Interreg CENTRAL EUROPE

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EnCLOD

Pilot Action: OLOMOUC

Monitoring Urban Heat through Data

How Olomouc is using Open Data, IoT sensing and microzoning to support climate-sensitive urban governance and build the foundations for a city-wide Digital Twin

Location: Olomouc, Czechia

Focus: Urban heat islands, climate adaptation & smart mobility

Data: Traffic flows, parking occupancy, air and surface temperatures, microzoning data, dynamic sensor data

Tools: IoT traffic sensors, weather stations, heat-island sensors, microzoning, dashboards, Open Data platforms, Digital Twin preparation

Stakeholders: Statutory City of Olomouc, Olomouc Region, Palacký University Olomouc, CITIQ, CityOne, city departments, businesses, researchers, students and citizens

Pilot Action: *Olomouc*

Using Open Data to optimise winter road salting

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CONTEXT

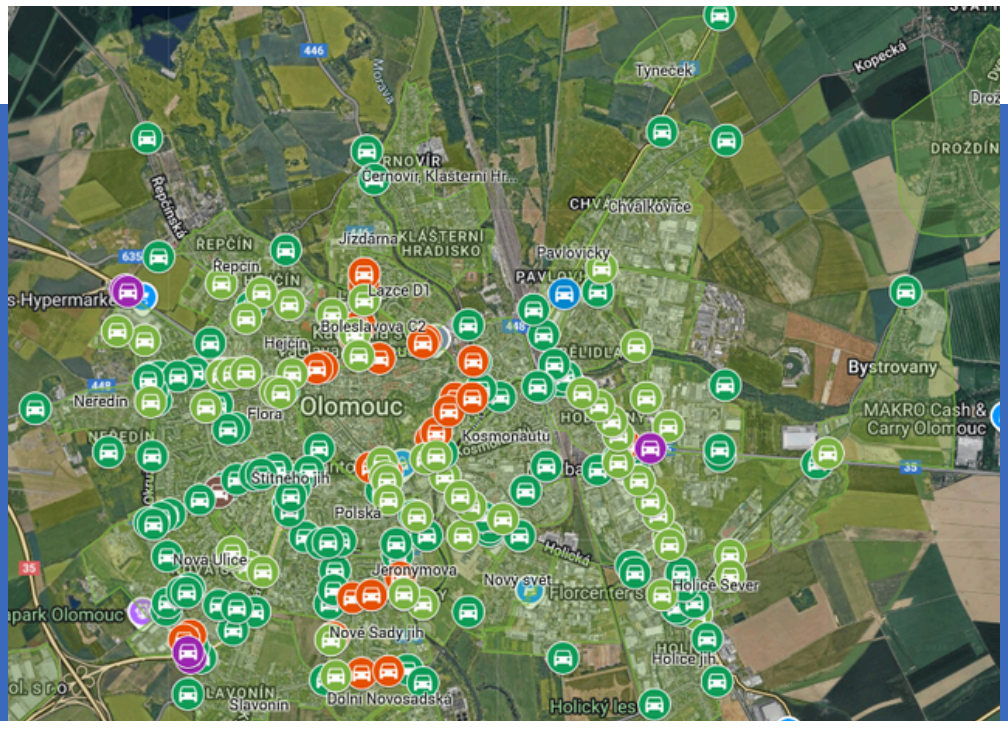
Like many European cities, **Olomouc faces growing challenges linked to climate change, urban overheating and increasing pressure on public space**. Parking areas, roads and highly urbanised surfaces can significantly contribute to urban heat islands, affecting citizens' wellbeing and the overall quality of urban environments.

Before the pilot, **the city lacked detailed and continuously updated information linking traffic flows, parking infrastructure and microclimatic conditions**. This limited the ability of local authorities to make evidence-based decisions regarding climate adaptation, public-space transformation and future mobility policies. The pilot aimed to demonstrate **how dynamic Open Data and IoT sensing can support smarter urban planning** while helping citizens better understand the impact of urban heat on daily life.

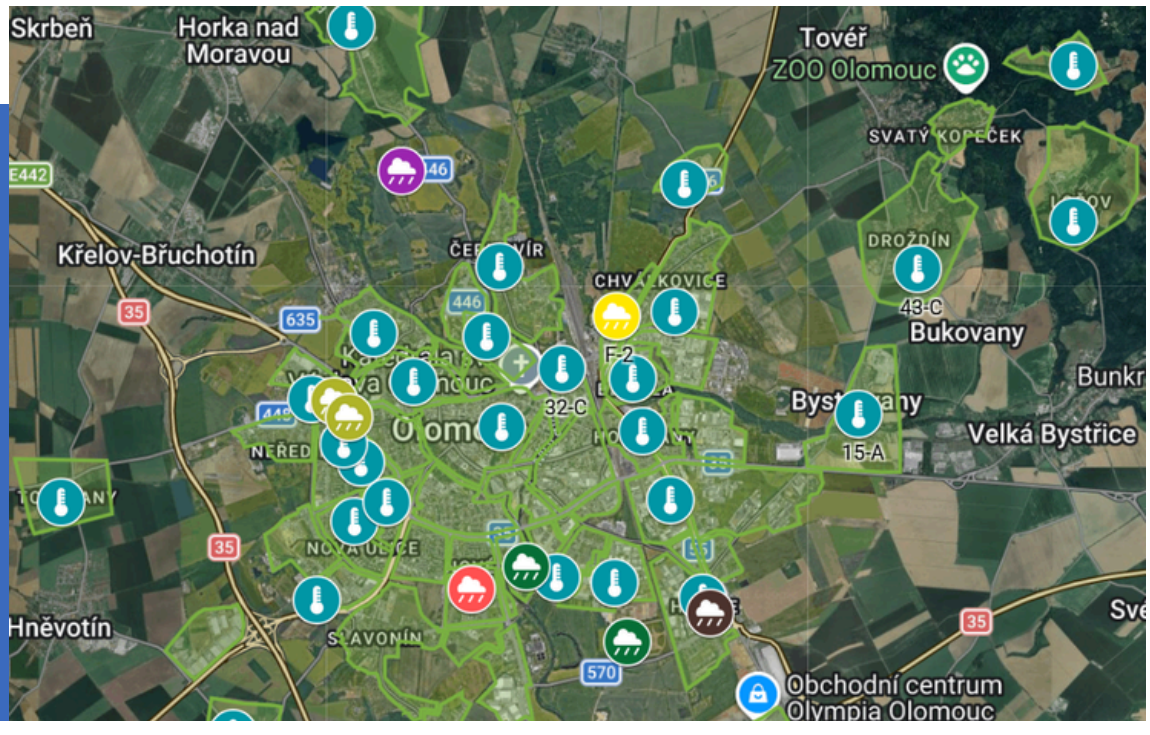
WHAT WAS IMPLEMENTED

To address these challenges, Palacký University Olomouc, CITIQ and CityOne, in cooperation with the Statutory City of Olomouc and the Olomouc Region, **deployed an integrated sensor network combining traffic monitoring and environmental sensing technologies.** The pilot integrated traffic magnetometers, weather stations and urban heat-island sensors capable of monitoring traffic intensity, parking occupancy, air temperature, surface temperature and subsurface temperatures. **Data are collected continuously and published as Open Data through regional and national platforms.**

The project also introduced a **microzoning framework** to analyse urban conditions at a more detailed territorial level and developed digital dashboards and public tools that allow users to compare heat-island conditions across different parts of the city. The pilot was further supported through stakeholder workshops, Open Data training activities and the 2025 Olomouc Hackathon.



Overview of the whole city traffic sensing design. Available here.



Overview of the whole city meteo sensing design. Available here.

MAIN RESULT

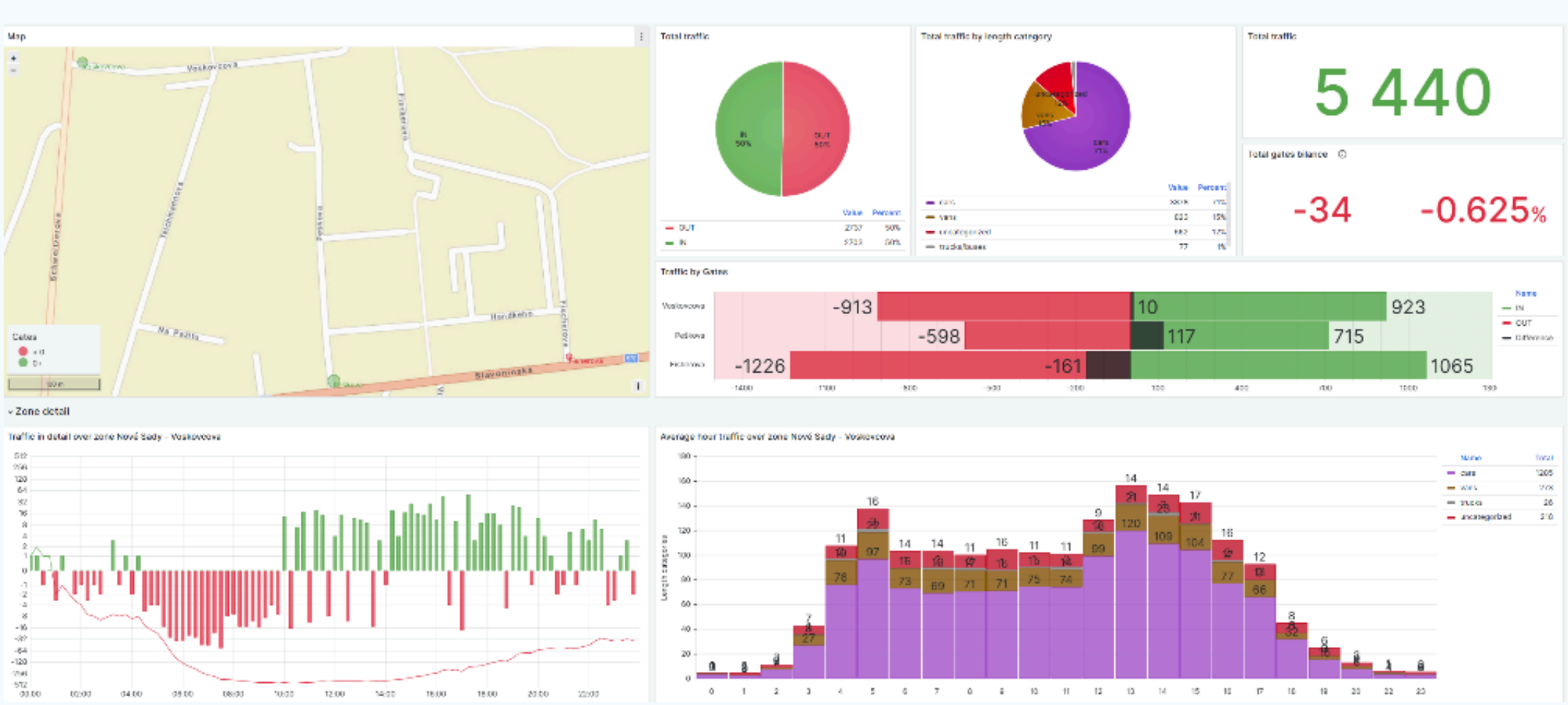
- **75 IoT devices deployed,** exceeding initial project expectations
- **38 new traffic magnetometers integrated with 17 existing traffic sensors**
- **20 environmental sensors installed,** including weather stations and heat-island monitoring devices
- **10 urban heat-island locations monitored** across the city
- **15-minute Open Data aggregation available for sensor outputs**
- **Dynamic sensor data published as Open Data** on regional and national portals
- **Public Urban Heat Islands and Microclimate Tool developed**
- **Microzoning methodology implemented** to support future Digital Twin development
- Foundations established for a **city-wide Digital Twin strategy**
- **51 participants engaged in the 2025 Olomouc Hackathon**
- **10 teams developed innovative solutions** using EnCLOD Open Data

IMPACT ON LOCAL GOVERNMENT AND THE CITY

The Pilot Action showed how dynamic Open Data can support evidence-based urban planning and climate-sensitive decision-making. It contributed to Olomouc's Intelligent Transport System strategy, strengthened cooperation between local stakeholders, and laid the foundations for a future city-wide Digital Twin.

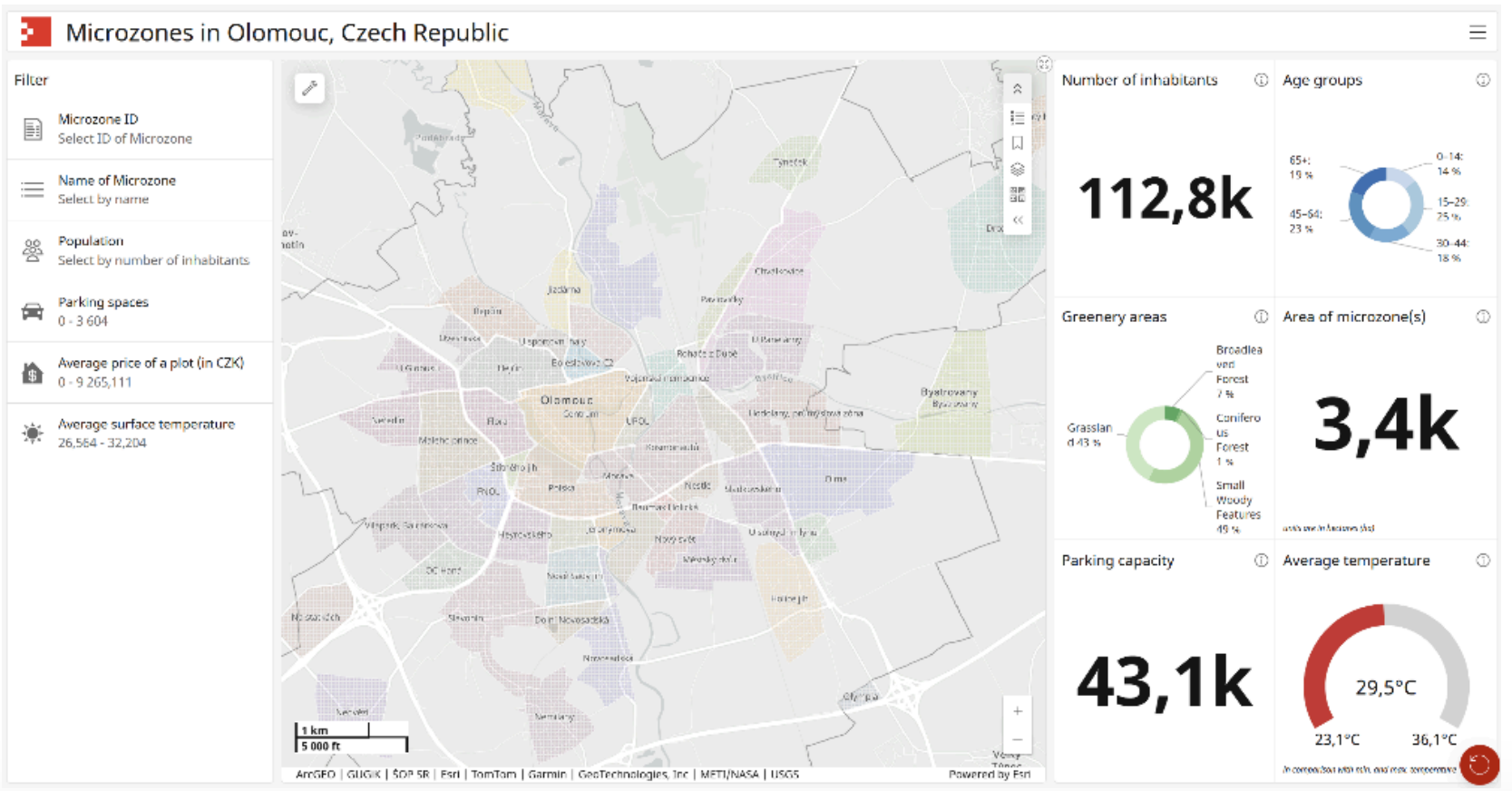
IMPACT ON CITIZENS/STAKEHOLDERS

Citizens gained access to transparent information on urban heat, traffic and parking through public dashboards and digital tools. The pilot also raised awareness of how urban heat affects different groups, while engaging students, researchers and businesses through workshops, Open Data training and the Olomouc Hackathon.



Grafana dashboard displaying traffic intensity data from the sensor network

Digital tool for analysing urban heat island effects based on sensor data collected within the pilot action. Available here.



Overview of the ArcGIS dashboard environment. Available here.

FUTURE GOALS

- **Scale the pilot into a city-wide Digital Twin**
- **Expand traffic and climate sensing** across the city
- **Ensure long-term Open Data publication and service operation**
- **Further improve the Urban Heat Islands and Microclimate Tool**
- **Support evidence-based parking and mobility policies**
- **Strengthen the use of Open Data in research, education and innovation**
- **Continue engaging citizens and stakeholders** through hackathons and data-driven initiatives
- **Position Olomouc as a local sandbox for Open Data and territorial governance innovation**

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ABOUT THE PROJECT

The project EnCLOD aims at strengthening the governance capacity of 5 local public authorities in Central Europe by promoting the use of Open Data (OD) and the Internet of Things (IoT) sensor networks. This initiative strengthens multi-level governance, promotes civil society involvement, and fosters public-private collaboration. Within the five pilot areas - Vicenza (Italy), Olomouc (Czech Republic), Debrecen (Hungary), Zilina (Slovakia), and Nova Gorica (Slovenia) - a specific challenge related to mobility/transport, environment, or climate change policy area is addressed through the development of 5 local Action Plans for the effective usage of Open Data and IoT opportunities for territorial governance and city-region planning. Furthermore, project activities will significantly increase awareness and knowledge of public authorities on OD and IoT potentialities for territorial governance, through case study collection and capacity building activities. Citizens' engagement will be enhanced through the organisation of events like "hackathons" and raising awareness activities.

PARTNERS INVOLVED IN THE PILOT ACTION OF OLOMOUC

Palacký University Olomouc

city:one

CITIQ
Intelligent technologies for urban mobility

OLOMOUC

OTHER PROJECT PARTNERS

IUAV

Provincia di Vicenza

DKV

epc

UNIVERSITY OF ŽILINA

alda
SRL Benefit Corporation

FA UNIVERSITY OF LJUBLJANA
Faculty of Architecture

MESTNA OBČINA NOVA GORICA