

**Senator**

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**Smart network operator platform  
enabling shared, integrated and  
more sustainable urban freight  
logistic**

[D7. 7] Portfolio of success stories Report 2



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## Document Contributors

### DELIVERABLE RESPONSIBLE: ZABALA

| Contributors      | Organization | Reviewers     | Organization |
|-------------------|--------------|---------------|--------------|
| Mónica Pérez      | ZABALA       | Ángela Nuñez  | CORREOS      |
| Mariano Echávarri | ZABALA       | Laura Pernias | CORREOS      |

## Document History

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## Executive Summary

The present document constitutes **Deliverable 7.7 – Portfolio of Success Stories** of the SENATOR project. It has been developed as part of **Work Package 7 – Social Awareness, Stakeholder Engagement, Dissemination, and Communication**, led by Zabala Innovation (ZAB).

**SENATOR** (“**Smart Network Operator Platform enabling Shared, Integrated, and more Sustainable Urban Freight Logistics**”) is a project funded by the European Commission under the **H2020-EU.3.4. - Societal Challenges – Smart, Green and Integrated Transport** program. Its objective is to create a new urban logistics model centered on four key urban layers: end-receiver, transport, logistics, and infrastructure. The project is part of the **CIVITAS initiative**, a network of cities working together to achieve cleaner and more efficient transport solutions across Europe and beyond.

This document represents the **second compilation of the portfolio of success stories** aimed at supporting the development of sustainable mobility and transport solutions. Through this effort, the SENATOR project seeks to **identify and highlight innovative activities and best practices in sustainable mobility and transport**. These case studies serve as valuable resources to inspire and enhance future EU projects in this domain. The collection includes examples from ongoing and past EU projects, the SENATOR project itself, as well as collaborations with external organizations.

## Objectives

The coordinated effort to develop success stories from various projects was focused on advancing sustainable mobility and transportation in Europe. Below are key reasons that illustrate the significance of this collaboration:

- **Comprehensive Perspective:** Collaboration across diverse projects offers a broader and richer understanding of sustainable mobility and transport solutions. Each project contributes unique approaches, experiences, and innovative outcomes. By integrating these perspectives, a holistic view is created, serving as a foundation for inspiring new ideas and strategies.
- **Shared Learning:** Collaboration enables the exchange of knowledge and lessons learned among projects. By sharing successes, overcoming challenges, and leveraging insights, teams can avoid redundancy, accelerate progress, and sidestep previously encountered pitfalls, ensuring more efficient outcomes.
- **Amplification of Results:** Joint efforts amplify the collective impact of individual projects. Combining resources and expertise leads to more robust and well-rounded solutions that address a wider range of issues in sustainable mobility. Additionally,

shared achievements highlight the effectiveness of these solutions, attracting further investment and collaboration.

- **Continuous Innovation:** Collaborative initiatives foster a culture of ongoing innovation. The exchange of ideas and joint problem-solving spark the development of novel concepts and approaches that may not emerge in isolation. This dynamic drives continuous progress in both research and the practical implementation of sustainable solutions.
- **Strengthening Networks:** Collaboration builds and fortifies networks among project teams, institutions, and organizations. These connections often extend beyond the scope of individual projects, paving the way for future partnerships and joint efforts that advance sustainable mobility and transportation.

This portfolio is publicly available on the Senator website, featuring a total of 13 **success stories** and offering a snapshot of the landscape of sustainable mobility and transport.

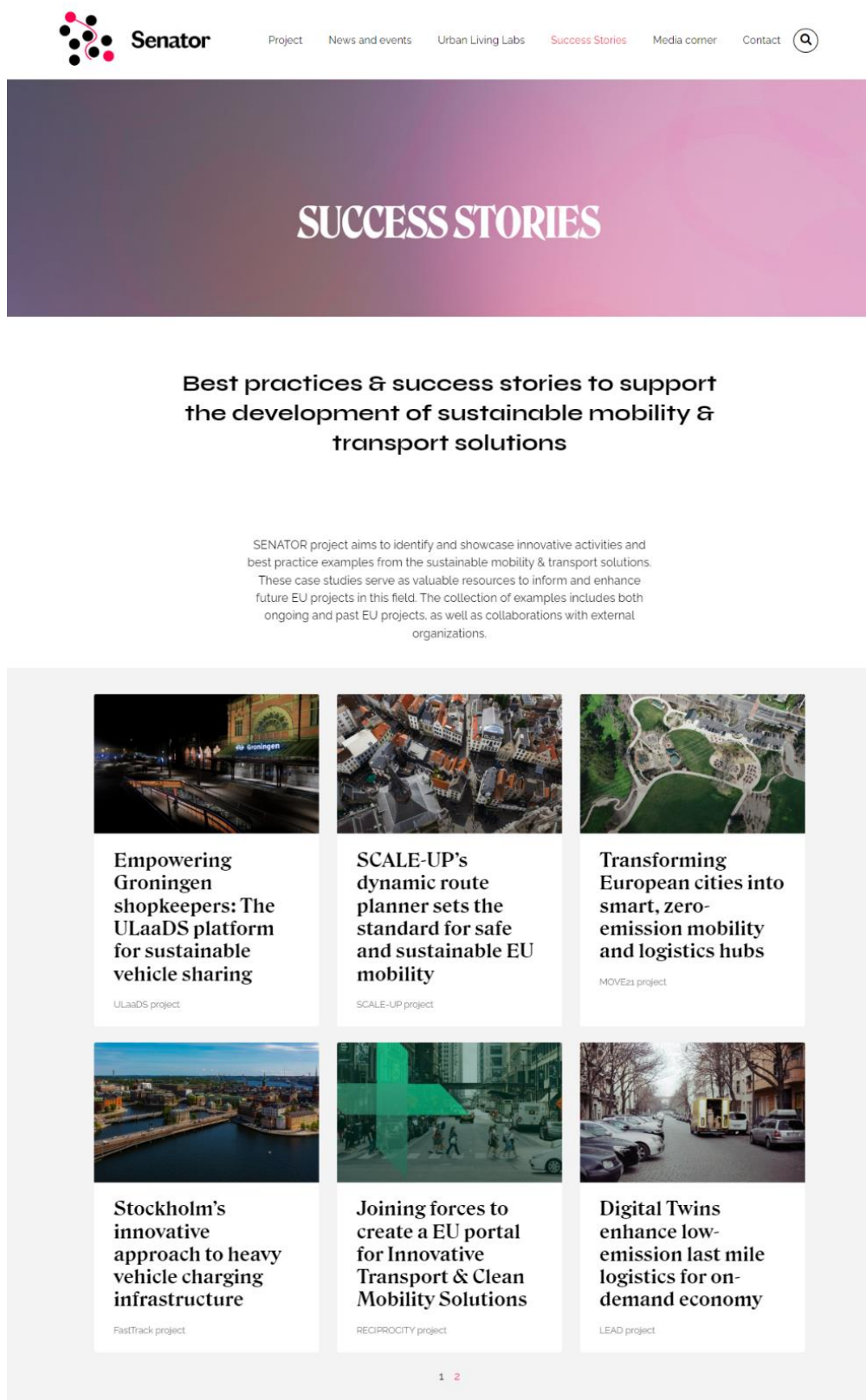


Figure 1. Success Stories Section on the Senator Website

## Publication & Promotion of Success Stories

The promotion of these success stories was undertaken through a multi-faceted approach, utilizing various platforms to maximize visibility and engagement. The goal was to ensure that these stories reached a wide and diverse audience, fostering awareness, inspiration, and collaboration in the field of sustainable mobility and transport. The promotion was carried out in the following way:

- **Website Showcase:** A dedicated section on the project's website served as a central hub for these success stories. Each story was meticulously presented, accompanied by comprehensive details, visuals, and data that highlighted the project's impact and significance. This online showcase ensured accessibility to a global/European audience at any time.
  - **Search Engine Optimization (SEO):** The project's website and success story pages were optimized for search engines to facilitate organic discovery by individuals searching for information on sustainable mobility and transport solutions or specific projects and pilots/living labs.
- **Social Media Engagement:** Social media platforms such as Twitter and LinkedIn played a pivotal role in promoting these success stories. Regular posts, featuring key insights and visuals, were shared across these platforms to engage followers and encourage them to explore the full stories on the project's website.

Additionally, a collaborative ecosystem among projects was fostered, creating a network where success stories were shared and reposted. This collaborative effort presented a unique opportunity for mutual growth, as it helped expand the follower base of each project. Followers not only gained access to SENATOR's success stories but also discovered other compelling projects within their sphere of interest, fostering a sense of community among like-minded individuals. It was a win-win strategy that amplified reach and provided the audience with a broader array of projects to explore.

- **Digital SENATOR Newsletter:** Periodic digital newsletters were sent to subscribers, summarizing recent success stories and providing direct links to the full stories on the website. This approach kept stakeholders informed and engaged, driving them to delve deeper into the showcased solutions.

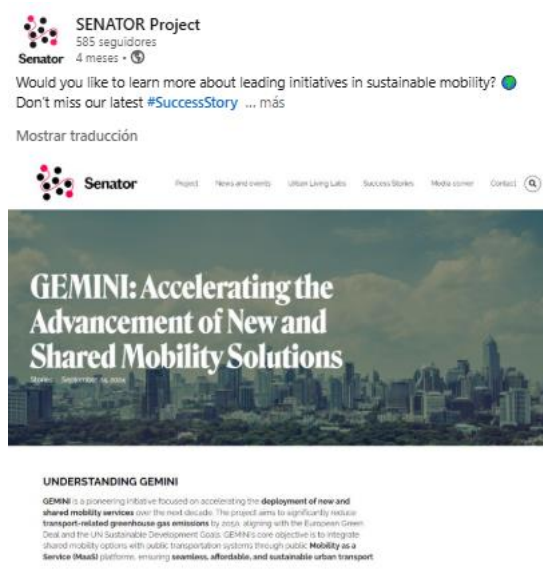
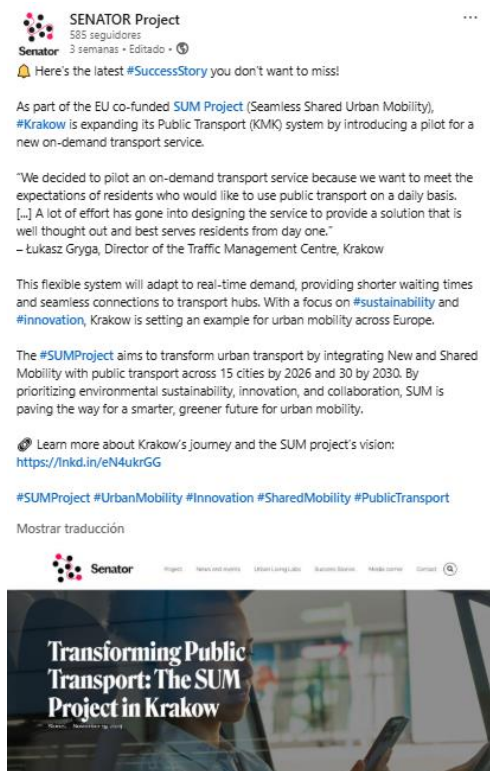


Figure 2. Promotion of success stories on the Senator project's social media.

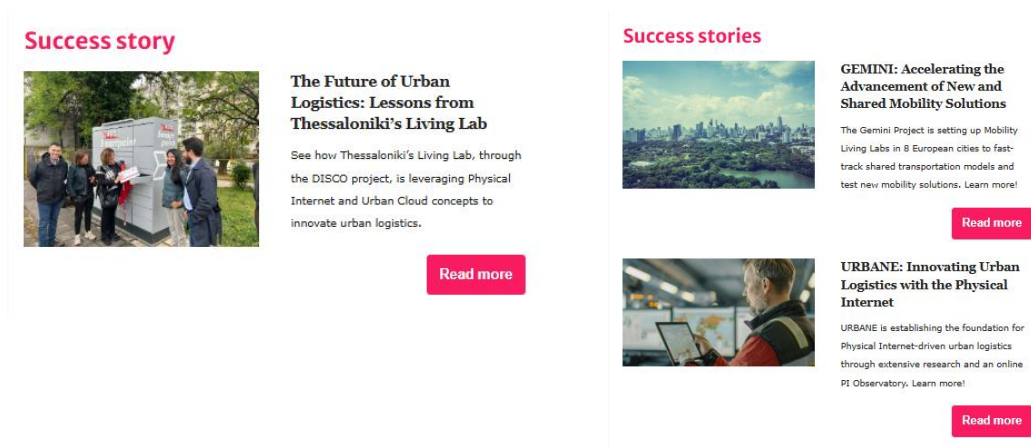


Figure 3. Highlighting success stories in the Senator project newsletter.



## Success Stories

Seven new projects have been added to the "Best Practices & Success Stories" initiative, in addition to the six projects initially showcased in the first report, further contributing to the development of sustainable mobility and transport solutions.

### ePcenter Project

→ [Link](#)



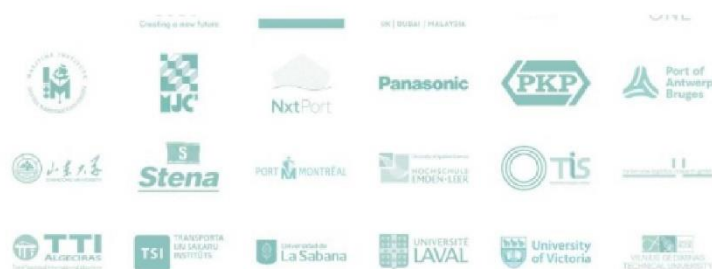
#### UNDERSTANDING EPICENTER

ePcenter is developing new technologies and software that will enable all players in global trade and international authorities to co-operate with ports, logistics companies and shippers, and to react in an agile way to volatile political and market changes and to major climate shifts impacting traditional freight routes.

The scope of innovation is very broad, covering synchromodal logistics optimisation, advanced data sharing and visibility solutions, Physical Internet, Hyperloop, Autonomous Electric Vehicles, Modular Containers, AI fuel optimisation systems for ships and advanced route planning systems for Arctic shipping, integrated with new methods and research into cetaceans and how shipping can reduce its impact on marine mammals.

ePcenter brings together 36 partners (port authorities, logistic service providers, manufacturers, academic institutions and technology partners) from all over Europe and around the World.





ePlcenter has many success stories, most of which result in greener and more sustainable global logistics operations. At the same time these solutions save money for logistics companies and their customers, delivering a true win-win for all stakeholders.

## KEY ACTIVITIES

ePlcenter has delivered an impressive and wide ranging set of innovations and technologies. These results deliver short-term benefits to industry, while increasing the sustainability of logistics operations, and facilitating a deeper understanding of the potential of future logistics concepts and technologies such as the Physical Internet, synchromodality and Hyperloop.



The following briefly describes some of the innovation areas covered by ePlcenter:

**Synchromodal logistics algorithms:** highly innovative optimisation and scheduling algorithms have been developed that can be applied to existing logistics networks to reduce costs and GHG emissions, and can also be used to simulate and study the impact of new technologies (e.g. Hyperloop, modular containers) and new freight routes (e.g. Silk Road rail, Arctic shipping).

**Physical Internet:** advanced algorithms and analytical models have been used to develop a deeper understanding of the Physical Internet concept and its beneficial impact on logistics operations, with applications to network optimisation and facility location analysis.

**Trusted Data Sharing Layer:** an innovative approach to sharing information in the logistics community, providing powerful tools to facilitate exchanges while retaining control, respecting the balance between

providing powerful tools to facilitate exchange while retaining control, respecting the balance between effective collaboration and commercially sensitive data.

**Visibility Solutions:** building on the increased availability of real-time data to provide advanced dashboards and platforms which increase visibility and control along the logistics chain, allowing operators to reduce costs and GHG emissions.

**Modular Containers:** known as "Connectainers", these sophisticated shipping containers help address the global problem of equipment repositioning, allowing a standard 40' container to split into two 20' units when needed, supported by advanced IT solutions for visibility and traceability.

**Autonomous Electric Vehicles:** advanced and environmentally friendly autonomous trucks enable sustainable and cost effective transport of goods, supported by sophisticated optimisation and routing algorithms to maximise fleet efficiency.

**Hyperloop:** in ePlcenter the potential applications of this futuristic technology have been analysed in depth, leading to a number of exciting use cases in freight transport and sustainable logistics, taking advantage of the low resistance/low energy characteristics of this mode of transport.

**Freight Network Configuration Impact Comparator:** a flexible and powerful toolset has been developed to allow rapid simulation and analysis of new transport technologies, modes and paradigms, applied to Hyperloop and other technological areas mentioned above.

**Ice Navigation Simulation Software:** increased interest in shipping activity in Arctic waters means that sustainable routing and operation of vessels is more important than ever. ePlcenter has created powerful new tools to help ships choose the right route to reduce costs, fuel usage and impact on the environment.

**Cetacean Research:** reducing the impact of shipping on whales and other marine mammals is becoming an increasing priority. In ePlcenter new understanding of this field has been developed, including providing inputs to navigation systems (please see previous item) to help ships intelligently avoid certain areas or reduce speed in sensitive regions.

**AI Driven Ship Propulsion:** a significant reduction in fuel usage (and therefore GHG emissions) can be achieved by applying the AI ship propulsion algorithms developed in ePlcenter. Alongside the navigation and cetacean-aware routing approaches this provides a highly innovative approach to "green" shipping.

**"The incredible range of innovations in the project, the depth of technical expertise of the consortium, and the positive impact of the technologies on sustainability in global supply chains, make participation in ePlcenter very exciting and rewarding."**

**Julian Stephens**, Technical Development Manager @ MJC<sup>2</sup>

**More information:**

- [Website](#)



## Senator Project

→ [Link](#)



In the dynamic world of logistics and parcel delivery, innovation is crucial for enhancing efficiency and transparency. **SENATOR**, a European project in its final year, aims to excel in this realm by **integrating blockchain technology into the development of a smart network operator**, serving as a control tower supported on an ICT Platform. With this integration, SENATOR seeks to test the feasibility of a more efficient and sustainable urban parcel delivery system.

The integration of blockchain technology into the platform development focuses on providing **meticulous tracking and immutable traceability of shipments and the delivery process**. Through this technology, information regarding the shipment's status at each stage, from receipt to package delivery, is continuously and immutably recorded. This ensures information integrity, as blockchain technology prevents any attempt at manipulation. Furthermore, it offers a comprehensive record enabling real-time package location tracking or reviewing the movement history.

Advancements in shipment traceability precision represent a fundamental improvement in the entire process of parcel reception and delivery, facilitating collaboration and synergy among various logistics operators—central aspects of the SENATOR project. **This collaboration is strengthened by the reliability that blockchain technology provides to all parties involved in the delivery process**. This reliability enables more efficient coordination of shared resources, such as the fleet and delivery routes, contributing to establishing a more efficient and sustainable urban delivery system without compromising competitiveness, quality standards or control over the process by each company.

Another notable aspect of integrating blockchain technology into SENATOR is its application in **cold chain traceability**. To ensure proper management of products from local markets, the fleet equipped with refrigerated cameras integrates sensors that send information to the blockchain network, **allowing continuous monitoring of product temperature from market collection to final consumer delivery**. This approach ensures the secure tracking of cold chain logistics, meeting stringent standards, and making it easier for consumers to access these products through home delivery services, ensuring they arrive in perfect condition.

In summary, **the application of blockchain technology undertaken by the SENATOR project underscores its transformative potential for the last mile of parcel delivery**. Data integrity, fostering collaboration, and cold chain assurance are just a few of the benefits that this innovative implementation can bring to the logistics sector, paving the way for future developments and improvements in goods delivery at both local and international levels.

## DISCO Project

→ [Link](#)



### UNDERSTANDING DISCO

DISCO is an innovation action project focused on upscaling urban logistics and smart planning, accelerating the transition to decarbonised and digital cities by changing the logistics paradigm using a Physical Internet (PI) led approach. **DISCO leverages the PI and Urban Cloud concepts to demonstrate the value of dynamic allocation of city infrastructures.**

DISCO aims to facilitate smart collaboration among stakeholders through the demonstration of **23 innovative measures** (along 5 DISCO-X innovations layered as digital, physical and business) across **8 Living Labs** (4 Starring and 4 Twinning) and **4 Early Adopters**.

DISCO aims to be at the service of cities and operators, co-designing, simulating, monitoring, evaluating and scaling-up the DISCO innovative measures. These measures will be demonstrated by adopting the Meta Model Suite, enabled by the **Urban Freight Data Space**, empowering uptake, and replicability at different phases of design and implementation, and ensuring stakeholder's participation.







DISCO is a collaboration between 47 partners: cities, technology and service providers, industry and SMEs, real estate companies, research organisations and universities, and network organisations. The project is coordinated by FIT Consulting.

## KEY ACTIVITIES: A success story from Thessaloniki Living Lab

Within the DISCO project, the **Thessaloniki Living Lab** stands out in the field of urban logistics due to its innovative approach to leveraging Physical Internet's principles. By integrating existing physical and digital assets, including a Logistics Real Estate Database, the LL is accelerating the city's digital maturity and enhancing its digital readiness in the logistics sector.

A prime example of this innovative approach is the establishment of an **"operational marriage"** between a real estate actor and a logistics service provider. This unique partnership demonstrates the **potential of enhanced demand matching platforms and strategic relocation of services** to optimize operations and transform how logistics are conducted in the city.

The implementation of the DISCO initiatives has not been without its challenges, though. Coordinating stakeholders with diverse interests and integrating new technologies required meticulous planning, open communication events and continuous adaptability. The ongoing development of Thessaloniki's local Urban Logistics Dataspace is instrumental in addressing these challenges by **simplifying data access and fostering greater transparency** among local stakeholders.

The involvement of key partners and authorities, such as the Hellenic Institute of Transport, the Municipality of Thessaloniki and the real estate management department regarding rail infrastructure in Greece, ensures that planning initiatives are well-informed and aligned with the city's urban logistics needs. **This collaborative approach, facilitated by the Dataspace**, is crucial for creating a sustainable and efficient local urban logistics ecosystem.

The operational marriage, exemplified by the strategic relocation of ACS to a new hub with optimized facilities, has already yielded tangible results. **Efficiency gains** have been achieved through improved parking, loading/unloading, and vehicle replenishment processes. Additionally, the use of the digital tools developed in Thessaloniki has showcased the **potential for data-driven optimization in urban logistics**, particularly in dynamic demand-to-supply matching.

In parallel, a robust **assessment framework** tailored to the Living Lab's unique context has been developed, ensuring that the project's activities align with both the city's vision and broader DISCO project goals. This framework will be instrumental in measuring the long-term impact of the lab's initiatives on emissions reduction, efficiency gains, and overall quality of life in Thessaloniki.



ACS lockers at TIF HELEXPO

**Two OPEN DAY events** effectively informed local logistics operators about the project's goals and innovations, leading to a discussion about possible agreements for future data-sharing partnerships within Thessaloniki's Urban Logistics Dataspace. Over 50 local and national operators, including the influential Thessaloniki Chamber of Commerce & Industry, representing retailers and shop owners, actively participated in these events.

A key lesson learned is the vital role of a trusted intermediary, like CERTH, in **facilitating public-private collaborations**. This trust is essential for enabling actor-driven logistics planning in the city through sensitive data-sharing, where diverse stakeholders can collaborate effectively to shape the future of urban logistics.

The EU's priorities for decarbonization, digitalization, and improving quality of life in cities are in direct alignment with Thessaloniki Living Lab's operations and planning within the DISCO project. As a key strategic hub in Southeast Europe, **Thessaloniki's efforts to optimize logistics, reduce emissions, and foster data-driven collaboration** exemplify a commitment to sustainable urban development that resonates with the broader goals of the European Union.

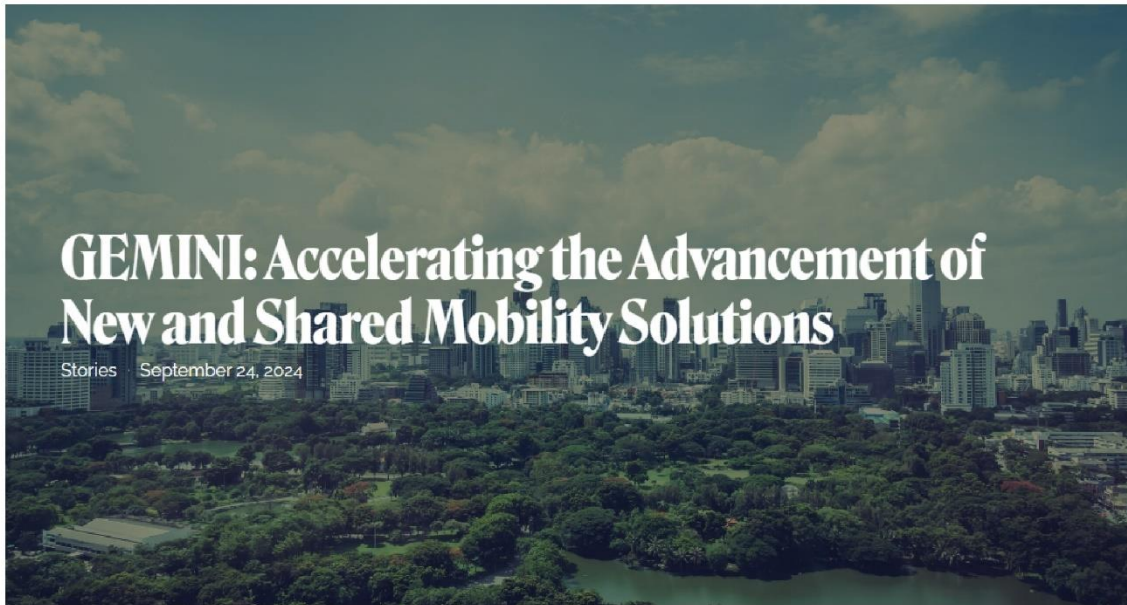
***"Thessaloniki, as the key strategic hub of South-East Europe, possesses the potential to become a logistics powerhouse by creatively leveraging its existing assets. Innovation in this sector extends beyond introducing new technologies, encompassing the reimagining and maximizing the potential of what we already have."***

**Dr. Georgia Ayfantopoulou** Research Director – Deputy Director HIT Head of Research Department  
"Infrastructure, Networks, Mobility & Logistics" ITS HELLAS, BoD President



## GEMINI Project

→ [Link](#)



### UNDERSTANDING GEMINI

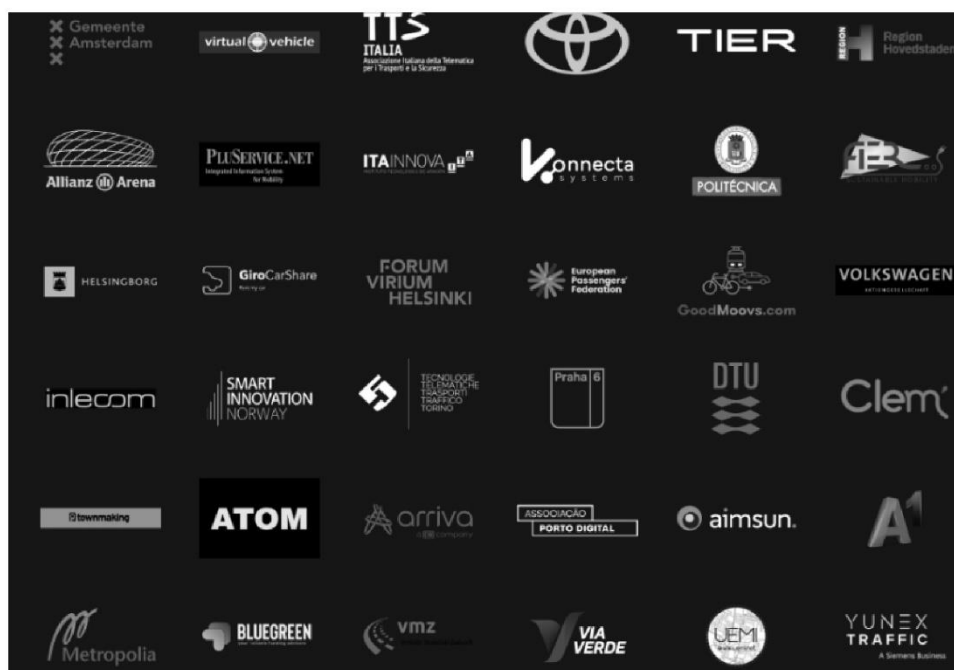
**GEMINI** is a pioneering initiative focused on accelerating the **deployment of new and shared mobility services** over the next decade. The project aims to significantly reduce **transport-related greenhouse gas emissions** by 2050, aligning with the European Green Deal and the UN Sustainable Development Goals. GEMINI's core objective is to integrate shared mobility options with public transportation systems through public **Mobility as a Service (MaaS)** platforms, ensuring **seamless, affordable, and sustainable urban transport**.

The project involves establishing **Mobility Living Labs (MLLs)** in eight European cities: **Amsterdam, Copenhagen, Helsinki, Ljubljana, Munich, Paris, Porto, and Turin**. These labs will serve as test beds for **innovative mobility solutions**, engaging local communities in the co-creation and implementation processes. Key innovations include developing **sustainable business models**, creating a **shared mobility data space**, and deploying **AI-driven mobility intelligence platforms**.

Expected results include a substantial reduction in **urban congestion, air pollution, and road risk**, along with enhanced **social inclusion and accessibility**. By increasing the **share of new mobility services by at least 25%** in participating cities, GEMINI aims to foster a **more integrated, user-friendly, and environmentally friendly transportation ecosystem**. The project will also provide **policy recommendations** and **scalable frameworks** to support the **widespread adoption** of these solutions across Europe.







GEMINI Project Partners

## Description of the Activities

One of the most successful and worth emphasizing activities in the GEMINI project is the **establishment and operationalization of the Mobility Living Labs (MLLs)** across eight European cities. These labs are crucial for testing and refining **innovative shared mobility solutions** and for fostering **community engagement** and **co-creation**, which are fundamental to the project's success.

**Mobility Living Labs (MLLs)** function as **dynamic ecosystems** where various stakeholders, including **local communities, public authorities, mobility service providers, and research institutions**, collaborate to **develop, test, and implement** new shared mobility services. Each lab tailors its activities to the **specific needs and characteristics** of its city, ensuring that solutions are **relevant and impactful**.

### Key Features Setting These Activities Apart

1. **Holistic and Inclusive Approach:** Unlike traditional top-down implementations, MLLs emphasize **co-creation with local communities**. This participatory approach ensures that the solutions developed are **user-centric** and address the **real needs** of the people they are designed to serve.
2. **Integration of Multiple Transport Modes:** The labs focus on **integrating various shared mobility options** (e.g., car sharing, bike sharing, e-scooters) with **public transportation systems**. This integration is facilitated through advanced **Mobility as a Service (MaaS)** platforms that enable **seamless planning, booking, and payment**.

The activities within the **MLLs** directly align with the EU's priorities, particularly the **European Green Deal** and the **Urban Mobility Framework**. By promoting **sustainable and smart mobility solutions**, GEMINI contributes to the EU's goal of achieving a **90% reduction in transport-related greenhouse gas emissions by 2050**. Additionally, the project supports the development of **climate-neutral and smart**

cities by 2030, in line with the EU Missions.

## Facing and Addressing Key Challenges

The following are some of the key challenges faced by the GEMINI project and the solutions implemented to overcome them

| Challenges                                                                                                                                                              | Overcoming Challenges                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Diverse Stakeholder Interests:</b> Balancing the different priorities and objectives of the numerous stakeholders involved was challenging.                          | <b>Effective Stakeholder Engagement:</b> Regular workshops, meetings, and collaborative platforms were established to ensure continuous dialogue and alignment among stakeholders.                                                    |
| <b>Technological Integration:</b> Ensuring seamless interoperability between various mobility services and public transport required sophisticated technical solutions. | <b>Advanced Data Integration Solutions:</b> The project leveraged state-of-the-art technology, such as AI-driven mobility intelligence platforms and shared mobility data spaces, to integrate different transport modes effectively. |

## Enhancing Efficiency, Reducing Emissions, and Improving Quality of Life

The following outlines how the GEMINI project has enhanced operational efficiency, contributed to emissions reduction, and improved quality of life:

| Impact of GEMINI Project on: |                                                                                                                                                                                                              |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Efficiency</b>            | The integration of multiple transport modes through <b>MaaS platforms</b> has streamlined urban mobility, reducing waiting times and improving travel efficiency for users.                                  |
| <b>Emissions Reduction</b>   | Preliminary data from the MLLs indicate significant reductions in <b>greenhouse gas emissions</b> due to the increased adoption of <b>shared and electric mobility options</b> .                             |
| <b>Quality of Life</b>       | By reducing congestion and promoting <b>sustainable transport</b> , the project has improved <b>air quality</b> and reduced <b>noise pollution</b> , enhancing the overall <b>urban living environment</b> . |

## Stakeholder Collaboration

Collaboration in MLLs involved **public authorities, private mobility providers, technology developers, and local communities**. This **multi-stakeholder approach** ensured that the solutions were not only **innovative** but also **practical** and widely accepted. Lessons learned include the importance of **continuous stakeholder engagement** and the value of **flexibility** in adapting to local contexts.

## Use of New Technologies and Innovative Approaches

The following are some of the new technologies and innovative approaches considered within the GEMINI project:

- **New Technologies:** AI-driven data analytics and real-time mobility management platforms

- New technologies, in particular data analytics and real time mobility management platforms were employed to optimize **service delivery and user experience**.
- **Innovative Approaches:** The project utilized **disruptive business models**, such as **Mobility as a Commons (MaaS)**, which focuses on **community-owned mobility solutions**. These models are now being **scaled and replicated** in other cities within the project's network.

**“GEMINI Living Lab aim to deliver new and shared mobility services that are both scalable within the Living Lab cities and replicable across Europe and beyond.”**

Prof. **Dr. Oliver Lah**, GEMINI Project Coordinator

**More information:**

- Website: <https://www.geminiproject.eu>
- Twitter: <https://twitter.com/GeminiEuProject>
- LinkedIn: <https://www.linkedin.com/company/geminiproject/?viewAsMember=true>



## URBANE Project

→ [Link](#)



### UNDERSTANDING URBANE

URBANE —*Upscaling Innovative Green Urban Logistics Solutions Through Multi-Actor Collaboration and PI-inspired Last Mile Deliveries*— is a Horizon Europe project **coordinated by INLECOM** that started in September 2022 and will run until February 2026. The project supports the transition path towards effective, resilient, safe and sustainable last-mile transport, through the implementation of **innovative solutions in four Lighthouse Living Labs (LLs)** located in **Helsinki, Bologna, Valladolid and Thessaloniki**.

A key component of such initiative is the replication of its results and lessons learned. This will be facilitated by the **URBANE Innovation Transferability Platform** comprising Digital Twinning Tools, open models, smart contracts governed by blockchain technology and a data-driven Impact Assessment Radar. **Two Twinning LLs** will be undertaken by the cities of Barcelona (Spain) and Karlsruhe (German), demonstrating their own innovative approaches to the last mile challenge using the tools developed in the Lighthouse LLs.

URBANE's **commitment to upscaling** is further strengthened by the engagement of **six early adopters (Follower Cities)** in feasibility studies of the innovations demonstrated in URBANE and their adoption, thus stimulating the formulation of new LL communities across Europe.

### URBANE ADVANCES THE INNOVATIVE PHYSICAL INTERNET (PI) APPROACH TO ENHANCE LAST-MILE DELIVERIES

To decarbonize and improve urban last-mile logistics, we need to implement systematic approaches that have city-wide impacts. URBANE has been setting the foundation for **Physical Internet driven operations in urban logistics** through extensive research and by **deploying an online PI Observatory**.



Cities are experimenting with zero emission zones, urban consolidation and micro-consolidation centers, electric vehicles and cargo delivery services, and more. To ensure these have widespread benefits, a **system-wide approach** is required. Unfortunately, few models exist in logistics operations that are **systemically efficient and self-regulating**.

The **Physical Internet model** is one such model that does exist! It uses the analogy of parcel shipments as being very similar to the movement of data packets over the Internet. The PI-inspired model imposes relatively **few constraints on how service providers operate** their delivery networks. It does, however, require each service provider to interact together through **standardised inter-networking protocols**. It also requires service providers to share resources for network operations to run efficiently and effectively. The PI model provides a set of standard rules that, when adopted, allow **service providers and city administrators** to easily **consolidate system-wide parcel flows and optimise the last-mile delivery process**.

The PI-inspired model is at the core of the **URBANE's methodology**. The project published a **deliverable on the potentials of PI-inspired models in last mile logistics**. URBANE's objective is to demonstrate how **innovative technologies, implemented using evolving PI concepts** (collaboration, asset sharing, and standards), can achieve up to 20% reductions in greenhouse gas emissions from last-mile deliveries while maintaining service levels and reducing costs (monetary, environmental, and social). It is hoped that the demonstrations made in the first two phases of the project, along with the feasibility studies, will encourage other European, and international, cities to adopt the approaches developed in the URBANE project for **improving the environmental and operational aspects of last mile delivery**.

## INSIGHTS AND INNOVATIONS: THE PI OBSERVATORY'S IMPACT ON LAST-MILE DELIVERY

In addition, URBANE has developed a **PI observatory** to share market-oriented information and news related to **Physical Internet** initiatives in order to generate a **better shared understanding** among different types of stakeholders concerning the **dynamics, competition, potential customer segments, buying patterns**, and additional key aspects in the field of last mile delivery at local and international levels.

*"The Physical Internet Observatory offers cities and logistics operators examples of best practices at a European level, allowing to share and diffuse information about lessons learnt from pilots. It also showcases models for different types of cities, which helps to identify the right format for each urban context, acknowledging that urban logistics needs are very varied across Europe."* **Blanca Yáñez Serrano**, URBANE's Communication, Dissemination & Exploitation Officer

The PI Observatory website is composed of **three sections**:

- **Products:** Market-ready innovations and technologies that have proven to make a positive impact in European cities and serve as great examples of how to make future urban logistics greener and more sustainable.
- **Best practices:** Use cases showcasing the successful deployment of the PI in cities that can serve as valuable references for new pilots and implementations.
- **Insights:** Latest innovation trends, studies, expert opinion pieces, and news about the Physical Internet and the last-mile delivery sector.

*"Urban logistics has operated in a relatively unregulated and ad hoc manner for much of its history. The hands-off approach accorded to logistics development in cities was acceptable when last mile delivery operations were a small fraction of overall urban logistics activities. However with the growth of*

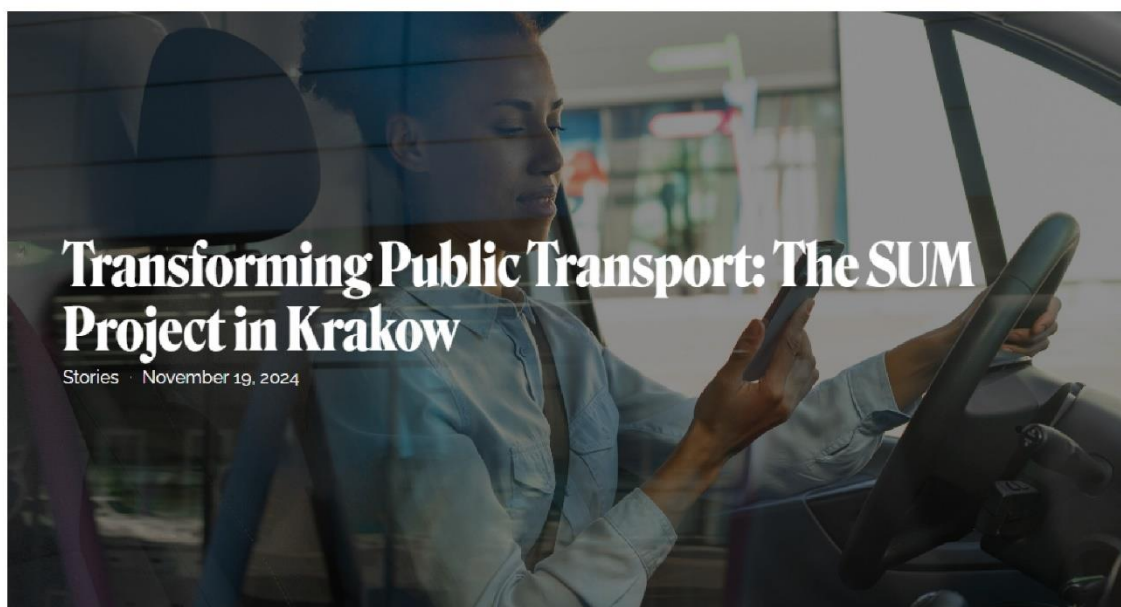
*operations were a small fraction of overall urban logistics activities. However, with the growth of ecommerce and its focus on rapid direct to consumer deliveries, the environmental and social impacts of last mile delivery have become problematic. In addition, the individual business focused approach taken by logistics service providers has resulted in systemic inefficiencies and increasing monetary costs for each delivery. A new approach is required, and that approach is one driven by collaboration, asset sharing, and innovation. This is exactly what the URBANE project hopes to develop through its use of the Physical Internet concept and the innovative solutions that it is developing."* **J. Rod Franklin**, Professor of Logistics and Academic Director of Executive Education at **Kühne Logistics University**

#### **MORE INFORMATION ON URBANE**

- [www.urbane-horizoneurope.eu](http://www.urbane-horizoneurope.eu)
- [Physical Internet Observatory | Mobility Innovation Marketplace \(eiturbanmobility.eu\)](#)
- [URBANE Project on LinkedIn](#)
- [URBANE Project on X](#)

## SUM Project

→ [Link](#)



### UNDERSTANDING SUM

By 2050, the urban population is expected to account for 82% of the world's population, posing major challenges for sustainable urban mobility. A shift from private cars to public and shared transport is essential to address problems such as air pollution, congestion and energy consumption. The EU co-funded Seamless Shared Urban Mobility (SUM) project **aims to transform existing transport networks by introducing New and Shared Mobility (NSM) integrated with public transport (PT).**

The objective of the SUM project is to facilitate the transformation of mobility in 15 European cities by 2026 and in 30 European cities by 2030. This transformation involves the **integration of new shared mobility modes with public transport, focusing on innovation, interconnectivity, environmental sustainability, safety, resilience and replicability.**

### KEY ACTIVITIES

As part of the SUM PROJECT, **Krakow**, located in southern Poland, plans to **expand the Krakow Public Transport (KMK) system** and introduce a new **on-demand transport service**. The aim of the project is to create a complete system that will provide its users with a short waiting time for the service and fast transport to the nearest interchange. The service will not be based on fixed routes or timetables, but will adapt to current demand. The **Municipality of Krakow**, in cooperation with the **Jagiellonian University (JU)**, carried out analyses for the implementation of the DRT service in Krakow.

As this service has not yet been implemented, the actual demand for the proposed service is unknown, and therefore the travel behaviour and perception of the users is unknown. To solve this problem, JU proposes a parameter-free method to **identify the optimal urban area for the implementation of shared mobility services**. Its comparative assessment takes into account factors influencing user choice, including the likelihood of choosing the new mode, the potential reduction of waiting times, the



competitiveness of the new system with public transport and its overall added value. JU uses municipal socio-demographic data, travel patterns and the road network in Krakow to **predict the demand for alternative services** and applies the utility-based approach to estimate mode choice.

The **analysis** consists of two steps.

1. In the first stage, JU analyses the New and Shared Mobility (NSM) from the **origin of the traveller to the public transport hub**. It considers 12 areas of Krakow with selected hubs (one or more different for each area), resulting in 24 different combinations of regions and hubs. The task is to select the best hub for each area and to compare the areas in terms of NSM.
2. The second stage of the analysis considers the **integration of NSM with public transport (PT)**. Based on municipal data, JU compared two areas in Kraków (**Bronowice** and **Skotniki**) in terms of their potential for introducing on-demand feeder bus connections with light rail. Despite similar general characteristics (population density, road network, proximity to the city centre, etc.), our methodology revealed significant differences. The biggest advantage is shown by the competitiveness parameter, which is twice as high for Skotniki as for Bronowice. In addition, the probability of choosing the service is almost 5% higher for the Skotniki area. The remaining parameters, although not significantly different, also favour Skotniki over Bronowice.

The Krakow Public Transport Authority (the contracting authority) has finally decided to **launch the new transport system in the Skotniki area**. The choice of the area was made on the basis of analyses based on spatial data, demography, traffic studies, technical aspects, etc., and with the support of specialists from the Jagiellonian University. We wanted to select a peripheral area of Krakow, where scattered buildings and often narrow streets make it impossible to provide a sufficient (acceptable) level of service to residents with regular KMK lines.

The task of the public transport company is to create a **special application to connect passengers with the drivers** and to order two vehicles for passenger transport. The service will also be integrated into the KMK fare system to facilitate transfers to other modes of transport such as buses and trams. This integration will also be reflected in the branding of the service, so that it is associated with the City of Krakow, Krakow Public Transport and other municipal sustainable mobility services such as LajkBike, and will be called LajkBus.

To date, the formal and technical aspects of implementing the application have been prepared, closed tests of the application have been carried out, the technical specification has been prepared, and the vehicle rental contract has been launched.

The on-demand transport system will be **piloted in Krakow for a period of 18 months**. The service will be co-designed with its users and, depending on the results of the pilot, the offer may be adjusted or extended (in terms of area or functionality).

*"We decided to pilot an on-demand transport service because we want to meet the expectations of residents who would like to use public transport on a daily basis, but because of the distance to reliable public transport, for example, they choose the car as their primary means of transport. A lot of effort has gone into designing the service to provide a solution that is well thought out and best serves residents from day one. From the first day of implementation, we will track user feedback and measure the effectiveness of the service in order to best adapt its operation to meet residents' expectations. This is why collaboration between the city, the university and technology partners is crucial at every stage, right from the start."*  
**Lukasz Gryga** Director of the Traffic Management Centre in Public Transport Authority in Krakow.



**MORE INFORMATION**

- [SUM Project Website](#)
- [SUM Project on LinkedIn](#)
- [SUM Project on X](#)

## GREEN-LOG Project

→ [Link](#)



### UNDERSTANDING GREEN-LOG

**GREEN-LOG – Cooperative and Interconnected Green delivery solutions towards an era of optimized zero emission last-mile Logistics** – is a Horizon Europe project that began on 1 January 2023 and will run until 30 June 2026. Coordinated by Netcompany-Intrasoft, GREEN-LOG unites 30 partners from across Europe to revolutionise city logistics with a focus on economic, environmental, and social sustainability.

The project introduces innovative solutions such as **Logistics-as-a-Service (LaaS)** platforms for interconnected urban logistics, **automated delivery concepts** using autonomous vehicles and droids, **cargo-bike-based innovations** for sustainable micro-consolidation, and **multimodal parcel deliveries** integrating public transportation. These advancements are powered by networked city logistics dataspace that deliver dynamic services for ecosystem optimisation while respecting the interests of stakeholders including consumers, businesses, and the city.

GREEN-LOG approach is being tested in **five Urban Living Labs** – **Athens (Greece)**, **Barcelona (Spain)**, **Flanders (Belgium)**, **Oxfordshire (UK)**, and **Ispira (Italy)**. These Living Labs represent a diverse range of European urban logistics landscapes and challenges and act as city platforms for co-designing, testing, and refining last-mile delivery innovations. They also nurture social innovation and deeper understanding of user needs, habits, and preferences.

Additionally, the project involves **three follower cities** experiencing rapid economic and social change – **Arad (Romania)**, **Helsingborg (Sweden)**, and **Valga (Estonia)** – that will test the transferability of GREEN-LOGs innovations.



## KEY ACTIVITIES

### FROM CO-CREATING Blueprints for Sustainable Last-Mile Solutions to deployment of the First VERSION OF THE INTEGRATED PLATFORMS, Tools and Services

The journey began with an analysis of urban contexts and mobility patterns across GREEN-LOG cities and areas. This process identified key factors influencing urban freight and service demands, including city layout, population density, infrastructure, regulatory frameworks, and technological readiness.

Using a **co-creative** and **collaborative** approach that brought together local governments, research institutions, and logistics professionals, the project developed practical and scalable logistics solutions tailored to each city's unique needs. By integrating developing technologies with the habits and experiences of Living Lab stakeholders, the project fostered innovations that align with the needs and expectations of diverse groups.

Ongoing collaboration between technology developers, social scientists, and local stakeholders during the early stages of the Living Lab's scoping and design ensured alignment of perspectives and a balanced consideration of technical feasibility, user experience, and social impact.

These efforts culminated in **comprehensive blueprints** detailing innovations to be integrated and deployed in each demonstration case, promoting environmental sustainability and enhancing urban living standards.

## INNOVATIVE DELIVERY METHODS AND DEPLOYMENT

In the first half of its journey, GREEN-LOG unveiled an alpha version of its innovative tools and platforms set to redefine last-mile delivery optimisation. This initial rollout introduced several groundbreaking developments, including:

- **The GREEN-LOG data space** for managing project and Living Lab data;
- **AI-powered algorithms** capable of predicting logistics demand across diverse scenarios;
- **Optimisation models** for scheduling daily deliveries through Micro-Consolidation Centres (MCCs);
- **Simulation platforms** for evaluating long-term planning and what-if scenarios;
- **Augmented Intelligence Modelling Platform** combining demand prediction, route optimisation, and iterative learning.

These innovations aim to tackle urban challenges, cutting congestion, curbing exhaust emissions, and streamlining response times— significantly enhancing the sustainability of last-mile delivery.

## REAL-TIME AND CONNECTED SERVICES

The ever-evolving challenges of last-mile logistics, exacerbated by real-time disruptions, call for innovative solutions. In this vein, GREEN-LOG has introduced cutting-edge services, platforms and a user-friendly interface to harmonise the needs of logistics providers, clients, and local authorities. By leveraging a dynamic pricing framework and innovative nudging mechanisms, GREEN-LOG rewards clients with credits while equipping logistics providers with tools to enhance operational efficiency.

At the heart of GREEN-LOG's advanced approach are:

- **GREEN-LOG Logistics-as-a-Service (LaaS) Marketplace:**
- A versatile collection of **Software Development Kits (SDKs)** integrated into Bring Your Own Device (BYOD) systems for on-line real-time tracking;
- **Nowcasting and forecasting services** to predict near-now and short-term transport demand and traffic patterns;
- A **reactive routing toolset** that optimises transport requests, reducing travel time;
- **Digital Control Tower** – a centralised, data-driven **platform** designed to transform last-mile logistics operations.

The first version of GREEN-LOG's innovative platforms, services and tools has been successfully delivered and is now undergoing testing within the Living Labs, paving the way for a more resilient and efficient future in urban logistics.

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## LIVING LABS DEMONSTRATIONS

The first round of trials in all five Living Labs began in Q4 2024 in a controlled environment, involving consortium partners and external stakeholders. After these trials, an evaluation will refine the solutions for the final round of real-life testing.

The outcomes of these trials will be assessed for their economic, environmental, and social impacts, setting the stage for broader adoption.

For more detailed information on these developments, please visit the [GREEN-LOG project website](#), where project deliverables will be available after approval by the European Commission.

*"In GREEN-LOG, we are committed to transforming last-mile delivery in Europe by embracing economically, environmentally, and socially sustainable logistics practices. Through our inclusive and collaborative Urban Living Labs, we strive to foster social innovation and design and implement cutting-edge delivery solutions."*  
**Amalia Ntemou**, Project Manager, GREEN-LOG Coordination Team, Netcompany-Intrasoft.

### More information

Website: <https://greenlog-project.eu/>

Social media channels:

- [GREEN-LOG Project on LinkedIn](#)
- [GREEN-LOG Project on X](#)
- [GREEN-LOG Project on YouTube](#)



## Closing remarks

The **Success Stories** initiative of the Senator project highlights the value of sharing best practices to advance sustainable mobility, transport and logistics innovation. By bringing together a diverse portfolio of best practices from EU-funded projects, including SENATOR itself, this initiative promotes knowledge exchange, enhances collective learning, and accelerates the development of more effective solutions.

This second compilation reinforces the importance of shared experiences in overcoming challenges, amplifying results, and fostering continuous innovation. The collaborative ecosystem established through this initiative strengthens networks across projects, institutions, and stakeholders, paving the way for future synergies that will continue to shape the transformation of urban logistics and mobility.

By promoting these success stories through multiple channels—website, social media, and newsletters—Senator ensures that these insights reach a wide audience, inspiring future projects and decision-makers across Europe. As the landscape of sustainable transport evolves, the initiative remains a valuable tool for empowering innovation and supporting the transition toward more efficient, greener urban logistics solutions.