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Logistics Innovation
through Collaboration
in Europe



[Webinar]

Integration of Passenger and Freight Transport

Joint 2025 Webinars

Greening urban freight transport

Unlocking Synergies: Combining
Passenger and Freight Transport for
Sustainable Urban Mobility



ULTIMO
Advancing Sustainable User-centric
Mobility with Automated Vehicles



URBANE

ZERO
emission
final mile
delivery

FRI 23 MAY 2025

13:00 – 14:30 CEST

POLIS
CITIES AND REGIONS FOR TRANSPORT INNOVATION

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in Europe

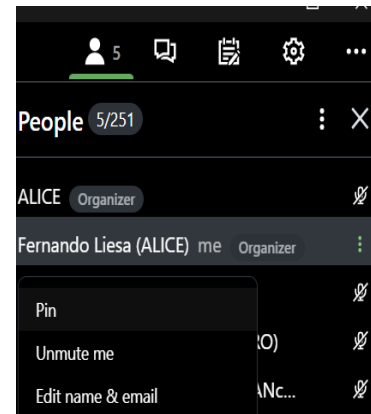
The European Technology Platform ALICE

Rules for the webinar

Waiting for other participants to join... 😊



- The **session will be recorded** in case you or other ALICE members wish to have a look afterwards. A link to the video recording and pdf presentations will be shared with participants through e-mail.
- Please, **keep your microphone muted when the meeting starts and your cameras off if you are not speaking**. You can introduce yourself when entering the meeting so you do a test (i.e. everybody can hear you) 😊
- Please, **add your name and company** to identify yourself →
- Please, **share your questions to the speakers in the GoTo chat**. You are also welcome to share thoughts, suggestions or relevant information on the subject



You may ask any question on these rules before the start!

AGENDA

- Welcome and session introduction.
- Presentation on La Poste's parcel delivery by tram in Strasbourg
 - Johan Leveque, La Poste Group
- Freight transport on the Metro network in Madrid
 - Rafael Villa Martínez, Metro de Madrid, DELPHI project
- Delivery robot on Trams in Karlsruhe
 - Thomas Benz, AE-Network, URBANE project
- Use of autonomous vehicles for freight transport
 - Olivier Starkenmann, OVO Logistique Urbaine
- Panel Discussion & Q&A
- Closing remarks

Using tramway to deliver goods : Strasbourg experience.

2025, MAY 23



Collaboration



Postal and parcel delivery services



Train manufacturer



Urban Context

- 300 000 hbs
- Medieval city center
- Hard to access
- Strong « no car » policy



Urban Context

- 300 000 hbs
- Medieval city center
- Hard to access
- Strong « no car » policy



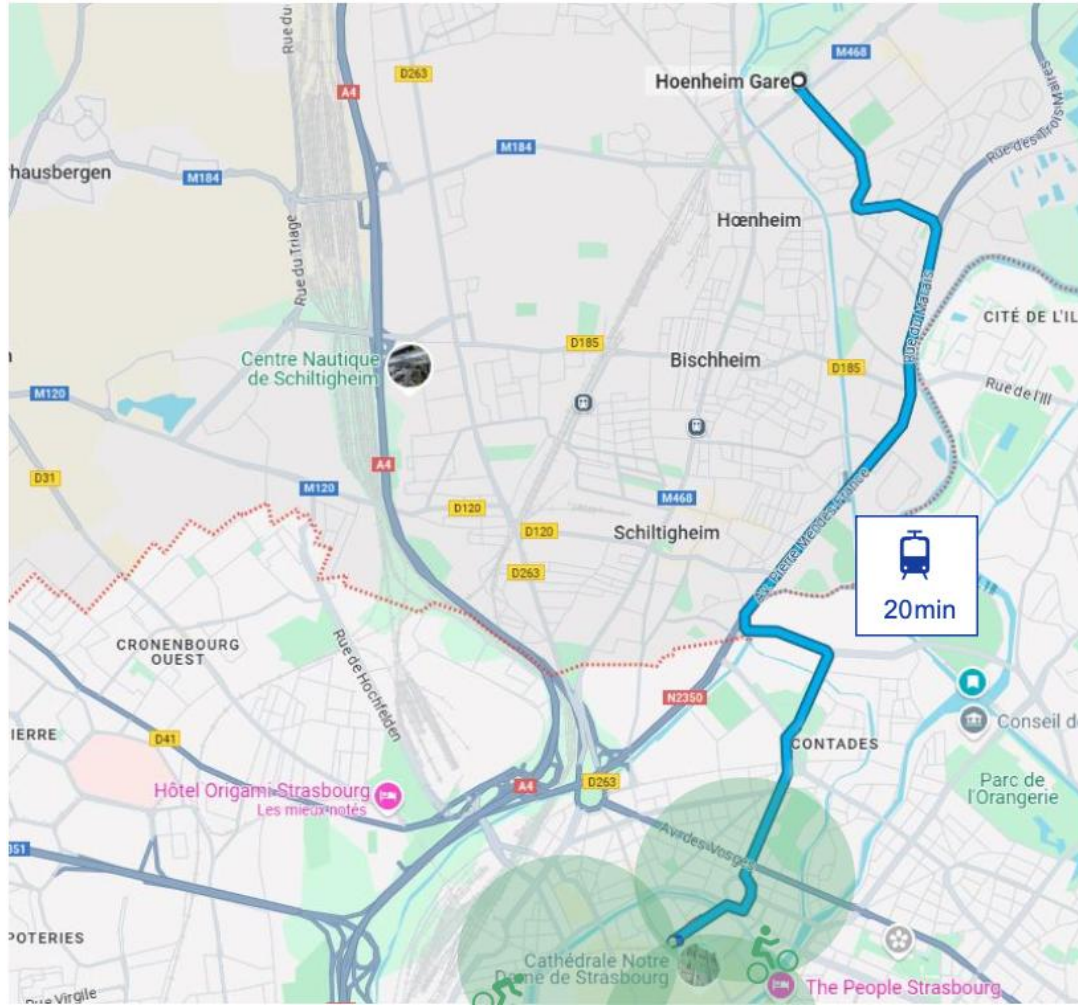
Urban Context



Cargo Bike coverage

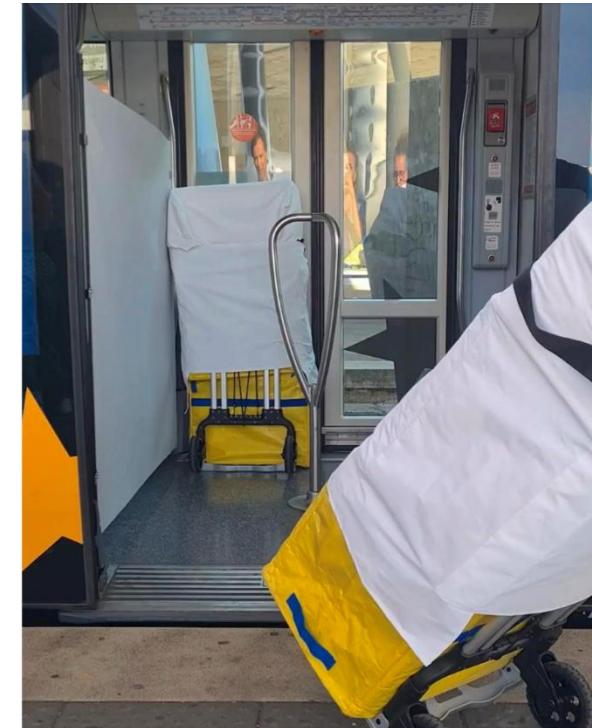


The experiment



From 11/09/2024 To 26/10/2024
Monday-Saturday

- Parcels are loaded from a peri-urban rail-connected platform at 9:00AM and brought to the city center.
- Parcels are containerized and unloaded directly in cargo-bikes.
- A second loop is made in the afternoon.



Strasbourg's objectives

- Promote decarbonization of freight transport
- Reduce heavy vehicle traffic
- Promote and support innovation
- Promote energy efficiency in the logistic field
- Facilitate logistic activities
- Reduce congestion in public space
- New service with no impact on tram quality of service



La Poste's objectives

- Technical feasibility :
 1. Link between loading/unloading platform <-> tramway
 2. Impact on regular tram network frequency and ponctuality
 3. Respect of worktime target (<3min30s loading, <30s unloading)
- People safety (general public, controlers/drivers, postal agents) and parcels safety.
- Social acceptation of shared mobility people/parcels by tram users.
- No alteration of delivery quality of service

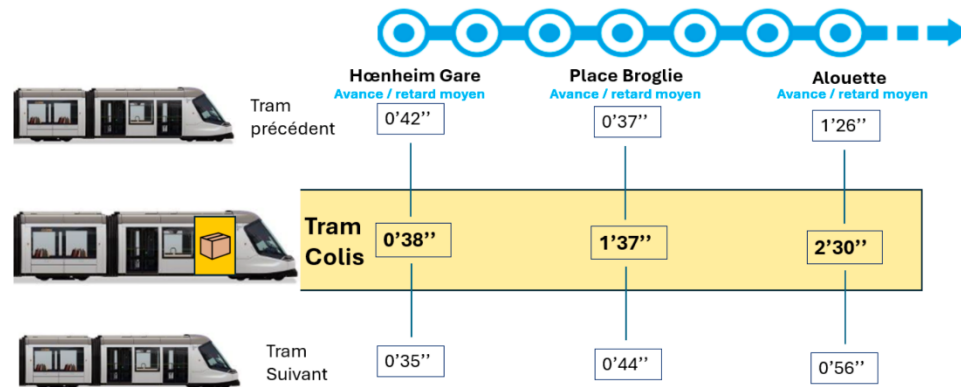


First feedback



Technical feasibility

- Loading and unloading times can be respected with **no impact** on frequency
- Tram **can be used** to bring parcels in a **specific zone**
- Lateness up to 1min30s can be induced due to lack of communication



- Average unloading time : 28s
- Downtime at the unloading station : 47s vs 26s without

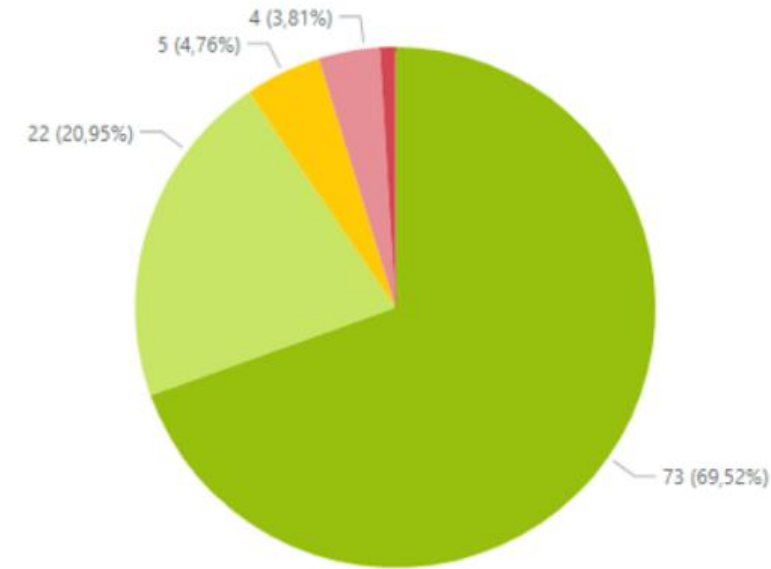
Safety

- No loss or steal of parcels over the duration of the experiment
- No incident reported



Social acceptance

- 90.5% of people have a favorable opinion of the experiment
- 86% of people are favorable for the experiment to become a permanent service



In the media

- More than 120 articles worldwide
- 8 full documentaries



Le tram strasbourgeois livre des colis : une première en France

Une expérimentation inédite vient d'être lancée : le transport de colis par le tram B, de la station Hœnheim Gare à la station Broglie. Ce projet porté par La Poste, Alsace, l'Euremétrropole et la CTS a pour but de désengorger la ville et d'améliorer la pollution de l'air en remplaçant certains tractors en camionnettes. Le premier test durera jusqu'au 26 octobre.

Motiv Châtelain-Courtois - 10 sept. 2015 à 10:00 (100 mots) 100 mots 100 mots 100 mots 100 mots 100 mots 100 mots 100 mots 100 mots 100 mots



Main challenges for scalability

- Parcel loading on rail is really city-dependant and opportunistic. It can happen a city has no available dockers for loading
- Resillience to tram disruptions is a challenge to adress, it has not been tested
- Resillience to demand and volumes high variability has not been tested
- Safety has been assured by an agent, it needs to be automated to ensure a profitable business model.
- Real time data is needed and passengers need to be given more information to avoid misunderstandings



Key learnings

- Freight mobility using tram IS technically feasible
- Good communication between operational actors is key to a successful experiment
- Profitable business model **has not yet** been found.
- Social acceptance surveys show people are ready for mixed passengers/freight
- Safety procedures and scalability are still to be challenged



Using tramway to deliver goods : Strasbourg experience.

2025, MAY 23





Proyecto M4G

Metro For Goods



Current Problem:

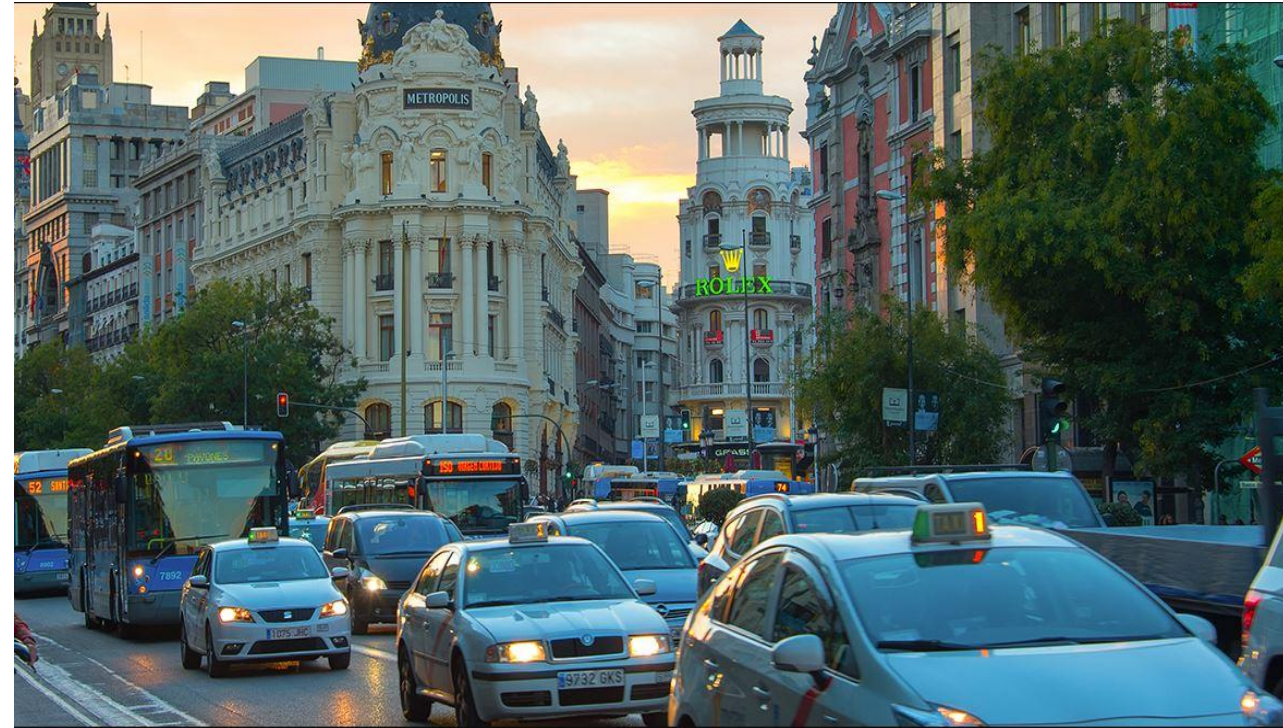
Urban freight transport already accounts for 38% of total traffic congestion in Madrid, and it is expected to rise to 47% by 2025

- **E-commerce Model is Overwhelmed:**

The growth of online shopping cannot be sustained by simply increasing the number of delivery vehicles. Operate during off-peak hours

- **Madrid Low Emission Zone:** In the coming years, two out of every three vehicles will be banned from circulating in urban areas affected by this new regulation.

- **Urban Freight Distribution requires a new delivery model:** that effectively addresses the challenges outlined



800.000 parcels / day



E-COMMERCE

E- Electronic
C- Commerce
L- Logistics
M- Marketplace
H- Hub
S- Shopping
A- Area
C- Customer experience

If 4% is transported by Metro



Remove 350 delivery vans
from the city every day



Reduce 35.000 Km/day of
traffic removed from
Madrid's road



€5 million /years in
externalities saving

Key Assumptions of the Project

- **No disruption to Metro's current passenger service:**

There is no mixing of passengers and parcels on the same trains, and train frequencies for passengers remain unchanged. Operate during off-peak hours

- **Reuse of existing resources:**

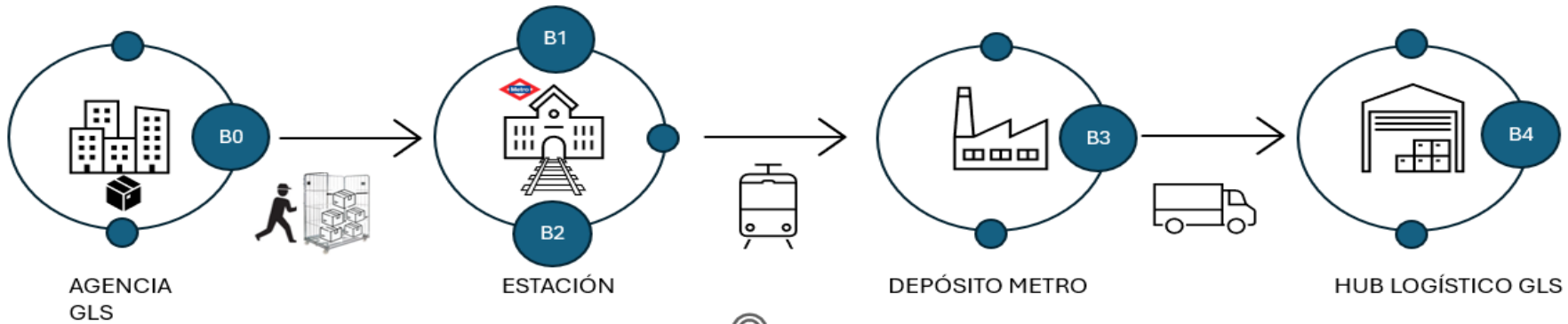
The trains used outside of service hours are the same ones operated for passengers during the day. Intermediate storage areas located in stations will serve as urban microhubs for parcel distribution.

- **Non-exclusive public service:**

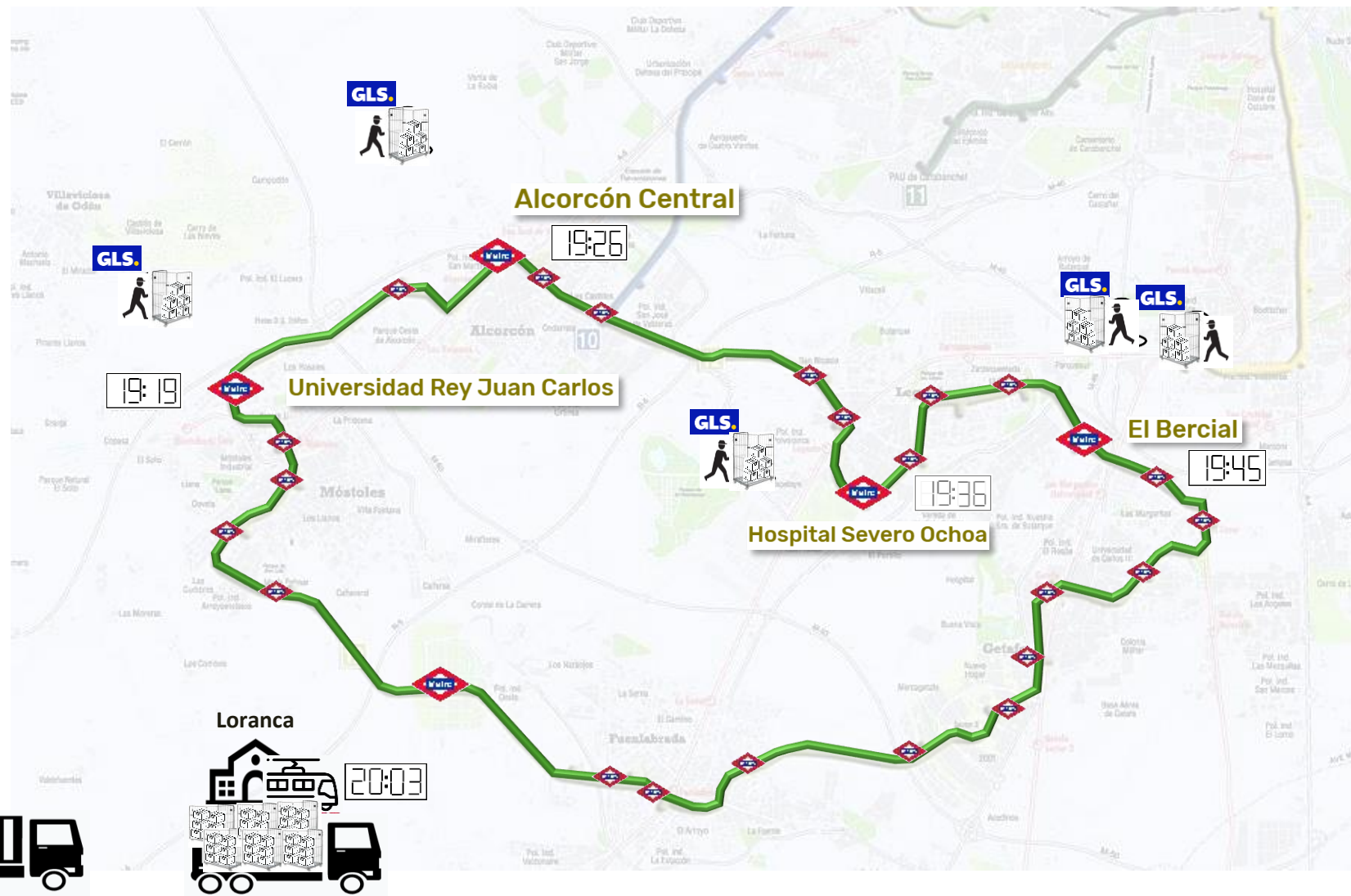
The system will be available to all logistics companies, which can use it simultaneously by paying a fee proportional to the service provided



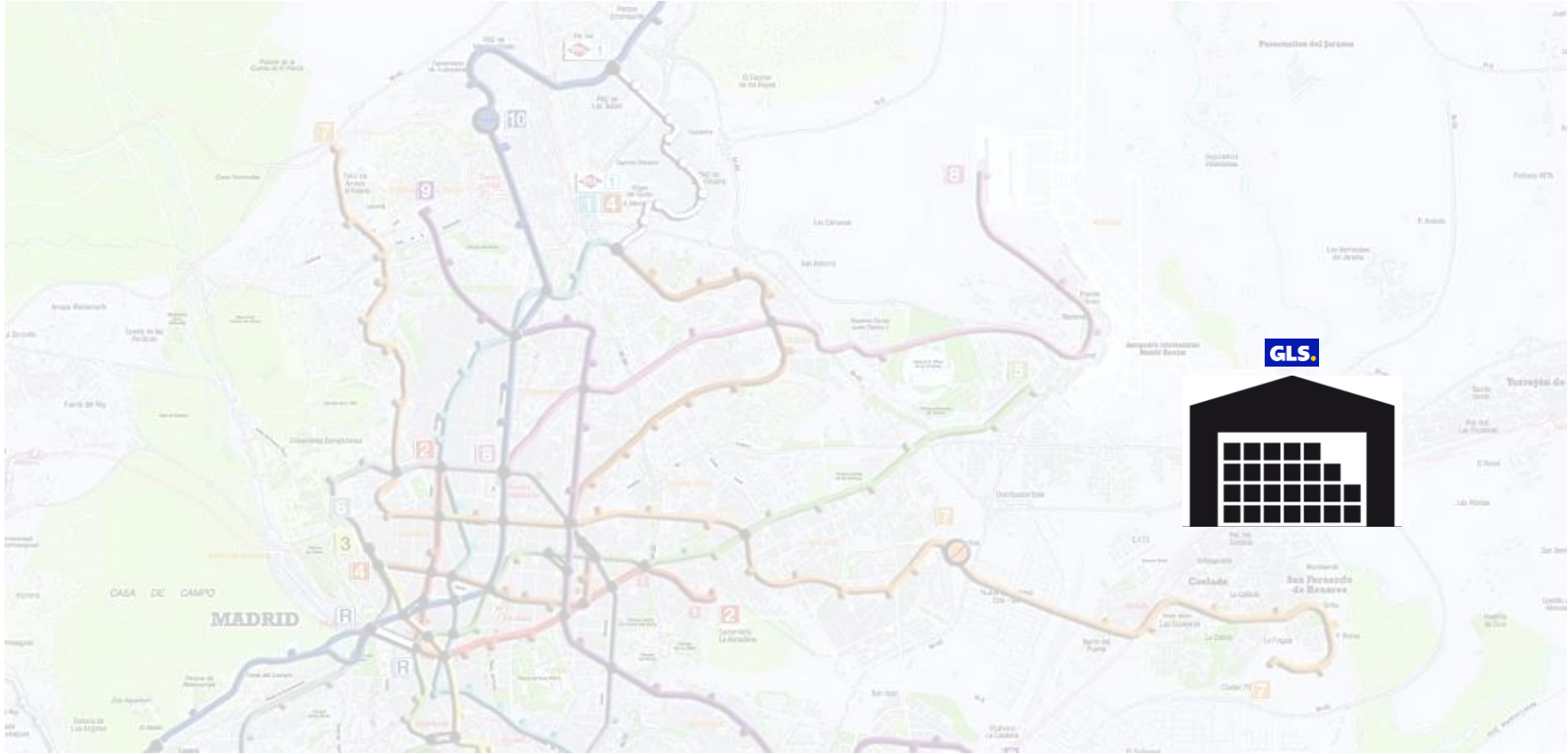
M4G Model: METROSUR Pilot



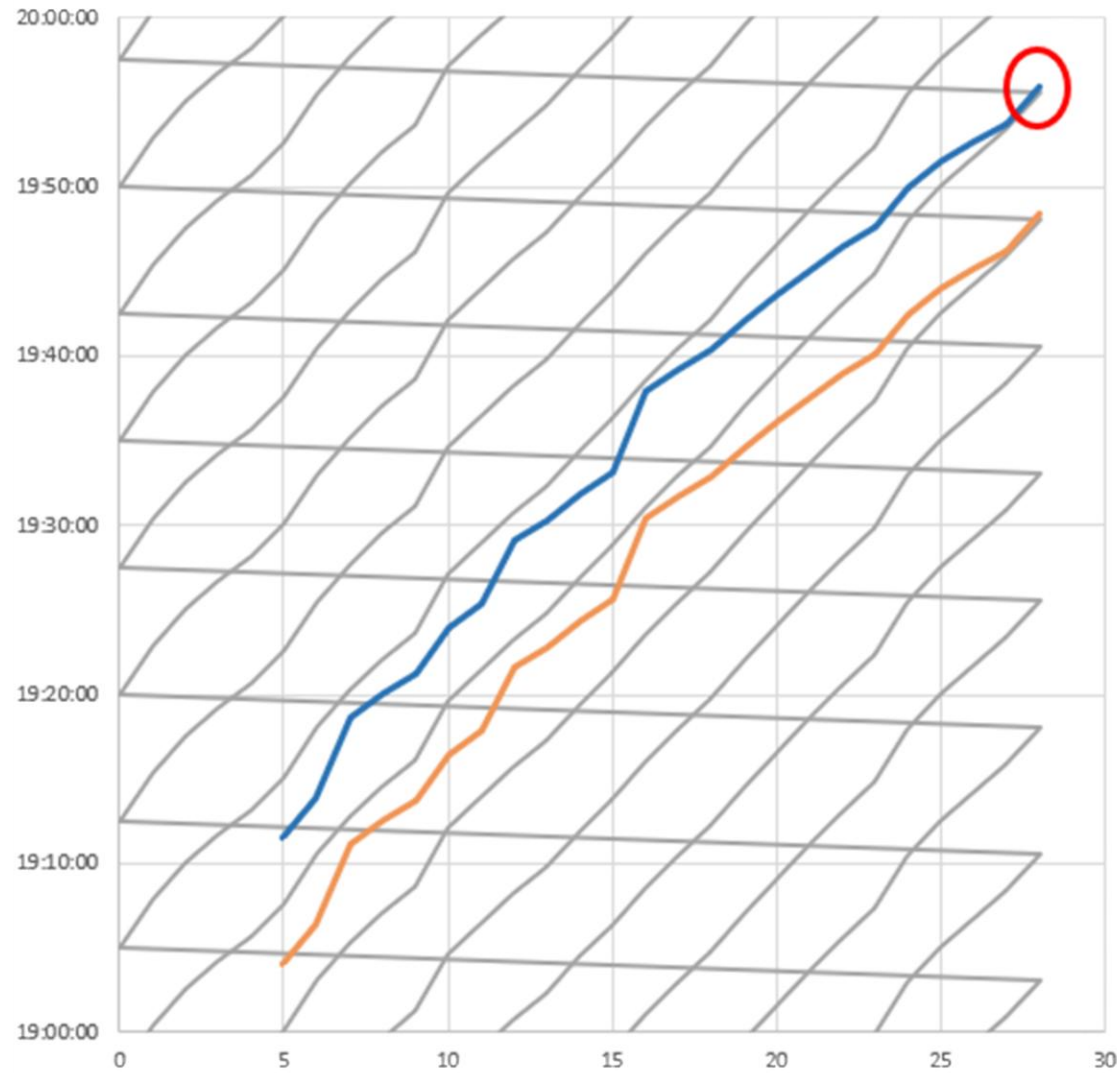
M4G Model: METROSUR Pilot



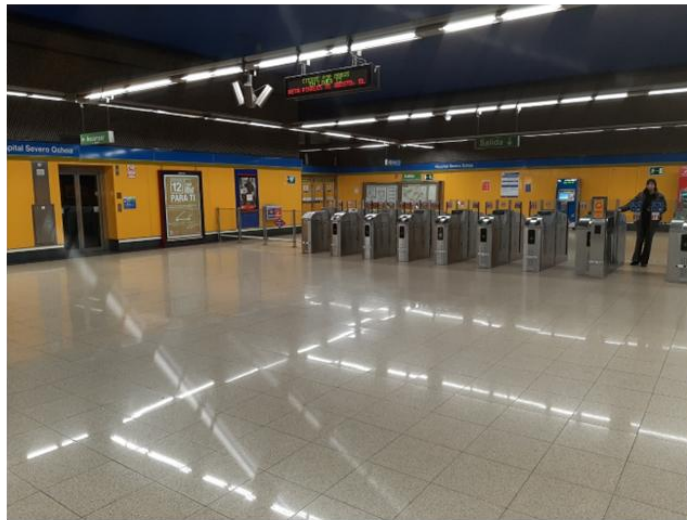
M4G Model: METROSUR Pilot



Adjustment to passenger train schedule without altering passenger service



Station Example: Hospital Severo Ochoa

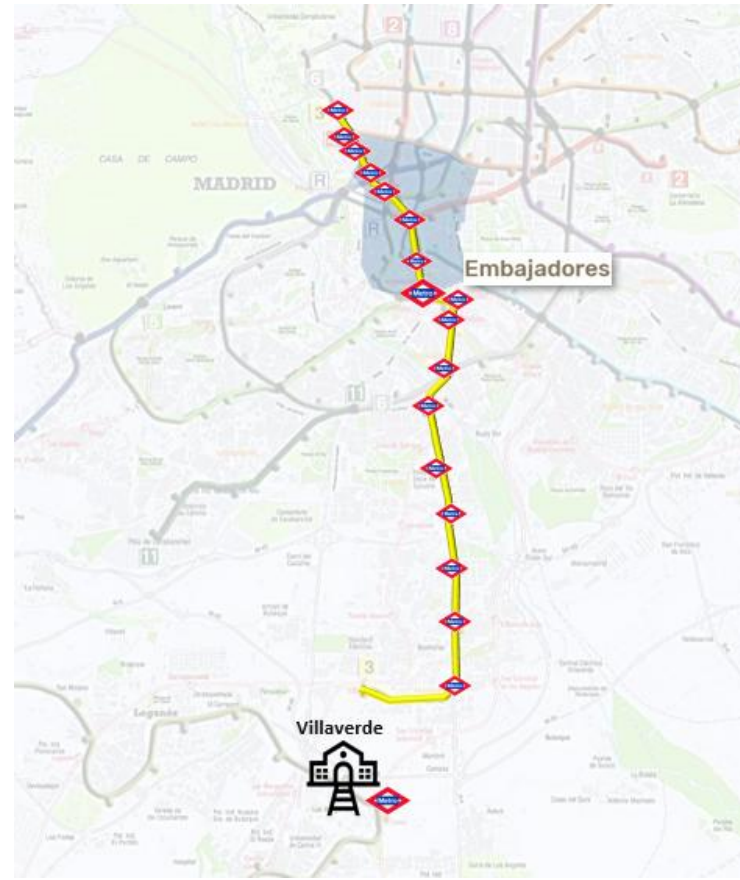
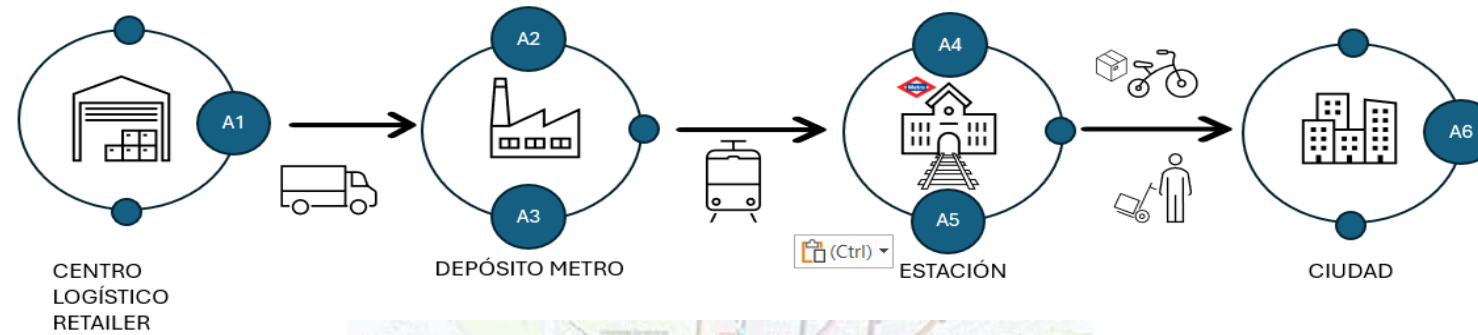


Loranca Depot: Transfer of goods from train to truck

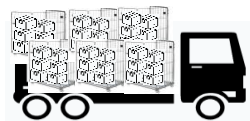
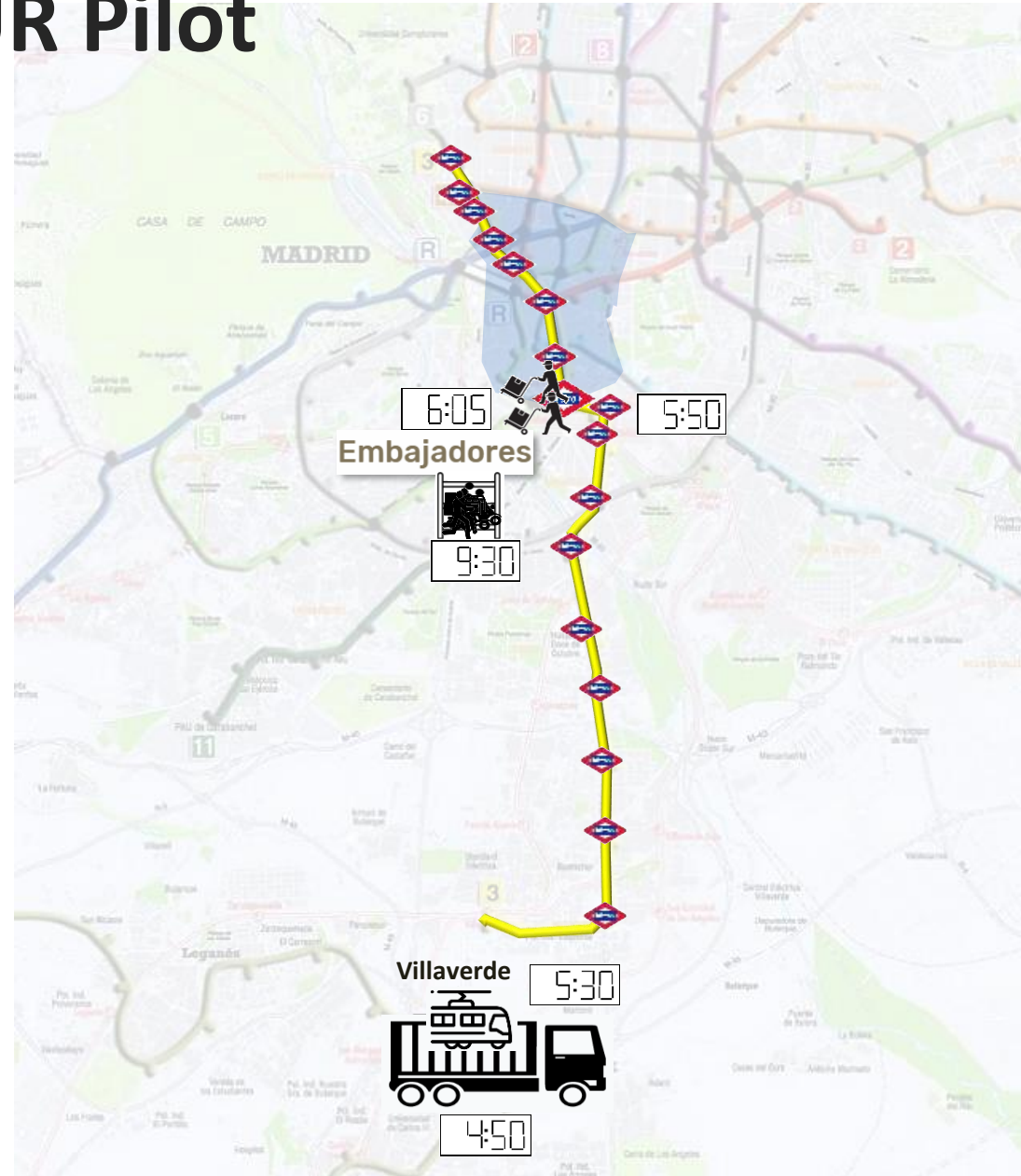




M4G Model: LEZ Pilot

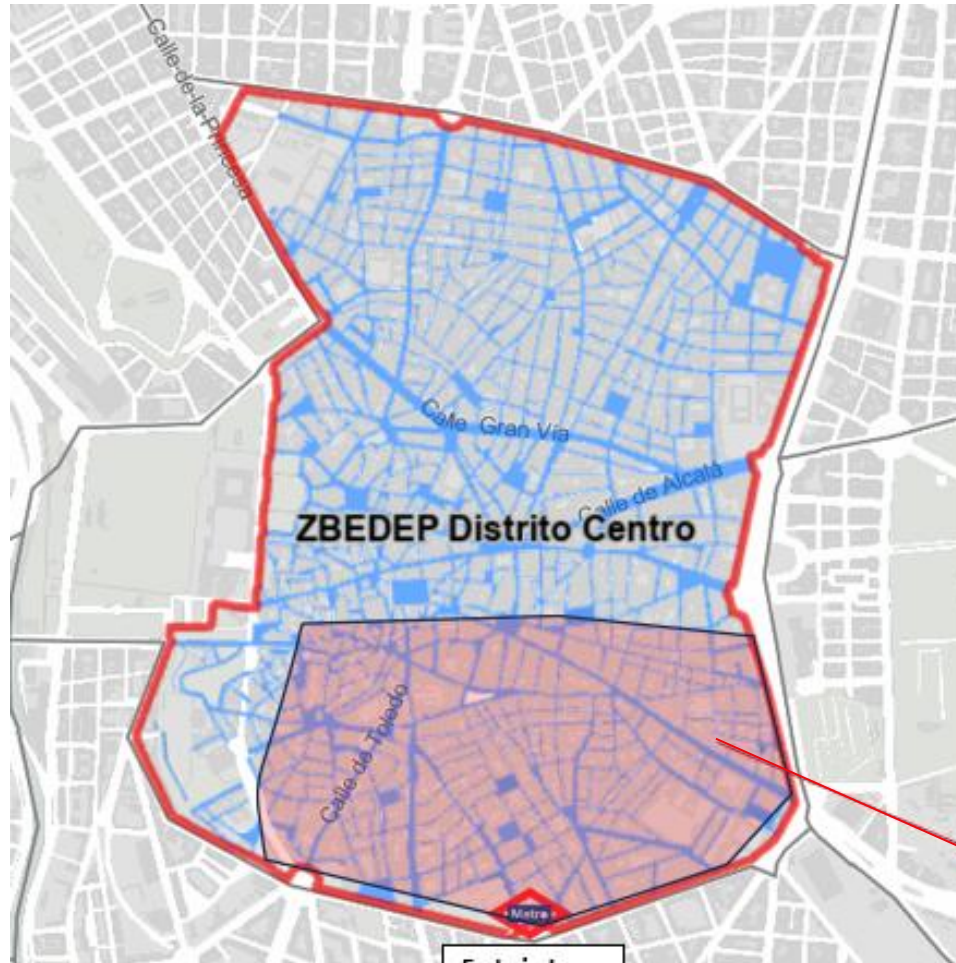


M4G Model: METROSUR Pilot



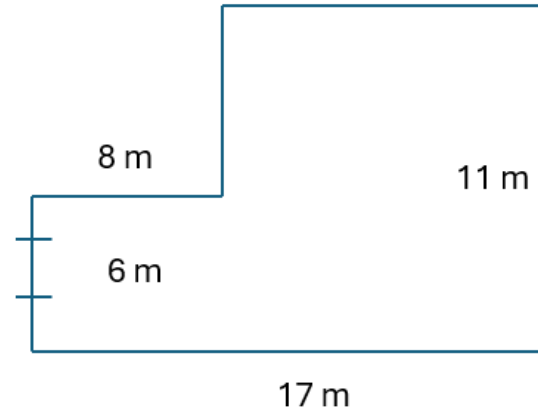
Low Emission Zone (LEZ):

Goods are injected from the depot into Embajadores station for subsequent distribution within a designated LEZ area.



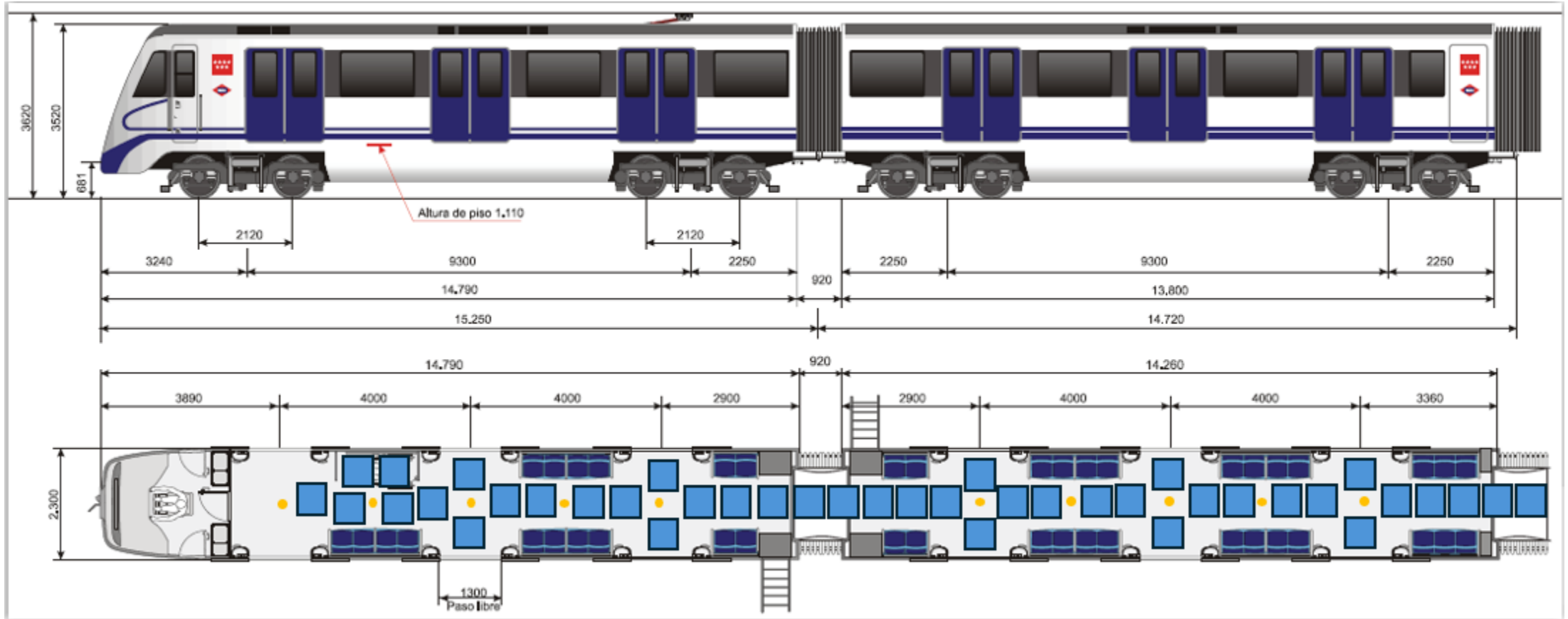
Home Delivery Area for E-commerce Parcels
using cargo bikes or walking couriers

Pilot Station: Embajadores



STATION FUNCTIONS AS A MICROHUB (SMALL INTERMEDIATE WAREHOUSE)

Vehicles and Handling Units : 8000 Series Train + Rolling Cages



Last-mile delivery bag

A Game-Changer for Urban Logistics

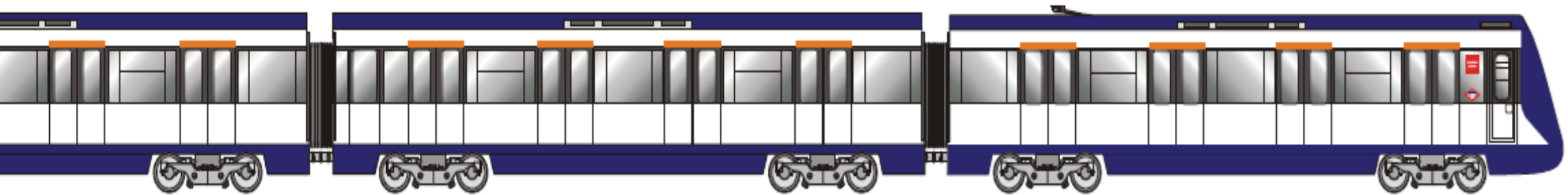
If a metro system anywhere in the world decides to step into urban freight distribution...

What are the critical factors it needs to consider to make it a success?



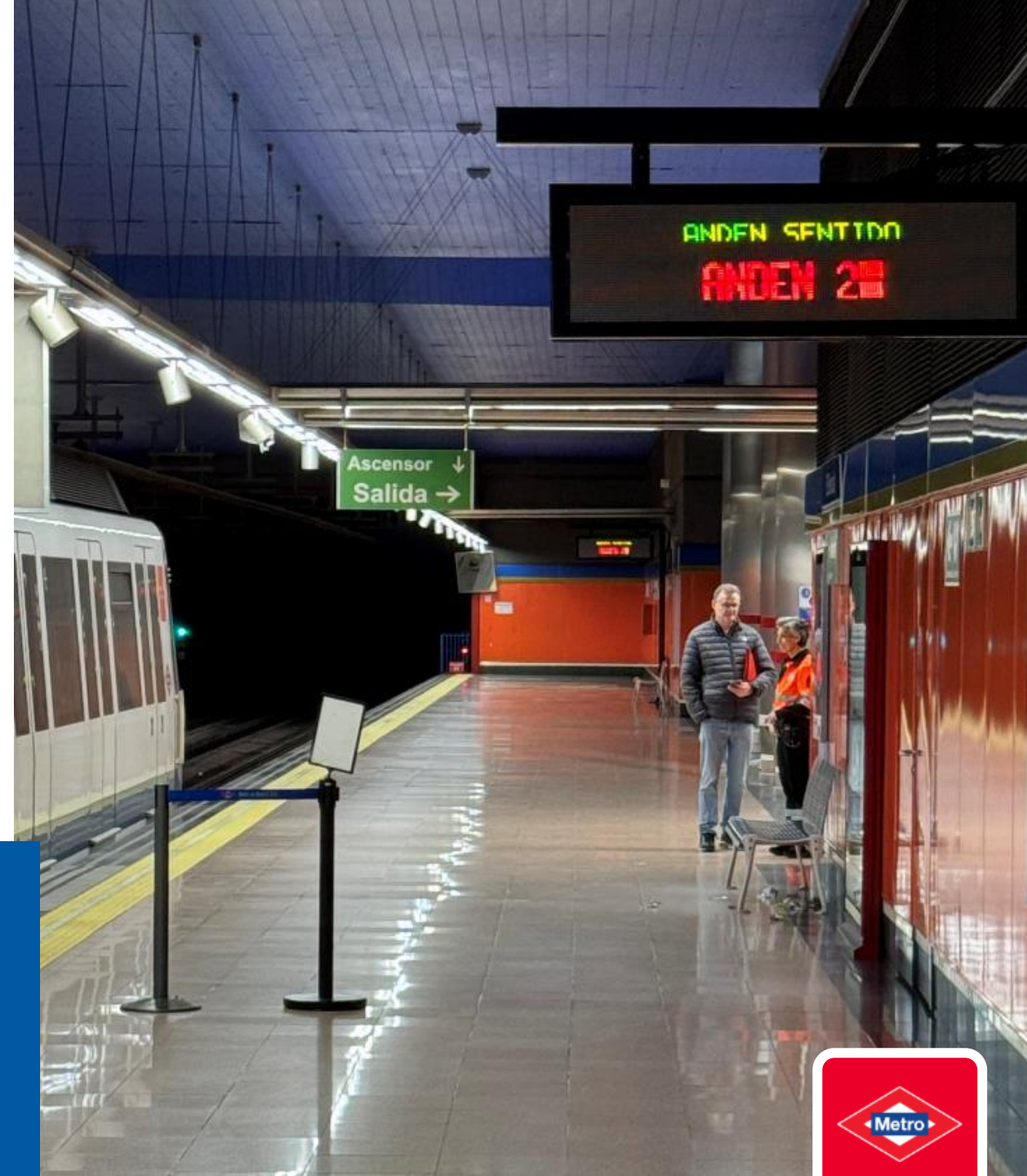
Operational Feasibility

- Decide: Dedicated vs. Shared Trains
- Operate during off-peak hours
- Zero impact on passenger services



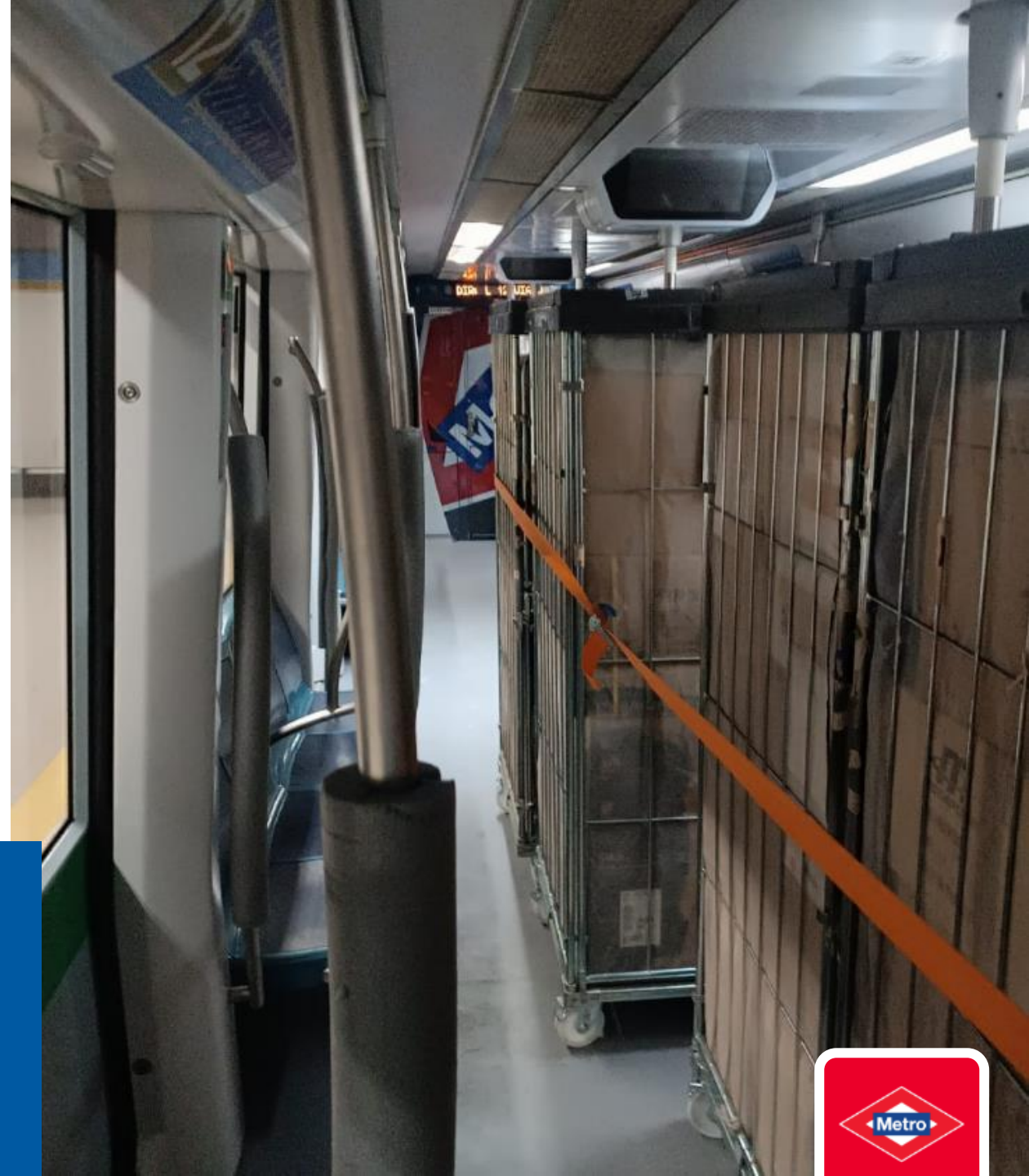
Infrastructure & Equipment

- Train type determines freight capacity
- Elevators are essential for vertical movement
- Large platforms enable efficient operations
- Microhubs support last-mile delivery
- Cages must comply with metro specifications



Safety Considerations

- Strict protocols for staff and cargo
- Secure freight during transport
- Anti-theft and tamper-proof measures



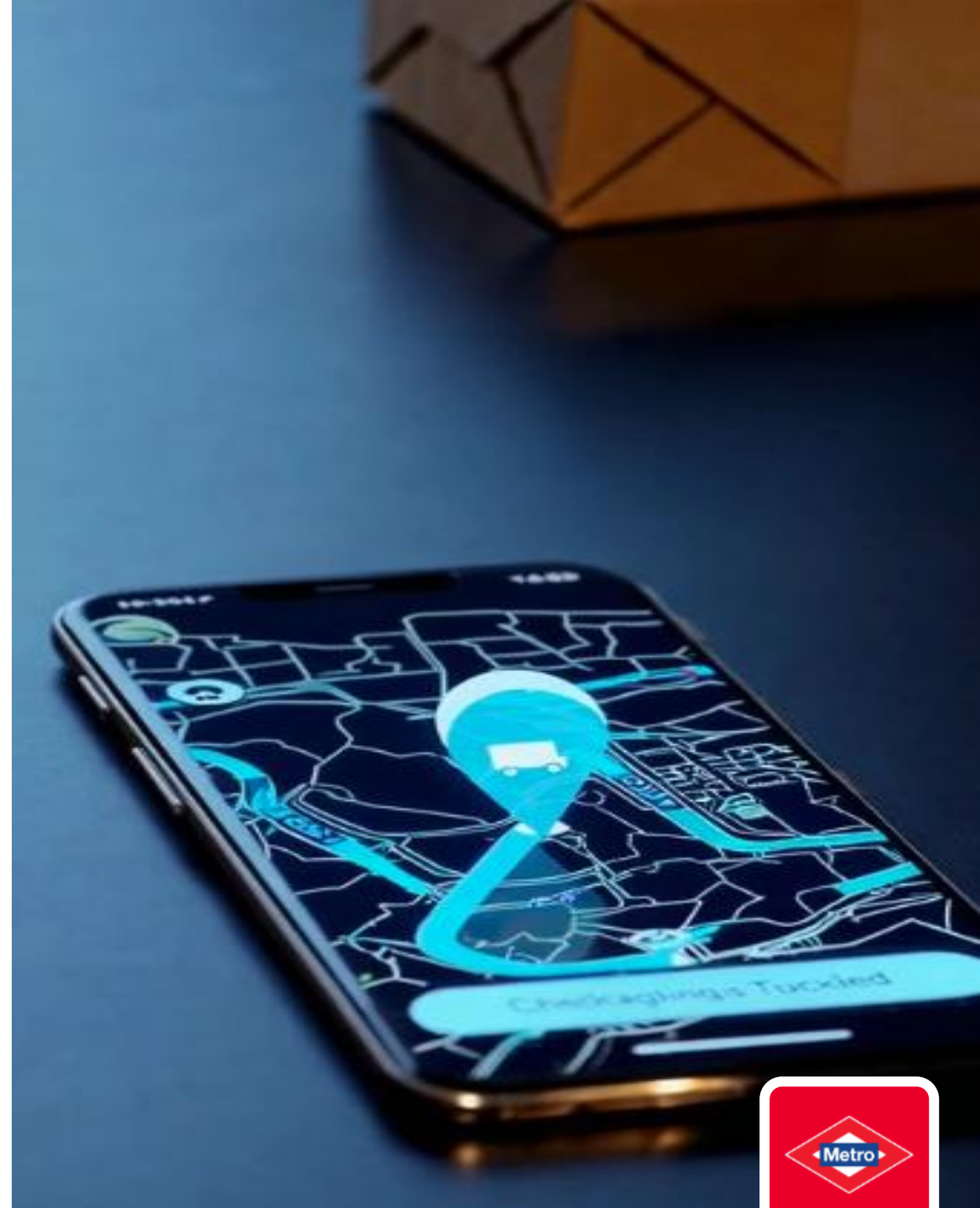
Speed & Efficiency

- Fast loading/unloading operations
- Streamlined logistics
- Full coordination with logistics operators



Stakeholder Collaboration

- Public-private cooperation is key
- Share data: capacity, deliveries, traceability
- QR code scans = control and reliability



Environmental & Urban Impact

- Fewer trucks = less pollution
- Well-placed lockers avoid crowding
- Track CO₂ reductions for validation
- Congestion is the real enemy



GRACIAS



Metro de Madrid



Twinning LL Karlsruhe



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101069782

URBANE - Overview

URBANE: Upscaling Innovative Green Urban Logistic Solutions Through Multi-Actor Collaboration and PI-Inspired Last Mile Delivery

Involved Cities:

- Lighthouse Living Labs: Helsinki, Bologna, Valladolid, Thessaloniki
- Twinning Living Labs: Barcelona, Karlsruhe
- Follower Cities: Aarhus, Antwerp, Mechelen, La Rochelle, Prag, Ravenna

LL Karlsruhe: Main role in the project

Main role in URBANE:

- **Implementing intermodal solutions** combining AMRs (robot) with rail-based (TramTrains) parcels movement in Karlsruhe
- **Demonstrate adaptation of innovations** in new contexts in Wave 2 LLs, Reuse Models and proven practices

Stakeholders:

- **Automotive Engineering:** Coordination of KA TLL, surveys during demonstration
- **City of Karlsruhe:** Providing specific city information, political support
- **AVG:** Providing access to tram and infrastructure (tram stop)
- **SEW:** Providing AMR for demonstration

Twining with Helsinki: Use of AMR in Last Mile



SymbolFoto: Norman P. Krauß

Use Cases

- **UC1: Internal Transport**
 - Transport between tram depots of mail and (small) tools
 - AMR only needed in secured environment
 - 1-1 delivery
- **UC2: ShopToCostumer**
 - (Small) businesses to customers
 - Small businesses delivering to a city quarter
 - n-m delivery
- **UC3: Feeding the Needing**
 - Meals on wheels
 - From central kitchen to end-costumers
 - 1-n delivery

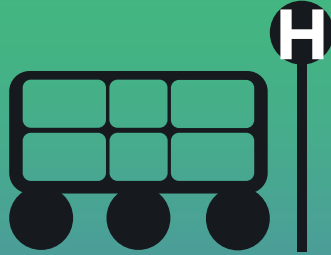
Use Cases are specific to Karlsruhe



Delivery through autonomous mobile robot & Tram-Train, common to all Use Cases



AMR arrives at the origin and the parcels are being loaded onto the AMR



AMR drives to the nearest train station and waits for the train to arrive



AMR enters the train and covers the main part of the delivery route by riding the train



AMR leaves the train and proceeds to the last delivery segment



Robot in Tram, Demo on 6 March 2025



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101069782



Thank you!



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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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2025

○ 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.

○ 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



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



The vehicles switch to goods' transportation automatically



BUS STOP

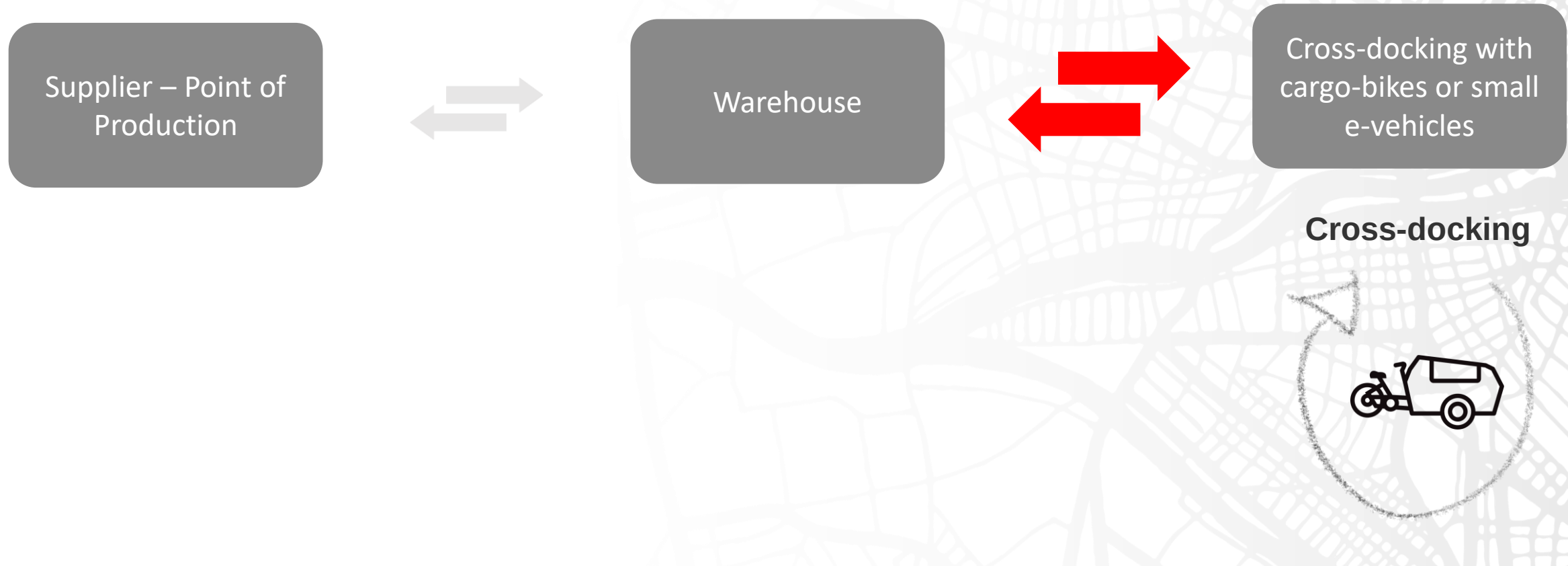
- Autonomous Pick-up
connecting suppliers with central warehouses
& Intra sites shuttles



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



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



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○ Cities' challenge



SUSTAINABILITY

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



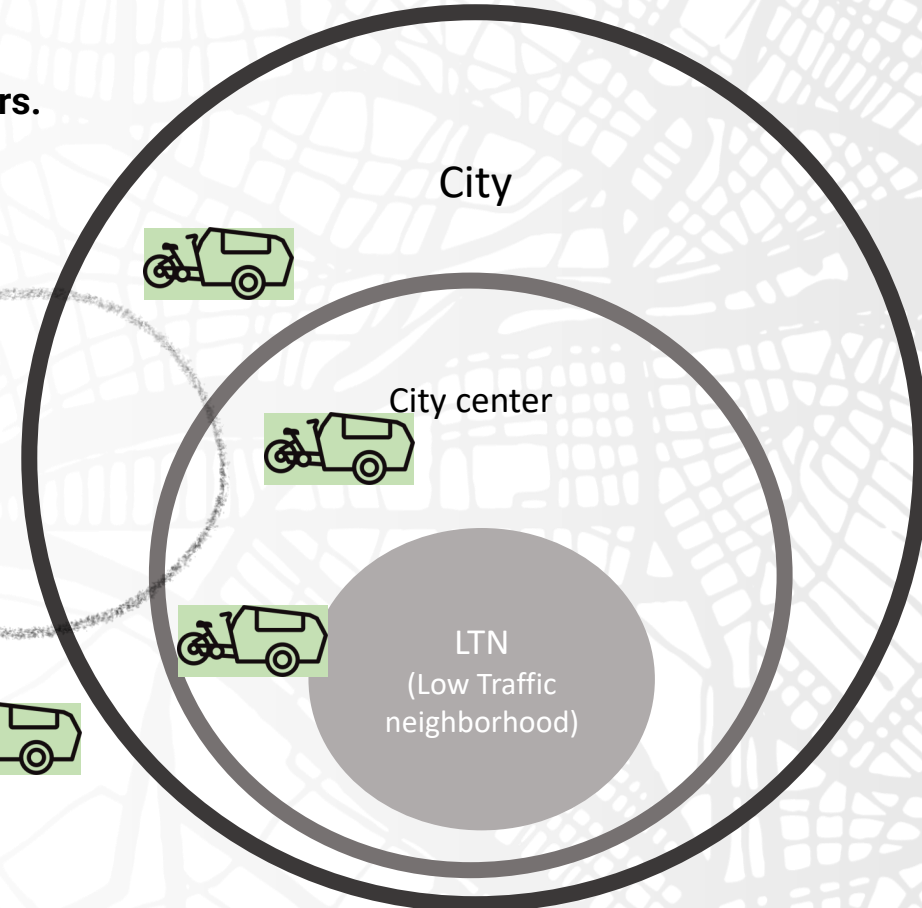
CONGESTION

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

Replace trucks by cargo-bikes in city centers.



Central hub with
Centralized logistics



○ Logistic operators' challenge

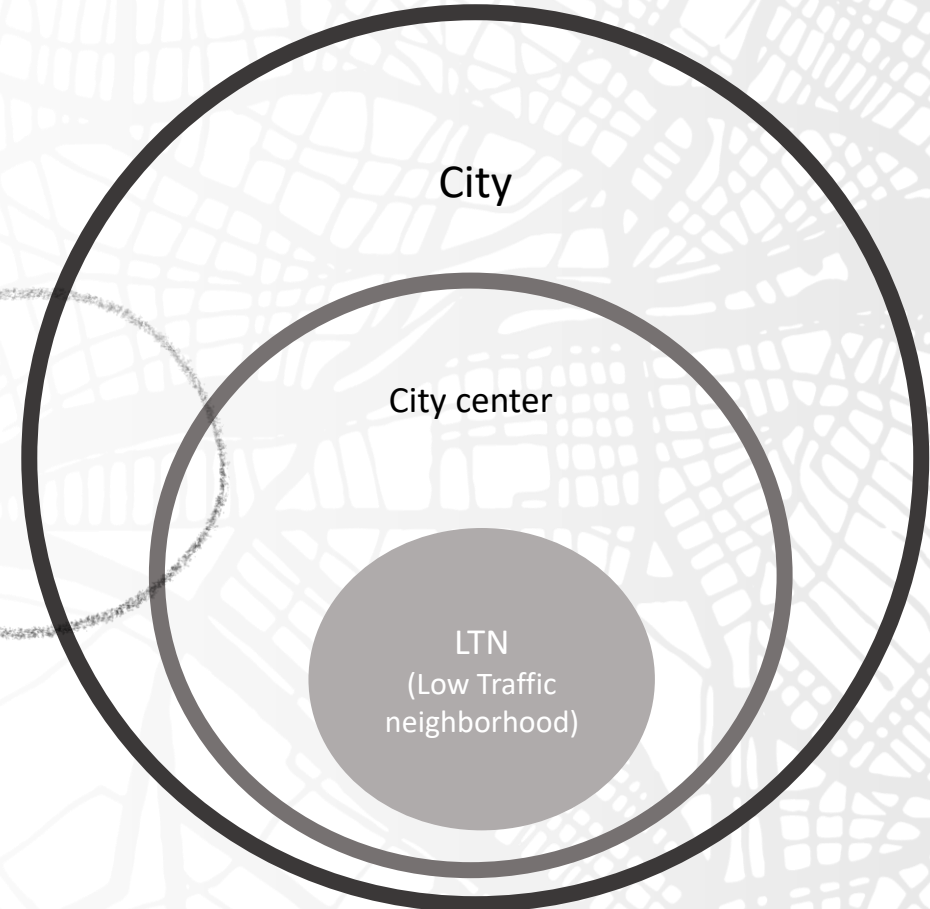
But it is not efficient to deliver from central hubs in cargo-bike.

How can we make it efficient ?



EFFICIENCY

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



○ Mobile Nano-hubs (AV-hubs) approach



○ 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.



○ 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

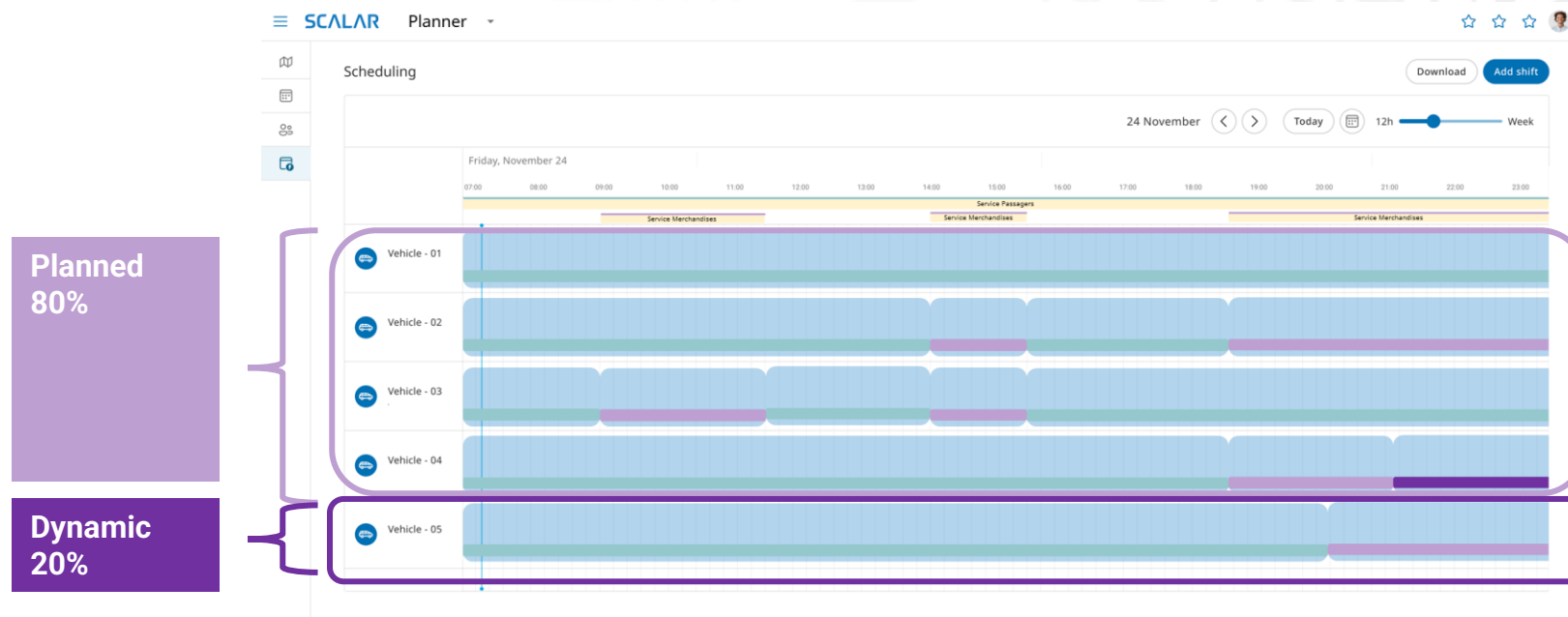
Dynamic vs. Planned Order

Two types of orders can be considered: dynamic and planned.

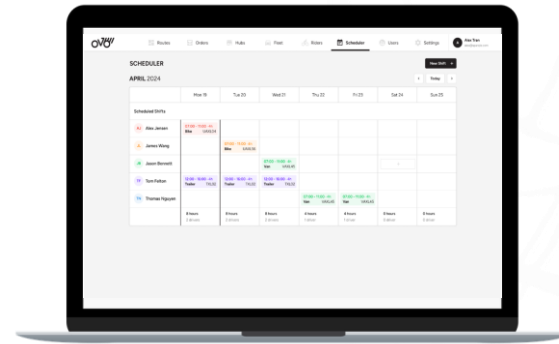
The allocation of vehicles between dynamic and planned modes will depend on actual demand.

Availability may be scheduled in time slots based on a monthly or quarterly contract.

Vehicle Allocation by Type of Service

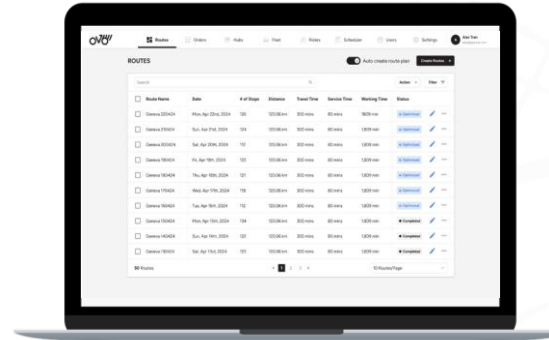


○ Service LaaS



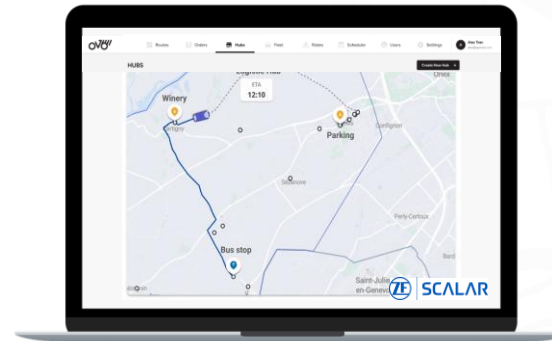
Booking interface

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 services



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Innovation for the future of our cities



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● POLIS – ALICE Webinars Series

Panel Discussion and Q&A



Johan Leveque

Head of Research & Development at La Poste Group



Rafael Villa Martínez

Head of Logistics at Metro de Madrid.



Thomas Benz

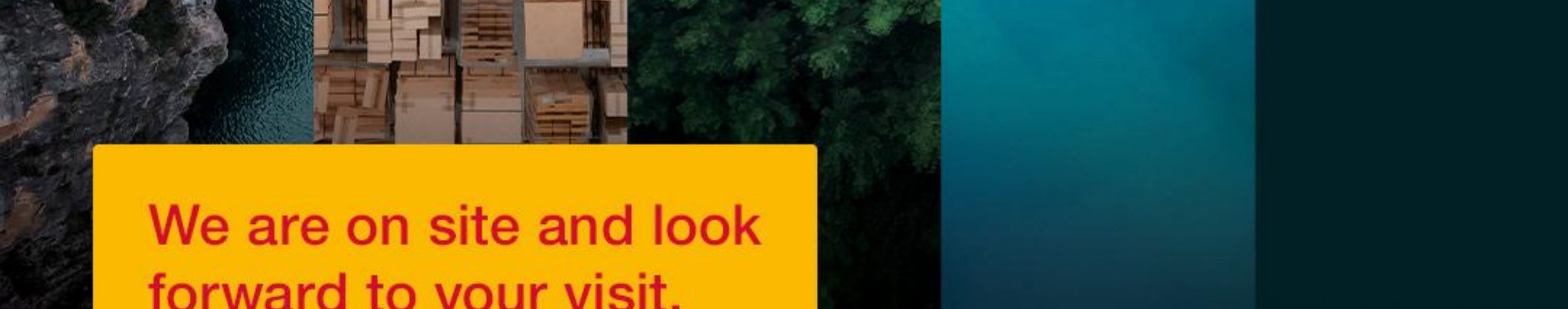
Project Coordinator,
AEN - Automotive Engineering Network



Olivier Starkenmann

Co-Founder at OVO Urban Logistics





We are on site and look forward to your visit.

Hall A3
Stand 400

June 2–5, 2025
Messe München

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tl **transport**
logistic

the leading exhibition

NAVIGATING THE LAST MILE: INNOVATIONS IN ZERO EMISSION URBAN FREIGHT



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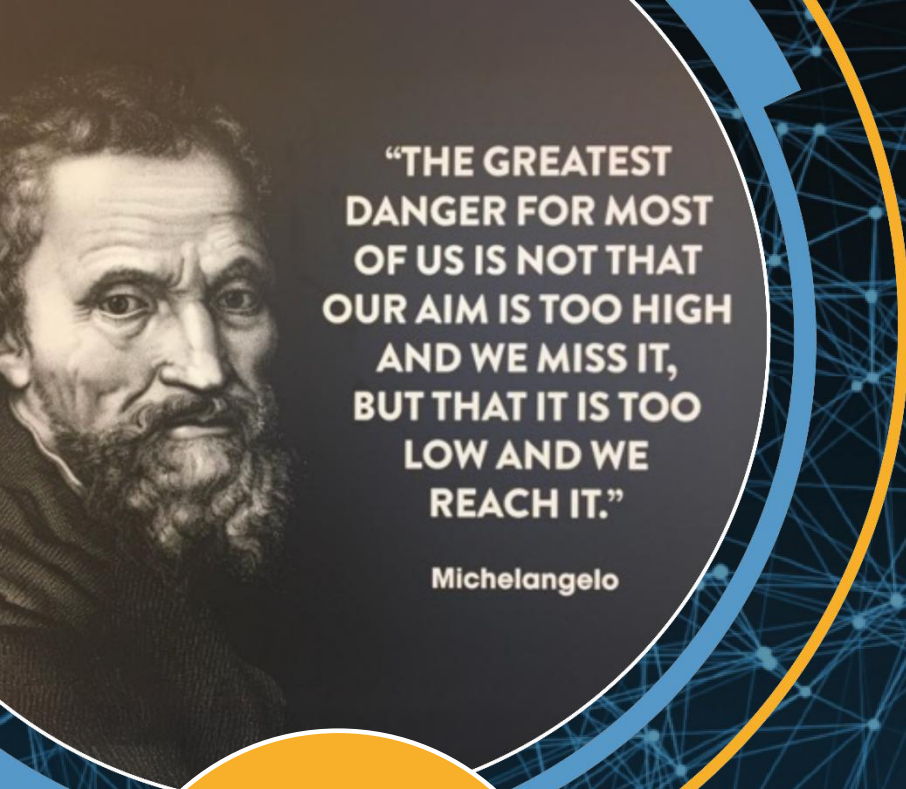
26-27 November 2025

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“THE GREATEST
DANGER FOR MOST
OF US IS NOT THAT
OUR AIM IS TOO HIGH
AND WE MISS IT,
BUT THAT IT IS TOO
LOW AND WE
REACH IT.”

Michelangelo

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The best way to predict the future is to create it!

Source: President Abraham Lincoln

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