LEAD: Low-Emission Adaptive last mile logistics supporting on demand economy through Digital Twins

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CIVITAS FORUM Aachen

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 861598. LEAD is a project under the CIVITAS Initiative. Read more - civitas.eu

CIVITAS 2030
Sustainable and smart mobility for all
THE CIVITAS INITIATIVE IS CO-FUNDED BY THE EUROPEAN UNION

Context

- Rise on-demand logistics = stress last mile delivery systems
- Customer: responsive system for customised products
- Industry: instant delivery
- Cities: possible negative consequences.

Urban planner + city authorities + stakeholder = prediction, evaluation, new business models

- **LEAD**: develop logistic solutions ↔Low emission operations, adaptive model & Digital Twins models

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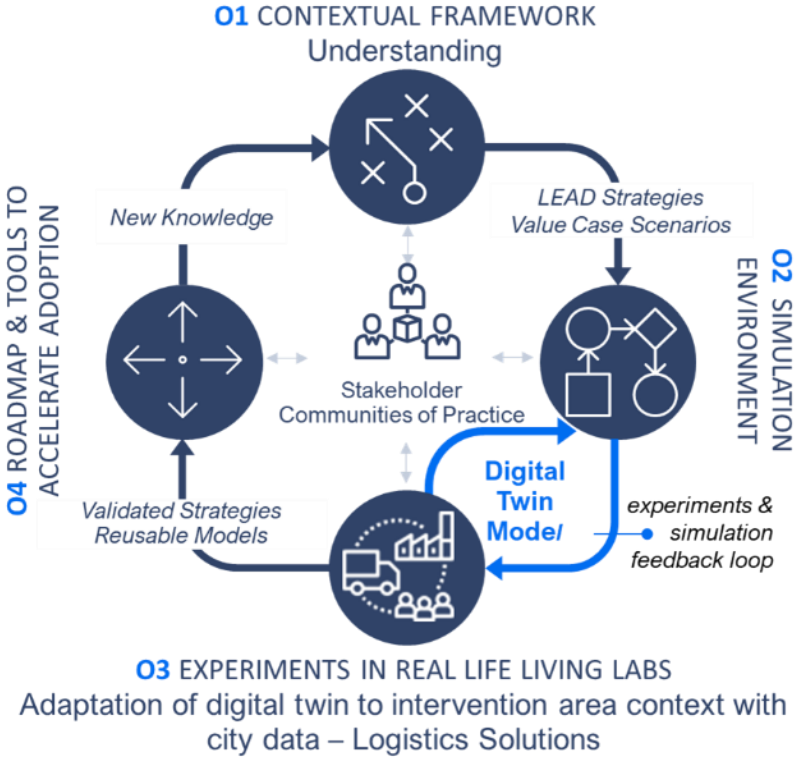
What is LEAD?

- LEAD – Digital Twins creation in 6 cities (TEN-T urban nodes)
- Solutions & use case scenarios



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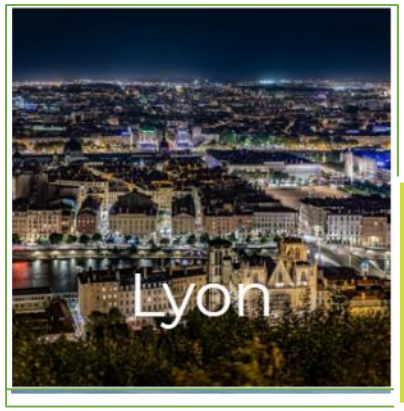
Living Labs

Transforming a Parking Lot to an Urban Consolidation Centre

Integrated last-mile logistics with demand-supply matching platforms

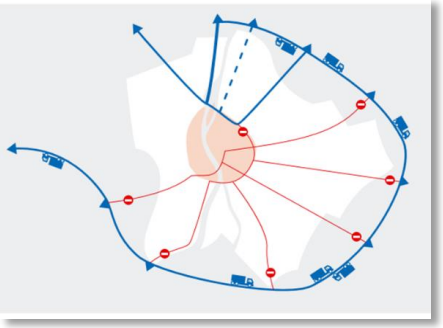
Turning retail stores to electric mobility nodes



Validation of last mile distribution models

Spatial Planning of Inner-City Loading Areas

Green Crowdshipping through the mass transit network



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LEAD

LEAD Strategies

1

Innovative business models

with a view to optimising the performance of last mile logistics (based on volatility of demand, delivery life cycles and costs) in response to the challenges posed by the on demand economy

2

Agile freight storage and distribution

Agile schemes for urban freight storage and last mile distribution, including crowdsourced shipping, capacity sharing, multi-echelon and Physical Internet inspired approaches

3

Low emission delivery vehicles

including Electric Delivery Vehicles (EDVs), hybrid and automated vehicles for freight delivery like cargo-bikes, delivery robots and droids -walkers will also be considered

4

Smart data-driven logistics solutions

for shared, connected and low-emission logistics operations, empowered by an adaptive modelling approach and Digital Twin models, applied in real-life environments

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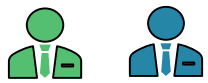
LEAD

Concept



Authorities & Business Users

Interface – Dashboard of Decision Support System (DSS)

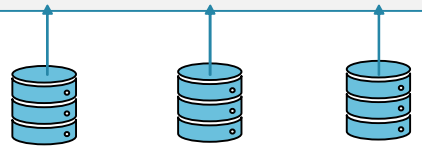
What-if scenarios- Logic - Cognitive Engine

APIs

Digital Twin Generic Models Library

ABM | Calculation of Externalities | Network Models | Freight Generation Models | Discrete Choice Modelling | ....

Data Ingestion



DATA

(CITY PLATFORMS, GEO DATA, OPERATIONAL SYSTEMS)

RESPONSE

Living Labs (Physical World)

MADRID, BUDAPEST, HAGUE, LYON, OSLO, PORTO

Living Labs (Digital Twin)

MADRID, BUDAPEST, HAGUE, LYON, OSLO, PORTO

SENSING

DDDAS

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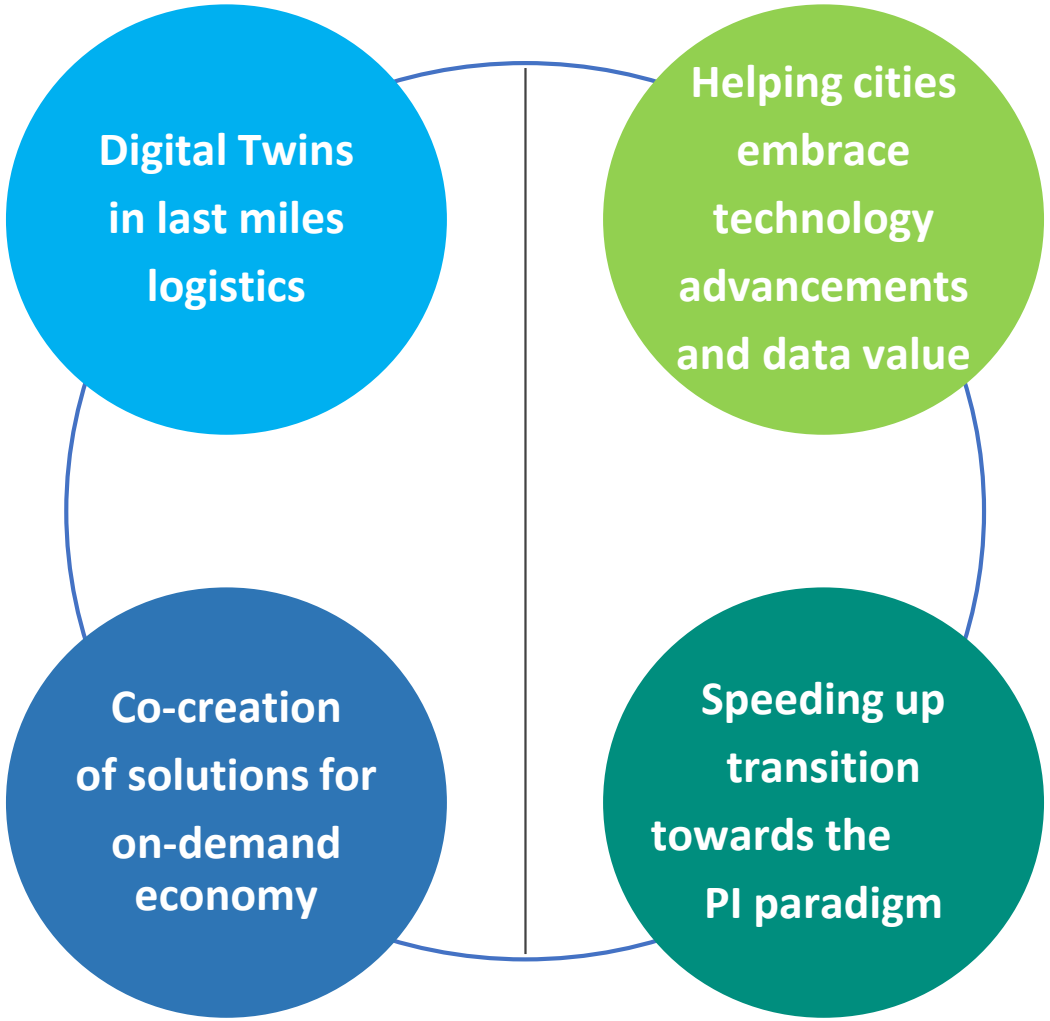
LEAD

LEAD Innovations



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Expected Impacts

Impact 1

- Clear understanding of cost-effective strategies, measures and tools to achieve essentially zero emission city logistics in major European urban centres by 2030.

Impact 2

- New tested, demonstrated practices and solutions for better cooperation between suppliers, shippers and urban/ regions policy makers (planners)

Impact 3

- Clearly provide inputs for the preparation and implementation of SULPs, SUMPs and other planning tools (big data and real-time traffic management)

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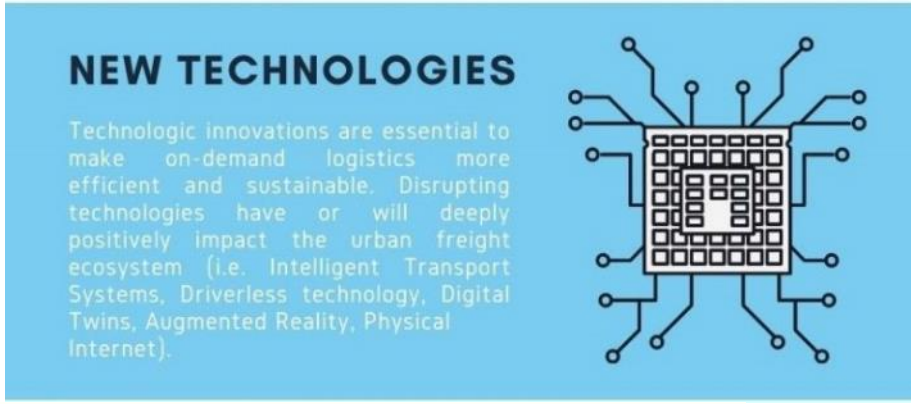
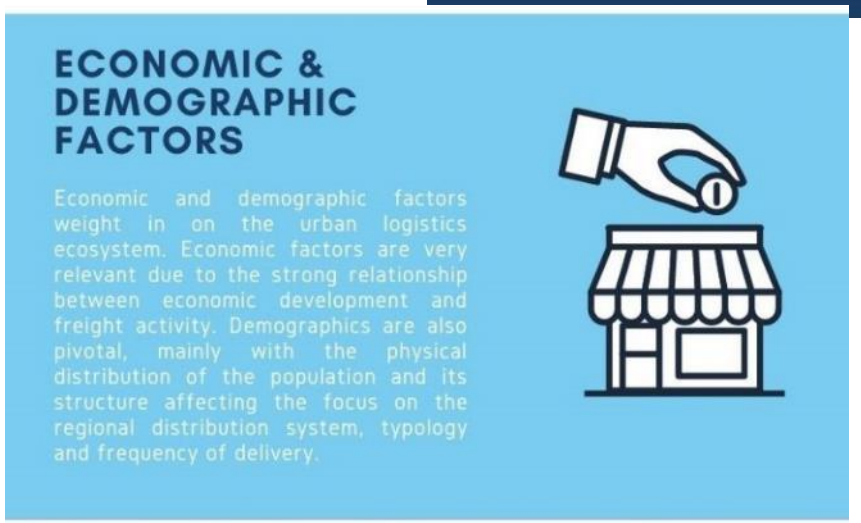
Where do we stand?

- Analysis of City Logistics landscape in the era of on-demand economy
- Communities of Practice
- KPI Definition
- Digital development
- Physical development
- Capacity Building





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10 cities and regions from seven countries have been selected to become members of the LEAD Transferability Platform.

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Partners

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Contact us!

Carlos Mateo, Other Mobility Services Director- EMT

carlos.mateo@emtmadrid.es

Claudia Ribeiro, Project Officer - POLIS

cribeiro@polisnetwork.eu

- Website: https://www.leadproject.eu/
- LinkedIn: lead-h2020
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