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Use Case Identity Cards

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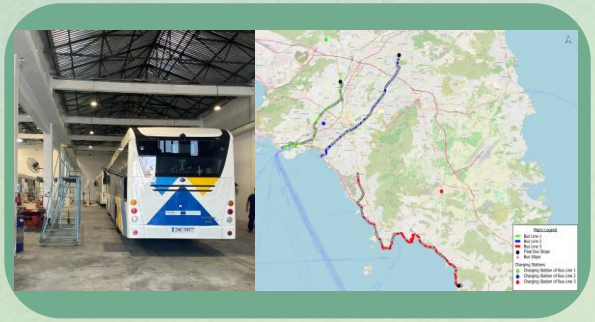
Athens - Greece
Optimised Scheduling and Route Planning for Electric Bus Integration in Athens

Code: AT-UC01
Brief: Optimise scheduling and routing to efficiently integrate new electric buses into Athens' public transport system.



Key Urban Challenges Addressed:

- **Electric bus integration** into Athens' existing bus system.
- **Two deployment phases** complicate fleet management.
- **Deadheading, charging, scheduling inefficiencies.**
- **Need for decision-support tools** to optimise operations and ensure service reliability.

Goals & Anticipated Benefits:

- **Reduce emissions & improve air quality**: Shift freight to electric, autonomous vessels.
- **Relieve roads**: Free space for pedestrians and bikes.
- **Manage traffic:** Use AI to optimise waterway flow and adapt services in real time via smart systems.

Ownership:

- **NTUA** develops scheduling and line planning algorithms
- **OASA** has acquired the funding for the physical infrastructure
- **Anaplassis** will provide data and field-knowledge

Infrastructure:

- 240 e-buses in operation
- 125 more e-buses are expected in April 2026
- Combined line planning modification and vehicle scheduling model
- Electric bus scheduling model based on trip services

Location:
This use case is applied to the area of the Municipality of Athens. Some public transport services are also examined that expand to the Athens metropolitan area and the wider Attica region.

Timeline:

March 2024 - June 2024
Gradual operation of 240 electric buses

April 2026
Full operation of 365 electric buses

June 2026
Testing of new optimised vehicle schedules

National Technical University of Athens
transport for athens OASA S.A.
Anaplassis
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Athens - Greece
Optimal Planning of Locations of e-Charging Infrastructure for the Athens Electric Bus Network

Code: AT-UC02
Brief: Data-driven optimisation of Athens' electric bus charging network, including charger placement and grid capacity planning.

Key Urban Challenges Addressed:

- **Expanding charging infrastructure** for the growing e-bus fleet.
- **Optimising charger mix and depot placement.**
- **Infrastructure upgrades of bus depots** before the installation of 63 new chargers.
- **High installation and maintenance costs.**

Goals & Anticipated Benefits:

- **Deploy and validate citywide e-bus charging network.**
- **Ensure scalability for expanding electric bus fleet.**
- **Avoid charging-related service interruptions.**
- **Improve charging reliability and reduce energy costs.**

Ownership:

- **NTUA** develops planning models (digital infrastructure)
- **OASA** has acquired the funding for the physical infrastructure
- **Anaplassis** will provide data and field-knowledge

Infrastructure:

- **Deployment of charging infrastructure** in key bus depots.
- **120 double chargers** in operation across five depots **(50 installed in early 2026)**.
- **Grid upgrades and depot reorganisation** required.
- **Charging Station Location Problem** (EB-**CSLP) optimisation tools** use OASA operational data.

Location:

The focus in the Athens Municipality area of control, while some bus line and respective services may expand in the wider Athens Metropolitan area. Bus depots that are also central in this Use Case and they expand in the wider Athens Metropolitan area (despite the fact that the actual electric buses may only serve the Athens Municipality area).

Timeline:

June 2026 – February 2027
Installation of 63 additional dual chargers.

January 2026 – June 2026
Operation of 120 dual chargers across five depots in the Municipal area of Athens.

June 2026 - February 2027
Operation and charging schedules for at least 183 dual chargers.

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transport for athens OASA S.A.
Anaplassis
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Kraków - Poland
Multimodal Logistics and Passenger Hub

Code: KR-UC01
Brief: Integration of sustainable urban logistics, multimodal infrastructure, and transformation of underutilised areas in Kraków.

Key Urban Challenges Addressed:

- **Reduce emissions and noise** through cargo bike deliveries.
- **Improve last-mile logistics** in restricted Old Town areas.
- **Reduce congestion and delivery disruptions.**
- **Enhance safety and urban quality of life.**

Goals & Anticipated Benefits:

- **Increase cargo bike deliveries and adoption** by businesses and stakeholders.
- **Improve delivery efficiency and logistics performance.**
- **Reduce fossil-fuel delivery vehicles** in the city centre.
- **Boost public acceptance and long-term cargo bike use.**

Ownership:

- **ZTP** develops, manages and oversees the new infrastructure.
- **Designated stakeholders (i.e., GLS, DPD, Macro)** will be accountable for respective areas.

Infrastructure:

- **Cargo bike hub under railway viaduct**
- **Logistics and rental facilities for cargo bikes and goods handling.**
- **Supporting infrastructure: bike access, loading area, staff facilities.**
- **Digital systems and micromobility integration.**

Location:
The multimodal logistics and passenger hub is located near Kraków Grzegórzki railway station, beneath an existing railway viaduct that was elevated several years ago, freeing up space at ground level now used for a linear park with greenery, mobility infrastructure, and public functions.

Timeline:

December 2025
Switch to a backup location

June 2026
Service launch for residents

Ocotber 2026
Service launch for stakeholders

Zarząd Transportu Publicznego w Krakowie

Co-funded by the European Union

Kraków - Poland
E-Cargo Bikes & E-Bikes Demand and Monitoring

Code: KR-UC01-B
Brief: Drone- and AI-based monitoring of bicycle traffic to support data-driven optimisation of traffic flow, intermodal connections between regional rail and bike-based transport, and urban mobility safety.

Key Urban Challenges Addressed:

- **Support climate goals** by promoting cycling and cargo bikes.
- **Provide data for urban logistics and infrastructure planning.**
- **Manage congestion and encourage modal shift.**
- **Improve safety and data-driven mobility policies.**

Goals & Anticipated Benefits:

- **Increase bicycle and cargo bike traffic.**
- **Improve cyclist and cargo bike user satisfaction.**
- **Create data-driven maps for safer, efficient routes.**

Ownership:

- **MobiLysis** will develop a system based on the analysis of data collected using drones.

Infrastructure:

- **Drone-based mobility monitoring system** with AI analytics.
- **No physical infrastructure required.**
- **Software platforms for drone coordination, data analysis, and dashboards.**
- **App-based research on user mobility behaviour.**

Location:
The solution is deployed in central Kraków, with a focus on the Grzegórzki district and its surroundings, including the UNESCO-listed Historic Centre and the SOR (Restricted Traffic Zone – Strefa Ograniczonego Ruchu). The system is designed to be mobile and modular, enabling the placement of distributed monitoring points across key urban locations.

Timeline:

June 2025
Careful selection of drone operation areas

September 2025
First research on drone swarms

March 2026
First data analysis

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Gozo - Malta
On-demand Automated Mini-Bus Services

Code: GM-UC01
Brief: A pilot on-demand autonomous e-bus service to test zero-emission mobility, user acceptance, and integration with local transport systems.

Key Urban Challenges Addressed:

- **High car dependency and congestion** in Malta.
- **Very low public transport use** and inefficient routes.
- Transport dominated by **petrol/diesel vehicles.**

Goals & Anticipated Benefits:

- **Pilot autonomous e-bus services** in Malta and Gozo.
- **Assess public awareness, acceptance, and safety perceptions.**
- **Evaluate technical and operational feasibility.**

Ownership:

- **MPT** will be responsible for implementation and deployment of the autonomous bus.
- **MTIP & TM** will provide assistance.

Infrastructure:

- **One autonomous electric bus** using existing bus stops.
- **Mobile network (3G/4G/5G) and GNSS connectivity**
- **Existing control centre and infrastructure .**
- **Integration with Tallinja app** for on-demand booking.

Location:

The solution will be implemented in Gozo and Malta, connecting Għarb (Ta' Dbiegi Crafts Village) with San Lawrenz through the village centre to provide last-mile mobility for residents and tourists.

It will also be demonstrated in Kalkara, Malta, connecting the Science Centre and a shopping mall, residential area and offices.

Timeline:

April 2026
Autonomous bus arrives in Malta

May 2026
Vehicle route learning and tests

June 2026
Operation of bus starts

GOVERNMENT OF MALTA
MINISTRY FOR TRANSPORT, INFRASTRUCTURE AND PUBLIC WORKS
L-Università ta' Malta
MALTA PUBLIC TRANSPORT
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Milan - Italy
Development of On-Demand E-Pod Service

Code: MI-UC01
Brief: A modular demand-responsive transport service with coupling vehicles enabling seamless passenger transfers.

Key Urban Challenges Addressed:

- **Pilot zero-emission on-demand transport in Milan.**
- **Use modular electric e-Pods that couple and uncouple along routes.**
- **Enable seamless passenger transfers during trips.**
- **Improve accessibility and reduce car dependency.**

Goals & Anticipated Benefits:

- **Reduce car dependency** among service users.
- **Increase accessibility to public transport.**
- **Reduce emissions and energy demand** by shifting from cars.
- **Demonstrate economic viability** of the system.

Ownership:

- **Agenzia TPL** is responsible for the service deployment.
- **AMAT** will work on the service planning.
- **NEXT** will provide the electric vehicles.
- **Factual** will provide the platform to manage DRT service.
- **UNINA** will oversee monitoring and evaluation.

Infrastructure:

- **IoT sensors and real-time systems** manage POD coupling, docking, and parking.
- **Autonomous navigation and docking technologies** tested by NeXT.
- **Vehicles communicate with infrastructure** to select parking and align for docking.
- **Four vehicles operate the service,** including one wheelchair-accessible.

Location:
The innovative on-demand service with on-board transfers will be launched in a district of the Milan metropolitan area, currently in the process of being established, to facilitate both first- and last-mile travel as well as door-to-door journeys.

Timeline:

March 2026
Simulations and planning

September 2026
E-pod service testing

November 2026
Wide-scale demonstration

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Miskolc - Hungary
Multimodal Passenger Hub

Code: MK-UC01
Brief: Transformation of an existing hub into an integrated multimodal mobility hub connecting public transport and micromobility.

Key Urban Challenges Addressed:

- **Limited interoperability between transport modes** (bus, micromobility, car).
- **Inconvenient waiting for the users** (average user experience when waiting for the bus).
- **Limited functionality at the hub** (missing user information).

Goals & Anticipated Benefits:

- **Reduce private car use.**
- **Integrate micromobility with public transport.**
- **Improve transfers and user experience.**
- **Expanding hub functionalities.**
- **Increasing the number of users.**

Ownership:

- **MVK** is responsible for the bus and tram infrastructure.
- **HC Linear** integrates, tests, and operates digital systems.
- **BME** supports the planning process and suggests the additional parameters.

Infrastructure:

- **Bike racks, platforms, and urban furniture.**
- **Internet hotspot, USB charger, solar panel.**
- **Digital passenger information displays.**
- **Travel time comparisons and emission savings.**
- **Aggregated statistics and useful travel information.**

Location:
Tapolca junction is an important transport hub connecting Miskolc city centre with the tourist area of Miskolctapolca, supporting both daily commuting and regional travel via major roads and motorways.

Timeline:

January 2026
Planning and design phase

March 2026
Contractor choice and contract signature

May 2026
Finetuning and installation

MVK
A Miskolc Csoport tagja

HC Linear
R&D SOLUTIONS | SINCE 1990

MŰEGYETEM 1782

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Miskolc - Hungary
Multimodal Journey Planner

Code: MK-UC02
Brief: Development a route planner including micromobility and public transport for optimised mobility solutions with extended parameters.

Key Urban Challenges Addressed:

- **Limited interoperability between transport modes** (bus, micromobility, car).
- **Separate planning tools for transport modes** (not possible to combine trips and compare options).
- **Limited functionality of trip planners** (missing information).

Goals & Anticipated Benefits:

- **Reduce private car use.**
- **Integrate micromobility with public transport.**
- **Combine various transport modes during planning.**
- **Expanding the functionalities of the journey planner.**
- **Increasing the number of users.**

Ownership:

- **MVK** is responsible for the bus and tram infrastructure.
- **HC Linear** integrates, tests, and operates digital systems.
- **BME** develops the multimodal journey planning algorithm with extended parameters.

Infrastructure:

- **Servers, data connections, IT back-end system.**
- **Public transport network and shared vehicles.**
- **Maps, route planner engine, and visualisation.**
- **Timetables and micromobility availability.**
- **Utility function calculation and user parameters.**

Location:

The application will be available in the administrative area of Miskolc and the operational area of MVK. By prioritising sustainability in travel planning, the pilot aligns with broader environmental goals and encourages a shift towards the usage of greener transport modes.

Timeline:

January 2026
Planning and design phase

March 2026
Algorithm implementation and user interface development

May 2026
Finetuning and testing

MVK
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HC Linear
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MŰEGYETEM 1782

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Poissy, Yvelines (Paris Region)
Intelligent Road and Smart Traffic Management

Code: PO-UC01
Brief: Development of a real-time smart mobility hub supervision system integrating sensors, data, and V2X communication between vehicles and infrastructure.

Key Urban Challenges Addressed:

- **Congestion and bottlenecks** around mobility hubs.
- **Limited real-time monitoring and management.**
- **Poor coordination** between transport modes.
- **Unreliable multimodal trip chains.**

Goals & Anticipated Benefits:

- **Deploy C-ITS and V2X for smart traffic management.**
- **Integrate sensors, data, and mobility services.**
- **Evaluate impacts on traffic efficiency and safety.**
- **Deploy in phases and measure performance with KPIs.**

Ownership:

- **VEDECOM** manages smart mobility hub system and V2X.
- **Floware** deploys sensors and provides traffic data.
- **Mobilysis** provides drone-based traffic monitoring.
- **CD78 (Yvelines)** provides infrastructure & regulatory support.

Infrastructure:

- **Connected vehicle fleet** including three conventional electric vehicles and one automated vehicle.
- **Drone-based traffic monitoring** for supporting real-time traffic analysis.
- **Sensor and roadside infrastructure** with V2X communication units.
- **Digital systems** including V2X, C-ITS services, and 5G/LTE connectivity, and AI enabled demand prediction model

Location:

The Paris/Yvelines LL focuses on Poissy (as the main mobility hub) and Triel-sur-Seine (as feeder mobility hub) which are a commune in the Yvelines department in the Île-de-France region in north-central France, north-west of Paris.

Timeline:

- **April-July 2026** — Testing
- **July-Oct 2026** — Small Scale (Fine Tuning)
- **Sep 2026** — Citizen Awareness Campaign
- **Oct-Nov 2026** — Full Scale

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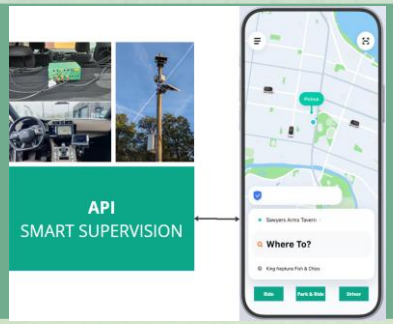
Poissy, Yvelines (Paris Region)
Shared Vehicle Services for Enhanced Mobility (UC1 Validation)

Code: PO-UC02
Brief: Integration of real time supervision system (UC01) with share mobility service operation and intelligent parking management system



Key Urban Challenges Addressed:

- **Lack of knowledge on parking occupancy**
- **Limited real-time management for connected devices**
- **Poor coordination** between transport modes.
- **Unreliable multimodal trip chains.**

Goals & Anticipated Benefits:

- **Interoperability** between traffic management components
- **Integrate supervision system** with connected devices
- **Integrate sensors, data** with shared mobility services.
- Evaluate impacts on **driving efficiency of shared services**
- Integration of **Park & Ride solution** with shared services

Ownership:

- **VEDECOM** manages shared mobility service at mobility hubs
- **Floware** deploys sensors and smart parking solution
- **Mobilysis** provides drone-based traffic monitoring
- **CD78 (Yvelines)** provides infrastructure & regulatory support.

Infrastructure:

- **Connected vehicle fleet** including three conventional electric vehicles and one automated vehicle.
- **Drone-based traffic monitoring** for supporting real-time traffic analysis.
- **Sensor and roadside infrastructure** with V2X communication units.
- **Digital systems** including V2X, C-ITS services, and 5G/LTE connectivity, and AI enabled parking occupancy prediction model

Location:

The Paris/Yvelines LL focuses on Poissy (as the main mobility hub) and Triel-sur-Seine (as feeder mobility hub) which are a commune in the Yvelines department in the Île-de-France region in north-central France, north-west of Paris.

Timeline:

- **April-July 2026** — Carpooling Model Integration
- **July-Oct 2026** — Parking Integration
- **Sep 2026** — Citizen Awareness Campaign
- **Oct-Nov 2026** — Carpooling Operation

INSTITUT VEDECOM
Yvelines Le Département
MOBILYSIS
Floware

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