



UNIVERSITÀ  
DEGLI STUDI  
FIRENZE

**DINFO**

DIPARTIMENTO DI  
INGEGNERIA  
DELL'INFORMAZIONE

**DISIT**

DISTRIBUTED SYSTEMS AND  
INTERNET TECHNOLOGIES LAB  
DISTRIBUTED DATA INTELLIGENCE  
AND TECHNOLOGIES LAB



[www.km4city.org](http://www.km4city.org)

<https://www.disit.org/>

<https://www.snap4city.org>

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**SMARTCITY**

EXPO WORLD CONGRESS

7-9 November 2023, Barcelona, Spain

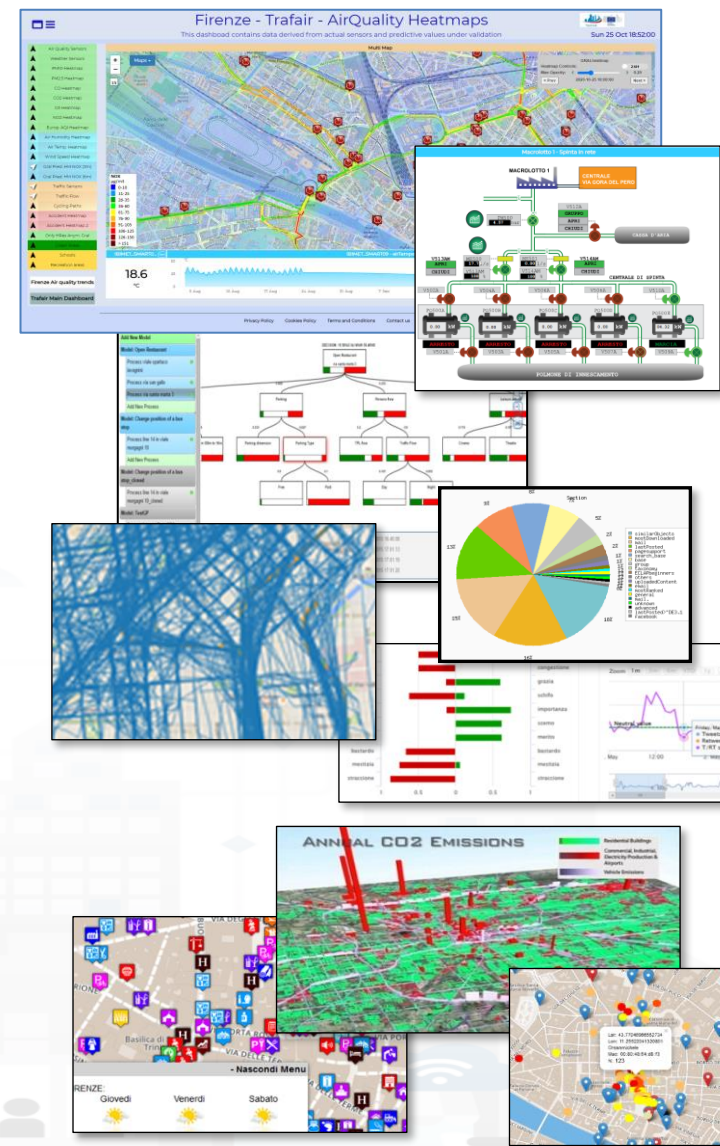
Visit Snap4City in Hall 1

**Competences**  
**AI & Digital Twins for**  
**Sustainable Decision Supports**  
**& Business Intelligence**

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#disitlab  
@snap4city

# Competence

- **Snap4City platform:** Open Source, FIWARE, Node-RED, GDPR, PEN test, monitoring drivers and vehicles any kind, building, etc.
- **artificial intelligence** big data, knowledge engineering,
  - generative AI, deep learning, Bert, continuous learning, etc.,
  - **Explainable AI, neuro-symbolic AI, NLP, LLM, etc.**
  - <https://scholar.google.com/citations?user=c2S3Ni0AAAAJ&hl=en>
  - **H-index = 40**
- **Digital Twin solutions for**
  - **decision** support systems, business intelligence, expert system what-if
  - **traffic** flow reconstruction, match mobility demand vs offer
  - **user** behaviour analysis, recommendation, matchmaking, engagement
  - **Predictions:** traffic, parking/bike, CO2, NO2/X, people flow, landslides, maintenance, etc.
  - early warning, anomaly detections, etc.
  - **KPI:** 15Min Indexing for cities, community of energy,
  - **3D** local and global city reconstruction,
- **Domains of:**
  - mobility and transport, energy, environmental, Tourism, Control Rooms, cultural heritage, security/safety, etc.





• **15 Minute City Index:**

- 13 subindexes: energy, slow mobility, fast mobility, housing, economy education, culture and cults, health, entertainment, gov, food, security...

10/22



- Monitoring and Prediction of energy consumption
- Stimulating: Bike sharing, e-bikes, car charge, etc.
- Community of Energy, planning energy plant



- Industry 4.0 integrated solutions
- Decisions Support Systems
- Process optimization, control
- Predictive maintenance



- Smart City infrastructure: monitoring and resilience, long terms predictions
- Effective and Low cost smart solutions
- What-if analysis, Simulations
- Origin Destination matrices computation



- business intelligence tools for decision makers
- Reduction production costs
- Monitoring resource consumption
- Optimization of Waste Collection

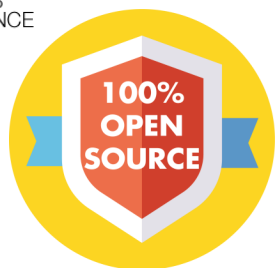


- Monitoring and Predicting: NO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, Traffic flow, pollutant, landslide, waste, etc.
- Traffic flow reconstruction
- Demand vs Offer of Mobility analysis



- Shortening justice time
- Anonymization and indexing legal docs.
- Prediction of mediation proneness
- Ethical Explainable Artificial Intelligence

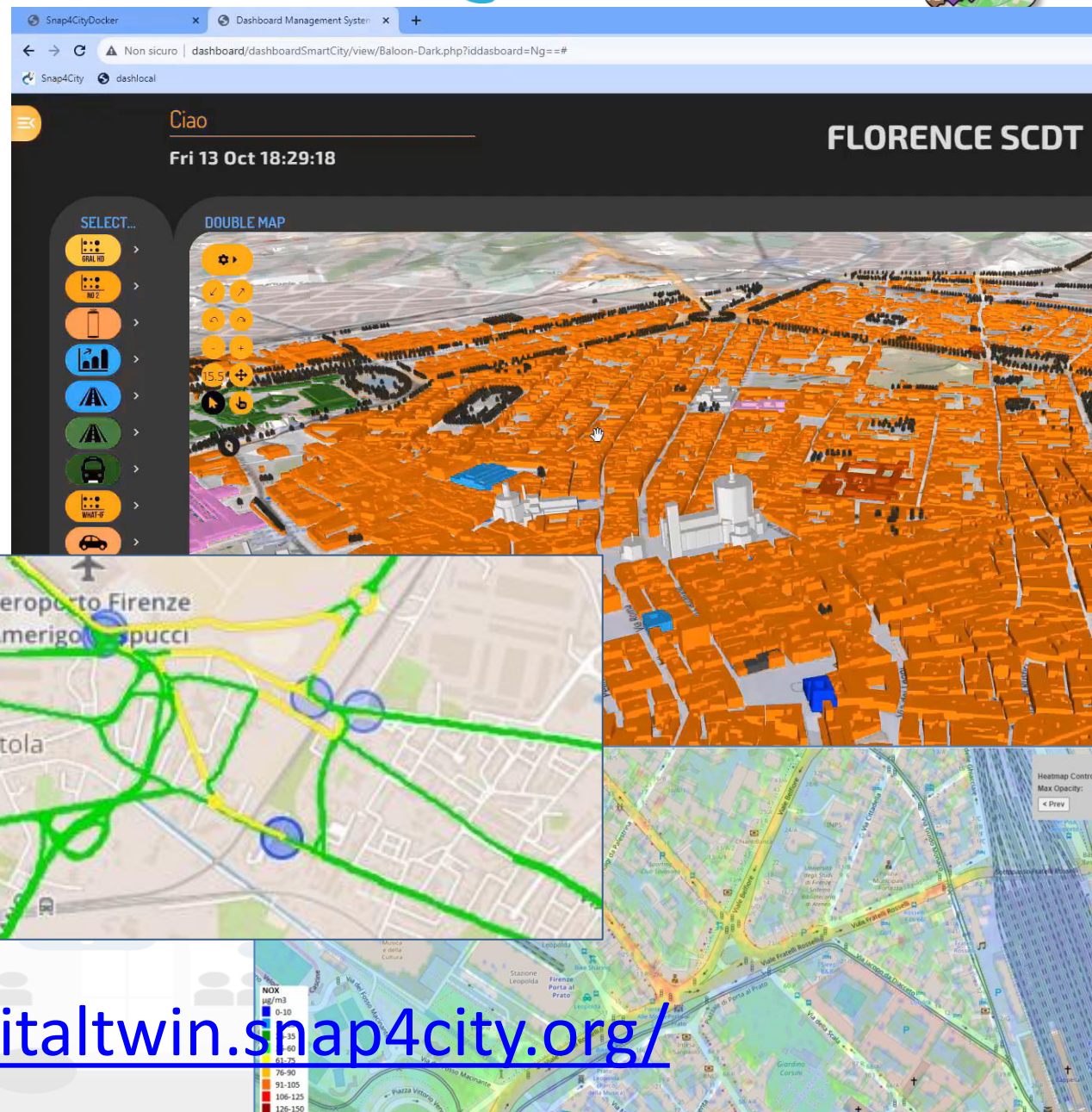
# Digital Twin



- Intuitive platform
- Any Data TYPE, any data source, any protocol
- Data storage seamless
- Data analytics → artificial intelligence, AI/XAI
- Data Ethics, AI Ethics, GDPR
- Data Representation
- Key performance Indicators
- What-IF analysis – Simulation, prediction, 2D/3D
- Operation, planning tactic and strategic
- Collaborative and shared representation
- Sustainable, shared, open source 100%
- **ANY 3D Tiles format and models**

## Complex and heterogeneous information, interoperability

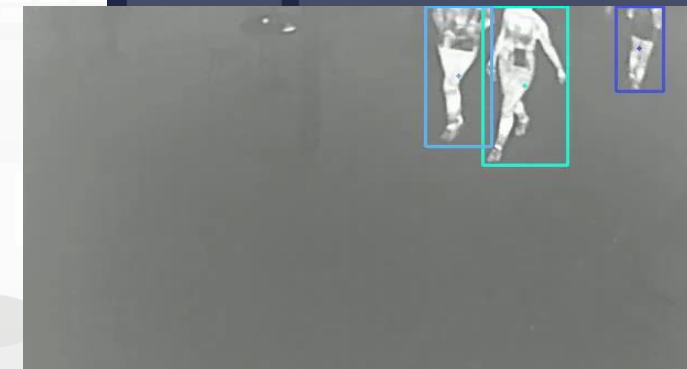
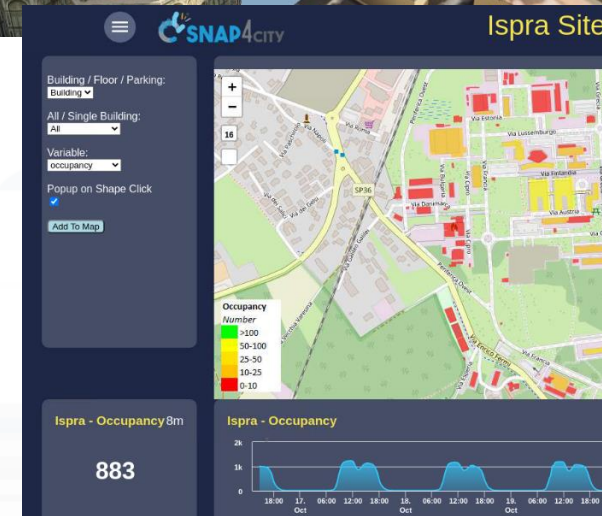
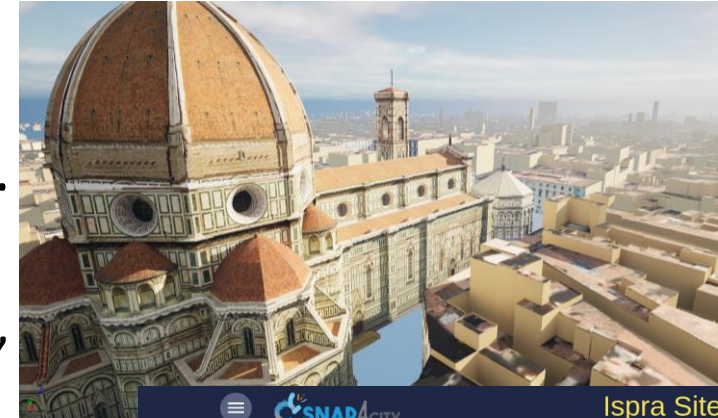
- GIS, ITS, AVM, IoT, BIM, CKAN, etc.
- Satellite services
- MaaS, last mile delivery HUBs
- etc.



<https://digitaltwin.snap4city.org/>

# Connections

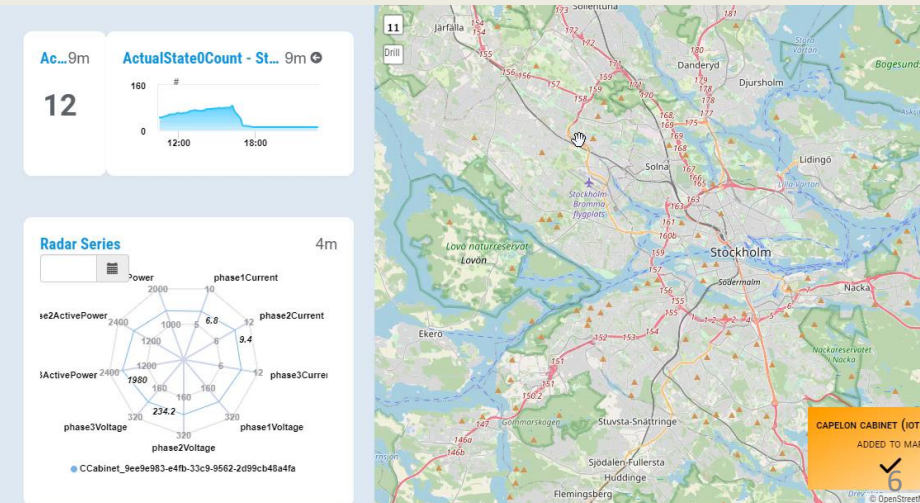
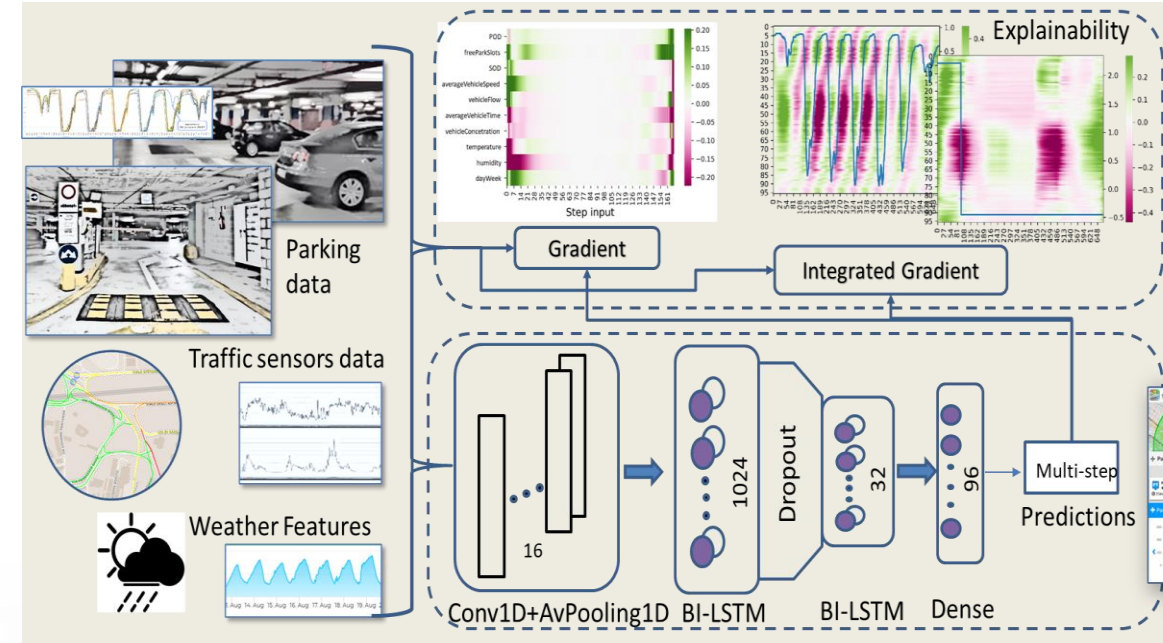
- **With:** public administrations in Italy, France, Belgium, Finland, Spain, Sweden, Croatia, Bosnia, Greece, Romania, Australia, etc.
- **Working for**
  - **Cities as:** Merano, Firenze, Cuneo, Pisa, Garda area, Lonato, Modena, Santiago, Dubrovnik, Valencia, Rhodes, Cagliari, etc.
  - **ISPRA JRC** of the European Commission, ANCI, Tuscany Region, Cipro ministry, etc.
  - **Large companies** such as: Leonardo, ENEL, UNISYSTEM, etc.
- **References:**
  - Boards of EDIH Tuscany X.0, CB-DAI of Tuscany Region, national CINI, national PhD on AI,
  - **Advisory Boards** for: BBC, Data Spaces, IMPETUS, etc.
  - Certified Experts of FIWARE, member of GAIA-X, Advisory....
- **Infrastructure:** Cloud (HA, DRS, FT), + more than 150.000 GPU cores.



# Recent Track Record

<https://www.snap4city.org/135>

- **Ammirare:** AI for costal erosion and changes, 2 pilots
- **Tourismo:** AI for tourism management and control, 7 pilots
- **ISPRA JRC EC:** Site Management Operation, energy, parking, people
- **CN Most:** AI for mobility and transport
- **Smart Light/Energy** management: Merano, CER, etc.
- **EDIH Tuscany X.0:** AI, HPC, Security
- **Herit-Data:** AI Digital Twin for Tourism management, 6 pilots
- **PC4City:** Land Slide Predictions
- **REPLICATE:** Control Room, and mobility and transport
- **RESOLUTE:** Resilience of Transport Systems



# Interested Calls

- **CLUSTER 3 - CIVIL SECURITY FOR SOCIETY**

- Disaster-Resilient Society 2023 (HORIZON-CL3-2023-DRS-01)
- Increased cybersecurity 2023 (HORIZON-CL3-2023-CS-01)

- **CLUSTER 4 - DIGITAL, INDUSTRY AND SPACE**

- Twin Green and Digital Transition 2024 (HORIZON-CL4-2024-TWIN-TRANSITION-01)

- **CLUSTER 5 - CLIMATE, ENERGY AND MOBILITY**

- Safe, Resilient Transport and Smart Mobility services for passengers and goods (HORIZON-CL5-2024-D6)
- Cross-sectoral solutions for the climate transition (HORIZON-CL5-2024-D2)
- Efficient, sustainable and inclusive energy use (HORIZON-CL5-2024-D4)
- Sustainable, secure and competitive energy supply (HORIZON-CL5-2024-D3)
- other Mobility, Climate and Energy related topics

- **CLUSTER 2 - CULTURE, CREATIVITY AND INCLUSIVE SOCIETY**

- Research and innovation on cultural heritage and CCIs (HORIZON-CL2-2024-HERITAGE-01)
- A sustainable future for Europe (HORIZON-CL2-2024-TRANSFORMATIONS-01)



# 2023 booklets



- Smart City



[https://www.snap4city.org/download/video/DPL\\_SNAP4CITY.pdf](https://www.snap4city.org/download/video/DPL_SNAP4CITY.pdf)

- Industry



[https://www.snap4city.org/download/video/DPL\\_SNAP4INDUSTRY.pdf](https://www.snap4city.org/download/video/DPL_SNAP4INDUSTRY.pdf)

- Artificial Intelligence



[https://www.snap4city.org/download/video/DPL\\_SNAP4SOLU.pdf](https://www.snap4city.org/download/video/DPL_SNAP4SOLU.pdf)





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