Senator

Zaragoza Urban Living Lab

Project Challenges & Outcomes

SENATORPROJECT.EU

The Senator project, funded by the Horizon 2020 EU programme, is at the forefront of developing innovative solutions for urban logistics. By focusing on four essential urban layers—end-receiver, transport, logistics, and infrastructure—the project has created a Smart Network Operator Platform, underpinned by a sophisticated ICT framework designed to facilitate **shared, integrated, and sustainable urban freight logistics.**

The following summarizes the key challenges faced and the solutions implemented during the pilot phase of the SENATOR Project, conducted in the Urban Living Labs of Zaragoza (Spain). During this phase, the SENATOR Platform was tested, refined, and enhanced to boost the efficiency and sustainability of urban freight logistics.

The aim is to share valuable insights gained while addressing the diverse needs of stakeholders, including public authorities, urban developers, logistics operators, transport and regulatory agencies, and citizens. Each of these groups plays a crucial role in the planning and management of urban spaces and is surely eager to expand their knowledge.

Find out more

More on Senator Project

Pilot implementation in Zaragoza's ULL

Zaragoza's pilot investigated the following areas, each aimed at evaluating the performance and capabilities of the SENATOR platform:

- **Local Market Consolidation and Cross-Docking**: Shipment optimization in Zaragoza allowed for real-time pickups and the consolidation of daily deliveries into a single unit across multiple postal codes. Cargo exchanges between Correos and Correos Express were evaluated to enhance logistics efficiency in the city center.

- **Network Balancing (Virtual Load Exchange)**: The redistribution of logistics tasks between vehicles or operators was simulated to ensure balanced deliveries, either by reallocating or transferring loads, while evaluating the impact on overall operational efficiency.

- **Regional Market Consolidation**: The feasibility of consolidating the regional outbound market was assessed to streamline connections between central markets and small retailers, reducing peak-hour traffic around Mercado Central de Zaragoza.

- **Smart Management for Loading Bays:** A study focused on optimizing the management of loading bays and strategic parking areas across Zaragoza to improve logistics flow.

Key Challenges

1. Data Collection
2. Anonymization and Data Protection
3. Address Geopositioning
4. Integration with SENATOR Platform
5. Information Display on the Platform

1. Route Optimization through Data Collection

Challenge

Gather essential data for shipment routes and integrate this information securely into the platform.

Details

Data on shipments, routes, and vehicle geolocation had to be collected and anonymized. This process involved overcoming challenges like incomplete digital information for many shipments and securing sensitive location data.

Outcome

Anonymization measures were successfully implemented, and the project adapted to ensure compliance with data privacy while enabling route optimization.

Impact

Complete, secure and reliable data support route optimization, leading to timely deliveries, reduced operational costs, and improved customer satisfaction and trust in the service.

2. Ensuring Privacy through Anonymization and Data Protection

Challenge

Protect sensitive shipping information and ensure recipient and staff privacy.

Details

Shipment codes were anonymized, and geolocation data was handled with an acceptable margin of error to prevent sharing of exact locations.

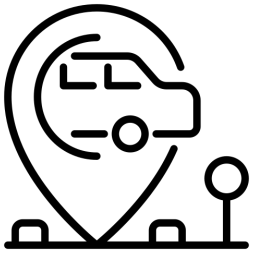
Outcome

The measures taken ensured that the project complied with privacy regulations, which in turn improved customer trust and operational efficiency.

Impact

Robust anonymization and data protection measures safeguard sensitive information and maintain the privacy of recipients and postal staff.

3. Geopositioning Data Accuracy for Route Optimization



Challenge

Achieve accurate geopositioning data to optimize routes and prevent delivery inefficiencies.

Details

The initial data available for route optimization presented inaccuracies and gaps. Technical solutions were implemented to improve data precision.

Outcome

By correcting and enhancing the accuracy of geopositioning data, the platform has the capacity to improve route efficiency and reduce delivery delays.

Impact

Ensuring accurate geopositioning data is crucial for optimizing delivery routes. Addressing challenges of incomplete and inaccurate data improved the system's reliability.

4. Seamless Integration for Operational Efficiency

Challenge

Overcome technical challenges in integrating the internal systems with the SENATOR platform.

Details

Automated integration faced obstacles, but alternative manual data transfer methods and custom data extracts were developed to ensure daily data sharing.

Outcome

Despite initial challenges, routes geoposition was integrated into the platform, including information about vehicles, PDAs and shipment status, all in real time.

Impact

By focusing on effective data transfer to the platform, we can can enhance information sharing, enabling us to respond swiftly and effectively to changes in routes and demand.

5. Real-Time Data Visualization for Enhanced Decision-Making

Challenge

Present large and diverse data in a way that enables quick decision-making and operational improvements.

Details

A user-friendly interface had to be developed to display complex data from different sources, enabling operators to access and interpret the data easily.

Outcome

The development of an intuitive interface streamlined decision-making processes, contributing to improved service delivery and operational efficiency.

Impact

By delivering timely insights through several different data visualizations, the SENATOR platform aims to optimize real-time route planning and improve overall service delivery.

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