close cooperation with the affected vulnerable groups. Various participatory methods will be utilised to ensure the inclusiveness of most vulnerable users.
Monitoring needed	Perceived safety and actual safety before and after the intervention.
Who is expected to benefit	Vulnerable road users.
What Stakeholders are affected	City of Helsinki - Urban Environment Division - Traffic and street planning. VRUs (cyclists, pedestrians, people with mobility impairments) Local neighborhood communities.

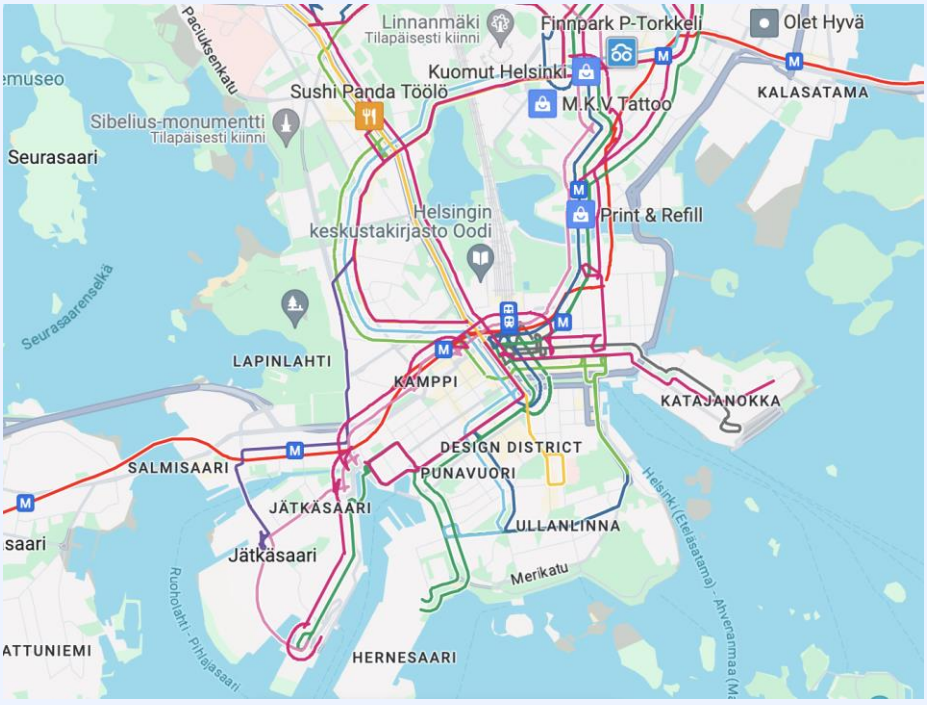
Living Lab

Characteristics

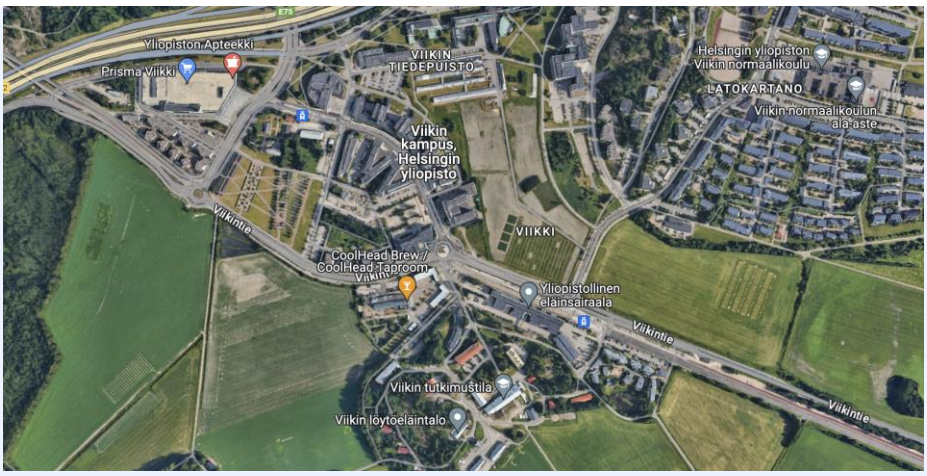
Maps of the area(s) where interventions are planned	Helsinki has an established Mobility Living Lab in Jätkäsaari district. Due to ongoing construction projects in Jätkäsaari area, ELABORATOR living lab activities will be demonstrated where the need for interventions has been identified as greatest, both in terms of safety and data. This means that interventions are not targeted at just one specific area. ELABORATOR Helsinki Living Lab is focusing particularly on digital solutions to improve traffic safety. Areas of intervention: Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information. Planned area of intervention covers the Helsinki region:



Intervention 2: Optimizing parking locations for shared e-scooters. Planned area of intervention covers the area of City Centre / Eastern City Centre:



Intervention 3: Improving safety at intersections. Planned area of intervention covers the area of Viikki district / Intersection Viikintie-Koetilantie:



Current mobility aspects of this area	City Centre (intervention 1 related to accidents and near misses) City of Helsinki has done a lot to improve e-scooters safety (source). The changes made so far include: - The speed limit for electric scooters is limited to 20 km/h during the day. - The night-time speed limit on weekdays is 15 km/h (from 00:00 to 05:00). - Rental electric scooters are completely unavailable during weekend nights (nights of Fri–Sat and Sat–Sun) from (midnight to 05:00). There are reduced speed limit zones of 10 km/h in the busy pedestrian areas of the city centre, e.g. in Keskuskatu and Aleksanterinkatu. The city has agreed on no-parking zones outside the city centre. Users are required to take a photo of the electric scooter at the end of their journey to show that the scooter has been parked correctly.

The operators monitor the photos and fine those users who, on the basis of the photos, have parked their scooter incorrectly.

Parking control has started to carry out local and storage removals for scooters that cause a significant nuisance.

The city has been working in cooperation with the police – in an effort to stop people from riding on the pavement, speeding and carrying more than one person.

The police will impose a €40 traffic penalty fee for offences such as riding on the pavement, carrying another person and riding into the wrong direction on a one-way street.

E-scooter releated traffic accidents 2021-2022 (source)

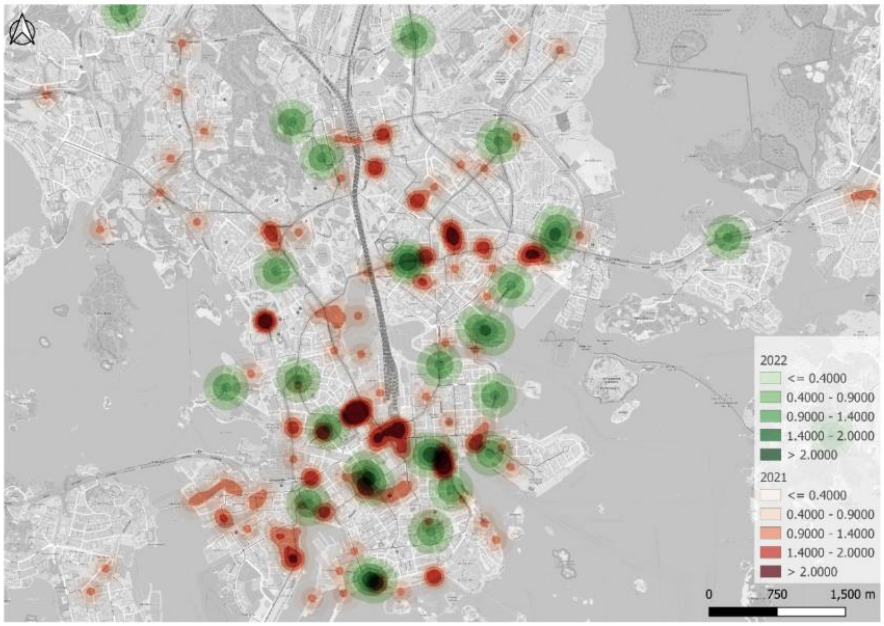


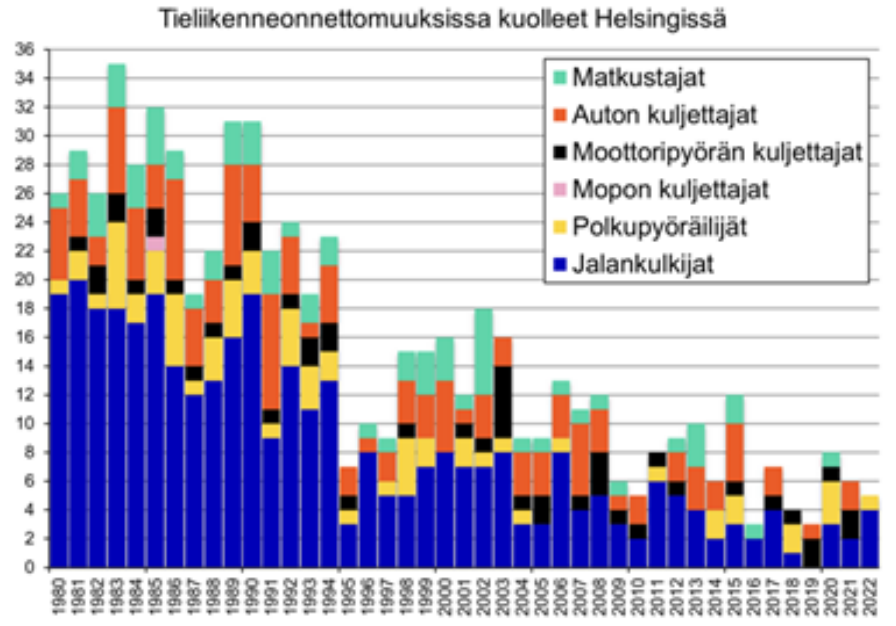
Figure 53: Focused heatmap of e-scooter crashes arrived by ambulance for Jan-Aug in 2021 and 2022, non-weighted

Eastern City centre (intervention 2 related to parking of the shared use e-scooters)

The city has decided to restrict the parking of shared-use electric scooters in the city centre in 2023 by using road signs with text. Parking was restricted in the city centre

	and in the southern part of the inner city, see map below. (source)  For the 2024 summer season a similar regulated parking solution will be sought for all Helsinki metro and train stations. (source) The Jokeri light rail line in Viikki The Jokeri light rail line started to operate in October 2023 (source). Jokeri Light Rail will, for the most part, operate in its own lane with traffic signal priority, and its trams can be operated in two directions. There will be approximately two million residents and over a million jobs in the capital region in 2050. The goal is to steer the increased mobility resulting from the population growth into sustainable modes of transport: public transport, walking and cycling New housing and workplaces are planned to be built along the Jokeri Light Rail line Pedestrians, cyclists and motorists should always use care and caution when walking, riding or driving near tracks. The braking distance of the heavy carriages is long (source). Light rail crossing point differs from a regular pedestrian crossing and unlike in normal crossing points, pedestrians are always obliged to give way to the trams. There is a normal pedestrian crossing on both sides of the tracks.
Infrastructure and services existing	Segregated and raised bike lanes, traffic signals with separate signal heads for cyclists and other road users on the bike lane, traffic management system capable to manage all road user traffic, multi-modal traffic model. Services existing: Helsinki Digital Twin Jätkäsaari District Smart Mobility Living Lab Smart infrastructure (e.g. Smart Junction)

	Helsinki Region Infoshare (open data service) Urban Open Platform / Helsinki Urban Data Space Various surveys concerning mobility behaviour, experienced challenges in transport infra etc.
Safety aspects of the area	Helsinki has a lot of traffic safety data available. In addition to hard data, the city is also already using map-based surveys for perceived safety challenges, to identify potential traffic issues. These have been done with Maptionary and some released as open data: Helsinki traffic safety survey 2020 (link) Survey on electric scooter safety 2022 - Kysely sähköpotkulautojen turvallisuudesta 2022 (only in Finnish, internal link) Electric scooters observational study 2023 - Sähköpotkulautojen havainnointitutkimus 2023 (only in Finnish, internal link) The numbers below are official numbers from the police. Unreported accidents (e.g. single accidents by cyclists or e-scooter users that do not involve the police) are not included. There has been a decreasing trend for years, with the year 2019 exceptionally having not a single traffic-related death of cyclists or pedestrians reported. (source) Serious injuries per mode of transport:   For pedestrians, 64% of the accidents (resulting in death or physical injury) are with a car and 11% with a bus. For cyclists, 71% of the accidents (resulting in death or physical injury) are with a car and 6% with a minivan.

	Traffic casualties in Helsinki between 1969-2022 per mode of transport:  Injuries and deaths aggregated, on average per year: 2011-2015: 518 per year 2016-2020: 428 per year Almost 70% of accidents with pedestrians happen on a pedestrian crossing (source) New publication on traffic accidents in Helsinki 2020-2022 (link)
SUMP guidelines for this area	The main three goals of the Helsinki's Road Safety Development Program 2022-2026 can be summarised as the following: The number of victims is halved by 2030: accidents resulting in personal injury among children and young people, pedestrians and cyclists are reduced by 50% Moving in traffic is perceived as safe: the perceived safety of children and young people, pedestrians and cyclists is improved. Up-to-date situational picture: Helsinki has an up-to-date and comprehensive traffic safety plan snapshot. Other relevant policy plans are: the Bicycle Action Plan 2020–2025. the Carbon-neutral Helsinki 2035 Action Plan. the Helsinki Intelligent Transport System Development Program 2030. Helsinki Region land use, housing and traffic plan (MAL 2023). Helsinki walking promotion program 2022.

Stakeholders and actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Offices in municipalities				
City of Helsinki, Urban Environment Division, Traffic system planning, Road safety / E-scooters	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections	- co-design - collaborate - inform - consult - involve	The City of Helsinki is in the ELABORATOR project Helsinki Living Labs associated partner, data provider and use-case developer. We have had several meetings starting from autumn 2023. Intervention 1: The City of Helsinki has provided us information from previous surveys on road safety and electric scooters, as well as examples of accident reporting platforms that already exist in the world. The City of Helsinki proposed to carry out a "Traffic safety survey for citizens of Helsinki" in cooperation with the ELABORATOR Helsinki LL. Intervention 2: The City of Helsinki has already done a lot of work to minimize the harmful effects of shared-use electric scooters. We have tried to find out what our ELABORATOR project could contribute to dynamic space relocation of parking locations for	Intervention 1: Helsinki LL decided to work with the city to implement a map-based "Traffic safety survey for citizens of Helsinki", whose results will be useful for the city's traffic safety work as well as for the ELABORATOR project. An accessible version of the questionnaire for the visually impaired will also be developed. At a later stage, it is still to be determined whether the actual intervention would be e.g. a platform-based application on risks & traffic safety or a technology-based safety data collection on electric scooters. Intervention 2: The city indicated that the area of interest for the ELABORATOR project would be the eastern part of the city centre, where no previous study has been done. Based on this, we started to plan a background study during the summer of 2024. In February 2024, the city identified the need for more specific parking for

			shared-use electric scooters. Intervention 3: Intelligent active real-time warning systems at intersections are not widely used in Helsinki. For the city, it would be interesting if the effectiveness and reliability of the warning system could be monitored. A conflict study related to a real-time warning system sounds good from the city's point of view.	shared-use electric scooters and this could be a useful intervention for both the ELABORATOR project and the city. Current GPS-based geofencing technology has some bias in accuracy. Intervention 3: The city identified two intersection options for us as possible test sites. Both of these intersections are located along the new light rail line, where, unlike before, pedestrians and cyclists will have to dodge the approaching light rail.
City of Helsinki, Business Helsinki	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections	- inform - consult - collaborate	Business Helsinki provides a wide range of services catering to the city's business, innovation, tourism and employment services. Business Helsinki has been involved in commenting on the Helsinki pilot plan. In autumn 2023, we had a more detailed discussion with Business Helsinki on the interventions we intend to implement in Helsinki. Needs: It is worth going through what has already been piloted in the past and building our interventions on those experiences.	Business Helsinki recommends us to build on the experience of previous pilots. The 2023 summer E-scooter tech study with Drover and Vianova should provide inspiration to us on how to manage e-scooter rider behaviour. The lidars installed by FVH should also be used for this project. It would also be good if the project could look at how accessibility can be improved at traffic hubs.

Mobility Lab Helsinki	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections	- consult - involve - collaborate	Mobility Lab Helsinki – the city's testbed for smart mobility – is coordinated by the City of Helsinki, Economic Development and done in collaboration with Forum Virium Helsinki, the city's innovation company. Opportunities to collaborate and receive technical support and assistance in the design and implementation of interventions.	Opportunities to collaborate and receive technical support and assistance in the design and implementation of interventions. Collaboration - we have common interests to improve safety along the new Jokeri light rail line.
Private companies in mobility and urban development				
E-scooter operators Voi, Bird, Bolt, Lime, Ryde, Tier	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information Intervention 2: Optimizing	- involve - collaborate NOT YET CONTACTED!	Voi Technology has previously participated in Helsinki e-scooter safety tech study in 2023. Prior knowledge: Geofencing is cheaper and effective solution to problems such as speeds and e-scooter parking than physical solutions (e.g. traffic signs).	

	parking locations for shared e-scooters			
Vianova (e-Scooter data platform)	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information Intervention 2: Optimizing parking locations for shared e-scooters	- involve - collaborate NOT YET CONTACTED!	Vianova has previously participated in Helsinki e-scooter safety tech study in 2023. And its platform has been used in monitoring e-scooters in Helsinki.	
Drover AI (machine vision and AI for e-scooters)	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information Intervention 2: Optimizing parking locations for	- involve - collaborate NOT YET CONTACTED!	Drover AI has previously participated in Helsinki e-scooter safety tech study in 2023.	

	shared e-scooters			
Piloting companies	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information Intervention 2: Optimizing parking locations for shared e-scooters	- involve - collaborate NOT YET CONTACTED!		
Businesses				
Metropolitan Area Transport Ltd (Kaupunkiliikenne Oy)	Intervention 3: Improving safety at intersections	- inform - involve - consult - collaborate NOT YET CONTACTED!	Responsible for the infrastructure of Helsinki's public transport. Important stakeholder in relation to light rail lines safety solutions.	
NGOs (non-gov) and NPOs (non-profit)				
Helsinki Region Cyclist Hepo (Helsingin pyöräilijät ry)	Intervention 3: Improving safety at intersections	- involve - inform	Relevant stakeholder in relation to light rail lines safety solutions.	

		NOT YET CONTACTED!		
Helsinki and Uusimaa Visually Impaired As-so-ci-a-tion (Helsingin ja Uudenmaan Näkövammaiset HUN ry)	Intervention 3: Improving safety at intersections	- involve - inform NOT YET CONTACTED!	Relevant stakeholder in relation to light rail lines safety solutions.	
The Finnish Association of People with Physical Disabilities (Invalidiliiton Esteettömyyskeskus ESKE)	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections	- involve - inform NOT YET CONTACTED!	Driving and parking on sidewalks are the main problems related to e-scooters. It is important to contribute to the safety of micro-mobility services.	
The Finnish Road Safety Council (Liikenneturva)	Intervention 1: Testing new solutions for collecting, visualizing and analyzing	- involve -inform NOT YET CONTACTED!	Relevant stakeholder in relation to light rail lines safety solutions and e-scooter related solutions. Will continue to campaign this spring for the rules on	

	accident-related information Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections		e-scooters, driving intoxication and driving on sidewalks.	
Helsingin liikenneturvallisuus-yhdistys ry		NOT YET CONTACTED!		
Local communities				
Facebook neighbourhood groups in Viikki and Kallio	Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections	- inform - involve NOT YET CONTACTED!		
Trial Troops (FVH)	Intervention 1: Testing new solutions for	- inform - involve		

	collecting, visualizing and analyzing accident-related information	NOT YET CONTACTED!		
Experts				
City of Helsinki's accessibility specialist	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information	- consult - inform - collaborate NOT YET CONTACTED!		
General citizens' segments				
Pedestrians	Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections	- consult - inform - collaborate NOT YET CONTACTED!	Accessibility and safety issues	
Cyclists	Intervention 2: Optimizing parking locations for	- consult - inform - collaborate	Accessibility and safety issues	

	shared e-scooters Intervention 3: Improving safety at intersections	NOT YET CONTACTED!		
Residents	Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections	- consult - inform - collaborate NOT YET CONTACTED!	Accessibility and safety issues	
Elderly	Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections	- consult - inform - collaborate NOT YET CONTACTED!	Accessibility and safety issues	
Youth	Intervention 2: Optimizing parking locations for shared e-scooters Intervention 3: Improving safety at intersections	- consult - inform - collaborate NOT YET CONTACTED!	Accessibility and safety issues	
Vulnerable road users				
Elderly ->	Intervention 1: Testing	- involve	The Elderly Citizens Council is a body that	Prior knowledge: Organizations for the

The Helsinki Elderly Citizens Council (Vanhusneuvosto)	new solutions for collecting, visualizing and analyzing accident-related information Intervention 2: Optimizing parking locations for shared e-scooters	- inform NOT YET CONTACTED!	influences the planning, preparation and monitoring of the city's activities in matters that are relevant to the wellbeing, health, inclusion, living environment, housing and mobility of the elderly, or the performance of their daily activities and the services they need. Needs: E-scooters Prior knowledge: The Elderly Citizens Council has previously expressed concerns about the safety risks caused by electric scooters. Electric scooters are currently a major obstacle to the safe mobility of elderly people in Helsinki.	disabled and the elderly have expressed their wish to be involved in planning the use and parking of electric scooters. This can be done, for example, through targeted events for discussion.
People with visual impairments -> Helsinki and Uusimaa Visually Impaired As-so-ci-a-tion (Helsingin ja Uudenmaan Näkövammaiset HUN ry) (SEE NGOs and NPOs)				
People with mobility impairments -> The Finnish Association of People with Physical Disabilities (Invalidiliiton	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-	- involve - inform NOT YET CONTACTED!		

Esteettömyyskeskus ESKE) (SEE NGOs and NPOs)	related information Intervention 2: Optimizing parking locations for shared e-scooters			
Vulnerable to exclusion users				
Helsinki and Uusimaa Visually Impaired As-so-ci-a-tion (Helsingin ja Uudenmaan Näkövammaiset HUN ry) (SEE NGOs and NPOs)				
The Finnish Association of People with Physical Disabilities (Invalidiliiton Esteettömyyskeskus ESKE) (SEE NGOs and NPOs)				
Public sector, other than offices in municipalities				
Association of Finnish Municipalities (e-scooter network)	Intervention 1: Testing new solutions for collecting, visualizing and analyzing accident-related information	- involve - inform FVH is now part of the municipal e-scooter network.	Association of Finnish Municipalities organizes the e-scooter network of around 30 cities in Finland. The municipalities in the e-scooter network see e-scooter services as a good new mobility service, but it needs to be developed into a safer and more	

	Intervention 2: Optimizing parking locations for shared e-scooters		functional part of urban mobility and travel chains. Municipalities need to have more effective legal tools at their disposal.	
Public sector: Traficom (Finnish Transport and Communications Agency)	Intervention 3: Improving safety at intersections	NOT YET CONTACTED!		

Previous interventions to tackle the problems

Past interventions brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years
Road deaths and Injuries (specially related to e-scooters)	Traffic safety of e-scooters: Temporal and speed restrictions (specific challenge behind restrictions: intoxication)	The speed limit for electric scooters is limited to 20 km/h during the day.
		The night-time speed limit on weekdays is 15 km/h (from 00:00 to 05:00).
		Rental electric scooters are completely unavailable during weekend nights (nights of Fri–Sat and Sat–Sun) from (midnight to 05:00).
		There are reduced speed limit zones of 10 km/h in the busy pedestrian areas of the city center, e.g. in Keskuskatu and Aleksanterinkatu.
	Behavioral change of e-scooter users (Means of influencing unwanted behavior)	Aalto University project: Evaluation of electric scooter deployment in the City of Helsinki: A perspective on sociotechnical transitions dynamics and adaptive governance, November 2022

		Helsinki Mobility Labs project tested whether AI and machine vision technology can enhance behavioral change Helsinki E-scooter safety tech case study, November 2023
		The city has been working in cooperation with the police – in an effort to stop people from riding on the pavement, speeding and carrying more than one person. The police will impose a €40 traffic penalty fee for offences such as riding on the pavement, carrying another person and riding into the wrong direction on a one-way street.
	Collect more and better data to reassess traffic safety measures of the city of Helsinki (Official data only covers the most serious accidents)	Traffic safety survey for the citizens fo Helsinki. It asked, among other things, for opinions on traffic safety in Helsinki, on measures to improve traffic safety and on traffic offences and dangerous places in traffic, as well as on places where the defendant had had an accident or a near miss. September 2019
Public space usage	Optimise dynamic space relocation of parking locations for shared mobility services	The city decided to restrict the parking of shared-use electric scooters in the city centre in 2023 by using road signs with text. Parking was restricted in the city centre and in the southern part of the inner city. 
		One operator can have a maximum of 700 electric scooters in the restricted area.
		There are around 250 parking spaces for shared-use electric scooters in the restricted area.

		
		Users are required to take a photo of the electric scooter at the end of their journey to show that the scooter has been parked correctly. The operators monitor the photos and fine those users who, on the basis of the photos, have parked their scooter incorrectly.
		Parking control has started to carry out local and storage removals for scooters that cause a significant nuisance.
Traffic safety at intersections	Improving traffic safety at intersections and pedestrian crossings	Piloting smart pedestrian crossing in Jätkäsaari with Bercman Technologies. FVH & The Last Mile project, 2019
		Piloting smart pedestrian warning system to improve traffic safety for visually impaired people. FVHs Jätkäsaari Mobility Lab with InnoTrafik Oy, 2021
		Jätkäsaari Smart Junction
		Lidars in Espa
		Monitoring and studies, e.g. Traffic accidents in Helsinki 2020-2022
	Improving traffic safety along newly opened Jokeri light rail line	Interventions have been taken in particular to prevent cars from driving onto the light rail tracks.

Detailed analysis of each of the past interventions

Previous intervention #1

About the intervention	
Intervention name	Restrictions and rules for e-scooter usage to prevent the nuisances / harms caused by e-scooters
Problem	Road deaths and Injuries (specially related to e-scooters)
Specific challenge	Traffic safety of e-scooters: Temporal and speed restrictions
Year of implementation	Rules and restrictions for e-scooter usage in 2021, 2022 & 2023 The speed limit for electric scooters is limited to 20 km/h during the day. The night-time speed limit on weekdays is 15 km/h (from 00:00 to 05:00). Rental electric scooters are completely unavailable during weekend nights (nights of Fri–Sat and Sat–Sun) from (midnight to 05:00). There are reduced speed limit zones of 10 km/h in the busy pedestrian areas of the city centre, e.g. in Keskuskatu and Aleksanterinkatu. The city has agreed on no-parking zones outside the city centre. Users are required to take a photo of the electric scooter at the end of their journey to show that the scooter has been parked correctly. The operators monitor the photos and fine those users who, on the basis of the photos, have parked their scooter incorrectly. Parking control has started to carry out local and storage removals for scooters that cause a significant nuisance. The city has been working in cooperation with the police – in an effort to stop people from riding on the pavement, speeding and carrying more than one person. The police will impose a €40 traffic penalty fee for offences such as riding on the pavement, carrying another person and riding into the wrong direction on a one-way street. (source)
What was the context of this challenge?	These restrictions have been introduced reactively, in response to the increasing number of emergency cases related to e-scooter usage hand in hand with a significant debate in the media during the spring and summer of 2021. (source) More specific Finnish or Nordic studies on emergency cases do indicate that crashes are often single, during weekends, and involve alcohol intoxication. Research from the Helsinki University Hospital and University of Helsinki indicated that in 2021 42% of injuries was moderate, severe, or worse, with the approximated total cost of e-scooter injuries being 1.7 million euros (Vasara et al., 2022). Moreover, this research showed that the most common site of injury was the head, with crashes happening during weekends and night-time, with almost half of patients reported to be intoxicated by alcohol at the time of the injury.

Data collected		
	(Source: Vasara, H., Toppari, L., Harjola, V. P., Virtanen, K., Castrén, M., & Kobylin, A. (2022). Characteristics and costs of electric scooter injuries in Helsinki: a retrospective cohort study. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine, 30, 57, 1-10.)	
Why was this intervention selected for tackling this specific challenge?	The speed and time limits were aimed at reducing the number of accidents involving electric scooters, especially at weekends.	
What were the KPIs to be achieved by this intervention?	The KPI were to decrease the number of accidents related to e-scooters	
How was the intervention implemented?	First by setting speed and time limits and then by imposing parking restrictions in the city center.	
What technologies were used for this intervention?	Geofencing.	
What tools and methods were used for this intervention?	By agreeing on restrictions with e-scooter operators. Geofencing.	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
City of Helsinki	Manager of the public space	Setting the restrictions and rules
E-scooter operators	Adoption of restrictions	Commitment of operators to restrictions
HUS Helsinki University Hospital	Research	Improving accident statistics
Aalto University	Research	Research on understanding behavioral, service, infrastructure, and institutional aspects of ongoing changes in the micromobility
How was the data collected?	Research done by HUS and Aalto University Emergency data analysis Video recording, coding and clustering analysis of revealed e-scooter riding behaviour	

Results	
	Analysis of questionnaire data for users and nonusers
What technology was used?	E-scooter trip data was obtained as an output from Vianova CityScope platform Video recording
How was it monitored?	Academic research
Who did apply this?	City of Helsinki E-scooter operators
Who was participating in it?	Spatial Planning and Transportation Engineering group City of Helsinki Ministry of Transport and Communications Voi Technology Finland AB Tier Mobility Finland Oy Lime Technology Oy
Who owns the collected data?	Results have been published and available here
What results have been achieved? Describe with concrete metrics.	**Overall, the proportional number of emergency cases in relation to the total number of trips is decreasing over years. Such ratio was 0.013% in 2021 before September restrictions, while 0.005% in the rest of 2021, and 0.004% between January and August 2022. As such, the level of safety for e-scooters is approaching the safety level of cycling.** **The issue of intoxicated riding has declined slightly between the years.**
What lessons have been learned?	Even though effectiveness of restrictive measures introduced in September 2021 has not been tested statistically, it can be inferred that it has had a positive effect, at least on the number of emergency cases. There is a need to develop comprehensive policy design processes, including a policy design canvas and associated process-rules. The researchers advise to avoid thinking about the effectiveness of isolated measures. Optimal policy design would instead rely on national level regulation around such aspects as drunk riding, speed, and user age, national level and multi-stakeholder campaigns especially targeting non-cooperative behavior (e.g., parent-child multi-riding, teenager or child multi-riding, drunk riding, etc.), development of education programs for all mobility system users, spatial-temporal and geofenced restrictions and rules for usage/parking in specific urban

About the intervention	
	areas, as well as further development of user recognition and verification technology in the e-scooter vehicle and associated digital platform.
What recommendations can be given for future interventions tackling this specific challenge?	Infrastructure design, construction, maintenance and use of temporary arrangements will have to continue to develop by relying further on state-of-the-art principles that account for inherent diverse human travel experiences and anticipated increasing diversity of urban mobility technologies.

Previous intervention #2	
Intervention name	Helsinki e-scooter safety tech case study
Problem	Road deaths and Injuries (specially related to e-scooters)
Specific challenge	Behavioural change of e-scooter users (Means of influencing unwanted behaviour)
Year of implementation	2023
What was the context of this challenge?	Since the advent of micromobility, cities and regulators have been striving to improve rider and pedestrian safety in the public right of way, reduce pavement clutter, and enforce better parking outcomes, all while increasing mobility options and reducing mobility insecurity through the use of these new vehicles.
Why was this intervention selected for tackling this specific challenge?	This neighborhood-based case study, in partnership with the Mobility Lab Helsinki, VTT, Voi Technology, Vianova and Drover AI, demonstrated how using a combination of AI & computer vision tech and analyzing real-time rider behavior can help to identify pedestrian and bicycle hot spots, capture data for infrastructure improvements, reinforce better riding and parking behavioral outcomes, and improve micromobility public policy.
What were the KPIs to be achieved by this intervention?	Using real-time user behavior nudges Data collection and visualization to map data by road type, showing gaps in infrastructure
How was the intervention implemented?	The 12-week case study from late July to late October 2023.
What technologies were used for this intervention?	AI & computer vision technology Vianova platform

Data collected		
What tools and methods were used for this intervention?	The deployment of 25 Path Pilot units on Voi scooters throughout Helsinki (15 units in City Center and 10 units in suburban districts - Munkkiniemi, Kallio, and Haaga). Apply AI & computer vision tech insights Vianova platform for visualizing and analyzing	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Drover AI	Technology provider	The pavement riding and pedestrian safety technology deployed for the case study consists of Drover's PathPilot
Vianova	E-scooter platform provider	Vianovas data used for data visualization and analytics
Voi Technology	E-scooter operator	Providing 25 e-scooters
Mobility Lab Helsinki	PM	
Forum Virium Helsinki	Enabler	
VTT	Research	
How was the data collected?	Drover's PathPilot solution was installed on 25 of Voi's e-scooters. In the first phase, it collected data about the infrastructure the e-scooters ride on. The second phase of the pilot introduced audio signals related to rider behaviour (such as alerts when riding on pedestrian streets, parking).	
What technology was used?	From 25 e-scooters deployed with Drover's PathPilot AI & computer vision technology Vianova platform	
How was it monitored?	Stakeholder meetings	
Who did apply this?	City of Helsinki and projects stakeholders	
Who was participating in it?	Voi Technologies, Drover AI, Vianova	

About the intervention	
Who owns the collected data?	The City of Helsinki, companies involved
What results have been achieved? Describe with concrete metrics.	The case study produced a white paper analyzing the observed rider behaviour. The results were promising. For example, riding e-scooters on sidewalks was reduced during the test period.
What lessons have been learned?	"From the images collected by the scooters, we obtained accurate information about, among other things, potholes on sidewalks, which can be a safety risk for road users. Additionally, several situations were observed where, for example, a parked car blocked access to the bicycle lane," says Juho Kostiainen, Project Manager of Mobility Lab Helsinki.
What recommendations can be given for future interventions tackling this specific challenge?	Continuation of testing with an expanded time and scope might be considered.

Previous intervention #3	
Intervention name	Analysing traffic behaviour with the Lidar technology
Problem	Traffic safety at intersections
Specific challenge	Improving traffic safety at intersections and pedestrian crossings
Year of implementation	2023-2024
What was the context of this challenge?	Forum Virium Helsinki and the Belgian company Flow Analytics are working together to collect and analyse data on the traffic on the Esplanade during the redevelopment. For two years, the two car lanes in South and North Esplanade have been converted into light traffic lanes and lounges.
Why was this intervention selected for tackling this specific challenge?	The main aim of the experiment is to find out what kind of information about the area's traffic can be obtained from Lidars and whether this information could be used in the next phase to improve the safety and attractiveness of the area.
What were the KPIs to be achieved by this intervention?	Testing functionality, both in terms of technology and operating conditions (long and cold Finnish winter)

Results		
How was the intervention implemented?	3 Lidars were installed	
What technologies were used for this intervention?	LiDAR (light radar)	
What tools and methods were used for this intervention?	Analytics tools	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Mobility Lab Helsinki (Forum Virium Helsinki and Business Helsinki)	PM	Enabler of testing new technology in city
Flow analytics	Technology provider	
How was the data collected?	LiDARs collecting data on vehicles, bicycles, pedestrians in the area	
What technology was used?	LiDAR Analyzing tools	
How was it monitored?	Ongoing	
Who did apply this?	Ongoing	
Who was participating in it?	FVH, Mobility Lab, Flow Analytics	
Who owns the collected data?		
What results have been achieved? Describe with concrete metrics.	Ongoing	
What lessons have been learned?	Ongoing More knowledge on the technology	
What recommendations can be given for future interventions tackling this specific challenge?	Ongoing	

Stakeholders involved in the intervention	
Previous intervention #4	
Intervention name	A smart pedestrian crossing pilot in Jätkäsaari
Problem	Traffic safety at intersections
Specific challenge	Improving traffic safety at intersections and pedestrian crossings
Year of implementation	2019
What was the context of this challenge?	The Last Mile project (Forum Virium Helsinki) sought smart mobility solutions in the Helsinki region for use by residents and tourists. In Helsinki, the project's new services were piloted in the Jätkäsaari area. In 2019 the Last Mile project developed mobility services for the residents of Jätkäsaari. The Last Mile project was funded by the European Regional Development Fund as part of the Six City Strategy for 2017–2020.
Why was this intervention selected for tackling this specific challenge?	In the Last Mile project, the cities sought new solutions in collaboration with companies that provide mobility services. In Helsinki, the project carried out a total of eight smart mobility pilots, a smart pedestrian crossing pilot was one of those pilots. Forum Virium Helsinki purchased the pilots through a procurement process, developed agile pilot operations and provided piloting support to companies.
What were the KPIs to be achieved by this intervention?	Generating data that can be used for better planning of the city environment and improving traffic safety.
How was the intervention implemented?	A smart pedestrian crossing pilot tested a traffic sign that utilized new technology on Selkämerenkatu. The pilot was conducted by Bercman Technologies.
What technologies were used for this intervention?	The smart pedestrian crossing sign by Bercman Technologies resembled a conventional traffic sign, but contained technology that produced data on the amount of traffic, traffic speed and air quality as well as environmental conditions to support planning.
What tools and methods were used for this intervention?	The smart pedestrian crossing facilitated the testing of warning functions designed to prevent collisions in a controlled manner.

Results		
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Forum Virium Helsinki	Forum Virium Helsinki was responsible for the coordination of the Last Mile project and the realization of its pilots in Helsinki.	Forum Virium Helsinki purchased the pilots through a procurement process, developed agile pilot operations and provided piloting support to companies. In addition to procuring the pilots, Forum Virium Helsinki offered companies the opportunity to test their services in a genuine urban environment.
Jätkäsaari Mobility Lab	Jätkäsaari Mobility Lab assisted companies to test mobility solutions on the streets of Helsinki, with real users.	The Last Mile project contributed to the establishment of the Jätkäsaari Mobility Lab, the City's hub for smart mobility projects and resident cooperation in Jätkäsaari. The development of smart mobility solutions continues at the Jätkäsaari Mobility Lab.
How was the data collected?	The traffic sign was outfitted with smart technology with featured warning functions. The device also collected data on traffic and the environment.	
What technology was used?	Bercman Technologies provided the technology, which included sensors, cameras and other technology. The smart signs' cameras and sensors monitor their surroundings and detect nearby pedestrians and vehicles. Every time someone crosses the road, the signs flash a white light to alert drivers to the crossing.	
How was it monitored?	The results of the pilot was presented to stakeholders	
Who did apply this?	This was an agile pilot to test the mobility solution to improve traffic safety	
Who was participating in it?	Bercman Technologies, FVH, Jätkäsaari Mobility Lab	
Who owns the collected data?		
What results have been achieved? Describe with concrete metrics.	The Last Mile pilots in 2019 (https://www.youtube.com/watch?v=76vb84_akYw)	

Perille asti -kokeilut Jätkäsaari 2019

(source)

What lessons have been learned?	Agile pilots are a good way of testing new services that are not yet available on the market or still being developed. The City of Helsinki gained new information on the possibilities of smart mobility and understanding of obstacles to piloting.

About the intervention	
What recommendations can be given for future interventions tackling this specific challenge?	

Previous intervention #5	
Intervention name	Improving traffic safety along newly opened Jokeri light rail line
Problem	Traffic safety at intersections
Specific challenge	Improving traffic safety along newly opened Jokeri light rail line
Year of implementation	2023
What was the context of this challenge?	New Jokeri light rail line opened for traffic in October 2023. The length of the line is 25 km, of which 16 km is in Helsinki and the remaining 9 km in Espoo. Jokeri Light Rail replaced trunk bus line 550, which was the busiest bus line in the Helsinki region. (source)  In the first months of operation, there were a lot of problems with cars driving on and getting stuck on the track. HS 9.11.2024 (source)

Stakeholders involved in the intervention		
		
Why was this intervention selected for tackling this specific challenge?	The safety group goes through monthly all accidents and serious incidents together. Safety group consist of the parties involved in light rail line operation,	
What were the KPIs to be achieved by this intervention?	Improving traffic safety along newly opened Jokeri light rail line	
How was the intervention implemented?	The problem has been tackled by adding barriers (bollards) in places where there is an estimated high risk of a car ending up in the wrong place. New traffic signs have also been installed. No measures have yet been taken to improve safety for pedestrians and cyclists.	
What technologies were used for this intervention?		
What tools and methods were used for this intervention?	Bollards and new traffic signs	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
City of Helsinki, Urban Environment Division	Landowner	Part of safety group

Results		
City of Espoo	Landowner	Part of safety group
HSL	Responsible for planning and organizing public transport in the region and working to improve its operating conditions. Responsible for producing bus, tram, metro, ferry and commuter train services	Part of safety group
Metropolitan Area Transport Ltd	Responsible for the infrastructure of Helsinki's public transport.	Part of safety group
How was the data collected?	From various sources	
What technology was used?		
How was it monitored?	Monthly meetings	
Who did apply this?		
Who was participating in it?	Safety group	
Who owns the collected data?		
What results have been achieved? Describe with concrete metrics.	The measures taken have decreased the number of accidents involving light rails and cars.	
What lessons have been learned?	The readiness to take further measures if safety requires it.	
What recommendations can be given for future interventions tackling this specific challenge?		

Annex IV: Ioannina Feasibility and Action Plan

Discovering the current state

Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
Climate change: Ioannina aim to become a Climate-Neutral and Smart City by 2030. A revolution in transportation and a shift towards sustainable and zero – emission mobility is the key to achieving this goal. This revolution demands systemic, deep and structural changes in the transport sector and will be coproduced with citizens and stakeholders.	In order to achieve the goal of climate neutrality, Ioannina has identified all challenges related to the mobility sector and more specific: - Promoting waling and cycling by completing necessary infrastructure projects, including pedestrian and biking routes. The project for Ioannina aims at integrating biking and the use of electric bikes to the area of intervention as well as the entire city. - Greening the bus fleet and strengthening the public transport role. With cleaner (electric, hydrogen etc.) vehicles and the upgrade of the overall service level of the public transport. On-demand transportation services, new bus circulation plans, mini-bus services for the CC. KTEL of Ioannina (sole public transport operator) is the key stakeholder to apply the needed changes in accordance with the city's needs. - Cleaner cars actions are at the core of urban mobility strategy and aims to assist the overall urban redevelopment by limiting car presence and boosting e-mobility with a comprehensive and extended EV chargers' network. Moreover, the action deals with the replacement of city-owned fossil fuel vehicles fleet with green vehicles and other policies and practices that limit internal	Climate change: Transportation and mobility sector focuses on making mobility climate neutral and supporting the city's transition to a more sustainable future.

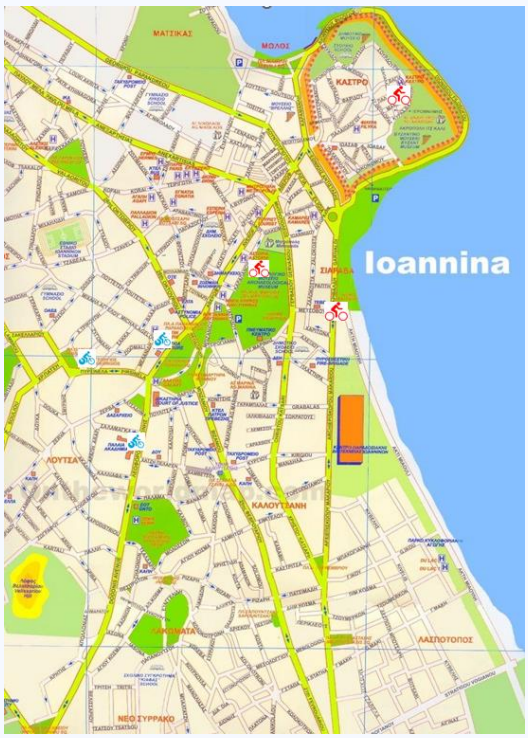
	combustion engine vehicles' circulation in the city. - Cleaning and strengthening waterborne transportation aim to increase the role of waterborne transportation by adding services and ease the replacement of diesel boats serving currently the connection between the city and the lake island. - Using Sustainable Transportation on waste collection aims to build on the existing waste strategy and rearrange waste collection with cleaner and smaller vehicles. The action includes projects such as smart waste collection system, supply of new waste collection vehicles (EVs) etc.	
Poor air quality: The city of Ioannina faces a significant challenge in terms of air quality. Given the geomorphology of the city (located among mountainous area) along with other factors such as the presence of the water body (lake) adjusting the temperature as well as the winds, all atmospheric pollutants are trapped in the atmosphere creating the phenomenon smog, especially during the winter months when fireplaces are used	The challenge refers to gradually applying legal restrictions related to GHG emissions and car-circulation. Emphasis needs to be put on policies to ensure a just transition, while also develop a medium-term plan to ban diesel vehicles and all ICE vehicles in the city. Therefore, cleaner vehicles as well as bikes need to be promoted in the city. Given the hilly formations of the city, the use of bikes is discouraged. Therefore, the project pilot action focusing on e-bikes has the potential to reverse this attitude.	Air quality standards are exceeded for several months annually
Road deaths increase and safety issues: Data for fatalities by road user groups shows that passenger car occupants continue to be the group most affected by road crashes. Motorcyclist fatalities also comprise a sizeable share of total road fatalities in Greek cities. In 2018, car occupants accounted for the largest share of	Compared to 2017, all road user groups saw their number of road fatalities reduced, with the exception of pedestrians and cyclists. The long-term trend shows traffic in Greece has become safer for all road user groups. Moreover, the user group that has benefitted least from road safety improvements since 2000 is	Young people continue to be at high risk in traffic, with a mortality rate well above the average, especially when using a bike or walking. Therefore, all actions need to be supported by information campaigns. The living labs can have a significant role in

road deaths with 38% of the total. They were followed by motorcyclists (27%), pedestrians (21%) and moped riders (4%).	cyclists, who saw the number of annual crash deaths fall by 46% from 22 to 12. Therefore, the main challenge to address in this direction is twofold: On one hand use of private vehicles must be reduces and discouraged. On the other hand, the promotion of active mobility using cars and bikes should be accompanied by secure and safe infrastructure. Speeding is perhaps the most critical factor for road crashes in the city. Therefore, the challenge is to also combine safe infrastructure with appropriate road safety measures, Finally, the city also needs to address the challenge of the gaps in the legislative framework, that creates significant mobility issues (e.g. when bike lanes meet pedestrian routes or crossing streets etc.)	informing and educating people about safe movement with a bike in the city
Urbanization: Urbanization is strongly linked to mobility challenges and specifically in the city centre. Use of private vehicles for freight as well as transferring goods in shops, restaurants and small businesses create several problems including traffic jams, noise, illegal parking, illegal occupation of bike lanes, walking lanes as well as passages for people with movement disabilities.	The challenge of urbanization in the city of Ioannina is strongly linked to the climate neutrality goal. Therefore, the challenge is to reduce urban freight emissions through regulatory schemes that promote clear timetables, encourage clean vehicles, promote cargo bikes and infrastructure that allow for this transition. Smaller, cleaner and less noisy vehicles shall deliver goods in the conurbation of Ioannina with the support of UCCs and loading/unloading platforms. Replacing ICE van and lorries entering the city will directly have an impact on local health and pollution, while also for vehicles serving the overall logistics chain which will allow for lowering emissions.	Urbanization is also linked to the city's expansion. As long as the city is expanding, more people need to address urban services close to the city centre, to administrative areas as well as spaces for recreation including the lake waterfront. Greening the city centre and the city's logistic is closely linked to the use of bikes and e-bikes.

Covid19 pandemic mind shift: During the Covid19 pandemic, the mobility pattern in the city of Ioannina changed dramatically with more people not using cars. On the other hand, public transport was neglected. Therefore, the challenge is to encourage and promote promoting the use of sustainable transport including cycling and walking by making safer passages and infrastructure as well as increasing e-bike docks in the city. At the same time public transportation needs to be connected with bike use	Sharing bikes as well as other means of transport is a significant challenge related to the Covid19 pandemic mind shift because sharing is strongly connected to the spread of the virus or other germs. During this time, the use of private cars has been increasing in order to avoid sharing transportation modes. This perception needs to be tackled by promoting active mobility patterns and connecting well-being with cycling and walking.	Change of mind-sets as well as behavioural patterns demand group work, correct information and promotion of sustainability. Urban living labs can play an important role in this direction.
Obesity and Population ageing: Groups of obese and old people need to be recognised as vulnerable teams of the population and special design needs to be taken for them. Important challenges in this direction include healthier and more active lifestyles, biking and walking, safety measures in all roads and combined transportation modes.	In order to address the difficulties of moving with bikes in a hilly city. E-bikes can play an important role.	When designing the solution, the process must be participatory and inclusive. Vulnerable Groups of obese and old people need to be included in the design, implementation and evaluation circle.

Proposed interventions

Proposed intervention 1

Intervention name	**Promoting shared, micro-vehicle solutions to boost smart and sustainable mobility**
Brief description	Ioannina will unfold the potential of micromobility by investing in smart bike docks as well as e-bikes. More specifically, the integrated solution will include: - 3 Docks bike stations: each one will include 10 locking/charging bays and will allow bikes to be charged while locked at the station. - 14 electric bikes - Smart platform for micromobility: A platform for detecting docks and e-bikes in order to freely use the e-bike for as long as they wish, returning it to one of docks. The platform will record movements, users and other useful statistics for the city
Infrastructure targeted	Cyclist infrastructure as well as connected infrastructure. The dock stations need to be put in areas where cars are parking at the moment, in order to discourage their use
Services	Station of shared e-bikes and scooters
Monitoring needed	Monitoring will be occurred through the smart mobility platform and the app related.
Who is expected to benefit	All citizens, visitors & bike users
What Stakeholders are affected	 City of Ioannina (red bikes suggest main areas and blue bikes alternative areas)

Living Lab

Characteristics

Maps of the area(s) where interventions are planned	
Current mobility aspects of this area	In terms of mobility, the prescribed area is located at the heart of the city, presenting a complex system of mobility modes including private cars, parking spaces, pedestrian routes and passes, movement of taxis and buses as well as small shops, restaurants and public administration buildings. At the moment, pedestrian routes are linked guiding from the city centre to the lake waterfront, Moreover, the area is densely populated, and the land is used from cars as well as citizens for all urban services.
Infrastructure and services existing	Main infrastructure includes: Roads for private vehicles, pedestrian routes and passes, parking spaces and underground parking, taxi stations, bus station, bike lanes and traffic lights, private bike sharing stations.
Safety aspects of the area	The area is a standard urban area that faces a series of traffic issues, related to safety. Some of the most important include illegal vehicle speed, small pedestrian crosses and fragmented infrastructure (not continuous) in terms of bike lanes.
SUMP guidelines for this area	SUMP guidelines for the area include: • Increase the pedestrian routes network to discourage private vehicles. • Controlled parking areas in the city-centre and in more extended areas • Integration of bike lanes in existing roads. • Bike docks (areas for bike-parking) • Traffic reduction • Improve air quality • Green spaces and connection with green corridors

Stakeholders and Actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Offices in municipalities				

Technical services department	**Intervention 1: Promoting shared, micro-vehicle solutions to boost smart and sustainable mobility**	**Technical design** **Mobility department-arrangements** **Safety issues**	**Coordination** **Information on technical designs – choice of areas to implement interventions** **Information on safety issues** **Information on de-carbonization of the city**	**Sound design** **Correct implementation** **Monitoring - KPIs**
Department of Urban Planning		Checking public spaces available and permitted for the use of e-bike docks	Information on land uses Information on parking areas Information on future infrastructure (e.g. bike lanes and pedestrian routes according to SUMP)	Sound design Correct implementation Monitoring - KPIs
Department of programming and development		Programming of works Monitoring added value with other projects KPIs monitoring	Facilitation Involvement of participants Tailoring information needs to participants and groups of people	Inclusive design Reduction of pollution City decarbonization
Department of economics		Funding monitoring	Information on the project economics Information on future investments and funding tools	Sound design Correct implementation Monitoring - KPIs
Mayor's office		Overall control Informing citizens and users Involve others	Monitoring and evaluating procedure Securing policy making	Sound design Inclusive design Correct implementation Monitoring - KPIs
Municipal police			Safety issues Protection of e-bike and docks	Sound design Correct implementation Monitoring – KPIs Increased safety
Private companies in mobility and urban development				
Private bus operator **Taxi drivers** **Private shared bikes & e-bike companies**	Intervention 1: Promoting shared, micro-vehicle solutions to boost smart and sustainable mobility	Participate Collaborate Discuss problems-issues with action development Diagnose fields of collaboration	Combine forces to make the action successful Ensure better design Share experiences Added value	Increase use of the transportation mode Design more sustainable services Increase users Combine modes of transport
Businesses				
Local SMEs	Intervention 1: Promoting shared, micro-vehicle solutions to boost smart and sustainable	Participate Collaborate Discuss	Understand the project Find added value for them Improve the image of the city centre with less cars	Provide better services for their clients Move to and from work in a safe and sustainable way using bikes and waling

About the intervention

Past interventions to tackle the problems

Brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years
e-parking solution with underground smart sensors	Adress illegal parking in areas where it is not allowed. Collect data on number of vehicles parking per day (detect peak times, average use of space etc). Collect data on average time of parking. Test connection method.	City centre placement of 100 sensors.

Detailed analysis of each of the past interventions

Previous intervention 1	
Intervention name	**e-parking solution with underground smart sensors**
Problem	Illegal parking Double parking
Specific challenge	Prevent illegal parking and inform municipal police in real time
Year of implementation	2020

Data collected		
What was the context of this challenge?	The project was implemented after the completion of the SUMP in order to test innovative solutions for urban mobility and funded by INTERREG MED program	
Why was this intervention selected for tackling this specific challenge?	Illegal parking in the city centre is a common phenomenon. Municipal police need a lot of resources to tackle this. Lack of data on parking time for urban services	
What were the KPIs to be achieved by this intervention?	Reduce car mobility in city centre Reduce illegal parking Discourage the use of car in the city centre due to lack of parking spaces	
How was the intervention implemented?	Stakeholder meetings were developed to choose the parking spots. Then 100 underground sensors were procured and placed in the area along with signal transmitters. Therefore, all 100 parking spaces were marked in white colour and holes were opened on the road to place the sensors	
What technologies were used for this intervention?	RF technology	
What tools and methods were used for this intervention?	RF connection – underground sensors – data analytics	
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
Police and municipal police	Safety, information for parking areas	They were provided with the platform and tablets to be able to monitor the implementation of the project. A special application to be able to put a fine to illegal users was also provided
Municipality of Ioannina	Project manager	Collection of data
Experts-academia	Data analysis	Asked to provide help with developing the application and analysing the data

Results	
How was the data collected?	**Using sensors and RF communication technology**
What technology was used?	RF communication technology
How was it monitored?	MOTIVATE MED Platform
Who did apply this?	Municipality of Ioannina and Municipal police
Who was participating in it?	Municipality of Ioannina and Municipal police
Who owns the collected data?	Municipality of Ioannina and Municipal police
What results have been achieved? Describe with concreate metrics.	**100 underground sensors were placed in the city centre** **1 platform for mobility management** **1 platform for parking management**
What lessons have been learned?	Knowledge on use of smart platforms to address mobility problems
What recommendations can be given for future interventions tackling this specific challenge?	To involve all stakeholders in the process of design and successful implementation, it is important to create a feeling of common ownership, starting engagement from early stages of design. The action needs to be a part of a bigger, more integrated design, leading the way to a more sustainable mobility condition for the city. Isolated actions that are not connected with other, similar action do not provide added value and users do not enjoy the full potential. Expenses for service and maintenance must be calculated for a project to be sustainable. Replication and potential expansion of the solution needs to be examined.

Annex V: Issy Les Moulineaux Feasibility and Action Plan

Contextual overview of the city

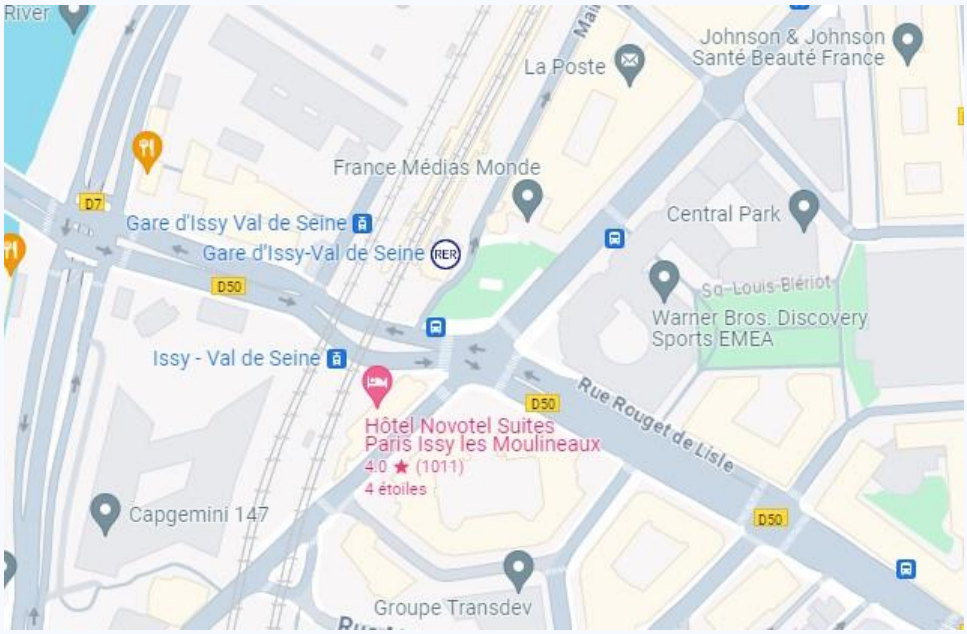
Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
Climate change We want to decarbonate the city by reducing the car traffic and developing greener modes of transport like public transport and bike use.	One of the goals of the project in Issy-les-Moulineaux is to reduce the congestion on the main roads of the city of Issy-les-Moulineaux by promoting the use of carbon free or almost carbon free transport modes leading to a reduction of CO2 emissions in accordance to the objectives fixed by the city towards climate neutrality and the climate budget of the city.	Climate change
Road Deaths increase and safety issues We want to increase the space for pedestrians in the city and ensure a safer environment for all the road users, whether they are pedestrians, cyclists, car users or else.	In the area of intervention, the main goal is to ensure a greater safety in the area and allow the pedestrians and bike users to use this segment without any fear. One of the other goals is to promote the use of bike and alternative transport modes in order for families and other VRUs to access to the island located in the city's territory with a great park usually visited by families.	Road Deaths increase and safety issues
Urbanization	The city of Issy-les-Moulineaux as a great project named Axe de Vie whose subject is to reface the urban design of the main roads of the city to lead to a more open city for bikes and pedestrians allowing VRUs to have more space.	Urbanization

Proposed intervention 1		
Covid-19 pandemic mind shift	The Covid-19 pandemic induced a mind shift in the comportment of the road users with a high development of the use of bikes following the pandemic (see figure 4). The shift induced new challenges with the need for the city to adapt the infrastructures by developing them and to make them safer to ensure good interactions between all road users.	Covid-19 pandemic mind shift

Proposed interventions

Intervention name	**GECO AIR**
Brief description	The LL will propose a response by designing and organizing a better way to share streets with a multi modes approach in the district of Issy Val de Seine, the economical center of the city and one of the major innovation hub in the Greater Paris Metropolitan area with 70 000 people that come to the city each day, doubling the population. The City's objective is to ensure safety and collaboration of different modes for better neighborhoods, especially at an intersection where there is a critical conflict area between vehicles, bike users and pedestrians, leading to a necessary intervention. The second intervention will consist on the experimentation of the GecoAir application developed by IFPEN and that helps the citizens to know better the air pollution and how to fight effectively against it. The results obtained by the application will be one of the potential sources for the mobility observatory. The city of Issy-les-Moulineaux also intends to reduce the air pollution aligned with the objectives that the city has fixed towards climate neutrality in 2050 and the annual objectives that can be found in the climate budget, first adopted in 2021 for concrete every year actions. The development of this application will also be useful in this perspective as it will come from data collected in the area allowing the city to readjust almost in real-time the objectives of the climate budget according to the collected data.

Proposed intervention 2	
Infrastructure targeted	The area selected for the experimentation is located at one of the key points of the city of Issy-les-Moulineaux in the business district of the city with a huge part of the traffic in the city going on in the area. The whole district will be considered for the use of the GecoAir application. 
Services	Application, sensors, collection of data
Monitoring needed	Follow the accident-prone behavior and mobility behaviors.
Who is expected to benefit	Citizens of the city and people who come to Issy for their work. Road users, bike users, pedestrians. Here, the goal is to have the largest number of users
What Stakeholders are affected	Citizens Employees The city

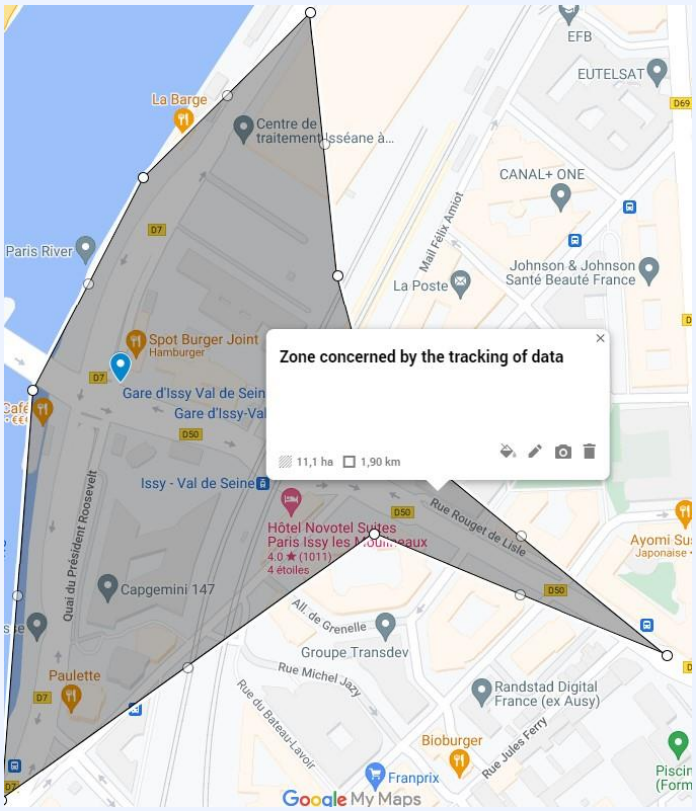
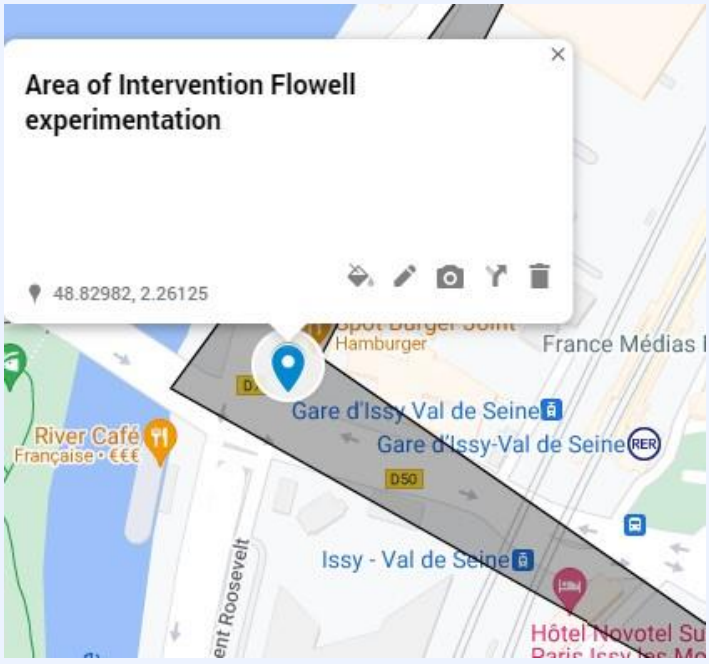
Intervention name	**Flowell**
Brief description	The LL will propose a response by designing and organizing a better way to share streets with a multi modes approach in the district of Issy Val de Seine, the economical center of the city and one of the major innovation hub in the Greater Paris Metropolitan area with 70 000 people that come to the city each day, doubling the population. The City's objective is to ensure safety and collaboration of different modes for better

	neighborhoods, especially at an intersection where there is a critical conflict area between vehicles, bike users and pedestrians, leading to a necessary intervention. The first intervention will consist on the experimentation of the Flowell technology developed by Colas that consists of a floor light marking system that will allow a better perception of the incoming cyclists in the selected area with less conflict interactions between road users. This experimentation will also lead to the development of the use of alternative ways of transport in the selected area. Changes in user behavior (road and bike) will be monitored in a mobility observatory (powered by Urban Radar). This observatory will aggregate several sources of data and will be the dynamic monitoring tool for measuring the impact of the actions implemented. The city of Issy-les-Moulineaux also intends to reduce the air pollution aligned with the objectives that the city has fixed towards climate neutrality in 2050 and the annual objectives that can be found in the climate budget, first adopted in 2021 for concrete every year actions.
Infrastructure targeted	 Intersection at high risk between bikes and other road users at one of the most frequented road of the city of Issy-les-Moulineaux.
Services	Sensors, floor light marking system installed by Colas, mobility observatory
Monitoring needed	Data collection + questionary
Who is expected to benefit	Bike users are expected to benefit from this by an increase of safety in the area and an increase of bike users following the safety increase.
What Stakeholders are affected	Bike users, road users, the city of Issy-les-Moulineaux, the département des Hauts de Seine (responsible for the road), GPSO (as Issy is member of this intercommunity).

Proposed intervention 3	
Intervention name	**Mobility observatory**
Brief description	Visualize and measure mobility on a city scale, using a variety of travel methods (bicycle, car, public transport, etc.). Helping the city of Issy-les-Moulineaux to identify other potentially risky areas Inform decision-making with data-based analysis Helping the city of Issy-les-Moulineaux to improve city planning Monitor the impact of decisions taken. Helping the city of Issy-les-Moulineaux to monitor the impact of decisions taken.
Infrastructure targeted	The area selected for the experimentation is located at one of the key points of the city of Issy-les-Moulineaux in the business district of the city with a huge part of the traffic in the city going on in the area. The whole district will be considered for the development of the mobility observatory.
Services	Sensors, cameras, open data, FCD
Monitoring needed	Data collection, data processing
Who is expected to benefit	The city of Issy-les-Moulineaux is expected to benefit from the mobility observatory as it will allow the city to develop a new tool to identify dangerous zones as well as helping the city in defining the next steps towards its urbanization policy.
What Stakeholders are affected	The city of Issy-les-Moulineaux will be the principal stakeholder committed to this intervention.

Living Lab

Living Lab characteristics

Maps of the area(s) where interventions are planned	 
Current mobility aspects of this area	This area is a great encounter of all types of mobility as we have pedestrians, bike lanes, cars and public transportation (bus and metro lines) that are located in the area. This area is an important encounter zone as it is located right beneath some

	of the biggest companies and their headquarters that are in Issy, like Orange, Microsoft Europe and France, Canal+, ... This area is one of the most, if not the most, crowded area in the city during working days, as solely for the RER C station, 30 000 passengers are coming by.
Infrastructure and services existing	There are bike lanes, parking slots in underground, bus stops and a RER C station in the area. There are also crosswalks for pedestrians to use.
Safety aspects of the area	The area is considered as dangerous for various types of users. In fact, the area is seen as a danger zone for pedestrians as there are a lot of works on the roads due to the renovation and construction of various buildings leading to temporary crosswalks that are seen as not safe enough. The bike lane is seen as small and as not safe by the various users and this furthermore as the intersection concerned by the Flowell experimentation see many waste trucks passing by as the incineration industry is located 200m further from this point leading to safety problems due to the blind spots of such vehicles. There is a high risk of collisions in this area as on the other side of the bridge, in the city of Boulogne-Billancourt, a fatal accident occurred last year due to the blind spots of a truck. As the disposition of the road is almost the same on the two sides of the bridge, there has been an increase demand of safety actions from the bike users of the city of Issy-les-Moulineaux.
SUMP guidelines for this area	The SUMP is defined on a higher scale and is not directly concerning this area but it has been changed in October 2022 with the opening of a new ecodistrict in the city leading to an increase of risk in the area.

Stakeholders and Actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Offices in municipalities				
Issy Média	Mobility observatory Geco Air Flowell	Managemen of the project	More safety for bike users on the various tension points of the city. New ideas for the urban planning of the city of Issy-les-Moulineaux. Less pollution in this area in accordance with the	Increased safety and new type of innovations for the next steps of the urban planning for the Axe de vie project that will take place in this area from 2027 onwards.

			objectives fixed in the climate budget.	Developing the use of bikes to ensure a reduction of pollution in the city.
Department in charge of the road infrastructures of the city of Issy-les-Moulineaux	Mobility observatory Geco Air Flowell	Supporting the development of the project through the involvement of the city.	More safety for bike users on the various tension points of the city. New ideas for the urban planning of the city of Issy-les-Moulineaux. Less pollution in this area in accordance with the objectives fixed in the climate budget.	Increased safety and new type of innovations for the next steps of the urban planning for the Axe de vie project that will take place in this area from 2027 onwards. Developing the use of bikes to ensure a reduction of pollution in the city.
Grand Paris Seine Ouest	Mobility observatory Geco Air Flowell	Consultation on the place of the intervention	More safety for bike users and VRUs not only in Issy-les-Moulineaux but in the whole area of Grand Paris Seine Ouest. Less pollution in this area in accordance with the objectives fixed in the intercommunity.	Have a friendlier environment for bike users and VRUs and developing the interventions in other cities part of the intercommunity.
Département des Hauts-de-Seine	Mobility observatory Geco Air Flowell	Involvement in the place of the intervention (road in charge of the département des Hauts-de-Seine)	Have a clearer view on the roads and the danger zones present on them.	Be able to spot on an easy way the various danger zones and be able to react more efficiently with the interventions developed in the project.
Private companies in mobility and urban development				
Colas	Flowell	Development of the	Intervene on a new scope of their Flowell technology	To be able to develop a wider range of actions for their solution and to

		Flowell intervention	to brighten the potential use cases.	test it in other cities to confirm the results obtained in Issy-les-Moulineaux.
Urban Radar	Mobility observatory	Development of the mobility observatory	Collect all kind of necessary data and how to restore them.	Better understanding of the needs of collectivities.
Company in charge of public transport				
Ile-de-France Mobilités	Mobility observatory	Discussions about data. Obtain some information	Data of the modal ratio from bikes, e-scooters or other kind of carbon free transport to the public transport modes.	To be able to better evaluate new kind of solutions like the necessity of bike parking slots in various metro stations to accompany the use of public transport combined to a free emission transport mode.
Universities and research centers				
IFPEN	Geco Air	Development of the Geco Air application	Discover the needs of the city of Issy-les-Moulineaux. Need for sufficiently substantial data on the city.	Implementation of a security monitoring methodology.
NGOs (non-gov) and NPOs (non-profit)				
MDB Vélos d'Issy	Geco Air Flowell	Consultation	Need of more safety for bike users on this intersection.	Increased safety on this intersection and more safety in general on other roads of the city.
General citizens' segments				
Citizens from the district concerned by the interventions :	Geco Air Flowell	Consultation during a	Need of more safety to feel safe enough to use the	A better living environment with the possibility to use bikes with the whole family

inhabitants of the district + employees from the companies present in the district.		public meeting	bike lanes to go to work or to go for hobbies. Less congestion and less air pollution	without feeling in danger. A better work environment with the possibility to come to work with the bike.

Past interventions to tackle the problems

Brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years
Road deaths and Injuries	Road safety of e-scooters	Limit no. of e-scooters : renting companies can not propose their services inside the area of Grand Paris Seine Ouest. Individuals can still have their own e-scooters. The renting is forbidden, not the possession.
		Area based restrictions: This has been taken to increase safety in the 8 concerned cities with this taken due to the harsh development of the e-scooters system in the last couple of years. There were a lot of complaints from inhabitants of the 8 cities that form the entity of Grand paris Seine Ouest with remarks like a lack of civism from the users of the e-sccoters as they let all the scooters on the sidewalks, leading to an increase risk especially for VRUs like families with kids in strollers or elderly that had to go on the roads to avoid the e-scooters. The problem also lied in the lack of repsect of the traffic rules with a lot of dangerous situations like the non-respect of traffic lights leading to accidents between other road users and e-scooters users.

Previous intervention 1		
About the intervention		
Climate change + Noise pollution + road deaths and injuries	Limitation of the speed in the city	Limitation of the speed from 50km/h to 30km/h in a major part of the city.

Detailed analysis of each of the past interventions

Intervention name	**Limit numbers of e-scooters**
Problem	Road deaths and Injuries
Specific challenge	Road safety of e-scooters
Year of implementation	2019
What was the context of this challenge?	The high development of e-scooters in the Greater Parisian Area has led to a growing number of tensions between different road users leading to more accidents. The harsh development out speeded the legal framework implying the necessity for the intercommunity of Grand Paris Seine Ouest, which includes Issy-les-Moulineaux, to react firmly to avoid more injuries and even fatal accidents.
Why was this intervention selected for tackling this specific challenge?	The decision was taken to tackle this challenge as it was needed to avoid fatal accidents. So, the decision was to ban the e-scooters companies that rented the e-scooters like Lime so that there would be less conflicts between road users. The ban was only for the rental system, private e-scooter can always be used if they follow the legal framework, like the limitation of speed up to 20km/h.
What were the KPIs to be achieved by this intervention?	The results expected was to obtain the ban of e-scooters companies and leading to a presence of e-scooters that would have been harshly decreased.
How was the intervention implemented?	It was implemented in the whole territory of Grand Paris Seine Ouest at the same time, also because besides from the risks of road injuries, there

Data collected		
	was a high problem of good manners as a lot of e-scooters were let outside of parking spots, on the pavement leading to difficulties for pedestrians to use the pavement, particularly VRUs.	
What technologies were used for this intervention?	No particular technology has been involved in this intervention.	
What tools and methods were used for this intervention?		
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
Grand Paris Seine Ouest	Leading role	Grand Paris Seine Ouest led the discussions between the 8 cities members of the intercommunity for the ban of rental e-scooters.
Municipality of Issy-les-Moulineaux	Local administration	The city of Issy-les-Moulineaux has been involved by participating in the decision process, alongside with the 7 other municipalities of Grand Paris Seine Ouest.
Users of e-scooters	Citizens	A communication campaign was made for them, asking them to switch to a personal scooter if they wanted to continue to use this type of mobility. A focus was also made on the risks and safety measures that needs to be taken by each user like the high recommendation of wearing a helmet.
How was the data collected?		
What technology was used?		
How was it monitored?		
Who did apply this?		
Who was participating in it?		

Who owns the collected data?	

Previous intervention 2	
About the intervention	
What results have been achieved? Describe with concreate metrics.	**The number of rental e-scooters has become 0 and we saw a light increase of personal e-scooters. Most of the users of rental e-scooters switched to rental bbikes called Vélib.**
What lessons have been learned?	It has been learned that this decision, taken before the Covid pandemic was a good decision for the city, because after the outbreak of the pandemic, the number of bike users has dramatically increased and if they were still the rental e-scooters, it would have led to a situation of maximum tensions between all road users. The limitation of the e-scooters was also later taken in 2023 in Paris, showing that this decision was the good one back in 2019.
What recommendations can be given for future interventions tackling this specific challenge?	In the future, if such a speocific challenge is again on the table then the most important would be to predict it and to act directly when the challenge is rising and not when the challenge is too important on a daily basis for the citizens.

Intervention name	**Speed limitation from 50km/h to 30km/h**
Problem	Road death and injuries/ climate change, air pollution and noise pollution.
Specific challenge	Limitation of the speed in the city
Year of implementation	2020
What was the context of this challenge?	During the Covid pandemic emerged the necessity to rethink the share of the urban space between the different road users, in particular towards the growing number of bike users. A limitation of speed in the majority of the city was foreseen to pacify the relations between the different road users and also to reduce air and noise pollution in the city.
Why was this intervention selected for tackling this specific challenge?	This intervention has been selected for this specific challenge as it was needed in order to adapt to the new reality of the mobility scheme of the city past Covid pandemic.
What were the KPIs to be achieved by this intervention?	The goal was to reduce air pollution, congestion and also to reduce the number of incidents in the city.

Data collected		
How was the intervention implemented?	The intervention has been implemented by selecting the roads that were reduced to 30km/h. The final decision was to decide the 30km/h limit for almost every road in the city except for one road located on the dock of the Seine river that is a road with no habitations nor public transport stops nearby and that is managed by the département des Hauts-de-Seine and that has been kept at 50km/h.	
What technologies were used for this intervention?	No particular technology has been used during the intervention.	
What tools and methods were used for this intervention?		
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
Municipality of Issy-les-Moulineaux	Decider	The city of Issy-les-Moulineaux has been the most important actor as the political will to change the speed limitation came from the city.
Département des Hauts-de-Seine	Manager of some of the major roads in the city	The département des Hauts-de-Seine has the control of some roads that are called routes départementales in France and where therefore involved in the process as some of these roads were also concerned by the speed limitation.
Road users	Consultation role	The bike users asked for such an intervention to feel safer as well as the pedestrians. It was also made for the car users to reduce congestion in the city.
Citizens	Consultation role	Citiznes asked for less noise and air pollution in the city leading to the necessity of developing new speed limits to achieve both of these objectives.

Results	
How was the data collected?	
What technology was used?	
How was it monitored?	
Who did apply this?	
Who was participating in it?	
Who owns the collected data?	
What results have been achieved? Describe with concrete metrics.	**The number of bike users has been increased by more than 200% since this intervention leading to a more pacified city. The congestion has also been reduced even if the congestion index is always quite high.**
What lessons have been learned?	The lessons learned are that the city is more pacified with less noise and even if the congestion problem is still present, it has been reduced and is more localized on some specific roads where the problem has already been identified before and where other interventions are needed.
What recommendations can be given for future interventions tackling this specific challenge?	To take into consideration future urban planning and the changes that can come from it.

Annex VI: Krusevac Feasibility and Action Plan

Discovering the current state

Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
The city of Kruševac faces several mobility challenges common to many urban centers, including traffic congestion, limited availability of sustainable transportation alternatives, and air quality concerns. Specifically, Kruševac struggles with aging public transportation infrastructure in need of modernization to improve reliability and user experience. There is also a lack of safe, connected infrastructure for pedestrians and cyclists, discouraging these modes of transport.	Intervention #1 aims to address the challenges of an aging public transport system through the installation of smart bus stations and implementation of real-time bus tracking. This will help modernize infrastructure and services, increase the number of passengers, i.e. attract new users. Intervention #2 targets the lack of safe, accessible infrastructure for pedestrians and cyclists by redesigning a street to prioritize these modes of transportation. This is intended to promote more sustainable options. The proposed interventions directly align with the following proposal call challenges: Climate change and air quality standards by supporting more sustainable mobility choices Urbanization by improving infrastructure to meet the needs of a growing urban population Obesity and population aging by facilitating more active transportation Road safety issues by designing infrastructure with pedestrian and cyclist safety in mind	Climate change Road Deaths increase and safety issues Urbanization Air quality standards are still breached Obesity and Population ageing Covid-19 pandemic mind shift

Proposed interventions

Proposed intervention 2	
Intervention name	**Real-time bus tracking and information**
Brief description	Intervention #1 includes the installation of boards with information of real-time bus arrival at bus stops and the implementation of a real-time bus tracking system. These technological advancements aim to improve the efficiency and user experience of the public transport system in Kruševac.
Infrastructure targeted	Bus stations
Services	The introduction of real-time bus tracking will provide commuters with up-to-date information on bus locations and arrivals, enhancing the overall convenience and reliability of the public transportation services.
Monitoring needed	Continuous monitoring of the smart bus stations and real-time bus tracking system is essential to assess their functionality, usage, and impact on improving the overall public transport experience in Kruševac.
Who is expected to benefit	Commuters, residents, and visitors utilizing the public transport system in Kruševac are expected to benefit from the improved services and convenience offered by the smart bus stations and real-time bus tracking.
What Stakeholders are affected	Stakeholders affected by this intervention include the local government, public transport authorities, technology providers, commuters, and residents of Kruševac

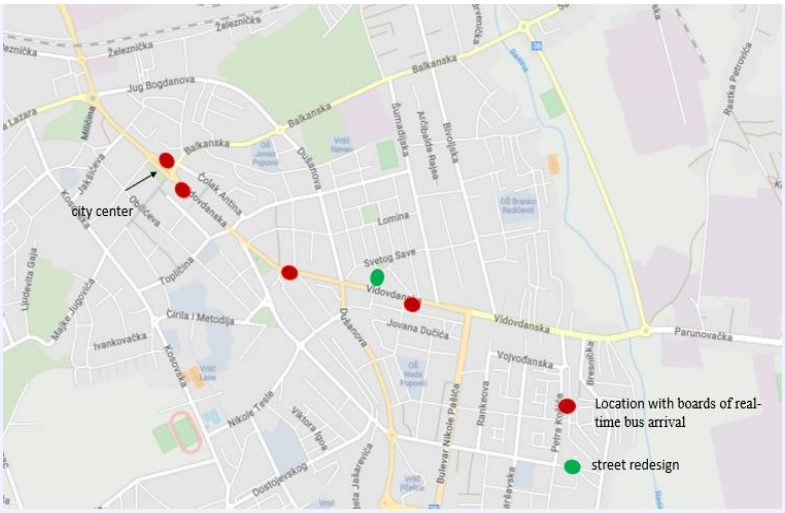
Intervention name	**Public space / street redesign**
Brief description	Targets the lack of safe, accessible infrastructure for pedestrians and cyclists by redesigning a street to prioritize these modes of transportation. This is intended to promote more sustainable options.
Infrastructure targeted	Public space.
Services	The implementation of pedestrian and bike-friendly features will enhance the accessibility, safety, and overall experience of pedestrians and cyclists within the city.
Monitoring needed	Ongoing monitoring of the redesigned street is necessary to evaluate its effectiveness in promoting pedestrian and bike-friendly activities, ensuring safety, and assessing the utilization of the new infrastructure.

Who is expected to benefit	Pedestrians, cyclists, and residents of Kruševac are expected to benefit from the enhanced pedestrian and bike-friendly features, creating a safer and more inviting environment for non-motorized transportation.
What Stakeholders are affected	Stakeholders affected by this intervention include residents, cyclists, pedestrian advocacy groups, city planners, and local businesses operating along the redesigned street, also public authority, PE “Public enterprise for urban planning and design“.

Living Lab

Living Lab characteristics

Maps of the area(s) where interventions are planned	Kruševac is facing increasing traffic challenges as its population and economy grow. Key issues include frequent traffic congestion along arterial roads during peak periods, inadequate public transportation infrastructure, poor conditions for pedestrians and cyclists, and rising motorization rates contributing to local air pollution. To address these concerns, the city aims to promote sustainable mobility options through smart technologies and improved infrastructure. The living lab for the city of Kruševac entails the implementation of smart transportation solutions aimed at enhancing the public transport system. This includes the installation boards with information of real-time bus arrival at bus stops and the introduction of a real-time bus tracking system. Furthermore, there are plans to redesign a specific street to be pedestrian and bike-friendly as outlined in the grant agreement. The living lab will focus on gathering data related to the usage and effectiveness of these interventions, as well as assessing the impact on the city's transportation infrastructure and the overall experience of residents and commuters. Knowledge gained in Kruševac can further be shared with other mid-sized cities in Serbia tackling similar mobility and livability challenges.

	
Current mobility aspects of this area	The current mobility aspects of this area encompass several key elements: Traffic Congestion: The area is currently experiencing significant traffic congestion, particularly during peak hours, leading to delays and inefficiencies in transportation. Limited Public Transportation Options: Public transportation options are limited, impacting the accessibility and convenience for residents and visitors. Enhancing public transit infrastructure is crucial for improving overall mobility. Challenges for Pedestrians and Cyclists: Pedestrians and cyclists face challenges in terms of safety and accessibility. The existing infrastructure may not adequately accommodate these modes of transportation, leading to potential risks and inconvenience. Parking Issues: The availability and management of parking spaces pose challenges, contributing to traffic congestion and affecting the overall flow of mobility in the area. Environmental Impact: Current mobility patterns contribute to environmental concerns, such as increased emissions and air pollution. Addressing sustainable mobility solutions is essential for mitigating these environmental impacts.
Infrastructure and services existing	Transportation Infrastructure: The existing transportation infrastructure consists of road networks, intersections, and public transportation facilities. However, there is room for improvement to enhance connectivity and efficiency. Public Services: Basic public services such as street lighting, waste management, and maintenance of public spaces contribute to the overall urban environment. Evaluating and optimizing these services are essential for creating a more livable and sustainable area.
Safety aspects of the area	From the aspects of safety pedestrians and vulnerable categories and cyclists are at risk

Offices in municipalities	
SUMP guidelines for this area	Locations for setting up smart stops and redesign public space are in the central city area covered by the SUMP. The SUMP guidelines and actions plans include the interventions for improvement of pedestrian infrastructure (construction of pedestrian zones and slow traffic zones), as well as improvement public transport infrastructure.

Stakeholders and Actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Chief urban planner	**Real-time bus tracking and information.** **Street redesign.**	**Empower**	**Ensure the proposed interventions align with the city's urban planning goals and regulations.** **Provide guidance and expertise to ensure interventions are feasible and sustainable.** **Facilitate coordination and collaboration among different municipal departments**	**Improve urban mobility and accessibility** **Enhance the livability and attractiveness of the city** **Promote sustainable transportation modes** **Increase citizen engagement and participation in urban planning processes**
Deputy head of the city administration	Real-time bus tracking and information. Street redesign.	Empower	Facilitate coordination and collaboration among different municipal departments	Improve urban mobility and accessibility Enhance the livability and attractiveness of the city Promote sustainable transportation modes Increase citizen engagement and

Private companies in mobility and urban development				
				participation in urban planning processes
Transport office	Real-time bus tracking and information. Street redesign.	Collaborate	Ensure the proposed interventions align with the city's urban planning goals and regulations Provide guidance and expertise to ensure interventions are feasible and sustainable	Improve urban mobility and accessibility Enhance the livability and attractiveness of the city Promote sustainable transportation modes Increase citizen engagement and participation in urban planning processes
Public enterprise for planning, Parking service	Street redesign	Collaborate	Ensure the proposed interventions align with the city's urban planning goals and regulations Provide guidance and expertise to ensure interventions are feasible and sustainable	improved parking conditions
Road safety council	Street redesign	Collaborate	Ensure the proposed interventions align with road safety strategy	Imrpved safety for all road users
"JUGOPREVOZ" **City operator for public transport**	**Real-time bus tracking and information.**	**Collaborate**	**Understand the potential impacts of interventions on their operations and services** **Provide insights into the transportation needs of the community from their perspective** **Explore opportunities for collaboration and integration with**	**Improved efficiency and reliability of their transportation services** **Increased customer satisfaction and ridership** **Opportunities for business growth and expansion**

			proposed mobility solutions	
Local communities				
Shop owners located in Brijanova street	**Street redesign**	**Consult**	**Understand how the proposed interventions may affect their businesses (e.g., accessibility, foot traffic, parking)** **Provide feedback on the potential impacts on their operations and customer experience** **Ensure their concerns and interests are addressed**	**Improved accessibility and visibility for their businesses** **Increased foot traffic and customer flow** **Enhanced streetscape and public spaces, creating a more attractive environment for customers**
association of the blind	**Real-time bus tracking and information.** **Street redesign.**	**Consult**	**Represent the interests and concerns of specific communities or causes (e.g., environment, urban mobility, accessibility)** **Provide valuable insights and perspectives based on their experience and expertise** **Ensure the interventions align with their organization's mission and values**	**Address specific issues or challenges relevant to their cause (e.g., environmental sustainability, accessibility)** **Promote inclusive and equitable urban development** **Raise awareness and engage the community in the Living Lab process**
NGO “Pescanik” women's association”	Street redesign.	Consult	Represent the interests and concerns of women	Better publci space for women
NGO Office for the youth of the city of Kruševac	Street redesign.	Consult	Represent the interests and concerns of young population	More strret space for young citizens
local community "Centar"	**Street redesign**	**Collaborate**	**Express their needs, concerns, and aspirations for their neighborhood** **Provide local knowledge and insights about the**	**Improved quality of life in their neighborhood** **Enhanced public spaces and amenities**

Vulnerable road users				
			area's challenges and opportunities Actively participate in the co-creation and decision-making process	Increased sense of community and belonging Addressing specific issues or challenges they face (e.g., traffic, safety, accessibility)
Ognjen Petar Todorovic	Real-time bus tracking and information. Street redesign.	Collaborate	Provide expert knowledge and technical guidance in their respective fields (e.g., urban planning, transportation, sustainability) Ensure the interventions are based on best practices and latest research Contribute to the evaluation and monitoring of the Living Lab process	Implement innovative and evidence-based solutions Contribute to advancing knowledge and practices in their field Demonstrate the potential and impact of Living Lab approaches
Public transport users:: high school students, employees, eldery	Real-time bus tracking and information	Consult	Express their needs, preferences, and experiences related to public transportation Provide feedback on the accessibility, convenience, and quality of existing services	Improved public transportation services (e.g., reliability, frequency, coverage) Enhanced accessibility and convenience for users
Public transport protentional users -Car users,	Real-time bus tracking and information	Inform	Express their needs, preferences, and experiences related to public transportation	Improved public transportation services (e.g., reliability, frequency, coverage) Enhanced accessibility and convenience for users

Media				
Bike users	**Street redesign**	**Consult**	**Represent the specific needs and challenges faced by people with disabilities in urban mobility** **Provide insights and recommendations to ensure accessibility and inclusivity** **Advocate for their rights and promote awareness**	**Improved accessibility and safety for people with disabilities in public spaces and transportation** **Removal of physical and structural barriers** **Promotion of universal design principles in urban planning**
Pederstrians	Street redesign	Consult	Represent the specific needs and challenges faced by pedestrians	Improved safety for pedestrians
E-scooter usesrs	Street redesign	Consult	Represent the specific needs and challenges faced by e-scooter users	Improved safety for e-scooter users
Caretakers with strollers	Street redesign	Consult	Represent the specific needs and challenges	Less noise, Ensure good accessibility (physical), and high safety for pedestrians with strollers
Kids	**Street redesign**		**Represent the specific needs and challenges faced by kids**	**Improved safety for kids**
Elderly	Street redesign		Represent the specific needs and challenges faced by eldery	Improved safety for eldery
Local media	**Real-time bus tracking and information.** **Street redesign.**	**Inform**	**Understand the purpose, goals, and potential impacts of the interventions** **Provide accurate and balanced information to the public**	**Newsworthy and impactful stories to share with the public** **Opportunities to raise awareness about urban issues and solutions**

Previous intervention 1		
About the intervention		
	Serve as a communication channel between the Living Lab and the broader community	**Increased engagement and interest from the community**

Past interventions to tackle the problems

Brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years
Road deaths and Injuries	Lack of accessibility and connectivity between the intercity bus station and the city center.	Pedestrian overpass (past intervention 1).
	Road safety of bicycle users.	Bike network expansion (lanes and paths) (past intervention 2).
Limited pedestrian-friendly areas and prioritization of vehicular traffic in urban spaces	Improving walkability	Pedestrian Zone Expansion

Detailed analysis of each of the past interventions

Intervention name	**Construction of a Footbridge with an Elevator - connecting the intercity bus station with the direction of movement towards the city center**
Problem	Lack of accessibility and connectivity between the intercity bus station and the city center
Specific challenge	Providing a safe and convenient pedestrian link for individuals with limited mobility, including the elderly and persons with disabilities, to access the city center from the intercity bus station.
Year of implementation	2024
What was the context of this challenge?	The intercity bus station is located at a distance from the main road leading to the city center, posing accessibility challenges for pedestrians, particularly those with mobility constraints. The existing route involved navigating through a crowded area with limited pedestrian infrastructure, creating safety concerns and inconvenience. At the crossings of this area there were many accidents.
Why was this intervention selected for tackling this specific challenge?	The construction of a footbridge with an elevator was chosen as a solution to directly address the accessibility and connectivity issues between the bus station and the city center. It aimed to provide a safe, direct, and inclusive pedestrian link, ensuring that individuals with limited mobility could access the city center without facing physical barriers or navigating through hazardous routes.
What were the KPIs to be achieved by this intervention?	Enhanced safety for pedestrians crossing between the bus station and the city center. Reduced travel time and distance for pedestrians between the two points. Increased satisfaction and convenience for users.
How was the intervention implemented?	2022. The City of Krusevac has foreseen this activity in the planning of the Budget for 2023. During 2023, the projects and the necessary documentation were completed. In the second half of 2023, the footbridge was completed. At the beginning of 2024, a usage permit was obtained, and it was put into operation.
What technologies were used for this intervention?	The intervention utilized modern construction techniques and materials to ensure the structural integrity and durability of the footbridge. Additionally, energy-efficient and accessible elevator systems were installed to facilitate vertical movement between the bus station and the city center.
What tools and methods were used for this intervention?	The project involved architectural and engineering design, structural analysis, and construction planning. Accessibility guidelines and universal

Data collected		
	design principles were followed to ensure the footbridge and elevator met the needs of diverse users. Stakeholder consultations and community engagement activities were conducted to gather feedback and address concerns.	
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
Municipal authorities	Provided funding, oversight, and coordination of the project	Initiated the project, allocated budgets, and coordinated stakeholder involvement
Public enterprise Urbanizam	Project design	Coordinated design phases
Intercity bus station operators	Collaborated on integration with the bus station facilities	Participated in planning meetings and facilitated integration with their facilities
Urban designers and architects	Designed the footbridge and elevator system	Developed conceptual designs and technical specifications
Construction companies	Responsible for the construction and implementation of the project	Carried out the construction work according to the approved plans
Local community representatives	Provided inputs and feedback on the design and implementation	Attended public consultations and provided feedback
How was the data collected?	**Data collection involved various methods, including:** **Pedestrian counts and traffic surveys at the bus station and city center.** **Accessibility audits and assessments of the existing infrastructure.** **User feedback and satisfaction surveys.** **Time and distance measurements for pedestrian travel between the two points.**	
What technology was used?	On-site surveys. Online surveys and feedback platforms.	
How was it monitored?	The data collection process was monitored through: Regular site visits and observations by project coordinators.	

Previous intervention 2	
About the intervention	
	Review of survey responses and feedback from stakeholders. Periodic progress reports and evaluations.
Who did apply this?	Municipal authorities (transportation and planning departments).
Who was participating in it?	-
Who owns the collected data?	Municipality.
What results have been achieved? Describe with concrete metrics.	**The number of reported incidents or accidents involving pedestrians in the area decreased.**
What lessons have been learned?	Collaboration between various departments and agencies is necessary for successful implementation of such interventions.
What recommendations can be given for future interventions tackling this specific challenge?	Explore opportunities for integrating additional amenities, such as seating areas, lighting, and wayfinding signage, to enhance the overall user experience. Establish robust monitoring and evaluation frameworks to ensure the long-term effectiveness and maintenance of the intervention.

Intervention name	**Bike Network Expansion (Lanes and Paths).**
Problem	Lack of adequate infrastructure for cycling as a mode of transportation.
Specific challenge	Road safety of bicycle users.
Year of implementation	2016-2023
What was the context of this challenge?	The city faced increasing traffic congestion, air pollution, and a lack of sustainable transportation options. Despite the potential for cycling, the existing infrastructure was limited, and many residents felt unsafe or discouraged from cycling due to the lack of dedicated bike lanes and paths.

Stakeholders involved in the intervention		
Why was this intervention selected for tackling this specific challenge?	The expansion of the bike network through the construction of new bike lanes and paths was chosen as a solution to encourage and facilitate cycling as a viable mode of transportation. By providing dedicated infrastructure, the intervention aimed to improve safety, accessibility, and convenience for cyclists, promoting a shift towards more sustainable and active modes of transportation.	
What were the KPIs to be achieved by this intervention?	Increased number of cyclists and cycling trips within the city. Reduced traffic congestion and carbon emissions from vehicular transportation. Improved safety and perception of safety for cyclists. Enhanced accessibility and connectivity for cyclists across different parts of the city.	
How was the intervention implemented?	The intervention involved a comprehensive city-wide plan for the construction of new bike lanes and paths. Existing roads were retrofitted with dedicated bike lanes, while separate bike paths were built in areas with high pedestrian and cycling traffic. The construction process included resurfacing, signage, and the installation of safety features such as barriers and intersection treatments.	
What technologies were used for this intervention?	The intervention utilized modern road construction techniques and materials, including specialized surfacing for bike lanes and paths. Additionally, intelligent transportation systems, such as cyclist-activated traffic signals and bike counters, were integrated to enhance safety and monitor usage.	
What tools and methods were used for this intervention?	The project involved various tools and methods, including: Geospatial analysis and mapping to identify optimal routes and locations for bike infrastructure. Public engagement and consultation processes to gather feedback and address concerns. Design guidelines and standards for bike lane and path construction.	
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?

Results		
Cycling advocacy groups and organizations	Represented the interests of cyclists and provided recommendations	Participated in planning meetings and provided expertise on cyclist needs
Municipal authorities (transportation, urban planning	Provided funding, oversight, and coordination of the project	Initiated the project, allocated budgets, and coordinated stakeholder involvement
Urban designers and transportation engineers	Developed the network design and technical specifications	Developed conceptual designs and technical specifications
Construction companies	Responsible for the construction and implementation of the bike lanes and paths	Carried out the construction work according to the approved plans
How was the data collected?	**Bike counts and cyclist traffic surveys along existing and proposed routes.** **User feedback and satisfaction surveys from cyclists.** **Geographic Information System (GIS) mapping of existing and proposed bike infrastructure.**	
What technology was used?	Online surveys. GIS mapping software and spatial analysis tools.	
How was it monitored?	Regular site visits and observations by project coordinators.	
Who did apply this?	Municipal authorities (transportation and planning departments).	
Who was participating in it?	-	
Who owns the collected data?	Municipality.	
What results have been achieved? Describe with concreate metrics.	**The number of cycling trips within the city increased by 30% after the implementation of the bike network expansion.** **Cyclist satisfaction surveys reported an 85% positive rating for the new bike infrastructure.**	
What lessons have been learned?	Prioritizing safety and connectivity are crucial for encouraging widespread adoption of cycling as a mode of transportation.	

Previous intervention 3	
About the intervention	
	Ongoing maintenance and improvements to the bike network are necessary to ensure its long-term effectiveness.
What recommendations can be given for future interventions tackling this specific challenge?	Develop a comprehensive bike network plan that considers connectivity, safety, and integration with other transportation modes. Implement educational and awareness campaigns to promote cycling as a sustainable and healthy mode of transportation. Explore opportunities for bike-sharing systems and end-of-trip facilities (e.g., secure bike parking, showers) to further encourage cycling. Continuously monitor and evaluate the bike network's usage and effectiveness, making adjustments and improvements as needed. Foster partnerships with local businesses, schools, and community organizations to promote cycling as a viable transportation option.

Intervention name	**Pedestrian Zone Expansion.**
Problem	Limited pedestrian-friendly areas and prioritization of vehicular traffic in urban spaces.
Specific challenge	Enhancing the walkability and livability of the city by expanding pedestrian zones, reducing vehicular traffic in certain areas, and creating vibrant public spaces for pedestrians.
Year of implementation	2021
What was the context of this challenge?	The city center and several neighborhoods were dominated by vehicular traffic, resulting in congestion, air pollution, and diminished pedestrian safety and accessibility. There was a growing demand for more pedestrian-friendly spaces that prioritized walkability, community interaction, and a higher quality of life for residents and visitors.
Why was this intervention selected for tackling this specific challenge?	The expansion of pedestrian zones was chosen as a solution to reclaim urban spaces for pedestrians, promote sustainable transportation modes, and create vibrant public realms. By restricting vehicular traffic in certain areas and enhancing pedestrian infrastructure, the intervention aimed to

Stakeholders involved in the intervention		
	improve safety, accessibility, and the overall urban experience for pedestrians.	
What were the KPIs to be achieved by this intervention?	Increased pedestrian traffic and usage of public spaces within the expanded pedestrian zones. Reduced vehicular traffic and emissions in the designated areas. Improved perception of safety and accessibility for pedestrians. Enhanced economic vitality and business activity in pedestrian-friendly areas.	
How was the intervention implemented?	The intervention involved the identification and designation of new pedestrian zones within the city. Selected streets and areas were closed to vehicular traffic, with the exception of emergency and service vehicles. Pedestrian infrastructure, such as widened sidewalks, seating areas, landscaping, and public art installations, were introduced to create attractive and inviting public spaces. Traffic management measures were implemented to redirect vehicular traffic away from the pedestrian zones.	
What technologies were used for this intervention?	-	
What tools and methods were used for this intervention?	The project involved several tools and methods, such as: • Urban design and placemaking principles to create vibrant and engaging public spaces. Public engagement and consultation processes to gather feedback and address concerns. Accessibility assessments and universal design guidelines to ensure inclusivity.	
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
Municipal authorities (urban planning, transportation, and public works departments)	Provided funding, oversight, and coordination of the project	Initiated the project, allocated budgets, and coordinated stakeholder involvement
Local business owners and merchant associations	Represented the interests of businesses within the pedestrian zones	Participated in planning meetings and provided feedback on the potential impacts on their businesses

Results		
Urban designers and architects	Developed the design and vision for the pedestrian zones	Developed conceptual designs and technical specifications for the pedestrian zones
Construction companies and contractors	Responsible for the physical implementation and construction work	Carried out the construction work and implementation according to the approved plans
How was the data collected?	**Data collection involved various methods, including:** **Pedestrian counts and movement patterns within the designated pedestrian zones.** **Vehicular traffic counts and congestion data in surrounding areas.** **User feedback and satisfaction surveys from pedestrians, residents, and businesses.**	
What technology was used?	On site surveys and counting	
How was it monitored?	Municipality – department for urbanism	
Who did apply this?	Municipality – department for urbanismž	
Who was participating in it?	Municipality – department for urbanism and department for utility work	
Who owns the collected data?	Municipality	
What results have been achieved? Describe with concreate metrics.	**Pedestrian traffic within the expanded pedestrian zones increased**	
What lessons have been learned?	Integrating placemaking elements, such as public art, seating areas, and greenery, enhances the overall pedestrian experience.	
What recommendations can be given for future interventions tackling this specific challenge?	Develop a comprehensive pedestrian network plan that considers connectivity, accessibility, and integration with other transportation modes. Implement phased expansion of pedestrian zones, allowing for gradual adaptation and minimizing disruptions to businesses and residents. Explore opportunities for temporary or seasonal pedestrian zones to test and evaluate their impact before permanent implementation.	

Annex VII: Liberec Feasibility and Action Plan

Discovering the current state

Mobility problems

Mobility challenges	Specific Challenges in the area of interventions	Proposal call challenges addressing mobility, public health and environmental aspects.
Road safety	The main problem of urban mobility in housing estates is parking, the capacity of parking places, the possibility of coexistence between other traffic participants (bikes, scooters, motorbikes, vehicles, public transport, components of the rescue system, etc.). Parking has to be regulated to decrease number of trips in housing estate	Climate change (transition towards climate neutrality, air quality and noise pollution) - Sufficient and appropriate parking space and relevant devices reduce redundant car movement in housing estate surroundings and means also less air and noise pollution. The goal is to ensure the possibility of using ecological approaches and new energy-saving technologies in housing estate parking lots. The possibility of installing charging stations or using other alternative transport and the like will ensure a reduction of the climate burden and improve air quality. Road Deaths increase and safety issues (50 % reduction target for deaths and also for serious injuries by 2023) - Sufficient and appropriate parking space and relevant devices reduce redundant car movement in housing estate surroundings and means also protection against accidents. The goal is to improve parking methods and thereby reduce potential accidents not only by repeatedly searching for
Missing catchment parking lots (P+R) on the outskirts of Liberec with connection to the public transport leading to the city centre	This might decrease number of non-resident vehicles parking in housing estates	
Missing K+R spaces nearby popular locations	Providing comfort space for using shared transportation with no need to occupy the traffic space for long time.	
Insufficient resident parking (housing estates) and non-legal parking	In a lot of housing estates, there is a problem with insufficient resident parking spots, is some of them are necessary to increase the number of parking places (since most housing estates were built decades ago when citizens did not own any or more than one car) and some there is necessary to regulate parking, to avoid non-legal parking and to eliminate parking of non-residents (common problem of	

Proposed intervention 1		
	commercial vehicles parking in housing estates).	places to park, but also by one's own behaviour in a given location
Low use of bikes and insufficient number of pedestrians	The city needs to increase use of bikes and number of pedestrians also in housing estates – there has to be built infrastructure for that, to ensure that the city is fully safely penetrable for that	Increased safety perception by citizens and especially by VRUs and vulnerable users. The approach to parking solutions will improve not only comfort for residents, but a generally safer view of traffic and other traffic participants such as pedestrians and cyclists. It is the same with immobile persons and their provision of safe parking. proposed measures and verification in pilot operation led to the possibility of getting to know the results in the given location and the transferability of untested verified measures for considering the safety of the operation. Urbanization. Air quality standards are still breached.
Insufficient infrastructure for cyclists and pedestrians.	See above	
Insufficient coherence of public transport lines	The municipal bus service can be coordinated with regional bus service to increase the frequency of the connection.	

Proposed interventions

Intervention name	**Effective regulation of residential parking in housing estates.**
Brief description	Determining places for residents - use of ITS systems to detect vehicles/residents' plate for controlling Offering alternative parking for commuter and non-residents
Infrastructure targeted	Managing of the parking spaces/spots in housing estates

Proposed intervention 2	
Services	Services/instruments regulating parking in housing estates (it means appropriate technical instruments for vehicle detection, active or passive sensors, overall service relevant to issuing cards).
Monitoring needed	It will be ensured with the use of ITS systems (sensors) - vehicle plates detection, based on inspection of turnover and occupancy of parking spaces etc.
Who is expected to benefit	Residents of the housing estates (and also other visitor of this area – increased traffic safety).
What Stakeholders are affected	Citizens (mainly local residents). Municipal authorities including the regional office/politicians (public space decision makers, creators of specific regulation and legislation). Municipal companies and organizations operating in those localities (for example schools located in housing estates). Local committees. Owners and managers of related infrastructure (Public transport company, often municipal companies and organisations – that are responsible for public space, public greenery, waste management etc.). Rescue corps.

Intervention name	**Public space re-design.**
Brief description	Redesign of public spaces within housing estates – building new greenery, better surroundings
Infrastructure targeted	Parking spaces/spots in housing estates, public greenery in housing estates, bus stops, streets and pavements etc.
Services	This measure is not defined properly yet but there can be expected some re-design of public space, i.e. housing estate and its surroundings in the future including some modernisations/building of bus stops and related infrastructure, new public greenery that has to be managed appropriately etc.
Monitoring needed	There will be monitored increase in transport safety, increase in usage of sustainable ways of mobility, decrease in GHG emissions.

Proposed intervention 3	
Who is expected to benefit	Citizens living on housing estates.
What Stakeholders are affected	Citizens (local residents). Municipal authorities including the regional office/politicians (public space decision makers, creators of specific regulation and legislation) Municipal companies and organizations operating in those localities (for example schools based in housing estates) Local committees. Owners and managers of related infrastructure (Public transport company, often municipal companies and organizations – that are responsible for public space, public greenery, wase management etc.). Rescue corps.

Intervention name	**Support/development of electrification in terms of charging infrastructure development in housing estates.**
Brief description	Building of charging infrastructure on parking lots
Infrastructure targeted	Charging infrastructure in housing estates (surroundings).
Services	Possible new services related to new charging infrastructure in housing estates.
Monitoring needed	There will be monitored increase in electrification, decrease in GHG emissions.
Who is expected to benefit	Citizens (mainly residents of housing estate)
What Stakeholders are affected	Citizens (local residents). Municipal authorities including the regional office/politicians (public space decision makers, creators of specific regulation and legislation). Municipal companies and organizations operating in those localities. Local committees. Owners and managers of related infrastructure.

Living Lab

Living Lab characteristics

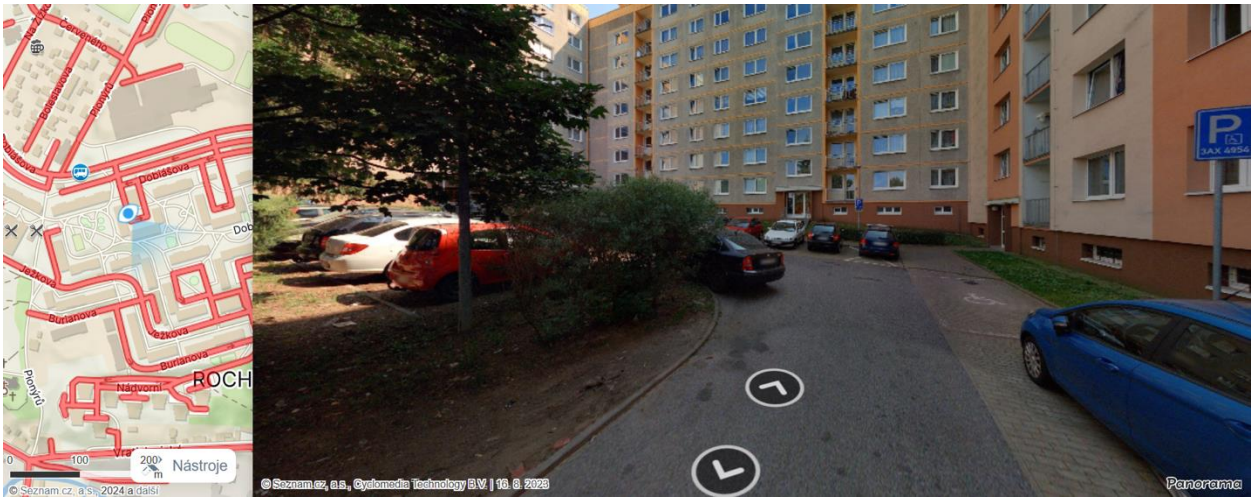


Figure 6 – street space inside the housing estate

Maps of the area(s) where interventions are planned	Housing estate Rochlice (Dobiášova)

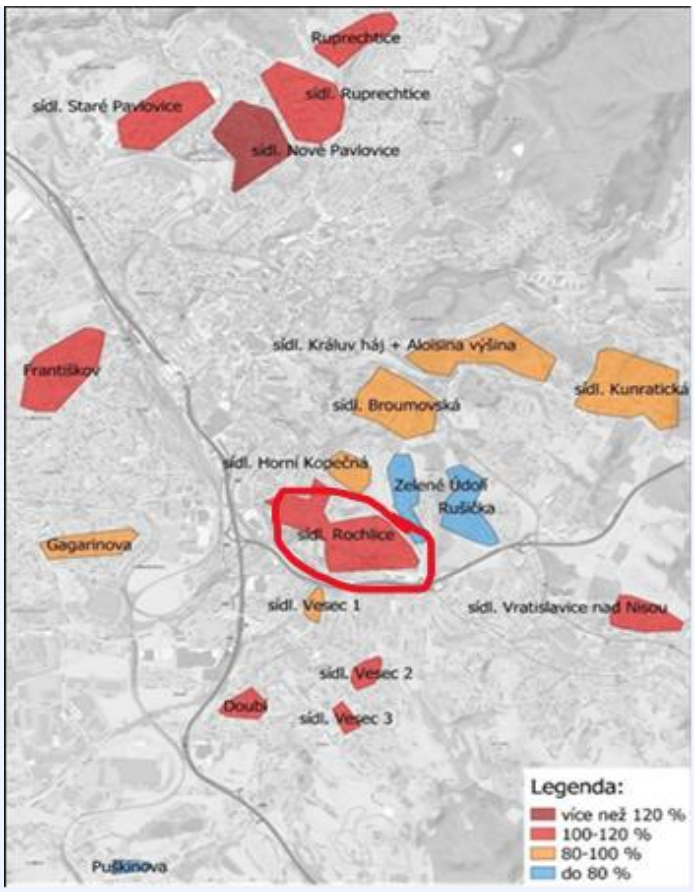


Figure 7 – Housing estate Rochlice (Dobiášova) and its parking space usage

Current mobility aspects of this area	The problem of the area is parking in the housing estate (see picture above), the insufficient capacity of parking places, also the possibility of unsafe coexistence between other traffic participants as bikes, scooters, motorbikes, public transport etc.). There is also completely missing infrastructure for electromobility development.
Infrastructure and services existing	Housing estate - Rochlice (Dobiášova) is densely populated locality, where there is typical higher traffic intensity, since the concerned locality is housing estate, there are located relevant civic amenities as shops, kindergarten, school, etc.). This has negative influence on traffic intensity and safety, this is why there has been realised some measures leading to increase in traffic safety (crossings reconstruction, pavements reconstructions, public lighting modernisation. It is also necessary to continue with other measures leading to increase in transport safety and development/support of sustainable mobility.
Safety aspects of the area	The maximum daily intensity of motor vehicles on working days is 4,279 vehicles /day, the proportion of heavy goods vehicles is 307 vehicles / day – peak hourly traffic intensity is 479 vehicles/hour,

– the intensity of bicycle traffic is 47 bicycles / day,
– the traffic unevenness coefficient is 54:46

There was measured the speed of passing vehicles, speed tracking was performed by short-term deployment of the radar with these results:

Rychlostní rozpětí	13:00 – 14:00 hod.	14:00 – 15:00 hod.	15:00 – 16:00 hod.
méně než 15 km/h	0	6	2
15 – 25 km/h	9	7	3
25 – 35 km/h	22	34	4
35 – 45 km/h	46	39	17
45 – 55 km/h	12	9	49
55 – 65 km/h	**8**	**4**	**16**
více než 65 km/h	**3**	**1**	**9**

Table 4: Speed of passing vehicles of one-time measurement

Road accidents in Liberec:

The number and consequence of road accidents has been decreasing slightly lately, as following numbers show:

Accident/Year	2018	2019	2020
Total road accidents	1047	1105	980
- life or health consequence	199	197	185
- fatal/death consequence	1	3	2
- severe injury	11	11	12
- minor injury	187	183	171
- pedestrian participation in accident	53	56	39

Table 5: Number of road accidents in Liberec

Location of road accidents (data for the whole Liberec district):

Road classification/Year	2018	2019	2020
Class 1	398	508	389
Class 2	114	103	124
Class 3	261	267	251
Local streets	808	870	791

Private companies in mobility and urban development	
	Parking space 256 219 184 Table 6: Number of road accidents in Liberec according to the street classes Areas with high concentration of road accidents are pedestrian crossings and their surroundings.
SUMP guidelines for this area	Specific goal 4.3 Tailored parking with city centre protection Measure 4.3.1 Expansion and adjustments of paid parking zones and organization of resident parking on the housing estate. The pilot area – Housing estate Rochlice is namely mentioned in SUMP

Stakeholders and Actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Municipal office:				
Dpt. of Architecture	Redesign of public spaces	High collaborate	Design of solution for sustainable environment	New and rebuilt public spaces
Dpt. of Transport	Legisl. restriction	Low consult	Proposal of new legal restriction	Less cars, CO2 reduction
Dpt. of Ecology	Redesign of public greenery	Medium collaborate	Adaptation for climate change	Better public spaces, CO2 reduction
Dpt. of Telematics	Redesign of parking spaces	High empower	Design of smart solution, safety measures	Better modal split in favour of pedestrians
Municipal police	Public safety management	High empower	Forcing of comply the regulations	Limiting the conflict situations

Experts				
Transport company DPMLJ	**Higher comfort of public transport** **Low emission transport**	**High** **collaborate**	**New e-buses** **Faster and comfortable transport**	**Higher share of citizens using public transport** **CO2 reduction**
Technical services TSML	Services for smart solutions and public space	Medium empower	Providing services for the city, maintenance of public spaces	Better public spaces
KORID LK	Regional public transport coordinator	Low involve	Coordinating municipal with regional public buses	Effective using of concurrent leading bus lines to lighten up from car rides.
Private investors	**Charging infrastructure**	**Low** **inform**	**Building of new charging points**	**Higher share of e-cars**
Shared e-bikes/e-scooter provider	Provider of alternative means of transport	Low inform	Managing the system o shared e-bikes/e-scooter	Limiting the individual car rides to the centre of the town Considerate management of the system tow the traffic space
Local communities				
Local committees and associations	Participation of an active residents	High involve	Participation of an active residents, better ideas	Tailored solutions and ideas from residents
Technical university in Liberec	**Smart solution design**	**Medium** **consult**	**Design of innovative action**	**Innovative solutions for parking and safety measures**
ČVUT	Smart solution design	High collaborate	Partner of the project	ITS solution for parking in housing estates

Migrants' segments				
NIPI	Barrier free measures coordinator	High collaborate	Professional support	Experiences with functional solutions, for users with movements and orientational disabilities
Citizens – local residents	**Participation of citizens**	**high**	**Participation of citizens**	**The highest possible number of experiences and expectation of the citizens will be fulfilled or at east discussed**
Elderly people	**Participation**	**low**	**Participation**	**Ideas for safety measures**
People with disabilities	Participation	high	Participation	Ideas for safety measures
People at risk of social exclusion	**Participation**	**low**	**Participation**	**Ideas for safety measures**
Ukrainies	**Participation**	**low**	**No need for action**	

Past attempts to tackle the problems

Past interventions brief overview

Problem	Specific challenge	Past intervention	Relevancy to ELABORATOR
Road safety, Overcrowded public space	Limiting the dangerous situations and unpleasant encounters with shared e-scooter, bike and other users of traffic space.	Considerate management of shared e-scooters and bikes	low

Previous intervention 1 – Shared bikes/e-scooter			
About the intervention			
Road safety	To make traffic space safer for every user, especially pedestrians	Road and sidewalks reconstruction	high
Overcrowded public space	To redesign public space within chosen housing estates, to solve insufficient room for residential parking with enough room for car traffic flow and pedestrians	Better parking management on chosen housing estates	high
Road safety	Determining space and building paths for pedestrians/bike-only	Save spaces for pedestrians and bicycles	medium
Weak offer of public bus services	Coordinating bus schedules to provide higher frequency of the bus service for residents of Krásná Studánka - northern part of the Liberec city, which is anyway on the line of regional buses toward region northern from Liberec	Coordination of municipal and regional buses for outskirt location	medium

There were no serious interventions held toward providing the P+R catchment parking on the outskirts of the city with a connection to public transportation and as well no intervention for K+R in the city centre or near the other popular locations in the city.

Detailed analysis of each of the past interventions

Intervention name	**Considerate management of shared e-scooters and bikes**
Problem	Road safety, Overcrowded public space
Specific challenge	Limiting the dangerous situations and unpleasant encounters with shared e-scooter, bike and other users of traffic space.
Year of implementation	2018
What was the context of this challenge?	On the city centre pedestrian area there were many accidents and injuries especially with the shared e-scooter user and other pedestrians.

Data collected		
	There are no dedicated routes for e-scooters or clear regulations of their using in the traffic space.	
Why was this intervention selected for tackling this specific challenge?	We decided to limit the number of shared e-scooters and area of their allowed usage to avoid dangerous situations.	
What were the KPIs to be achieved by this intervention?	The decreased number of shared e-scooter, limited area of their allowed usage and dedicated places where is possible to park them.	
How was the intervention implemented?	By discussion with the e-scooter provider.	
What technologies were used for this intervention?	SW setting of the system with dedicating the area of operation and places where is possible to park and later pick up the shared e-scooters.	
What tools and methods were used for this intervention?	E-scooter provider SW.	
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
Citizens and visitors	Users	By street public survey
Municipal office	Initiator	Initiating and discussing with e-scooter provider and citizens/visitors
Municipal police	User, manager of public safety	By collecting data about accidents and conflict situations
Shared E-scooters companies	Manager of the e-scooter system	By adapting the SW of the system
How was the data collected?	**By interviewing randomly chosen people on the street,** **By collecting the experiences from Municipal police officers**	
What technology was used?	Interviews, field observations	
How was it monitored?	Reporting the accidents, summary material	
Who did apply this?	Municipal office	

Previous intervention 2 – Road/sidewalks reconstructions	
About the intervention	
Who was participating in it?	Citizens, visitors, Municipal office, Municipal Police, Shared e-scooter providers
Who owns the collected data?	Municipal office
What results have been achieved? Describe with concreate metrics.	**Injury cases decreased by 30%** **Death numbers decreased by 80%** **Safety perception increased by 50%**
What lessons have been learned?	Such other mode of transportation as e-scooters has advantages by saving the car traveling on one of the sides but need to be better organized on the other side.
What recommendations can be given for future interventions tackling this specific challenge?	E-scooters as well as bicycles belong to traffic space. The shared system needs to be managed in behaviour to limit conflict situations.

Intervention name	**Road and sidewalks reconstruction**
Problem	Road safety
Specific challenge	To make traffic space safer for every user, especially pedestrians
Year of implementation	2017-2024
What was the context of this challenge?	To reduce the road accidents and dangerous situations
Why was this intervention selected for tackling this specific challenge?	On one of the sides many of the reconstruction were necessary due the improper state (physical and aesthetic). On the other side, the reconstructions were made by approach for road safety, taking care of the car traffic, integrated system, pedestrians and cyclists to make proper and safe room for every user.
What were the KPIs to be achieved by this intervention?	Number of realization and km of resolved roads, sidewalks and crossings.

Results		
How was the intervention implemented?	By physical realisation on ground of case studies and building documentations.	
What technologies were used for this intervention?	Planning SW, administrative procedures, tendering, building itself	
What tools and methods were used for this intervention?	CAD SW, building tool and machineries	
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
Residents	Users	Initiating many of the intervention by pointing out on various improper state of certain places of traffic rooms
Municipal office	Initiator, administrator, investor	Monitoring and managing of the traffic infrastructure, initiating and financing the intervention.
Traffic construction designer	Author of the intervention plan	Incorporating all needs and demands into the building documentation.
TSML and other contract building companies	Realizator	Realizing the intervention
How was the data collected?	**By emails, phone calls, on public meetings and own fields surveys**	
What technology was used?	Various depending on the above mentioned	
How was it monitored?	By survey before and after the realization.	
Who did apply this?	Residents and Municipal office	
Who was participating in it?	Municipal office, residents, traffic construction designer, TSML and other realization companies	
Who owns the collected data?	Municipal office	

Previous intervention 3 – Parking management	
About the intervention	
What results have been achieved? Describe with concrete metrics.	**Dozens of realizations all around the city.**
What lessons have been learned?	There should be a certain plan for all of the interventions to priority tackle the most important and realize them in logical order concerning capacities and minimize the impact on the traffic organization during the realization.
What recommendations can be given for future interventions tackling this specific challenge?	Joining the nearby intervention in one complete intervention.

Intervention name	**Better parking management on chosen housing estates**
Problem	Overcrowded public space
Specific challenge	To redesign public space within chosen housing estates, to solve insufficient room for residential parking with enough room for car traffic flow and pedestrians
Year of implementation	2022
What was the context of this challenge?	To find more parking places on current streets without building new extra paved spaces
Why was this intervention selected for tackling this specific challenge?	There was no additional space to spread the parking lots. The greenery had to be saved in current area.
What were the KPIs to be achieved by this intervention?	Number of new parking lots, comparing with the previous state.
How was the intervention implemented?	Organizing the traffic as a one-way streets system and marking the lots to be understandable for users.
What technologies were used for this intervention?	Vertical road signs and horizontal road markings on current streets.

Results		
What tools and methods were used for this intervention?	Public survey between the citizens of the housing estates	
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
Citizens of the housing estates	Users	By public meeting and surveys
TSML – municipal technical service provider Road sign companies	Realizator of the road signs and marking	As ordered realizator
Author of the study	Organizer	Organizing the public meeting and surveys, elaborating the documentation
Municipal office	Initiator, investor	Initiating and financing the study and surveys
How was the data collected?	**Public meetings and questionaries**	
What technology was used?	Questionaries, common talks and direct interviews	
How was it monitored?	By author of the study and municipal office members	
Who did apply this?	Municipal office	
Who was participating in it?	Residents of chosen housing estates participating in public meetings and surveys	
Who owns the collected data?	Municipal office	
What results have been achieved? Describe with concrete metrics.	**More parking places achieved and better coordination of parking**	
What lessons have been learned?	That without regulation we can´t reach anything	
What recommendations can be given for future interventions tackling this specific challenge?	Precise urban planning with regard of the surrounding relations, legislation restriction and recommendations for building new apartments/housing estates – compulsory number of parking lots and paths for pedestrians/bikes connected to the area	

Stakeholders involved in the intervention		
About the intervention		
Intervention name	**Save spaces for pedestrians and bicycles**	
Problem	Road safety	
Specific challenge	Determining space and building paths for pedestrians/bike-only	
Year of implementation	2018-2020	
What was the context of this challenge?	States and regional politics aim to support pedestrians and bike transportation as a safe mode of traffic at the expense of individual car transportation	
Why was this intervention selected for tackling this specific challenge?	To increase the modal split in favour of cyclists and pedestrian	
What were the KPIs to be achieved by this intervention?	Km of new build and demarcated infrastructure	
How was the intervention implemented?	Demarking & building of new cycling path	
What technologies were used for this intervention?	Road signs and road marking on the existing roads and sidewalks and building of the new cyclo-pedestrians' paths	
What tools and methods were used for this intervention?	Road marking tools, building machinery...	
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
City residents and visitors	Users of the infrastructure	As an object of observation
Municipal office	Organizing and initiating the intervention	As initiator
Author of the study and project documentation	Defining the intervention and preparing the project documentation	As an author

Previous intervention 5 – Municipal and regional buses		
About the intervention		
Technical services TSML	Realizer of the intervention	Physical realization
Contract construction company	Realizer of the intervention	Physical realization
How was the data collected?	**By observation and traffic surveys**	
What technology was used?	Personal and electronic counter	
How was it monitored?	By comparing the traffic surveys before and after realization	
Who did apply this?	Municipal office	
Who was participating in it?	Municipal office, TSML, Contruction companies and the users	
Who owns the collected data?	Municipal office	
What results have been achieved? Describe with concrete metrics.	**Only few kms of new infrastructure**	
What lessons have been learned?	That it´s very difficult and expensive to build new line infrastructure due to long administrative procedures while dealing with various private owners of affected lands	
What recommendations can be given for future interventions tackling this specific challenge?	Room for pedestrians and cyclist have to be integrated part of any road reconstruction and new realisation.	

Intervention name	**Coordination of regional and municipal buses for outskirt location**
Problem	Weak offer of public bus services
Specific challenge	Coordinating bus schedules to provide a higher frequency of bus service for residents of Krásná Studánka - the north part of the Liberec city, which is anyway on the line of regional buses toward the region north Liberec.
Year of implementation	2021
What was the context of this challenge?	Residents from Krásná Studánka called for higher frequency of municipal bus line.

Results		
Why was this intervention selected for tackling this specific challenge?	To save the public financial funds by adding extra buses.	
What were the KPIs to be achieved by this intervention?	Number of bus connection from Krásná Studánka to city centre.	
How was the intervention implemented?	DPMLJ – municipal public service provider in cooperation of KORID (regional public service coordinator) coordinated the bus schedules to offer both municipal and regional buses as a single bus service.	
What technologies were used for this intervention?	Timetables change and integrated tariff solution	
What tools and methods were used for this intervention?	Timetable SW, board device statistics	
What stakeholders and actors were involved in this intervention?	What were their roles?	How were they involved?
Residents of Krásná Studánka	Users	As initiator
DMPLJ	Municipal bus service provider	Coordinated the services
KORID LK	Regional public transport coordinator	Coordinated the services
How was the data collected?	**Number of connections came from time schedules** **Number of passengers came from survey**	
What technology was used?	Observation by the bus drivers	
How was it monitored?	Summary of the observation by emails	
Who did apply this?	Residents of Krásná Studánka	
Who was participating in it?	DMPLJ, KORID LK, Krásná Studánka Residents	
Who owns the collected data?	DPMLJ, KORID LK	

What results have been achieved? Describe with concreate metrics.	**The number of connections was increased almost 2 times. Regional buses offer the express connection to the centre (less stops on the route on city ground)**
What lessons have been learned?	This coordination should be held on other directions common for municipal and regional bus lines.
What recommendations can be given for future interventions tackling this specific challenge?	Instead of adding new municipal buses for outskirt locations, it is worth using the regional buses going the same way.

Annex VIII: Lund Feasibility and Action Plan

Proposed intervention 1

Discovering the current state

Mobility problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
Efficient and cost beneficial methos for traffic measuring. Increased safety for VRU. Climate neutrality.	Challenge to not just move car flows and create heavy car traffic in other parts of the city center. Increase traffic safety (actual and perceived) for VR. Not interfered public transport.	Climate change. Road safety. Livable and attractive cities. Inclusive cities. Noise pollution.

Proposed interventions

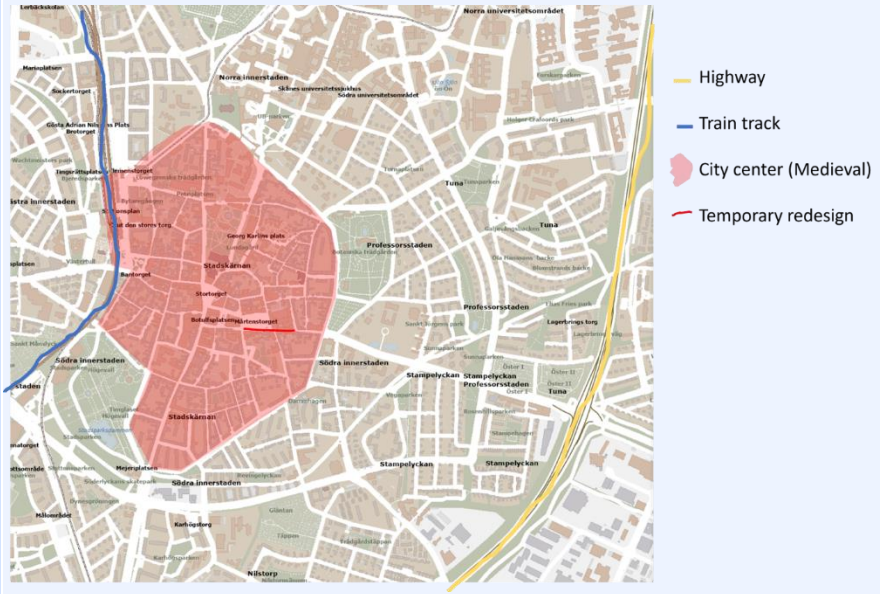
Intervention name	Redesigning street (temporary)
Brief description	Temporary redesignment of existing street, and new regulation in to “pedestrian street”. Closing of 15 parking spaces. Bicycles will be allowed on the street, but they have to cycle at the same speed as pedestrians. Also important with a holistic approach, meaning that we want to understand if and what impact the intervention has on the surrounding traffic flow, not just on the one street. If the intervention can have a positive impact on the overall traffic system and modal split.
Infrastructure targeted	Street, square, parking. For monitoring: Streets in an area around the intervention street and square.
Services	Restaurants, shops, buses, shared parking, parking, parking for people with disability permits.

Proposed intervention 2	
Monitoring needed	Traffic flow, number of cars, cyclists, pedestrians. Behavior on and surrounding streets, speed of cyclist. modal share, car traffic, air quality, noise and emissions.
Who is expected to benefit	Users of the city center, pedestrians (if successful, also shop- and restaurant owners, business owners etc). City technical department & city planning department, gaining knowledge on what impact the intervention has. Vulnerable road users
What Stakeholders are affected	Bicyclist, visitors parking on street/square, (buses – hopefully not)

Intervention name	Temporary change of parking regulation close to and on square
Brief description	15 parking spaces will be temporarily closed. On the square, the parking will get a new regulation, and the area for the market that takes place during daytime will be different.
Infrastructure targeted	Parking
Services	Parking
Monitoring needed	Traffic flow, number of parked cars
Who is expected to benefit	Car users / visitors
What Stakeholders are affected	Car users. (Maybe busses, and public transport passengers since the new regulation might result in increased car flow on a specific street, and might have a negative impact on busses)

Living Lab

Living Lab characteristics

Maps of the area(s) where interventions are planned	Inner city Lund, mostly medieval parts  
Current mobility aspects of this area	In the yellow zone (map 1) there is parking spaces, which is not so frequent in the rest of the city center, and thus the street is attractive for cars to reach them. The yellow zone is also easy accessible from the highway. It's also one of the important cycling routes through the city center, but also needs to service pedestrians.

Infrastructure and services existing	Parking spaces, bike-sharing station, road infrastructure (no bicycle lanes) and pedestrian lanes that are very narrow in some parts.
Safety aspects of the area	Narrow medieval streets that today need to fit all modes. In general, zero-vision for deaths, and severe injuries related to traffic should decrease by 50% to 2030. During 2022, 90% of the injured in the municipality was VR.
SUMP guidelines for this area	Goal of becoming climate neutral by 2030. Transport is the biggest cause of emissions. Goals in SUMP states that by 2030 75% of all travel within the municipality should be made by sustainable transport modes, 50% for trips to/from the municipality. Cycling should increase by 1% per inhabitant yearly, while motor vehicle use per inhabitant should decrease by 1% on yearly basis. Physical accessibility is to be improved for everyone, and is especially important for the disabled, children and the elderly. The number of people who feel that the traffic environment is safe is to increase on an annual basis. I the new plan for city center evelopment a new model for traffic regulations is presented. The focus is on creating “car soft” environment, where cars have du adapt to other modes of transport. The regulation on who are allowed to drive in the city center will be more strict than today. The objective is to create and foster attractive and inclusive environments for pedestrian and cyclist,

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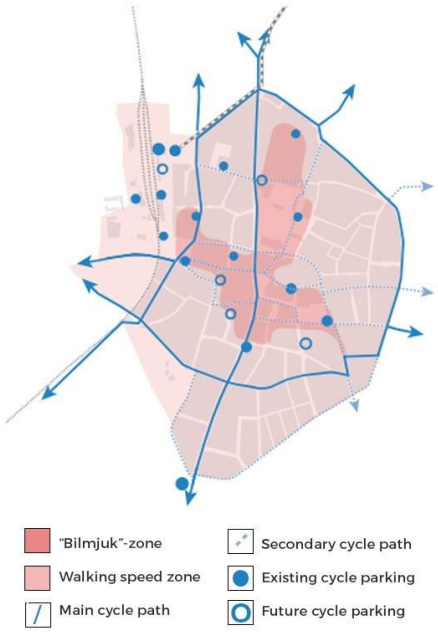


Early plan for introducing new zones in the city center to promote a safer and inclusive environment for all sustainable transport modes.

Stakeholders and Actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Technical dep.	1, 3	Collaborate		
City planning dep.	2	Collaborate		Gain knowledge and foster better and efficient working methods and routines

Vulnerable to exclusion users				
Different companies within the traffic measurement / sensor industry. Work ongoing				
Keolis, buss company responsible for all bus lines in the city	2	Consult/collaborate		Involving to better measure what impact intervention 1 have on public transport
Lund City/citysamverkan (collaboratice organization of 3 parties: local trade/shop organization, property owners and the municipality)	2	Collaborate		Colloborate on measuring impact
The Swedish Association of the Visually Impaired	1	Consult/collaborate NOT YET CONTACTED		Gain more knowledge on how to make the temporary street design safe and inclusive
City of Lund accessibility specialist	1	- consult - inform - collaborate		
Cyclist	1,2	Consult		To understand the impact of cyclist accessibility, to what extent the intervention affects cyclist
Older women	1	Consult NOT YET CONTACTED		Gain more knowledge to predict injuries among older women walking

Previous intervention 1				
About the intervention				
Visually impaired	1	Consult		Gain more knowledge about how the end users perceive the redesign, and if there is need to modify design
Regional public transport company Skånetrafiken	2	Consult		Involving to better measure what impact intervention 1 have on public transport

Past interventions to tackle the problems

Past interventions brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years
Lack of travel data to pinpoint needs connected to cycle paths and bicyclist perceived and actual safety.	Lack of knowledge about what bicycle routes cyclist use, unsafe spots and missing links in the infrastructure	Data collection on bicycle trips and safety
Decrease car share on trips in the city center	Decrease the number of car trips in the city center and promote biking and walking.	European mobility week; 2015 - 2018

Detailed analysis of each of the past interventions

Intervention name	Data collection on bicycle trips and safety

Problem	Lack of travel data to pinpoint needs connected to cycle paths and bicyclist perceived and actual safety
Specific challenge	Lack of knowledge about what bicycle routes cyclist use, unsafe spots and missing links in the infrastructure
Year of implementation	2018
What was the context of this challenge?	The city of Lund has political goals on yearly increasing cycling. The technical department is responsible for the traffic environment. Investments are constantly being made in the infrastructure to promote cycling. But the department was unsure of how to use the resources in the most efficient way, and where. The municipality has a report system for errors that cyclists can use, but other than that the municipality only collects data through traffic counts which does not show where the traffic safety is/perceived as low.
Why was this intervention selected for tackling this specific challenge?	To get new insight on data colleting methods, and to get the kind of data that the department was missing
What were the KPIs to be achieved by this intervention?	Increased traffic safety
How was the intervention implemented?	The municipality together with project partner Trivector – consulting company with traffic experts, planned two kinds of data collection. Around 1000 cyclists were asked to help with the data collection. 500 people ended up contributing.
What technologies were used for this intervention?	A “bottom”, app and mobile phone. The bottom connected to the bottom to the phone through Bluetooth. The cyclist was instructed to press the bottom when they felt unsafe. The position was then saved. One app was used, that tracked the users travels. By the end of the day the user “corrected” all trips. The information contained means of transport on different trips, the purpose of the trip. The data contained travel times, what time the trip was made, and the perhaps most important part: the exact route from A to B. The combination of the two made it possible to examine a potential difference in perceived safety among different age groups, gender etc.
What tools and methods were used for this intervention?	App + “Bluetooth bottom”.

Previous intervention 2		
About the intervention		
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
500 cyclists	Collecting all the data	They used the app and collected data. They used the bottom when they felt unsafe.
Municipality of Lund	PM	Managing. Engaging with cyclists.
Trivector traffic AB	PM	Managing, building analyzing tools to manage and understand the data collected
Malmö University	Researchers	Wrote articles on the method and results
How was the data collected?	Through phones, bottom, app, involvement of cyclist	
What technology was used?	Through phones, bottom, app, involvement of cyclist	
How was it monitored?		
Who did apply this?		
Who was participating in it?	Project partners (traffic engineers, traffic planners, mobility management officer, communication officer) and 500 cyclist.	
Who owns the collected data?	Not sure, perhaps both the City of Lund and Trivector traffic AB	
What results have been achieved? Describe with concreate metrics.	New learnings on spots that were unsafe, new knowledge on what paths cyclists choose and use more frequently.	
What lessons have been learned?	There is potential in new methods to get relevant traffic data. But there is also a need to continue to develop resource efficient methods.	
What recommendations can be given for future interventions tackling this specific challenge?	Decide on purpose. The method depends on smart phone users, which most swedes are but the method tent to miss the elderly – a segment that still cycle.	

Data collected		
Intervention name	European mobility week	
Problem	Goal on decreasing car share on trips in the city center	
Specific challenge	Decrease the number of car trips in the city center and promote biking and walking.	
Year of implementation	2015-2018	
What was the context of this challenge?	1 week with temporary regulation on street. A yearly intervention, during European mobility week.	
Why was this intervention selected for tackling this specific challenge?	European mobility week is a good opportunity to make short temporary trials that promote sustainable mobility.	
What were the KPIs to be achieved by this intervention?	Modal split	
How was the intervention implemented?	In dialogue with shop owners and public transport company, the street was temporarily regulated into a “pedestrian zone”, (cars and buses allowed but in pedestrian speed).	
What technologies were used for this intervention?	None	
What tools and methods were used for this intervention?	Dialogue, interviews	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Bus company	They were informed/dialogue	They were informed/dialogue
The association on local shop- and restaurant owners	They were invited to collaborate	Invited to collaborate during activities and use public space, but ended up not wanting to have an official role
How was the data collected?	Interviews	

Results	
What technology was used?	Not applicable
How was it monitored?	Not applicable
Who did apply this?	Not applicable
Who was participating in it?	Customers
Who owns the collected data?	University/municipality
What results have been achieved? Describe with concrete metrics.	Since we did not do a thorough data collection, we have not been able to evaluate
What lessons have been learned?	Can be resource demanding to do the required data collection
What recommendations can be given for future interventions tackling this specific challenge?	Set KPIs, and reasonable expectations

Annex IX: Milan Feasibility and Action Plan

Discovering the current state

Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
Climate change, including the specific issue of air quality (1,4): by regaining space from private car parking for giving it back to pedestrian and cycling use, the active mobility choice is promoted and facilitated against carbon-polluting ones. Road Deaths increase and safety issues (2): the universal accessibility issue is inherently related to safety, specifically when dealing with visually impaired users. And more generally speaking, improving the quality, visibility and availability of pedestrianized space with properly designed crossing significantly improves protections against accidents. Obesity and Population ageing (5): promoting active mobility is one of the keys to fight diffused obesity and universal accessibility is strongly connected with the issues emerging with a progressive aging of population (becoming more and more vulnerable under the points of view of visual and free movement capacities).	Downtown pilot: Realization of raised crossings, road slides and widening of sidewalks, installation of tactile paving and sensors for people with visual impaired, insertion of speed restriction (30 km/h), creation of new urban green areas and new crossings. Mapping the public space of the city of Milan and construction of decision support system (DSS) to improve accessibility for people with disabilities by prioritizing interventions. Citizens and associations will be involved through moments of participation, questionnaires and workshops. Stadium pilot: Planning a regeneration concept and designing a tactical urbanism intervention. Mapping the public space of the city of Milan and construction of decision support system (DSS) to improve accessibility for people with disabilities by prioritizing interventions. Citizens and associations will be involved through moments of participation, questionnaires, workshops and gamification.	Climate change. Road Deaths increase and safety issues. Urbanization. Air quality standards are still breached. Obesity and Population ageing. Covid-19 pandemic mind shift.

Proposed intervention 1		
Covid-19 pandemic mind shift (6): the availability and width of pedestrian paths to be used safely and, generally, of public spaces and parks to protect physical and mental health, has proven a new urgency after the first waves of Covid pandemics. Moreover, the return to private car to avoid sharing personal space on public transport is a new risk emerging during peak pandemic phases, and it can only be tackled by promoting active and specifically cycle mobility, the most sustainable and health-safe solution for this specific issue.	* All interventions will contribute to problem solving even if in a different form and way.	

Proposed interventions

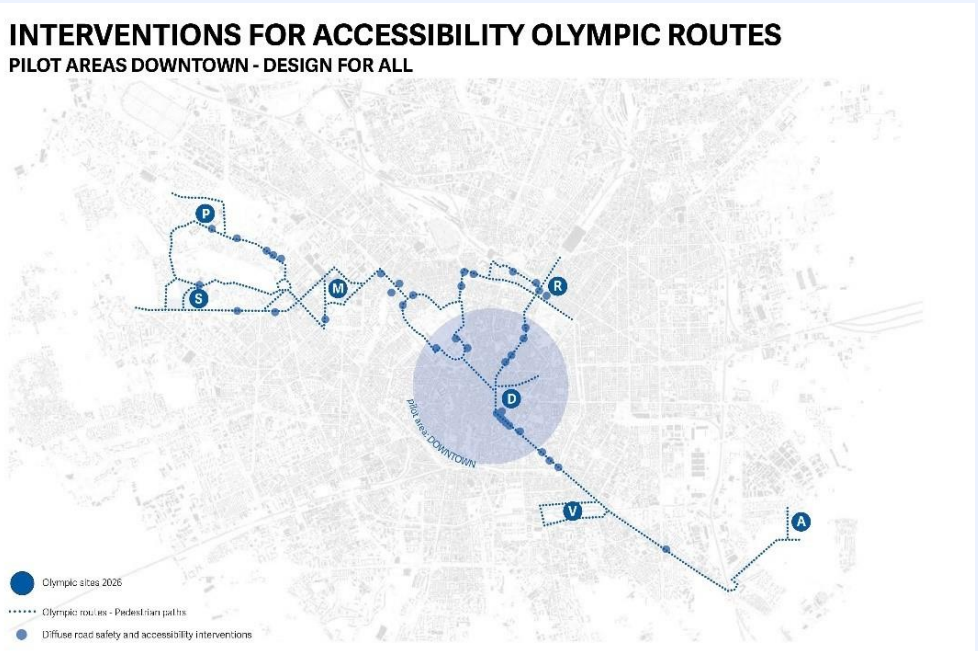
Intervention name	Downtown pilot: Improvement accessibility and safety
Brief description	Downtown pilot: Several crossings located along the Olympic routes planned for the Milan-Cortina 2026 Olympic and Paralympic Winter Games are non-accessible and characterized by low road safety, improper subdivision of public space in favor of private mobility and the absence of pedestrian continuity.
Infrastructure targeted	Roads, sidewalks, crossings, architectural barriers, traffic light crossings, urban greenery, and LPT stops.
Services to be used	Not applicable
Monitoring needed	Traffic levels, vehicle speeds, modal split, pedestrian flows, Extension of mapping, Active sensors, wayfinding service, Infrastructure utilization
Who is expected to benefit	The interventions were designed for people with motor and visually disabilities, but they can be seen as an improvement for pregnant women, the elderly, parents and caregivers using buggies, and people with temporary injuries.

Proposed intervention 2	
What Stakeholders are affected	Representatives of impaired users, ATM, Organizations, citizens, people with disabilities, Associations with sensory and hearing disabilities.
Intervention name	Stadium pilot: Co-creation of a regeneration process
Brief description	Stadium pilot: Via Novara is a western axis connecting Milan to Settimo Milanese and nowadays it has large streets characterized by absence of greenery and improper balance of public space and disregard for neighborhood size. The goal of the Stadium pilot is to co-create a concept with stakeholders for the regeneration of Via Novara. Part of the concept will be realized through tactical urbanism envisioning a possible realization of the whole regeneration concept designed for via Novara.
Infrastructure targeted	Roads, sidewalks, urban greenery, crossing.
Services to be used	Not applicable
Monitoring needed	Public space use, services and commercial spaces.
Who is expected to benefit	Citizens, city users and retail consumers.
What Stakeholders are affected	Citizens, residents, city users and retail consumers

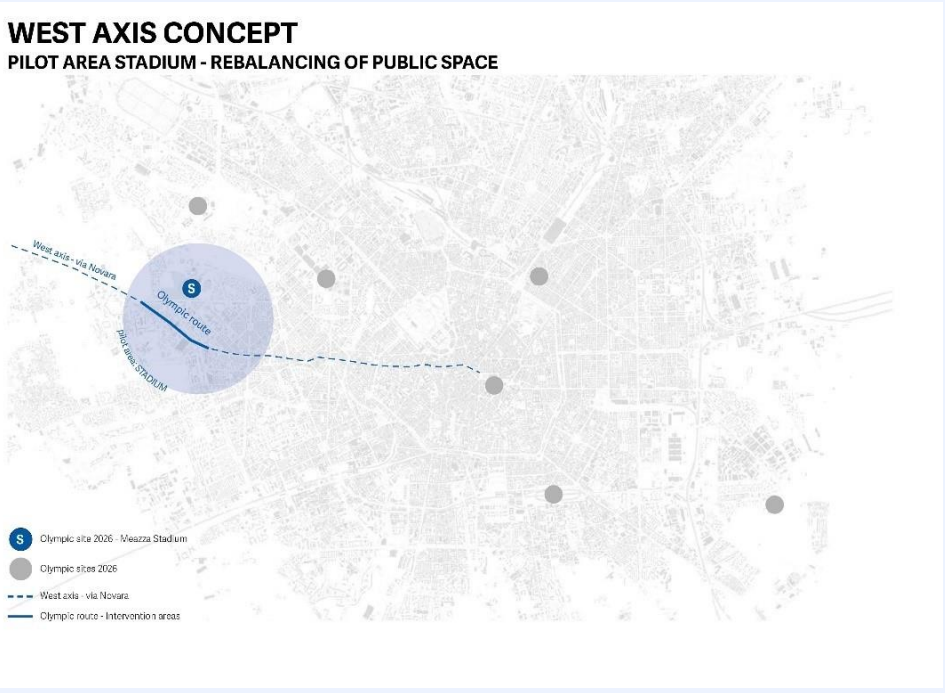
Living Lab

Living Lab characteristics

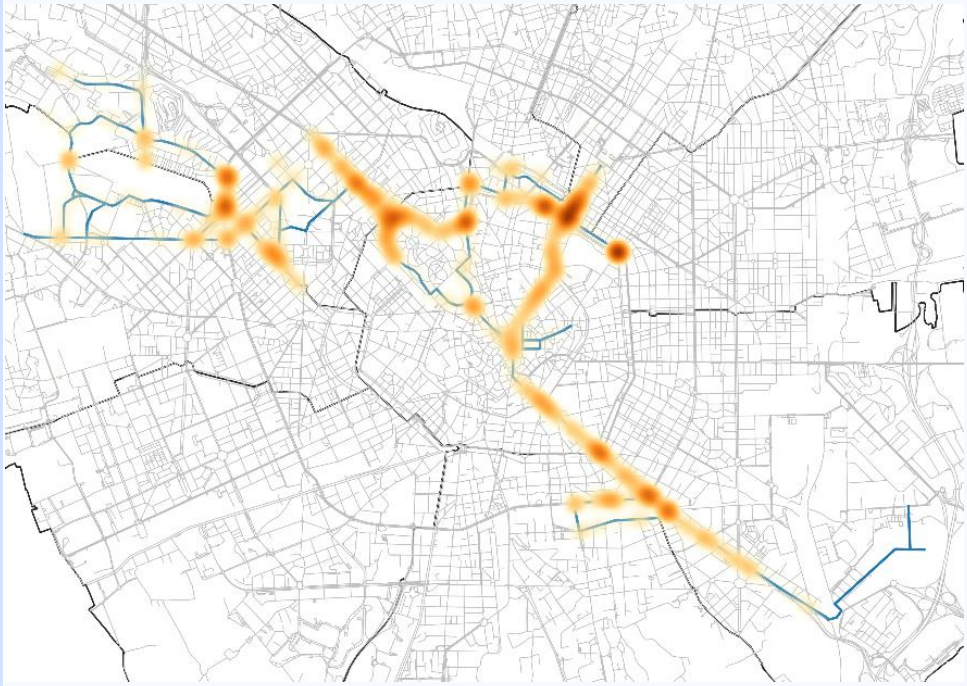
Maps of the area(s) where interventions are planned



Downtown pilot: The interventions will be developed in the northwest area of Milan, in the center (it will be involved in the testing of sensors for people with visual impaired) and the southeast area.



Stadium pilot: The regeneration concept takes into consideration the whole path of Via Novara (a western axis connecting Milan to Settimo Milanese).

Current mobility aspects of this area	Downtown pilot: the crossings chosen are characterized by low road safety, improper subdivision of public space in favor of private mobility and the absence of pedestrian continuity. Stadium pilot: via Novara has large streets characterized by absence of greenery and improper balance of public space and disregard for neighborhood size. Vehicular accessibility is inconsistent with functional classification.
Infrastructure and services existing	Downtown pilot: the Olympic routes pass through from one end to the other of the city of Milan, from the suburbs to the center, and connect highly differentiated levels of infrastructure and services. The center of the city is an area with a strong tourist, commercial and cultural focus, thus characterized by an extensive network of public mobility infrastructure (buses, subway, tram, etc.). Stadium pilot: via Novara is characterized by a poor distribution of public space among different urban functions and mobility.
Safety aspects of the area	 Downtown pilot: Interventions at crossings were chosen based on the accident analysis done, taking into consideration the number, type and causes of the accident and the global accessibility of the routes. Stadium pilot: The west axis (Novara Street) is a low traffic road after working hours, the most peripheral part poorly lit, it is unsafe for those who decide to walk or bike along it.
SUMP guidelines for this area	Increase the air quality. Zero risk vision.

Offices in municipalities	
	Universal accessibility of the city of Milan. Greening and new urban infrastructures.

Stakeholders and Actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Mobility Department	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve Collaborate Empower	Main actor in coordination of the LL together with AMAT.	Correct and complete realization of all objectives and fulfilling indicators at the end of the experimentation.
Greening Department	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve Collaborate	Involvement facilitation by building a shared schedule of interventions to provide the best support in co-decision.	A correct implementation of all the proposed solutions within a framework of feasibility under the point of view of greenery management.
AMAT	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve CollaborateEmpower	Main actor in coordination of the LL together with the Mobility Dept.	Correct and complete realization of all objectives and fulfilling indicators at the end of the experimentation.
Municipalities	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve Collaborate	Involvement facilitation by building a shared schedule of interventions to provide the best support in co-decision.	A wide and equal involvement of the main actors of each involved neighborhood.

Businesses				
Disability Council	Downtown pilot: Olympic routes	Inform Consult Involve	Careful involvement due to specific needs of each representative member,	A correct implementation of all the proposed solutions regarding those targeting impaired citizens.
ATM	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve Collaborate	They should find advantages in joining the process: i.e. wider knowledge of LPT presence in the neighborhood by the citizens.	To gain more users of LPT thanks to the implementations.
Electric vehicles sharing companies	Stadium pilot: West Axis	Inform Consult Involve Collaborate	They should find advantages in joining the process: i.e. wider knowledge of their systems by the citizens.	To gain more users of their sustainable sharing systems thanks to the implementations.
Local businesses	Stadium pilot: West Axis	Inform Consult Involve CollaborateEmpower	They should find advantages in joining the process: i.e. wider knowledge of their business by the citizens.	To gain visibility and therefore enlarge the client catchment area.
Associations of local businesses (Confcommercio, Confesercenti)	Stadium pilot: West Axis	Inform Consult Involve CollaborateEmpower	They should find advantages in joining the process: i.e. wider knowledge of their members represented by the citizens.	To gain visibility for their represented members.
TomTom	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve Collaborate	Be enabled as an actor in public space mapping.	Technical support and engagement of the company for data collection and optimization.

Local communities				
Meta	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve Collaborate	Be enabled as an actor in public space mapping.	Technical support and engagement of the company for data collection and optimization.
Italia Nostra Milano Nord	Stadium pilot: West Axis	Inform Consult Involve Collaborate	Be enabled to share the results and hopes coming from their previous research and projects about the redevelopment of via Novara.	To provide further application and support to their previous projects about the redevelopment of via Novara.
Mare Culturale Urbano	Stadium pilot: West Axis	Inform Consult Involve Collaborate	Be enabled as cultural actor in the area.	To gain recognition and consolidate the symbolic role of cultural catalyzer in the local scale.
Wikimedia Italia (Openstreetmap)	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve Collaborate	Be enabled as an actor in public space mapping.	Technical support and engagement of the mapping community for data collection and optimization.
Polisocial (Politecnico di Milano)	Stadium pilot: West Axis	Inform Consult Involve Collaborate	Be enabled to share the results and hopes coming from their previous researches and projects about the redevelopment of via Novara.	To provide further application and support to their previous projects about the redevelopment of via Novara.
Comitati di quartiere (neighborhood associations)	Stadium pilot: West Axis	Inform Consult Involve CollaborateEmpower	To be reached through effective communication and information.	To be empowered in the transformation of their neighborhood.

Vulnerable road users				
Sport local associations	Stadium pilot: West Axis	Inform Consult Involve CollaborateEmpower	Be enabled as crucial social actor in the area.	To gain recognition and consolidate symbolic role of social catalyzer in the local scale.
Schools	Stadium pilot: West Axis	Inform Consult Involve CollaborateEmpower	Be enabled as crucial social actor in the area.	To gain recognition and consolidate symbolic role of social catalyzer in the local scale.
Residents	Stadium pilot: West Axis	Inform Consult Involve CollaborateEmpower	To be reached through effective communication and information.	To be empowered in the transformation of their neighborhood.
Students	Stadium pilot: West Axis	Inform Consult Involve CollaborateEmpower		
City users	Stadium pilot: West Axis	Inform Consult Involve		
Visually impaired	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve	Careful involvement due to specific needs.	A correct implementation of all the proposed solutions regarding those targeting impaired citizens.
Mobility impaired	Downtown pilot: Olympic routes Stadium pilot: West Axis	Inform Consult Involve	Careful involvement due to specific needs.	A correct implementation of all the proposed solutions regarding those targeting impaired citizens.

Previous intervention 1
About the intervention

Past interventions to tackle the problems

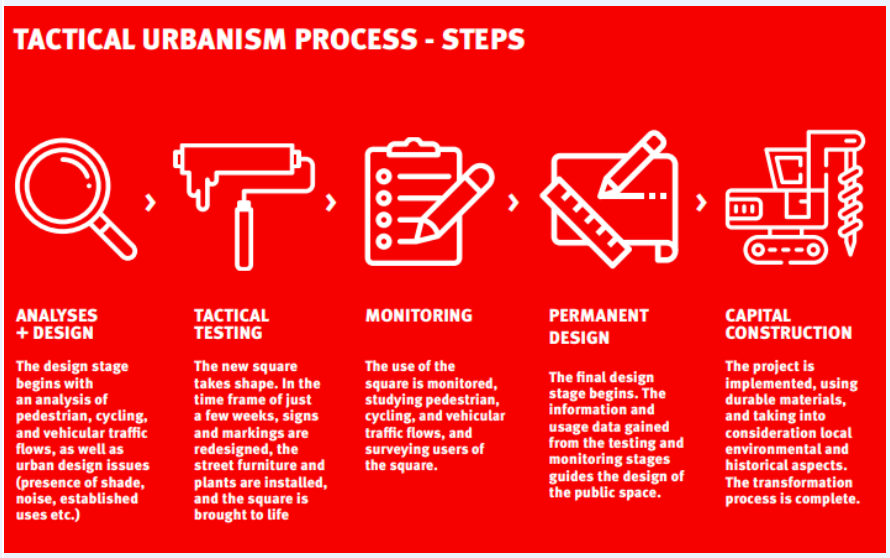
Past interventions brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years
Lack of pedestrian and bike-friendly space in the whole city	Transforming redundant street / car parking space into pedestrian and bike-friendly space	Piazze Aperte
		Piazze Aperte in Ogni Quartiere

Detailed analysis of each of the past interventions

Intervention name	Piazze Aperte
Problem	Lack of pedestrian and bike-friendly space in the whole city
Specific challenge	Transforming redundant street / car parking space into pedestrian and bike-friendly space
Year of implementation	2018
What was the context of this challenge?	Unlike other cities in Italy, Milan's urban structure developed together with its transport infrastructures, and still today, regardless the city's important progresses towards a more and more efficient public transport network, its configuration shows a strong redundancy of street spaces, dedicated to private vehicular mobility, and a superabundant quantity of parking slots. Also, even in central neighborhoods, the typical experience of public space is averagely quite poor, with the vast majority of side-walks finished with plain asphalt, and large portions of even high quality residential buildings with no public uses of the

	ground levels. Worrying levels of air pollution complete the description of the context.
Why was this intervention selected for tackling this specific challenge?	Piazze Aperte ("Open Squares") is a program of the City of Milan, developed by Agenzia Mobilità Ambiente Territorio (AMAT), together with Bloomberg Associates and the Global Designing Cities Initiative. The program centers around urban regeneration and sustainable mobility, key goals of the Territory Governance Plan for Milan 2030 (PGT Milano 2030) and the Sustainable Urban Mobility Plan, in the context of the "Piano Quartieri" ("Neighborhood Plan"). Piazze Aperte aims to enhance public spaces and turn them into community gathering places, to extend pedestrian areas, and to promote sustainable forms of mobility to benefit the environment and improve the quality of life in the city. Piazze Aperte uses the "tactical urbanism" approach to put public spaces once again at the center of community life and to encourage people to make the most of public squares, rather than just using them for parking or thoroughfares. By giving people back their community spaces, the hope is that, through activities, gatherings, and even just simply "living" in these areas, public squares will once again regain their full status as local meeting places. Thanks to this program, and through the signing of collaboration agreements, the City of Milan and its residents are able to actively cooperate in the design, development, and implementation of public spaces, as well as promoting and preserving them, based on the principles of shared management.
What were the KPIs to be achieved by this intervention?	Sqm pedestrianized New furniture added New pedestrian usage New cyclists' usage
How was the intervention implemented?	Tactical urbanism is an innovative approach to urban design, based on short-term, low-cost measures aimed at creating new public spaces and safer streets. This type of measure is well known and has been put into practice around the world for over a decade. From Barcelona, where the Superillas program helped to pedestrianize a significant proportion of the city, to New York, where Times Square has been pedestrianized, to Paris, which is rapidly becoming a 'bike friendly' city thanks to interim cycle lanes. Tactical urbanism measures allow cities to try out new uses for urban spaces, and to launch long-term strategies to promote city living. The advantages of this new approach are linked to the immediate impact that these measures have on local residents, who can themselves become advocates for innovation projects and active participants in urban transformation. The temporary nature of tactical urbanism allows cities to try out solutions that can be reversed, if needed before investing time and resources into permanent infrastructure. Interim, simple, fast, and economical solutions can produce immediate benefits, test experimental solutions, help in

	making the right choices, and support future decision-making on permanent solutions. 
What technologies were used for this intervention?	Lo-fi technologies that can be put in place by citizens and do not require major urban works: colored ground paintings, simple urban furniture (benches, picnic tables, ping-pong tables, bike racks, potted trees, etc).
What tools and methods were used for this intervention?	1. Creation of new squares and/or pedestrian areas through changes to the roadway network and street design, including limiting vehicular access to certain areas to create new public space. 2. Activation of underused and unequipped public spaces furnishing, improving, and adding new functions with the aim of encouraging community spirit, as well as promoting cultural and group activities that can add value and life to that space. 3. Creation of cycle lanes using prefabricated materials, signs and markings, to facilitate cycling in particular in 30km/h zones, oneway streets, and areas ide 4. Extension and enhancement of pedestrian areas through the measures, such as narrowing roadbeds, removing underused parking spaces, adopting traffic calming measures, creating more 30km/h zones, and redefining intersections to improve soft, pedestrian and bike mobility, in particular around schools and nurseries. ntified by the Sustainable Urban Mobility Plan (SUMP).

Data collected		
  		
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Municipi (districts) of the City of Milan	Selection of sites for the interventions, involving local associations and groups	Directly by City of Milan and AMAT
Neighborhood associations and groups	Co-realization of the interventions through collective workshop days	Directly by the Municipi
How was the data collected?	By direct observation sessions (counting new pedestrian passages in several moments of the day/year) and direct measuring (surface measuring are inherently available to City of Milan and AMAT for having the interventions planned and designed, number of actors involved are known to Municipi)	
What technology was used?	Direct observation	

Previous intervention 2	
About the intervention	
How was it monitored?	Direct observation
Who did apply this?	City of Milan and AMAT teams
Who was participating in it?	City of Milan and AMAT teams
Who owns the collected data?	City of Milan and AMAT
What results have been achieved? Describe with concrete metrics.	Sqm pedestrianized: 2420 smq New pedestrian usage: +30% New cyclists usage: +47% New furniture added: 30 benches 4 ping-pong tables 2 pic-nic tables 10 bike racks 70 potted trees 2 BikeMi points
What lessons have been learned?	The experimental program has been very successful in terms of effectiveness of the solutions and feedback from the neighborhood involved, but citizens should also be involved in the decision-making phase
What recommendations can be given for future interventions tackling this specific challenge?	To be coherent in communicating all the phases and to clarify the whole process so that citizens and actors are aware of the transformations ongoing and feel involved and important in the making of their own neighborhood transformation

Intervention name	Piazze Aperte in Ogni Quartiere
Problem	Lack of pedestrian and bike-friendly space in the whole city
Specific challenge	Transforming redundant street / car parking space into pedestrian and bike-friendly space

Year of implementation	2019-2022
What was the context of this challenge?	Public spaces are key areas for community spirit and social inclusion. In addition to high-quality urban design, public spaces also need to be “activated” through programming and other efforts that respond to the needs of the people who experience them. The suitable design of spaces and the way they are equipped has a huge role to play in contributing to the development of inclusive public living, catering to all genders, ages and cultural backgrounds, and reinforcing community identity and cohesion.
Why was this intervention selected for tackling this specific challenge?	Piazze Aperte aims to activate neighborhoods and develop activities and services for residents that involve regional networks and support citizens' organizations, paying particular attention to residents’ quality of life. The Piazze Aperte program intends to encourage the active involvement of residents in sustainable and shared urban regeneration, creating a strong sense of belonging and new ways of expressing local community that lead to respect for the land and shared management. After the success of Piazze Aperte, in 2019, the City of Milan launched a call for proposals entitled “Piazze Aperte in ogni quartiere” (“Open Squares in every neighborhood”) and open to all citizens, groups, association and local actors, with the aim of identifying new spaces to be transformed, receiving over 60 suggestions. 
What were the KPIs to be achieved by this intervention?	Number of interventions realized Sqm pedestrianized New furniture added

	Citizens and groups involved Fraction of the whole residents having a new square within 15 min walk from home
How was the intervention implemented?	The “Collaboration Agreement” is a written tool through which the City of Milan and its active residents define the aims, objectives and expected results of the “Piazze Aperte” program, as well as the organization of maintenance, shared management, and regeneration of communal spaces. Through collaboration agreements, pursuant to the Common Goods Regulations - Municipal regulations governing the participation of active citizens in care, management and regeneration of urban commons - active citizens, informal groups, associations, educational institutions, committees, foundations, and companies promoting "corporate maintenance" can collaborate with the Administration to implement programs that address the management, maintenance, improvement, and activation of various forms of urban common Under the point of view of the actual implementations, the same tactical urbanism techniques already experimented in the first cycle of Piazze Aperte were used (see above).
What technologies were used for this intervention?	Lo-fi technologies that can be put in place by citizens and do not require major urban works: colored ground paintings, simple urban furniture (benches, picnic tables, ping-pong tables, bike racks, potted trees) 
What tools and methods were used for this intervention?	1. Creation of new squares and/or pedestrian areas through changes to the roadway network and street design, including limiting vehicular access to certain areas to create new public space.

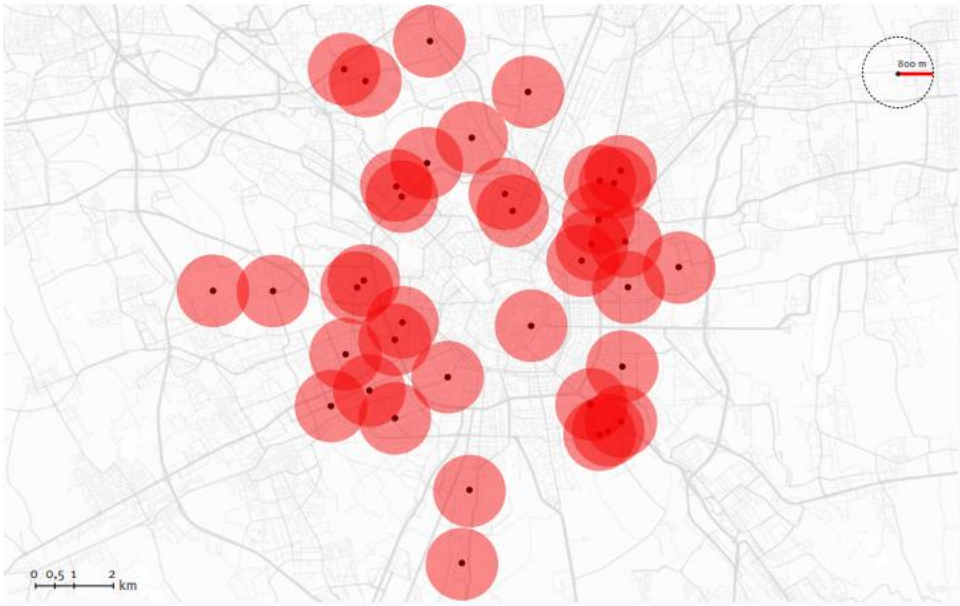
Stakeholders involved in the intervention		
	2. Activation of underused and unequipped public spaces furnishing, improving, and adding new functions with the aim of encouraging community spirit, as well as promoting cultural and group activities that can add value and life to that space. 3. Creation of cycle lanes using prefabricated materials, signs and markings, to facilitate cycling in particular in 30km/h zones, one-way streets, and areas ide 4. Extension and enhancement of pedestrian areas through the measures, such as narrowing roadbeds, removing underused parking spaces, adopting traffic calming measures, creating more 30km/h zones, and redefining intersections to improve soft, pedestrian and bike mobility, in particular around schools and nurseries. ntified by the Sustainable Urban Mobility Plan (SUMP).	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Municipi (districts) of the City of Milan	Support in the coordination of the activities	Directly by City of Milan and AMAT
Neighbourhood associations and groups	Proposers; Co-decisors; Co-designers; Co-realizators; Co-managers.	In this new cycle, the involvement of citizens extended to every step of the process, structured as follows: I) A selection phase, where the City issued a call open to free citizens, informal groups and associations, to propose urban transformations realizable within the tactical urbanism framework. Applicants were provided a kit of admissible interventions (typically paintings, urban furniture and potted plants) and a list of 52 urban areas available for a transformation (with the possibility to candidate further ones); II) A proposal phase, where citizens were asked to propose transformations concerning function, aesthetics and furniture. Interestingly, several groups spontaneously included professional designers to improve the efficacy of proposals. Anyway, regardless their technical quality or readiness, all proposals were accepted (unless evidently incoherent with the intervention kit);

Results		
		III) A co-design phase in which citizens were involved in a co-design process to refine their proposals and fit them inside the urban safety regulations and traffic management; IV) The final realization activity, seeing citizens welcome to actively contribute into the realization of the interventions. Collective painting living-labs were activated with adults and kids thanks to the use of non-toxic paints and materials. V) Proposer groups are called to sign the "Collaboration Agreement" with the municipality in order to ensure care for the transformed new space (ie. Plant watering, monitoring).
How was the data collected?	By direct observation sessions (counting new pedestrian passages in several moments of the day/year) and direct measuring (surface measuring are inherently available to City of Milan and AMAT for having the interventions planned and designed, number of actors involved are known to Municipi)	
What technology was used?	Direct observation	
How was it monitored?	Direct observation	
Who did apply this?	City of Milan and AMAT teams	
Who was participating in it?	City of Milan and AMAT teams	
Who owns the collected data?	City of Milan and AMAT	

What results have been achieved? Describe with concrete metrics.

How many residents have benefited from the program?

One in two Milanese residents now have a square within 15 minutes (800 meters) from their home.



What lessons have been learned?	Involving citizens throughout all phases of a public space creation drastically improves the success of a participatory initiative.

	
What recommendations can be given for future interventions tackling this specific challenge?	To be coherent in communicating all the phases and to clarify the whole process so that citizens and actors are aware of the transformations ongoing and feel involved and important in the making of their own neighborhood transformation. To be quick in transforming temporary solution into permanent ones (4 squares are now permanently been transformed with nature-based solutions, electric plants, permanent paving materials and design, permanent integrated furniture)

Annex X: Split Feasibility and Action Plan

Discovering the current state

Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
In the city of Split, there is a large number of transportation modalities. The primary modality is road traffic, i.e., individual transportation. The city of Split is the largest city in Dalmatia and the second-largest city in the Republic of Croatia. It serves as the main administrative center of the Split-Dalmatia County and is a leading economic, cultural, transportation, political, and administrative hub in the Southern Croatian Coast. According to the data from the Ministry of the Interior (MUP), in the year 2022, there were 75,544 registered personal vehicles, 7,533 commercial vehicles, and 7,933 motorcycles in the City of Split. Considering data from 2013, there has been an exponential increase in the number of registered motor vehicles, averaging 2.5% annually, indicating a significantly unfavorable trend in citizens' habits. With respect to the mentioned data, the level of motorization in the City of Split is approximately 468 vehicles per 1000 inhabitants. This is higher than the	Improve safety of the most vulnerable groups. Reduce motorized traffic and increase the share of sustainable mobility. Improved air quality.	Climate change and air quality standards are still breached. Road Deaths increase and safety issues. Urbanization. Covid-19 pandemic mind shift.

Proposed intervention 1		
average in Croatia (465 vehicles per 1000 inhabitants) and lower than the average in the EU (567 vehicles per 1000 inhabitants). Conflicts between micro-mobility users (pedestrians, bikes, e-bikes). Preventing improper parking in areas designated for pedestrians and in areas intended for public transportation vehicles. High share of cars in modal split (higher potential of accidents and low safety feeling of vulnerable users). Increasing number of car ownership. Air quality impact.		

Proposed interventions

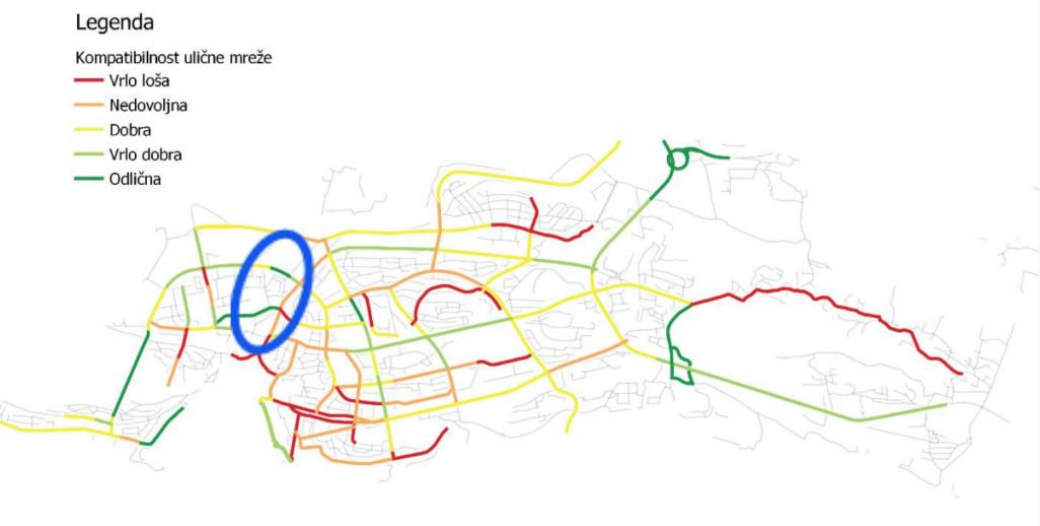
Intervention name	Video surveillance systems
Brief description	Implementation of the video surveillance systems to enable enforcement of penalties for misuse of the (shared) infrastructure.
Infrastructure targeted	Improper parking at bus stops, road lanes, sidewalks, and other areas not meant for motorized vehicles.
Services	Identify real mobility needs and public space re-design needs and possibilities. Testing new technology and data collection.
Monitoring needed	Improvements in traffic safety and mobility efficiency through the implementation of innovative solutions such as video surveillance systems, infrastructure redesign, and promotion of alternative transportation methods.
Who is expected to benefit	Traffic participants: public city transportation, emergency services, cyclists (and other non-motorized users), and pedestrians.

Proposed intervention 2	
	Traffic Office - Traffic enforcement officer.
What Stakeholders are affected	Administrative Department for Communal Affairs, Department for Transport. City development department. Promet Split d.o.o., public transport company. Ministry of Internal Affairs, Traffic police. Citizens. Drivers. Public transport users.
Intervention name	The perceived satisfaction of public spaces.
Brief description	Conduct large-scale surveys on public opinion on acceptance of the proposed measures.
Infrastructure targeted	Bus stops, road lanes, and sidewalks.
Services	Surveys or online platforms for gathering feedback from residents, drivers, and passengers (all traffic participants).
Monitoring needed	Improvements in traffic safety and mobility efficiency
Who is expected to benefit	City administration. Citizens. Vulnerable to exclusion groups. Faculty of Traffic Sciences.
What Stakeholders are affected	Administrative Department for Communal Affairs, Department for Transport. City development department. Promet Split d.o.o., public transport company. Ministry of Internal Affairs, Traffic police. Technical Traffic School. Faculty of Traffic Sciences. Associations from the transportation sector. Citizens. Drivers.

Living Lab

Living Lab characteristics

Maps of the area(s) where interventions are planned	 The map shows the locations that will be covered by the project (red dots); however, it is important to note that the city of Split is currently in the process of a public call for expressions of interest from economic entities for the demonstration of software solutions for automatic recognition of improper parking and stopping using the existing video surveillance system. Three companies have responded to the public call and will deploy their systems during a demonstration period of 40 days. Based on this tight timeframe, the city will gain insights into the operation of all systems and create technical specifications for the products, as well as the necessary functionalities for the publication of the Call for Bids and the procurement of systems within the Elaborator project.
Current mobility aspects of this area	Traffic Congestion: The area is currently experiencing significant traffic congestion, particularly during peak hours, leading to delays and inefficiencies in transportation. Taking into consideration the traffic flow generators, it is evident that the inbound/outbound traffic from the area north of Split occurs through Ulica Domovinskog rata, where the daily traffic volume ranges, depending on the section, between 45,000 and 70,000 vehicles. Public Transportation Options: Through the analysis of vehicle frequencies on the City of Split's network, it has been determined that Poljička Road, Zagrebačka and Livanjska Streets, as well as Ulica Domovinskog rata, are the roadways best served by public bus lines. These streets are covered by approximately 10 to 20 lines with a theoretical vehicle interval of around 2.3

	minutes, which, due to the lack of coordination in schedules and traffic congestion, is not achievable. Challenges for Pedestrians and Cyclists: In the Split area, it is challenging to find streets where the needs of various user groups (vehicle traffic, public transportation, pedestrians, cyclists, commercial activities, amenities, and residents) are fully met. Conflicts between pedestrians, cyclists, and motorized traffic arise on most streets, especially in the vicinity of the city center, where there is a wide range of user needs.  Parking Issues: Due to a lack of parking spaces, there are often situations with improperly parked cars, posing a risk to the safety of traffic participants. Additionally, a section of the road leading towards Zagrebačka Street from Ulica Domovinskog rata is marked as a restricted access zone, allowing entry only for public city transportation vehicles, taxi vehicles, and vehicles with authorization. Some drivers do not adhere to the defined area, and upon entering the designated zone, they leave improperly parked vehicles, including those with entry permits, due to a shortage of parking spaces within the zone.
Infrastructure and services existing	Public bike sharing system and part of cycling infrastructure Public transport (bus) with ticketing system and information panels Covered bus stops Pedestrian walkways Street parking spaces Tree-lined avenues and shrubs Horizontal and vertical traffic and tourist signage Public street lighting

Offices in municipalities	
Safety aspects of the area	Split (pop. 161.312) is the largest city in Dalmatia and the largest city on the Croatian coast. It is an intraregional transport hub and popular tourist destination. In Split, 47% of everyday commuting is done via car and 24% by walking. As a reason for walking, citizens of Split state acceptable distances for walking and avoiding waiting in traffic jams. Public transport is represented in 22% and cycling in 5% of the journeys. The remaining 2% of the commutes is done by taxi and motorcycles. During the period of 2010-2019, 53 people died and 982 are seriously injured in traffic crashes. Split is currently preparing its new development strategy aligned with the Carbon neutrality and Mission Cities principles, with its special target no. 16. being the increase of energy efficiency and transition towards clean energy.
SUMP guidelines for this area	Split's SUMP has identified the need for re-assessment of road and public space towards the needs of alternative transport modes. The SUMP suggests promoting and fostering this transition by developing and improving dedicated infrastructure. In this intervention several approaches around the shared infrastructure concept (sharrows, bike box markings, etc.) will be examined. This is expected to contribute to the SUMP goals resulting in an increase of attractiveness of alternative transport modes leading to the eventual redesign of urban public spaces that are now heavily occupied by cars. SUMIs: Indicators 2, 10, 13, 14 and 17.

Stakeholders and Actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Administrative Department for Communal Affairs, Department for Transport	Video surveillance systems (VSS). The perceived satisfaction of public spaces (SURVEYS).	Involve	VSS: Need to solve security problems and enforce regulations related to misuse of utility infrastructure. SURVEYS: Need for gathering feedback	VSS: Establishing a system of video surveillance systems to effectively prevent abuse, provide evidence for enforcement actions and seamlessly integrate with existing infrastructure and regulatory frameworks.

Public bodies				
City Development department		Involve	and ensuring that proposed measures align with public sentiment and acceptance.	SURVEYS: Providing comprehensive insights into public attitudes, concerns, and preferences regarding the proposed interventions.
Promet Split d.o.o.	Video surveillance systems	Consult	Efficient Operations: Promet Split needs interventions that ensure the efficient operation of their bus transportation services. This includes minimizing delays, optimizing routes, and managing resources effectively. Passenger Safety and Security: Ensuring the safety and security of passengers is a primary concern for Promet Split. They need interventions that help mitigate risks and address security issues within their transportation network. Infrastructure Support: Promet Split requires support from municipal authorities to maintain and improve transportation infrastructure such as bus stops, terminals, and road conditions.	Promet Split needs interventions that enhance the efficiency, safety, and quality of their bus transportation services. They expect collaboration with municipal authorities, integration with surveillance systems, and a supportive regulatory environment to achieve these goals effectively.

Experts				
Ministry of Internal Affairs, Traffic Police	Video surveillance systems	Inform	Need for interventions that help identify and address traffic violations, congestion points, and safety hazards. Measures that contribute to the prevention of traffic accidents and the reduction of road-related injuries and fatalities.	Effective implementation, collaboration with other stakeholders, and measures to ensure data security and privacy protection.
Association of Traffic Engineers	The perceived satisfaction of public spaces (SURVEYS)	Involve	Need for gathering feedback and ensuring that proposed measures align with public sentiment and acceptance.	Providing comprehensive insights into public attitudes, concerns, and preferences regarding the proposed interventions.
Association for Nature, Environment and Sustainable Development Sunce	The perceived satisfaction of public spaces (SURVEYS)	Involve	Need for gathering feedback and ensuring that proposed measures align with public sentiment and acceptance.	Providing comprehensive insights into public attitudes, concerns, and preferences regarding the proposed interventions.
Association Cyclists' Union	The perceived satisfaction of public spaces (SURVEYS)	Involve	Need for gathering feedback and ensuring that proposed measures align with public sentiment and acceptance.	Providing comprehensive insights into public attitudes, concerns, and preferences regarding the proposed interventions.
Faculty of Transport and Traffic Sciences	Video surveillance systems (VSS) The perceived satisfaction of public spaces (SURVEYS)	Involve	Interventions that support its research and educational goals. Provide access to data and insights for academic purposes. Offer opportunities for collaboration and impact assessment.	Access to resources and infrastructure necessary to conduct research and educational activities related to proposed interventions Opportunities to assess the impact of proposed interventions on traffic

				patterns, road safety, and transportation efficiency
General citizens' segments				
Citizens	Video surveillance systems (VSS) The perceived satisfaction of public spaces (SURVEYS)	Inform	Citizens need interventions that prioritize their safety, privacy, and convenience while using public spaces and transportation services. Users of public city transport require interventions to enhance the reliability and punctuality of services, thereby reducing wait times and ensuring timely arrivals. Drivers may resist interventions that disrupt their accustomed way of using public spaces (some drivers may not be fully aware of the reasons behind proposed interventions, such as the need to enforce parking regulations for safety or traffic).	Clear and accessible information to citizens about the reasons behind proposed interventions. Enhance the overall quality of public transportation services and their safety and security while using public transportation. Driver revolt due to collected fines for illegally parked vehicles.
Users of public city transport	Video surveillance systems (VSS) The perceived satisfaction of public spaces (SURVEYS)	Inform	Citizens need interventions that prioritize their safety, privacy, and convenience while using public spaces and transportation services. Users of public city transport require interventions to enhance the reliability and punctuality of services, thereby reducing wait times and ensuring timely arrivals.	Clear and accessible information to citizens about the reasons behind proposed interventions. Enhance the overall quality of public transportation services and their safety and security while using public transportation. Driver revolt due to collected fines for illegally parked vehicles.

Schools				
			Drivers may resist interventions that disrupt their accustomed way of using public spaces (some drivers may not be fully aware of the reasons behind proposed interventions, such as the need to enforce parking regulations for safety or traffic).	
Car drivers	Video surveillance systems (VSS) The perceived satisfaction of public spaces (SURVEYS)	Inform	Citizens need interventions that prioritize their safety, privacy, and convenience while using public spaces and transportation services. Users of public city transport require interventions to enhance the reliability and punctuality of services, thereby reducing wait times and ensuring timely arrivals. Drivers may resist interventions that disrupt their accustomed way of using public spaces (some drivers may not be fully aware of the reasons behind proposed interventions, such as the need to enforce parking regulations for safety or traffic).	Clear and accessible information to citizens about the reasons behind proposed interventions. Enhance the overall quality of public transportation services and their safety and security while using public transportation. Driver revolt due to collected fines for illegally parked vehicles.
Technical traffic school - students	Video surveillance systems (VSS)	Inform and Involve	Educational Insight: Students need practical exposure to advanced traffic management technologies such as VSS.	Real-world Learning: Students expect to gain hands-on experience and insights into how VSS can

	The perceived satisfaction of public spaces (SURVEYS)		Safety and Convenience: Ensuring that the infrastructure used in their daily commute is safe and efficient.	enhance traffic management and safety. Improved Infrastructure: They anticipate improvements in the safety and efficiency of transportation routes commonly used by students.
Technical traffic school - professors/teachers	Video surveillance systems (VSS) The perceived satisfaction of public spaces (SURVEYS)	Consult and Involve	Teaching Resources: Professors need access to current technologies and case studies to enhance their teaching materials and methods. Professional Development: Opportunities to be involved in cutting-edge urban mobility projects.	Enhanced Curriculum: Incorporation of real-time data and case studies from the VSS into the curriculum to provide students with up-to-date and practical knowledge. Research Opportunities: Access to data for conducting research and publishing studies on the impact of advanced traffic management systems.
Primary and secondary schools - professors/teachers	Video surveillance systems (VSS) The perceived satisfaction of public spaces (SURVEYS)	Inform and Involve	Safety Assurance: Assurance of student safety during commutes and school-related activities. Educational Content: Integration of sustainable urban mobility concepts into the curriculum.	Safer Routes to School: Enhanced safety measures around schools, reducing traffic-related accidents and improving pedestrian infrastructure. Educational Enhancement: Utilization of project data to teach students about sustainable urban mobility and the importance of innovative traffic solutions.

Past interventions to tackle the problems

Previous intervention 1

About the intervention

Past interventions brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years
High incidence of traffic violations	Inadequate enforcement of traffic laws	Increased controls by traffic wardens and police
Improper parking on sidewalks	Limited space for parking, endangering pedestrian safety	Installation of barriers (bollards)
Traffic congestion during peak hours	High volume of vehicles, lack of efficient public transport	Optimization of bus routes and schedules
Safety of vulnerable road users	High accident rates involving cyclists and pedestrians	Implementation of dedicated bike lanes and crosswalks
Air pollution from vehicles	High levels of vehicle emissions in urban areas	Promotion of alternative transportation methods and increased use of public transport
Lack of data for traffic management	Insufficient data for informed decision-making	Deployment of video surveillance systems for traffic monitoring
Insufficient public awareness	Low public participation in mobility planning	Public awareness campaigns and surveys on mobility issues

Detailed analysis of each of the past interventions

Intervention name	Road Safety Signs
Problem	The area faces frequent instances of improper parking due to a shortage of parking spaces, leading to congestion and safety hazards for traffic participants.

Stakeholders involved in the intervention		
Specific challenge	Addressing the issue of improper parking and ensuring efficient utilization of available parking spaces to alleviate traffic congestion and enhance road safety.	
Year of implementation	2023	
What was the context of this challenge?	The area's growing population and increasing traffic volume exacerbate the challenge of parking management, particularly in the vicinity of Ulica Domovinskog rata and Zagrebačka Street.	
Why was this intervention selected for tackling this specific challenge?	This intervention was chosen to tackle the specific challenge of parking issues, as improper parking contributes significantly to traffic congestion and compromises road safety.	
What were the KPIs to be achieved by this intervention?	KPI 1: Reduction of traffic violations - Measure the decrease in instances of improper parking and other traffic violations. KPI 2: Improved road safety - Reduction in the number of accidents and near-misses in areas with new road safety signs. KPI 3: Increased public satisfaction - Survey-based measurement of public satisfaction regarding road safety improvements.	
How was the intervention implemented?	The intervention was implemented by the authority of the City of Split, which took action following citizen complaints, reports from traffic wardens regarding observed violations, and verbal notifications from the relevant police station. A company was engaged to paint the horizontal signage on the road.	
What technologies were used for this intervention?	n/a	
What tools and methods were used for this intervention?	Traffic pattern assessment was utilized, areas prone to improper parking were identified, and a method for installing warning signage was determined considering the spatial constraints of the location.	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**

Results		
Administrative Department for Communal Affairs, Department for Transport	Responsible for identifying areas prone to improper parking and creating reports on improperly parked vehicles. Involved in installing warning signage to address the issue of improper parking.	The Administrative Department for Communal Affairs played a key role in identifying locations with frequent instances of improper parking and generating reports on vehicles parked unlawfully. The department was responsible for implementing solutions to mitigate improper parking by installing warning signage at strategic locations identified by the generated report.
Ministry of Internal Affairs, Traffic Police	Responsible for identifying areas prone to improper parking and creating reports on improperly parked vehicles.	Communication with Administrative Department for Communal Affairs in identifying locations with frequent instances of improper parking
Drivers	Drivers are using spaces for improper parking of vehicles, thereby endangering the safety of traffic participants.	Using spaces for improper parking of vehicles
How was the data collected?	Data was collected from the system for generating fines for observed violations.	
What technology was used?	An application solution for recording traffic violations.	
How was it monitored?	From the system for generating fines for observed violations.	
Who did apply this?	Administrative Department for Communal Affairs, Department for Transport	
Who was participating in it?	Administrative Department for Communal Affairs, Department for Transport. Ministry of Internal Affairs, Traffic Police.	
Who owns the collected data?	City of Split.	

Previous intervention 2	
About the intervention	
What results have been achieved? Describe with concreate metrics.	Due to the shortage of municipal traffic wardens available for field patrols, attributed to the high number of traffic violations within the city area, specific changes in areas marked as problematic were not closely monitored.
What lessons have been learned?	n/a
What recommendations can be given for future interventions tackling this specific challenge?	n/a

Intervention name	Barriers (bollard) Installation for Pedestrian Safety
Problem	Drivers parked their vehicles on sidewalks, posing a risk to pedestrian safety.
Specific challenge	The specific challenge was the spatial constraints for installing bollards, as some locations lacked sufficient sidewalk width.
Year of implementation	2020.
What was the context of this challenge?	The context of this challenge was the need to address the safety concerns arising from vehicles being improperly parked on sidewalks. Due to spatial constraints in certain locations where sidewalks were not wide enough, finding suitable areas to install bollards presented a challenge.
Why was this intervention selected for tackling this specific challenge?	This intervention was selected to address the specific challenge of vehicles improperly parked on sidewalks because it provides a physical barrier to prevent such behavior. Installing bollards serves as a proactive measure to deter drivers from parking on sidewalks, thereby enhancing pedestrian safety.
What were the KPIs to be achieved by this intervention?	KPI 1: Reduction in pedestrian accidents - Measure the decrease in accidents involving pedestrians in areas with newly installed bollards. KPI 2: Increased pedestrian safety perception - Survey pedestrians to gauge their perceived safety in areas with bollards. KPI 3: Compliance with parking regulations - Measure the decrease in instances of vehicles parked on sidewalks.

Data collected		
How was the intervention implemented?	Identified locations with frequent instances of vehicles parked on sidewalks. Determined areas where installing bollards would effectively prevent improper parking while considering spatial constraints. Acquired the necessary bollards and installed them at selected locations, ensuring proper alignment and spacing to create a barrier against vehicle parking on sidewalks.	
What technologies were used for this intervention?	Impact-resistant Bollards: Bollards made from high-strength materials to withstand vehicle impacts.	
What tools and methods were used for this intervention?		
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Administrative Department for Communal Affairs, Department for Transport	Coordinated the overall implementation and ensured compliance with municipal regulations.	Organized and managed the project, ensuring coordination among various departments and stakeholders. Held meetings to discuss project progress and address any issues.
Ministry of Internal Affairs, Traffic Police	Provided oversight and support for safety measures in public spaces.	Collaborated with local authorities to support the project, provided additional resources if necessary, and ensured that the interventions aligned with national safety policies.
Drivers	Adjusted their driving and parking behaviors in response to the new installations.	Participated indirectly by adjusting their driving and parking habits in response to the bollards. Some may have provided feedback through community meetings or surveys.
Pedestrians	Benefited from enhanced safety measures and provided feedback on their effectiveness.	Engaged in community feedback sessions to share their experiences and perceptions of safety improvements. Their input was used to assess the effectiveness of the intervention and make any necessary adjustments.

Previous intervention 3	
About the intervention	
How was the data collected?	Data was collected from the system for generating fines for observed violations.
What technology was used?	An application solution for recording traffic violations.
How was it monitored?	From the system for generating fines for observed violations.
Who did apply this?	Administrative Department for Communal Affairs, Department for Transport
Who was participating in it?	Administrative Department for Communal Affairs, Department for Transport Ministry of Internal Affairs, Traffic Police
Who owns the collected data?	City of Split
What results have been achieved? Describe with concrete metrics.	100% of vehicles were moved from pedestrian zone
What lessons have been learned?	It's crucial to carefully assess the spatial constraints of each location before implementing interventions like installing bollards. Not all areas may be suitable for such measures due to limited space or other factors.
What recommendations can be given for future interventions tackling this specific challenge?	Conduct thorough assessments of problem areas and consider the unique characteristics of each location before implementing solutions. This may involve analyzing traffic patterns, sidewalk widths, and existing infrastructure to identify suitable interventions. Development of educational campaigns aimed at raising awareness about the importance of pedestrian safety and the consequences of improper parking, as well as providing clear information about parking regulations and alternatives, can encourage behavior change among drivers.

Intervention name	"Risk Assessment and Safety Report for the Installation of Video Surveillance System"

Problem	In order for the City to install video surveillance systems, it must prepare a document in accordance with the Law on Data Confidentiality and the Regulation on the Conditions and Methods of Technical Protection Implementation. The lengthy procedure for obtaining project approval from the Ministry of Internal Affairs.
Specific challenge	Property and legal issues Availability of electrical power for connection Availability of internet network Structural integrity of the poles for video surveillance installation
Year of implementation	2022.
What was the context of this challenge?	The context of this challenge pertains to the installation of video surveillance systems in the city.
Why was this intervention selected for tackling this specific challenge?	This intervention was selected to address the specific challenge of enhancing security and monitoring in the city through the installation of video surveillance systems.
What were the KPIs to be achieved by this intervention?	KPI 1: Compliance with legal requirements - Ensure the risk assessment document meets all legal standards and regulations. KPI 2: Identification of high-risk areas - Number of high-risk areas identified for potential video surveillance installation. KPI 3: Submission of pilot projects - Successful submission and approval of pilot projects for EU co-financing.
How was the intervention implemented?	Identified are specific needs for video surveillance, including areas to be monitored and security issues. Based on traffic enforcement statistics, locations requiring the installation of video surveillance systems were noted. A risk assessment document was prepared in accordance with the law.
What technologies were used for this intervention?	n/a
What tools and methods were used for this intervention?	Risk analysis: Utilization of structured risk analysis methods to identify potential risks and security issues associated with the installation of video surveillance systems. Legal analysis: Review of legal requirements and regulations related to the installation of video surveillance systems, including data privacy protection and security liability.

Results		
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Administrative Department for Communal Affairs, Department for Transport	Coordinated the preparation of the risk assessment and safety report. Provided data on traffic patterns and high-risk areas.	Managed the overall process, organized meetings, and ensured all stakeholders were engaged. They coordinated the collection of necessary data and oversaw the drafting of the risk assessment and safety report.
Ministry of Internal Affairs, Traffic Police	Oversaw the safety and regulatory compliance aspects of the project.	Collaborated by providing oversight to ensure the project adhered to safety standards and regulations. They also offered guidance on the legal aspects of video surveillance.
How was the data collected?	Data was collected from the system for generating fines for observed violations.	
What technology was used?	An application solution for recording traffic violations.	
How was it monitored?	From the system for generating fines for observed violations.	
Who did apply this?	Administrative Department for Communal Affairs, Department for Transport	
Who was participating in it?	Administrative Department for Communal Affairs, Department for Transport Ministry of Internal Affairs, Traffic Police	
Who owns the collected data?	City of Split	
What results have been achieved? Describe with concrete metrics.	Identification of over 20 locations for the installation of video surveillance systems Submission of a pilot project for EU co-financing	
What lessons have been learned?	Conducting a thorough risk assessment is essential to identify potential challenges and mitigate risks associated with the installation of video surveillance systems. This process helps anticipate legal, technical, and logistical issues, allowing for proactive planning and problem-solving.	

Previous intervention 4	
About the intervention	
	Implementing pilot projects allows for testing and validation of proposed solutions on a smaller scale before full-scale deployment. Pilot projects provide valuable insights into technical feasibility, user acceptance, and operational challenges, helping inform decision-making and optimize resource allocation.
What recommendations can be given for future interventions tackling this specific challenge?	Continuously gathering relevant data on traffic, safety incidents, and causes of improper parking helps inform the needs and priorities for future interventions.

Intervention name	Increased controls by traffic wardens and the relevant police department office.
Problem	High incidence of traffic violations and safety concerns on city roads, including improper parking, speeding, and disregard for traffic regulations
Specific challenge	Inadequate enforcement of traffic laws due to limited resources and manpower, leading to persistent violations and safety hazards.
Year of implementation	Yearly
What was the context of this challenge?	The city has experienced an increase in traffic congestion and safety issues, exacerbated by a growing population and urbanization. Despite existing traffic regulations, enforcement efforts have been insufficient to address the rising number of violations and ensure road safety for all users
Why was this intervention selected for tackling this specific challenge?	Increased controls by traffic wardens and the relevant police department office were chosen to address the specific challenge of inadequate enforcement. By deploying more traffic wardens and enhancing coordination with the police department, the intervention aims to improve enforcement efficiency and deterrence, ultimately reducing traffic violations and enhancing road safety
What were the KPIs to be achieved by this intervention?	KPI 1: Reduction in traffic violations - Measure the decrease in instances of traffic violations due to increased enforcement. KPI 2: Improved traffic flow - Measure the improvement in traffic flow and reduction in congestion.

Data collected		
	KPI 3: Increased public compliance - Survey-based measurement of public compliance with traffic regulations.	
How was the intervention implemented?	The intervention was implemented through intensified patrols by traffic wardens in the field and strengthened collaboration with the police department. Additional traffic wardens were deployed to key locations to improve coverage and effectiveness of traffic law enforcement. Additionally, better coordination between traffic wardens and police officers was established to enable quicker response to violations and appropriate action.	
What technologies were used for this intervention?	Body Cameras: Worn by traffic wardens to record interactions and ensure transparency.	
What tools and methods were used for this intervention?	Tools and methods used for this intervention included resource planning and allocation of traffic wardens based on analysis of traffic violation data and identification of high-risk locations.	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Administrative Department for Communal Affairs, Department for Transport	Coordinated and funded the increased enforcement efforts. Identified high-violation areas and coordinated with law enforcement.	Organized planning sessions, allocated resources, and managed the implementation of the increased enforcement measures.
Ministry of Internal Affairs, Traffic Police	Provided additional support and resources for enforcement.	Supported the intervention by providing additional resources and ensuring the enforcement measures complied with national policies and regulations.
Drivers	Adjusted their driving behaviors in response to increased enforcement.	Were indirectly involved as they adjusted their driving behaviors in response to the increased presence of traffic wardens and police.
How was the data collected?	Data was collected from the system for generating fines for observed violations.	
What technology was used?	An application solution for recording traffic violations.	
How was it monitored?	From the system for generating fines for observed violations.	

Results	
Who did apply this?	Administrative Department for Communal Affairs, Department for Transport
Who was participating in it?	Administrative Department for Communal Affairs, Department for Transport Ministry of Internal Affairs, Traffic Police
Who owns the collected data?	City of Split
What results have been achieved? Describe with concrete metrics.	
What lessons have been learned?	Effective coordination between traffic wardens and the police department is crucial for successful enforcement.
What recommendations can be given for future interventions tackling this specific challenge?	For future interventions, it is recommended to increase the use of technology, such as automated traffic enforcement systems and data analytics, and to engage the community continuously through educational campaigns and feedback mechanisms. Additionally, collaboration among stakeholders, regular training for enforcement personnel, and transparency and accountability in reporting intervention outcomes are essential.

Annex XI: Trikala Feasibility and Action Plan

Proposed intervention 1

Discovering the current state

Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
Climate change. Road deaths and safety issues (both physical and psychological sense of safety). Urbanization increase. Air quality due to car emissions.	Reduce traffic and increase sustainable mobility. Increase sense of safety of vulnerable groups. Increase air quality. Meet the 100 Climate Neutral Initiative in relation to city mobility.	Climate change. Road Deaths increase and safety issues. Urbanization. Air quality standards are still breached. Obesity and Population ageing. Covid-19 pandemic mind shift.

Proposed interventions

Intervention name	Data collection and monitoring.
Brief description	Target is to monitor and collect data mainly through sensors, apps, ED models and in person surveys in order to create a KPI baseline of the areas and propose measures for the re-design of the public space in order to provide safe, inclusive and sustainable urban mobility services.
Infrastructure targeted	Sensors recording bike routes and sensors recording illegal parking.
Services	Sensors to record the use of bikes and record illegal parking on bicycle lanes.

Proposed intervention 2	
	Data collection to re-design safer bike lanes. Participatory research with women cyclists to evaluate perception of safety.
Monitoring needed	TBD
Who is expected to benefit	Cyclists, women, elderly and other vulnerable groups.
What Stakeholders are affected	Mayors Advisor on Urban planning Municipal Urban Planning Company Municipal Police Traffic Police Cyclists Local Organization supporting Women NGOs in Trikala that support people with mobility issues

Intervention name	New modes, means and service solutions to optimize public space and mobility.
Brief description	Focus on the development of physical and virtual solutions on the roads, crossings and streets to improve road safety, especially for pedestrians and cyclists without compromising physical environment and considering circular economy principles where possible).
Infrastructure targeted	Park and ride stations.
Services	Create park and ride stations at the periphery. Provide real time information to the municipal police in cases of parking violations.
Monitoring needed	TBD
Who is expected to benefit	Cyclists, citizens from rural areas, students, visitors to the city, traffic police.
What Stakeholders are affected	Mayors Advisor on Urban planning Municipal Urban Planning Company

Proposed intervention 3	
	Municipal Police Traffic Police Cyclists University students School students Municipal technical service Smart Trikala Municipal Department Urban planning Municipal Department

Intervention name	New modes, means and service solutions to optimize public space and mobility.
Brief description	Focus on the development of physical and virtual solutions on the roads, crossings and streets to improve road safety, especially for pedestrians and cyclists without compromising physical environment and considering circular economy principles where possible).
Infrastructure targeted	Smart crossing.
Services	Install smart crossings outside schools or public places.
Monitoring needed	TBD
Who is expected to benefit	Cyclists, citizens from rural areas, students, visitors to the city, traffic police.
What Stakeholders are affected	Mayors Advisor on Urban planning Municipal Urban Planning Company Municipal Police Traffic Police Cyclists University students School students Municipal technical service

Proposed intervention 5	
	Smart Trikala Municipal Department Urban planning Municipal Department

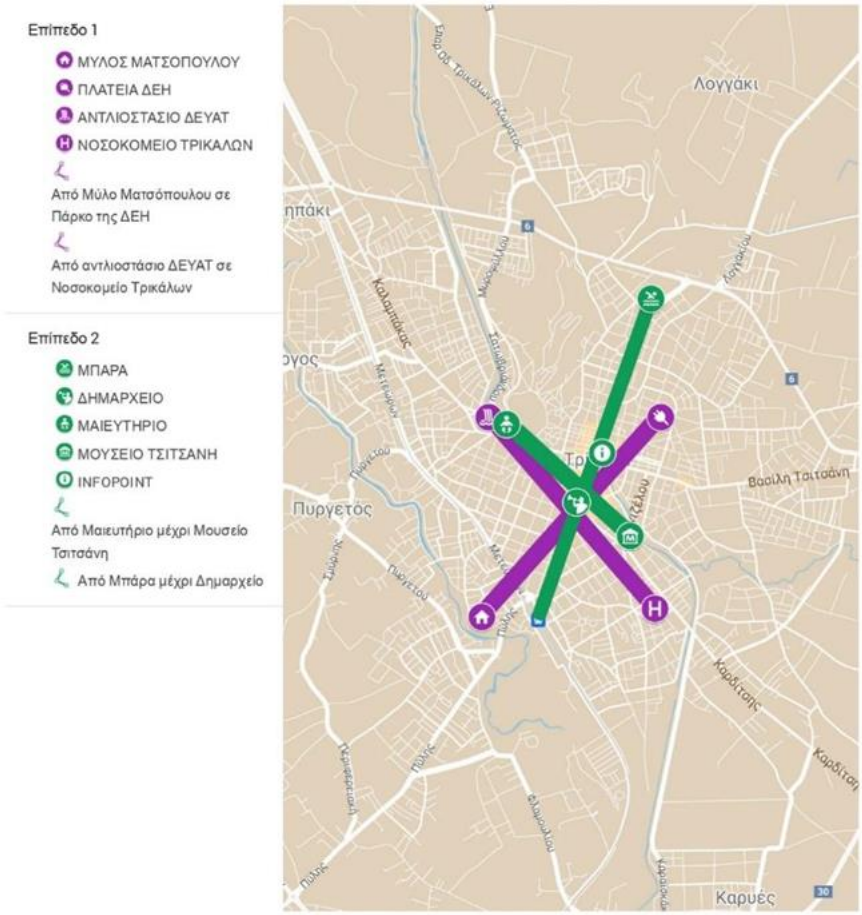
Intervention name	Online applications, artificial intelligence and digital twins
Brief description	Target is to make use of location-based services, technologies and data to improve the collection of data and planning of the areas.
Infrastructure targeted	TBD
Services	Integration of the existing SMARTA2 app to allow residents to access the city as well as to evaluate the experience/sense of comfort of the citizens and vulnerable to exclusion groups.
Monitoring needed	TBD
Who is expected to benefit	Cyclists, students, visitors, rural citizens, women, vulnerable groups.
What Stakeholders are affected	Mayors Advisor on Urban planning Municipal Urban Planning Company Cyclists Local Organization supporting Women NGOs in Trikala that support people with mobility issues Urban planning Municipal Department DotSOFT S.A School students University Students Rural citizens

Intervention name	Participatory research and engagement of vulnerable to exclusion groups.

Brief description	Target is to perform participatory research considering all involved users, including pedestrians, cyclists and other vulnerable to exclusion groups to better understands their feelings and considerations in read mobility.
Infrastructure targeted	TBD
Services	Participatory workshops to: Identify potential obstacles that prohibit women from choosing more active personal mobility options Evaluate the sense of safety for women cyclists Examine new mobility ways to support caregivers and elderly
Monitoring needed	TBD
Who is expected to benefit	Women, elderly, cyclists, caregivers, other vulnerable groups
What Stakeholders are affected	Mayors Advisor on Urban planning Municipal Police Traffic Police Cyclists Local Organization supporting Women NGOs in Trikala that support people with mobility issues Elderly

Living Lab

Living Lab characteristics

Maps of the area(s) where interventions are planned	 The ends of the purple line refer to the park and ride stations that allows citizens to park their car at the periphery of the city and use a bicycle to commute at the city centre. The green line covers important areas of interest where one can find smart parking systems, schools, bicycle lanes, the info point and crowed public places.
Current mobility aspects of this area	The main urban mobility challenges are the following: Climate change Road deaths and safety issues (both physical and psychological sense of safety)

	Urbanization increase Air quality due to car emissions Out of the total population, 67,000 people live in the main city of Trikala, while the rest of the population is spread in the surrounding rural areas. The problem in Trikala is that the rural sites in its vicinity are underserved by public transport. As a result, mobility largely depends on individual car use, with circa 50,000 car owners currently being registered in the municipality. This has a negative impact on the environment, causes severe traffic congestion in the city centre, increases traffic accidents and decreases the quality of life and the safety of pedestrians and cyclists. The last few years there has been an effort to provide to the citizens alternative and sustainable mobility solutions that allows them to use bicycles instead of their private cars and combine different public transportation services more efficiently.
Infrastructure and services existing	SMARTA 2 app: During the SMARTA 2 demonstrator (https://ruralsharedmobility.eu/smarta-2/) an on line app was created to support citizens of rural areas to plan their trip at the city center in advance while using sustainable mobility solutions. To be more precise, the mobile app allows the residents of rural areas: to reach the city of Trikala using carpooling; to access real-time information about the expected arrival time of the bus at the stop in the rural areas as well as bus information in the city of Trikala; to book other services offered at the Info Point on the main square in the city of Trikala e.g., storage locker, bicycle, wheelchair scooter Furthermore, this app allowed commuters from rural areas to the city of Trikala to efficiently plan multimodal travel as well as provided them with first/last mile connectivity. Existing bicycle stations: There are 12 bicycle stations all around the city, for the citizens to safely store and/or rent a bicycle. Trikala's bicycle fleet: 44 conventional bicycles are currently being used, 45 additional bicycles will be provided by the open mall and 42 electrical bicycles will also be provided very shortly. A sensor based smart parking service for people with disabilities. A sensor-based monitor system on cargo loading and unloading areas. A smart controlled parking system in different areas around the city is currently under construction and will very soon be implemented. Online citizens app "20.000" (https://20000.trikalacity.gr/): Digital Services Platform for Citizen Requests & Municipal Structures.

Safety aspects of the area	A recent survey performed in the course of the Cities-4-People project in 2017 revealed that: - The dominant method of travelling, whether for work, leisure activities or household tasks, is by car (41,3% - 46,2%), followed by the bicycle (34,8% - 37,6%) and walking (19,5% - 33,9%) - The citizens prefer to walk, cycle or drive rather than use the public transport, when it comes to distances less than 1,5km. - Urban mobility is mainly motorized (approximately 50.000 car owners) as car is extensively used even for small distances. - It is estimated that in Trikala there are 259 cars (public and private), 2 public buses, 70 motorcycles, and 140 trucks – goods road motor vehicles per 1,000 citizens. - The majority of the citizens uses the public transport for travel distances larger than 2km, in order to move from the suburban areas, i.e. the surrounding villages, to the city of Trikala and vice versa. - Some of the rural suburbs in Trikala are underserved and the access to public transport is limited. Where accessible, PT is mainly used to serve suburban and rural areas and does not offer last-mile solutions. - In relation to annual car accidents, according to ELSTAT, the city of Trikala has an 11% decrease in accidents from 2020 to 2021. There are approximately 40 car accidents every year.
SUMP guidelines for this area	There is a SUMP in the city of Trikala, in which electromobility as well as automated transport and public engagement are elements along with active mobility and micro-mobility. In addition, the SUMP aims to boost the public transportation share in the daily transport patterns, which is currently dominated by private fossil-fuel vehicles. SUMP is an ongoing programme which is expected to enhance the quality of life in the city of Trikala. Main interventions include the unification of the bicycle path and the pedestrian network and the exploitation of the existing ICT infrastructures and services as well as the deployment of new ones. In conjunction with the Sustainable Urban Development Strategic, in the framework of which is planned the redevelopment of several squares as well as the Lithaios river bank in the city center, sustainable forms of transportation will be encouraged and green transportation awareness will raise.

Stakeholders and Actors

Offices in municipalities				
Stakeholder or actor	**Intervention**	**Participation scale**	**Needs in terms of the Living Lab participation**	**Expectations from the intervention**
Vice Mayors	All interventions	Inform	Participate on workshops and act as ambassadors in promoting the new mobility services.	Increase quality of life of the citizens.
Municipal Technical Service	Proposed intervention 2: Park and ride Stations Proposed Intervention 3: Smart crossings Proposed Intervention 1: Sensors deployment and data collection	Inform, consult and involve	We will need to keep them updated in relation to these interventions and consult if necessary.	To support and promote the 100 climate neutral and smart city by 2030 initiative of the city
Smart Trikala Municipal Department	Proposed Intervention 2: Park and ride stations Proposed Intervention 3: Smart crossings Proposed Intervention 1: Sensors	Inform, consult and involve	We will need to keep them updated in relation to these interventions and consult if necessary.	Additional tools will be introduced to them that could support existing services.

NGOs (non-gov) and NPOs (non-profit)				
	deployment & data collection Proposed Intervention 4: SMARTA 2 app integration			
Urban planning Municipal Department	Proposed Intervention 2: Park and ride stations Proposed Intervention 1: Sensors deployment & data collection	Inform, involve and collaborate	This developmental company is responsible for the municipal policy, all municipal parking and bike lanes and will therefore play a vital role in deploying these two interventions.	Additional services to support them.
DotSOFT	Proposed Intervention 2: Park and ride service Proposed Intervention 4: SMARTA2 app	Involve and collaborate	This Private IT company is responsible for the SMARTA2 app and will support the park and ride service as well.	
Novoville	Proposed Intervention 2: Park and ride Proposed Intervention 4: SMARTA2 app	Inform	Company responsible for the smart parking app of the city.	
Local businesses around the park and ride stations	Proposed intervention 2: Park and ride service	Inform	These local businesses may see a positive impact due to the increased mobility in their area.	

General citizens' segments				
There are 2 local NGOs that support people with mobility issues	Proposed Intervention 5: Participatory workshops	Inform, collaborate and empower	To be involved on the participatory workshops.	Empowerment
Youth Council	Proposed Intervention 5: Participatory workshops	Collaborate and empower	The youth council consists of 44 tactical members age 15 to 28. To be involved on the participatory workshops.	Empowerment
Local Organization supporting Women	Proposed Intervention 5: Participatory workshop	Collaborate, empower	To be involved on the participatory workshops.	Empowerment
Mayors Advisor on Urban planning and digital reformation	All interventions	Inform and consult	We always work very close with the Mayors advisors to make sure that our interventions support the Municipality's priorities and objectives.	
Rural citizens	Proposed Intervention 2: Park and ride Proposed Intervention 4: SMARTA2 app	Inform, involve and empower	These two interventions will provide to the citizens living in rural and suburban areas the ability not to take their car at the city center and pre- organize their trip by using different and more sustainable transport services	Ability to commute to the city in a more sustainable way
University Students	Proposed Intervention 4: SMARTA2 App	Inform, empower	This app will allow them to pre-organize their commute in the city by using sustainable mobility services	Ability to better organize their commute at the city
School Teachers from 3 schools	Proposed Intervention 3:	Inform, consult, collaborate and empower	We will need to involve the teachers from the 3 schools	Increase safety and security outside the schools

	Smart crossings		that the smart crossings will be deployed	
Other local authorities				
Cyclists	Proposed Intervention 1: Sensors deployment Proposed Intervention 5: Participatory workshops	Inform, involve collaborate, empower	Inform the cyclists about the sensors on the bike lanes and ask them to use the service. They will also be involved on the participatory workshops.	Tools to improve the bike lanes
Women	Proposed Intervention 5: participatory workshops Proposed Intervention 1: sensors deployment	Inform Involve empower	To involve women of all ages in our participatory workshops and conduct participatory research with women cyclists to evaluate perception of safety.	To promote women perception of safety when commuting at the city and help re-design safer bike lanes
Municipal Police	Proposed Intervention 1: Sensors deployment	Inform, collaborate	The municipal police will be able to receive alerts for illegal parking on bike lanes in 5 different high risk areas	They will be able to better monitor bike lanes for illegal car parking
Traffic Police	All interventions	inform		They can benefit from all the data gathered by the interventions

Past interventions to tackle the problems

Past interventions brief overview

Previous intervention 1		
About the intervention		
Problem	**Specific challenge**	**Intervention has been done during the past 5 years**
Climate change. Air quality due to car emissions. Urbanization increase. Road deaths and safety issues (both physical and psychological sense of safety). Low level of public participation and co-creation Need of PT services with frequent routes and attractive fares. Need to collect real-time traffic management, exploiting the existing ICT infrastructures (e.g. fibre optics network) and services (e.g. smart parking system) and incorporating new ones.	Reduce traffic and increase sustainable mobility. (SMARTA 2, Cities4People) Meet the 100 Climate Neutral Initiative in relation to city mobility. (ELVITEN, SHOW, AVINT) Increase air quality (SMARTA2, Cities4people) Increase sense of safety of vulnerable groups (SMARTA2) integration of automated buses with the city transport network (SHOW, AVINT) design of multimodal and sustainable mobility systems (SMARTA 2) improvement of public transportation systems and services (SMARTA2, AVINT, SHOW)	ELVITEN SHOW SMARTA 2 Cities4People AVINT

Detailed analysis of each of the past interventions

Intervention name	Cities4People
Problem	Decongestion of the city center which can be addressed by car usage reduction and modal shift towards sustainable forms of mobility. Road deaths and Injuries. Low level of participatory processes. Making cities better places to live in by improving urban and peri-urban mobility through sustainable mobility innovations.

Stakeholders involved in the intervention		
Specific challenge	Having a two-fold approach: 1) Having citizens participate in the innovation supply chain of their local mobility ecosystems. 2) Empowering local communities of engaged city changers by offering them the necessary arsenal to interact and innovate.	
Year of implementation	2017-2020	
What was the context of this challenge?	City center	
Why was this intervention selected for tackling this specific challenge?	A Citizen Mobility Lab was designed to experiment with ideas and solutions and a Citizen Mobility Kit to gather useful resources and collect key stakeholder inputs.	
What were the KPIs to be achieved by this intervention?	The KPI were designed to evaluate multiple aspects such as social innovation, digital social innovation, co-creation, Sustainability of urban development, neighborhood governance, shared economy.	
How was the intervention implemented?	In Trikala, Cities-4-People contributed to the re-planning of the existing public transport system as well as the introduction of new mobility solutions, especially in the area of the grand open market. Shared mobility was used as a way to decrease the volume of cars used to commute from the broader rural and peri-urban areas of the Prefecture of Trikala. Other interventions concerned the creation of better connections and the improvement of the public transport infrastructure as well as the optimisation of parking slots and the establishment of better bike lanes.	
What technologies were used for this intervention?	Surveys directed to citizens that were using the project's technology (electric scooter, smart storage lockers, info point)	
What tools and methods were used for this intervention?	Qualitative and quantitative methods and tools	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Users from rural areas, migrants	Support, promote, test and evaluate	Online questionnaire
Municipality of Trikala	Support, promote and give feedback	Interviews and workshops

Results		
Bus company	Support, promote and evaluate	Interviews and workshops
Traffic police	Support	Workshops
NGOs for people with mobility problems	Support, test, evaluate	Interviews and workshops, online questionnaires
Cyclists	Support, test evaluate	Interviews and workshops, online questionnaires
Authorities from rural areas	Support, promote, test, evaluate	Interviews and workshops
How was the data collected?	Smart applications, online questionnaires, interviews, consultation workshops	
What technology for data collection was used?	Electric scooter, info point, smart storage lockers	
How was it monitored?	E-Trikala was promoting through social media the data collection tools (surveys). Various posts were made. In addition, co-creational workshops were organised, in which the surveys were distrubuted and collected on site..	
Who did apply this?	The surveys were designed by the project coordinator and were distributed by e-Trikala to the local community (stakeholders and citizens).	
Who was participating in it?	The stakeholders mentioned above	
Who owns the collected data?	e-Trikala	
What results have been achieved? Describe with concrete metrics.	One of the Cities-4-People interventions in Trikala consisted in providing people with mobility impairments with a free electric scooter that can be attached to their wheelchair to enable them to cover longer distances and move more independently in the city. As a part of the Cities-4-People project, the team in Trikala piloted the functioning of smart storage lockers at the Info Point in the main square. The lockers are expected to enable people to drop their bags and therefore renounce to private car usage in favour of sustainable transportation means, such as bikes, public transport or simply walking.	

Previous intervention 2	
About the intervention	
	The project had a qualitative methodological approach. Concerning the project's results, co-creation tools in the neighbourhood led to the formation of supportive communities and helped promote stakeholders' active engagement. These activities included first using voting methods to enable locals to indicate what mobility interventions they most wanted, and following these up with workshops and prototyping activities that empowered locals to whittle this list down to the most needed interventions. Workshops and prototyping activities also led to the creation of Trikala's Citizen Mobility Lab, which provides a physical space to share information and foster interaction among the members of the local community. It is an open and accessible space that enables members to meet, discuss, experiment, test technologies, and propose new mobility projects, and is expected to continue well into the future. In addition, the Citizens Mobility Kit, an online digital platform, facilitates information sharing and engagement in innovation processes.
What lessons have been learned?	Smart mobility systems and services should help address first- and last-mile issues by complementing public transport services at multiple geographic locations in the city with different shared mobility options.
What recommendations can be given for future interventions tackling this specific challenge?	A wide range of stakeholders and citizens, public authorities, transportation providers and businesses are providing fruitful information in a discussion on how to improve mobility, which can be translated into policymaking.

Intervention name	AVINT
Problem	Decongestion of the city center which can be addressed by car usage reduction and modal shift towards sustainable forms of mobility.
Specific challenge	Improvement of PT services with frequent routes and attractive fares. Real-time traffic management, exploiting the existing ICT infrastructures (e.g. fibre optics network) and services (e.g. smart parking system) and incorporating new ones. Integration of automated buses with the city transport network.
Year of implementation	2018-2023

Results		
What was the context of this challenge?	Trikala and its admin area are underserved by public transport therefore mobility largely depends on individual car use.	
Why was this intervention selected for tackling this specific challenge?	The intervention aimed at the improvement of PT services with frequent routes and attractive fares as well as smart systems and tools.	
What were the KPIs to be achieved by this intervention?	Various indicators, focusing on traffic data, socio-demographic characteristics, travel behavior.	
How was the intervention implemented?	A pilot demonstration on the passenger use case.	
What technologies were used for this intervention?	2 automated shuttles.	
What tools and methods were used for this intervention?	Quantitative and qualitative.	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Users from rural areas	Support, promote, test and evaluate	Online questionnaire
Municipality of Trikala	Support, promote and give feedback	Interviews and workshops
Bus company	Support, promote and evaluate	Interviews and workshops
How was the data collected?	Traffic data, online questionnaires, interviews	
What technology was used?	The booking application for the 2 automated shuttles was the technology to collect trip data. In addition, multiple online surveys were promoted to collect data for travel patterns of citizens.	
How was it monitored?	E-Trikala was promoting the questionnaires to the local community so that we fullfill the required number of results.	
Who did apply this?	End-users (citizens and enterprises)	
Who was participating in it?	Local stakeholders that contributed to the pilot demonstration	
Who owns the collected data?	E-Trikala	

Previous intervention 3	
About the intervention	
What results have been achieved? Describe with concrete metrics.	The On-demand Service has been executed in a route connecting the city center and the peri-urban areas of Trikala. It was free of charge and was supervised remotely via a control center and fleet management tools. The result achieved within the project was the development of one platform called SMARTA 2 platform (Sustainable shared mobility interconnected with public transport in European rural areas), managed by the Development Company of the Municipality of Trikala – Local Development Company – "e-Trikala SA". The online platform provided the following functions: real-time information about the estimated time of arrival of a city bus at a specific stop. The information already exists in the existing system of intelligent transport of city buses and is reflected in specific signs at bus stops in the city of Trikala. It has been used as an application for carsharing and carpooling and information on the available options on a case-by-case basis. They are basically used by / to neighboring settlements / villages in relation to the city of Trikala, and its development allows its expansion to new destinations. The platform was used also as an on-demand service that allows you to send a request for booking a bus or taxi. In this way the urban transport provider knows in advance the real need for specific routes. In addition to the online version, the service is supported through an infopoint call center, which is located in the central square of the city of Trikala and is already staffed with appropriate staff. an online booking application for the existing services which are already offered by the Municipality of Trikala through the Info Point in the Central Square object storage key), and the ability to expand to new services.
What lessons have been learned?	Trikala citizens are very willing to use innovative services that promote safety, multimodality and sustainability. The predominant impact is the successful investigation of how AVs can be used via on demand services serving pedestrian areas.
What recommendations can be given for future interventions tackling this specific challenge?	The institutional framework needs to be further improved to allow the commercial use of automated mobility services. Replication with the local ecosystem is a significant step for a better implementation.

Intervention name	SHOW

Stakeholders involved in the intervention		
Problem	Decongestion of the city center which can be addressed by car usage reduction and modal shift towards sustainable forms of mobility	
Specific challenge	Improvement of PT services with frequent routes and attractive fares. Enhancement of freight transport and parcel delivery process especially in peak hours. Real-time traffic management, exploiting the existing ICT infrastructures (e.g. fibre optics network) and services (e.g. smart parking system) and incorporating new ones. Integration of automated buses with the city transport network.	
Year of implementation	2020-2024	
What was the context of this challenge?	Trikala and its admin area are underserved by public transport therefore mobility largely depends on individual car use (46% share in modal split). This has a negative impact on the environment, causes severe traffic congestion in the city center and increases traffic crashes.	
Why was this intervention selected for tackling this specific challenge?	The intervention aimed at the improvement of PT services with frequent routes and attractive fares as well as smart systems and tools.	
What were the KPIs to be achieved by this intervention?	Various indicators, focusing on traffic data, socio-demographic characteristics, travel behavior.	
How was the intervention implemented?	A pilot demonstration on the logistics use case was organized for the duration of 4 months and a pilot demonstration on the passenger use case is currently ongoing for 12 months (ending 9/2024).	
What technologies were used for this intervention?	5 delivery robots and 2 automated shuttles	
What tools and methods were used for this intervention?	Quantitative and qualitative	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Users from rural areas	Support, promote, test and evaluate	Online questionnaire
Municipality of Trikala	Support, promote and give feedback	Interviews and workshops

Results		
Bus company	Support, promote and evaluate	Interviews and workshops
Traffic police	Support	Workshops
NGOs for people with mobility problems	Support, test, evaluate	Interviews and workshops, online questionnaires
Cyclists	Support, test evaluate	Interviews and workshops, online questionnaires
How was the data collected?	Traffic data, online questionnaires, interviews, consultation workshops	
What technology was used?	Trip data through sensors installed on 5 delivery robots and 2 automated shuttles	
How was it monitored?	E-Trikala was promoting the surveys and was responsible for achieving a certain number of routes.	
Who did apply this?	End-users (citizens and enterprises)	
Who was participating in it?	Different partners participated in the project and local stakeholders contributed to the pilot demonstration	
Who owns the collected data?	E-Trikala	
What results have been achieved? Describe with concrete metrics.	The Logistics Service has been executed in the pedestrian area of the city center. It was free of charge and was supervised remotely via a control center and fleet management tools. The delivery of small parcels and goods to local stakeholders was carried out via a dedicated booking application.	
What lessons have been learned?	Trikala citizens are very willing to use innovative services that promote safety, multimodality and sustainability. The predominant impact is the successful investigation of how AVs can be used via on demand services serving pedestrian areas.	
What recommendations can be given for future interventions tackling this specific challenge?	The institutional framework needs to be further improved to allow the commercial use of automated mobility services. Replication with the local ecosystem is a significant step for a better implementation.	

Previous intervention 4	
About the intervention	
Intervention name	SMARTA 2
Problem	Climate change. Air quality due to car emissions. Urbanization increase.
Specific challenge	Reduce traffic and increase sustainable mobility. Meet the 100 Climate Neutral Initiative in relation to city mobility. Increase air quality.
Year of implementation	2019-2021
What was the context of this challenge?	The problem in Trikala is that the rural sites are underserved by public transport. As a result, mobility largely depends on individual car use, with circa 50,000 car owners currently registered in the municipality. This has a negative impact on the environment. Causes severe traffic congestion in the city centre. It has a social impact. People who cannot afford or do not own a car cannot commute to the city center and therefore they cannot access essential services such as healthcare facilities, supermarkets
Why was this intervention selected for tackling this specific challenge?	ARTA 2 – Demonstrators assisted Trikala in setting-up an online application that allowed citizens to access real-time public transport information along with available carpooling options. The application also included a booking system for services such as storage lockers, wheelchair scooters or bicycles, offered in the city's main square info point.
What were the KPIs to be achieved by this intervention?	Trikala's demonstrator aimed to: Promote more flexible, sustainable and affordable mobility solutions for people living in rural areas. Increase the awareness for sustainable shared mobility and change the mobility behaviour of the citizens away from private cars by offering alternative mobility solutions that are currently not available (i.e. carpooling) or providing services under one common application (to be used free of charge) that will promote the usage of existing services (i.e. public transport

real time information, online booking of e-bikes, wheelchair scooters, storage lockers).

Promote multimodality and connectivity of available transport modes.

Expected impacts of the demonstrator:

the project will be disseminated to more than 10.000 people through our media events and publications (Facebook, website, regional and national media, joined events, conferences). At least 1000 of them will visit the website to learn more and 400 of them will download and make use of the app.

300 people to use at least one of the mobility solutions offered via the app developed during SMARTA2

30% of the people that will use SMARTA2 app will change their mobility patterns and start using public transport, carpooling and bicycles for their daily commute. Therefore, reduce the private car usage.

50% of the registered users will wish to continue using the application after the end of the project i.e. 50% of the users will answer “yes” in the question whether they wish to continue using the SMARTA2 App after the end of the pilot period.

The hypotheses for this evaluation:

The area of intervention that posters and dissemination activities will take place will have 50% more registrations to the app than the area of intervention that no posters are uploaded. As it turned out there were posters distributed in both pilot rural areas. However, the nudges used in each area differ, allowing us to measure the different impact depending on the type of nudge.

The ability for someone to book in advance the services offered at the InfoPoint will increase the people using them by 50%

Car-pooling will be used mostly among people that already know each other (neighbours or relatives)

Having real time information of the bus routes and timeline online, so as for the user to decide whether/when to start his/her journey and really save time, will increase public transport usage by 201%

The SMARTA 2 app will be downloaded by at least 1000 users and will be actively used by more than 300.

2/3 of the users will continue use the app after the pilot period.

The evaluation included the following components:

In the evaluation we made a comparison in terms of users’ acceptance between two different intervention areas.

Stakeholders involved in the intervention		
	The evaluation included all type of users (carpooling users, bus users, InfoPoint services users). Important stakeholders of the area's mobility ecosystem (such as the Urban Bus Company) were invited to evaluate the application. All evaluation material (for users and stakeholders) included an overview about their attitudes to mobility (e.g. their changes in their mobility behaviour through the using or the new services, their choice of the new means of transport, their motivation, their wishes and complains, their suggestions for improvement, their will to use the service after the funded pilot phase etc.). The evaluation also included the analysis of enabling conditions like drivers and barriers and the exchange with stakeholders who are responsible for these conditions.	
How was the intervention implemented?	Due to the COVID lockdown in 2020, although the app was ready, we had to seize the pilot. We re-introduced the service after 4 months. The testing period lasted almost a year.	
What technologies were used for this intervention?	User friendly app. MaaS deployment. Multimodal travel patterns and planning. Available on Android and iOS. Scalability of the App. Data collection.	
What tools and methods were used for this intervention?	On line application	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Users from rural areas	Support, promote, test and evaluate	Online questionnaire
Municipality of Trikala	Support, promote and give feedback	Interviews and workshops
Bus company	Support, promote and evaluate	Interviews and workshops
Traffic police	support	workshops

Data collected		
NGOs for people with mobility problems	Support, test, evaluate	Interviews and workshops, online questionnaires
Cyclists	Support, test evaluate	Interviews and workshops, online questionnaires
Authorities from rural areas	Support, promote, test, evaluate	Interviews and workshops
How was the data collected?	E-Trikala has gathered feedback and data via: Online questionnaires to the users (citizens of rural areas) focusing on Mood (Mobiity behavior Percentage of voluntary ridesharing, Usage of info-point services, Usage of the bus). Interviews with other stakeholders (Municipal Authorities, Rural area Authorities, Urban bus company) focusing on motivation, Mass, momentum and money. Motivation, Mass, momentum and money factors were addressed in two ways: a) via the existing information and research that has been done from e-trikala and the Municipality while deploying other sustainable mobility projects e.g CityMobil2, ELVITEN, C4P, AVINT and b) via information provided by the local authorities during the consultation and demonstration workshop. Consultation workshops with all stakeholders Data gathered by the app in relation to number of users for each service.	
What technology for data collection was used?	On line questionnaires and data gathered by the app in relation to number of users for each service.	
How was it monitored?	Added the questionnaires to the app inviting end users to evaluate it Access and report how many people used each service each months Access and report how many people registered and downloaded the service on a monthly base Conducted consultation workshops with stakeholders and users	
Who did apply this?	Both qualitative and quantitative data were gathered by e-trikala	
Who was participating in it?	We collaborated with DOTSOFT (the company that created the app) so as to have access to the data and to add the on line questionnaire. We also collaborated with white research (the projects partner responsible for the evaluation report)	

Who owns the collected data?	E-Trikala

Results

What results have been achieved? Describe with concreate metrics.

About the survey

As part of our work in SMARTA 2, we wanted to learn more about the barriers and drivers of people living in rural areas regarding shared mobility and their thoughts on our services.

The surveys were administered in the local language of the pilot areas for a period of approximately one month (between April and May 2021).

In the surveys, we asked hands-on questions such as the practical and behavioural barriers that are affecting people when it comes to using shared mobility services as well as their experience with the SMARTA 2 services.

Statistical results about shared mobility in general

The first part of the survey assessed the use of shared mobility among respondents. The opening question asked which primary mode of transport the respondents use to commute. According to the results, the top 3 primary modes of transport for commuting are car (140 users), walking (93 users) and cycling (93 users). The use of shared mobility comes next as the 4th most cited mode (34 users) of transport for commuting, with nevertheless a noticeable difference from the first three most preferred mobility options.

When asking the respondents how often they use shared services to commute to the city centre or other destinations, the results showed that 43% - almost half of total sample – never use shared services. 26% of the respondents use shared services “occasionally/sometimes. The overall pattern is complemented by a low share of respondents who use shared mobility “almost every time” (12%) and “every time” (1%).

The survey also asked the respondents whether they would consider using shared services to commute. Here, approximately a third of the respondents (31%) expressed willingness to use such services. At the same time, 12% showed unwillingness to use such services and 57% did not reply to the question. The fact that almost a third of respondents would use such services contrasts the actual low rates of shared mobility use, and highlights the need to match citizens’ willingness with existing services

To understand better what influences the frequency in which respondents use or not shared services, the survey asked respondents to rank 11 potential factors on a Likert scale1. Some of these factors are practical, while other behavioural. According to the results contributing to the decrease of environmental pollution is considered by 37.50% of the respondents a very important factor, implying relatively high levels of environmental awareness in the area. The results also showed that 27% of the respondents answered that helping a fellow citizen who does not own a car is a very important

factor. Helping the community to become more sustainable is also a factor that is considered by a larger percentage of the respondents very important. Saving money is consider important for 30% of the respondents and very important for 32%. Furthermore, the survey asked the respondents in an open question if there are other factors that could influence how frequently they use shared mobility services. The two most mentioned factors by the respondents are the need for more services, and more areas to be covered by the services. Some respondents also expressed their wish to have e-bikes added to the existing services. On top of that, some mentioned the idea of introducing a loyalty scheme and access to parking.

Statistical results in relation to the service

The survey focused on their satisfaction level with respect to the SMARTA 2 service. 22% of respondents are very satisfied, 54% are satisfied and only 3% are very dissatisfied. As such, the general picture showed high acceptance levels of the service among current users.

The most frequently mentioned factors that according to surveyed users should be improved in the SMARTA2 services. The most highlighted factors that should be improved are the geographical availability and the frequency of the service. A considerable number of respondents – more than 1 out of 3 of surveyed users – mentioned that they would not improve something to the already existing service.

The survey asked also the 200 respondents to what extent the 6 following factors would affect them in using the SMARTA2 services. According to the results, giving a small donation to a local charity when using the services is considered by 45% of the respondents – almost half of total sample – to have a major effect on their decision. Knowing the person to share the service with and getting small discounts when using the services are two factors that are also considered to have a major effect for around 27% of the respondents. The factor that seems to be the least influential on respondents' decision about using the service is if a local politician uses the services. In particular, 26.50% of the respondents answered that this factor has no effect whatsoever on them using the service, while 20.50% answer that it would have a moderate effect.

Additional input

In relation to the service there was another on line survey conducted during the pilot. Approximately 281 people answered it. Here are some useful results.

Users were asked on how easy or difficult to use was the SMARTA 2 app. 66 of them found it very easy to use, 148 of the found it quite easy. 57 found the app neither easy or difficult and only 6 found it quite difficult and 2 very difficult.

	Users were also asked if they will be willing to pay a small amount in order to continue using the app after the program ends. 146 of them said yes, 74 of them said no and 57 were indecisive.
What lessons have been learned?	One of the project's objectives was to create a toolkit with all important lessons learned and recommendations that will be of use to other cities implementing something similar. The Toolkit is also available https://ruralsharedmobility.eu/smarta-2-toolkit/
What recommendations can be given for future interventions tackling this specific challenge?	Same as above https://ruralsharedmobility.eu/smarta-2-toolkit/

Annex XII: Velenje Feasibility and Action Plan

Proposed intervention 1

Discovering the current state

Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
- Conflicts between micro-mobility users (pedestrians, e-scooters, bikes, e-bikes) - High share of cars in modal split (higher potential of accidents and low safety feeling of vulnerable users) - Increasing number of car ownership and air quality impact - Obesity among the school children and aging population	Improve safety of the most vulnerable groups Reduce motorized traffic and increase the share of sustainable mobility Improved air quality Contribute to Mission 100 initiative	- Climate change - Road deaths increase and safety issues - Increase in urbanization - Air quality standards are still breached - Obesity and population aging - Covid-19 pandemic mind shift

Proposed interventions

Intervention name	Data collection and monitoring for the re-design of public space
Brief description	Target to collect and monitor data through the implementation of a city-wide network of smart sensorics with the goal of establishing a baseline, upon which we will be able to measure the KPIs and propose measures towards the provision of a safe, inclusive and sustainable urban mobility space.
Infrastructure targeted	Cycling lanes, roads, crossings
Services	Smart traffic cameras installed at potential infraction points between users of different kinds of mobility.

Proposed intervention 2	
	Collect data on the usage of sustainable mobility. Establishment of traffic flow models/real time analysis.
Monitoring needed	Before, after
Who is expected to benefit	Citizens in general, cyclists, students, elderly, other vulnerable groups.
What Stakeholders are affected	-City advisors on Urban planning -City educational high-school centre -City mobility planners -Smart development department -Traffic police -Citizens

Intervention name	New means, modes and service solutions to optimize public space and mobility.
Brief description	Development and implementation of a smart personal micro-mobility hub (bike, e-bike, e-scooter), with the goal of improving safety and building physical capacity for the use of sustainable mobility means, focusing mainly on cyclists in the area.
Infrastructure targeted	Micromobility hub
Services	Personal micro-mobility hub on high-school premises. Implementation of a personal, state of the art, bicycle lock and charging station. Promotion of alternative to cars, oriented towards elementary and secondary school students.
Monitoring needed	Before, after
Who is expected to benefit	Cyclists, students, visitors to the city, public.
What Stakeholders are affected	City advisors on Urban planning City educational high-school centre City mobility planners Students

	Cyclist

Proposed intervention 4

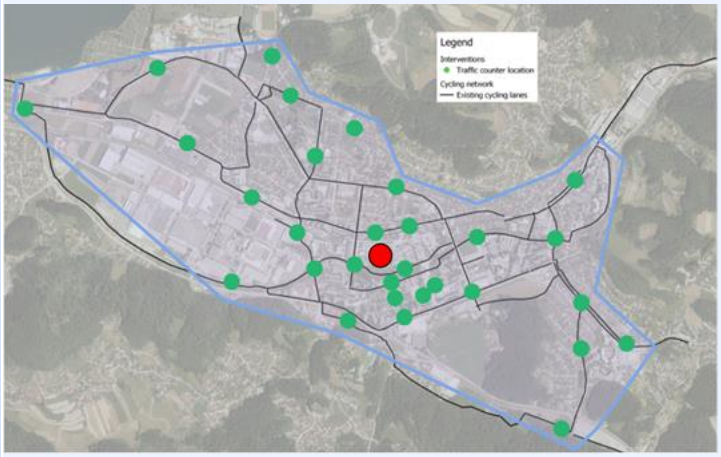
Intervention name	On-line applications, artificial intelligence and digital twins.
Brief description	Development of AI-based smart traffic analysis, detect pedestrians, micro-mobility and vehicles (counting, accident and conflict detection).
Infrastructure targeted	Roads, bike lanes
Services	Traffic flow digital twin: data-driven decision support data visualization
Monitoring needed	?
Who is expected to benefit	City administration, citizens.
What Stakeholders are affected	- City advisors on Urban planning - City educational high-school centre - City mobility planners - Smart development department - Students

Intervention name	Participatory research and engagement of vulnerable to exclusion groups.
Brief description	Conduct training campaigns of future/existing users of micro-mobility among elementary and secondary school students.
Infrastructure targeted	?
Services	Workshops, awareness raising activities: - promotion of biking and sustainable mobility - safe usage of micro-mobility
Monitoring needed	?
Who is expected to benefit	City administration, citizens, vulnerable to exclusion groups.

What Stakeholders are affected	- City advisors on Urban planning - City educational high-school centre - City mobility planners - Smart development department - Students - Vulnerable to exclusion groups

Living Lab

Living Lab characteristics

Maps of the area(s) where interventions are planned	
Current mobility aspects of this area	Population 33.558 inhabitants, with population density of 401 inhabitants per km2. The use of micro-mobility is increasing in recent years, creating new types of conflicts, dangerous situations and accidents between: Cars Public transport (bus, including bike sharing system and on-demand transport) Pedestrian traffic Cycling E-scooters Modal split(2016) Cars-61%, Public transport – 10%, cycling – 9%, pedestrian 20%.

Infrastructure and services existing	Public bike sharing system and cycling infrastructure. Free local public transport (bus). Cycling paths. Pedestrian walkways.
Safety aspects of the area	Number of traffic accidents between 2010 and 2019 was between 194 and 333 yearly. Most occurred in 2012(333) and are on the decline from that point onward. The year with the lowest number of accidents was 2018 (194). Conflicts between micro mobility users (pedestrians, e-scooters, e-bikes, bikes…) High share of cars in modal split (higher potential of accidents and low safety feeling of vulnerable users) Increasing number of car ownership and air quality impact, increased potential for accidents Obesity among the school children Aging population
SUMP guidelines for this area	Improving safety in pedestrian and cycling traffic Increase of the share of sustainable mobility modes Promotional activities for awareness raising Improving safety in school ways Establishment of dangerous spots register Building of parking spots for bikes near the public buildings Increasing of the attractiveness of active mobility infrastructure Establishment of e-charging spots for e-micro-mobility Traffic calming measures

Stakeholders and Actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention

Vulnerable road users				
Office for economic development and transition	1,2	Intervention implementation	Project management, procurement, implementation oversight	Established network of smart traffic cam/data gathering means, Implementation of micromobility hub
Office for communal activities	1,2	Empower, consult	Inputs and help with implementation of intervention	That the micromobility hub and smart traffic cameras are successfully implemented.
School centre Velenje	2	Inform, involve, empower	Ensuring the cooperation of high school students in the survey and focus group.	To get a micromobility hub in the area of School centre Velenje.
Citizens	2	Inform, empower	To ensure safe use of micromobility means of transport.	Safer conditions in the traffic all over city for micromobility users.
Mobility planning	1,2	Consult, collaborate	To give expert inputs/opinions for the proposed interventions.	To better plan the sustainable mobility of the city in the future.
Young	2	Inform, empower	To change their mindsets which will prevent the use of cars before they can acquire their driver's license.	A micromobility hub in the area of School centre Velenje, which will make cycling more attractive for them since they will be able to more safely lock their more expensive bicycles.
Elementary and high-school students	2	Inform, consult, empower	To change their mindsets which will prevent the use of cars before they can	A micromobility hub in the area of School centre Velenje, which will make cycling more attractive for

Migrants' segments				
			acquire their driver's license.	them since they will be able to more safely lock their more expensive bicycles.
Micromobility users	1,2	Inform, consult, empower	Micromobility users need safer systems for locking up their bicycles.	A micromobility hub in the area of School centre Velenje, which will make cycling more attractive for them since they will be able to more safely lock their more expensive bicycles.

Past interventions to tackle the problems

Past interventions brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years
Conflicts between micromobility and other road users	Improve safety of vulnerable groups	Tactical urbanism
		Illuminated pedestrian crossings
		Speed limits on potential infraction points
		Area based restrictions

Previous intervention 1		
About the intervention		
	Data collection and monitoring for redesign of public space	Implementation of bike counters
High share of cars in the modal split	Reduce motorised traffic and increase the share of sustainable micromobility	Implementation and expansion of a shared bicycle stations, new bike lanes, new cycling paths, awareness raising campaigns
GHG emissions from motorised traffic	Improving air quality	Awareness raising campaigns
Insufficient means for data collection and monitoring	Data collection and monitoring for redesign of public space	Implementation of bike counters

Detailed analysis of each of the past interventions

Intervention name	Implementation of bike counters
Problem	Insufficient means for data collection and monitoring
Specific challenge	Data collection and monitoring means
Year of implementation	2019
What was the context of this challenge?	Screening of bike trips on a specific route
Why was this intervention selected for tackling this specific challenge?	To gather data on the usage of established bike paths
What were the KPIs to be achieved by this intervention?	Number of users

Previous intervention 2		
About the intervention		
How was the intervention implemented?	Based on municipal development plans	
What technologies were used for this intervention?	Movement sensors and counter screens	
What tools and methods were used for this intervention?	Bicycle number and speed counts	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Municipality of Velenje	Implementor	Facilitator
Intermatic	Solution provider	Chosen on a tender
How was the data collected?	With bike counters	
What technology was used?	Radar, laser counting	
How was it monitored?	In data platform app	
Who did apply this?		
Who was participating in it?	Bike riders on the route	
Who owns the collected data?	Municipality of Velenje	
What results have been achieved? Describe with concrete metrics.	Established basic data provision and monitoring	
What lessons have been learned?	Measurements are unreliable	
What recommendations can be given for future interventions tackling this specific challenge?	More reliable measurements	

Intervention name	Tactical urbanism

Data collected		
Problem	Conflicts between micromobility and other road users	
Specific challenge	Improve safety of vulnerable groups	
Year of implementation	2020	
What was the context of this challenge?	Conflict prevention on and around the elementary school premises	
Why was this intervention selected for tackling this specific challenge?	We decided to implement interventions of tactical urbanism to increase safety of vulnerable road users	
What were the KPIs to be achieved by this intervention?	Increase visibility and thus safety of pedestrian crossings and bike lanes near primary schools	
How was the intervention implemented?	Initiative	
What technologies were used for this intervention?	Lights, colourful poles, road markings	
What tools and methods were used for this intervention?	Lights, colourful poles, road markings	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Government	Planners, implementors	Prepared documents, procured the materials and implemented the intervention
Municipality of Velenje	Oversight	Facilitator
Elementary school	Beneficiary	Beneficiary
How was the data collected?	-	
What technology was used?	-	
How was it monitored?	-	
Who did apply this?	-	

Previous intervention 3	
About the intervention	
Who was participating in it?	-
Who owns the collected data?	-
What results have been achieved? Describe with concreate metrics.	Greater visibility and awareness
What lessons have been learned?	
What recommendations can be given for future interventions tackling this specific challenge?	

Intervention name	Implementation and expansion of a bike sharing system, biking lanes and cycling paths
Problem	High share of cars in the modal split
Specific challenge	Reduce motorised traffic and increase the share of sustainable micromobility
Year of implementation	Start 2010 – ongoing
What was the context of this challenge?	Provision of infrastructure for shared sustainable mobility, increasing the share of bikes in the modal split
Why was this intervention selected for tackling this specific challenge?	To provide the broadest spectrum of users with the sufficient means of sustainable mobility and safer and more inclusive biking infrastructure
What were the KPIs to be achieved by this intervention?	More people riding bicycles
How was the intervention implemented?	Preliminary corridor screening, implementation on most crowded paths
What technologies were used for this intervention?	Construction

Previous intervention 4		
About the intervention		
What tools and methods were used for this intervention?	Bike racks, bicycles, stations	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Municipality of Velenje	Facilitator	Owner of infrastructure
Public utility company	Station maintenance	Maintenance
Tourist board	Bike sharing system manager	Managing of the system
Citizens	Users	Using the infrastructure
How was the data collected?	/	
What technology was used?	/	
How was it monitored?	/	
Who did apply this?	/	
Who was participating in it?	/	
Who owns the collected data?	/	
What results have been achieved? Describe with concrete metrics.	More people deciding to use bicycles in city centre	
What lessons have been learned?	The system is good, but can be improved	
What recommendations can be given for future interventions tackling this specific challenge?	More durable bike racks – prone to vandalism	

Intervention name	Area based restrictions
Problem	Conflicts between micromobility and other road users

Data collected		
Specific challenge	Improve safety of vulnerable groups Improve safety of vulnerable groups	
Year of implementation	Once per year	
What was the context of this challenge?	Addressing the redesign of public space for inclusive sustainable mobility	
Why was this intervention selected for tackling this specific challenge?	Temporary foreclosure of one of the busiest streets in Velenje is meant as a demo project to showcase the possibilities in terms of public space redesign and safe inclusive mobility	
What were the KPIs to be achieved by this intervention?	Raised awareness regarding the increase of motorised traffic in impacts on the environment and mobility	
How was the intervention implemented?	We closed Rudarska street for traffic for 1 week and monitored feedback	
What technologies were used for this intervention?	/	
What tools and methods were used for this intervention?	Urban equipment	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Municipality of Velenje	Co-facilitator	Promotion, dissemination, organisation
IPOP	Co-facilitator	
Citizens	Users	Informed, surveyed
How was the data collected?	Questionnaire, survey	
What technology was used?	Pen/paper	
How was it monitored?	On site	
Who did apply this?	IPOP	
Who was participating in it?	Citizens	

Who owns the collected data?	IPOP

Results	
What results have been achieved? Describe with concrete metrics.	The majority of citizens wasn't very happy about it
What lessons have been learned?	The general population is against it
What recommendations can be given for future interventions tackling this specific challenge?	Data driven solutions and foreclosure of other streets, that might have a more positive impact on the citizen's mindset

Annex XIII: Zaragoza Feasibility and Action Plan

Discovering the current state

Mobility Problems

The main urban mobility challenges	Specific challenges related to interventions	Proposal call challenge addressing mobility, public health and environmental aspects
Climate change: as part of the NetZeroCities Mission, the city still needs to reach acceptable levels of carbon emissions and energy savings, and traffic control tasks need to play a greater role in order to adapt regulation to the energy demands. Vehicle reduction is necessary for a model of environmental sustainability in the city.	Climate change: In terms of mitigation, the main challenge is to reduce the trough-traffic and car-dependence of families coming to schools located in this block. Internal streets could be oriented for active mobility. Reducing the through-traffic should decrease the level of exposition of children to emissions and noise. In terms of adaptation, a better distribution of the public space should allow nature-based solutions against heat, to support active mobility. This also includes to complete the cycling infrastructure in this block.	Contribute to the objectives of the Climate Neutral and Smart Cities Mission by accelerating the transition towards climate neutrality in cities through the promotion of zero-emission, shared, active and human-centred mobility.
Road deaths increase and safety issues: transport intermodality causes unsafety issues for certain groups (bikes, pedestrians, vulnerable groups, etc.). Moreover, the ban on cycling on pavements created insecurity for citizens, and this led to a decrease in the number of cycling trips from 70,000 to 50,000 in the last year. In addition, there is a lack of clear regulations on the use	Road deaths increase and safety issues: Besides reducing the existing conditions of car-oriented development, the promotion of active mobilities and new modes should be accompanied by a responsible use of new vehicles in shared spaces.	Solutions for at least ten unsafe areas/living labs in urban/peri-urban areas using innovative planning, design and implementation approaches, including but not limited to co-creation and/or citizen engagement, modelling and AI, digital and smart enforcement tools, dynamic space

of bicycles in areas shared with pedestrians.		reallocation, with a view to reduce road safety risks, reducing exposure to air and noise pollution and the perceived feeling of unsafety for pedestrians and cyclists; Address proactively potential risk raised by expected increases in cycling and e-scooters.
Population ageing: vulnerable groups, including elderly people, usually feel lack of safety when acting as pedestrians or public transport passengers, so they need to be properly addressed.	Population ageing: Ensuring safety in public space is especially important around the Miguel Servet Hospital and the elderly house Mazaruba.	Re-assess road and public space quality responding to needs of diverse groups (examples include but are not limited to: women, children, people with disabilities and older people); actions may include but are not limited to improving data collection for foot, bike and e-scooter traffic as well as the mechanisms for reporting pedestrian and cyclists, e-scooter injuries and deaths.
Covid-9 pandemic mind shift: during Covid pandemic, mobility measures were taken in Zaragoza, like the implementation of 30 km/h limits in specific zones. These measures led to improvements in the mobility, but it is necessary to continue promoting the use of public and sustainable transport, as cyclists and scooters users still feel unsafe when circulating in these types of roads.	Covid-9 pandemic mind shift: Zaragoza is introducing quick urban transformation in favour of cyclist and PMV, as the 53 km of shared traffic lanes (30 Km/h) implemented since 2020. The intervention area and the New Romareda project is an excellent space for testing similar approaches for pedestrian and cycling mobility.	Rebalancing the attribution of public space to different modes of transport so that it better reflects the actual or desired local modal split as well as support reaching Vision Zero [2] and zero-emission objectives, thus increasing road safety and quality of life in cities; Public space redesign actions targeted by the awarded projects should consider the circular economy principles, adaptation to climate change (in particular heatwaves), cross-sectoral synergies and not come at the cost of removing or deterioration of parks, trees or green recreational areas.

Proposed interventions

Proposed intervention 1

Intervention name	Data collection and monitoring for the re-design of public space
Brief description	Develop and deploy an on-demand diagnostic mobility lab for in-situ and non-intrusive mobility evaluation at local level. Enriched with sensors to measure foot, bike, and e-scooter flows, vehicle volumes and speed, exposition to pollutants and noise. The collection of data will serve to design the physical layer of the monitoring system (what to install, where etc.). The monitoring of public space wiil build on the current digital layer from the municipality, especially the information exploited by the traffic control centre. Zaragoza counts on permanent and temporal vehicle counters across the city, including the Living Lab's main streets. Also, conducts temporal monitoring campaigns in the main bicycle corridors and is progressing on the development of artificial intelligence layers to enhance the capabilities of the street cameras. From this information, detailed monitoring will be carried out with the deployment of the on-demand diagnostic mobility lab, also known as the LabKit. This tool will be used to characterise the area at pedestrian level, complementing the existing information with more detailed insights. This data collection relates to the proposed intervention 2, in terms of the geo-localization app to monitor road safety risks and crashes. Furthermore, in-person surveys about road safety conditions will be carried out during the monitoring campaigns of the Labkit. This data collection relates to the proposed intervention 3 in terms of the base information to perform the pedestrian microsimulations.
Infrastructure targeted	Mobility diagnosis of bike lines, pedestrian streets and squares and traffic lines.
Services	None
Monitoring needed	The monitoring campaigns will collect data related to: modal split, vehicle speed, safety perception, air quality, GHG concentrations, noise and thermal comfort.

Proposed intervention 2	
Who is expected to benefit	Local stakeholders and citizens.
What Stakeholders are affected	Local stakeholders and citizens.

Intervention name	New modes, means and services solutions to optimize public space and mobility
Brief description	Deploy a station for e-bikes and scooters in residential areas to re-assess public space and improve road safety. The final localization and user of the shared station will be decided with local stakeholders during the co-creation workshops. This shared station will not be part of the public system BIZI and will operate as a stand-alone service to be use by one of the target groups. A priori, it is estimated that the shared station could be located at one of the local schools or at the Miguel Servet App for reporting and geo-localization of road safety risks and crashes. On one hand, the shared bicycles and scooters will be enhanced with the Citizen Science Kits (developed by IAAC) to monitor cyclist behaviour, plus environmental indicators as particulate matter or weather parameters. On the other, a GIS-based tool for the location of safety risks and crashes will be implemented to gather the local knowledge of residents and stakeholders. This app will be use during the co-creation activities and de in-person surveys that will occur in parallel of the monitoring campaign of proposed intervention 1.
Infrastructure targeted	Cyclist infrastructure.
Services	Station of shared e-bikes and scooters
Monitoring needed	Monitoring will be occurred through the Citizen Science Kits and the GIS-based app.

Proposed intervention 4	
Who is expected to benefit	Students, teachers, and parents attending local schools and/or Hospital workers. VRU might benefit from the safety characterisation of the area.
What Stakeholders are affected	Schools and/or Hospital.

Intervention name	Online applications, Artificial Intelligence and Digital Twins
Brief description	Perform pedestrian microsimulation to evaluate behaviour before and after the interventions. Include movement on sidewalks for different type of pedestrians, interaction between pedestrians and traffic on crosswalks, boarding at public transport stops and the influence of physical obstacles. Public space transformation scenarios will be defined during the co-creation workshops, so residents and stakeholders' inputs can be considered for the microsimulation of alternatives. The output of this activity will be a characterisation of potential transformations of the area surrounding the New Romareda Stadium.
Infrastructure targeted	Public space in general (bike lines, pedestrian streets and squares and traffic lines).
Services	None
Monitoring needed	The required data collection will be carried out in proposed intervention 1.
Who is expected to benefit	Local stakeholders and citizens.
What Stakeholders are affected	Local stakeholders and citizens.

Intervention name	Participatory research and engagement of vulnerable to exclusion groups

Brief description	Conduct in-person surveys for data collection (e.g., about road safety conditions) that will complement the diagnostic mobility lab. In parallel of the data collection campaigns of the Labkit, in-person surveys will be carried out by two means. Through a GIS-based tool (developed by CIRCE) for the location of safety risks and crashes will be implemented to gather the local knowledge of residents and stakeholders. Through the Mobility co-design Videogame (developed by IAAC) that integrates a gamification approach for the collective prioritization of sustainable mobility solutions. Both approaches will be implemented at co-creation activities and at the monitoring campaign, as part of the in-person surveys activity.
Infrastructure targeted	Public space in general (bike lines, pedestrian streets and squares and traffic lines).
Services	None
Monitoring needed	Localization of safety risks and desired solutions for safer public space.
Who is expected to benefit	Local stakeholders and citizens.
What Stakeholders are affected	Local stakeholders and citizens.

Living Lab

Living Lab characteristics

Zaragoza Lighthouse city aims to develop safer and more accessible public space considering facilities usually accessed by women, children, elderly, and people with disabilities. The location of the Living Lab will be the surroundings of the New Romareda Stadium, where the Miguel Servet Hospital, 7 schools and 1 elderly house are found within a 500-meter radius. The area is also characterised by the convergence of pedestrian, bike and traffic flows and is served by urban buses, tram, and shared services. The ambition is to test and co-design safe and universal approaches at neighbourhood level, balancing the daily mobility needs and patterns with the big events scheduled in the stadium.

The area is composed mainly by residential buildings and public buildings (the Romareda stadium, the Princess Leonor Hall, The Miguel Servet Hospital and several schools). Around the hall and the stadium, the neighbourhood

counts on a wide pedestrian area and some pedestrian paths inside the blocks. Important traffic streets are located around the intervention area, but also inside.

Zaragoza SUMP at the Living Lab

Based on the values from Zaragoza's SUMP (data from 2017), the modal split in the University District is: Walking (44%), Cycling (4%), Transit (29%) and Driving (22%). This district shows lower levels of people walking or driving compared with city averages, due to a higher use of public transport, especially the city tram. Although the SUMP does not detail the actions to be implemented in the Living Lab, at least not with the specification required for ELABORATOR, the main lines of work are as follows:

- Pedestrian infrastructure: the SUMP does not consider any improvement in this area, besides the already existing square besides the stadium and the event hall.
- Cycling infrastructure: Zaragoza's SUMP projected 2 bike lines in this area: one to complete the bike line of Calle Violante de Hungria and the bike line of Calle Pedro III El Grande and Calle Jerusalén. The existing infrastructure is identified as lacking vertical signaling, but with adequate horizontal signaling and lighting.
- Street hierarchy: the study area is part of the 30 km/h area for 1 lane streets. The area is divided by 3 internal streets dedicated for traffic distribution (C. Asín y Palacios, C. Condes de Aragón and Calle Pedro III-Jerusalen). The SUMPs recommend implementing a Superblock or similar around major streets but suggests 4 pilots in other city areas. Also, the study Area is included in a traffic restricted area only for zero emissions, hybrid and ICE Euro 4, Euro 5 o Euro 6 vehicles.
- Public Transport: a BRT circular lane is proposed in Vía Hispanidad (not coinciding with Ci1 and Ci2 bus lines). An exclusive bus lane is proposed in Calle Violante de Hungría.
- E-Mobility: charging infrastructure projected in the Miguel Servet Hospital (10 charging points) and the Princess Leonor Hall (5 charging points). Additional chargers planned in public parking (Audiorama: 436 parking spots, 3 charging points and parking Romareda (426 places, 3 charging points).
- Parking: the study area has a positive balance of 56% between the number of local vehicles and the total offer of parking. However, it is not part of any parking management strategy. 30% of the available parking is in-street and free.
- Safety: the SUMP suggest different actions for traffic calming inside the neighborhood. Actions on the layout, on the longitudinal profile, on the cross section, intersections, the width of the carriageway and lanes, the paving, and the incorporation of vegetation.
- TICs: implementation of an Event Management System, including monitoring of traffic.
- Taxi, Freight, Intermodality, Tourism, Promotion: general measures, but nothing specific for the study area.

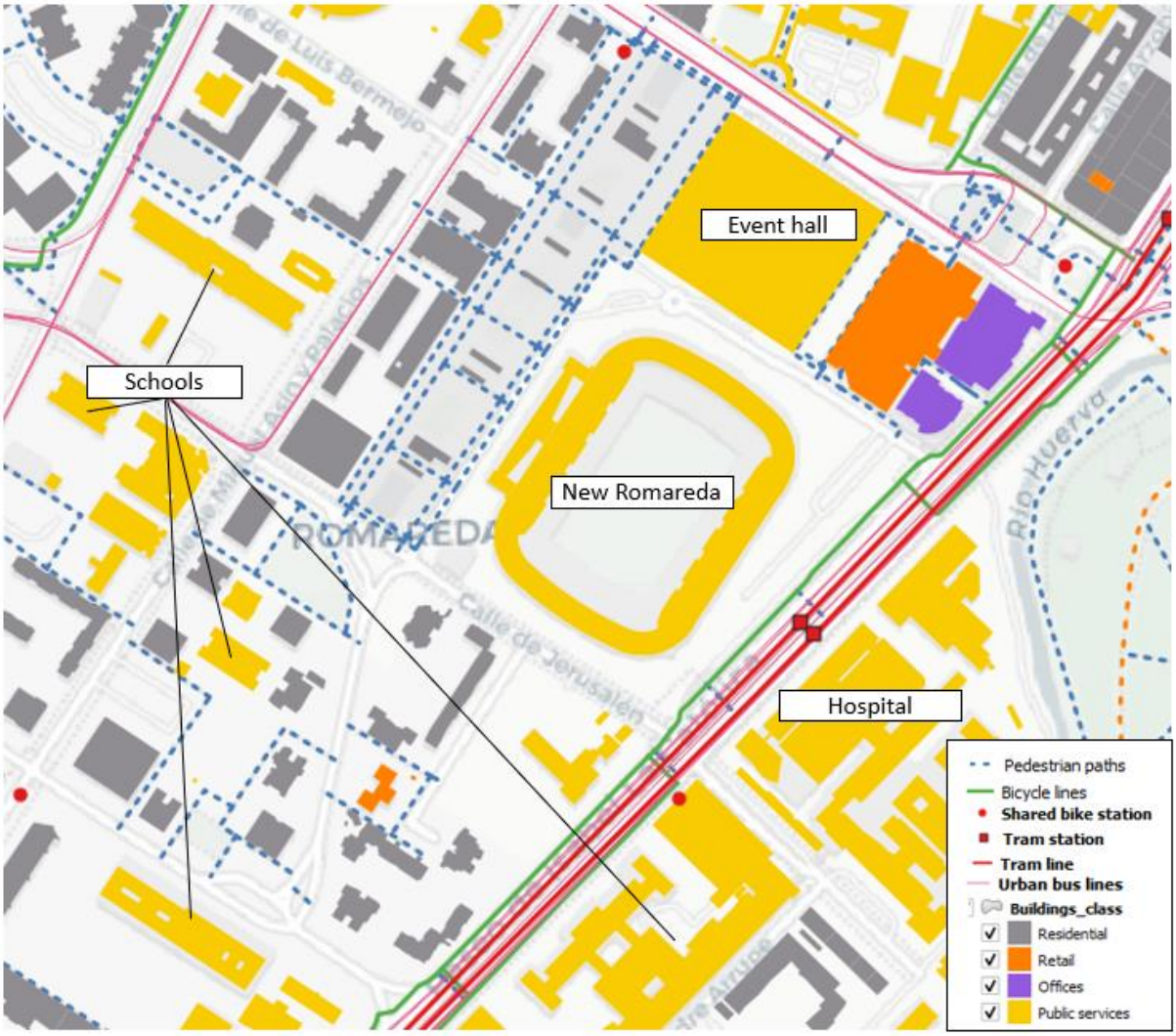


Figure 1 - Buildings and transport infrastructure at Zaragoza's Living Lab.

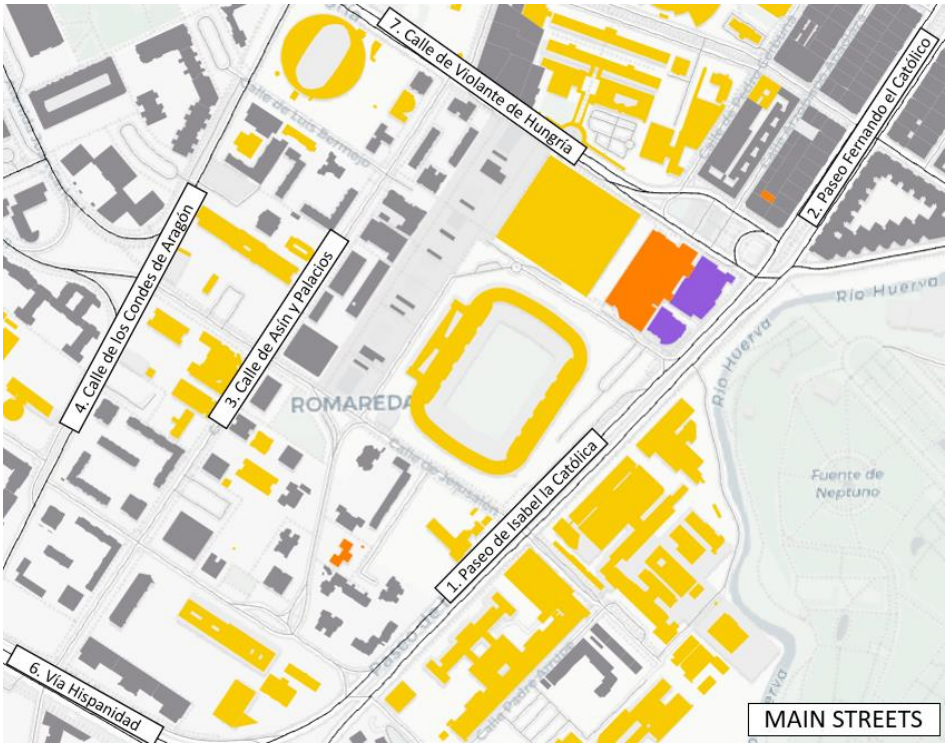


Figure 2 – Main streets at Zaragoza's Living Lab.

The traffic average daily intensity in working days (vehicles/day) is presented in the following image:

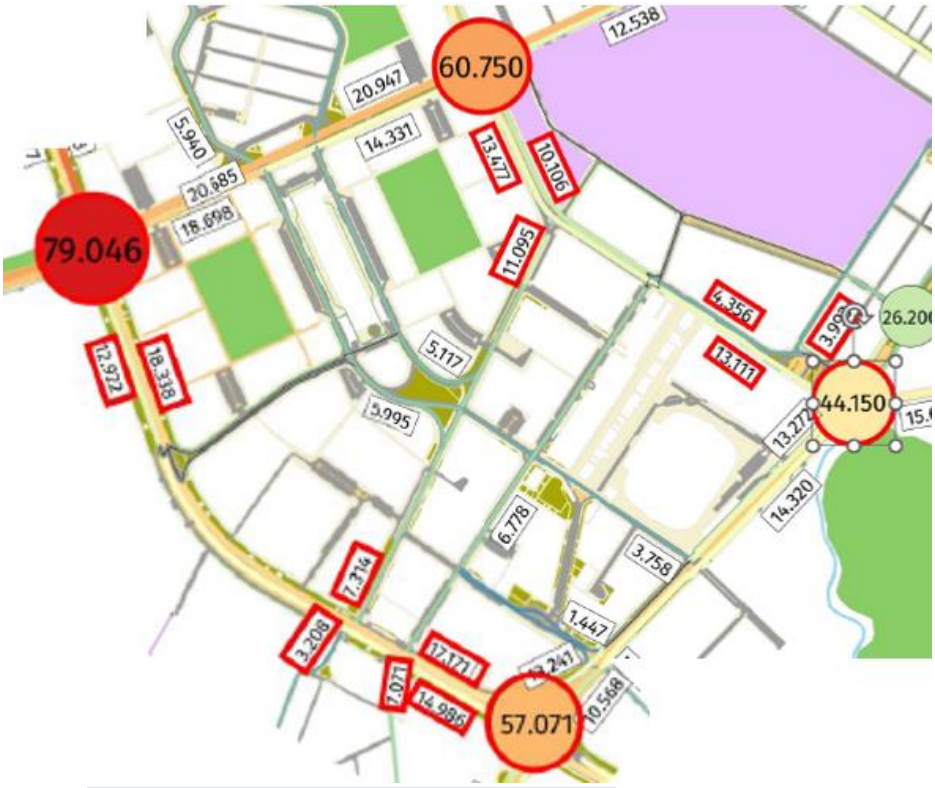


Figure 3 – Traffic volumes during labor days in the Living Lab.

The transport infrastructure and services are as follow:

Figure 4 – Main transport infrastructure and services in the Living Lab.

In terms of safety statistics, the following table show the information collected in the main roads:

Street	Year	Collision	Injury level	Hit-and-run	Injury level
1. PASEO DE ISABEL LA CATÓLICA	2018	0		0	
	2019	2	Driver - Serious	1	Pedestrian - Serious
	2020	0		0	
	2021	0		0	
	2022	0		1	Pedestrian - Serious
2. PASEO DE FERNANDO EL CATÓLICO	2018	0		2	Pedestrian - Serious Pedestrian - Death
	2019	1	Cyclist - Serious	0	

	2020	1	Driver - Serious	1	Pedestrian - Serious
	2021	1	Cyclist and PMV - Serious	0	
	2022	2	Driver - Serious	0	
3. CALLE DE ASÍN Y PALACIOS	2018	0		1	Pedestrian - Serious
	2019	0		0	
	2020	0		0	
	2021	0		0	
	2022	2	Driver - Serious Cyclist - Serious	0	
4. CALLE DE LOS CONDES DE ARAGÓN	2018	0		0	
	2019	0		0	
	2020	0		0	
	2021	1	Driver - Serious	0	
	2022	1	Cyclist - Serious	0	
6. VÍA HISPANIDAD	2018	0		0	
	2019	1	Driver - Serious	0	
	2020	0		0	
	2021	0		2	Pedestrian - Serious Cyclist - Serious
	2022	0		0	
7. VIOLANTE DE HUNGRIA	2018	1	Driver - Serious	0	
	2019	0		0	
	2020	0		0	
	2021	0		0	
	2022	0		0	

Businesses

Stakeholders and Actors

Stakeholder or actor	Intervention	Participation scale	Needs in terms of the Living Lab participation	Expectations from the intervention
Dirección Gral. Fondos Europeos (Ayto de Zaragoza)	1 to 4	Inform		
Equipamientos e Infraestructuras (Ayto de Zaragoza)	1 to 4	Consult		
Urbanismo (Ayto de Zaragoza)	1 to 4	Consult		
Medio Ambiente (Ayto de Zaragoza) - Proyecto STARS	1 to 4	Collaborate		
Oficina de Participación	1 to 4	Involve		
Junta Municipal Universidad	1 to 4	Involve		
Gobierno de Aragón - Servicio Aragones de Salud	1 to 4	Consult		
IDOM	1 to 4	Consult		
Westworld (parking managers)	1 to 4	Inform		
Taxi association	1 to 4	Consult		
Chamber of Commerce of Zaragoza	1 to 4	Consult		

Real Zaragoza	1 to 4	Involve		
General citizens' segments				
ECODES	1 to 4	Consult		
CesarAugusta neighbourhood association	1 to 4	Involve		
Asociación de Vecinos Agustina de Aragón-Romareda	1 to 4	Involve		
Federación Aragonesa de Barrios	1 to 4	Involve		
AVANZA	1 to 4	Consult		
TRANVIAS DE ZARAGOZA	1 to 4	Consult		
Consorcio de Transportes del Área de Zaragoza	1 to 4	Consult		
Bizi Zaragoza	1 to 4	Consult		
Electric scooters	1 to 4	Consult		
ZARATAXI | Asociación Provincial del Auto-taxi de Zaragoza	1 to 4	Consult		
Colectivos Peatones	1 to 4	Collaborate		
Colectivos Ciclistas	1 to 4	Collaborate		
Colectivos patinetes	1 to 4	Collaborate		
CEIP Cesario Alierta	1 to 4	Empower		
CEIP Doctor Azúa	1 to 4	Empower		
Colegio Público César Augusto	1 to 4	Empower		

Public buildings and facilities				
CEIP Margarita Salas	1 to 4	Empower		
Colegio Romareda Agustinos Recoletos	1 to 4	Empower		
IES Miguel Catalán	1 to 4	Empower		
Colegio El Savador	1 to 4	Empower		
UNIZAR- University Students	1 to 4	Collaborate		
Foro Ciudadano por la Movilidad Sostenible de Zaragoza	1 to 4	Collaborate		
DFA Association	1 to 4	Empower		
CERMI Aragón	1 to 4	Empower		
Erlderly house Mazaruba	1 to 4	Empower		
Hospital Miguel Servet	1 to 4	Empower		
Auditorio de Zaragoza	1 to 4	Inform		

Past interventions to tackle the problems

Past interventions brief overview

Problem	Specific challenge	Intervention has been done during the past 5 years

Previous intervention 1		
About the intervention		
Traffic clogging around Zaragoza's LL	Traffic clogging at Hospital Miguel Servet Emergency Access	Detailed traffic study performed in 2018. Results to be implemented as part of the current area transformation
	Traffic and new modes at Stadium premises.	Data availability identification for ELABORATOR.

Detailed analysis of each of the past interventions

Intervention name	Traffic and access study in the Miguel Servet Hospital
Problem	Hospital's emergency door, located on Calle Gonzalo Calamita, south of the centre, shows traffic jam at certain times of the day and night, Padre Arrupe street is collapsed, Gonzalo Calamita street, and even occasionally the junction of this street with Pº Isabel la Católica (Pº Isabel la Católica). Isabel la Católica (including the tram platform), preventing smooth access.
Specific challenge	Emergency access clogged by local traffic.
Year of implementation	2018
What was the context of this challenge?	Besides the importance of having a clear access for emergency vehicles, several activities happen in these streets. Namely, school activities (pick-up and drop-off of students), private parking dynamic and the taxi service based on a taxi stop in front of the hospital.
Why was this intervention selected for tackling this specific challenge?	A traffic study was performed to understand the problem, and to identify the best alternative, considering the existing activities, resources and infrastructure of the area.
What were the KPIs to be achieved by this intervention?	The traffic study is mainly based on congestion and traffic intensity. The main KPI considered was average daily traffic (veh/day).
How was the intervention implemented?	4 alternatives to modify the transit around the hospital were analysed and compared. The analysis consisted in: Data collection from the Traffic Control Centre.

Data collected		
	Traffic local simulation at micro scale. In this phase, no congestion was identified, but intervention alternatives were evaluated. Field analysis. In-situ observation of the local mobility patterns. This phase resulted in the identification of inadequate behaviours from school's parents and taxis.	
What technologies were used for this intervention?	Traffic Control Centre vehicle counts (loops). Traffic simulation.	
What tools and methods were used for this intervention?	None yet. The results of this study will be implemented as part of the transformation to be made around the New Romareda Stadium.	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
Zaragoza Urban Mobility Service	Study performing	Project leaders
Zaragoza Infrastructure Service	Municipality	Kept informed
Zaragoza waste collection service	Local mobility actor	Kept informed
Taxi association	Local mobility actor	Kept informed
Miguel Servet Hospital	Local mobility actor	Kept informed
EL Salvador School	Local mobility actor	Kept informed
Public Parking (Calle Arrupe, 1)	Local mobility actor	Kept informed
DFA Association	VRU stakeholder	Kept informed
How was the data collected?	Data from Zaragoza's Traffic Control Centre	
What technology was used?	Vehicle counters (inductive loops, pneumatic tubes, manual counts, etc…)	
How was it monitored?	The mobility service performs traffic monitoring in a year basis, both permanent and temporal stations. Also, Camera-based traffic surveillance is performed continuously.	
Who did apply this?	Zaragoza's Mobility Service	
Who was participating in it?	-	

Who owns the collected data?	Zaragoza's Mobility Service

Previous intervention 2

About the intervention

What results have been achieved? Describe with concrete metrics.	The study resulted in the identification of the most promising alternative to deliver a solution to the traffic clogging of the Hospital Emergency Access. Beyond the traffic metrics handled by the Mobility Service, a scoring method was applied to evaluate each alternative. The following criteria was valued from 1 to 10, considering the weights in brackets: Problem solving (10) Improvement of local mobility (3) Users' behavioural changes (-2) Investments needs (-1)
What lessons have been learned?	The involvement of stakeholders, and the communication of the results is positive to facilitate the future implementation of the solution. Also, analysing the problem based on data collection, traffic simulation and in-situ observations allowed to clearly understand the situation and identify the most effective solution.
What recommendations can be given for future interventions tackling this specific challenge?	Involve and inform stakeholders. Based public space transformation in data collection and assessment.

Intervention name	Traffic and PMV around the Romareda Stadium
Problem	Study made as part of ELABORATOR activities. This identification of data availability will support the development of new AI capabilities to enhance the traffic surveillance infrastructure. This will be also supported with the Labkit.
Specific challenge	Study made as part of ELABORATOR activities.
Year of implementation	2024
What was the context of this challenge?	The same context of Zaragoza's Living Lab.
Why was this intervention selected for tackling this specific challenge?	To better understand the mobility patterns around the stadium.

Results		
What were the KPIs to be achieved by this intervention?	Vehicles per time.	
How was the intervention implemented?	The traffic control centres have the following control points: Continuous measurements: 4 points operating since 2023. Pneumatic tubes counters: 48h campaigns. Bicycle and PMV: manual counting based on surveillance cameras.	
What technologies were used for this intervention?	Magnetic loops (permanent). Pneumatic tubes (temporal). Surveillance cameras (temporal manual counts).	
What tools and methods were used for this intervention?	Only data collection and reporting.	
What stakeholders and actors were involved in this intervention?	**What were their roles?**	**How were they involved?**
None involved		
How was the data collected?	Several monitoring points in the area, managed by the traffic control center.	
What technology was used?	Magnetic loops (permanent) Pneumatic tubes (temporal) Surveillance cameras (temporal manual counts)	
How was it monitored?	Same as above.	
Who did apply this?	Zaragoza Mobility Service	
Who was participating in it?		
Who owns the collected data?	Zaragoza Mobility Service	
What results have been achieved? Describe with concrete metrics.	This identification of data availability will support the development of new AI capabilities to enhance the traffic surveillance infrastructure. This will be also supported with the Labkit.	

What lessons have been learned?	-
What recommendations can be given for future interventions tackling this specific challenge?	-