Urban Logistics Made Sustainable

Ultimo LaaS Service Implementation Partners

Ultimo LaaS

Dual-use of autonomous vehicles for passenger and logistics transport

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Advancing Sustainable User-centric Mobility with Automated Vehicles

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2025

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Challenge - Solution

Challenge
Public transport fleet owners operating autonomous vehicles (AVs) face challenges **in amortizing their investment in large fleets**.

Idea
Maximizing vehicle utilization over a full 24-hour cycle is therefore a key objective.

Solution
To address this, Ultimo is testing the use of Avs bus for logistics operations during off-peak hours, when passenger transport demand is lower.

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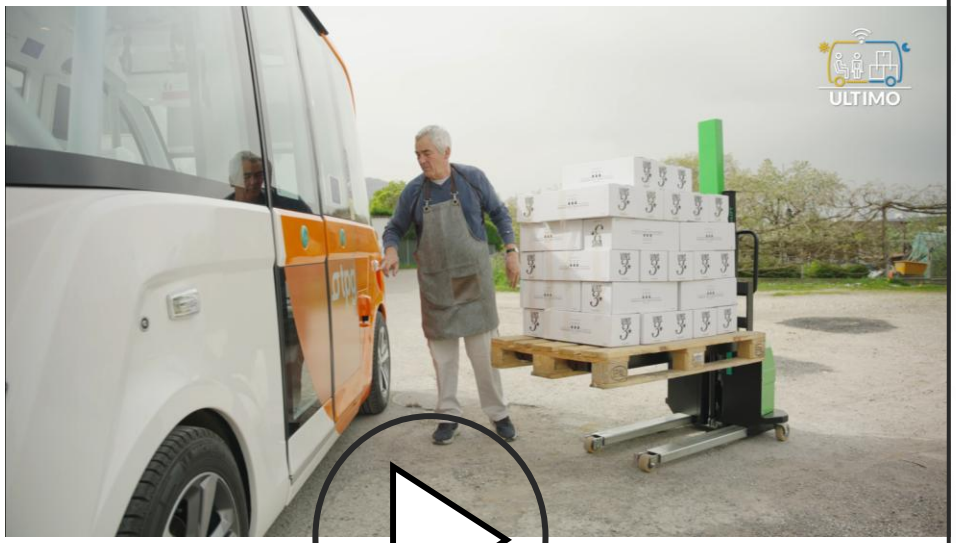
Overview of the Identified Use Cases

1
Autonomous Pick-up connecting suppliers with central warehouses & Intra sites shuttles



2
Mobile Nano-hubs (AV-hubs) Multimodal urban logistics

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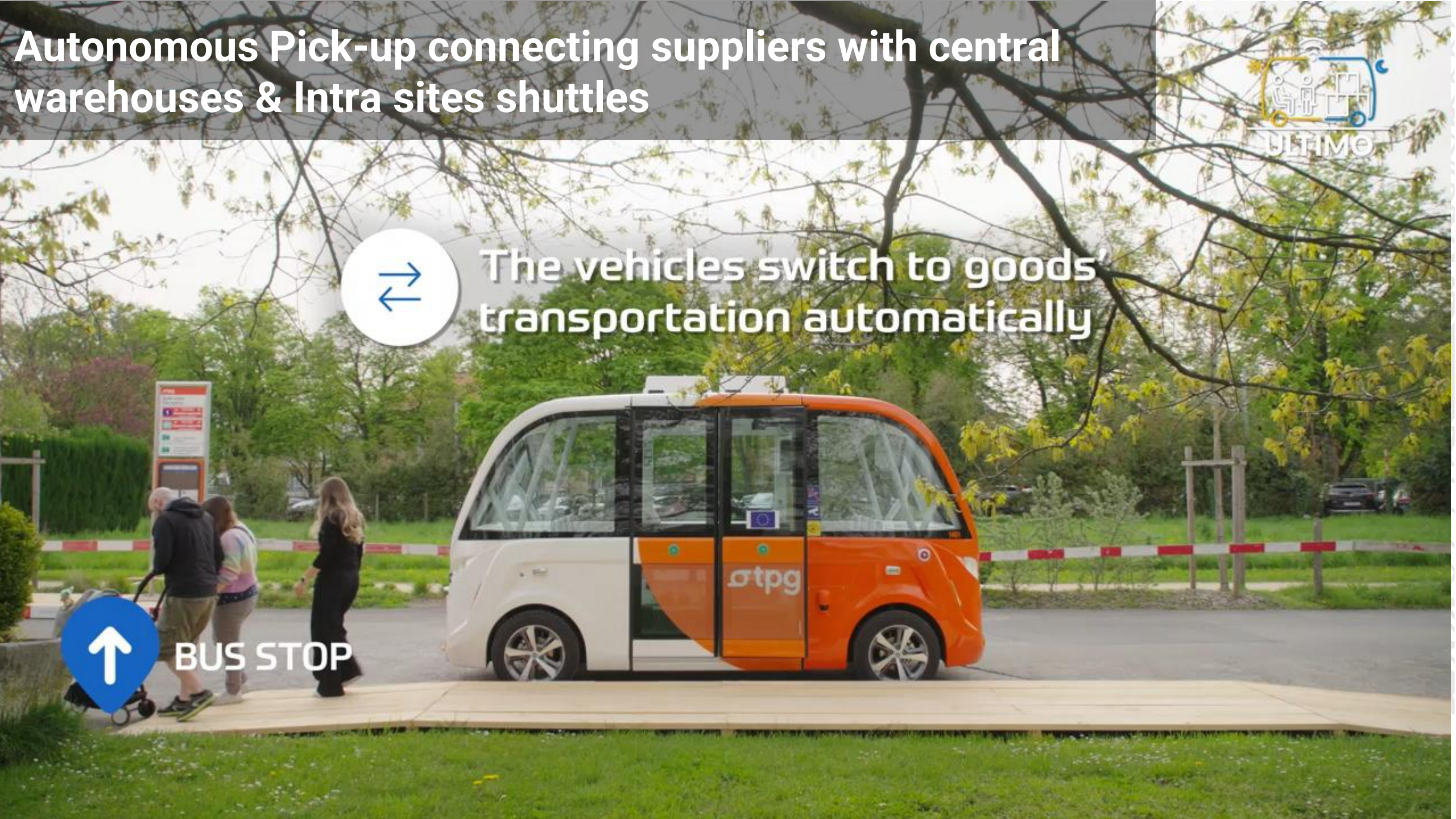
Autonomous Pick-up connecting suppliers with central warehouses & Intra sites shuttles



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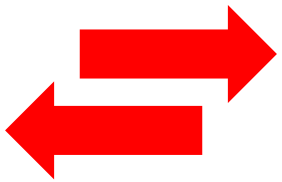
Autonomous Pick-up
connecting suppliers with central warehouses
& Intra sites shuttles

Supplier – Point of Production



Warehouse

Delivery

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Mobile Nano-hubs (AV-hubs) Multimodal urban logistics

Supplier – Point of Production

Warehouse

Cross-docking with cargo-bikes or small e-vehicles

Cross-docking

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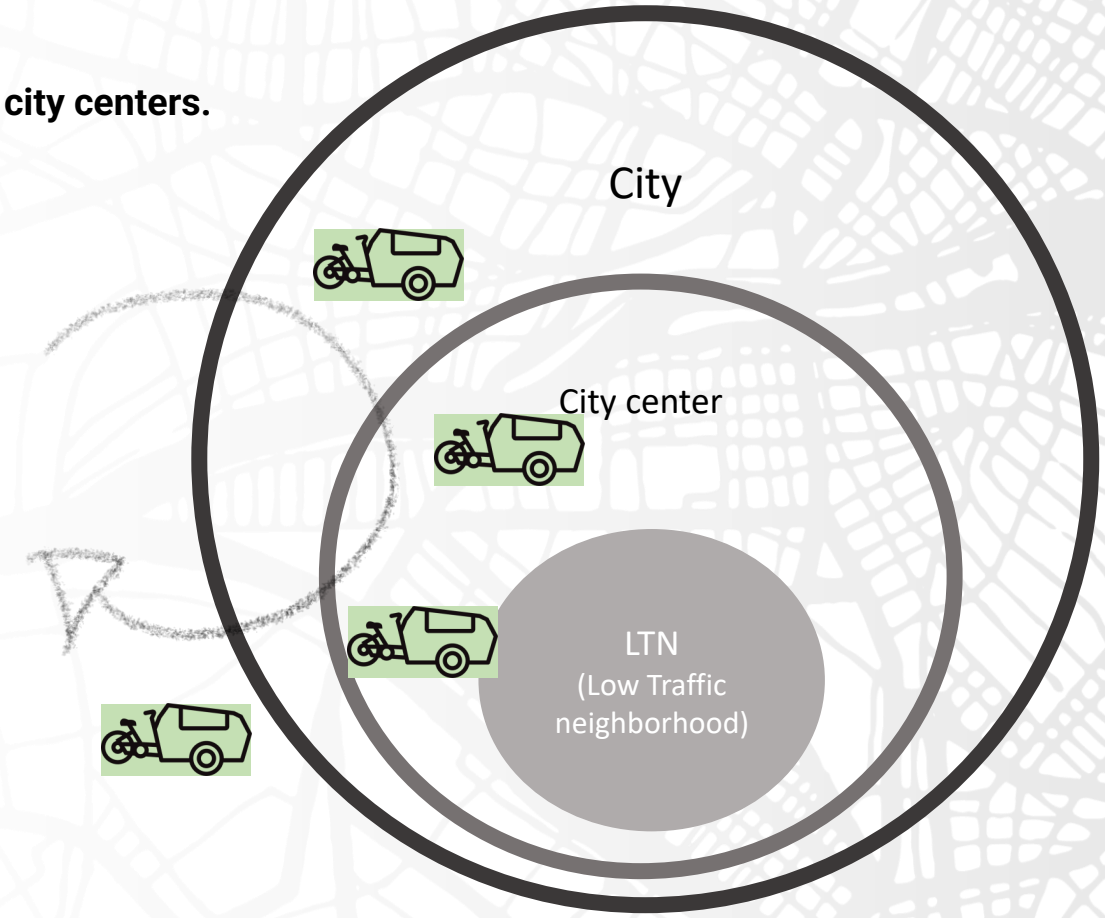
Cities' challenge

SUSTAINABILITY
25% of total emissions of polluting gases come from transportation.

CONGESTION
20% of traffic in cities is caused by freight transport.

Replace trucks by cargo-bikes in city centers.

Central hub with
Centralized logistics



* Source: Deloitte, "Logística de Última Milla: retos y soluciones en España", febrero 2020.

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Logistic operators' challenge

But it is not efficient to deliver from central hubs in cargo-bike.

How can we make it efficient ?

EFFICIENCY
The Last Mile represents up to **40%** of total logistics costs.

Central hub with
Centralized logistics

* Source: Deloitte, "Logística de Última Milla: retos y soluciones en España", febrero 2020.

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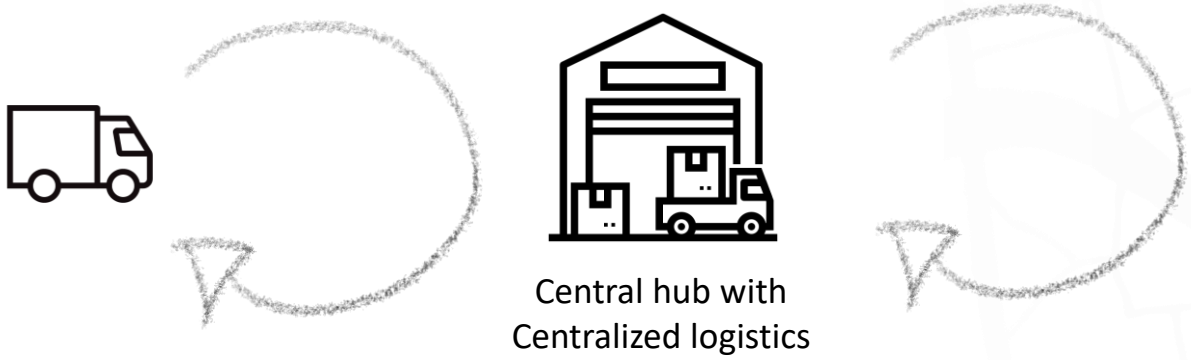
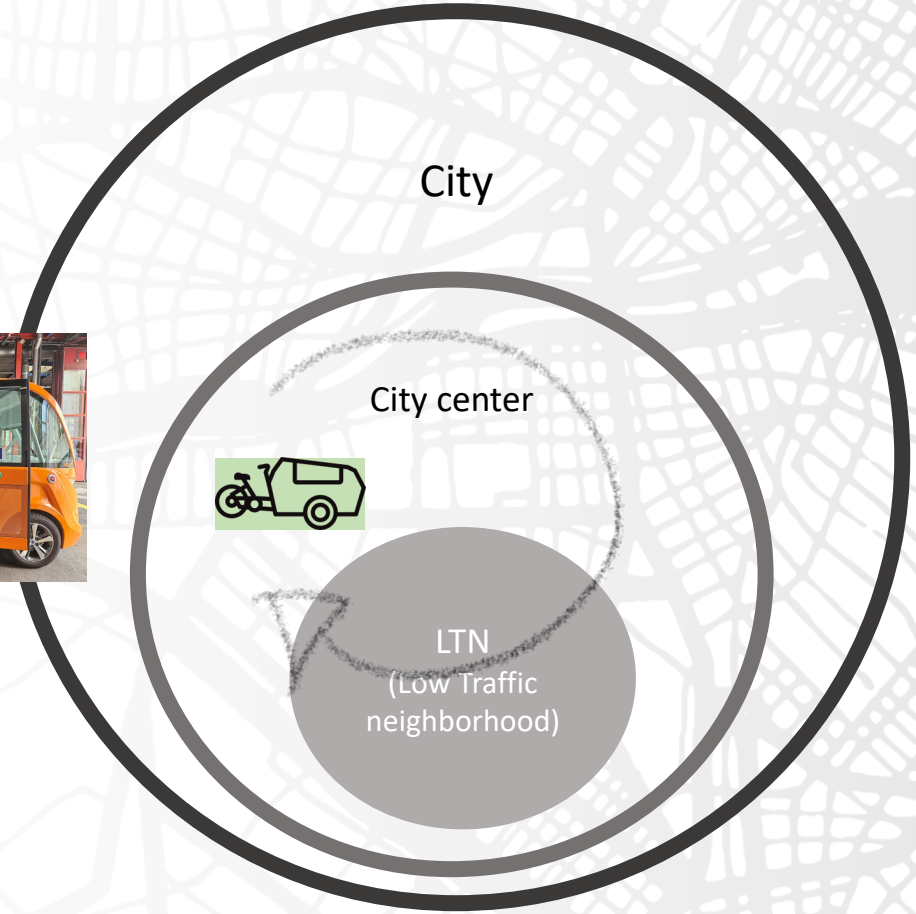
○ Mobile Nano-hubs (AV-hubs) approach





* Source: Deloitte, "Logística de Última Milla: retos y soluciones en España", febrero 2020.

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OVO’s approach

Tools for Decentralized & multimodal logistics.

Decentralized, as our approach uses a multitude of small depots and relay points in strategic locations.

Multimodal, because we help you connect trucks to cargo bikes (or small vehicles), exploiting the advantages of each means of transport.

To do this, we have developed new infrastructures and IT tools.

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Mobile Nano-hubs (AV-hubs)
OR Fixed Nano-hubs

OR

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Challenges of Using Passenger Transport Vehicles for Logistics Purposes

Warehouse Access

Access routes to depots and loading areas should be **mapped** and **allow for GPS**-based vehicle tracking.

Handling Automation

Going forward, this could be combined with **automated loading and unloading** processes at the depot.

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Challenges of Using Passenger Transport Vehicles for Logistics Purposes

Adapted containerization to a vehicle made for passenger transport & containerization adapted to whole supply chain

✓

✗

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Challenges of Using Passenger Transport Vehicles for Logistics Purposes

Find logistic demand on low-demand hours for passenger transport

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Challenges of Using Passenger Transport Vehicles for Logistics Purposes

Dynamic vs. Planned Order

Two types of orders can be considered: dynamic and planned.
The allocation of vehicles between dynamic and planned modes will depend on actual demand.
Availability may be scheduled in time slots based on a monthly or quarterly contract.

Vehicle Allocation by Type of Service

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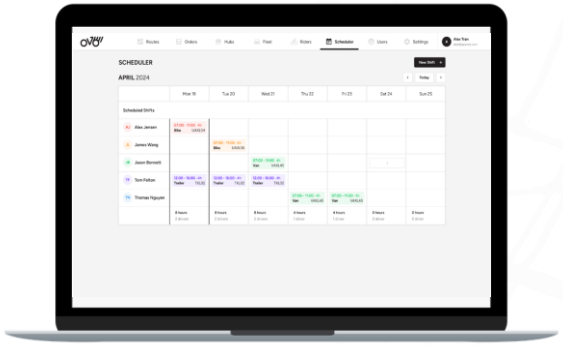
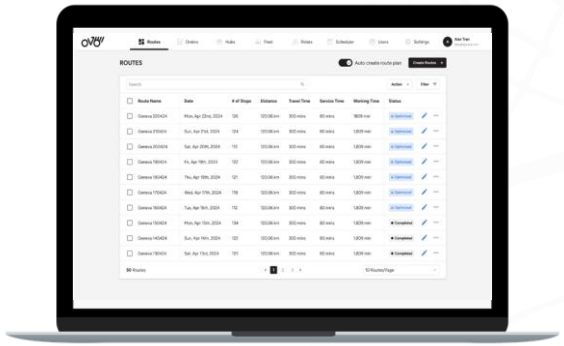
Service LaaS



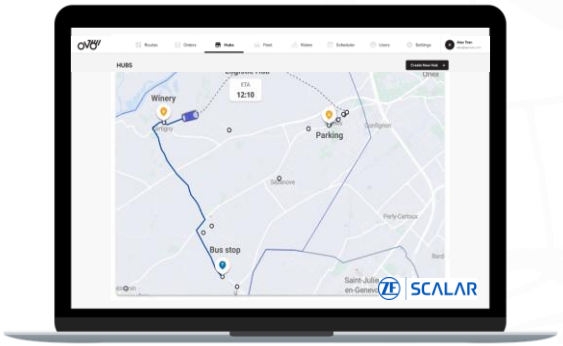
Booking interface

For Logistic Operators



Orchestration of the Logistic Service

Mange booking rights can be done by the PTO or by a broker



Fleet Orchestrator

Optimize the routes of the vehicles and availabilities for Logistic serivces

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Innovation for the future of our cities

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