



Final Learning Reports from Each Topic Based Cluster

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Responsible Co-Author(s):	
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Abstract

This deliverable summarises all learning activities undertaken in the context of the FastTrack project. It highlights the content of the activities performed to which all clusters attended and it details for each cluster the main learning outcomes per activity.

Project Partners

No	Name	Short name	Country
1	ICLEI EUROPEAN SECRETARIAT GMBH	ICLEI	Germany
2	EUROCITIES ASBL	Eurocities	Belgium
3	MOBIEL 21 VZW	M21	Belgium
4	EUROPEAN INTEGRATED PROJECT SRL	EIP	Romania
5	VECTOS GMBH	Vectos	Germany
6	ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS	CERTH	Greece
7	STAD ANTWERPEN	Antwerp	Belgium
8	COMUNE DI BOLOGNA	COBO	Italy
9	BUDAPEST FOVAROS ONKORMANYZATA	MUNBUD	Hungary
10	STOCKHOLMS STAD	Stockholms Stad	Sweden

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Glossary

Abbreviation / Term	Explanation
AC	Ambassador City / Ambassador Cities are those, who thematically lead a Cluster together with the Technical Support Partner. ACs are project partners yet also aim at developing a deployment plan on one selected measure.
CBW	Capacity Building Week(s)
C-ITS	Cooperative Intelligent Transport Systems
Cluster	Thematic based group of cities (Local Affiliates) lead by an Ambassador City and a Technical Support Partner.
D	Deliverable(s)
Datex	Is the electronic language used in Europe for the exchange of traffic information and traffic data.
Deployment Plan	Each Local Affiliate will create a Deployment Plan, which outlines an action plan to rapidly and effectively implement the innovations they have explored in FastTrack. Plans will articulate the actions they will take, alongside a timescale, who will be responsible for these actions, funding sources, and any additional detail needed to make plans easily monitorable and actionable.
Exchange Hub Platform	The Exchange Hub is the main online exchange and communication interface with the project partners as well as the community of Local Affiliates. It combines the functionalities learning – storing – discussing - finding, and allows the Innovation Community to stay in touch regularly.
FCD	Floating-Car-Data

FUA	A Functional Urban Area consists of a city and its commuting zone. It therefore consists of a densely inhabited city and a less densely populated commuting zone whose labour market is highly integrated with the city
Horizontal Skills Streams	The horizontal skill streams cover the transversal themes each Cluster will work on. They encompass: Funding, financing and procurement; digitalisation and (big)-data management; governance, planning, co-creation and behavioural change.
IA	Intermediate Activity happening during a learning sequence between two Capacity Building Weeks.
Innovation Diaries	The innovation diaries are the cities' capacity building road map. After each Capacity Building Week it captures the outcomes and feedback of the capacity building week, as well as the milestones and objectives for the subsequent learning sequence as well as internal objectives for each local authority.
ITS	Intelligent Transport Systems
IoT	Internet of Things
KPI	Key Performance Indicator(s)
LA	Local Affiliate
LEZ	Limited Environmental Zone
LL	Living Lab
LS	Learning Sequence
MaaS	Mobility as a Service
MS	Milestone(s)
OCIT	Open Communication Interfaces for Road Traffic Control Systems. The idea of OCIT is to provide communication interfaces for vendor-mixed systems. OCIT is the interface between devices, components and systems.
PC	Project Coordinator
PO	Project Officer
PPP	Public-Private Partnership
QGIS tool	Open-source Geographic Information System allowing to develop maps, freely accessible to academia, public administration.
Q&A	Question and Answer
SUMP	Sustainable Urban Mobility Plan
SULP	Sustainable Urban Logistics Plan
TSP	Technical Support Partner(s)
V2L	Vehicle-to-load
V2V	Vehicle-to-vehicle
WP	Work Package
WPL	Work Package Leader

Executive Summary

The CIVITAS FastTrack project works with local authorities across Europe that are motivated to take action to accelerate the uptake of sustainable mobility and transport measures. Whilst their motivation for the uptake is high, it is not always easy for them to keep pace with the newest developments, insights regarding what works, where and why. Therefore, FastTrack helps those 24 local authorities across Europe to know how to transform innovations into worthwhile, reliable and rapidly implemented mobility solutions. The work program and support structure developed under Work Package 1 – Status Quo and Needs Assessment and Work Package 3 – Management of the External Interface and FastTrack Fund¹ addresses these knowledge, capacity, governance, data, evidence, and funding challenges in a structured and coordinated way and allows for a two and a half years peer-learning process, sharing insights between city peers and with external stakeholders around the world.

This Deliverable 2.2 presents the learning outcomes from the five Learning Sequences of the FastTrack Peer-learning Programme. The latter had as ultimate goal to allow 24 Local Authorities to get the right input, knowledge and confrontation with other city peers to develop a Deployment Plan around a chosen innovation. The versatile Learning Programme led to a variety of learning outcomes that can serve other city representatives as guideline for their future learning needs.

This **Deliverable 2.2 – Final Learning report per Cluster**, provides the following six Chapters:

- *Chapter 1: Peer-learning to accelerate innovation uptake* highlights the structure of the implemented peer-learning programme and outlines the main learning outcomes of the five Capacity Building Weeks hosted by the Ambassador Cities.
- *Chapter 2 to 5* detail the activities performed in each of the four thematic based Clusters and provides detailed description of the content of the exchanges as well a key learning outcomes.
- *Chapter 6* draws some general conclusions.
- In the *Annex* of this Deliverable eight case studies are providing concrete examples of the innovation path, learning curve and the lessons learnt by the four Ambassador Cities and four Local Affiliates.

¹ See also Deliverable 1.3 - Programme of Work for Local Affiliate Engagement, Deliverable 1.4 - Summary Programme of Work and Capacity Building Handbook and Deliverable 3.1 - Set-up Responsive Support Structure

1 Peer-learning to accelerate innovation uptake

This chapter situates in the first place the activities performed in FastTrack in the overall learning programme and highlights key aspects of the learning methodologies applied. Key content from the Capacity Building Weeks to which all Cluster contributed and participated are summarised on the second part of the chapter.

1.1 Five Learning Sequences to accelerate the uptake of mobility innovations

The FastTrack work programme is built upon peer-exchange activities, which aim at building capacity based on the knowledge gathered amongst the community of cities and local affiliates, as well as the technical partners. External input is provided by experts, suppliers, representatives coming from the industry sector, private mobility providers, funders, financiers, and civil society to build up capacity around the so-called horizontal skill streams including: funding, financing and procurement; digitalisation and (big)-data management; governance, planning, co-creation and behavioural change.

The programme of work is divided into five learning sequences. Each thematic cluster follows the same work structure yet has tailored content and activities within each learning sequence. Each learning sequence is divided into core exchange, happening during the five Capacity Building Weeks and intermediate activities.

Learning Sequences	Capacity Building Week	Intermediate Exchange Activities	Objectives	Fast-tracking Phase	Stakeholder Focus
Learning Sequence 1	16-18 Nov21, online [MS8]	Jun 2021 – Nov 2021	Getting to know the communities and build up expertise on innovation in the mobility field of your choice. Define missions and goals. Learning, cluster and topic development and consolidation.	INSPIRE Set a goal	Focus on meeting the suppliers. Suppliers, industry, private companies, mobility providers
Learning Sequence 2	28-31 Mar22, Stockholm [MS10]	Dec 2021 – Mar 2022	Exchange best-practices. Selecting and prioritising the measure/innovation, strategies, technologies in an informed way	INFORM Select a measure	Meet the implementers. Peers, city officials, policymakers
Learning Sequence 3	20-23 June22 Antwerp [MS13]	April 2022 – July 2022	Defining how to implement the selected innovation in a fast way. Target precise stakeholders, define processes and timelines.	INITIATE Plan the deployment	Meet the funders. European Commission, investors, PPS-experts, business developers
Learning Sequence 4	24-26 Oct22, Bologna [MS16]	Aug 2022 – Nov 2022	Finalising the deployment plans through critical (peer) review, meet the citizens' needs, finetune the matchmaking with potential investors, suppliers and operators.	ENGAGE Concretise the deployment plan	Meet the citizens their needs and experience. Citizen groups, civil society, citizen science projects, vulnerable groups, gender groups
Learning Sequence 5	15-17 May22 Budapest [MS21]	Dec 2022 – May 2023	Delivering and presenting the deployment plans to the wider community	ACCELERATE Ready to start the deployment on site	Meet the wider network. Projects in the Horizon realm, EIT, EIP, urban mobility KIC

Table 1: Overview of the learning programme deployed in FastTrack

Capacity Building Weeks (CBW) have both plenaries and activities where the entire community gathers, as well as cluster specific activities. Due to the pandemic situation, in 2021 and 2022 the first two Capacity Building Weeks originally planned in Freiburg, Germany and Stockholm, Sweden were held online. While all partners involved put great effort into creating the best learning environment possible, the online format did not fully replace the benefit of on-site visits and direct exchanges. To stimulate as much interaction as possible, efforts were made to use a variety of presentations, videos, or breakout sessions (such as the Q&A to test the audience knowledge about the cities involved). MURAL and Mentimeter were used to steer group discussions and allow for an active involvement of participants which were pushed to interact on the online boards. Thanks to regular short breaks and online workshops adapted in length, the audience attention kept high with few dropouts over the time of the first Capacity Building Week. Besides and to complement the online Capacity Building Week of Stockholm, a study visit was organised in September 2022 when the sanitary conditions allowed everyone to travel more easily again.

The **intermediate activities** are organised between the CBWs to prepare and follow-up, as well as to continue the learning process and the work on the deployment plans. Those activities are organised around the core interests identified within each thematic cluster community through the remote peer-learning sessions. The remote horizontal skill stream sessions tackle the horizontal learning needs around the topics mentioned above (see further details under D1.3, pages 13-14). Furthermore, Ambassador Cities (AC) and Technical Support Partners (TSP) provide online self-learning material via the project's Exchange Hub to the Local Affiliates (LA). Various formats are thus provided including, reports, studies, videos, e-course suggestions etc.

1.2 Capacity Building Weeks and their transversal learning content

1.2.1 Learning Sequence 1

Online Exchange Hub launch session, 14 June 2021

This online information session, which took place on 14 June 2021, presented, and launched the Exchange Hub as main online interaction tool for the FastTrack community. It unveiled first inspiring solutions proposed by Ambassador Cities and Technical Support Partners, made available under each Cluster section. Whereas 15 out of the 20 Local Affiliates were represented during the call, all project partners participated.

Capacity Building Week 1

Plenary opening session, Tuesday, 16 November

The week was kick-started with the two inspiring key notes speakers Jill Warren, CEO of the European Cyclists' Federation, and Johanna Tzanidaki, Innovation and Deployment Director

at ERTICO². Under the moderation of Peter Staelens, Eurocities, the Key messages from the speakers included:

"For me, the true innovation in cycling is when cities have the foresight to prioritise active mobility. When you do that, the sky is the limit." – Jill Warren, European Cyclists' Federation

"Accelerated uptake necessitates that cities go out, speak up, and speak to everyone." – Dr. Johanna (Yanna) Tzanidaki, ERTICO - ITS Europe

Panel discussion: How can we make the collaboration between suppliers and local authorities work?, Wednesday, 17 November

How can we make the collaboration between suppliers and local authorities work, was the guiding question of the second morning, which was dedicated to reflecting upon the key principles cities should consider when going out into the innovation market. Under the moderation of Jan Christiaens from Mobiel 21, Katia Kishchenko (City of Antwerp), Karen Simons (Rebel Group), and Julian Scriven (Brompton) enlightened the group on how to set up partnerships between local authorities and suppliers.³ Highlights of the panel discussion include:

"It is very important to set up a participation framework to structure how the city and innovator can work together and think together, and ensure that you work towards a common goal." – Karen Simons, Rebel

"Partnerships create inputs for practical policies. We try to encourage the development of private solutions. But we (the city) also take lessons learnt with us. This leads to positive impacts on mobility in the short- and long-terms." – Katia Kishchenko, Stad Antwerpen

"Having ongoing dialogue between the private and public sectors helps you to really understand each other. Long relationships with Manchester means that we now understand their context well, and the city understands how we can and cannot support them." – Julian Scriven, Brompton Bike Hire

Presentation of the Supplier Register, Wednesday, 17 November

Local Affiliates got introduced to the Supplier Register located on the Exchange Hub where they can find all suppliers which responded to the FastTrack call for suppliers. Via a search tool and various filters, LAs can easily find the suppliers corresponding to their needs.

Study visit of Freiburg, Wednesday, 17 November

The study visit of Freiburg guided the participants through the public transport system of the German city, with a focus on their multimodal hubs. The ICLEI team also presented the e-charging infrastructure and the existing facilities that could be transformed into charging stations. Participants got a virtual bike ride through various areas of Freiburg which showcased the cycling infrastructure, the cycling paths available to commute from the surrounding villages

² The interventions can be watched in full length under following link:
<https://www.youtube.com/watch?v=6uwH9oPlyyA>.

³ The panel discussion in full length under following link:
<https://www.youtube.com/watch?v=Vm6X5D2O7vo>.

to the city centre. Video material of various kinds, self-made, documentaries, recordings from the informed cities project made the tour as 'real' as possible.

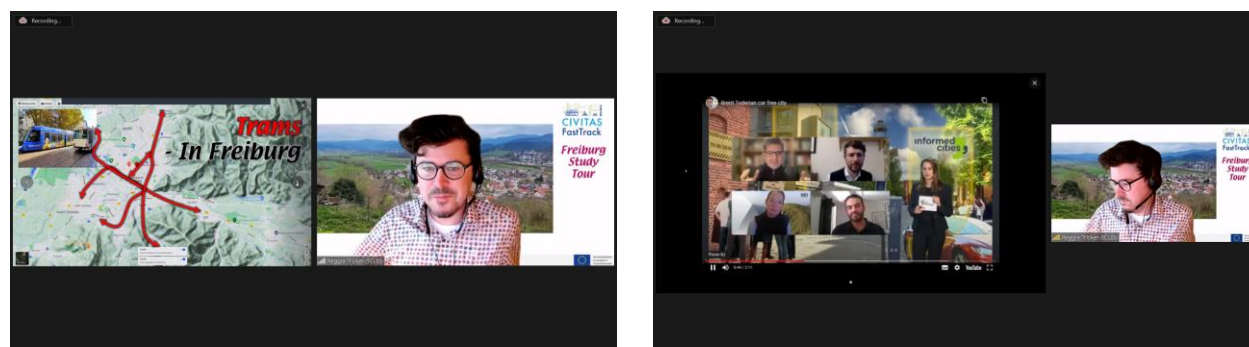


Figure 1: Screen short form online study visit in Freiburg

Introduction to innovation diaries and deployment plans, Thursday, 18 November

During this slot, Lucia Cristea from EIP and Maria Chatziathanasiou, from CERTH, Local Affiliates got introduced to the various steps of the Deployment Plan development and to the Innovation Diaries which they are asked to fill out at the end of each learning sequence. Those diaries help Local Affiliates to capture the knowledge they will then input in their deployment plans and gather their feedbacks for project partners to adapt the activities accordingly.



Figure 2: Deployment Plan - Step 1

1.2.2 Learning sequence 2 – Capacity Building Week 2

Opening Plenary Stockholm, Tuesday 29 March 2022

Eva Sunnerstedt, Head of unit Clean vehicles and fuels at the city of Stockholm introduced the second Capacity Building Week and highlighted Stockholm's ambitions in terms of clean vehicle promotion in public transport and in the private market. The city sees innovation as way to explore new processes of collaboration with private actors and citizens, which is tried out in many ways in the partnerships established for spreading the installation of charging stations.



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Figure 3 Graphic illustration of the opening speech.

Panel discussion “why data matter in mobility policy”, Tuesday, 29 March 2022

To open the discussion on the importance of data in the new mobility developments three city representatives shared their views and experiences. Sami Sahala from the city of Helsinki explained their approach on digital twins for mobility, he stressed that cities “need to have a collaboration with all these stakeholders that are a potential sensors” to build functioning digital twins. In Helsinki it is the Forum virium an in-house company of the city council of Helsinki that is there to “fail forward” and innovate. Jordi Ortuna from the city of Barcelona stressed that data is the tip of the iceberg. As key for cities to enhance their management of data he mentioned the Law that was passed in Barcelona to regulate open data to avoid dependency on suppliers. Finally, Zoe Peters from the city of Rotterdam structured the intervention around the question: why is it important to reduce data gaps? The city of Rotterdam has taken the approach of ‘co-delivering data for policy’. The city needs to be a referee and the enabler for open data collection. Providing data as a municipality through APIs is one option. Beyond that the city needs to ensure fair access to data! Overall, Zoe stressed the need for a changing decision-making proces - new mindsets and procurement processes for data collection are needed.

Panel debate: social innovation – ecosystem approach to engage all actors, Wednesday 30 March

Julienne Chen, Citizen Engagement & Program Manager, EIT Urban Mobility and Giovanni Maccani, Senior Researcher, Ideas for Change shared their experience and views on how to link social innovation and mobility data collection.



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Figure 4: Graphic illustration of panel debate on the social innovation – ecosystem approach to engage all actors,

Workshop Data management platforms, Wednesday 30 March 2022

On the second day of CBW2, four interesting presentations about data management and processing were delivered by Chrysostomos Milonas, CERTH; Thibault Castagne, Vianova; Sergio Fernandez, EMT Madrid and Stijn Vernailen, City of Antwerp. The speakers presented different mobility data sources that should be combined to produce clear results. Mobility as a Service (Maas) integrates various forms of transport services into a single mobility service to facilitate customers' needs. In the context of Maas, EMT presented a bus application that informs the user about the occupancy and the exact location of the bus. Also, EMT described the environment where sustainable Maas can thrive and pointed out that open data and services facilitate data collection and integration. On the other hand, Vianova integrates the data and displays them in a city dashboard. The dashboard aims for a live monitoring of different fleets for better city administration and planning. CERTH and Antwerp underlined the need to create platforms for data reuse. More specifically, they displayed the function of the National Access Point (NAP), which is a digital point of access. NAP is helpful because it offers interoperability, accessibility and different contents in the same environment.

Update on Activity Fund opportunities, Thursday 31 March 2022

Jan Christiaens from Mobiel 21 provided the timeline on the activity Fund application process, the purpose of it as well as examples on how the cities could use the fund to develop their mobility innovation.

1.2.3 Learning Sequence 3 – Capacity Building Week 3

Opening plenary of CBW3 in Antwerp, Monday 20 June 2022

The third Capacity Building Week got kickstarted by a keynote speech by Kobi Ruthenberg, Director of the New York City office at ORG, Permanent Modernity. He showed participants

how to pair top-down with bottom-up approaches. In Antwerp, different stakeholders agreed on an ambitious mobility Master Plan (more top-down). Then, local communities offered interventions and place-making activities to help meet the larger plan's goals around Antwerp's ring road. In that way, the bigger infrastructure work around the Ring Road is complemented by tailored local measures.

Funding Day – Panel Discussion, Wednesday 22 June 2022

The panel was moderated by Stefan Gabi, Vectos and included four panellists: Katerina Nedvedova, city of Brno, Czechia; Peter Staelens Eurocities; Chris van Maroey, city of Antwerp, Belgium; Lieven Raes, Digital Flanders.

In Brno, the idea to create a Mobility Fund was introduced in 2018, when we started paid residential parking. Some residents were against residential parking. To give them something back, the Mobility Fund was set up to support better mobility in their area.

In Antwerp, the marketplace started in 2016 within Smart Ways to Antwerp (SWA). In the marketplace, the city works with private mobility partners to have attractive offers in line with the sustainable mobility policy of the city. They invited private mobility and service providers to become a partner and work with the city to reach sustainable mobility goals. Every partner with a good business model could enter into a partnership and use SWA as a quality label. In turn, SWA gives them visibility and exposure. This worked well, as Smart Ways to Antwerp's brand awareness was quite good and the partnerships have a low threshold. Project calls invited partners to make good proposals and introduce good solutions. They could get small financial support to use as a cashback offer for the end users. This was temporary, as a good business model was of course needed in the end.

Work time with cities ahead of Business Model workshop, Wednesday 22 June 2023

The worktime was split into three presentations by Jeanette Bolther, PNO Consultants and project coordinator of ENTRANCE, Ronald Kleverlaan from Crowdfundingshub and Joris Beckers, from the University of Antwerp. Jeanette Bolther provided an overview of the financial landscape and introduced ENTRANCE, which focusses on providing individual funding and financing advice on implementation scenarios for sustainable mobility solutions. Its main objective is to boost the uptake of first-of-a-kind sustainable transport solutions (e.g. through an online matchmaking platform for individual users with interest in funding programs, best practices and legislation, or for a connecting solution between providers and buyers). Concerning the funding categories and types she highlighted that they depend on the type of project and the level of risk.

Ronald Kleverlaan dived deeper into alternative funding instruments. These are considered attractive as they create social license to operate by involving public stakeholders, and allows them to become co-owners and actively support the innovation. Furthermore it can combine different funding sources (de-risk by gauging investor interest). Ronald described the role of governments in supporting start-ups:

- Coaching and training: to inspire start-ups about the potential of different financial instruments, guide them in setting up business models and connect them with right financiers (ENTRANCE takes on this role for specific projects).

- Matchfunding: if a company raises funds, a government can provide matching funds. Different approaches are possible ('in first', 'top up', 'bridging' or 'real time').
- Procurement: crowdfunding can be employed as a pre-selection tool >>> use the knowledge of the crowd to do a first selection.

Ronald remarks that LAs should be careful not to raise too much funding at the start, to get the right funding at the right moment. Different alternative financing instruments can be used at different innovation stages. Citizen cooperatives, or community businesses, are for example gaining popularity.

Finally, Joris Beckers talked about the role business modeling for PPP plays in creating mobility hubs. These models were developed by the University of Antwerp, its partners and six European cities (i.e. INTERREG NWE eHubs). Joris explains that the cities and private actors in the INTERREG project, at the start, had the ambition to set up or expand a shared mobility hub with a focus on locations where different electric mobility solutions are bundled. They sought an answer to the question: how do we create a business model that allows for quick uptake? In the traditional view, business models focused on the economic value a firm can create. When moving towards sustainability, the focus shifts to what value the network can create. This requires the presence of actors that seek public value creation (LAs, NGOs, ...), e.g. in terms of modal shift, transport justice, or public space management. eHubs developed a network-based business modelling tool that takes different actors into account. The tool represents a holistic process. Consisting of five steps, eHubs identified five different business models for shared mobility hubs and tried to pinpoint them to locations in the city of Antwerp. Finally, eHubs showed that value-adding services can be added to hubs to make their business models workable.

1.2.4 Learning Sequence 4 – Capacity Building Week 4

Visit of the Fondazione Innovazione Urbana lab, Tuesday 24 October

Participants were greeted by the CBW organisers, followed by a guided visit of the Innovazione Urbana Lab, led by Leonardo Tedeschi, Fondazione Innovazione Urbana (FIU). FastTrackers were able to view a digital twin of selected parts of the urban centre and learn about different features of the work conducted by FIU.

Opening plenary and interview of CBW4 in Bologna, Tuesday 24 October 2022

Jasmin Miah of ICLEI introduced Anna Lisa Boni, Deputy Mayor for EU/Recovery Funds, Ecological Transition and International Relations of the Bologna City Council, who delivered the keynote speech and responded to questions from participants. Councillor Boni pointed out that mobility is one part of the bigger picture of what Bologna is trying to do in the 100 Cities Mission. The main concerns are a just climate transition, combatting social inequality, providing quality public services with a commitment to reaching climate neutrality by 2030. Bologna's approach includes the Impronta Verde—where the city's 5 green infrastructure areas look like a hand and various options for making mobility more sustainable are foreseen. While Bologna has had its streets blocked by protesters against the planned motorway bypass, Councillor Boni is more worried about those who don't participate in civic actions, as participation is an important feature of the city's political processes.

Panel debate on citizen engagement, Tuesday 24 October 2022

Juan Caballero from Eurocities moderated a panel discussion featuring representatives from the cities of Bologna, Malmö and Groningen. Luca Bellinato pointed out that Bologna always



experiments with new ideas and mobility is always being discussed. It is important to find the right balance between what the engineers propose and what people want. Maria Brodde (Malmö) indicated that there are often discrepancies between what people want and engineers plan. It is important to remember how important citizen involvement is—its cost is very low, but it makes a project better. Terry Albronda (Groningen) mentioned that his team talks to people, but this is not always easy for technicians—the Groningen model for a decentralised design of democracy takes a 3-step approach in ways to cooperate. It is important to cooperate with neighbourhoods, as people who live there know better. Thus Neighbourhoods can propose projects from scratch.

Figure 5: Picture from Panel debate on citizen engagement

Regarding tools for structuring dialogue, Maria Brodde responded that there is a mechanistic approach in which dialogue must follow procedures, but it is also important to work with smaller groups, and with more vulnerable people. She underlined that white, middle-aged wealthy men want to keep their cars, but do not think about pedestrians. It is also important to engage schools, as we don't always think about kids. There must be a mix of tools to engage citizens. Luca Bellinato indicated that in Bologna there are always people who protest new projects such as the tram and the motorway bypass, but the city takes their views seriously and meets with citizens and interest groups. The people who were against the underground parking actually just wanted more green areas on the surface. Bologna has engaged its citizens through tactical urbanism actions and Pedibus and Bicibus initiatives involving school communities. Terry Albronda mentioned that in Groningen there are sponsorships by private companies and the city engages young people through online participation, social media and digital tools. Juan Caballero pointed out that digital tools are not available for everyone. From the public, Paul Fenton from Stockholm suggested that intergenerational learning is an underutilised tool that benefits young and old and is good for cohesion: children learn how to teach, and old people learn new skills.

Introduction to the workshop on citizen engagement, Tuesday 24 October 2022

As introduction to the co-creation workshop on citizen engagement, Naomi Julien from FIU presented a slide show illustrating the citizen engagement process for Bologna's tram project, beginning in 2019 and involving 6500+ citizens in online public meetings, meetings in neighbourhoods, information meetings with technicians. The tools employed changed due to

the pandemic - in July 2020 an emergency pedestrianisation plan and neighbourhood laboratories were introduced. She also showed several examples of tactical urbanism, including the Rossini Square (which became a permanent park) and Via Procaccini (which is still temporary). She stressed that with each level of citizen engagement chosen by a local authority, the responsibility to be flexible and accept the initial projects to be altered grows.

This was followed by a presentation from Fabio Bettani of the Consulta della Bicicletta, which was established by the City Council to give a voice to the cycling community and has the “right of speech” to express opinions in the City Council meetings. The Consulta has a good working relationship with officials in the Municipality’s Mobility Department, provides feedback on public projects, cycling lanes, the 30km/h zones and promotes public awareness of cycling.

Study visit Via Procaccini and Altra babele, Wednesday 25 October 2022

Guided by Noemi Julien of FIU, the FastTrackers walked to the Bolognina neighbourhood to see and hear about an example of tactical urbanism in Via Procaccini, meeting with citizens in the local community (the current and former headmasters, parents of middle-school students). They explained the need for a car-free area where students could gather before and after school. Students and teachers were also involved in painting the messages and planting greenery in planters that designated the space that had been converted from a parking area.

In the late afternoon the group then headed down Via Antonio di Vincenzo to visit L’AltraBabele, a non-profit association dedicated to the world of cycling, providing services and accessories for cyclists, organising events (such as BikePride), conducting workshops, training and cycling education. It has a strong social vocation, aimed at promoting active citizenship, legality and integration. It is also a leading proponent of the circular economy for bicycles, rebuilding sturdy and safe used bicycles from abandoned or recovered bicycles.



Figure 6: Picture of site visit at Via Procaccini

Workshop on acceleration factors, Wednesday 25 October 2022

The CBW also included a workshop on acceleration factors, which allowed all cities engaged to reflect upon the conditions under which an innovation can be considered as ‘shovel-ready’ for implementation. In Exercise 1 a few key words were listed on a sheet. Participants were asked to choose which represents an enabler and which an accelerator factor and why they think that a particular key word is an enabler or accelerator. For Exercise 2 – On an A2 sheet, a few key words were listed. Participants were asked to rate on a scale of 1 to 5, how much of an influence the factors listed have on their innovation implementation today and in 3 years.

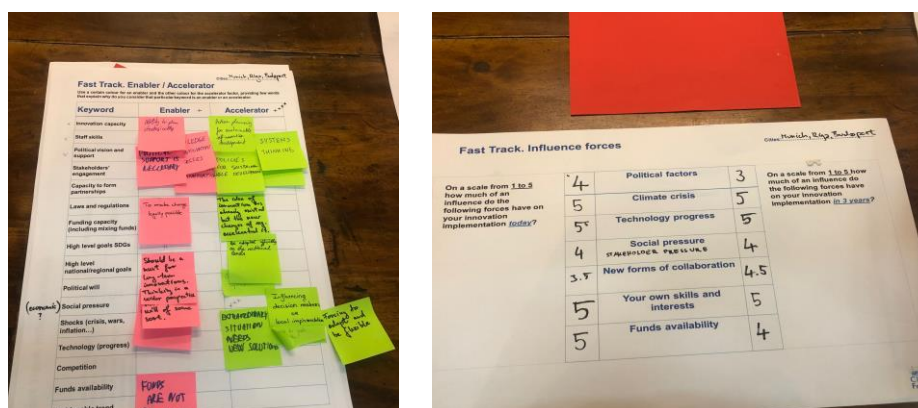


Figure 7: Exercise 1 and 2 on acceleration factors

2 Learning outcomes Cluster 1

Cluster 1 focused its work on sustainable urban logistics mainly. Seven cities took actively and consistently part in the activities under this thematic cluster: the city of Antwerp, the city of Brno, the city of Gdynia, the city of Munich, the city of Murcia, the city of Riga, the city of Stockholm.

2.1 Overview of key activities and key outcomes

2.1.1 Learning Sequence 1

The Learning Programme of FastTrack kickstarted with Learning Sequence 1. The main aim of the learning sequence was to grasp in more detail the main challenges faced by Cluster 1 cities on urban logistics and to provide them an overview of existing innovations and current trends to develop more sustainable urban logistics systems. By the end of the Learning Sequence 1 each Local Affiliate of Cluster 1 had a clearer view on the measures to deploy and the challenges they wanted to respond to.

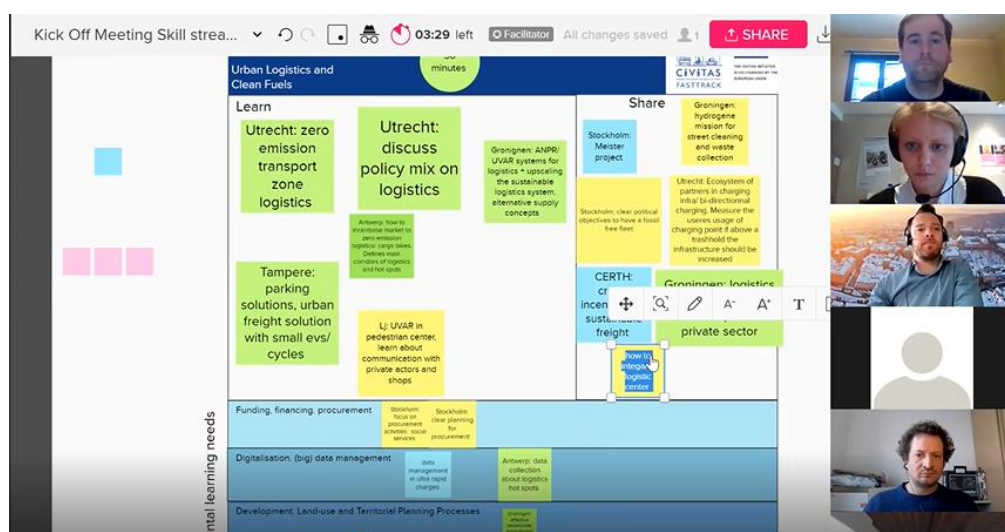


Figure 8: Screenshot from recording of Workshop1

Activity	Speakers	Participants	Key outcomes	Resources
Workshop 1: Setting the scene: current trends & challenges 16/11/2021 10:10 – 11:15	Yanying Lin, ALICE Paul Fenton, City of Stockholm Elpida Xenou, CERTH	Bologna Murcia Brno Grenoble Gdynia Antwerp Eurocities ICLEI	<p>This workshop aimed at identifying the main challenges on urban logistics currently faced by cities as well as key innovation trends.</p> <p>Challenges shared by cities:</p> <ul style="list-style-type: none"> – Missing a long-term coherent vision for urban logistics. – Missing a clear vision with clear measures. – The city has to become a trend setter, not follow the market only. – Construction site logistics in inner-city needs to be developed. – Managing heavy vehicles in inner-city must be done in a more systemic way. – Stakeholder cooperation must be improved. – Data collection on logistics flows needs to be further enhanced. <p>Trends cities would like to follow:</p> <ul style="list-style-type: none"> – Set up stakeholder coordination frameworks and logistic plans. – Test and pilot measures (construction site consolidation, barges, micro-hubs, cargo-bike strategies, consolidation centers etc.). – Find data collection methods. – Develop and implement data governance models – Develop new business models for take up of electric/FCEV vans and trucks, cargo bikes – Test flexible time and off-peak deliveries – Enhance workers welfare, safety and skills 	<p>Novelog project https://www.etp-logistics.eu https://ec.europa.eu/inea/en/horizon-2020/projects/H2020-Transport/Urban-Mobility/NOVELOG</p> <p>ALICE-ETP & POLIS (2021). Cities-Regions and companies working together. Guide for advancing towards zero-emission urban logistics by 2030 https://www.etp-logistics.eu/wp-content/uploads/2021/12/POLIS_ALICE_Guide-Zero-Emission-Urban-Logistics_Dec2021-low.pdf</p>
Workshop 2: Get inspired by peer cities' innovations 16/11/2021 11:30 – 13:05	Dieter Häusler, City of Vienna Mauro Borioni, Metropolitan City of Bologna Sofoklis Dais, CERTH Sjouke van der Vlugt, City of Groningen	Antwerp Brno Eurocities (3) Stockholm ICLEI	<p>During this workshop four inspiring urban logistics measures were presented.</p> <p>The LogistikPlan2030+ in Vienna sets overall clear goals to be reached in terms of logistics policies and measures in Vienna, the last mile being seen as particularly important. Various surveys and engagement tools were set up to reach a common vision. The Chamber of Commerce can be a key partner to reach mutual understanding between the city and the private sector.</p> <p>The Metropolitan City of Bologna has a Sustainable Urban Logistics Plan (SULP). Being a core node of the Po Region, Bologna is a crossing point of logistics flows. The SULP has four major objectives: reduction of CO₂, the logistic market development, the reduction of road congestion, and the reduction of logistics sprawl. A survey was run on how people, goods and the energy sources are used to assess the sustainability of the current freight delivery. Such assessment is a key starting point.</p> <p>City of Stockholm presented the study that was run by a consulting company for the city to assess what would be the adequate staff support to have greater involvement of the city administration in logistics policies. Many interviews were conducted, and options</p>	<p>Vienna Logistic Plan https://www.logistik2030.at</p> <p>Stockholm construction consolidation center https://www.youtube.com/watch?v=AwiN1FyRtjU</p> <p>Novelog project: https://civitas.eu/projects/novelog</p> <p>Stockholm night-time deliveries: https://civitas.eu/mobility-solutions/night-time-</p>

			<p>distinguished between high to low municipal involvement. In total EUR 200,000 per year for officers and consultants would be needed for freight support. Cities' engagement in urban logistics policies comes with costs that the administration needs to estimate.</p> <p>CERTH presented the various planning tools that were used in the NOVELOG project. There are many ways to collect logistics data that are explained in the NOVELOG tools; Yet it remains unclear how to access data for empty running.</p> <p>In the case of Groningen, micro hubs are set up near the city centres to be efficient with cargo bikes. Many trips are needed from the consolidation centre. Students were able to operate cargo bikes for a while and get the business going. E-commerces offering delivery services directly from the hubs have added to diversity. In the case of Groningen, hub ownership and rent are paid by the private sector; the public sector support was money to create their business idea and concept; rent can still be a barrier to the business model. In general, having separate models for local and national flows seems to work. Getting the e-commerce out of the inner-city is another strand of measures to be explored.</p>	deliveries-using-clean-and-silent-vehicles
Workshop get inspired by suppliers 17/11/2021 10:10 – 11:10,	Jos Miermans, Etheclo Laura Tavernier, Rebel Anna Craciun, StreetDrone Claire de Vos, Macq Markus Luebeck, Vianova IO Sergi Panianua, Nemi	Antwerp Stockholm Munich Grenoble Gdynia ICLEI Eurocities	<p>This workshop allowed suppliers and LAs to exchange about current innovations provided by the private sector.</p> <p>Rebel offers a digital platform for city logistics - A neutral, digital platform as policy instrument for local authorities and optimization tool for logistics carriers. It allows to visualize current urban freight flows and simulate policy measures and impact on future freight flows and KPI's. Models are offered, have moved on from Excel-based approaches to web-based tools and digital platforms which are soon to be made available for demo. According to Laura Tavernier, operators need an incentive to share data. Rebel has also been able to model what's inside trucks but knowing this for sure (load factors), is still somewhat mythical.</p> <p>StreetDron has developed different types of autonomous electric vehicles that can help with the first and last mile. The supplier is open to customer needs and can apply solutions to many vehicle types. Anna Craciun stressed that lack of goods storage is more of an issue than empty running (though data is hard to get). "First mile" issues - food/goods is moved around a lot before it even starts its journey; human error can lead to wastage and increased emissions. Regarding data sharing, Anna mentioned that smaller companies are cautious about sharing data as the larger established risk averse companies might end up taking advantages of it. Open-source processes are seen as the best way to work as it avoids non-disclosure agreements with LAs which can hold up the process.</p> <p>For Etheclo everyone deserves access to healthy food and medication, therefore Etheclo contributes by offering a safe, sustainable & smart concept with a packaging & a monitoring component. The box and the sensors can be combined into a smart packaging. The isothermic box business offers a three-year life cycle after which it can be recycled; relying on local hubs. The data sensors offered by Etheclo can be put to multiple transport uses.</p>	

			<p>Delivery companies and "innovators" need to engage with each other to join their offers/services up to bring complete solutions to LAs (e.g. software + logistics + packaging). Vianova is helping cities and operators to enable and manage smart and sustainable mobility. New vehicle types and modes have led to more vehicles overall and wild parking - a transport system shock. Vianova thus provides data-driven mobility and infrastructure management giving cities and operators the right tools to deploy and manage smart mobility. Vianova has data sharing agreements with over 50 mobility providers (including micro-mobility, car sharing and logistics providers). They process, structure, aggregate and present this, and other connected infrastructure, data in an easy-to-use dashboard: enabling cities & other public/ private organisations to introduce sustainable mobility, control public space and take informed decisions about mobility policy, infrastructure development and more. The applications can be shared across public transport and logistics solutions.</p> <p>Nemi provides an app for users, drivers and the back office for MaaS Services.</p> <p>Macq develops intelligent cameras, pollution sensors, mobility softwares.</p> <p>Representatives from Stockholm and Antwerp expressed some interest and potentially willingness to cooperate with Rebel on data management platforms, in the feedback provided through the Innovation Diaries. Ethecl's delivery containers also got Stockholm's attention.</p>	
Workshop 3: Cluster learning programme and individual objectives 18/11/2021 10:30 – 12:15	Anne-Charlotte Trapp, Eurocities	Stockholm Antwerp Munich Grenoble Gdynia CERTH ICLEI	<p>This workshop allowed to prioritise more precisely the learning topic based on the main challenges the cities want to address within FastTrack.</p> <p>The most "popular" challenges (indicated by more than 2 out of 7 cities) concern the:</p> <ul style="list-style-type: none"> – Sulp development – Consolidation centres – Data collection – Data sharing with operators – Road safety <p>On the other hand, the challenges that received a high prioritization score include:</p> <ul style="list-style-type: none"> – Stakeholder engagement coordination platforms – Data collection: how to upgrade smart infrastructure to collect data – Sulp development – Parking facilities for cargo bikes 	See full table in D2.1

Table 2: Summary of activities Cluster 1, LS1

2.1.2 Learning Sequence 2

LS2 (CBW in Stockholm) (from beginning of 02/2022 to end of 03/2022)

Learning Sequence 2 allowed Cluster 1 cities to clearly distinguish the different learning needs they were facing on urban logistics and to address two of the most pressing one: the lack of data and the engagement of stakeholders around Sulp development and around more targeted measures such as hub developments.

- The cooperation with ULaaDS during CBW2 workshop on *logistics fora* gave a solid basis to cities on how to identify the core stakeholders they need to work with and how to assess their power relations.
- The workshop on innovative data gathering also showed to what extent logistics data gathering is transversally problematic, yet that innovative methods exists and need to be further explored such as data form GPS or for tires.
- The exchanges also showed that the topic could require much more time and effort beyond the project capacities as none of the cities were having great knowledge to share; which made the peer exchange more an exploratory exchange than an exchange towards replication.



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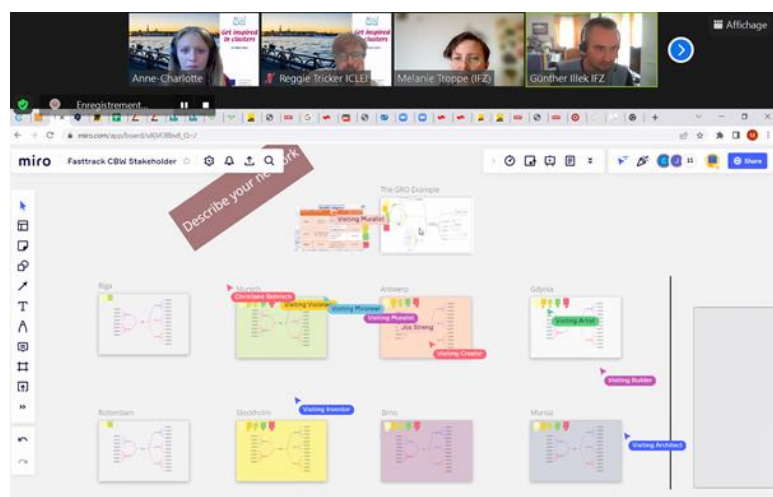


Figure 9: Miro board of the workshop on Setting up logistics' stakeholder fora

Activity	Speakers	Participants	Key outcomes	Further Resources
IA Webinar: Setting up cargo bike and logistic hubs – which stakeholders to engage? (public) 10/03/2022 10.00 – 11.30	Ruth Lamas Borraz, from the Metropolitan Area of Barcelona, HALLO project. Wouter Blok, from Kappa, Rotterdam. Noemí Monterde Higuero from Fundacion Valenciaport and Beatriz Royo from ZLC, SPROUT project. Judita Eisenberger and Václav Novotný from the Prague Institute of Planning and Development (IPR Prague).	valenciaport zlc ICLEI Barcelona Bergen Brno Antwerp Ruter Gent Milan vub deloitte London riga madrid EIP University Roma 3 Brussels Debrecen EIPL Lisbon Eurocities	During this webinar four examples of logistics hubs were presented with a focus on the stakeholders that were cooperating around them. The key messages from the presentations include: – As a hub operator, don't give away your service for free. – Create as much publicity as possible when you set up a hub. – As local authority, support of your branch organizations. – Receivers won't pay for extra shipping, but they will pay for extra services. This must be kept in mind when developing a business model. – Carriers will pay for the last mile. – Ensure there is always a strong champion of the project within the city administration. – Strong branding and visual appeal of the hub site is important, even on a low budget. – The location of hubs can be strategic spaces such as a space under a bridge (as in Prague) ideally with some already existing infrastructure to protect from weather conditions.	HALLO project: https://www.eiturbanmobility.eu/projects/hubs-for-last-mile-delivery-solutions/ SPROUT project: https://sprout-civitas.eu/ Cargo-bike Hub in Prague: https://civitas.eu/news/logistics-depot-for-e-cargo-bikes-opens-in-prague Binnenstadservice in Rotterdam: https://binnenstadservice.nl/
CBW: Co-learning workshop: Innovative data collection methods for urban logistics	Dr. Leatitia Dabian, University Gustave Eiffel Elpida Xenou, C-ERTH Maria-Angeliki Evliati, City of Stockholm Tim Sjouke,	Antwerp Munich Gdynia Rotterdam Stockholm Groningen Bologna Murcia ICLEI Eurocities	The workshop focused on the data needed to better plan and deploy sustainable urban logistics policies. When looking at freight data it is important to remember that: – Identifying freight demand generators is key. – Data collection is just the first step. Qualitative interviews (telephone interview surveys) are one way to understand the supply chain– Yet logistics data reported at national scale is often difficult to extract locally. – One can't collect all data through "smart" means. There is a need for dialogue: Interviews can be done directly with drivers. It can be complemented by street surveys to count trips.	University Gustave Eiffel, Logistics City Chair: https://www.lvmt.fr/chaieres/logistics-city/ Stockholm Freight Plan: https://start.stockholm/globalassets/start/om-stockholms-stad/politik-och-demokrati/styrdokument/stockholm-freight-plan.pdf

	City of Rotterdam		<ul style="list-style-type: none"> Local authorities should always state why they need data – e.g. carbon footprint assessment (e.g. relates to age and type of vehicles). The biggest challenge in terms of data collection is doing it from scratch. Speaking to freight operators is one innovative method that allows to respond to that challenge. It has proven efficient. There are a few examples but none outstanding one, apart from Barcelona. There an app has been developed where drivers have to record all their deliveries. To understand where the highest logistics flows are, Stockholm uses a combination of data from connected vehicles (vehicle manufacturer) and mobile phone data. In Rotterdam there is a green deal engagement framework with logistics operators; Camera data that was used for identifying traffic flows, can now be used to distinguish different types of vehicles. 	<p>Zero emission logistics pact in Rotterdam: https://www.rotterdam.nl/wonen-leven/zero-emissie-stadslogistiek/Covenant-Zero-Emission-City-Logistics-Rotterdam.pdf</p>
Co-learning workshop: Setting up logistics' stakeholder for a 31/03/2022 10.00 – 12.30	Melanie Troppe & Günther Illek (IFZ), ULaadS project	Stockholm, Murcia, Munich, Antwerp, Rotterdam (ext. to project), Groningen, Brno, Gdynia, Riga, Bax & Co, ICLEI, Eurocities, CERTH	<p>Building on the expertise developed in the ULaadS project, this workshop provided LAs with a clear methodology to develop logistics' stakeholder fora.</p> <p>Key elements included:</p> <ul style="list-style-type: none"> When engaging with logistics stakeholders, start with categorisation of stakeholders splits them into: Supply chain - Shopkeepers - Experts/system suppliers Residents can be included in different categories. Use a tool for power calculations: it is important to be adaptive and to modify the importance of different stakeholders as you learn more. Local authorities should interpret power and not always focus on the most powerful players with lots of existing presence and inertia. Gaps in the stakeholders to engage were identified during the exercise which showed usefulness of running it with FastTracker cities. 	<p>ULaadS Deliverable D.2.2: https://ulaads.eu/wp-content/uploads/2022/01/D2.2-Local-ecosystem-stakeholders-needs-and-requirements-priorisation-of-use-cases-first-version.pdf</p> <p>Urban logistics Groningen: https://www.youtube.com/watch?v=vT2gl1_EChM</p>

Table 3: Summary of activities Cluster 1, LS2

2.1.3 Learning Sequence 3

During learning sequence 3 the Local affiliates had to make a choice on the innovation to select and improve their capacities and knowledge on key challenges they face in terms of required skills and financial models.

During the capacity Building Week in Antwerp the workshops on technical skills and financial models allowed the cities to further elaborate on the skills required to collect the right set of data on logistics. It became evident that data collection is connected to the capacity to engage with the private logistics sector. Beyond that the group did an exercise on the type of “unusual suspects” they shall engage with for the development of logistics’ strategies and SULPs. A closer look was taken to the financial model backing the deployment of Brno’s micro hub. The long-term investment was identified to be the most challenging. Furthermore, one replication potential got identified: the CULT project that got implemented in Antwerp received special attention from Murcia’s representative.

The study visit, in Antwerp gave the Cluster 1 cities clear examples on private led initiatives which are none the less embedded in a broader development project which is steered by the municipality. Those examples from DHL, BWD etc. later led to the question of the role of municipalities in the development of hubs. Two tendencies could be distinguished: those that see the city as facilitator that should not be part of the business models and those that are co-developing micro hubs with the private stakeholders. In LS 4 this discussion got even more dominant.

At that point of the project, it also became clear that within Cluster 1, one could differentiate between the cities working on process driven innovations such as Antwerp, Munich, Stockholm, Riga, Murcia (working on the development of strategies for LEZ deployment, last mile logistics, SULPs, charging infrastructure strategy for heavy vehicles) and more measure based innovations such as Brno and Gdynia, focusing on the development of micro-hub(s).

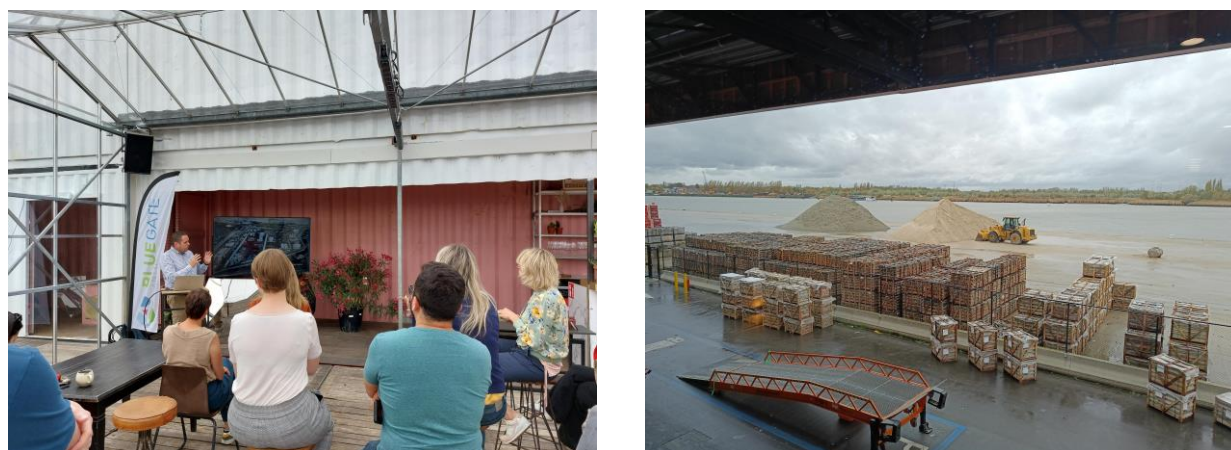


Figure 10: Pictures from the site visit at Blue Gate

Activity	Speakers	Participants	Key outcomes	Resources
IA Webinar: Preparation ahead of the CBW3 in Antwerp 01/06/2023 11.00 – 13.00	All participants.	Riga Stockholm Gdynia Antwerp Eurocities ICLEI	During this preparation webinar the Deployment Plan structure was presented as well as the main sections that would be discussed during the workshop of the CBW3 ahead. Each city decided which questions would be more relevant to discuss. The cities present also provided an update of their work on their chosen innovative measures.	
CBW: Co-creation workshop – How 'shovel ready' is your innovation – Technicalities and skills. 20/06/2022 16.00 – 18.00	Christiane Behrich, City of Munich	Stockholm Antwerp Gdynia Murcia Munich ICLEI Eurocities	<p>During the workshop Cluster 1 cities discussed which skills they need to develop their mobility innovations and mainly focused on the skills around data collection. The key questions raised by the workshop were:</p> <ul style="list-style-type: none"> – What kind of different data collections methods are currently used in the cities? – How can we complement them? – What are the limitations? <p>The workshop included the development of a SWOT analysis of different logistics data collection methods.</p> <p>Munich is currently trying to set up a data collection strategy but the date they currently have is based on <i>national statistics</i>; common assumption is that one third of traffic is logistics but there is no data to confirm this. The city got national funding to procure a contractor who is trying to develop another data collection method. It is difficult to disentangle and measure the contribution of logistics traffic to the emissions. Beyond that since there are many different ongoing projects there is a limit to measuring progress in terms of emission reductions. In Munich there is <i>no need to do a one-off data collection</i> but understand <i>which are the key indicators to track over time</i>.</p> <p>The contractors made a wishlist of what would be desirable and are checking with the city which data exists. With the FastTrack Fund Munich has applied for money to use cameras to calibrate counting stations so they can differentiate/categorise between vehicles. Beyond those opportunities emerged from floating car-data (GPS-based data using vehicle signals) - they received interesting proposals from companies offering this (e.g. Ubilabs).</p> <p>Stockholm has <i>collected some data on heavy vehicles from tube sensors</i>. They are trying to make a <i>map of logistics hot spots</i> – layer 1 = tube data; layer 2 = movement data from telecommunications firms, basic assumption that certain warehouse types will be start/end points; layer 3 = Scania data c.a. 40% of all vehicles moving in Stockholm. Very extensive discussions are ongoing – yet the tendency to ask for more leads to stagnating discussions, so now they decided to simplify and will focus on flows (layer 2) only. Just started, work to continue during summer. <i>There are some limitations as they will get 500 metres resolution only</i>. Similar issues to Munich will be concerning data</p>	<p>SMALA project Hamburg: https://www.hamburg.de/bwi/smala-english/</p> <p>Application used in Barcelona for deliveries: https://www.areaverda.cat/en/dum</p>

			<p>accuracy, assumptions, anonymity, etc. They will provide calibration. Scania collaboration is free because of strategic collaboration, whereas for telecommunications data the city would have to pay. Freedom of information rules prohibit NDAs, so the local authority agreed with getting screenshots of the data. The Traffic Office and Scania organised a data lab workshop to develop the concept and clarify the goals and content of the cooperation.</p> <p>To finish the workshop the participants all filled a Methods/Evaluation canvas which showed the actual data collection methods used and which could be explored in each city of Cluster 1.</p>	
CBW: Site visit Smart Mobility Solutions in the city ('mobility safari') 21/06/2022 09.20 – 12.00	Sven Huysmans, City of Antwerp	All CBW3 participants	<p>During the mobility safari in the city center of Antwerp LAs learned about:</p> <ul style="list-style-type: none"> – New established cargo bike rental service by a private operator in Antwerp. – The city has established drop off zones similar to the micro-mobility ones for cargo bikes, thus adapted the parking infrastructure to the cargo bikes. 	
CBW: Site visit to urban logistic hubs 21/06/2022 13.30 -17.00	Chris Van Maroey & Karen Simons, City of Antwerp	Antwerp Munich Murcia Gdynia Brno Eurocities ICLEI	<p>Lessons learnt of the site visit of Blue Gate in Antwerp:</p> <ul style="list-style-type: none"> – Strategic location for logistics consolidation is key – redevelopment of former oil site (Blue Gate antwerp) strategically located close to city center. – Set up socio-economic standard for (logistics) companies to join in the redevelopment project. Monitor if standards are met through KPIs. – BMB Bouwmaterialen Antwerpen uses the waterway to deliver construction site materials as well as delivery by cargo bike. – Local authorities could use leverage power of building permits to oblige consolidation on construction sites, i.e. tools staying on construction sites 	Blue Gate Antwerp: https://www.bluegateantwerp.eu/hp-rewrite/494344643a9b1d855ab9a77721318b02
CBW: Co-creation workshop business model challenge 22/06/2022 13.30 – 16.00	Paul Fenton, Stockholm	Brno Antwerp Brno Gdynia Munich Murcia ICLEI Eurocities	<p>The workshop explored which business models are needed for the innovations chosen by Cluster 1 cities:</p> <p>The City of Stockholm focuses on charging infrastructure for heavy vehicles. One of the main challenges is the need for the city of Stockholm to make a choice on whether they wish to ban heavy vehicles from the city centre and switch to cargo bikes for last-mile delivery. The issue here is that the municipal strategy is not yet finalised on the topic, and this has a direct impact on how charging operators see their investment in charging infrastructure for heavy vehicles. The debate revolves around choosing either micro-deliveries (cargo bikes) or efficient high-volume deliveries (heavy vehicles). In the meantime, it is needed to reassure truck operators because investment in a truck is a "locking investment". From the discussions with the stakeholders, there are different business models possible that are simultaneously being implemented in Stockholm:</p> <ul style="list-style-type: none"> – Business model of night delivery – 3 shifts a day 	Stockholm Royal Seaport first in Sweden to introduce an electric-powered truck for construction transports: https://www.norradjurgrdsstaden2030.se/chronicles/stockholm-royal-seaport-first-in-sweden-to-introduce-an-electric-powered-

		<ul style="list-style-type: none"> – Business model of traffic restricted areas and micro-deliveries. – Terminal-based solutions. <p>The business model for charging infrastructure should consider the business model for petrol station, therefore offering the same range of services for truck drivers: WC, food, possibility to rest and shower. In Germany, truck drivers can book in advance their parking spot at the petrol station/parking lot and the facilities linked to it.</p> <p>As investment is not on the side of the city, the city needs to create the framework conditions for business models. It is important to identify the driving objectives for the city (reduce emissions, electrification...) in order to set out clear incentives and procurements to private companies. Private partners want to know from the public partner what is the regulation going to be and public authorities need to know what to indicate to the private partners. It is indeed difficult for the public sector to tell as policy priorities and strategies are changing. Now there is a push for electrification at all governance levels but at the same time, it is highly expected that heavy vehicles – even if electric – will be banned from cities centres in the coming years.</p> <p>City of Gdynia focuses on funding, financing and business models for cargo bikes schemes and micro-hubs.</p> <p>The discussion focused on identifying what will be and who will be responsible for:</p> <ul style="list-style-type: none"> – Implementation costs – Operational costs – Potential revenue streams <p>For all these costs, operators are expected to be the ones responsible, yet participants also discussed the role of city authorities. Renting for free and covering the operational costs are options to be explored but could lead to the business model not being viable, the operators not being aware of the actual costs and the city losing its bargaining power.</p> <p>City of Brno focuses on microdepot for cargo bikes.</p> <p>The city is implementing a multi-operators micro-depot for cargo bikes. It will be funded by mobility funds (money collected from residential parking fees e.g). A memorandum of cooperation has already been signed with supplying companies (DPD, DHL...) and it gives them the right to use this micro-depot. In the chosen business model, the city gives the land and provides the micro-depot modules and operators selected through a tender will be responsible for operating the hub. Supplying companies will use the micro-depot. It was discussed to have only the first year of operational costs partly financed by the city, however this led to some discussions on the role of city authorities and the</p>	truck-for-construction-transports
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			importance of keeping their bargaining power with operators, to continue leading the deployment of such projects in line with the city's own goals and priorities.	
CBW: Co-learning Workshop on Governance / Political Will 23/06/2022 09.20 – 12.45	Bernardo Lopez, City of Murcia Chris Van Maroeve, City of Antwerp Alex van Breedam, Trivizor	TriVizor Antwerp Stockholm Murcia Gdynia Munich Eurocities	<p>During this workshop the Cluster analysed whether the necessary political will and governance structure was given to deploy the chosen innovations.</p> <p>Antwerp: For the Sulp the team mobilized is Smart Ways To Antwerp with 1.5 full time equivalent dedicated to work on the Sulp. The city is getting some external expertise from consultants to define the timelines etc. For the Sulp the team identified the need for a neutral partner that will liaise between the local authority and the private actors. This would be a kind of moderator like in the case of the Intendant in the Ring Road project.</p> <p>The CULT project got selected through a call launched by the city of Antwerp for a project where TRIVIZOR is the elected neutral orchestrator of a group of 8 big logistics companies. Their main goals is to optimize and develop a system of sustainable consolidation delivery. Legal framework of CULT: all companies agree on same conditions and tariffs. There is only one contract negotiation. Any new company joining will agree to the same conditions as all others. Shop owners could also join but the framework might be too heavy for them to join individually - better if they join through the association of shop owners. The primary financial support from the city was crucial to build the framework. Now there are monthly meetings to help building trust amongst partners. Daily deliveries and fixed rounds for the last mile is the key result of CULT. This example got lot of attention from Bernardo from the city of Murcia as it would provide a good solution to their current difficulties in terms of engaging and coordinating with the bigger players to develop a sustainable last mile logistics culture/plan in Murcia.</p> <p>In Stockholm the city also felt the need to have this neutral figure in the data collection process, to make sure to deal with the commercial sensitivity and privacy aspects. External expertise can be useful in that case.</p>	CULT project https://www.cultcitylogistics.be/

Table 4: Summary of activities Cluster 1, LS3

2.1.4 Learning Sequence 4

LS4 (CBW in Bologna) (from beginning of 08/2022 to end of 10/2022)

Over the summer the cluster 1 cities had time to put their draft Deployment Plans on paper. Special attention was given to the case of Riga as their participation had been cancelled last minute during CBW3. The main aim of the intermediate online exchange was to further specify and narrow down the innovation Riga would choose to deploy.

The study visit in Stockholm particularly showed Cluster 1 LAs how European projects such as CIVITAS ECCENTRIC can become acceleration factors when it comes to create a momentum around an innovative measure such as the development of a construction consolidation center with barges. The potential of using water ways for lowering emissions and congestion of construction logistics flows received great interest from the cities present.

During the Capacity Building Week in Bologna, all Deployment Plans except the one from Murcia got peer reviewed. The Cluster group and particularly the cases of Gdynia, Riga, Brno and Munich benefitted from the exchanges with representatives of Cluster 3 and 4 as they brought in new perspectives. Munich's representative highlighted that they could be of greater advising support to the Sulp development in Antwerp once they would have reached their next step.

Addressing citizen engagement regarding logistics during the workshop showed that few is happening at this stage in European cities. The city representatives explored options to engage further with the workers of the gig economy and potential cargo bike users, also to receive feedback on the cycling infrastructure. The examples provided by the city of Stockholm were key to this discussion.



Figure 11: Gdynia's poster for the peer-review



Figure 12: Presentation by TIL

Activity	Speakers	Participants	Key outcomes	Resources
IA Webinar: Catch-up with cluster 1 05/08/2022 11.00 – 12.15	All participants	Riga ICLEI Antwerp Murcia Gdynia Eurocities	<p>As Riga did not participate in the CBW3 a dedicated follow-up call was organised to focus on their chosen innovation. In Riga logistics has been missed out of a lot of developing strategies so far. Thematic sub-plans are a potential approach to integrate sustainable urban logistics in the urban planning.</p> <p>Challenges encountered by Riga:</p> <ul style="list-style-type: none"> - Private/public logistics actions are not consolidated; - Slow transition to sustainable delivery options; - Lack of political impetus; - Funding implementation; - Communication with citizens; - Stakeholder engagement isn't regular/constant; - Long term implementation timescales are unclear. <p>Riga was asked to make sure to scale down and be more specific in the innovation chosen for its deployment plan.</p>	
Stockholm site visit: construction consolidation centre and mass handling centre in the Port area at Lindarängsvägen 08/09/2022 13.45 – 16.00	Loic Pages, City of Stockholm	Brno Munich Stockholm Braga CERTH Debrecen Bologna Brasov Riga Tampere Groningen ICLEI Vectos Antwerp Ljubljana Kadikoy BKK Belgrade Budapest Mobiel21 Hengelo	<p>One of the four site visits during the study visit in Stockholm included a tour of the cutting-edge logistics centre in Frihamnen. The City of Stockholm is currently expanding its subway system and is treating the rock that is dug out of the ground as a resource rather than a waste. Initially, this rock was transported to the logistics centre via trucks, requiring roughly 50 trips a day. However realising the negative impact this was having on city traffic and urban emissions, the logistics centre switched to transporting these materials using a barge, freeing the city of significant construction traffic and utilising a mobility option that was already available, the sea.</p>	

		Bucharest Ilfov Eurocities		
CBW: Workshop on participatory processes 24/10/2022 13.00 – 17.00	Noemi Julian, FIU and Fabio Bettani, President of Consulta della bicicletta	Gdynia Brno Antwerp Riga Stockholm Munich Murcia Eurocities ICLEI	For this workshop the focus was taken on Gdynia's micromobility hub with the aim to understand which citizens shall be involved in setting up the hub. There are a number of actors to involve (operators, postal services, cargo bike companies) Yet, there are other factors that impact the effectiveness of this hub like the geography of the city and the skillset of delivery workers. Involving labor organisation specialised in the delivery sector could be an option to explore. To understand how adapted the cycling infrastructure is to cargo bikes, Stockholm equipped 4 people to go out and assess the quality of the network to remedy potential problems. This could be a useful tool to help better understand what types of problems people driving cargo bikes are facing (curbstones are broken, glass on road).	
CBW: Peer-review Poster session for LAs of cluster 1 25/10/2022 09.30 -12.00	Mihail Potihonins, City of Riga, Paul Fenton, city of Stockholm, Katerina Nedvřdová, city of Brno, Tim Vervoort, City of Antwerp, Christiane Behrisch, City of Munich, Pawel Kimel, City of Gdynia	Riga Gdynia Brno Antwerp Bologna Groningen Brasov Munich Stockholm Eurocities ICLEI	Each Cluster 1 city received comments and advises on how to further improve their deployment plans. Below some key questions and points raised: Riga (reviewer Brno) The plan presented by Mihails is overall very detailed. The main questions raised during the review were: <ul style="list-style-type: none"> – What about transit traffic? How will it be redirected? – Further elaborate on the cooperation with local shop owners for greater acceptance is needed. It was suggested to Riga to reflect upon how the shops can become allies in the LEZ implementation. Brno (reviewer Gdynia) Katerina presented her concept of a logistics micro-hub in the immediate vicinity of the city center. The main weak point of the Deployment Plan is how the business model works. The medium-term financial scheme remains unclear as well as the governance. Following suggestions were formulated: <ul style="list-style-type: none"> – Think of return trips to the hub to further develop the business model - dry waste. – For the first year the operation costs will be partly financed by the city. Further develop the scheme beyond year 1 (potential additional funding etc.). – Set the long-term milestones and planning. – To measure the success of innovation: Identify data sources set up to measure these indicators (stores delivered to, or items that were delivered). – To create a strong ecosystem, start with a specific and targeted set of shop owners: basic business such as bakeries, pharmacies. Shop owners can decide on the logistics operators they want to preferably work with, the leverage power shop owners have, can thus be useful. 	https://urban-hubs.apcoa.be/en/#c35 Dortmund microhub: https://www.dortmund.de/de/leben_in_dortmund/nachrichtenportal/alle_nachrichten/nachricht.jsp?nid=692049 Collective distribution centre at Klara Norra Kyrkogata, Stockholm, return flows with waste: https://www.ragnsells.com/

			<p>Antwerp (reviewer Munich) Tim from Antwerp presented the plans of the Sulp development process. No major comments were made on the Deployment Plan. One question was raised on the role of the port, as it is not to include in the Sulp. Its exclusion shall be clearly explained and justified (i.e. with reference to other logistics strategies or policies impacting on the sustainability of port operations, transportation to/from, etc). Tim from Antwerp indicated that the port has its own plans and that the port flows affect to a small extent the inner-city flows which might justify not to include it. Further suggestions were made on interesting data collection to consider, especially the option of engaging a dialogue with tire producers. Asking for aggregated information and indicators instead of data from the private sector increases the chances to get them, for instance by asking for hotspots and schemes not for raw data. Munich is already a couple of steps ahead on the Sulp process and could provide more targeted advice further down the road. They also received help from a consultancy that helped the city of Hamburg which was perceived as quite helpful.</p> <p>Munich (reviewer Stockholm) Christiane presented the micro-logistics hub plan and indicated that there are still open questions whether the contains of the hub will be owned by one company or shared by different shipping companies.</p> <ul style="list-style-type: none"> – The city owned company for P+R will provide the space. – It is a re-financing model: the first hub shall generate revenues to develop the next ones. – Dortmund has worked out an interesting financial model for a neutral logistic hub. <p>No major comments were made but it appeared that the approach differs in the cities around the table:</p> <ul style="list-style-type: none"> – In Murcia their model is not to pay for the hubs but to provide all necessary instructions to the private sector in order to develop their own micro hubs. – In Antwerp the main business model for logistics hubs is based on the cooperation with parking facility managers. <p>Gdynia (reviewer Riga) Pawel presented the concept of a logistics micro-hub to be deployed inside a market place. He indicated that the lack of funding is the main challenge faced. The cooperation with the local university helps in the development of the project. The main points raised concerned:</p> <ul style="list-style-type: none"> – There are currently no regulations on hours of deliveries but there are regulations on car weight (max 10 tons). 7-9 am heavy trucks can go into the city centre but 	
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			<p>after 9am only light cars can do the deliveries. It can be politically sensitive to introduce new restrictions. Politicians aren't willing to make more restrictions.</p> <ul style="list-style-type: none"> - Will every courier have its own locker? <p>Every company has their own box. 6 major companies so 6 major boxes. Boxes don't require any approval for city engineering. As long as the owner of a plot agrees, the company can put the lockers anywhere.</p> <ul style="list-style-type: none"> - How will you create relationships between couriers? <p>In an ideal world Gdynia wants to have anonymous couriers for everyone. But for now each company has its own courier.</p> <ul style="list-style-type: none"> - Mihails (Riga) advised to have the dialogue with stakeholders as soon as possible to minimise issues with cars on sidewalks, (smaller solutions at the beginning are extra work, but will make it better in the long run (for example make parking spots specifically for cargo deliveries) and do some promotion to get citizens on board. <p>Murcia did not attend the peer-review session in Bologna.</p>	
CBW Site visit: Central Station Hub, velostation and parking facility 25/10/2022 17.00 -18.30	Luca Bellinato, City of Bologna	All CBW participants	<p>Close to the main train station of Bologna the city is currently developing a bike parking. The facility is also developed to accommodate needs of cargobike delivery services, such as secured parking, showers for riders as well as lockers.</p> <p>The main issue identified was the lack of well-developed cycling infrastructure around the parking.</p>	
CBW: Meeting with ITL on Logistics 26/10/2022 09.25 – 10.00	Giuseppe Luppino (ITL)	Bologna Groningen Munich Antwerp Tampere Brno Budapest Gdynia Eurocities ICLEI	During this session the ITL presented the URBANE project, which focuses on omnichannel logistics, digital twins, collaborative logistics.	URBANE project: https://civitas.eu/projects/urbane

Table 5: Summary of activities Cluster 1, LS4

2.1.5 Learning Sequence 5 – Cluster 1

During the last Learning Sequence more personalised and individualised advice from EIP and Eurocities has been provided to the Cluster to ensure high quality of the Deployment Plans.

The activities stimulated reflections beyond the innovation chosen about broader innovation governance questions.

Beyond that, the results from the cooperations the City of Munich and Murcia had with suppliers thanks to the FastTrack Fund were shared. Murcia shared the guide developed by Factual on how to set up micro hubs. Munich shared the results of their data collection on urban logistics.

During the final Capacity Building Week Cluster 1 had the opportunity to particularly share the outcomes on the set up of micro-logistics hubs.

Activity	Speakers	Participants	Key outcomes	Resources
IA Webinar LEZ for Logistics – the case of Riga 29/11/2022 10.00 – 11.00	Mihails Potihonins, City of Riga Giacomo Lozzi, University Roma 3	Riga Stockholm Antwerp ICLEI Eurocities Budapest Munich Bologna BKK Gdynia Braga	The webinar focused on the LEZ the city of Riga is planning to implement. Key challenges still faced by the city authority were discussed. Giacomo Lozzi's input and the experience of Rome's LEZ was central to the exchanges.	Urban Access regulation Website
IA Webinar Innovation Governance 12/12/2022 14.00 – 15.30	Erica Eneqvist, (PhD), City of Stockholm	Riga Antwerp ICLEI Eurocities Budapest Munich Bologna BKK Gdynia Braga EIP Debrecen CERTH Tampere Belgrade Vectos Kadikoy Mobiel21 Malmö	Erica Eneqvist from the City of Stockholm presented her work on innovation governance and how she is setting up a knowledge management strategy in the public administration. Key outcomes of the webinar on innovation governance: <ul style="list-style-type: none"> – In the long run, creating reflective spaces to arrange the knowledge and the continuous learning of the institution and thus become acceleration factors for the uptake of mobility innovations. – Local authorities need to think beyond the project lifetime and the project managers' responsibility. – The length of innovation projects matters – 5 year projects are often too long and not all private actors can commit to that. However there is the need to be able to calculate impacts 5 to 6 years after the end of a project. An adaptation on the type of funding could be envisaged. – In Kadikoy a separate Strategic Development Department body was created to keep the innovation memory. 	
IA Webinar Online Peer review Murcia's deployment plan 16/12/2022 09.30 – 10.30	Bernardo Lopez, City of Murcia	Antwerp EIP Eurocities Riga Stockholm	This webinar focused on the Deployment Plan developed by the city of Murcia. Main comments were provided regarding the governance of the microhubs and how the city would practically guide the private sector in developing their own hubs. The cooperation with Factual through the FastTrack Fund and the guide developed in that context is a key outcome complementing the Deployment Plan.	

Table 6: Summary of activities Cluster 1, LS5

3 Learning outcomes Cluster 2

Cluster 2 focused its work on regional and city-wide cycling (sharing) schemes. Initially four cities took actively and consistently part in the activities under this thematic Cluster: the city of Antwerp, the city of Metropolitan Association for Sustainable Development of Brasov Public Transport, the Regional Development Agency for Ljubljana Urban Region, the City-Institute of Lviv. TPBI Bucharest participated in the two first learning sequence before having to leave the cluster due to an internal re-organisation of the services, not allowing them to continue their participation.

3.1 Overview of activities and key outcomes

3.1.1 Learning Sequence 1

All cities, which participated in the activities under Cluster 2, were satisfied with the exchanges organised in the first Learning Sequence. Cluster 2 LAs share the interest in investigating data collection methods as well as their pertinence and use. Thus, collaboration and exchanges with the LAs of the other clusters are welcome for the upcoming Learning Sequence. The representative from Ljubljana indicated a strong interest in running a study on the allocation of potential stations for an e-bike sharing system in the Ljubljana urban region. This had then been met at a later stage with the use of the FastTrack Fund.



Figure 13: Screenshot from Bram's presentation

Activity	Speakers	Participants	Key outcomes	Resources
Workshop 1: Setting the scene: current trends & challenges 16/11/2022 10:10 – 11:15	Bram de Pooter, city of Antwerp Fred Dotter, Mobiel 21	Antwerp Ljubljana Bucharest Vectos Mobiel21	<p>This workshop aimed at identifying the main challenges on cycling schemes currently faced by cities as well as key innovation trends.</p> <p>Challenges faced by cities:</p> <ul style="list-style-type: none"> – There are well developed schemes for cycling and walking at the urban level but not on regional scale, there are huge problems on introducing cycling on the regional scale. – Safe and connected cycling infrastructure is lacking. – Bucharest's modal share was about 8% for cycling, which is quite low for a European city. <p>Trends:</p> <ul style="list-style-type: none"> – Set up coordination with the private sector. – Find a way for public e-bike sharing schemes to deploy on the regional scale. – Better connect cycling with other modes of transport. – Enhance the communication strategies. 	<p>Antwerp Routeplan https://routeplan2030.be/ Copenhagenize Index: https://copenhagenizeindex.eu/</p>
Workshop 2: Get inspired by peer cities' innovations 16/11/2022 11:30 – 13:05	Bart Slabbinck, City of Bruges Sven Huysmans from The New Drive Joanna Majdecka, City of Krakow Clotilde Imbert, Copenhagenize	Bucharest Ljubljana Antwerp Vectos Mobiel 21	<p>During this workshop four inspiring cycling measures were presented.</p> <p>In Bruges an extensive study had shown that there is no such thing as “the” cycling route. In fact, there are more direct trips in the morning and more pleasure related route choices in the evening. The city decided to add a layer in the cycling network the so-called cycling ring road (highway). The lessons learnt shared by Bart are to first develop a vision (comprehensive network) by identifying quick wins. A second lesson learnt is that cycling management is more than traffic management and getting from A to B. Thirdly a ring road should not only be the fastest solution but also a pleasant one, one must thus get rid of the vision of ‘ring roads’ from the last century.</p> <p>The New Drive consultancy gave an overview on different kinds of bike sharing systems. Sven distinguished different generations of cycling schemes that differed in availability, in bike types, and rental stations. There are also different user-models: back to one system (return bike to the same location), back to many locations, free floating systems. Space usage and level of regulation also matters when setting up a scheme: one can have free parking, parking zones, or parking stations.</p> <p>The City of Krakow presented their Bike to Work and Bike to School campaigns. The successfulness of the campaign was measured through a survey which showed that every year 1 in 5 participants of the Bike to Work campaign shift from car to bike.</p> <p>Copenhagenize explained that:</p> <ul style="list-style-type: none"> – Positive storytelling about cycling is essential. “We need more positive stories about everyday life of cyclists!”, said Clothilde Imbert. – Advertising convenience of cycling, showing emotions and daily situations is key. – Chose the visual identity carefully: Everything is communication. And sometimes it's in the small things like putting a logo on a cycling path. 	<p>Handshake project https://handshakecycling.eu Bike for brussels https://www.bike.brussels/fr/</p>

Workshop Get inspired by suppliers 17/11/2022 10:10 – 11:10	Wim Michiels, ANYWAYS Kresimir Herceg, Bikademy Jean Huvelle, ModC Networks AB Steven Logghe, Movias Neal Byers, Nota Bene Consulting Ltd Ola Rynge, Nudgd Sebastian Schlebosch, Dott Mobility Simone Feigl, Bike Citizens	Bucharest Ljubljana Antwerp Vectos Mobiel 21	<p>This workshop allowed suppliers and LAs to exchange about current innovations provided by the private sector.</p> <p>ANYWAYS is developing, testing and publishing alternative transport schemes. The first ready product is called Impact: It is an online interactive map which allows to map the neighbourhood to be worked on and test and visualise any changes such as speed limitation, additional cycling infrastructure. It allows to establish and test cycling routes through inputting (open) data. That way the QGIs tool comes close to a route model. It thus allows to compare different scenarios and to choose the most adapted one.</p> <p>Bikademy promotes cycling destinations of cities and regions. It is an app on which all types of cyclists can register and do specific exams, meaning cycling to a location of cultural or natural importance and take pictures of the places. That way the cultural and natural heritage gets promoted by the ones that explore them by bike.</p> <p>ModC Networks AB provides modular cycling solution for urban fabrics with little space to allocate to cycling infrastructure including for instance wooden prefabricated paths. The benefit is the lower environmental impact of this kind of infrastructure (less emissions, less asphalt, less water-tight ground).</p> <p>Movias' Start-up is working as expert in smart mobility mainly on data innovation technology and behavioural change. Movias proposes a three-layered model on data analytics combining, IT system with the necessary traffic engineering and modelling capacity and finally the right business model and data sharing.</p> <p>Nota Bene Consulting Ltd.: « Work from Hub », this is what Nota proposes; creating places outside the city centres to work qualitatively and which are accessible via active travel and PT. A first trial is run in Sheffield at a bus interchange.</p> <p>Nudgd proposes to use behavioural science to nudge people to use active travel modes. The company can set up authorised nudging schemes to send out trigger for employees to commute by bike, by foot, by public transport, by e-car.</p> <p>Dott Mobility is a micro-mobility operator which started with e-scooters now also expanding to e-bikes. In favour of regulation to set up the right schemes in each city.</p> <p>Bike Citizens: Digitalising cycling and data generation is at the core of Bike Citizens work. The Bike Citizens app (https://www.bikecitizens.net/app/) proposes the best way from A to B locally, provide personal statistics, with a rewarding scheme, civic participation campaigns spotting and informing dangerous spots collectively. For instance, the app and the data generated is used by the Hannover Region.</p>	https://www.bikecitizens.net/app/
Workshop: Cluster learning programme	Stefan Gabi, Vectos	Bucharest Ljubljana Antwerp Vectos	<p>This workshop allowed to prioritise more precisely the learning topic based on the main challenges the cities want to address within FastTrack.</p> <p>The most “popular” challenges (picked by 2 cities and more) concern the:</p> <ul style="list-style-type: none"> – Using funds provided by national supranational level 	More details in Deliverable 2.1.

and individual objectives 18/11/2022 10:30 – 12:15		Mobiel 21	<ul style="list-style-type: none"> – Regional coordination for cycling scheme – Stakeholder management – Set up a national cycling guide – Evaluation of measures – Connectivity with close-by regions. Integration with other systems – Safe and connected cycling infrastructure (standards) Selecting infrastructure for mobility hubs / public bike checks – Regional cycling infrastructure and e-bike scheme – Connecting existing infrastructure – Cycling promotion <p>The challenges that received a high prioritization score include:</p> <ul style="list-style-type: none"> – Regional coordination for cycling scheme – Selecting infrastructure for mobility hubs / public bike checks – Regional cycling infrastructure and e-bike scheme – Connection to existing infrastructure – Use of social media regarding cycling development – Cycling promotion 	
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Table 7: Summary of activities Cluster 2, LS1

Learning Sequence 2 (CBW in Stockholm) (from beginning of 02/2022 to end of 03/2022)

This learning-sequence significantly helped the LAs to generate a basic understanding not the least in terms of bike sharing schemes. This is especially true in the case of Ljubljana, for example profiting from the presentation of Antwerp region's bike sharing scheme (developed by Lantis) during a webinar (on 2 March, see below). Many aspects mentioned during this event were later replicated in Ljubljana's deployment plan.



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Figure 14: Screenshots of online workshops

Activity	Speakers	Participants	Key outcomes	Resources
IA Webinar on (e-)bike sharing schemes 02/03/2022 10.00 – 11.30	Candide de Bruyn Lantis, Franziska Kupfer Antwerp Transport Region Jelle de Keyser City of Antwerp Taco van der Stehen & Quentin van Meerbeeck, Donkey Republic	Ljubljana Brasov Bucharest Vectos Mobiel21	This webinar bundled valuable experience from the Antwerp city and the Antwerp Transport Region with a thematic focus on (e-)bike sharing schemes. Hands-on information was provided from different perspectives (city-perspective, regional perspective, supplier-perspective). The lively discussion centred around the viability of sharing-schemes, organisational and business models (e.g., number of bikes, number of stations, revenues that can be expected, need for funding). In the end of the webinar the LAs were assigned to do some “homework” prior to the next CBW: they were asked to define a first set of goals to be reached and the set of stakeholders they would like to involve when developing their own bike sharing scheme.	
CBW - Co-learning workshop: Data collection methods for cycling 29/03/2022 11.20 – 12.40	Matteo Jarre, Bikenomics Stijn Vernailen, Smart Ways to Antwerp Elke Franchois, Ping if You Care	Brasov Ljubljana Bucharest Vectos Mobiel21	The workshop focused on the different ways to collect data to inform cycling policies. For cycling policies local data gathering can be of great added value, especially if gathered by users/cyclists themselves (c.f. citizen science). They can provide: – Information on weak points in the cycling network/hotspots. – Demographic data – They can directly track, ping, comment on (virtual) maps. Different target groups can bring in different useful perceptions. After collecting and analysing the data you can formulate better informed recommendations.	
CBW - Co-learning workshop: Policy framework & best practices for (e-bike) sharing systems 30/03/2022 14.00 – 15.30	Candide de Bruyn Lantis, Franziska Kupfer Antwerp Transport Region	Ljubljana Brasov Bucharest Vectos Mobiel21	This session was the follow-up on the webinar on e-bike sharing systems from 02 March (see above). LAs now had to present their “homework” and received comments from the speakers. They had to define a first set of goals to be reached and the set of stakeholders they would like to involve. The session helped especially Ljubljana and Brasov to further develop their innovative solution (bike sharing scheme).	

	Jelle de Keyser City of Antwerp Taco van der Steen & Quentin van Meerbeeck, Donkey Republic			
CBW- Co-creating cycle-friendly streets 31/03/2022 10.00 – 12.30	Bart, Bruges Bucharest, Radu Jianu Cris Evans and Tom Frank, Vectos	Ljubljana Brasov Bucharest Vectos Mobiel21	<p>During the workshop the example of one boulevard in Bucharest was taken to discuss how to transform it into a cycle friendly street. One huge benefit of the boulevard is that there is a lot of space to play with. A two-way cycle way on each side, instead of parking space would be possible. The grand avenues in Bucharest can be a great asset for cycling, enjoy the grandness of cycling, you have the place and shadows from the trees which is a great asset in the summer for comfortable cycling. Chris and Tom from Vectos produced an outline drawing live during the workshop based on the ideas mentioned by the participants. Bart referred to the model of superblocks, where you set up mobility plans on the neighbourhood level. Traffic junction are the most difficult parts to design. Cycle and walking priority traffic lights could be considered this means separate traffic lights for cyclists and motorised traffic.</p> <p>Some general recommendations included:</p> <ul style="list-style-type: none"> – Transforming the curb side is a long term process that can start with pilot projects or demonstrator projects to test out actions. This way you can make your vision is acceptable little by little. – Sometimes it can be simple: use photoshop to draw a picture of how it could look like to have a clear image. Demonstration projects can really help to get over that cold-water fear, change is being achieved step by step. – Klemen showed an example of how they have used storytelling. Removed the cars from one street during one week in the European Mobility Week. This shows how nice and comfortable it can be without the car in this street. They used this to make the change permanent. They used before and after pictures to tell the story, show the benefits, highlight the liveability and finally used this as an example/best practice to change other areas. 	<p>Bruges Cycling Plan https://www.brugge.be/brochure-stadsfietsroute-f30-english</p> <p>Handshake Brochure https://handshakecycling.eu/sites/default/files/Resource%20Documents/BrochA4_50jaarMobiliteitsplanning_ENG_def_web.pdf</p> <p>EUROPEAN MOBILITY WEEK: https://mobilityweek.eu/home/</p>

Table 8: Summary of activities Cluster 2, LS2

LS3 (CBW in Antwerp) (from beginning of 04/2022 to end of 07/2022)

At that time of the learning programme the cluster was still joined by 4 LAs. This led to a variety of ideas and approaches and lively discussion. Some ideas were at that time still rather vague (Bucharest, Lviv), others already quite focused (Ljubljana, Brasov). The cluster-internal “team spirit” evolved and growing trust amongst partners allowed for informal and ad hoc exchange. The publishing of the Deployment Plan template by EIP helped the LAs to focus their thinking.



Figure 15: Mobility safari in Antwerp

Activity	Speakers	Participants	Key outcomes	Resources
IA - Webinar: Preparation Meeting with LAs prior to CBW3 01/06/2022 10.00 – 11.30	All participants	Mobiel 21 Vectos Antwerp Ljubljana Brasov Lviv	The call allowed to clarify the cluster needs for the CBW, and which city will be presenting in which workshop.	
CBW - Co-creation-workshop How 'shovel ready' is your – Technicalities and skills innovation? 20/06/2022 16.00 – 18.00	Daniel, Bucharest Melania Petrea, city of Brasov	Mobiel 21 Vectos Antwerp Ljubljana	During this workshop the LAs discussed their main challenges regarding the skills needed in their local teams. <ul style="list-style-type: none"> – There is a low team capacity in Bucharest – there is a need for additional partners. – There are issues with the car dependency in both Bucharest and Brasov and there is no cycling culture, expertise on behavioral change is key and needed in the teams. – Stakeholder consultation will be important in Brasov, further expertise on that must be fostered inside the administration. – Bucharest requires further capacity to get funding. To develop the project Romanian EU funds will be gained once the goals of the projects are clarified. 	
CBW Study visit Smart Mobility Solutions in the city ('mobility safari') 21/06/2022 09.20 – 12.00	Sven Huysmans, The New Drive	All participants	During the mobility safari in the city centre of Antwerp the participants discovered the way the local authority regulates bike and micro mobility parking, with the introduction of e-scooter specific spaces. By walking through the central parts of Antwerp, participants saw that the city bike sharing system is well used. Besides the cycling infrastructure also appeared not to be always very clear and coherent in the city centre.	
CBW – Parallel Site Visit: Velo Antwerp and EY 21/06/2022 14.00 – 17.00	Katia Kishchenko, Freya Vandaele, Bram De Pooter, Lukas Dedeker, City fo Antwerp	Mobiel 21 Vectos Antwerp Ljubljana Brasov Lviv Bucharest	The visit focused on 3 topics: innovative and future-proof infrastructure, the Smart ways to Antwerp employers' approach and how companies can incentivize active mobility. At Berchem train station a range of mobility options come together. Recent developments have heavily improved the cycling facilities, including cycling lanes and bike parking. Thanks to this, the area has become an attractive and very well accessible location for businesses and companies. At EY company FastTrackers learned more about how Smart ways to Antwerp works actively together with companies (such as EY) to improve sustainable commuter traffic, and how companies themselves play an important role in the mobility challenge and modal shift solution.	

CBW - Co-learning Workshop on Governance / Political Will 23/06/2022 09.00 – 10.00	Maksym Terletsy, City Institute Lviv	Brasov Ljubljana Vectos Mobiel21 Antwerp	<p>During this workshop, cluster 2 took a closer look at the case of Lviv and examined whether the political will and governance is strong enough to develop the chosen innovations and how to remedy if not.</p> <ul style="list-style-type: none"> – In Lviv the current context of fuel shortage is perceived as an opportunity to promote cycling. – Cycling is not so safe, because the car speed is high due to cars on the road not respecting the speed limit of 50km/h (there are enforcement issues). – Key question for Lviv: Without investing in street infrastructure, what can you do to promote cycling? – Many cars are coming from outside the city: Road circulation is possible solution just as changing a bit the street design in favour of active modes. (Freiburg gave road signs to promote cycling). <p>There are resources to do some promotional campaigns, that should bring the initiatives into a plan.</p>	
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Table 9: Summary of activities Cluster 2, LS3

LS4 (CBW in Bologna) (from beginning of 08/2022 to end of 10/2022)

The LAs were writing the first drafts of their Deployment Plans over the summer 2022 which provided a very good basis for further discussion. A first review of the then available drafts in the framework of an online workshop (on 31 August 2022) helped the LAs to define their specific key challenges. It became clear during the discussion that the two LAs follow different strategies in terms of stakeholder and citizen engagement – and that both strategies (very open / broad in Brasov, quite decent in Ljubljana) are reasonable in the specific local context.

Activity	Speakers	Participants	Key outcomes	Resources
IA Webinar: Catch-up with cluster 2 31/08/2022 10.30 -12.30	All participants	Mobiel 21 Vectos Antwerp Ljubljana Brasov Lviv	The LAs shared a very first draft of their deployment plans prior to the workshop and briefly presented it in the beginning of the meeting. A first review of these drafts was the core of this online workshop. It helped the LAs to define their specific key challenges they should further work on in the upcoming process (e.g., milestones should be more clearly defined, funding has to be clarified).	
Study visit in Stockholm – Walking Tour of Stockholm Royal Seaport area & working lunch at Tram Museum 08/09/2022 09.30 – 13.00	Paul Fenton, City of Stockholm	Mobiel 21 Vectos Antwerp Ljubljana Brasov	The first site visit of the study visit in Stockholm was in the new Royal Seaport area. In this area neighbourhood planning is used as lever for reducing car use. There is a limited amount of on-street parking and of underground parking. Building permits were designed to meet those goals. Beyond that, the circulation in the neighbourhood prioritises pedestrians and bikes.	
CBW: Workshop on participatory processes 24/10/2022 13.00 – 17.00	Noemi Julian, FIU and Fabio Bettani, President of Consulta della bicicletta	Mobiel 21 Vectos Antwerp Ljubljana Brasov	During the workshop, the group co-created a participatory process for the implementation of a new bike sharing scheme. For Brasov Ljubljana and Antwerp the stages at which citizens shall be engaged differed. For Brasov the participation shall start at an early stage, while for Ljubljana it shall be between the proposal and the implementation phase. The levels of involvement chosen were the 'Antenna' and 'Arena model' described by FIU, meaning mainly informative sessions, dialogues with employers, PT operators, cycling association and communication (online and offline campaigns).	Fondazione Innovazione Urbana https://www.fondazioneinnovazioneurbana.it/en/
CBW: Peer- review Poster session for LAs of cluster 2 25/10/2022 09.30 -12.00	Klemen Gostic, RRALUR Melania Petrea, City of Brasov	Ljubljana Brasov Vectos Mobiel21 BKK Brno	Each Cluster 2 city received comments and advises on how to further improve their deployment plans. Below some key questions and points raised: Ljubljana (reviewers all present participants): Klemen presented the concept for a regional e-bike sharing system, which will be part of the SUMP and deployed by the regional agency. The main challenges discussed were: <ul style="list-style-type: none"> – How to make the provider share data on the usage of bicycles etc. – Need for evaluating qualitative aspects (survey, etc.) – Identify the target group more: what could be barriers of incentives for using the system? – Work with mobility profiles and map out how they are moving and why 	

			<ul style="list-style-type: none"> – Good idea to involve employers! This is a strong point in the plan. Maybe have them invest as well? – Use the storyline and successes of Ljubljana city as an ambassador in the communication to the urban region and other municipalities. – Think about the risks to have Nomago as the biggest investor and evaluate the pilot. – Could this system be a competitor for public transport? Will the bike-sharing work in hilly area's? – How will the charging of the e-bikes be organised? <p>Brasov (reviewers all present participants): Melania presented their plan for a city-wide bike sharing system. The solution must be seen as mean to change behaviors; Brasov already studied the origin destination trips and most of them are below 5 km, which is a cyclable distance. Further user research would help identify if there is an existing bike community, whether the numbers are growing. In the definition of the target groups this step is essential and needs to be further finetuned. The type of bike scheme that will be chosen must also result from the understanding of the kind of users that will benefit first from the scheme and create a critical mass. Further advise was provided by the city of Brno on the need to set up an evaluation of the system in the early stage.</p>	
CBW Site visit: Central Station Hub, velostation and parking facility in Bologna 25/10/2022 17.00 -18.30	Luca Bellinato, City of Bologna	Mobiel 21 Vectos Antwerp Ljubljana Brasov	<p>The Bike Station (velostazione) next to the main bus station of Bologna is in an old air-raid shelter that is currently undergoing renovation and will house new secure bike parking, but not only—it also will provide cafés, bicycles services and WCs for users of the space.</p> <p>Participants critically questioned the location whether close enough to the main train station to be fully integrated in the multi-modal hub. A better traffic management and cycle path infrastructure would help the spatial connection to be more obvious according to FastTrack participants.</p>	
CBW - Guided visit to eXtraBO/Parco Villa Ghigi/Foundation Villa Ghigi, Bologna 26/10/2022	Julia Culver, Nomisma	Mobiel 21 Vectos Antwerp Ljubljana Brasov	<p>Promoting sustainable tourism is at the heart of the work done by ExtraBo, a dedicated tourist information venue at the heart of the city of Bologna. Alongside individualised consultancy the agency also offers a wide range of maps to help tourists and locals use the cycling paths of the Bologna region.</p> <p>Urban Rural connection can be strengthened through parks, and the walking and cycling infrastructures that link the outskirts with the city center. The Parco Villa Ghigi exemplifies also how involving students and schools in the exploration of those areas can be strategic to foster sustainable mobility behaviour.</p>	<p>Extrabo: https://extrabo.com/</p>

Table 10: Summary of activities Cluster 2, LS4

Learning Sequence 5 – Cluster 2

During Learning sequence 5, no dedicated Cluster 2 intermediary activity was organised. Being a smaller group the onsite activities performed allowed the group to have more time dedicated per city which allowed the cluster to have a steeper learning curve. Nonetheless, Cluster 2 cities joined the Activities organised under the other Clusters.

Over the five learning sequences the input from Antwerp was of high importance during all the Learning Sequences – in terms of more general approaches (e.g. Lantis, see above) but also in terms of details (e.g., procurement documents that were shared).

The final Capacity Building Week allowed the group to showcase the learnings in terms of bike sharing schemes to a wider audience and to connect to other interesting organisations and projects.

4 Learning outcomes Cluster 3

Cluster 3 focused its work on mobility hubs, the connection between Public Transport and Micro-mobility solutions, the development of MaaS schemes. Nine cities took actively and consistently part in the activities under this thematic cluster: the city of Budapest, the city of Hengelo, the city of Tampere, the city of Malmö, the city of Krusevac, the city of Groningen, the city of Debrecen, the city of Kadikoy, TPBI Bucharest.

4.1 Overview of activities and key outcomes

4.1.1 Learning sequence 1

By the end of learning sequence 1, all cities, apart from Sofia, involved in Cluster 3 specified ideas for a measure they wanted to deploy.

For the first learning Sequence, the overall feedback was positive from Cluster 3 representative. 7 out of the 11 cities which provided feedback qualified the exchanges as useful. A special attention is required for Krusevac though. Representatives provided less positive feedback through the Innovation Diary. Their focus and needs being slightly different to the majority of the cities – more Public Transport centred - some personalised material might need to be provided. This had to be adjusted in future learning sequences.

Activity	Speakers	Participants	Key outcomes	Resources
Workshop Setting the scene current trends and challenges 16/11/2021 10.10 – 11.15	Laurie Pickup, International Director, Vectos Andras Vagany, BKK	Kadikoy, Groningen, Bucharest, Krusevac, Malmo, Debrecen, Tampere, Hangelo EIP	This workshop aimed at identifying the main challenges currently faced by cities on multi-modal mobility as well as key innovation trends. Laurie Pickup (International Director, VECTOS) presented social aspects that could be considered when planning integrated mobility solutions. Key insights provided by Laurie were: if a solution looks too complex, simplify it; be smart, understand your city's DNA and look for positive elements you can use to FastTrack the implementation, build consensus for change across the mind-sets, carry your Fast Tracking on the positive generations and pay specific attention to those sections of society that gave up long ago. Andras Vagany (BKK) shared experiences regarding traffic management in the city of Budapest. He presented the challenges they have faced due to the COVID-19 pandemic and how sustainable transportation could be improved by integrating the mobility services (such as MaaS) and the physical infrastructure with a Mobility PointNetwork.	https://telebusz.bkk.hu/ SMACKER project https://www.interreg-central.eu/Content.Node/SMACKER.html SUITS project https://cordis.europa.eu/project/id/690650 MOVE21 https://move21.eu/ SCALE UP https://www.scale-up-project.eu/
CBW Get inspired by peer cities' innovations 16/11/2021 11.30-12.45	Prof. Peter Jones, UCL Marijke de Roeck, City of Antwerp Mike Axon Managing Director, Vectos SLR Charlotte Halpern (Sciences Po, CEE) Floridea Di Ciommo (co-director cambiaMO) Dr. Steve Cassidy (Co-Founder/Director Fuse Mobility)	Kadikoy, Groningen, Bucharest, Krusevac, Malmo, Debrecen, Tampere, Hangelo EIP	During this workshop six inspiring multi-modal mobility measures were presented. Prof. Peter Jones (UCL) presented new trends in transport and mobility policies. He talked about the challenges and the lessons learned from the projects CREATE, MORE and SUMP-PLUS. He talked about the importance to reduce personal car use, to create spaces for people and mobility alternatives and, finally, to integrate policies. He also mentioned how important it is to see the street as an ecosystem - as a place with different functions integrated and the necessity to make integration across different transport sectors (such as retail, health, education, tourism). Marijke de Roeck (Antwerp) had a presentation on how MaaS (Mobility-as-a-Service) has been developed in the city of Antwerp. MaaS-type measures are needed for cities because they encourage users to combine different modes of travel and reduce dependence on personal car, reduce travel times, reduce noise and air pollution and they could contribute to improve the quality of the environment. In the future, the City of Antwerp would like to intensify the collaboration with various mobility actors, users, MaaS providers and governments' representatives. Mike Axon (Managing Director, VECTOS SLR) held a very insightful presentation on the topic of implementing mobility hubs and, particularly, Vectos (SLR) experience in working with developers. Mike talked about the development of sustainable living and the approach from the private sector perspective. In his presentation, he stated that a place-based approach can contribute to accelerate the reductions in emissions whilst creating better places and healthier, happier, more resilient communities. Planners and urban designers should prioritise interventions in the most effective way guided by "vision & validate" policies rather than "predict & provide" more common used policies. Mike also emphasized that in	CREATE http://www.create-mobility.eu/ MORE https://www.roadspace.eu/ SUMP-PLUS https://sump-plus.eu/

			<p>UK, the planning policy is based on three principles – climate, health and economy and he has also provided examples from UK for innovative mobility solutions, such as community hubs.</p> <p>Charlotte Halpern (Sciences Po, CEE) did a presentation on transport governance and why it matters to cities. She first started by clarifying the notion of transport governance in relation to cities and that, ultimately governance has to do with maintaining city growth. Charlotte also presented some key findings from other projects and what can be learned from cities that have already been able to develop specific governance. The main point was that the majority of the cities that developed transport governance have done so through experimenting – using the city as a laboratory and thus challenging their national authorities. She has also explained the potential effectiveness of using an approach that combines high and low tech as well as being consistent in terms of capacity building.</p> <p>Floriea Di Ciommo (co-director cambiaMO) held an interesting presentation on the topic of Integrated multi-systems – leaving no-one behind. She offered an overview of the potential solutions for inclusivity when it comes to integration of intermodal mobility solutions. She highlighted the fact that more accessibility does not necessarily mean that inclusivity is increasing, especially if accessibility translates into personal technology. In her presentation, Floriea also introduced tools such as Just Transition and the diversity, equity and inclusion (DEI) approach.</p> <p>Dr. Steve Cassidy (Co-Founder/Director Fuse Mobility) presented an overview of MaaS in Scotland and his own journey in implementing MaaS. He also presented part of the projects the company has implemented, some specifically targeted to vulnerable groups, mainly helping people transition to integrated mobility. Steve's presentation offered a very good insight on services and potential methods to approach integrated multi-modal mobility solutions from how to obtain funding to how these services were implemented and what was their impact.</p>	
CBW Workshop get inspired by suppliers 17/11/2021 10.10-11.10	Michael Koucky Martin Vingren Gregorio Mango Toral Jimenez Tom Rye Maria Dilling Elken Manuel Quinting, Init Marko Cikovic Josep Laborda, RIDEAL	Kadikoy, Groningen, Bucharest, Krusevac, Malmo, Debrecen, Tampere, Hangelo. EIP	<p>This workshop allowed suppliers and LAs to exchange about current innovations provided by the private sector on multi-modal mobility.</p> <p>Koucky & Parteners presented the company as having consultants specialised on sustainable transports and mobility. They have an expertise in bicycle traffic, plans, strategies, traffic safety, parking and mobility, neighborhood mobility, micro-mobility and electrification plans.</p> <p>CINESI SL is a mobility and transport consultancy with 20 years of experience and a multidisciplinary team. Tom Rye said about the company that the areas of expertise are: collective transport services, transport economics, fare systems, traffic and roads network, public bodies and policies, private companies and industry, transport investments feasibility, multimodal mobility networks and future trends.</p>	

	Arild Tjomsland, Kobla Anes Jon Skaret/ Ole Liabo Giel Mertens		<p>Skipit ApS. The Skipit app (https://skipit.cc/) provides you with across boarder digital "Skipit card", giving you easy access to public transport networks throughout European capitals. The app is also connecting you with local neighbourhoods across some of Europe's biggest cities with a personal inspirationfeed, so you can experience the taste of the 'local life' and supporting local communities and businesses.</p> <p>Init offers a fully integrated planning, telematics, dispatching and ticketing system and data analytics. They research, spot trends, connect knowledge and translate it into products.</p> <p>WeGoApp is an inner-city car sharing app for employees, saving resources, eco-friendly, lowering traffic congestion and making trip to work more pleasant.</p> <p>RIDEAL an online platform which enables public and private organizations to implement, manage & optimize schemes to subsidize or finance mobility trips of different target groups according to specific criteria.</p> <p>Kobla AS presented a case study of one of the cities the app is being used. Together with the Bodo Municipality from Norway, Kobla promoted their MaaS application by encouraging people to use it to spend less money on transportation. Thus, they managed to change the behaviour of the inhabitants.</p>	
CBW Workshop Cluster learning programme and individual objectives 18/11/2021 10.30 – 12.15	All participants	Kadikoy, Groningen, Bucharest, Krusevac, Malmo, Debrecen, Tampere, Hangelo. EIP	<p>This workshop allowed to prioritise more precisely the learning topic based on the main challenges the cities want to address within FastTrack.</p> <p>In terms of challenges, the following were prioritised by the cities:</p> <ol style="list-style-type: none"> 1. Digitalisation and data management 2. Business models 3. Funding 4. Participation and cooperation 5. Planning regulation 6. Infrastructure 	

Table 11: Summary of Activities Cluster 3, LS1

4.1.2 Learning sequence 2

During the Learning Sequence 2 the LAs and AC of Cluster 3 learned about various types of mobility innovations and best practices, strategies, and technologies. Particular focus on learning was placed on data collection, selection, and management, seeing the appropriate use of data as a critical step to deploying Mobility as a Service and mobility hubs.



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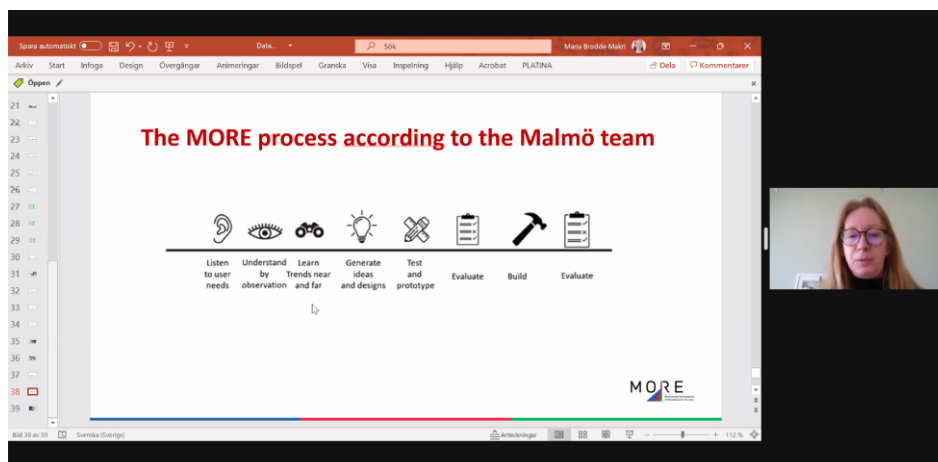


Figure 16: Screenshot of online presentations from Tampere and Malmö

Activity	Speakers	Participants	Key outcomes	Resources
Co-learning workshop: Data collection methods for mobility hubs 29/03/2022 11.00 – 13.00	Maria Brodde City of Malmö Tiina Leinonen City of Tampere	Budapest, BKK Kadikoy, Debrecen, Bucharest Groningen, Tampere, Malmo, Krusevac, Sofia EIP	<p>The workshop focused on the different ways to collect data to inform multi-modal policies.</p> <p>Main challenges identified:</p> <ul style="list-style-type: none"> – Difficulties in convincing the decision makers to use different data collection methods; – Lack of clarity in explaining decision makers the methods to understand their benefits; – High costs of different modern methods for data collection. – Lack of political support to invest in platforms for data collection. – GDPR is seen as a major barrier in collecting data and usage; – The major data collection companies (google, mobile phone operators) are reserved in sharing their data with the city administrations, due to GDPR issues. <p>Innovative ways to solve them:</p> <ul style="list-style-type: none"> – Combining the hard data and the people data (qualitative data collection); – Show to the traffic planners the new type of data, combining different data sources and better analysis of the existing and new data sets; – Change perspective - focus on all the modes, especially on the cyclist and pedestrians; – Use existing traffic cameras and improve them. 	<p>Smart City Update from Turku: From data to smart decision-making https://nscn.eu/cityupdate/Turku/SmartDecisionMaking</p> <p>SmartHubs project https://data.smartmobilityhubs.eu/wiki/Main_Page</p>
Co-learning: Workshop Cluster 3: Data integration for Sustainable Complex Mobility Systems 30/03/2022 14.00 – 15.30	Mate Sebok, BKK Angelo Meuleman, Mpact Steve Wright, Vectos/SLR	Budapest, BKK Kadikoy, Debrecen, Bucharest Groningen, Tampere, Malmo, Krusevac, Sofia EIP	<p>The workshop focused on how cities can integrate and use different types of data sets to develop complex mobility systems.</p> <p>Key outcomes of the presentations and discussions were:</p> <ul style="list-style-type: none"> – The change in the system could start with better information about PT and the shared mobility systems. – To provide sustainable solutions for certain neighbourhoods it is important for understanding needs of the people living in the area; there is also the need that the mobility providers, irrespective of the type of service offered, need to share data. – For example, the e-scooter companies should share their data, but they don't want to share their data with other private companies. Cities can set up licencing schemes that encourage/oblige the operators to share certain types of data with the local authority only. – Sometimes it is hard to find the working solutions between two different public entities to share their data (metro-train, city-national level) – Organising the shared micromobility solutions is challenging - creating connections, integration, and regulation of the parking is imperative (Sofia and Budapest) 	

			<ul style="list-style-type: none"> – It is important to identify the sources of data. For Antwerp, it took two years to find out the owner of some data and to get the permission to use it. It is important the capacity of a city administration in analysing the data collected. Sometimes it is necessary to bring more people from different departments on board; this requires a communication process. – Antwerp's main challenges: legal issues in using data and responsibility in dealing with it 	
Co-learning workshop: Challenges and drivers for successful implementation of Mobility Hubs and MaaS solutions 31/03/2022 10.00 – 12.30	Lucia Cristea, EIP Martin Courtz, Groningen Drenthe, Stijn Vernailen, City of Antwerp, Miklos Banfi, City of Budapest	Budapest, BKK Kadikoy, Debrecen, Bucharest Groningen, Tampere, Malmo, Krusevac, Sofia EIP	<p>During this workshop Cluster 3 reflected upon main drivers for successful implementation of mobility hubs and MaaS. The key points of the discussion include:</p> <ul style="list-style-type: none"> – Needed focus change: Main question of travel and transport engineers who ask themselves how do I get from A to B? But the question we need to ask ourselves is, why do I want to go to B? – Make clear rules: shared mobility providers have to share data in Antwerp. There are technical challenges to doing the integration, it's more about trust among players. – Often more colorful/simplified, direct charts are needed to understand the data sets – similar to marketing solutions are needed to convince politicians 	

Table 12: Summary of Activities Cluster 3, LS2

4.1.3 Learning Sequence 3

During learning sequence 3 the cities started to discuss among each other on their Deployment Plans topics. Their needs come from the stakeholder engagement, public-private partnership and they were looking for funding/financing opportunities. During the CBW3 in Antwerp the majority of participants agreed that in order to implement their innovations partnerships would be beneficial.

For Cluster 3 LAs there was a common agreement that overall, all cities had teams covering necessary skills required to implement their chosen innovations. However, the majority felt that their teams needed to acquire more skills or knowledge regarding communication. All cities stated that lack of proper communication also being at the root for some of their political barriers.

It is important to note in this respect that with the exception of Groningen which has a clear plan in terms of technical requirements, participants did not yet know in detail which technicalities their innovations require.

The discussions also had a very strong focus on the collaboration with stakeholders and issues regarding communication and “marketing” the innovations in a way that can harvest a larger acceptance percentage. Overall, there seems to be mistrust among citizens for the city authorities and a weak communication process.

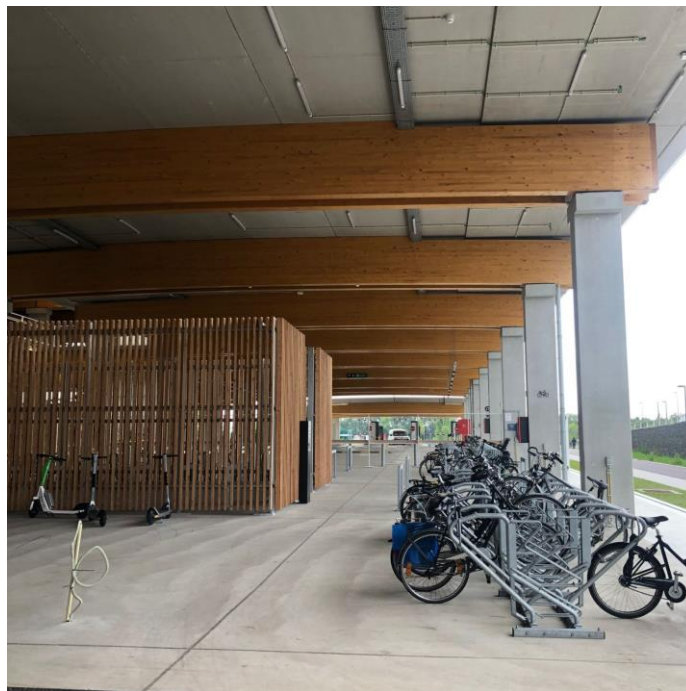


Figure 17: Site visit at P+R Linkeroever

Activity	Speakers	Participants	Key outcomes	Resources
Co-creation workshop – How ‘shovel ready’ is your – Technicalities and skills innovation? 20/06/2022 16.00 – 18.00	Oliver Papp, City of Debrecen	Budapest Debrecen Groningen Tampere Hengelo Bucharest Kadikoy EIP	During the workshop Cluster 3 cities reflected upon the technical skills that are necessary to foster in their administrations to deploy innovations around MaaS and mobility hubs. Key skills identified were: <ul style="list-style-type: none"> – Become better at communicating. It helps solving issues of political willingness to support projects. – If there is a lack of in-house skills, working with local universities and NGOs can be a good asset. – Create dedicated departments for data analysis and have specialists that can sum up the data and communicate it in an attractive way. 	
Smart Mobility Solutions in the city (‘mobility safari’) 21/06/2022 09.20 - 12.00	Sven Huysmans, City of Antwerp	Budapest Debrecen Groningen Tampere Hengelo Bucharest Kadikoy EIP	During the site visit the participants used the wayfinding app – smart ways to Antwerp to navigate the mobility ecosystem in the inner-city of Antwerp. This application integrates the different modes of transport from different public and service providers and allows to book combined trips. While the application does not yet permit to pay the whole trip with an integrated price, the city owned application is a first step towards a MaaS System.	
Parallel Site Visit 21/06/2022 13.00 - 17.00	Candide De Bruyn, Lantis	Budapest Debrecen Groningen Tampere Hengelo Bucharest Kadikoy EIP	During this site visit Participants visited the P+R Linkeroever which is part of an ecosystem of P+R around the rings road at the outskirts of the city of Antwerp. All are reachable by public transport. A new public transport stop was added with the construction of the P+R and the tram line extended. Now 18 trams/h stop at the P+R. Work in progress: Combi-ticket for parking and PT use. Temporary action on the Parking fee: discount rate for commuters. The building itself is an open construction, which shall bring a sense of security. The high roofs could allow to transform the Parking building into another use such as housing or offices.	
Co-creation workshop business model challenge 22/06/2022 13.30-16.00	Aron Hegedus (BKK) Hanna Reuterhorn, City of Tampere	Budapest Debrecen Groningen Tampere Hengelo Bucharest Kadikoy	During this workshop Cluster 3 cities worked on the main challenges cities face in developing business models for MaaS and mobility hubs. The discussions showed that: <ul style="list-style-type: none"> – Main financial challenges come from decreased income/decrease of PT due to Covid and political and institutional uncertainty. 	Coenegrachts, E.; Beckers, J.; Vanelander, T.; Verhetsel, A. Business Model Blueprints for the Shared Mobility Hub Network. Sustainability 2021, 13, 6939. https://doi.org/10.3390/su13126939

		EIP	<ul style="list-style-type: none"> – There are issues on funding due to division of the central government and the municipality (different political parties in power can make co-funding more complicated). – Possible solutions can be direct funding from the EU. – Collaboration with other cities helps to learn from other cities about funding opportunities; participatory budget schemes; shared funding schemes with operators, procurement options. – Municipal budgets can help finance the upscaling of pilots. – Cities need to further convince the national governments to support innovations; one approach can be to offer an opportunity to "invest" rather than asking for funding. <p>Most of the participants did not have yet a clear plan for the management of costs in their Deployment Plans, however, there was a general sense of agreement that there is always the need for additional funding sources. Combining funds from different sources could be a challenge, but a necessity to implement innovation.</p>	Shift2MaaS, Deliverable D4.2 Impact Assessment: Demand, Costings, Business Models and Regulation https://projects.shift2rail.org/download.aspx?id=569a4471-82e4-41d5-bcd5-2cdfe4400341
Co-learning Workshop on Governance / Political Will 23/06/2022	Terry Albronda, City of Groningen Mert Yama, City of Kadikoy Daniel Georgian Pislaru, TPBI	Budapest Debrecen Groningen Tampere Hengelo Bucharest Kadikoy EIP	<p>During this workshop LAs discussed the importance of a good governance and political will in setting up mobility hubs:</p> <ul style="list-style-type: none"> – Political support is the main breaking point for innovation. – Groningen provides participation books for citizens to start their own initiatives, involvement of stakeholders in innovation since the beginning might be a good approach. – In Budapest there is no clear knowledge of the citizens regarding the governance layers, dual administration is sometimes a barrier in project implementation. 	
Intermediate Activity Cluster 3 – Antwerp Debrief & Identifying remaining gaps 14/07/2022 15.00 - 16.30	All participants	Budapest Debrecen Groningen Tampere Hengelo Bucharest Kadikoy EIP	<p>During this workshop, the LAs discussed the learning needs highlighted within CBW3, major outcomes and remaining gaps.</p> <p>There was a general consensus that the Capacity Building Week has helped them gain more insight and clarity into the objective of the implementation. Cities also agreed that talking with their peers and hearing the presentations was inspirational and made them see different perspectives solving similar issues.</p> <p>In terms of remaining gaps, cities expressed an interest into learning more about Public-Private Partnerships and engaging stakeholders. They have also expressed the need to interact more with the other clusters as well.</p>	

Table 13: Summary of Activities Cluster 3, LS3

4.1.4 Learning Sequence 4

The peer review exercises were well received and useful to cluster 3 cities. None of the cities indicated that they would have big gaps for the development of Deployment Plans, but felt that issues related to innovation measure financing, public-private partnership and stakeholder engagement should be further explored. This was considered when developing the final online activities in learning sequence 5.



Figure 18: CBW in Bologna, poster wall (left) and poster presentation by Budapest (right)

Activity	Speakers	Participants	Key outcomes	Resources
IA Webinar: Cluster 3 Meeting – Deployment Plans Update 23/09/2022 13.00 – 14.30	Lucia Cristea, EIP	Budapest Hengelo Groningen Debrecen Malmö EIP	<p>This meeting focused on clarifying the structure of the deployment plans in preparation for their completion by the cities. During the meeting, EIP made a series of clarifications and observations based on the first drafts received, that included:</p> <ul style="list-style-type: none"> – Better identify which activities can be performed in parallel to one another. – Considering additional resources for certain activities to speed up the completion of respective activities. – For measuring the initial, intermediary, and final innovation implementation process, consider the objectives of the innovation as well. – For impact evaluation think of targeted values. <p>Some specific observations were made regarding deployment plans received from Budapest and Debrecen. Cities were then encouraged to express any concerns or unclarities they might have related to the questions within the deployment plans. There were no major concerns or questions raised.</p>	
Stockholm – site visit to Nobina, a public transport operator who run e.g. autonomous shuttles in public transport 08/09/2022 09.30 – 12.30	Jens Lindström, Nobina	Budapest Debrecen Groningen Tampere Hengelo Bucharest Kadikoy EIP	On the last day of the study visit in Stockholm, in the neighbourhood of Barkarby, which is located in the northern outskirts of the city of Stockholm, the FastTrack cities were able to test Nobina's automated buses, which are operating on demand in areas where no other public transport options are available. The newly developed area has been conceived in an integrated way, with a Bus Rapid Transit (BRT) line fully operational by the time the first residents moved in. The BRT is connecting the neighbourhood to a metro station, offering thus the possibility to connect to the city centre. Having a reliable and efficient transport solution at their front door allows a great share of the residents to use public transport on a daily basis and not to be dependent on their car, despite living in the outskirts of the city.	
CBW - Guided visit on the Innovazione Urbana Lab 24/10/2022 10.30-12.00	Leonardo Tedeschi, FIU	All CBW4 participants	During the first day of the CBW in Bologna, Leonardo Tedeschi from FIU Lab showed the participants how the Lab represents different types of available data on different interactive maps. Showing the location of different functions, transport modes can help in identifying bottlenecks and provide citizens a broader understanding of the urban transport system.	
CBW - Participatory processes in mobility innovation 24/10/2022 15.00- 15.30	Noemi Julian, FIU and Fabio Bettani, President of Consulta	Budapest Malmö Debrecen Groningen Tampere Hengelo Bucharest	Noemi Julian, FIU and Fabio Bettani, President of Consulta presented the citizen participation approach of the city of Bologna in a plenary session of the CBW4 in Bologna. The city of Bologna does thorough citizen participation processes when developing public transport policies. For the construction of the new tram line, the city engaged in both informative and co-creational style of engagement sessions.	

	della bicicletta.	Kadikoy EIP	Key take-away is that whatever level of engagement is taken, the local authority should take into account the expectations that will be raised amongst citizens and thus be ready to alter the plans. If not, there are greater chances for frustration and confrontation.	
CBW Workshop on participatory processes in mobility innovations – Part 1 24/10/2022 15.30-17.00	Istvan Tohati, DKV Debrecen	Budapest Debrecen Groningen Tampere Hengelo Bucharest Kadikoy Malmö EIP	During the workshop Cluster 3 cities reflected upon means to foster citizen participation in the development of mobility hubs. The key takeaways from this exercise have been the following: <ul style="list-style-type: none"> Local authorities must have a clear goal and make it clear to citizens from the start. It was also remarked that having a common fact base (or ensuring that everyone speaks the same language) is very important, so the message must be tailored in a way that can be easily understandable for everyone. LAs must manage expectations from the get-go. If citizens are promised something which ends up not being fulfilled, the trust between the municipality and civil society will break. LAs must be careful how often they engage citizens and how as there is the potential for engagement tiredness. 	
CBW Peer review – poster session 25/10/2022	Terry Albronda, City of Groningen, Mert Yaman, City of Kadikoy Maria Brodde, city of Malmö Erik Stok, City of Hengelo Andras Vagany, BKK Istvan Tohati, City of Debrecen Jelena Nikolic, City of Krusevac	Budapest Debrecen Groningen Tampere Malmö Hengelo Kadikoy Krusevac EIP	During the peer-review session of CBW4, each Cluster 3 city received comments and advises on how to further improve their deployment plans. Below some key questions and points raised: Malmö - (reviewer Debrecen) The representative from Malmö focused on the key points regarding the innovation, as follows: <ul style="list-style-type: none"> Malmö is working to implement multi-modal hubs and develops a roadmap for 100 multimodal hubs located at major PT stops, parking houses and important nodes, they should have an added value to existing PT and bike-sharing system. Better use of available public space through more sharing options shall be ensured. The city thus wants to develop existing stations but no high-level decision has been made yet in regards to this. The city collaborated with a private company to design the concept for the hubs. There are still barriers to the implementation - regulations at the national level make the process difficult. Finding available spaces such as removing parking spaces is not a smooth process. The integration in a MaaS app is a complex procedure. There is still a need for: good business models and external financing; finding good forms for PPP's; developing a sustainable business model for maintenance. The expected impact is increased mobility options and better distributed accessibility for all to different means of transport. The review from Debrecen was more oriented towards clarifying certain aspects of Malmö's Deployment Plan. Some key points from the review include: <ul style="list-style-type: none"> One main existing issue in Malmö for micro-mobility is its regulation and the limitation of the parking options. One solution, could be to implement a regulation which designates parking in dedicated spots. 	

		<ul style="list-style-type: none"> – The reviewer also asked if they have experts within their team working on the design and implementation of hubs or if they employ a contractor. Maria indicated that they have experts but also work with subcontractors. <p>Debrecen - (reviewer Groningen)</p> <p>The key points from the presentation were:</p> <ul style="list-style-type: none"> – Debrecen is looking into introduce micro-mobility services (which are currently non-existent). – The goal is to properly integrate micro-mobility with PT. The administration is looking at the city characteristics to understand what PT is lacking so that the micro-mobility services complete these. – Debrecen also looks at a way to make PT/micro-mobility services financially attractive for passengers. – Partnerships creation is key in the process as well as finding a business model that is profitable but also advantageous for passengers. – Most significant challenges are: increase in car usage; road congestion; creating PT solutions for remote urban areas; return to pre-pandemic passenger volumes – The city still needs to define the sustainable business models for PPP; stakeholders' cooperation structures; the operational framework; the optimal pricing for passengers. – Expected impact are increased demand for PT and the shift towards sustainable modes. <p>Groningen provided a very thorough review, following the provided template. They analysed Debrecen's DP in detail and offered a lot of helpful comments and suggestions. Some key points included:</p> <ul style="list-style-type: none"> – Citizens' engagement within the DP could be further highlighted. – The decision-making process needs to be made clearer - it's not clear from the DP who will make decisions on implementation. – Add the decision-making process to as part of the planning process, which should also clarify/define the timeline. – More clarity on funding schemes is needed. – The reviewer remarked that to them, it seemed that there could also be issues at urban planning level. – The reviewer also stressed the need to add in or plan for specific steps to be taken after FastTrack ends. – Debrecen's Deployment Plan seems like the first step from "nothing" to "everything". <p>Kadikoy - (reviewer Krusevac)</p> <p>The key points from the presentation included:</p>	
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			<ul style="list-style-type: none"> – Kadikoy's goal is to enhance active travel and a LTZ in the city's historic centre and to have a tailor-made neighbourhood-based multi-modal mobility plan. – Preference for creating UVARs by a smart parking solution instead of direct restrictions. – The biggest issues faced are the reduction of the last mile covered by car and the need to regulate micro-mobility access. – The city needs to create spaces in the city centre and remove cars that are parked in the streets. – The main remaining challenge is land ownership. – Expected impacts of the measures are: decrease in fossil fuel vehicle flow in the city centre, decrease in emissions. <p>The review from Krusevac was oriented towards clarifying certain aspects of Kadikoy's deployment plan. Some key points from the review include:</p> <ul style="list-style-type: none"> – Kadikoy needs to clarify in the DP if they are looking to implement public or private parking. – The city should aim at a PPP and maybe use a portion of funding for micro-mobility, offering subsidies for electric cars could also help with the decrease of pollution. – Changes in zoning system would be necessary. <p>Krusevac - (reviewer Hengelo)</p> <p>Key points from the presentation included:</p> <ul style="list-style-type: none"> – Krusevac wants to introduce a route planner and an e-ticketing system. – Challenges faced: the finalisation of the PPPs; the creation of a unique ticket for several services; the lack of experience for managing bike-sharing; the data management; the financial sustainability. – The city is still looking for funding sources and a marketing plan. – Expected impacts are: the increased use of PT; the increase of bike use. <p>The review from Hengelo was more oriented towards an open discussion in which the reviewer offered some insights from their own experience. Some key points from the review include:</p> <ul style="list-style-type: none"> – Target young people who don't drive for achieving quicker modal shift. – The innovation proposed provides a great opportunity for campaigns to change the mindsets. – Focus on who are the PT users and how to reach car users. Right now the majority of users of PT in Krusevac are students or older people that benefit from subsidies. – Clarify who operates PT in Krusevac. There is a private operator for now but the city of working on a PPP. – Clarify who does what in the DP. 	
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		<ul style="list-style-type: none"> – Clarify where the city stands in terms of funding and political support. Until now the city applied for funding for the bike sharing scheme. <p>Budapest/BKK – (reviewer Kadikoy)</p> <p>Following the presentation of BKK's mobility innovation measure, the following questions were raised:</p> <ul style="list-style-type: none"> – How will BKK connect the new MaaS app to the old app? The ticketing integration, including railway is inspired by applications in the Netherlands. – Which is the funding mechanism? Micro-mobility providers will pay for using mobility points. – How will BKK solve the problems with the vehicles (scooters, bicycles) left on the sidewalks? The plan is to use push notification (through the app) to leave vehicles in the nearest mobility points, otherwise, car users will be penalised. The App will focus on last mile options. – How will the data collection mechanism be deployed? There is an ongoing procurement process to buy a software that will collect data and monitor vehicles. <p>Hengelo – (reviewer Malmo)</p> <p>Following the presentation of Hengelo's innovative measure of developing a light train line between Hengelo and Eschede, Malmö suggested considering a BHLS corridor instead of a train in the first phase of the project. This would provide more information about the attractiveness of the public transport service in the area and implies fewer costs, compared with a rail track and train operation.</p> <p>Groningen – (reviewer Tampere)</p> <p>Groningen's plan is to develop a Roadmap Mobility Hubs, in order to create a city-wide network of neighborhood hubs. Groningen was asked about the rationale for the methodological approach. The mobility innovation in Groningen considers not only infrastructure-related aspects but socio-economic factors. The project starts with the people, and the plans do not consider only the mobility aspects. There is an intention to transfer the pilot beyond the city area, but this necessitates discussion with other cities through the area teams.</p> <p>Main recommendation for such projects - "Make pilots first!"</p> <p>Tampere – (reviewer Budapest)</p>	
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			Tampere wants to follow the example of Budapest for Mobility Hubs/MaaS but needs more time to analyse the situation and to choose the best location.	
CBW Visit to Central Station Hub, velostation and parking facility 25/10/2022	Luca Bellinato, City of Bologna	Budapest Debrecen Groningen Tampere Hengelo Bucharest Kadikoy Malmö EIP	During CBW4 the FastTrackers visited the Central Station of Bologna. The newly refurbished train station in Bologna functions a central multi-modal hub combining, P+R Kiss and ride, PT and local and national train connections. Criticism on the car centred approach of the train station and confusion generated by lack of or unclear signalisation. Challenges of catering towards new transport modes while still guaranteeing the access to the train station in context of car based mobility. Broader question on how to make larger infrastructure projects fit for future transitions.	SMARTA project https://ruralsharedmobility.eu/
CBW Meeting with TPER 26/10/2022	Mirco Armandi, CIO, TPER	Budapest Debrecen Groningen Tampere Hengelo Malmö Bucharest Kadikoy EIP	During the final day of the CBW4 the Public Transport Operator (TPER) presented the MaaS Platform Bologna is aiming to develop based on the existing ROGER app, the current local wayfinding and online ticketing tool.	

Table 14: Summary of Activities Cluster 3, LS4

4.1.5 Learning Sequence 5

During the last learning sequence, Cluster 3 cities worked around remaining challenges such as Financial schemes for MaaS. The Final CBW allowed the Cluster to share the outcomes on their work with a wider audience.

Activity	Speakers	Participants	Key outcomes	Resources
IA Online Peer review Bucharest's deployment plan 28/11/2022 14.00 – 15.30	Dan Rusu, Bucharest	Vectos EIP (2) Groningen ICLEI Antwerp Gdynia Mobiel 21 CERTH (2) Stockholm Tampere Brasov Debrecen Braga Budapest Bologna Kadikoy Munich	In the first part of the webinar EIP provided an overview of the sections where LAs shall provide further information. Then TPBI present their plan to integrate the data sets of the different Public Transport operators in order to increase the capacity to manage the Public Transport system in a coherent way.	
IA Webinar - Financial schemes for MaaS 16/01/2023 14.00 – 15.30	Stijn Vernaillen, City of Antwerp Julia Culver, Nomisma Andras Vagany, BKK Anne-Charlotte Trapp, Eurocities	Brasov, Belgrade Antwerp Kadikoy Sofia Riga Braga City Institute Lviv Bucharest Debrecen Bologna Budapest Groningen Stockholm BKK Mobiel21 EIP CERTH Vectos EIP Eurocities ICLEI	<p>During the webinar Anne-Charlotte Trapp, from Eurocities presented three different ways on how MaaS may be managed:</p> <ul style="list-style-type: none"> – The MaaS could set all prices for the transport services it offers, so akin to the <i>Integrator</i> model. – Transport firms could sell trips to the MaaS company, who then combines these into complete trip tickets and sells them to the customers. This is the <i>Intermediary</i> setting, and it is how the company "Whim" operates. – Finally, transport firms may keep all pricing control, and the MaaS only offers a <i>Platform</i> on which trips using multiple firms can be more easily bought. <p>During the webinar representatives from Bologna (Nomisma) and Budapest shared their status of MaaS development as well as the main business model related questions. The question of who covers the long-term organisational costs is still to be decide in both cities.</p> <p>Stijn Vernaillen presented the business model Antwerp has put in place for its MaaS and compared it against other models such as the ones currently developed ion Brussels or Berlin.</p> <p>Stijn highlighted that a MaaS system is not a costs saver, and that it is important to think beyond re-selling of tickets as this does not generate enough revenues. It is important to think in term of product combinations such as a combination of a Parking fee and the ticket for a Micro-mobility ride.</p>	Vincent A.C. van den Berg, Henk Meurs, Erik T. Verhoef, Business models for Mobility as an Service (MaaS), Transportation Research Part B: Methodological, Volume 157, 2022, Pages 203-229.

Table 15: Summary of Activities Cluster 3, LS5

5 Learning outcomes Cluster 4

Cluster 4 focused its work on the integration of data sets for a better fleet and traffic management. Four cities took actively and consistently part in the activities under this thematic cluster: the city of Bologna, the city of Braga, the city of Sofia and the city of Belgrade.

5.1 Overview of activities and key outcomes

5.1.1 Learning Sequence 1

During the first learning sequence the Cluster 4 cities explored different innovations that would fit their needs and got a good overview of the existing innovative tools to further integrate data sets.

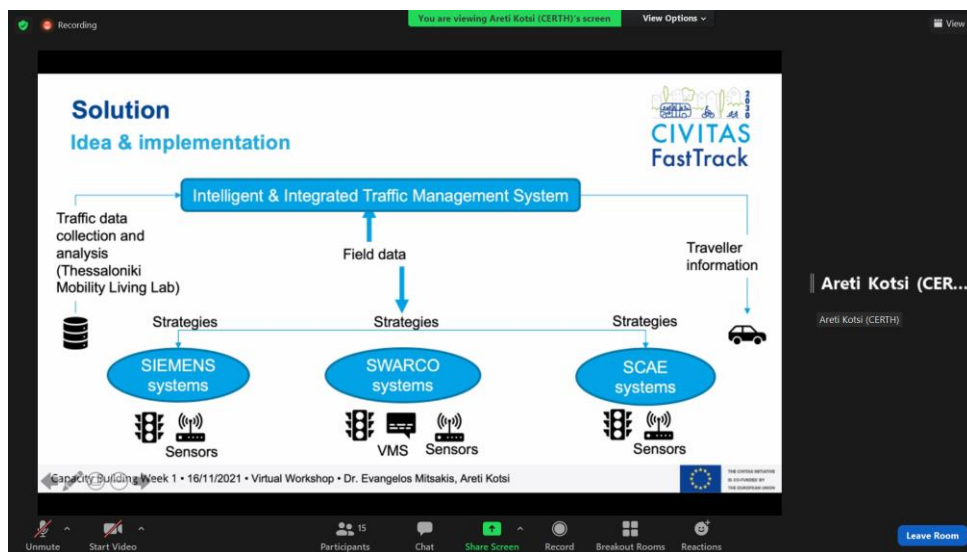


Figure 19: Screenshot from Areti Kotsi's presentation

Activity	Speakers	Participants	Key outcomes	Resources
Workshop 1: Setting the scene: current trends & challenges 16/11/2021 10.10 – 11.15	Georgia Ayfantopoulou, CERTH Johanna Tzanidaki, ERTICO Luca Bellinato, Municipality of Bologna	Braga Belgrade Bologna CERTH	<p>In this workshop key challenges and innovation trends were presented and discussed. ERTICO presented 3 innovation trends in traffic management, underlining the holistic approach, as a need for effective traffic management implementation. The innovation trends in traffic management is TM 2.0, Mobility Network Management (MNM), Digitalisation and Connectivity.</p> <p>Main challenges identified by all participants:</p> <ul style="list-style-type: none"> – Organisational issues – Investment/ financing needs – New challenges associated with changing mobility behavior and mobility patterns due to the pandemic – Lack of high-quality real-time data for traffic management purposes – Lack of safe infrastructures for active mobility modes – Budget constraints – Lack of dynamic data management – Lack of electromobility management <p>Trends cities are willing to pick up:</p> <ul style="list-style-type: none"> – Smart city, including smart urban mobility – Mobility-as-a-Service – Multimodality – Cost-efficient solutions – Platforms for data management and data sharing – Data management and data sharing – Traffic management of VRUs 	<p>Šusteková, D., & Knutelska, M. (2015). How is the artificial intelligence used in applications for traffic management. Machines. Technologies. Materials., 9(10), 49-52. https://stumejournals.com/journals/mtm/2015/10/49.full.pdf</p> <p>Dr. Sven Maerivoet. Artificial Intelligence and Traffic Systems. https://www.trasaid.eu/wp-content/uploads/2017/Presentations/2017-09-27-tml-netherlands.pdf</p> <p>Social Traffic Management. MAPTM. https://maptm.nl/portfolio/easytransfer/</p>
Workshop 2: Get inspired by peer cities' innovations 16/11/2021 11.30 – 13.05	Luca Bellinato from the Municipality of Bologna Areti Kotsi from CERTH/HIT Jose Maria Salanova Grau	Braga Bologna Belgrade CERTH	<p>During this workshop three traffic management innovations were presented.</p> <p>Bologna's dynamic traffic light system.</p> <p>The goal of the traffic control system is twofold: to reduce congestion and travel time locally, for the private cars owners and give priority to the public transport vehicles. Almost 100% of the public fleet have priority. The data archive is enriched with data coming from the local police. Bologna's challenge for the future is to comply with a new need: to give priority to TRAMWAY in real-time. In fact, Bologna is going to have a new tramline, in 3-4 years, this needs priority not in a predictive way, but in real time.</p>	

	from CERTH/HIT Lennart Englund from the City of Gothenburg		<p>The traffic management decision support system for Thessaloniki Agglomeration. After an overview of what was existing before the project was implemented, Mrs. Kotsi explained the project idea and implementation, in particular she focused on the real time traffic management and traffic data and the software behind it. The challenge was to integrate 3 pre-existing individual systems. The data collected are multi-source: floating car data, weather data, sensor data and video data.</p> <p>Thessaloniki's Smart Mobility Living Lab. Main elements discussed were the Thessaloniki Smart Mobility ecosystem, data acquisition, services provided and how data analysis is done (case of Covid was used as an example). Main goals of the Lab are to support innovation and to test solutions in the city. The living lab fosters initiatives encouraging development in the transport sector and the sustainability of mobility schemes by the provision of novel technologies and innovation. They can cover all the needs: they work throw algorithm development, Mobility modelling and system simulation, system development, implementation and testing. The Ecosystem is the most import asset of the Living Lab. Every element of the network is integrated, they are contributing with data and collaborating. Is one of the largest living labs in Europe.</p> <p>Lennart Englund from the City of Gothenburg presented Gothenburg's integrated soft priority system for public transportation, responding to a specific request from Bologna as interested in this topic.</p>	
Workshop get inspired by suppliers 17/11/2021 10.10 – 11.10	Tamlyn Shimizu from BABLE Milena Vuckovic, Yunex Traffic doo Belgrade Wouter Florizoone presented Telraam Richard Stones from CPTED UK Ltd Laurent Glorieux, Citywa y Wannes De Smet Be-Mobile	Braga Bologna Belgrade CERTH	<p>This workshop provided an overview of traffic management innovations developed by the private sector.</p> <p>Tamlyn Shimizu from BABLE indicated that only a 10-23% of urban innovation projects are scaling: lack of information and collaboration, inadequacy of traditional tools to cope with the complexities of a smart city are the key barriers to this. She presented the BABLE as a use-cases based bundle of solutions, products, expert consultancy and city training for smart city transformation.</p> <p>Milena Vuckovic presented Yunex Traffic doo. Siemens Mobility will be implementing new technologies in 300 intersections of Belgrade with tram prioritization. Data from road sensors will feed an adaptive traffic network management system.</p> <p>Vasilis Mizaras presented Deeptraffic which supports traffic management as a service, integrating multi-source data for traffic management scenario building and eventually returning the information both to the operator (KPIs) and the end users via mobile app.</p> <p>Wouter Florizoone presented Telraam, a smart traffic counting tool, which can be adjusted in a window screen and has the possibility of counting different modes, but also its web-platform accessed by citizens.</p> <p>Richard Stones from CPTED UK Ltd presented technical solutions for crime prevention. Crimes can lead to failure of mobility schemes (when failing to connect with the community or if there is lack of ownership). Portable solutions placed for increasing surveillance and provide community ownership feeling are expected to reduce crime.</p>	

			Cityway smart digital solutions for MaaS were presented by Laurent Glorieux, with mobile services that provide a seamless mobility experience for the traveller. Be-Mobile traffic information as a product of revolutionary data collection methods and modern data analysis was presented by Wannes De Smet, as the path to facilitate total traffic management and give public authorities, companies and travellers control over their mobility.	
Workshop 4: Cluster learning programme and individual objectives 18/11/2021 10.30 – 12.15	All participants	Bologna Braga Belgrade CERTH	<p>During this workshop Cluster 4 identified the main challenges to tackle in the framework of FastTrack.</p> <p>The most “popular” challenges (picked by more than 2 cities) concern the:</p> <ul style="list-style-type: none"> – Lack of funding mechanisms – Data integration from many providers – Improvement of data collection systems <p>On the other hand, the challenges that received a high prioritization score include:</p> <ul style="list-style-type: none"> – Lack of funding mechanisms – Lack of dedicated personnel for data management – Data integration from many providers – Improvement of data management – Improvement of data collection – Need to transit to real-time data – Pricing policies – Environmental traffic zones – Changing mobility behaviour – ITS systems – Traffic light systems – Digital infrastructure 	

Table 16: Summary of Activities Cluster 4, LS1

5.1.2 Learning sequence 2

During Learning Sequence 2 the LAs and AC of Cluster 4 learned about various types of mobility innovations and best practices, strategies, and technologies and met several city peers. Particular focus on learning was placed on data collection, selection, and management, seeing the appropriate use of data as a critical step to deploying innovative mobility solutions. Consequently, a basic understanding as regards multimodal traffic management and innovative data collection have been generated. The Ambassador City of Cluster 4, Bologna as well as all the other LAs, seemed to benefit from the activities of this LS, since its representatives participated more actively in the discussions and asked several questions.

Several topics that were brought forward to be tackled from the AC/LAs refer to governance issues, planning and regulation, data management, digitalisation, funding issues and co-operation among the involved actors, in the view of multimodal traffic management systems. During this learning period there was no concrete “replication” happening from one AC or LA to another city, since it was a primary step of the process and the AC/LAs spent more time to listen, observe and consider the knowledge exchanged by the FastTrack peers.



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Background efforts in Thessaloniki

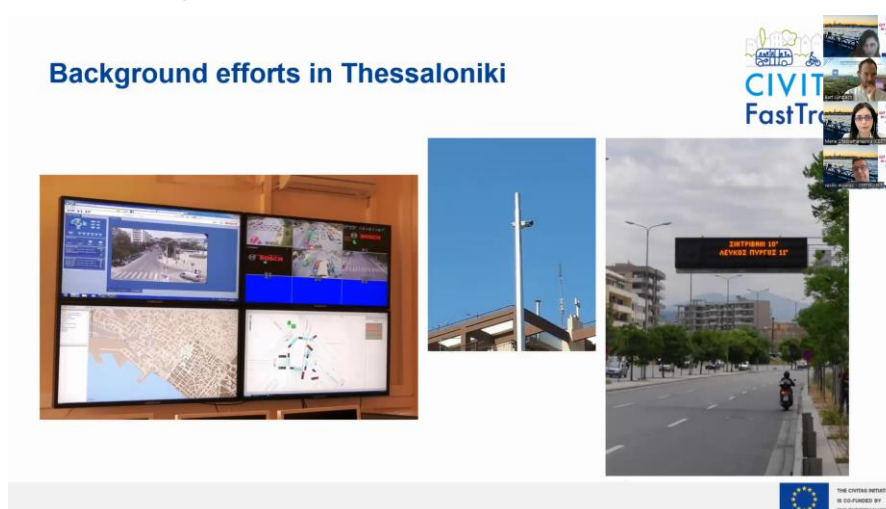


Figure 20: Screenshot from workshop

Activity	Speakers	Participants	Key outcomes	Resources
IA Webinar: Introduction to Traffic Management 01/03/2022 11.00 – 12.30	Areti Kotsi, CERTH-HIT, Dr. Evangelos Mitsakis, CERTH-HIT)	Braga Bologna Belgrade Prague CERTH Eurocities	The scope of the webinar was to provide an introduction to the fundamentals of traffic management and control, to highlight the state-of-the art in the domain and present to LAs the innovations related to Intelligent Transportation Systems. Key topics covered: <ul style="list-style-type: none"> – Traffic management and control core elements and principles – Funding of ITS projects – EU policies – Cost benefit analysis and impact assessment of ITS projects – Business and governance models for sustainable ITS – Data repositories and data exchange – Future trends and developments 	
Co-learning workshop: Data collection methods for traffic management 29/03/2022 11.00 – 13.00	Anne-Marie Van Asbroeck / Mobilidata Josep Laborda, CERTH Vassilis Mizaras, CERTH	Bologna Braga Belgrade Sofia CERTH	This workshop provided overview of 3 interesting examples of data integration projects. Anne-Marie Van Asbroeck presented Mobilidata which intends to improve the traffic situation in Flanders and to provide road-users with real-time information to help them on their journeys so that they can make the mobility choices that work best for them. Mobilidata is in line with Flemish policy. Mobilidata is co-creating a whole raft of innovative mobility solutions with private partners, based on a digital infrastructure, smart traffic lights and high-quality, sustainable data sources. By working with Mobilidata solutions, policymakers, businesses, government departments, local residents and app-builders can all combine to make being on the road smoother, more sustainable, more comfortable, and safer for every road-user. Josep Laborda presented a 4-step framework for mobility data sharing: <ul style="list-style-type: none"> – Set standards: proper format data towards interoperability – Collection & share data – Think of the storage: decentralized storage or data aggregators. – Analysis and application: urban planners, regulators, policymakers, researchers 5 factors to consider about data operation: <ul style="list-style-type: none"> – Architecture: centralized vs decentralized – Data: raw (most pure) vs aggregate – Data scientists: in house or outsourcing – Openness: open vs proprietary (legacy) – Level of risk and innervation Moliere project example: MOLIERE build open data commons for mobility services a Mobility Data Marketplace (MDM) underpinned by blockchain technology, raising the profile, visibility, availability, and utility of geo-location data from GALILEO, and test it to fuel and demonstrate a diverse set	Aifantopoulou, G., Mylonas, C., Dolianitis, A., Stamelou, A., Psonis, V., & Mitsakis, E. (2020). National Access Points for Intelligent Transport Systems Data: From Conceptualization to Benefits Recognition and Exploitation. <i>arXiv preprint arXiv:2010.12036</i> . https://arxiv.org/pdf/2010.12036 DATEX II. https://www.datex2.eu/ Socrates ^{2.0} - TMex protocol. https://socrates2.org/activities/pilot-designs

			<p>of concrete, highly relevant mobility scenarios and use cases where geo-location data is key, addressing the needs of cities, public transport authorities, mobility service providers, and end-users.</p> <p>Vassilis Mizaras provided an overview of innovative data sources.</p> <ul style="list-style-type: none"> – Road site detectors – Floating car data – Connected car data – Bluetooth/Wi-Fi sensors – GPS location 	
Co-learning workshop: Multi-modal urban traffic management 31/03/2022 10.00 – 12.30	Jos van Vlerken, City of Copenhagen Leire Serrano, Tangent project Bart Lijmbach and Mr. Floris Hooft, Ask&GO	Bologna Braga Belgrade Sofia CERTH	Within the peer-learning workshop of Cluster 4, five presenters shared their experience in urban cycling traffic management (the Copenhagen case), new tools for optimizing traffic management operations in a dynamic way (the TANGENT project), Social Traffic Management (the Ask&GO services provided in the Netherlands), Higher Level Traffic Management centers (the case of Thessaloniki) and cost-benefit analysis for ITS and C-ITS projects.	https://imetbgr-my.sharepoint.com/:u:/g/personal/hitlab3_imetb_gr/EWU7_vvI-GhpLnroQax-02JMB_kQ-cW_VJzKf8V-hw_US2g?e=fqsOhJ TANGENT project https://tangent-h2020.eu/

Table 17: Summary of Activities Cluster 4, LS2

5.1.3 Learning sequence 3

During Learning Sequence 3 the initiation of the discussion over the Deployment Plans preparation of the LAs/AC of Cluster 4 took place. Additionally, site visits during CBW3 took place for onsite peer-learning. The lead discussion/learning theme of this learning period were the funding opportunities for innovative mobility solutions.

During the intermediate period of the Learning Sequence 3 the LAs were focused on the exchange of experience that will take place in the context of FastTrack and how they will share knowledge successfully. Several topics that were brought forward in order to be tackled from the AC/LAs refer to approaches for funding, governance, financial and big data management. Also, the LAs were concerned for contracting issues (content, context, management, risks), data interpretation and cooperation (with both internal and external actors).

During this learning period there was no concrete “replication” of practices from one AC or LA to another inside cluster 4, but mostly an overall knowledge exchange and best practices sharing between the project participants, mainly focused on the presentation and analysis of several innovative mobility solutions.

All the LAs stood out during this period by making an excellent effort to prepare the presentation of the first draft of the Deployment Plan. This was an important moment of the learning process. LAs seemed more confident to discuss and describe their innovative mobility solution and how to deploy it. Also, during this period a more targeted knowledge transfer between the technical support partner (CERTH/HIT) and the LAs took place for the specific innovations that they wanted to include in their Deployment Plans. Traffic Management Center was the main idea of Braga and Belgrade while MaaS seemed to be the case of Bologna and Sofia. Bologna was still trying hard to grasp all the knowledge as regards developing governance model and a business framework for their MaaS project.

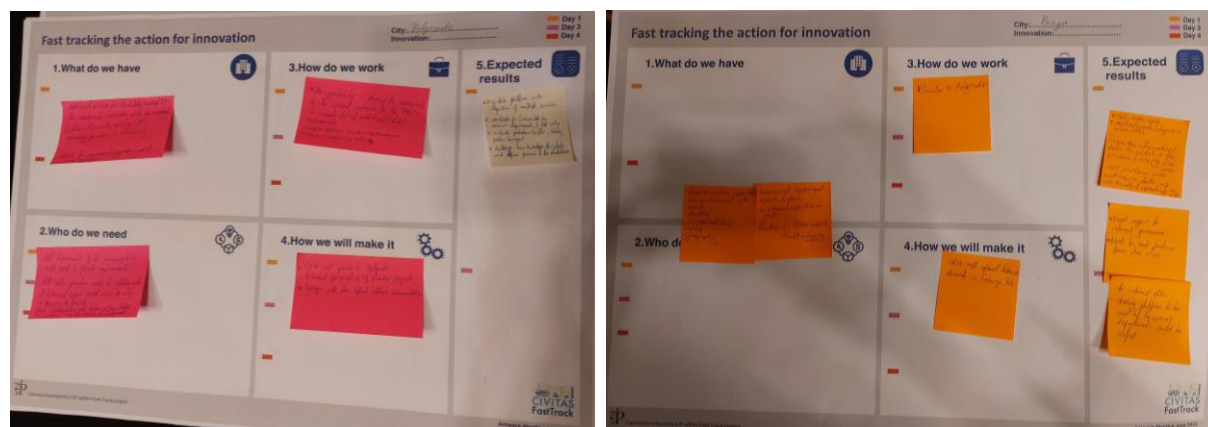


Figure 21: Canvases filled out by Braga and Belgrade

Activity	Speakers	Participants	Key outcomes	Resources
Webinar: Preparation for CBW3 activities 1/2 26/05/2022 10.00 – 11.00	All participants	Bologna Braga Belgrade Sofia CERTH	The webinar helped to define the focus to take during the workshops of CBW3.	
Webinar: Preparation for CBW3 activities 2/2 27/05/2022 11.00- 12.00	All participants	Bologna Braga Belgrade Sofia CERTH	The webinar helped to define the focus to take during the workshops of CBW3.	
CBW Co-creation workshop How 'shovel ready' is your – Technicalities and skills innovation? 20/06/2022 16.00 – 18.00	Lili Momchilova, Sofia Urban Mobility Centre Luca Bellinato, City of Bologna Pedro Moreira City of Braga Jelena Davidovic, Secretariat for Transport, City Administration of the City of Belgrade	Bologna Braga Belgrade CERTH	During the workshop the cities exchanged which skills would be required to set up their innovations. <ul style="list-style-type: none"> For Braga a clear need for further experts in geography and data management got identified. The expertise does not need to be internal, the technical skills could also be provided through cooperation with academia for instance. In Belgrade, on a procedural level the discussions allowed to identify the need to ask all departments to provide their data related needs. This can be seen as catalyser for further cooperation between those departments in a longer run. The help of an external technical experts could be appropriate to assist the city administration. For the technical specifications, CERTH provided detailed and specific information for each of the cities as follow up to the workshop. 	Mitsakis, E., & Kotsi, A. Costs and benefits of bundled C-ITS services. The C-MobILE approach. Link FESTA Project Handbook Version 7 . Lu, M., Turetken, O., Adali, O. E., Castells, J., Blokpoel, R., & Grefen, P. W. P. J. (2018, September). C-ITS (cooperative intelligent transport systems) deployment in Europe: challenges and key findings. In <i>25th ITS World Congress, Copenhagen, Denmark</i> (pp. 17-21). Link .
Parallel site visits, Cluster 4,	Lili Momchilova, Sofia Urban	Bologna Groningen CERTH	The site visit to the Flemish Traffic Management Center provided Cluster 4 cities with key information on traffic management beyond city boundaries. The participants identified the availability of camera equipment in strategic locations, the staff skills their awareness and the	Mobility Trends, Smart Ways To Antwerp:

Visiting the Flemish traffic control center 21/06/2022 13.00-17.00	Mobility Centre Luca Bellinato, City of Bologna Pedro Moreira City of Braga Jelena Davidovic, Secretariat for Transport, City Administration of the City of Belgrade	Sofia EIP	structured cooperation between departments as key for success. The prioritisation allowed by the traffic light system in Antwerp also contributes to the efficiency of the traffic management.	https://mobilitytrends.slimnaaranwerpen.be/maglr-en/start
Co-creation workshop business model challenge 22/06/2022 13.30-16.00	Lili Momchilova, Sofia Urban Mobility Centre Luca Bellinato, City of Bologna Pedro Moreira City of Braga Jelena Davidovic, Secretariat for Transport, City Administration of the City of Belgrade	Belgrade, Braga, Bologna, Sofia CERTH	<p>This workshop was dedicated to identifying the business models that would support the deployment of traffic management platform for the local authorities.</p> <p>Belgrade</p> <ul style="list-style-type: none"> – The discussion started with the costs and a time horizon (short, mid, long – term) – costs referring to preparation/ main cost is the actual project execution - the time plan for this one is more than 2 years/ costs for training for data analysis are also needed – The main steps are: political support before anything else, technical procurement, annual financial plan of the organization, - the political support is at the same time the main barrier – concerning the technical procurement the contribution of an expert is very important. In terms of funds: there is a local budget but this could not cover all costs if it's too big – perhaps other funding sources may be needed – however, they have no experience participating in EU-funded projects – extra discussion and explanation on how CEF projects work could be beneficial for the city. – Overall the planned revenues will be more related to societal benefits – revenues may come from the data itself if the TMC is then allowed to sell the data they own to 3rd parties - social benefits projection is very important to receive the political support <p>Braga</p> <ul style="list-style-type: none"> – Cost structure is like Belgrade/ some EU funds are already gained/ one important short-term cost is extra human resources 	<p>D4.5 Final Business Models. C-Mobile. https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5ded49460&appId=PPGMS</p> <p>Suratno, B., Ozkan, B., Turetken, O., & Grefen, P. (2018, July). A method for operationalizing service-dominant business models into conceptual process models. In <i>International Symposium on Business Modeling and Software Design</i> (pp. 133-148). Springer, Cham. https://www.researchgate.net/profile/Baris-Oezkan-5/publication/326064934_A_Method_for_Operationalizing_Service-Dominant_Business_Models_int</p>

			<ul style="list-style-type: none"> – The major steps include the definition of technical requirements/ political willingness at higher level (mayor, municipal assembly)/ legal aspects of tendering – local budget is not sufficient – they always apply for national funds as well – Revenues are social benefits/ organizational revenues for the municipality <p>Sofia</p> <ul style="list-style-type: none"> – The scope is to optimize all modes under one common platform. – The project is in the very beginning/ the overall is estimated to rise to circa 16M/ the funding will be half national and half EIB as a loan. – Some extra discussion on data to be collected is needed. – Revenues are mostly related to societal benefits for citizens and operators. – Further steps include stakeholders' cooperation and engagement to see all the different aspects and interests 	o Conceptual Process Models/ links/5b62c679458515c4b2595e4f/A-Method-for-Operationalizing-Service-Dominant-Business-Models-into-Conceptual-Process-Models.pdf
CBW Co-learning Workshop on Governance / Political Will 23/06/2022 09.45-11.00	Lili Momchilova, Sofia Urban Mobility Centre Luca Bellinato, City of Bologna Pedro Moreira City of Braga Jelena Davidovic, Secretariat for Transport, City Administration of the City of Belgrade	Belgrade, Braga, Bologna, CERTH, Sofia	<p>The workshop made clear that there is a need of clear political governance, centralized decisions and objectives to structure a uniform traffic management platform for the local authorities.</p> <p>In terms of Governance:</p> <ul style="list-style-type: none"> – It is important to make the top management aware of the importance of a traffic management organization. – The training of technical staff is key. – More inter-departmental cooperation is key. <p>In terms of Planning:</p> <ul style="list-style-type: none"> – Staff needs experience and to be socialized to write appropriate plans. <p>In terms of Engagement and Participation:</p> <ul style="list-style-type: none"> – Stakeholders needs collection as key step. – Internally ask about preferred structures. – Also ask citizens and companies. <p>Funding:</p> <ul style="list-style-type: none"> – European project can be a good source of funding. 	

Table 18: Summary of Activities Cluster 4, LS3

5.1.4 Learning Sequence 4

During Learning Sequence 4 discussion and support of the Deployment Plan of each AC/LA took place, as well as the provision of additional learning material. All the AC/LAs created Deployment Plans and had an even more clear idea of their selected innovative mobility solution and the activities it requires as well as their capacity as cities.

Several topics that were brought forward to be tackled were capacity building for the deployment of the selected innovative mobility solution (e.g., capacity building inside the city's team working on the innovative mobility solution implementation), data purchasing from the public sector (e.g., Athens' traffic management center), how and if it is possible to integrate more traffic information in a city's platform (e.g., travel times), how to share free data with specific users, technical challenges for the implementation of an integrated data platform

During this period (apart from the already acknowledged improvement of Bologna and Braga) Belgrade made an excellent impression with its clearly stated Deployment Plan and the clear necessities/questions. Because of funding difficulties, it was decided to modify the Deployment Plan of Sofia from their initial idea of MaaS towards capitalizing on the knowledge and data from the INNOAIR Project "Green urban transport on demand" in order to replan specific public transport lines and also to help the traffic management of the area.

For the transfer of knowledge and replication activities within this sequence, we can clearly state that the Deployment Plan of Bologna has been greatly influenced by the experience of Antwerp and that Bologna and Braga had a very successful exchange on governance issues.

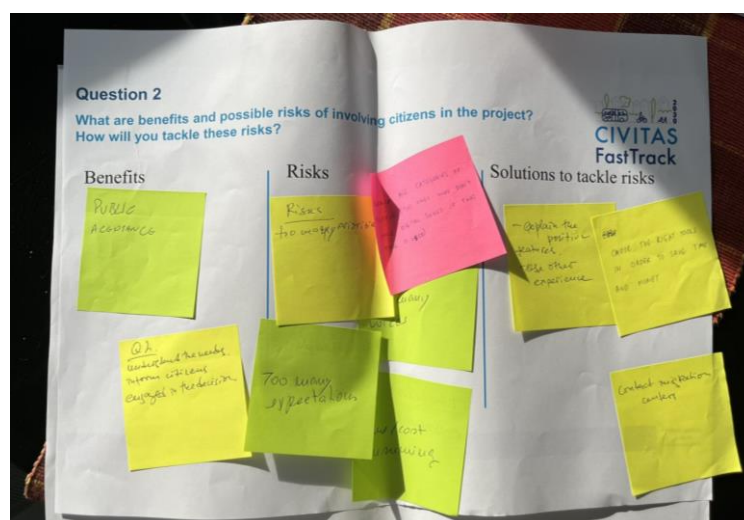


Figure 22: Site visit and autonomous buses in Barkarbystaden (left) workshop on citizen participation (right)

Activity	Speakers	Participants	Key outcomes	Resources
Webinar: Deployment Plan meeting 10/10/2022 10.45 -13.45	All participants	Belgrade, Braga, Bologna, Sofia CERTH	During the webinar Cluster 4 partners and cities did an update on the advancement of the Deployment Plans and the needs for further exchange. The question of revenue streams and business models was predominantly raised. Bologna's representative expressed the need for some more input from Antwerp on the Public Private Partnership and Business Models for MaaS. A separate online webinar was organised under LS5 to tackle this need. As an example of revenue stream generation for Belgrade, CERTH mentioned the case of Athens, where revenues are generated by selling traffic data.	
Stockholm – site visit to Nobina, a public transport operator who run e.g. autonomous shuttles in public transport 09/09/2022	Jens Lindström, city of Stockholm	Belgrade Braga Bologna Sofia CERTH Groningen ICLEI Eurocities Riga Brasov Munich EIP Vetos Mobiel21 Kadikoy Antwerp Hengelo Budapest Debrecen Brno	At the site visit in Barkarbystaden, a recently developed peri-urban suburb north of Stockholm, emerging on a disused airfield. Local Affiliates and partners engaged in discussions with representatives from the private urban logistics company, Nobina. A central question that emerged from this discussion was how to develop this area in a way that encouraged using public transport. By working closely with city planners and designing roads that prioritise the bus system, they cut travel time by 50% and have guaranteed a commuting time into the city centre, regardless of the time of day. This has resulted in the modal share of public transportation use which is nearly as high as in the city centre itself, at 67%. The key to this quick transformation: cooperation.	
CBW 4 Participatory processes in mobility innovation 24/10/2022	All participants	Belgrade, Braga, Bologna, Sofia CERTH	During the workshop on citizen engagement, the group identified different steps of citizen involvement in the context of mobility data platform development: <ul style="list-style-type: none"> - Collect needs on Application /Information to better use the Public Transport system. - Involvement can be guaranteed through incentives to switch modes of transport. 	
CBW4 Peer review – poster session	András Vágány of BKK	Budapest Bologna Sofia	Each Cluster 4 city got an extensive peer-review of their Deployment Plan. Key outcomes of the exchanges are summarised below.	ReVeAL project: https://civitas-reveal.eu/

25/10/2022	Gabriele Pinese, City of Bologna Gergana Ugrinska and Bissera Dimitrova of the Sofia Urban Mobility Center Jelena Davidović of the Belgrade Secretariat of Transport	Belgrade CERTH	<p>Bologna (reviewer Braga): The deployment plan was presented by Gabriele Pinese of the Municipality of Bologna. The MaaS innovation explained in the deployment plan aims at more user freedom, real time info-mobility, social inclusion, increasing user loyalty and reducing car ownership. It foresees links to the national digital service on info-mobility. The city has experience with mobility bonuses and integrated traffic light management. The reviewer was Pedro Moreira from Braga asked Q: “what do you want to upgrade—you already have something?” The representatives from Bologna replied that on the ROGER App it is possible to get bus and parking tickets and mobility bonuses, but it needs to integrate taxi services, the people mover, cultural events and also all of the metropolitan railways to become a regional access point to data and services, also integrated with national data. “Trip planner” is most efficient in integrating the data of users, including parking for handicapped users. But integration is a long process, involving bureaucracy and procedures. The monthly service has been customised to the needs of several categories—elderly and students. Pilot systems calculate needs after 10 uses, recognising patterns—a bundle of services can be calculated in real time.</p> <p>Sofia (reviewer Bologna): The deployment plan was presented by Gergana Ugrinska and Bissera Dimitrova of the Sofia Urban Mobility Center (SUMC) and reviewed by the Bologna team. Based on an EU Urban Innovation Actions (UIA) project INNOAIR, the deployment plan introduces a new flexible tariff policy and a pilot on-demand green public transport (electric minibus) service, supported by an advanced IT platform with machine-learning capabilities, for three newly developed areas beyond the main public transport routes. The idea is to provide sustainable travel alternatives to reduce car traffic and improve air quality. Through the collection and analysis of data generated by user demand (via mobile App), SUMC will gain a better understanding of user needs in growing areas of the city, valorising the data to improve public transport in general. Among the challenges faced is how to include “non-digital people” in this system and how the collected data can be used outside the project for other purposes.</p> <p>Belgrade (reviewer Sofia): the deployment plan presented by Jelena Davidović of the Belgrade Secretariat of Transport was reviewed by the team from Sofia. Belgrade seeks to improve its capacity in working on multi-modal traffic management driven by Big Data. Belgrade faces several challenges regarding data use: in particular, the city needs real-time data to support planning, including for non-motorised traffic, and collection of traffic data on suburban areas, as counters are only present in the city centre. Different organisations within the Municipal administration could benefit from having access to such data. It also needs to clarify the issues of data ownership by private companies and the lack of data-sharing arrangements in contracts. Belgrade requires further technical expertise and knowledge and training in data analysis. Belgrade also expressed a need for more knowledge on how to access EU pre-accession funds for public transport infrastructure. It was suggested to provide a clearer overall timeframe, quantification of the baseline and the costs of the deployment plan.</p>
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			Acceleration involves defining the legal relationships and conducting a needs analysis for the data platform: what kind of platform do we want? Braga (Reviewer Belgrade) The Deployment plan presented by Pedro Moreira from Braga was overall assessed as providing good to very high quality of information. The main comments concerned the impacts: Greater elaboration of the expected impacts of the innovation deployed would be beneficial.	
CBW4 Visit to Central Station Hub, velostation and parking facility 25/10/2022	Anna la Piana Andrea Morini of MetroPark	Belgrade, Braga, Bologna, Sofia CERTH	During the site visit at the Central Station of Bologna participants saw the new features including the modernised high-speed train area, the People Mover/Marconi Express monorail to Bologna's international Marconi Airport, the Kiss&Ride Area, the bus stops and future tram areas and the access to the new parking complex. The control centre provided a fascinating perspective on the comings and goings of vehicles and the assistance provided to drivers when exiting the facility. The tunnels stretched all the way to another part of the neighbourhood—it is one of the largest parking facilities in the Region.	
CBW4 - Meeting with TPER 26/10/2022	Mirco Armandi, TPER	Belgrade, Braga, Bologna, Sofia CERTH Mobiel21 EIP Vectos Eurocities ICLEI	During the last day of the CBW4 in Bologna Mirco Armandi from TPER explained the new features of Bologna's public bus transport system and the ROGER app, including real-time info-mobility, payment options and e-ticketing. He also pexplained the operation of the existing MaaS and how it will be upgraded and expanded. ROGER allows paying for parking in 25 cities in the Emilia-Romagna Region. During the height of Covid, some TPER buses had an "sniffing WiFi" which could detect if the bus was occupied to excess capacity by detecting how many smart phones were on the vehicle. The algorithm would calculate the presence of 30 people if 25 smartphones were detected, with a fairly low error level. TPER also provides "taxi vouchers" for certain categories of citizens: older people, families at risk, poor families.	

Table 19: Summary of Activities Cluster 4, LS4

Learning Sequence 5 – Cluster 4

During Learning Sequence 5, Cluster 4 Cities participated in the activities organised by the other Clusters including the online peer-review of Bucharest's Deployment Plan which was thematically very much aligned with the work done under Cluster 4.

The Capacity Building Week in Budapest aimed at providing the key outcomes of Cluster 4 activities as well as the lessons learned especially regarding the integration of data for better and more sustainable traffic and public fleet management.

6. Concluding remarks

The peer learning activities carried out under FastTrack helped all cities to define their Innovation Deployment Plan more precisely. By the end of the project 23 Deployment Plans were submitted. Deliverable 4.5 provides an exhaustive overview of the submitted Plans. Even though the innovations in all four Clusters were different in many ways, there were also commonalities, such as the need for diversification of skills, the need for interdepartmental and inter-institutional collaboration, the involvement of all stakeholders and coordinated data management. Further recommendations emerging from the exchanges will be specified in Deliverables 4.3 and 4.4.

This thematically structured summary of all the exchanges that happened during the FastTrack Capacity Building Programme represents a source of information for city practitioners looking for inspirations and insights about sustainable mobility innovations of various types. Each of the summarising tables also provides an overview of resources and project suggestions that can help practitioners get informed about further innovation developments.

In the framework of FastTrack cities were able to exchange experiences in tackling various issues that can accelerate or hinder the implementation of mobility innovations, and during study visits they were able to see in practice various innovative solutions that they then applied in the development of their Deployment Plans. The peer-review session during the CBW4 in Bologna was a good opportunity for each city to present in detail its mobility innovation, which led to a refinement of it based on the suggestions received, but also inspired the other cities to take up some of the ideas that were suitable for their innovations. Exchanges with the other clusters in the framework of the Capacity Building Weeks and Intermediary Activities have also strengthened the approach to implementing the innovations.

The core outline of the exchanges show how peer-learning in itself is an accelerator for many European cities. In-depth common reflections, collective brainstorming, evaluation provided by peers, does contribute to deploy sustainable mobility innovations in a more efficient and rapid way throughout European local authorities. According to the FastTrack community, the benefits of the exchange are multiple, they help to avoid unnecessary steps, to think ahead concerning implementation, to better assess the risks taken.

The outcomes of the discussions presented here shall function as a mirror that the FastTrack cities hold up to other city practitioners and which may help them to identify control questions they should apply to themselves when starting to deploy sustainable mobility innovations.

7. Annex – Eight case studies

In this Annex you can find the eight case studies developed by the FastTrack project in the following order:

1. Antwerp - Sustainable Urban Logistics Planning
2. Bologna - The MaaS Upgrade
3. Braga - Better information through better data integration
4. Bucharest - Integrated Mobility Center
5. Budapest - Next step on the road to a full MaaS
6. Debrecen - Connecting the dots : Mobility hubs as a game changer
7. Ljubljana - Regional e-bike sharing scheme
8. Stockholm - Charging Infrastructure for heavy vehicles

All are available online on the FastTrack website under the 'Resources' section:
<https://fasttrackmobility.eu/resources>.

CASE STUDY

Antwerp

Sustainable Urban Logistics Planning



*Sustainable
and Clean
Urban Logistics*

Context and rationale

Antwerp is a city with about 520.000 inhabitants in northern Belgium, the Flanders region. It is located 40 km north of Brussels, the capital of Belgium, and 15 km south of the Dutch border. The metropolitan area has about 1.200.000 inhabitants. Antwerp's port is the second largest in Europe. The city has elaborated and adopted a Climate Plan, an Integrated Urban Development Concept, and a Sustainable Urban Mobility Plan at the regional level. Mobility planning takes place both at the municipal level and the regional level, with the city council being seen as the main decision-maker in terms of mobility issues concerning the city of Antwerp. There are several offices / teams dealing with mobility issues: The "Smart Ways to Antwerp"- team is focusing on soft measures like communication supporting behavioural change, whereas the "Modal Shift"-team's focus is on hard measures. Other departments / offices are involved in mobility issues as well, such as Operations, Public Domain, Business & Innovation, Events. The city administration is continuously adapted to current challenges. The appointment of a climate protection council and ambassador are the latest examples of this.

Initial challenges and needs

Within the scope of the FastTrack project, Antwerp chose to develop a **Sustainable Urban Logistics Plan** (SULP). For the design and implementation of the SULP, the following three major barriers were identified:

- The SULP needs to maintain **political support** during and after its development.
- **Private stakeholder support**, especially from the logistics sector, could be a second barrier. The SULP should take into account the economic reality and the variety of stakeholders involved.
- The third barrier is a scarcity in **urban logistics data**. This is an issue many cities face. It takes time and creative solutions to overcome and it means that for the case of Antwerp, the SULP will be based on available data. As a result, some analyses may not be possible. Yet the data analyses should be realistic and at the same time ambitious, as they are the basis for the goals set by the SULP.



Image: Frederik Beyens

Innovation developed

The Sulp is a masterplan for sustainable and future-proof urban logistics. It is a policy document that defines ambitions and goals. There are five guiding principles which are preconditions for the preparation of the Sulp:

1. The city is taking on a growing and diversified role in the issue of sustainable urban logistics for its territory and jurisdiction.
2. The city is committed to reaching supply and demand of logistic flows through a broad stakeholder approach and with attention to the distinction between occasional and structural flows in the city.
3. The city is committed to stimulating a wide range of logistical solutions within a broader ecosystem by extending “network thinking” to the local Antwerp fabric.
4. The city adopts an area-oriented approach.
5. The city commits to 5 ways to achieve sustainable urban logistics.

Lessons learnt along the FastTracking way

The methodology for developing a Sulp is very specific. However, designing the deployment plan for FastTrack has proven to be an instructive thinking exercise. Parts of it can be applied to other domains and projects. In FastTrack, both parties involved in the Sulp's design, Smart Ways to Antwerp and the mobility department worked closely together alongside the external party, Rebel. In the context of the Sulp, cooperation with other departments has taken place or is being planned. This also happens of course on other occasions, but working together on this project proved again that internal cooperation is very valuable and needed.

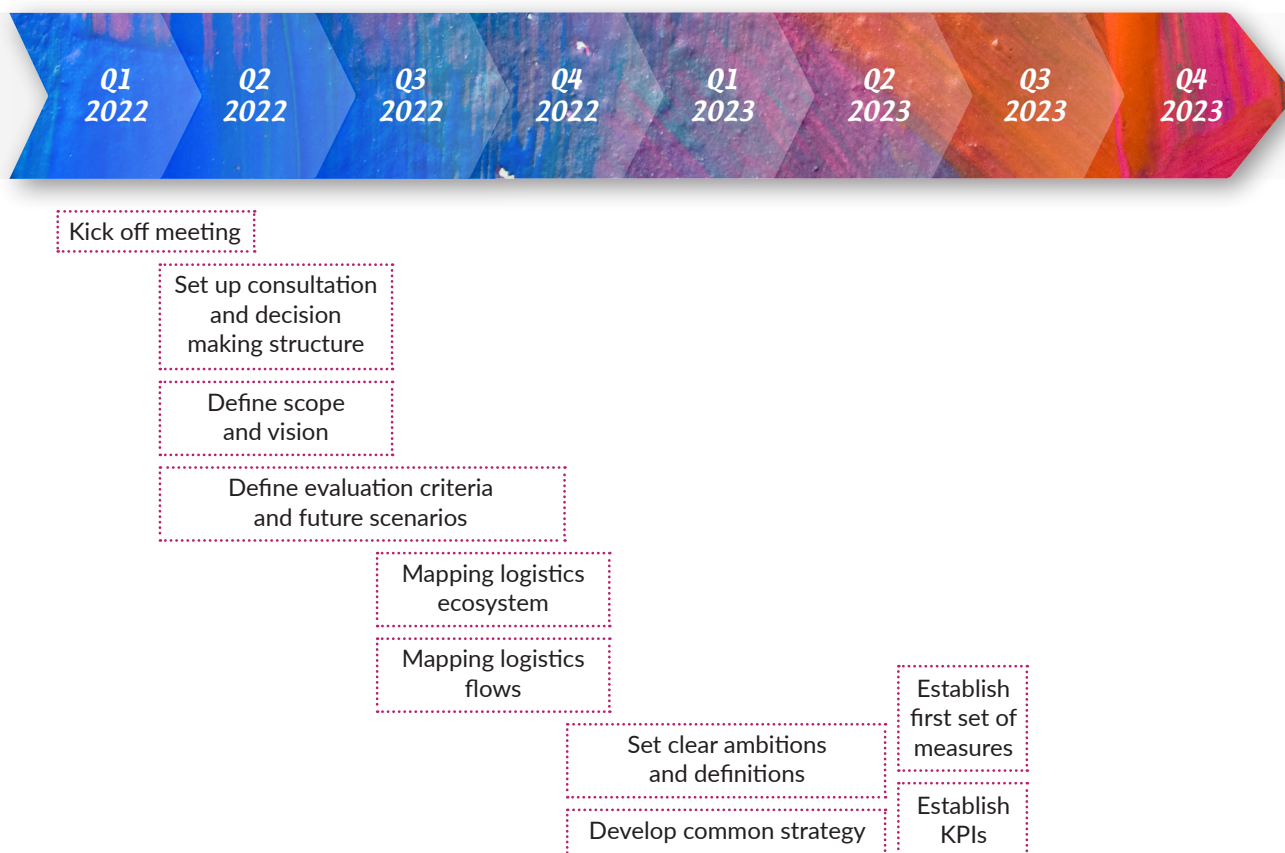
The questions provided in the deployment plan template allowed the team to critically think about the process until now and to deepen where needed. Working on this deployment plan also stimulated the team to think more in advance about certain phases or approaches.

Acceleration factors

- Good internally aligned coordination between teams
- Thinking of Sulp steps well in advance
- Finding the right balance in cooperation with private sectors (number of events, inputs asked)
- Having “neutral” external partner to help the process



Timeline - The deployment road ahead



Read more

Deployment Plan
Smart ways to Antwerp www.slimnaarantwerpen.be/en/home

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info@FastTrackMobility.eu



CASE STUDY

Bologna

The MaaS upgrade



**Integrated
Multi-modal
Mobility
Solutions**

Context and rationale

Bologna is the capital and largest city of the Emilia-Romagna region in Northern Italy. It has nearly 400.000 inhabitants. The metropolitan area including the city and its functional urban area has about 1.000.000 inhabitants. It is one of 13 Italian metropolitan areas which receive specific funding and support from the Italian government because of their importance for the country's development. The university plays an important role within the city, which is also characterised by high-level culture, historic architecture, cuisine, and industry. A Sustainable Urban Mobility Plan (SUMP) was elaborated and adopted at the level of the metropolitan area (Metropolitan City) in 2019. Within Bologna's city administration there is a dedicated mobility department, which is collaborating with the Urban Planning, Environment and Economy Departments in terms of mobility planning at the city-level.



Initial challenges and needs

Barriers faced:

- Technical barriers, time lags or gaps in real-time information collection and transmission;
- Technical difficulties in integrating systems of different service providers: payments, cultural activities, local transport, data collectors/processors;
- Legal issues regarding public-private partnerships (PPP), GDPR/privacy issues, compliance with NIS2 Directive (cybersecurity);
- Limited user skills and aptitudes for use of mobile systems, esp. among elderly;
- Technical barriers for users: generation/type of smart phone required to use system;
- User attitudes & behaviour—resistance to shifting to public transport, mobile apps and payments;
- Difficulties in engaging private mobility providers to work with public transport providers, due to competition and reluctance to share data;
- Private companies are interested in innovative products and services driven by profit but may not consider the value of inclusivity and social cohesion.

Innovation developed

To address growing mobility challenges and improve air quality, the Municipality of Bologna seeks to introduce a more advanced **Mobility-as-a-Service** (MaaS) initiative, building on and integrating investments foreseen under the SUMP (2019) (tram, trolleybus, electric public vehicles, ZTL Ambientale, Green Area, sharing-mobility), the ROGER App, and funded under ROP ERDF 2014-2020 and NOP METRO actions for sustainable mobility in urban areas. The main objective is to reduce private vehicle use in favour of public transportation and all forms of sustainable mobility that are present at the regional level, while also making the service more user-friendly and socially inclusive—in line with the specific objectives of the SUMP, which foresees implementation of MaaS. The mobility innovation is an upgraded Regional MaaS system, managed by operators that have signed commercial agreements, reaching level 4 Integration.

The system includes various components and features:

- Adaptive MaaS—multimodal travel planner that can be personalised to the user's profile providing a dynamic offer of local public transport and mobility services depending on needs by location and time;
- Realtime infomobility and interactive maps, including color-coded information on bus occupancy;
- Dematerialised travel tickets available through integrated and/or unified payment systems with personalised bundles and all-inclusive mobility subscriptions;
- Promotions, reward systems, incentives: a) for users with rewards, bonuses, cashback, gamification based on calculation of carbon footprint; b) for MaaS operators with subsidised fees, discounts for sustainable/inclusive solutions sold;
- Multilingual App: for foreign visitors and residents;
- Integration of Culture Card and event ticketing: for access to cultural facilities and events in the metropolitan area and other platforms of tourism at the regional level.

Front-end: Mobile App (ROGER)

- NFC-HCE Technology for Mobile ticketing;
- Payment interfaces: onboard card reader, SIM sensors (but users can still buy tickets via kiosks, traditional retail outlets);
- Sensors and data collection system (sniffing WiFi to detect occupancy of buses, GPS trackers of public transport, AVM);
- Integration layer with Data Sharing (DS) and Service Repository Facilities (SRF) connection to National Access Point (NAP).

Back-end: Digital Platform (LEPIDA)

- Platform collects and transmits data;
- Commercial contracts with service providers (transport and other) provide basis for data sharing;
- Integration of systems at the regional level with NETEX/SIRI protocols;
- Infomobility monitors at bus-stops;
- Call centre.



Lessons learnt along the FastTracking way

Bologna's Deployment Plan was developed on the basis of an already quite detailed proposal, yet the savings of time and effort resulted from the fact that the FastTrack methodology and approach provided a structure and framework that helped to more clearly understand the elements and inputs for a SWOT analysis with clear benefits for the overall management of the project. This means that once funding does become available, Bologna will be able to start the project much more quickly, since many of the issues have already been addressed in this deployment plan. In other words, FastTrack has contributed to **savings of time and effort** (for internal personnel), a **reduction in the need for external consultants** (savings in cost), and the **availability of better data and information** for decision-making processes concerning the project (savings in effort).

Through participation in the programme, it was possible to gain further insights for example, to learn about the MaaS experience in Antwerp, Budapest

and Stockholm and to learn about smart contracts, scalable cloud solutions for sharing mobility data, and conducting living and virtual labs.

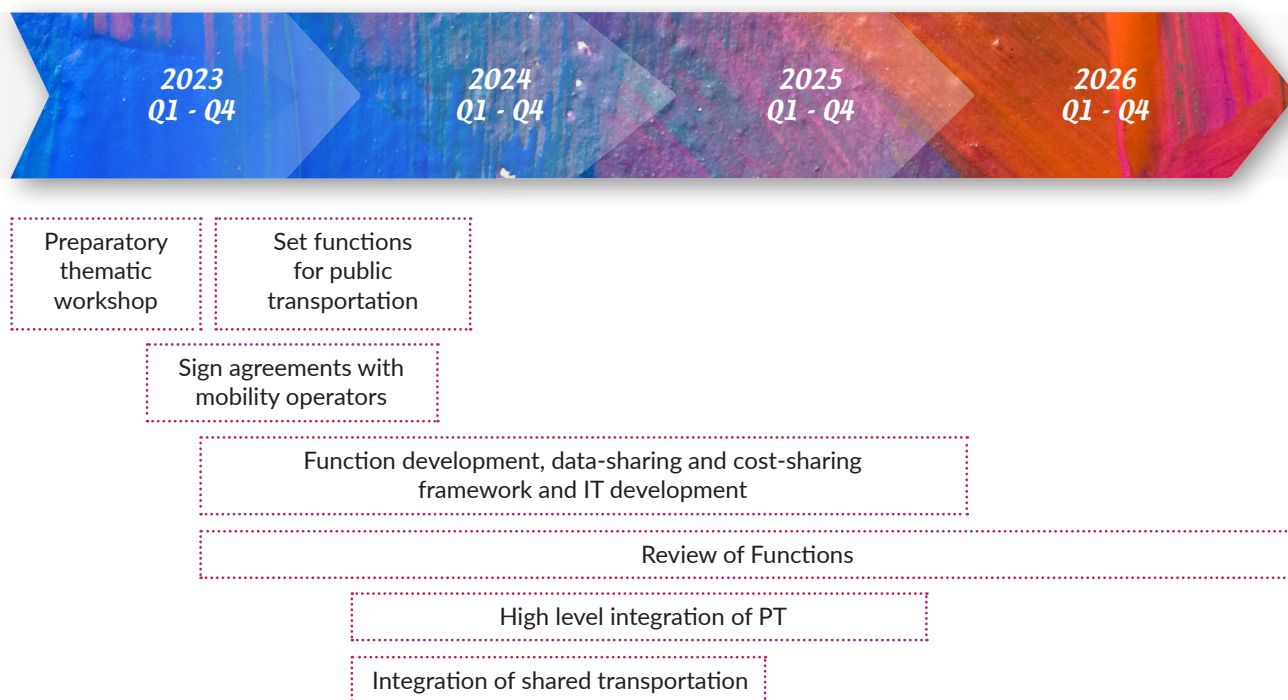
Regarding social inclusion and accessibility, while the physical limitations of people with mobility or visual impairments are generally clear and addressed, the lack of digital skills or access to devices or payment cards (digital divide) and lack of language understanding (cultural divide) of public transport users are not always taken into account—the latter aspects were highlighted by the Stockholm representatives.

Acceleration factors

- Political buy-in;
- Right cooperation framework, build trust amongst partners;
- Define right scope of the MaaS, think along the necessary combinations of services.



Timeline - The deployment road ahead



Read more

Deployment Plan

SUMP: <https://pumsbologna.it>

SPINE project: www.spine-project.eu

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info@FastTrackMobility.eu



CASE STUDY

Braga

*Better information through
better data integration*



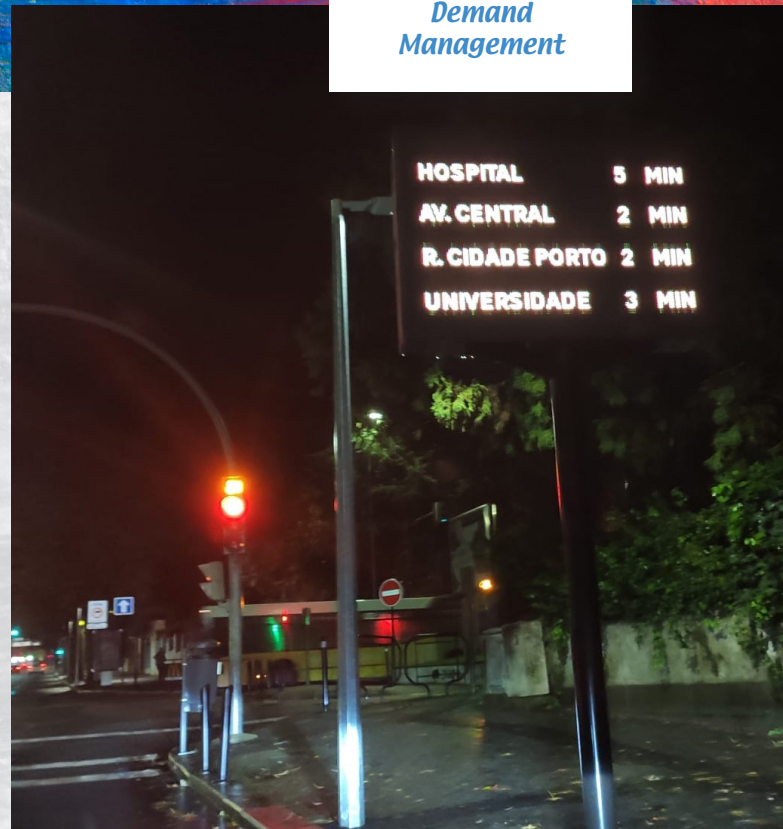
*Traffic and
Demand
Management*

Context and rationale

Located in the north-western region of mainland Portugal, Braga is situated in the Cávado Valley. Administratively, the municipality of Braga is the capital of the Braga district, which comprises a total of 37 parishes. Situated on an important road axis, the city has experienced great economic, social and cultural development. By signing the Covenant of Mayors for Climate and Energy, the Municipality of Braga has committed itself to supporting the implementation of the 40% greenhouse gas reduction target by 2030, the reduction of energy poverty and the creation of a long-term vision to achieve climate neutrality by 2050. In this context, taking into account the Sustainable Development Strategy and the path already developed by the municipality, the most ambitious local objective is to reduce its CO₂ emissions by at least 55% by 2030. In this way, it is hoped to accelerate the carbon neutrality of the territory in an equitable and sustainable way.

Initial challenges and needs

Braga is facing mobility challenges such as increasing motorisation rates, by-pass traffic in the city downtown, lack of intermodal facilities, ineffective parking management, and lack of a cycling network.



Innovation developed

The Mobility Innovation “Roadmap to an effective traffic control centre” aims to develop an efficient strategy for traffic system management in Braga, and to implement this strategy to improve the current situation by combining all existing and new information sources. This requires the implementation of an interdepartmental traffic management centre.

Through the data collected, processed and integrated in a facility such as the Intelligent Traffic and Mobility Management Centre, the city will be able to have a deeper knowledge of, for example:

- Identification of urban areas with higher traffic volumes;
- Identifying roads with higher cycling demand and analysing the specific conditions of these roads (prioritising investments);
- Rewarding companies that pay particular attention to the sustainable mobility of their employees.
- Planning appropriate rules to strengthen multi-mobility and inter-mobility;
- Identifying key public transport connections and improving public transport services;
- Awareness of behavioural changes linked to personal incentives.

The information system of the service will automatically collect information from public space (environmental sensors, smart lightning, smart crosswalk, traffic sensors) through APIs, process all the information with the platform of urban intelligence and send the results for the smart city server (the back office of the webpage/app) and external displays with useful information.

Lessons learnt along the FastTracking way

Braga received many types of knowledge via FastTrack:

Knowledge of successful implementations:

- By investigating and analysing successful traffic management system deployments in other cities such as Bologna, Braga was able to pick up lessons and apply similar tactics to our own.

Technical understanding:

- Understanding of the technical components of traffic management systems, such as data analysis, system design, and equipment selection. This helped Braga in selecting the best technology and designing a solution that suits our specific requirements.

Regulatory understanding:

- Advice on regulatory requirements and standards for traffic management systems. Ascertain that our system complies with all applicable regulations and is interoperable with other systems in the region.

Organisational knowledge:

- Understanding of the organizational structure and processes required to effectively deploy a traffic management system. This will assist Braga in developing a clear and effective project strategy, allocating resources accordingly, and effectively managing stakeholders.



The workshop funded by the Innovation Fund and conducted by Bable was of significant importance for the city of Braga. Bable is a company that specialises in providing solutions and services for smart cities, mobility and transportation. The company has extensive experience and expertise in working with cities around the world to develop and implement innovative solutions for urban mobility. The workshop was designed to provide insights into best practices for real-time traffic management and other mobility solutions. Bable has worked with a range of cities and organisations and has developed a deep understanding of what works and what doesn't. The workshop provided the Municipality of Braga with access to this knowledge, enabling the municipality to benefit from the best practices and lessons learnt from other cities. Additionally, Bable offers valuable information about technology solutions and vendors in the smart city space. The workshop provided the Municipality of Braga with knowledge to make informed decisions about which solutions to implement and how to do so in the most effective manner. Collaboration opportunities are also possible between the two organisations, which can result in identifying areas of mutual interest and exploring opportunities for future collaboration. By leveraging the knowledge and experience of Bable, the Municipality of Braga can identify the most effective solutions and approaches to real-time traffic management and other mobility challenges, helping to create a more sustainable and efficient urban environment for its citizens.

Acceleration factors

Introducing data-driven decision making into a traditional, bureaucratic organisational structure can be a challenge, but it we believe that we can accomplished that by:

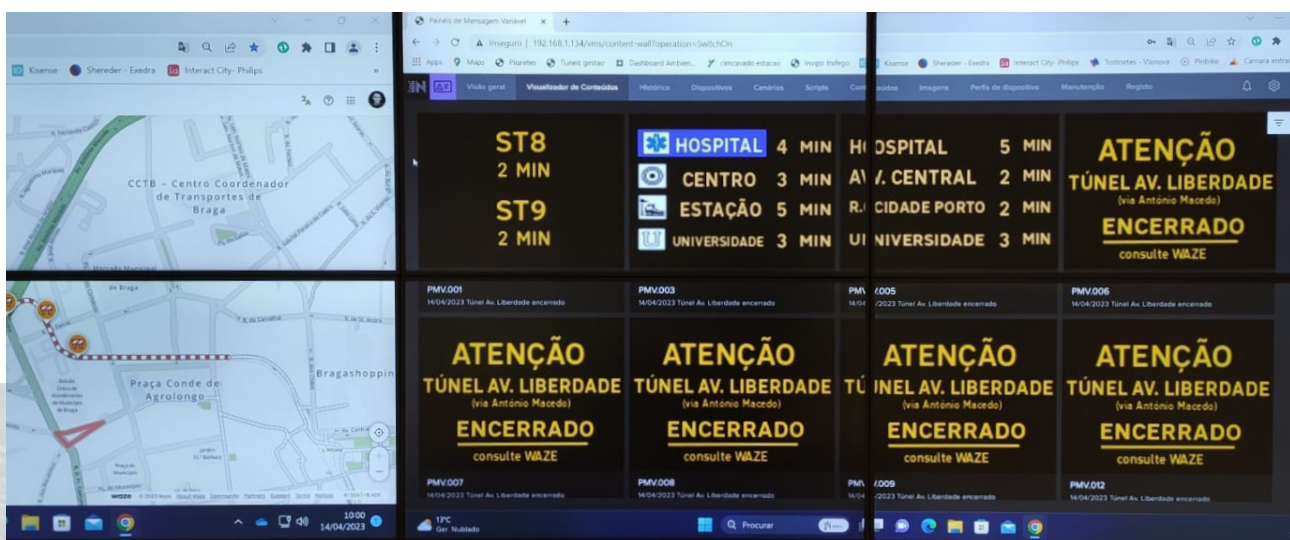
- obtaining buy-in from top-level executive;
- establishing a culture of data-driven decision making;
- creating a robust data infrastructure;
- streamlining processes;
- communicating effectively with stakeholders;
- implementing measures to hold those responsible accountable.

To achieve these goals, employees must be trained to embrace the use of data in decision making, processes must be reviewed and simplified, and stakeholders must be informed about the benefits of data-driven decision making.

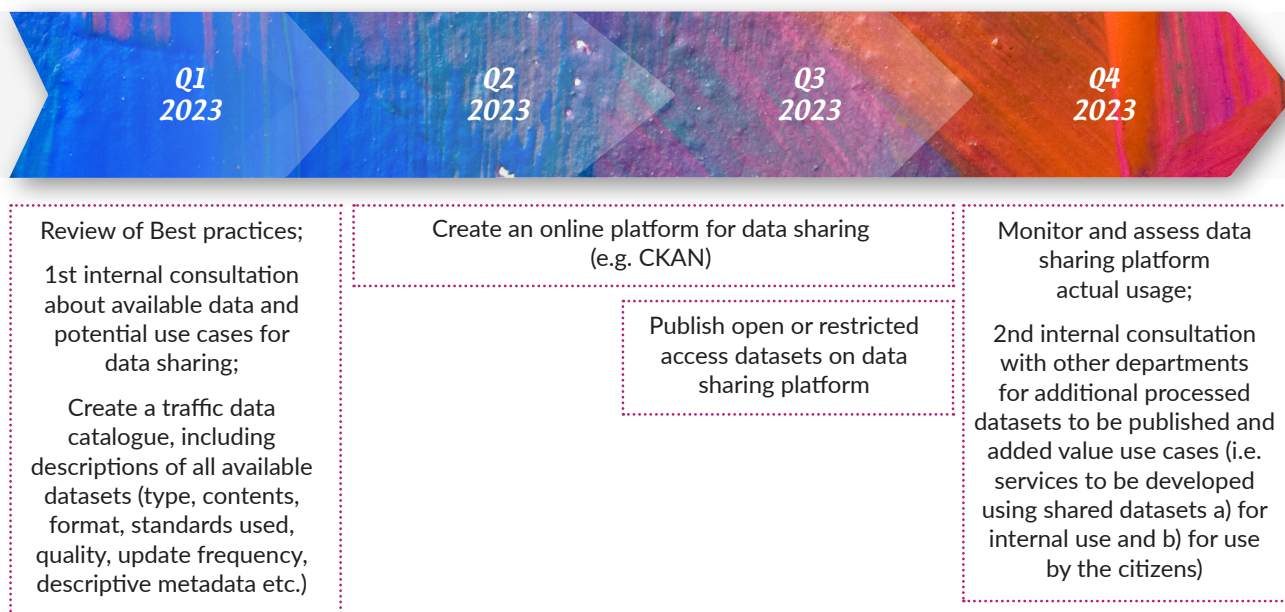
This transition will take time and may require persistence, but with a commitment to continuous improvement, it is possible to successfully do it. Thus, the degree of experience in implementing such structures in other municipalities or public organisations, with the defined level of interdependencies, is a major need.

"Because of its emphasis on real, tangible solutions that can be executed quickly and efficiently, the FastTrack process is particularly well-suited to our needs. The curriculum stresses a hands-on, collaborative approach that includes government officials, industry leaders, academics, and residents from around our city. We believe that the FastTrack process will allow us to expedite mobility innovation while simultaneously ensuring that our solutions are effective, sustainable, and inclusive. We may prevent costly mistakes and build on the successes of our peers by leveraging the best practices of others."

Pedro Moreira, Head of Transport Authority and Mobility Management Unit, City of Braga



Timeline - The deployment road ahead



Read more

Deployment plan

- Bicification project www.bicification.eu
- <https://pinbike.web.app/opendata/21>
- New project for intermodal data: Reactivity: www.reactivity-eit.eu
- Real-time information for our Bus Terminal: <https://cctb.cm-braga.pt>

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CASE STUDY

Bucharest

Integrated Mobility Center



*Traffic and
Demand
Management*

Context and rationale

Bucharest, the capital of Romania, has about 1.800.000 inhabitants and is located in the southern part of the country. The city is surrounded by Ilfov County with its 300.000 inhabitants. The Intercommunity Development Association for Public Transport Bucharest-Ilfov (TPBI) covers both the city and the county. The Association was set up in 2018 and since then has undertaken mobility planning at the urban and functional urban area level, coordinating the interests of many smaller peri-urban and rural municipalities as well as the capital city. Not yet fully developed governance structures and frameworks are major challenges. The Intercommunity Development Association for Public Transport Bucharest-Ilfov is perceived as a pioneer of new solutions, ready to test and adopt any kind of innovation as soon as it evolves. Learning from other cities, participating in research and innovation projects, and external consultancies are channels through which innovation is fed into decision making processes or operational activities.

The association has elaborated and adopted a Climate Plan and a Sustainable Urban Mobility Plan (SUMP-BI) which were validated by Bucharest Municipality and Ilfov County. Mobility planning takes place at the level of the functional area (agglomeration), and each municipality is represented in the association's board and validates decisions.



Image: Sieges Vides

Initial challenges and needs

Various Information Technology System (ITS) applications are deployed in an uncoordinated way in the urban areas covered by TPBI, leading to low efficiency of system deployment and low interoperability between the public transport systems. Processes at TPBI level and in relation to operators are currently not sufficiently digitized to create an integrated flow of data and adequate decision support for real-time public transport management.

Existing equipment and operating technologies of the public transport system (both at the TPBI and operator level) fail to provide the basic facilities for efficient public transport management and effective management of commercial costs and revenues.

Innovation developed

Within FastTrack the main objective of the mobility innovation selected by TPBI is to create an **Integrated Mobility Center**. This centre would ensure the electronic collection of public transport and mobility data from all sources and IT systems in order to obtain coherent, complete, and integrated information to assist decision-making for optimising public transport and for making investments, including monitoring the SUMP.

Two Modules compose the Integrated Mobility Center:

Module 1 – The planning software is the IT support necessary to develop and update the Integrated Transport Program for the Bucharest-Ilfov region. It configures lines, respectively routes intended for public transport in the Bucharest-Ilfov region and it establishes specific traffic schedules. It can integrate data from the monitoring application on average journey times recorded at interchanges and communicate data to the planning application on public transport routes/lines and traffic schedules implemented across the network.

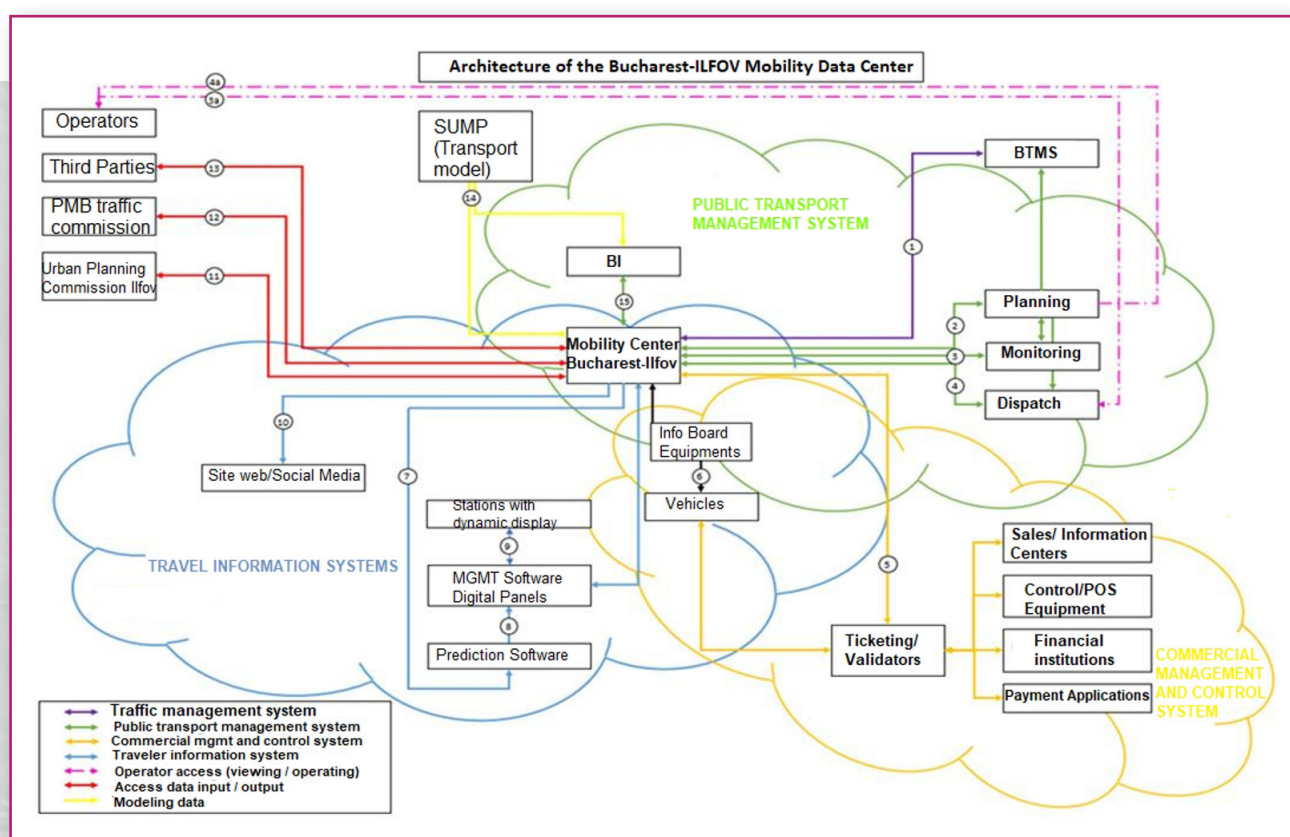
Module 2 – The monitoring software is the IT support for monitoring the circulation of public transport on routes in relation to the transport program of the

operators based on the management delegation contracts/service provision contracts. It will be able to integrate the data related to the planned transport performance (the timetables of the public transport lines) and retrieve data (GPS coordinates, speed, route, vehicle identification elements on the route, etc.) from the systems in which they are collected at the operator level. At the same time, it will analyse in a unitary way the way in which the transport operators ensure the transport service at the planned parameters through the delegated transport program through planned-realised comparative analysis, but also through appropriate reporting according to TPBI requests.

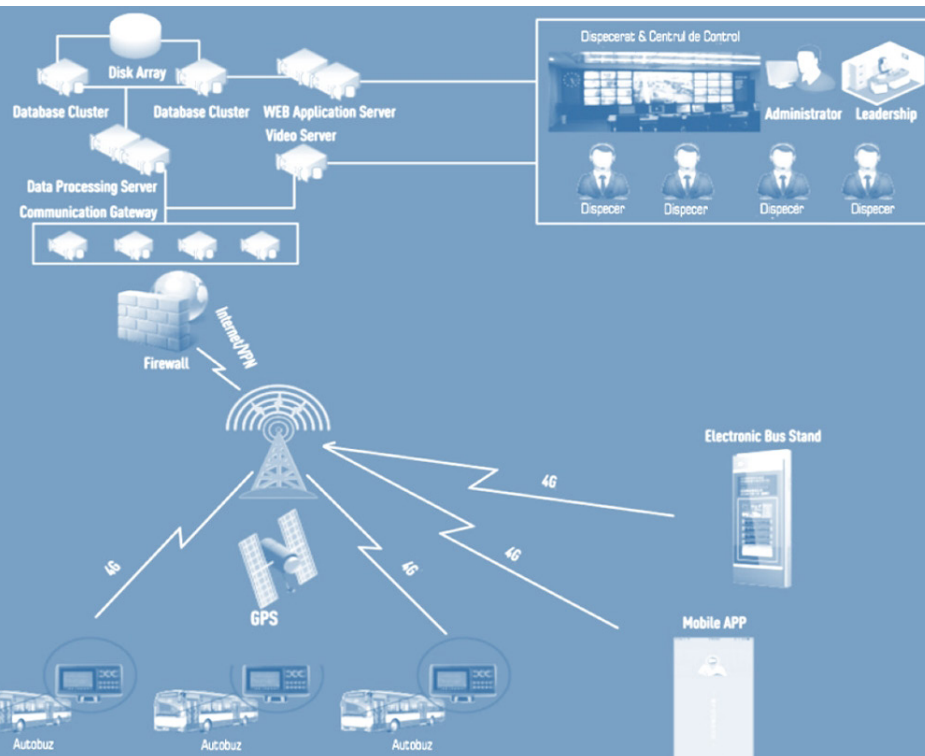
The Mobility Center will be integrated with all ITS systems of TPBI through open data

The questions provided in the deployment plan template allowed the team to critically think about the process until now and to deepen where needed. Working on this deployment plan also stimulated the team to think more in advance about certain phases or approaches.

Regarding the Mobility Center, Module 3 (separate project) will include the acquisition of a new, modern dispatching system that will enable the transmission of open data from the four transport operators to the integrated mobility centre.



The principle diagram of the dispatching system



Lessons learnt along the FastTracking way

During the FastTrack programme, **Dan Rusu**, Project Manager, and his colleagues re-analysed the needs and re-evaluated the original plan. Together with the monitoring, planning and IT departments, they managed to improve the technical characteristics and the integration of equipment and operating technologies.

Through this collaboration, the project proposal, which was on standby for a long time with decision-makers, became a strategic and important project for the local authorities.

It led decision-makers to increase the budget compared to the initial project and significantly shortened the time needed for preparing documents, launching the tender and implementing the project.

Through the participation of the TPBI team in the FastTrack learning programme, the first contracting stages of the project started at least **6 months** ahead of schedule, and the budget allocated for the project was increased by approximately **15%** according to the team in TBPI.

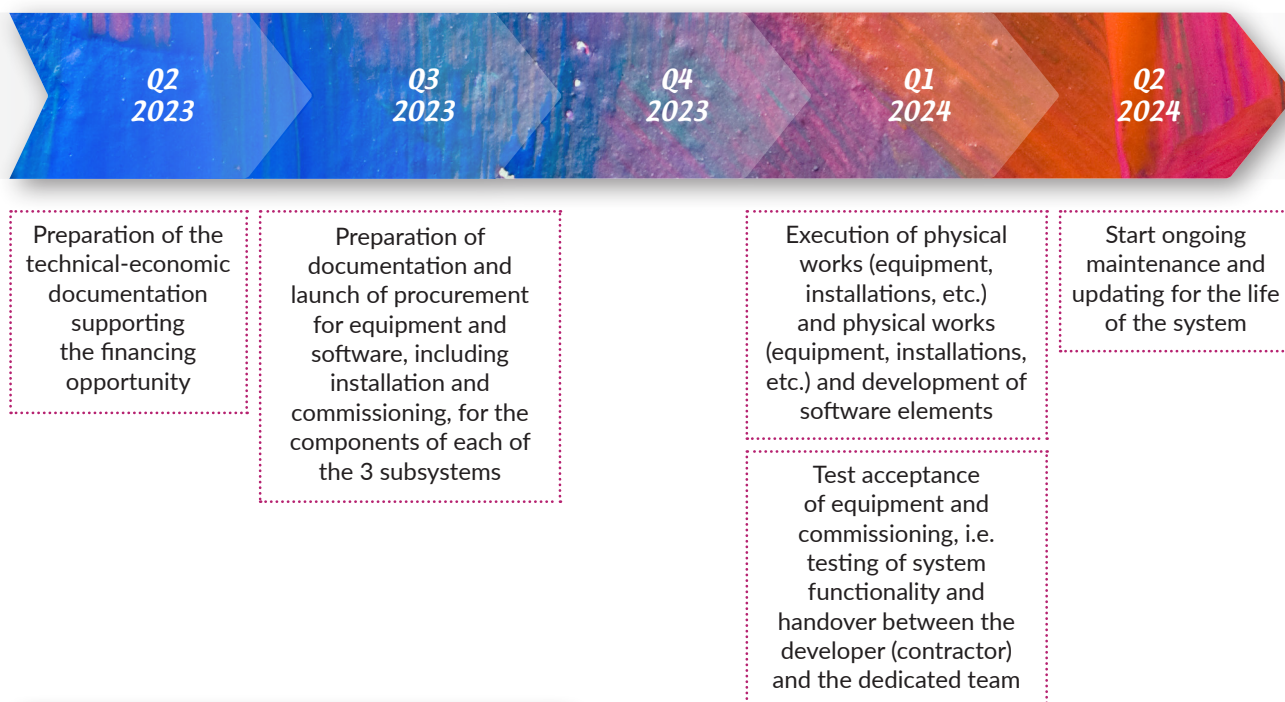
"We managed to adapt new policies and strategies regarding the planning part of public transport and the technologies used, through the presentations made by the Local Ambassador - Budapest, information that will help us in the proper implementation of the Integrated Center project of Mobility."

Dan Rusu, TPBI

Acceleration factors

- Clearer technical specifications
- Clearer scope of the project
- More convincing outline for political decision makers
- Use FastTrack project as momentum

Timeline - The deployment road ahead



Read more

Deployment plan TPBI

[TPBI Website](#)

[SUMP Bucharest-Ilfov Region](#)

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CASE STUDY

Budapest

*Next step on the road
to a full MaaS*



**Integrated
Multi-modal
Mobility
Solutions**

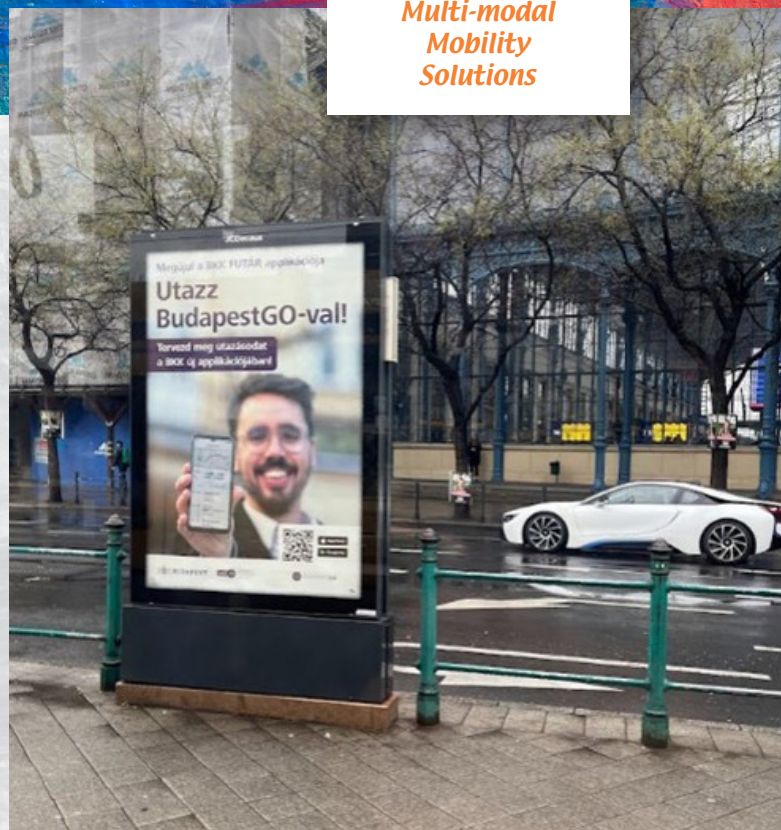
Context and rationale

Budapest, the capital of Hungary, is home to 1.750.000 inhabitants and is located in the northern part of the country. It is the centre of the Budapest metropolitan area, which contains approximately 3.300.000 inhabitants (about one third of Hungary's population).

Budapest has elaborated and adopted an Integrated Urban Development Concept, Climate Plan, Sustainable Energy Action Plan, Sustainable Urban Mobility Plan (SUMP), and Sustainable Urban Logistics Plan (SULP). Mobility planning is taking place at the municipal / city level. There is a dedicated mobility department at the city-level, and BKK, the city administration's City Operations Department, and the Urban Planning Department are involved in mobility planning as well. BKK as a public service provider is fully owned by the Municipality of Budapest. The publicly owned company was established in 2010 and since then, they have been responsible for the operation and development of Budapest public transport as the transport organiser of the city.

Initial challenges and needs

To help passengers plan their trips the BKK FUTÁR application was launched in 2014. This application was using live GPS data provided by the public transport vehicles. In January 2022, FUTÁR allowed



customers to plan their trips with suburban railway lines operated by the national railway company (MAV). This feature was a breakthrough for the city, since it was the first time that users were able to plan their trips with different transportation modes operated by different companies. However due to the lack of integration with BKK's services, the number of people using these lines remained lower than expected. With a more integrated Mobility as a Service (MaaS) system, the city aims to establish an integrated platform that serves as a base to access all essential mobility functions.

The main challenges faced are:

- The segregation of the existing online platforms – each service providers offer their own platforms to their services that tend to cause confusions and misunderstandings to travellers, e.g in terms of ticketing, MÁV (the national railway company) and Volánbusz (the national public bus transport company) services have their own ticket types and fares compared to BKK bus services and their tickets can be purchased on their own websites.
- Commuters using various transport service providers must be supported with integrated tickets and passes to make purchases easily manageable.
- The lack of navigation opportunities in the currently existing application. Many of the functions will require additional resources and development either in the infrastructure, or in the backend of the software.

Innovation developed

Within FastTrack, the team from Budapest focused on public and shared mobility and multi-modal hubs by further developing the mobility-points approach, with a focus on the software side (MaaS) and on integration with public transport.

In February 2022, FUTAR was renewed and changed its name to BudapestGO. The application was renewed with several new features: besides journey planning, the app offers a simple and quick solution for ticket purchasing. The widget is one of the most popular convenience features, according to customer feedback,

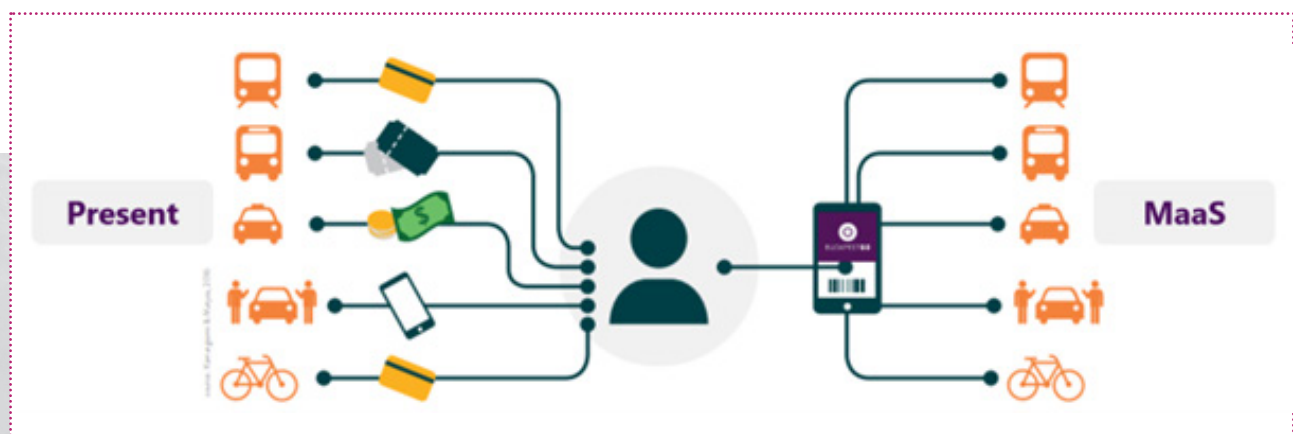
allowing passengers to place a ticket or pass on their phone's home screen with a single swipe and have it at their fingertips. In March, the app counted more than 1 million users and more than 6,5 million purchased tickets and monthly passes. Thanks to the automatic pass renewal option, the passenger will always have a valid pass without having to remember the expiry date.

In May 2022, new features were added to BudapestGO, making the app even better and more accurate for cyclists, and the Telebusz and Telefogas on-demand bus and cogwheel-railway services were also made available. Trips can be planned with private bikes, public bikes or with the option to change between bike and public transportation during the trip. The location of stations and bikes of the public bike share system, called MOL Bubi is also available in the application. However, users cannot pick up bicycles directly using BudapestGO, they need to switch to MOL Bubi application for that. In addition, since January 2023, users are able to plan trips and buy tickets for the suburban buses operated by the national bus company (Volanbusz).

In the future, BKK would like to further improve BudapestGO. For example, to have a more direct integration between public and private shared mobility service providers.

The most crucial and urgent functions, where the appropriate regulations have already been considered are planned to be implemented in the near future, such as:

- Link to make a reservation/purchase
- Combined static route planning
- Filters for various vehicle types
- Pre-arranged mobility packs
- Integrated payment



Lessons learnt along the FastTracking way

FastTrack provided many new experiences and knowledge, involving new perspectives, holistic approaches and ideas that were considered or used during the implementation of the final shaping of the innovation.

It also helped the city of Budapest to become part of a large international network of experts which has the potential to apply jointly to EU projects, making it possible for the cities to build strong relationships and develop hand in hand.

The Municipality of Budapest and BKK strongly believe that the lessons learnt in FastTrack and the objectives of the project contributed immensely to the accelerated development of Budapest's MaaS system. FastTrack provided an excellent ground to practice those skills and helped in implementing the right mindset towards a connected and sustainably developing Europe.

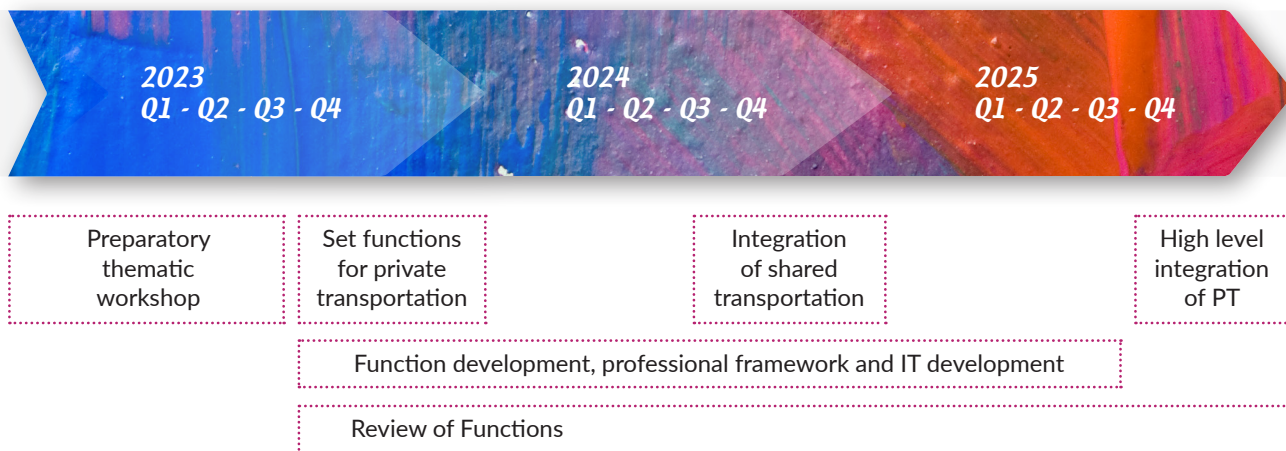
There are many authorities that need to cooperate during large-scale projects. Bringing them together on the same platform and finding a new way to approach collaboration will be essential in the future. A great example to that was learnt from Hengelo and Groningen with the "Gebiedsteam" – "area team" concept.

Acceleration factors

- Integration to the current BKK data strategy;
- Adaptive and flexible project, with both short-term and long-term goals that can be achieved;
- Citizen and stakeholder engagement – including them in the discussion from the beginning, making the project feel like their own;
- Strong narrative, arguments in favour of the project and why it is necessary – "pitching the idea" towards all types of stakeholders.



Timeline - The deployment road ahead



Read more

Deployment Plan

SUMP: <https://bkk.hu/en/strategy/budapest-mobility-plan>

News article: <https://bkk.hu/en/news/2022/10/new-features-and-faster-operation-on-budapestgo.8171>

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CASE STUDY

Debrecen

Connecting the dots - mobility hubs as game changer



*Integrated
Multi-modal
Mobility
Solutions*

Context and rationale

Debrecen has about 200.000 inhabitants (second largest city in the country) and is located in the eastern part of Hungary, about 30 km away from the Romanian boarder. Debrecen has elaborated and adopted several strategies, programmes and plans related to sustainability issues, including a development plan "Debrecen 2030", an Integrated Urban Development Concept, Sustainable Energy Action Plan, a Smart City Strategy, and a Sustainable Urban Mobility Plan. There is a dedicated mobility department in the city administration. The urban development department, the urban management department, the city's parking management company, the public transport company, and the Debrecen Training Centre are all involved in mobility planning as well.



Initial challenges and needs

The excessive growth of car traffic poses a significant challenge to the city. In the 1990's, an estimated 50.000 car were used in the city. This figure has since doubled and will continue to increase rapidly in the coming years. The situation will be exacerbated by the increase in commuting and transit traffic, which is the result of economic development in recent years. The Municipality of Debrecen has a significant goal to reduce the city's car traffic and allow space for sustainable and alternative modes of transport through sustainable and innovative methods. A

solution to this problem can be the construction of a micromobility network, which can ensure access to areas currently not covered by the existing public transport network. To understand the exact needs, the biggest shortcoming for the local administration currently is **data analysis capacity**. Although a passenger counting system has already been established on several vehicles operated by the city's public transport company, the data collected already exceeds what existing departments can thoroughly analyse. In addition, the collected data does not represent the entirety of the city's public transport usage behaviour.

Innovation developed

In the framework of FastTrack, the team from Debrecen, now part of the city's public transport company (DKV), has worked on the creation of integrated mobility hubs in Debrecen. The objective is to improve the public transport system of the city by **offering several types of mobility solutions** to the citizens, making it easier for them to reach destinations that are not covered by the current public transport network. As a result, the expectation is that more people will choose public transport and leave their car at home, which will reduce traffic congestion and CO₂ emissions in the city. As a result of their planned mobility innovation, Debrecen passengers who otherwise could not access public transport services at certain locations of the city will be able to use such aided by complementary micromobility vehicles. It will be a free-floating system, but the vehicles will be left and picked up at their designated locations. The city will identify the weak points within the network and make the services accessible and inclusive, so everyone can quickly and efficiently use the urban public transport services. The integrated mobility hubs will enable the passengers to use e-scooters or bicycles (electric or regular) to connect to the nearest stop from where they can quickly continue their journey to their desired locations around the city. In case of small travel distances and only micromobility vehicles are used, DKV will still receive an amount of income from the usage. It is very important that the mobility innovation must not reduce walking or regular bicycle travels, but targets reduced car usage in the city.

The passengers will be able to utilise a MaaS application on their smart device, making them able

to purchase their public transport tickets and passes as well as pay their micromobility service fees. The business model includes two versions. One version allows an individual with a public transport pass to pay a discounted price on the e-rollers or bicycles (electric or regular) and there is a version where the public transport pass would include an amount of time which can be used for micromobility travels. The application will also provide route planning that combines the different modes of transport if the desired destination makes it viable.

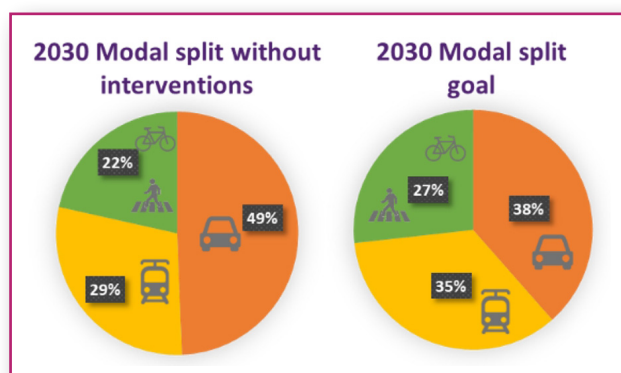
Lessons learnt along the FastTracking way

"During ambassadorial city site visits, discussions and workshops, the representatives of local solutions and the input sharing with other partner city delegates has enabled us to include ideas and data into our reports. Through the networking that took place within FastTrack, we have been able to obtain valuable connections and relationships, such as our close relationship with BKK Budapest who have provided us with presentations of their good practices in the capital that are being utilized in the planning of our innovative measure in Debrecen."

István Tóháti, DKV

Each Capacity Building Week within the FastTrack project presented an opportunity to assess what they have seen and experienced from the Ambassador cities, to hear the Local Affiliates' opinions, to evaluate the good practices from other cities and to create reports with the most relevant information while taking into consideration the relevant context of Debrecen. The reports then were shared with relevant decision makers from DKV and the city, which further strengthened their commitment towards the project in the planned services.

FastTrack helped Debrecen to envision the micromobility services applied to the needs and characteristics of the city, to be aligned with their most pressing traffic problems and to deliver as a real solution.



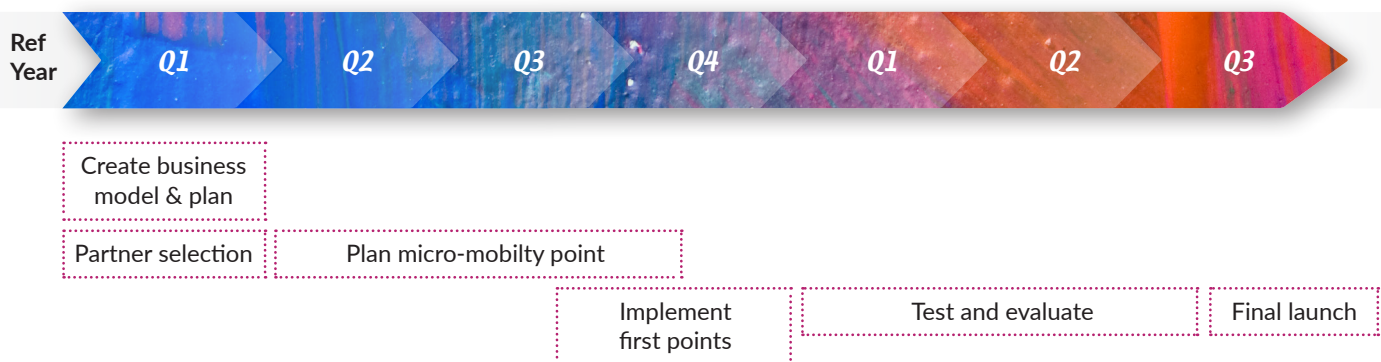
Acceleration factors

- Political will – With specific data and specified intentions, it is significantly more convincing for the city and stakeholder decision makers to be on board with the innovative measure as simple ideas themselves fall short.
- Exchange – Build Expertise- Spread the expertise with relevant services and their decision makers – Increase their commitment to the measure.

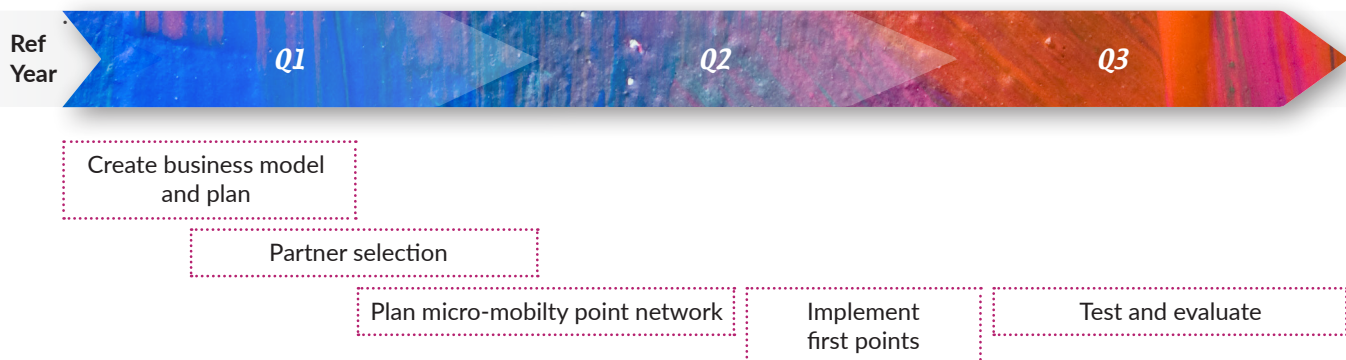
Timeline - The deployment road ahead

The timeline depends on the business model chosen:

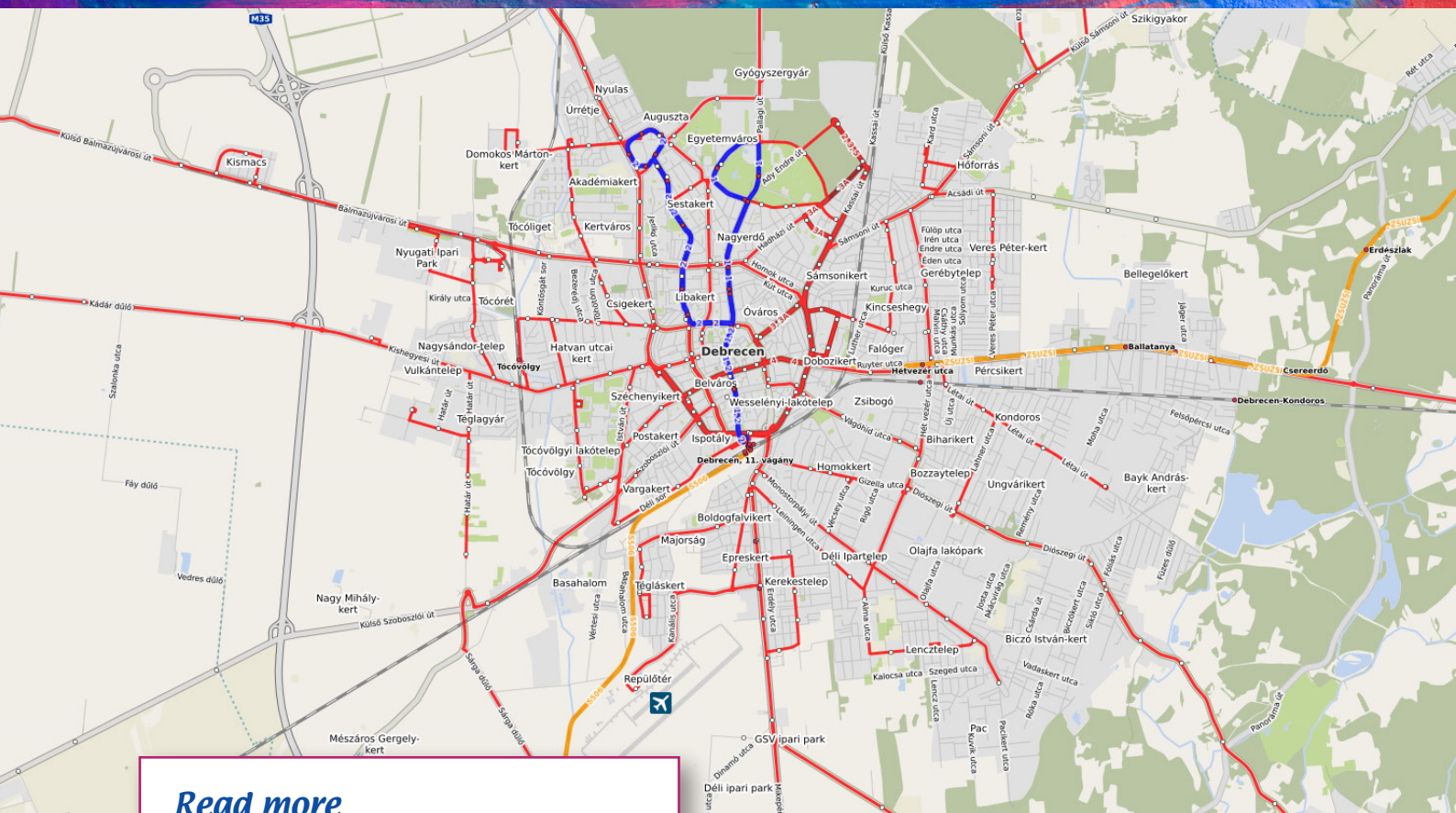
1. The first version is a scenario where DKV must procure and develop everything on its own. This includes all the necessary vehicles and equipment, and then DKV must find a way to organise a seamless service that is adequate for the target audience. Due to the lack of experience, the process would likely include a natural learning process of trial and error and a longer implementation time span, therefore Debrecen estimates 1 year for this version.



2. The second version is a close cooperation between DKV and a private micro-mobility service provider. The close cooperation would mean that private stakeholders bring their experience, good practices and hardware into the project which would drastically reduce the time horizon by making the overall implementation easier for DKV. For this reason, they estimate 6 months for this version.



Before the official launch of the operation, a test period of 3-6 months will be determined in order to learn about user habits and how the city's initial plans align with the actual usage results. This period would add time to both timeline versions.



Read more

Deployment Plan

[Smart City Strategy of Debrecen](#) (in English)

[DebrecenMob](#), a successful project which engaged citizens to use active mobility and provided a lot of data on commuter habits.

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CASE STUDY

Ljubljana

Regional e-bike sharing scheme



*Cycling in the
Urban and
Functional
Urban Area*

Context and rationale

Ljubljana, the capital of Slovenia and centrally located within the country, has nearly 300.000 inhabitants. The entire urban region has about 550.000 inhabitants. It is comprised of Ljubljana and the functional urban area's 25 municipalities.

Learning from other cities, regions and external consultancies are channels through which innovation is fed into decision-making processes or operational activities. The Regional Development Agency of Ljubljana Urban Region's Office for Development Projects and Investments (RRA LUR) initiates most of the innovation in mobility. The agency has been actively involved in research and innovation projects. The City of Ljubljana – by engaging with the regional development agency of Ljubljana urban region and other stakeholders – has elaborated and adopted an Integrated Urban Development Concept, Sustainable Energy Action Plan, and Sustainable Urban Mobility Plan, and at the regional level has developed an electromobility strategy, an urban master plan, and a Zero Waste plan. In addition, there are municipal spatial plans and local SUMP. Mobility planning mainly takes place at the municipal level, and intermunicipal approaches are coordinated by the regional development agency.

Initial challenges and needs

The main issue faced by RRA LUR is to connect all 25 municipalities in the Ljubljana Urban Region (LUR)



Image: Presernov

in a way to provide adequate infrastructure, such as cycling paths, e-bike stations, e-bikes etc. As the region is currently not well connected with biking lanes, the main aim is to persuade people to use bikes in combination with public transport, instead of using the cars for commuting to work. The biggest challenge LUR is facing is that 84% of all trips from other Slovenian regions to the region are still made by car, and after the pandemic, this number has not decreased. In addition, approximately 70% of daily commutes to Ljubljana from the LUR are done by car. A **regional bike sharing scheme** could thus also help to reduce number of car users as it would give them an alternative option for long distance commuting.

Innovation developed

With the help of FastTrack, the agency's goal is to implement a regional e-bike sharing scheme in 25 municipalities in Ljubljana urban region to develop infrastructure and to introduce modern e-bike sharing technology in the region.

The LUR aims to construct adequate infrastructure at the destination (bicycle storage facilities, charging stations for electric bikes, etc.), and adapt cycling routes for a faster journey (wider cycle paths, flatter ramps, etc.). This will improve the time competitiveness of bicycles in combination with public transport versus cars in peak traffic hours to achieve greater use of electric bicycles.

Lessons learnt along the FastTracking way

Extensive exchanges with the Antwerp Transport Region and Lantis on their regional bike sharing scheme its technical specifications and governance, were central to the learning path.

During the FastTrack project RRA LUR identified a supplier, the Nomago company, which has been



commissioned to present and implement a guidance tool for intermodal connectivity on a regional scale in the main corridors to and from Ljubljana and will provide guidance tool until the end of 2022.

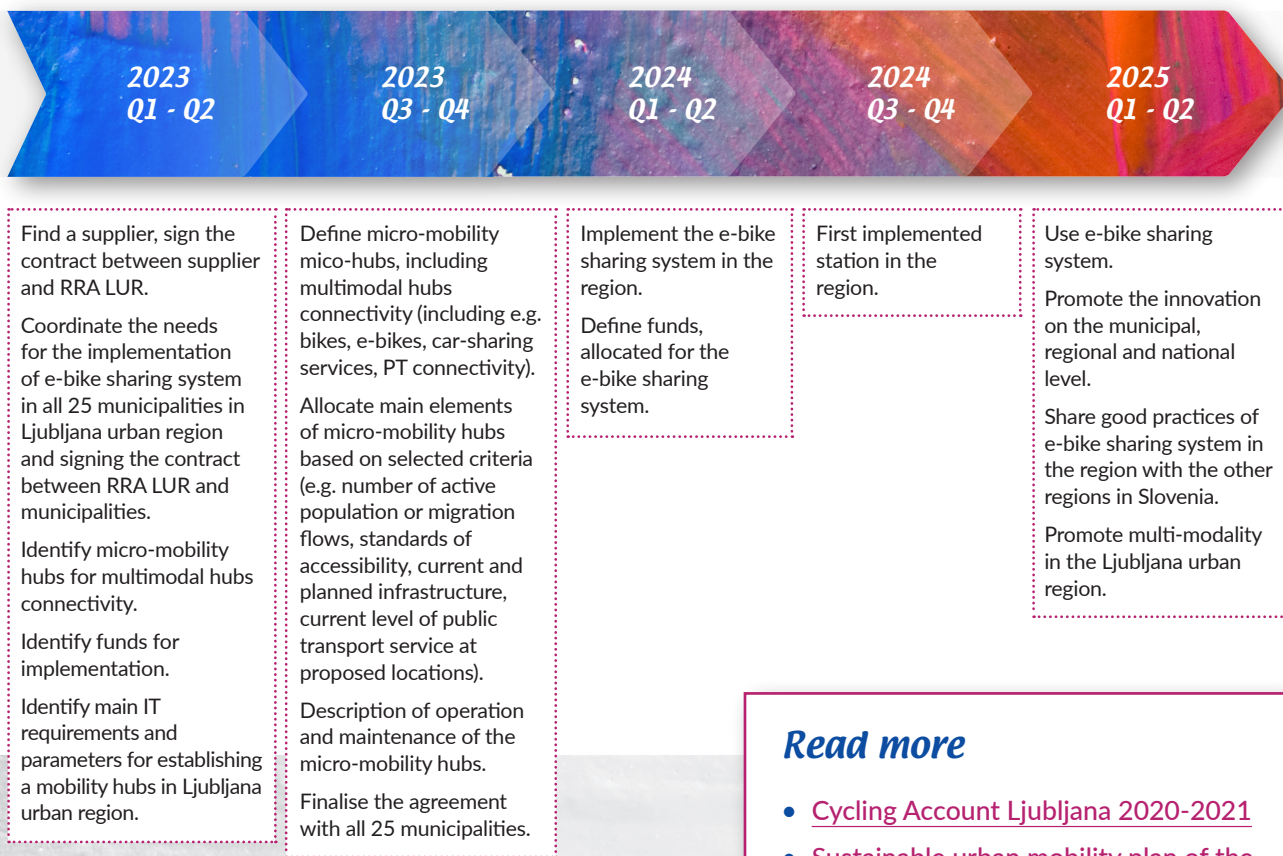
The regional bike sharing scheme is planned to be operational by 2027.

Acceleration factors

- Elaboration of a guidance tool to start the introduction of the e-bike sharing system
- Collaboration between main regional mobility stakeholders
- Collaboration with employers
- Targeted exchange with experienced companies and city authorities



Timeline - The deployment road ahead



Read more

- [Cycling Account Ljubljana 2020-2021](#)
- [Sustainable urban mobility plan of the Ljubljana Urban Region](#)



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CASE STUDY

Stockholm

Charging Infrastructure for heavy vehicles



*Sustainable
and Clean
Urban Logistics*

Context and rationale

Stockholm is the capital of Sweden, with nearly one million inhabitants in the capital itself and about 2.4 million inhabitants in the metropolitan area. Stockholm is located in the east of Sweden, at the meeting point between Lake Mälaren and the Baltic Sea.

The city has elaborated and adopted an Integrated Urban Development Concept, Climate Plan, Green City Action Plan, Sustainable Energy Action Plan, Sustainable Urban Mobility Plan (SUMP), and Sustainable Urban Logistics Plan (SULP). In addition, the SUMP is being actively updated, with the current update in the preparation and analysis phase. Mobility planning takes place at both the municipal and regional level.

Initial challenges and needs

Within FastTrack, the team from Stockholm focused on urban logistics solutions. In particular, the team wanted to explore smarter solutions for the charging of heavy vehicles. The motivations for these activities were a mix of common issues, including congestion, climate change (CO₂-reduction and electrification targets), air pollution, noise, social exclusion, and an improved use of urban infrastructure. The solutions to be deployed, which are seen as innovative at the local level, are mainly related to an urban area, but will also include the large peri-urban area around Stockholm, which is roughly 6,500 square-kilometres.



A major challenge is that the City's planning capacity is limited by a lack of reliable data concerning traffic movements of heavy vehicles. The City's environmental zone and congestion charge systems mean there is an overall awareness about the number of vehicles entering and leaving the urban area, but there is less data on the patterns of vehicle movements and how this relates to e.g. logistics "hot spots" or availability of loading bays, and how such issues relate to charging needs, both with regard to terminal-based charging and for on- or off-street "top-up" charging. These issues also need to be considered in relation to a wider set of related challenges, such as how to develop attractive public spaces, increase traffic safety, and reduce air pollution. As a result, a wide range of stakeholders are likely to have opinions – and be affected – by work on this topic. There are thus significant opportunities to use multiple sources of information to address specific data gaps,

improve planning and better inform decision-making in the both the public and private sectors. By doing so, risks such as technological lock-ins or poorly informed investment decisions may be avoided, and opportunities to capture hidden/unseen values may be identified.

Innovation developed

Stockholm's innovation in a defined plan/approach that enables accelerated introduction of public charging infrastructure for heavy vehicles in Stockholm and its surrounding region. This plan/approach will be linked to specific locations and interventions enabling action. Electric heavy vehicles are expensive but increasingly being adopted. For heavy vehicles using public charging stations there are multiple challenges – e.g. identifying appropriate locations, engaging service providers, ensuring grid access and electricity supply. The City aims to accelerate introduction by facilitating dialogue and coordinated planning, to ensure that e.g. new charging stations for heavy

vehicles are located in ideal locations and enable synergies with or fulfilment of other city objectives (addressing e.g. reduced noise pollution, congestion, traffic safety, etc.)

In Stockholm, an “Electrification Pact” has been formed and involves relevant stakeholders. Within this, a working group is trying to identify the needs and possible solutions to accelerate introduction of public charging for heavy vehicles.

- The City has a structured approach concerning planning and permitting to enable introduction of on-street public charging and parking in publicly-owned parking facilities;
- The City has a structured approach concerning awareness-raising to enable introduction of off-street charging in private properties;
- Terminal-based charging of e.g. buses, vans and heavy vehicles remains the responsibility of other stakeholders.



Image: Pixabay / Pexels

Lessons learnt along the FastTracking way

"As Ambassador City, the main benefit has been the exchange with other cities concerning ambitions, measures, methods and approaches which have partly influenced our thoughts about the deployment process and more generally influenced our discussions concerning implementation."

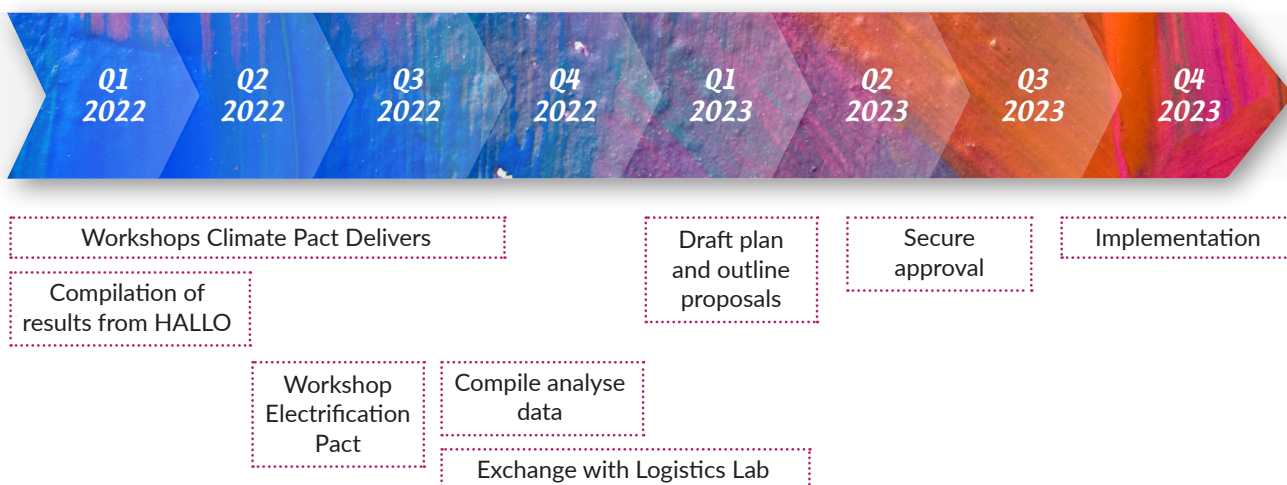
Paul Fenton, City of Stockholm

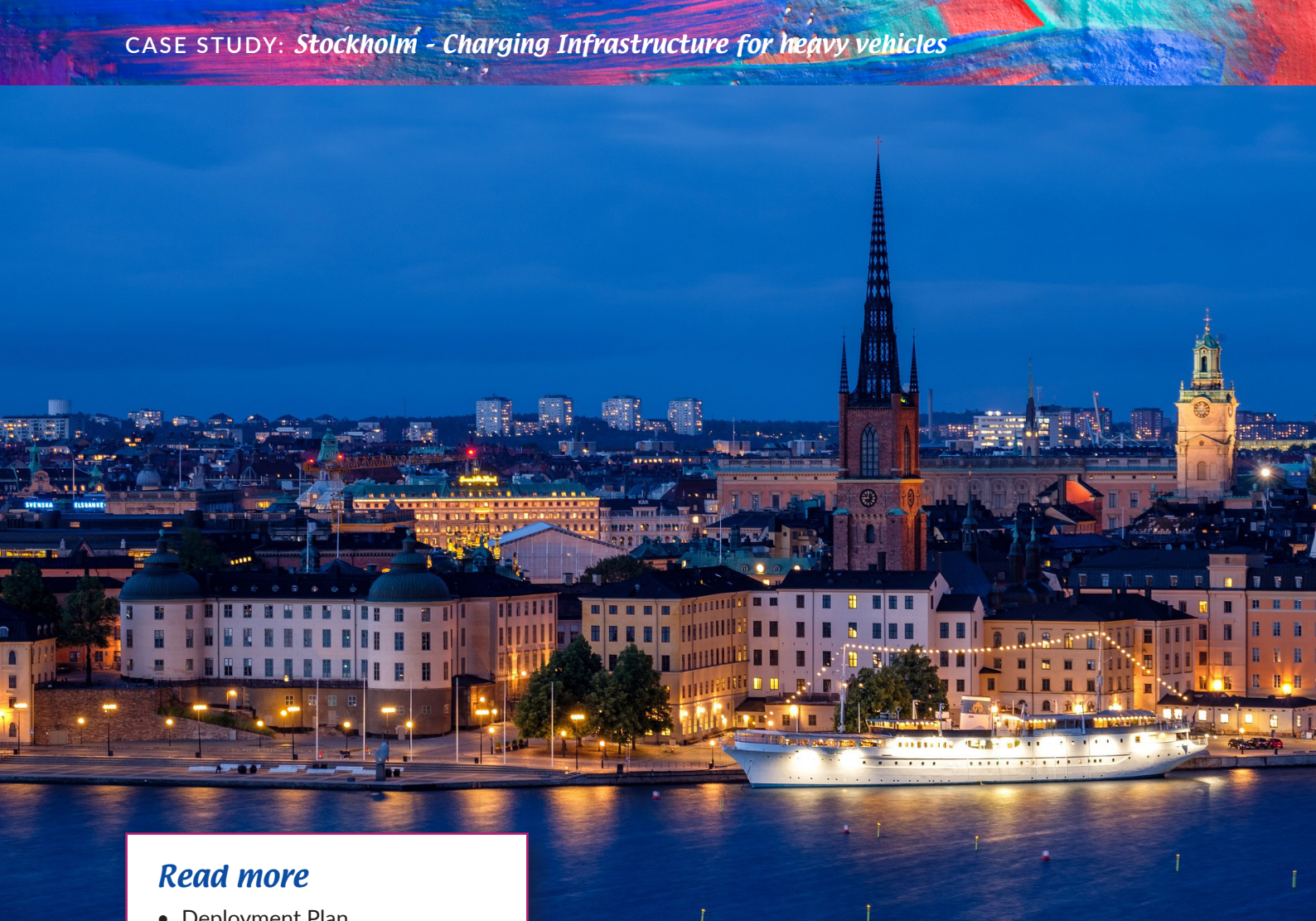
Acceleration factors

- Local political support
- Aligned local and national electromobility strategy
- Several European projects aligned to support data gathering and stakeholder cooperation

Timeline - The deployment road ahead

Milestones achieved so far include multiple rounds of dialogue and completion of studies. The next milestone will be completion of data analysis followed by the development of general conclusions and a proposed working method for coming years. In this stage, more specific milestones related to implementation will be defined and may include e.g. quantitative milestones concerning charging points or similar, or qualitative milestones concerning process development (e.g. update of city freight plan).





Read more

- Deployment Plan
- [Awaken Sleeping Assets Project](#)
- [ECCENTRIC](#)
- [HALLO project](#)
- [SULP](#) (in Swedish)

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info@FastTrackMobility.eu

