



UNIVERSITÀ
DEGLI STUDI
FIRENZE

Dipartimento
di Ingegneria
dell'Informazione

DISIT

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



HR EXCELLENCE IN RESEARCH

DISIT lab:

<https://www.disit.org>



Paolo Nesi

20-minute overview • research • platforms • projects • collaboration

DISIT Lab at a glance, since 1994

University of Florence — Department of Information Engineering (DINFO).

ICT/AI lab with a long R&D track record.

- One the most relevant labs of UNIFI
- Official Regional Lab of Tuscany Region
- **Member of:**
 - International Advisory Boards: BBC, UNDP
 - international: GAIA-X, FIWARE, MDS
 - National ecosystems: EDIH Tuscany X.0, CINI, CNIT
 - National centers: CN MOST, FAIR
 - Regional centers: CBDAI (Tuscany), IFAB (Emilia Romagna)
 - PhD courses: national PhD-AI, PhD of DINFO
 - International Associations: AI*IA, IEEE, ACM



Publications:

<https://www.disit.org/5487>

Around 20 researchers working on: Agentic AI, AI, big data in the domains of:

- smart cities, industry, retail, mobility & transport, environment, waste, energy, health, justice and quality of life.

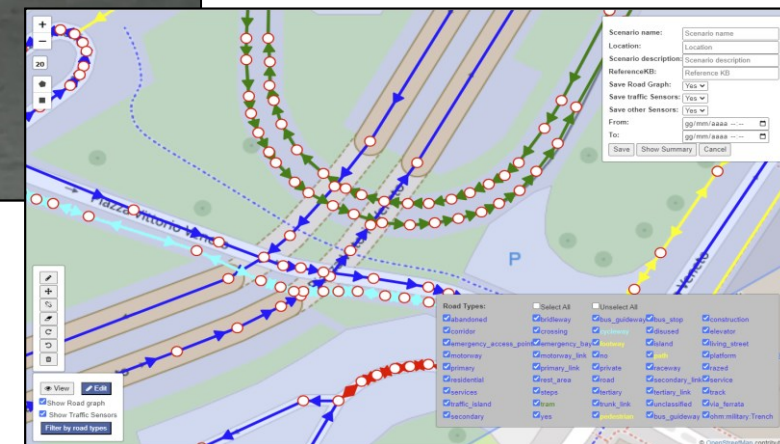
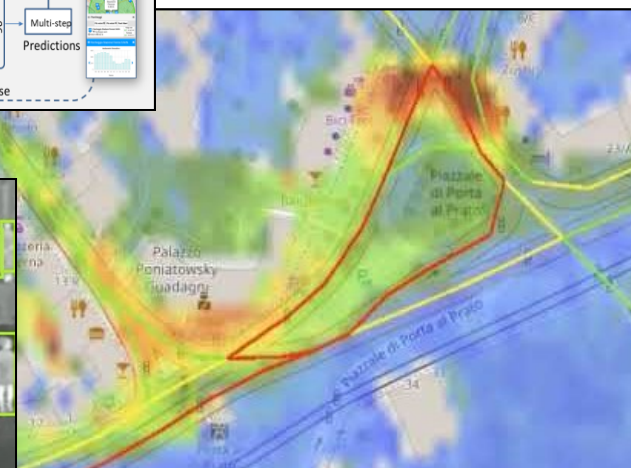
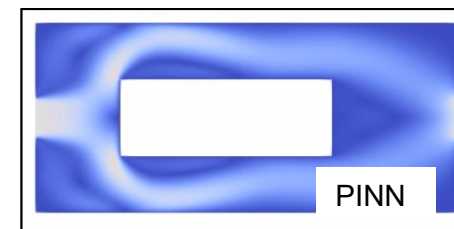
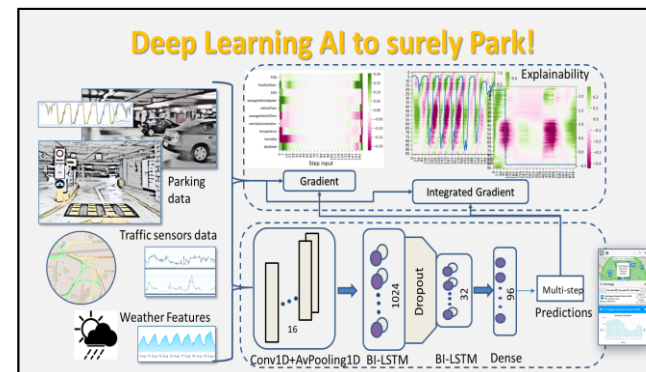
Dedicated Data center with several clusters: HPC CPU/GPU and MLOps

Research + platform engineering + real-world deployment

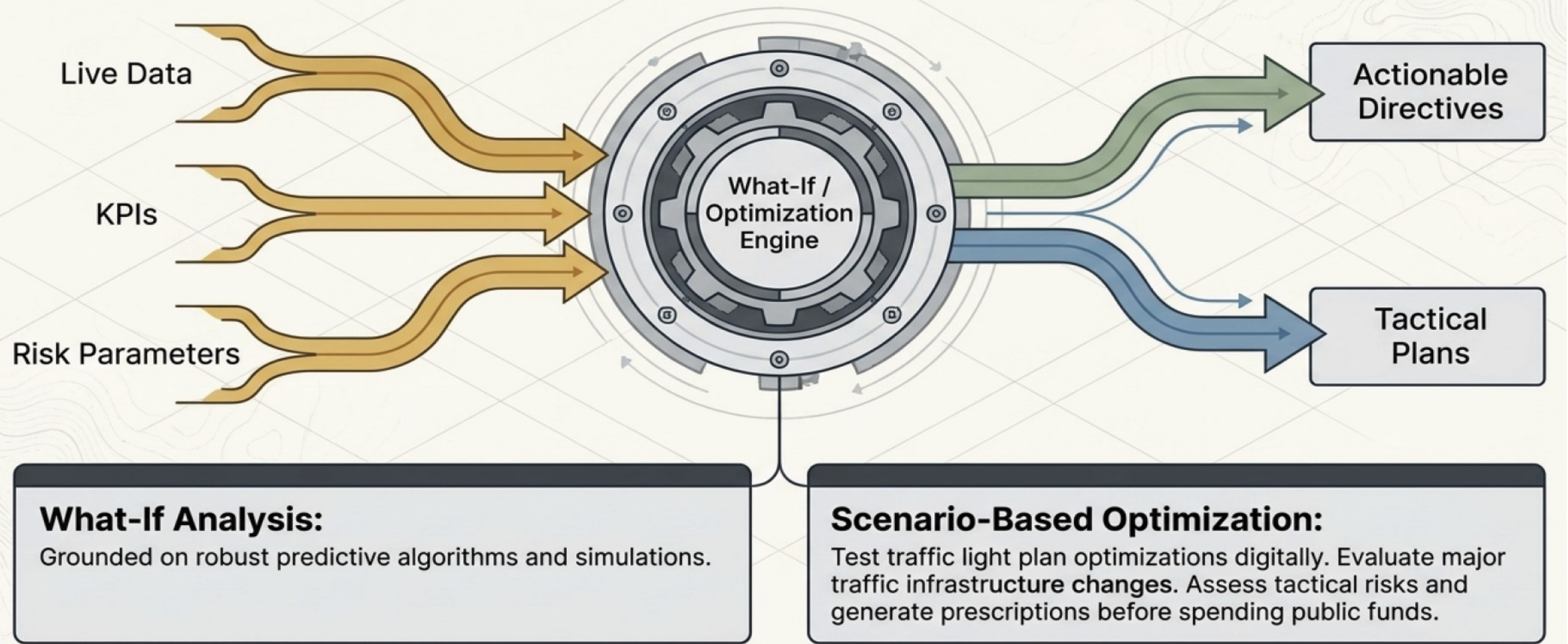
Core research areas

A research stack for trustworthy, explainable and operational AI, Digital Twins.

- **Artificial Intelligence and Machine Learning:** DL, GNN, RL, GCN, CNN, federated and scalable models.
- **Explainable and Neuro-Symbolic AI:** XAI, PINN, hybrid symbolic/data-driven reasoning.
- **Generative AI,** LLMs, Agentic AI, RAG systems for assistants, QA over Knowledge Graphs and RAG, dashboards and IoT/WoT applications.
- **Big Data, Data Spaces and distributed architectures:** cloud/edge and high-performance ingestion and data processing, active-active solutions, microservices, MCP.
- **Knowledge Engineering:** ontologies, RDF/KG, semantic indexing, reasoning, disambiguation and interoperability.



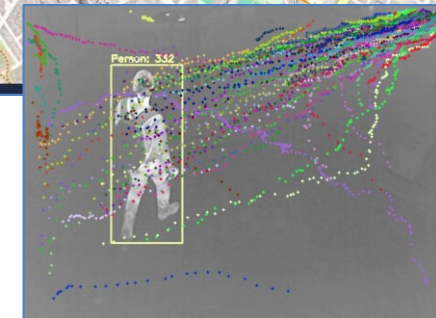
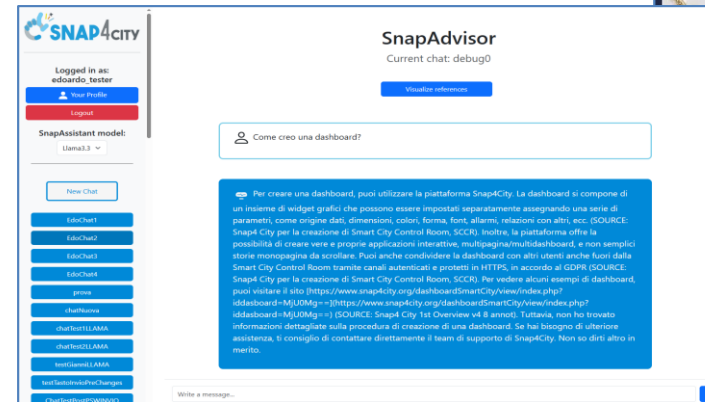
Decision Support Systems



Applicative domains, operation & plan

Predictions, Early warning, Optimization

- **Smart Cities Control & Applications**
- **Mobility and Transport Management**
- **Industrial applications**
- **Tourism services management**
- **User Behaviour: city, retail**
- **AI Assistants: developers, legal, decision makers, commercials**
- **Environment: air quality, waste**
- **Energy Management**



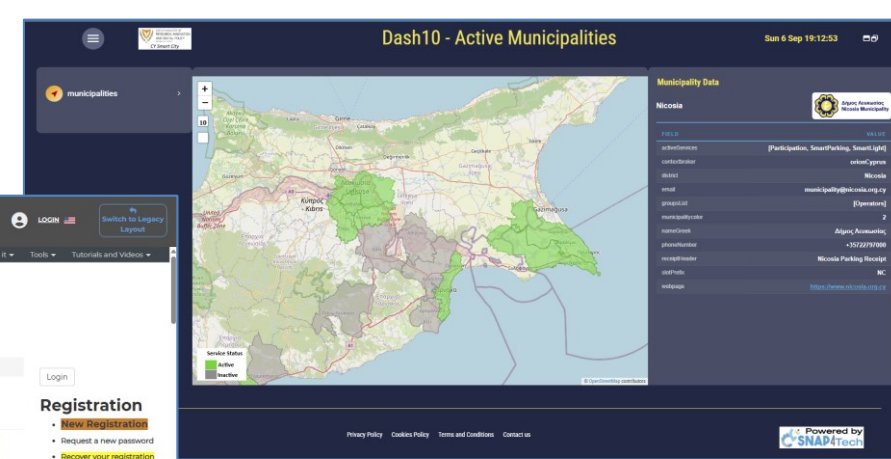
Infrastructures

• Spin-off companies:

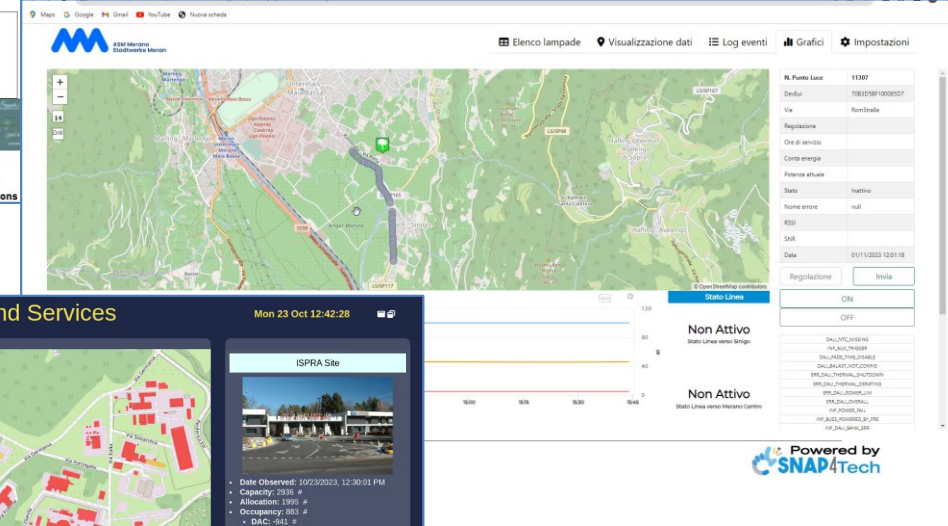
- Snap4 srl
- DAI srl

• Platforms/Solutions:

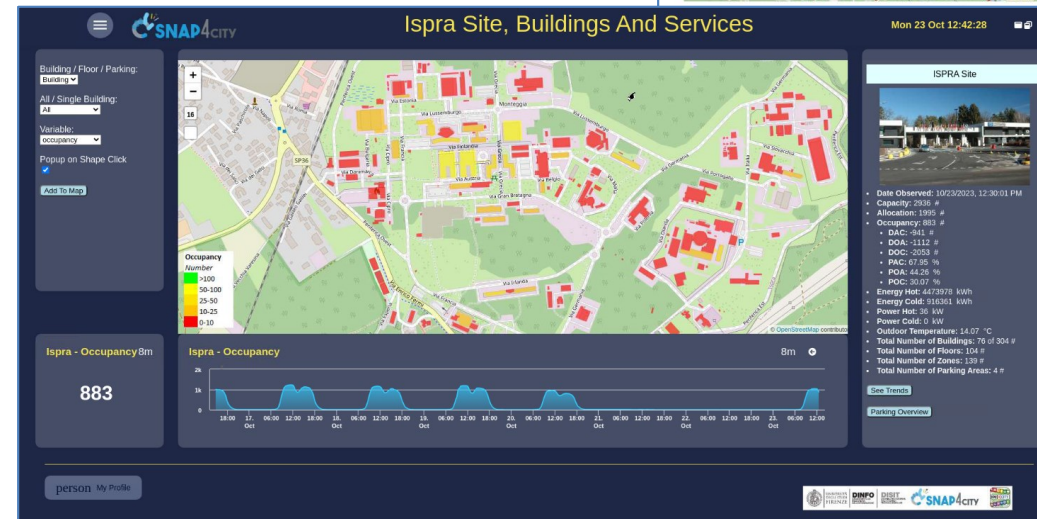
- Snap4City.org
- SnapAdvisor Agentic AI
- Smart Cyprus + Mobile Apps
- Merano's Smart Light
- Cuneo's Smart Assets
- Mobility4Future, CN MOST
- Snap4ISPRA, EC ISPRA
- Etc.



SmartCyprus



Merano



Snap4Ispra

Snap4City / Snap4Industry backbone

An open-source platform ecosystem for data-driven Smart City, Smart Region and Smart Industry solutions.

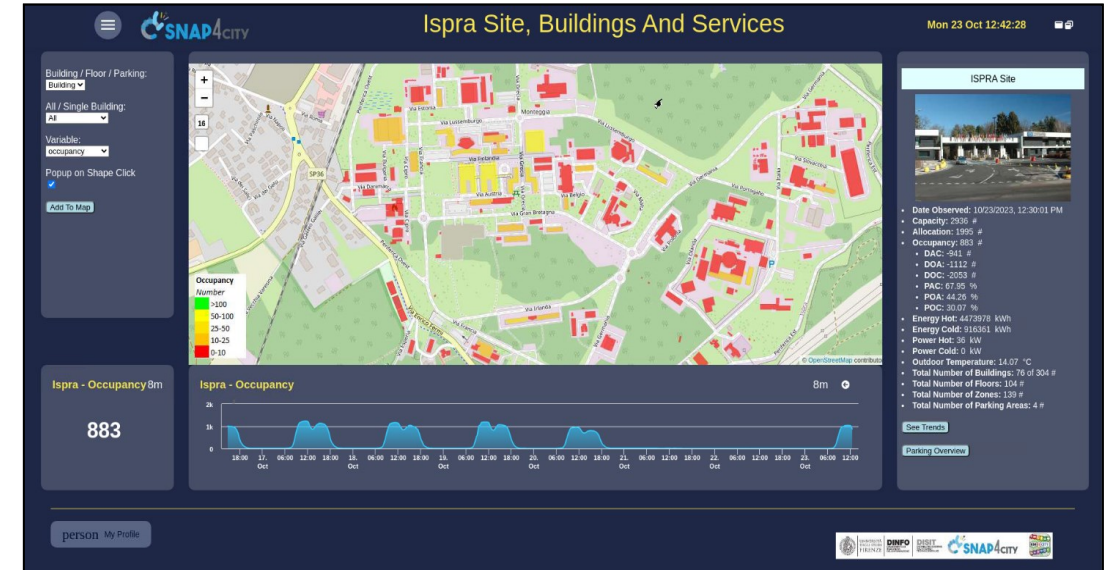
Microservices architecture for IoT/loE, stream + batch processing and scalable cloud deployment.

Semantic layer based on Km4City for multi-domain reasoning and interoperability.

AI, Agentic AI, MLOps: development environment and AI solutions

Dashboards, control rooms, 2D/3D Digital Twins and no/low-code tools for operational users.

Designed for secure, privacy-respecting applications and GDPR-aware deployments, AI-Act, etc.



<https://www.snap4city.org>



Knowledge Model for the City



2020



Contract



- Smart Tourism
- 6 Pilots
- Data Analytics
- Extended platform



- Smart Mobility
- PISA, PUMS
- Living lab



Km4City 1.6.7

Smart Ambulance (2021-22)

Sii-Mobility

enel x Contract



Contract

2021

PC4City (2020-21)
Monitoring Terrain

Winner of Open Data Challenge of
enel x

CAPELON

- Smart Light
- Sweden

Enterprise (2021-22)
Industry 4.0

Almafluida Industry 4.0 (2021-22)

AMPERE (2021-22)
Industry 4.0

SYN-RG-AI
SmartCity



Industry 4.0

uni.systems

SmartCity, 2021-23



AXIS collab
SmartCity

2022



Asymmetrica Smart City, 2022-23



Contract, 2022-23

2023



Contract, 2022-23



2022-2023

enel x Contract, 15min



Security and Risk

Smarteas



Italferr, Smart City



CN MOST, 2022-26



EI THE, 2022-26

G. Agile, 2021-23



2023-26



Merano, smart light

OceanRace, Genova, AWS

Cuneo, smart city

2024

Km4City 1.6.8

TOURISMO



UrbanDT4TF

ELLIE IA 2025-2027



Contract, 2024-25

CAI4DSA



OPTIFaaS



Rhodes, smart city

eShare

UNIFI TUSS



AMMIRARE



- **Smart Cyprus:** Parking, participation, Light, Waste, etc.
- **ISPRA JRC contract**, EC: DSS, SOC, control room, energy, <https://www.snap4city.org/970>
- **Merano Smart Light**, contract <https://www.snap4city.org/1023>
- **Cuneo Asset management**, contract <https://www.snap4city.org/975>
- **TOURISMO**, Interreg, EC: Tourism, NLP, DSS, <https://www.snap4city.org/1001>
- **ELLIE**, Horizon Europe, EC: AI, VR, <https://www.snap4city.org/1056>
- **AMMIRARE**, Interreg, EC: AI, environment, Big Data, <https://www.snap4city.org/1002>
- **Reg4IA**, LLM, DL AI for regional public administration, A project of presidency of national council
- **Energia**, RT, contract: Federated Learning, AI, PINN, DSS, on manufacturing
- **SADI-MIAC**, RT, partner: AI predictions, Tourism, Retail, Computer Vision, <https://www.snap4city.org/1055>
- **CN MOST**, PNRR: sustainable mobility, AI, platform, <https://www.snap4city.org/1050>
- **MUSEOAct**, Deep Learning AI for condition deformation predictions wrt environmental aspects
- **Reverberi contract**, Smart Parking monitoring
- **LIBROCO**, AI for predicting events effects on commerce, LLM
- **RFI contract**: mobility, AI, DSS
- **++ other contracts covered by NDA**

Closed in 2025-early 2026

- **BullIVIT**, RT, conv: Agentic AI, NLP, LLM on commercial phases
- **UrbanDT4TF**, CN HPC: Digital Twin mobility, <https://www.snap4city.org/1057>
- **DI-DTPlatform**, CN HPC: Digital Twin, mobility, environment, <https://www.snap4city.org/1097>
- **Sasuum**, CN MOST, PNRR: AI, mobility, <https://www.snap4city.org/999>
- **OPTIFaaS**, CN MOST, PNRR: AI, mobility, DSS, <https://www.snap4city.org/1008>
- **LeverageOPTIFaaS**, CN MOST: PNRR, mobility, <https://www.snap4city.org/1064>
- **CAI4DSA**, FAIR PE1, PNRR: AI, Neuro-Symbolic, PINN, NG-DSS, <https://www.snap4city.org/1016>
- **SMART3R**, PRIN UNICagliari: mobility, DSS, <https://www.snap4city.org/1087>
- **Tuscany X.0, EDIH**, TestBeforeInvest, Training on AI, Big Data, Security, HPC: <https://www.tuscanyx.eu/>
- **The IE**, PNRR: AI, NLP, LLM, Legal Aspects, SnapAdvisor, RAG LLM
- **Salerno Port**: AI for container ID recognition and tracking
- **Talent Hub**, ECRF, conv: NLP, match demand vs offer

booklets

- Smart City



https://www.snap4city.org/download/video/DPL_SNAP4CITY.pdf

- Industry



https://www.snap4city.org/download/video/DPL_SNAP4INDUSTRY.pdf

- Artificial Intelligence



https://www.snap4city.org/download/video/DPL_SNAP4SOLUTIONS.pdf





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