## **AI FOR SMART CITIES**



## **TESTING AND EXPERIMENTING AI SOLUTIONS**

POLIS Conference, December 2024 Pascal LHOAS



27-28 NOVEMBER 2024





01 The CitCom.ai project
02 The Luxembourg TEF Site
03 Luxembourg TEF services



27-28 NOVEMBER 2024

# The **CitCom.ai** project





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## **THE CITCOM.AI PROJECT**

#### In a nutshell

Digital Europe Programme
€40 million budget
5 years
Jan. 2023 – Dec. 2027
36 partners
11 countries

CitCom.ai aims at facilitating the uptake of AI in Europe, by bringing trustworthy AI services to smart cities more efficiently.

35 partners, covering 11 countries are gathered to design a Testing and Experimentation Facility (TEF) for AI in the field of smart cities.

## CitCom

## WHAT IS A TEF?

TEFs are large-scale reference testing and experimentation facilities, combining physical & virtual facilities, bringing support to technology providers to test & experiment AI solutions in real-world environment.

#### Goals:

•Bring trustworthy AI to the market more efficiently

•Facilitate AI uptake in Europe

•Contribute to the implementation of the AI act





**Characteristics** Scope : AI & robotics •World-class reference sites Networked Combining physical & virtual facilities •Open to all technology providers across Europe (>TRL 6) •Offering permanent & sustainable services

CitCom

### **THE CONSORTIUM & RELATED TOPICS**

**COORDINATOR** Imec, LIST (on operations)

WITH SUPPORT FROM OASC, EuroCities, Enoll and Fiware

WITHIN THE CONTEXT OF living-in.eu initiative

#### +25 PARTNERS IN 3 THEMATIC SUPER NODES

NORDIC	CENTRAL	SOUTH
<ul> <li>POWER</li> <li>Climate and sustainable environment</li> <li>Energy</li> <li>Environmental solutions</li> <li>Cyber, Ethics, Edge</li> <li>University Aarhus</li> </ul>	MOVE Logistics and mobility Urban M&L algorithms Mart Interesection Electromobility Autonomous driving MEC	CONNEL Local infrastruct Pollution, G Urban deve Water and waste Facility Drone deliv Tourism

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# Luxembourg TEF site





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## **MISSION STATEMENT**

The CitCom.ai TEF site in Luxembourg (LUXTEF) focuses on electromobility, which plays a crucial role in the decarbonization of cities, and the reduction of air and noise pollution. Further to the national context, we aim at bringing trustworthy AI services to smart cities and communities more efficiently and facilitate their uptake and adoption all over Europe.



## **LIST AS LUXTEF OPERATOR**

The backbone of the Testing and Experimentation Facility (TEF) of Luxembourg is a unique combination of hardware, software layers and competences to supports Al Innovators and businesses in prototyping, testing, and experimenting tailored AI solutions, making the most of the wealth of the data using most relevant machine learning and human-in-the-loop.



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## AIDA RESEARCH AND TECHNOLOGY INFRASTRUCTURE

#### A versatile toolbox for Artificial Intelligence and High-Performance Data Analytics





EUROPEAN UNION European Regional Development Fund

#### Hardware

GPU powered computing clusters hosted & operated by LIST

#### Software

Open-source + proprietary data analytics & AI stacks Latest capabilities in Data Analytics (IBM Cloud Pak, Hortonworks, Hadoop...)

from beginner to expert user

#### **Cloud services**







Planarthu



Data visualisation

Natural language Processing

Optimisation

Computer Vision (ML powered)

Time series analysis Signal processing Streams analytics (real time) Machine Learning

## **COVERING THE SCOPE OF DA**





## **EMBEDDEDNESS**

Luxembourg and EU research and innovation ecosystem



### Funded by the European Union



#### **Mobility**





CityMoS

SV/O

Smart and sustainable cities and communities



LUXEMBOURG DIGITAL INNOVATION HUB





# Luxembourg TEF Services





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## **TEF LUXEMBOURG: SERVICE OFFER**

<u>Electromobility services</u> are proof-of-concepts where AI innovators and cities come together to experiment with <u>reusable technical assets</u> aimed at advancing electromobility roll-out. These initiatives rely on data-driven and AI-powered tools to solve some of the well-known electromobility problems. <u>**Transversal services**</u> provide essential support to Al innovators in the scoping and experimentation phases of their Al solutions for Smart and Sustainable Cities. These services consider both <u>methodologies</u> and <u>skills</u>, enabling innovators to effectively design and implement their Al-driven solutions for urban contexts.



## **TRANSVERSAL SERVICES – CUSTOMER JOURNEY**

Expert guidance services helping you design & experiment the best suited approach



Level of (technical) maturity

## **ELECTROMOBILITY & TRANSVERSAL SERVICES**



Co-design

**POC Development** 

Al model assessment

Transversal

**Digital Twin Scoping** 

## **LOCAL DIGITAL TWIN**

#### A true a replicable DT for electromobility



A true Digital Twin demonstrator tool for cities and districts using real mobility, built-up and grid data to allow the beneficiary to assess the impact of PV and EV-mobility scenarios in the energy balance.





#### Assessing the potential of solar energy for vehicle integration and fleet management

Quantify the potential production of photovoltaic energy, to support transportation or heavy-duty fleet operators evaluate the benefit of ViPV to reduce their carbon footprint and operational costs.

**Represent any urban infrastructure** and other 3D objects Attributes of surfaces:

Textures

Optical properties (e.g. albedo reflectivity, transmissivity) other cadaster information...

Compute Solar irradiation for all required

locations accounting for shading from surroundings



## **ENERGY LAB**

#### An assessment service of battery-enabled EV chargers using HITL

The **energy lab** helps assessing the performance of a charger in real conditions to be used by a public charging service provider to have quality checks of their charging networks in a real scenario. The service will get access to real-time data from the EV chargers already installed by the partner (for example, connecting remotely to the EV chargers in their backend) and provide high-resolution predictions about their usage in a consolidated dashboard.



## **OPTIMAL EV**

#### **Optimising charger occupancy**

With this platform that locates charging stations and monitor their usage (including detecting anomalies), public charger providers can predict the occupancy rate at a given pricing of new charger based on AI-models on historical data from chargers and assess the optimal location of new charging infrastructure.



## **CLEAN FLEET : EV EMISSION TRACKER**

#### **Driving sustainable decisions**

Provides comprehensive environmental insights for fleets, addressing **CO2 emissions** but also **material usage** or **primary energy footprint** for a life cycle perspective.

#### 1. Real-time Data Insights:

- Live "CO<sub>2</sub> counter" offering accurate fleet emissions data.
- Dashboard for tracking progress and making informed decisions.

#### 2. Decision-making Tool:

- Test fleet renewal scenarios based on demand, budget, and environmental impacts.
- Embedded Total Cost of Ownership (TCO) calculations for smarter budgeting.



## **DIGITAL OPPORTUNITY ASSESSMENT FOR AI**

### 3 steps to the best-suited Data Analytics proof of concept



#### **Exploration Workshop**

Map business challenges, data & DA/AI techniques

2-4 hours workshop to identify use cases

#### **Capacity Workshop**

Assess partners DA/AI readiness

2-4 hours workshop to specify the approach



#### Hands-on Workshop

Discover the technologies & start to use with own data

2-4 hours hands-on workshop + remote work + consolidation meeting You get: A development for a tailored POC

## EXCELLENCE For impact

LIST.lu

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KARLSRUHE (DE)

MANDON MANANANANANA

