



www.snap4city.org
www.snap4solutions.org



www.km4city.org



#snap4city
#km4city
#disitlab
@snap4city

Overview 2026

**Agentic AI Digital Twin Platform
Decision Support Systems
& Business Intelligence**

DIGITAL TWIN SOLUTIONS TO SETUP SUSTAINABLE DECISION SUPPORT SYSTEMS AND BUSINESS INTELLIGENCE



UNIVERSITA'
DEGLI STUDI
FIRENZE

DINFO
DIPARTIMENTO DI
INGEGNERIA
DELL'INFORMAZIONE

DISIT
DISTRIBUTED SYSTEMS
AND INTERNET
TECHNOLOGIES LAB

2026/27

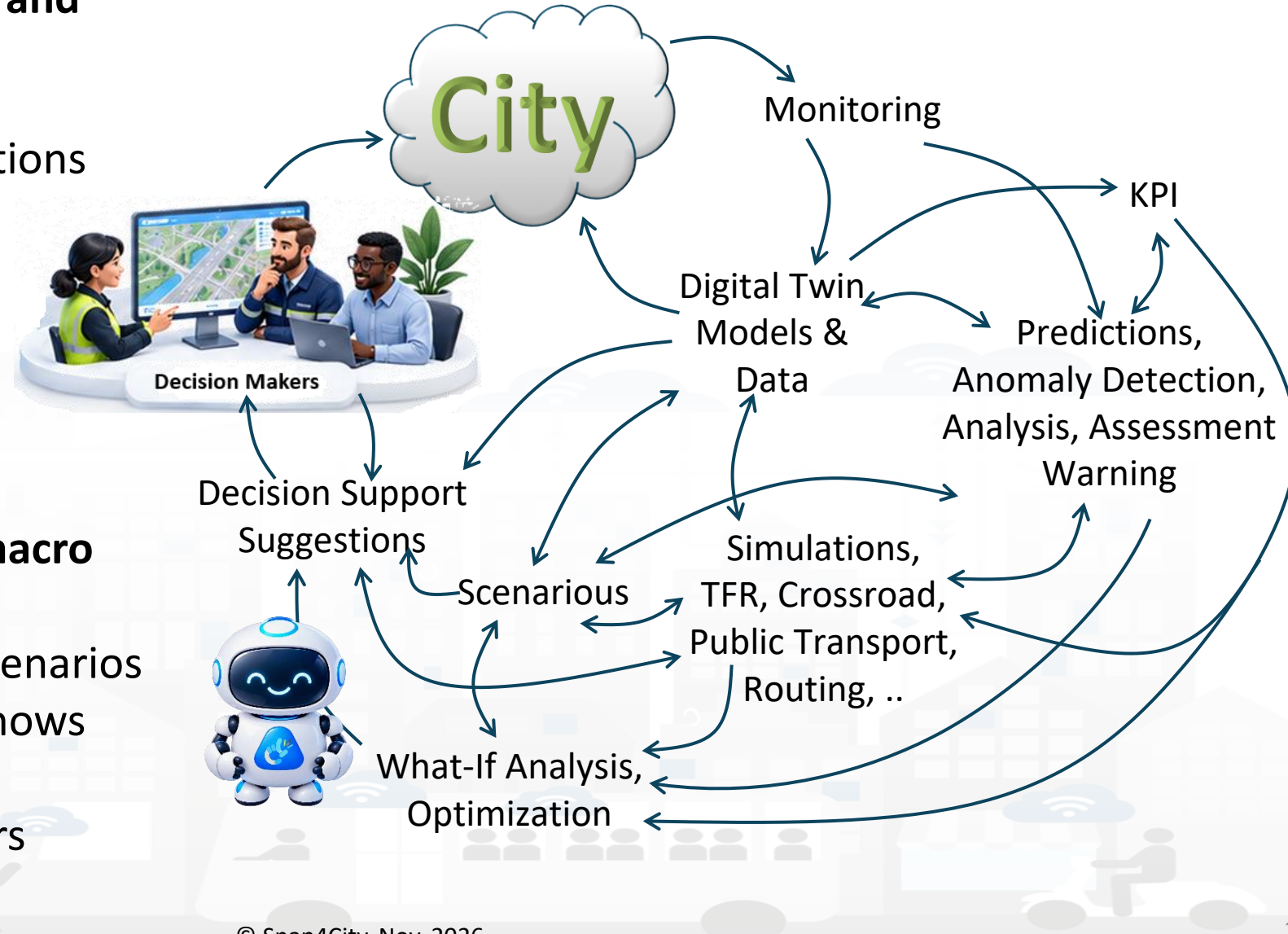
Agentic Tasks

- **Controlling Status:** management, and operational

- Monitoring via KPI
- Early warning on critical conditions
- Predictions vs KPI
- Anomaly detection
- Neuro-Symbolic analysis
- Risk assessment
- Fast What-if analysis

- **Making plan:** tactic and strategic, medium and long range, micro/macro

- Simulation & optimization
- Generative AI Prescriptions, scenarios
- Resilience to Unexpected unknowns
- What-if analysis wrt scenarios
- Collaboration with stakeholders



Value for buyers and delivery partners

City and enterprise teams



A shared operational view

Combine information across departments and connect it to daily decisions.

Developers



A reusable application toolbox

Use visual flows and APIs while keeping the flexibility of custom code.

System integrators



A foundation for differentiated services

Build domain applications and connect customer systems on a common platform.



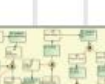
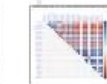
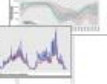
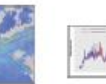
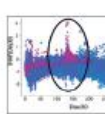
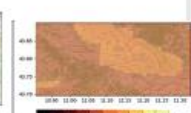
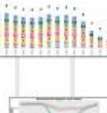
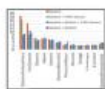
THE POWER OF AGENTIC AI AT THE SERVICE OF YOUR OPERATIONS AND PLANS

OPERATION AND PLAN - CONTROL ROOMS - DECISION SUPPORT SYSTEMS - WHAT-IF ANALYSIS - OPTIMIZATION - APPLICATIONS - AGENTS



LOW-CODE DEVELOPMENT, VISUAL PROGRAMMING, SMART APPLICATION DEV.,
DIGITAL TWIN DEV. PLATFORM, PROCESSING LOGIC, MICROSERVICES
API-DRIVEN DEV., EDGE & CLOUD DEV.

ARTIFICIAL INTELLIGENCE, AI-POWERED DIGITAL TWIN, ADVANCED ANALYTICS,
PREDICTION, OPTIMISATION, SIMULATION, MACHINE LEARNING,
GENERATIVE AI, AGENTIC AI, AI AGENTS, RAG, GRAPH AI, MLOPS

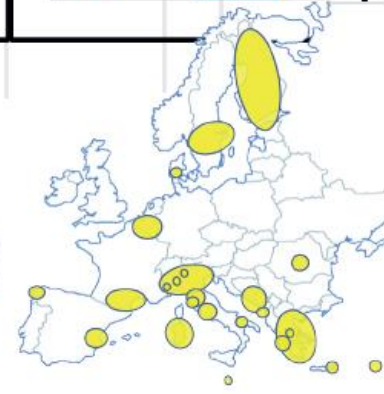


KNOWLEDGE GRAPH, SEMANTIC KNOWLEDGE,
KNOWLEDGE-DRIVEN, CONTEXT-AWARE DATA,
SEMANTIC REASONING, DATA HARMONIZATION

INTEROPERABILITY, SEMANTIC INTEROPERABILITY,
CROSS-PLATFORM, OPEN STANDARDS
VENDOR-AGNOSTIC, LEGACY SYSTEMS

ANY DATA INGESTION, REAL-TIME, INTEGRATION,
IOT/WOT, HETEROGENEOUS DATA,
EDGE-TO-CLOUD DATA INTEGRATION,
BIDIRECTIONAL EVENT DRIVEN

FULL INTEROPERABILITY, ANY: DATA, BROKERS, NETWORKS AND VERTICALS



Powered by
FIWARE

FREE
TRIAL

PEN Test
Passed

EU GDPR
COMPLIANT

SNAP4
Appliances and Dockers
Installations

EUROPEAN OPEN
SCIENCE CLOUD

Node-RED

JS Foundation

E015
digital ecosystem

NVIDIA

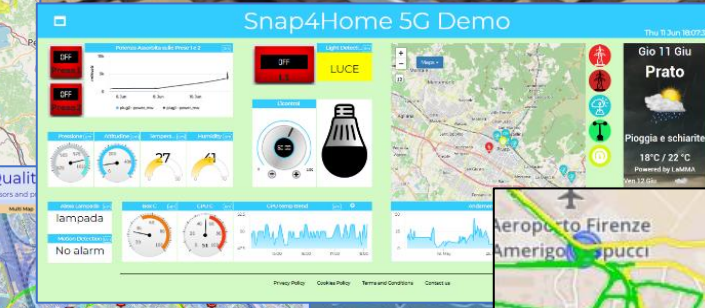
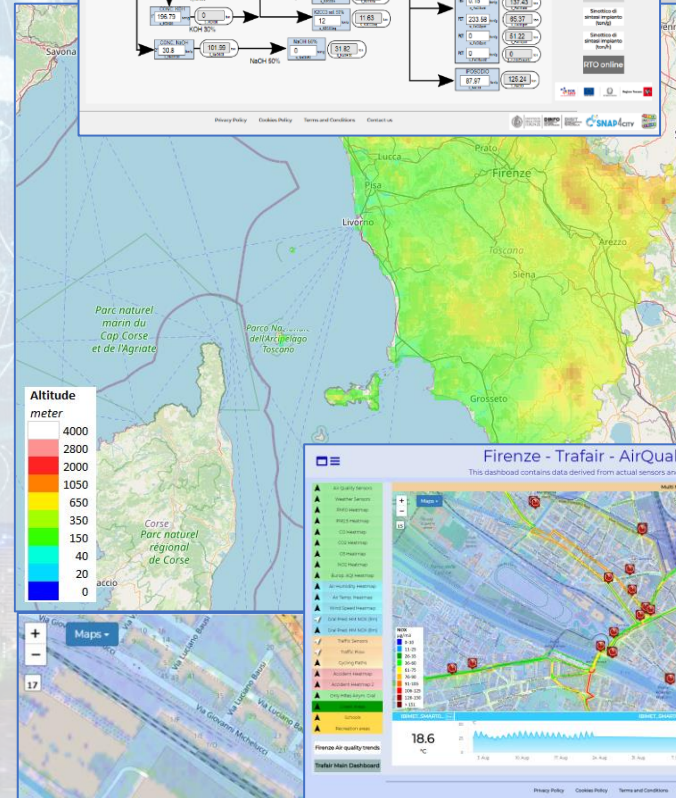
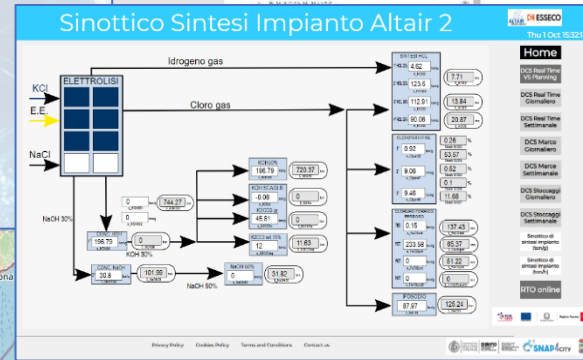
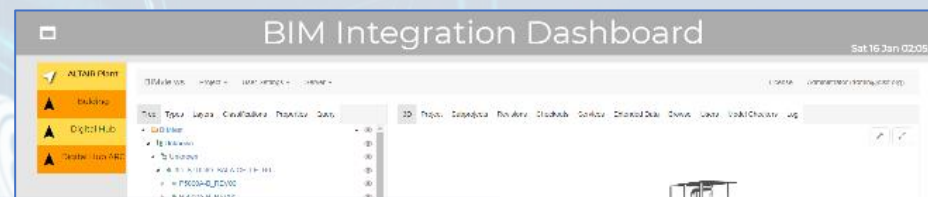
High Level Types

© Snap4City, Nov. 2026

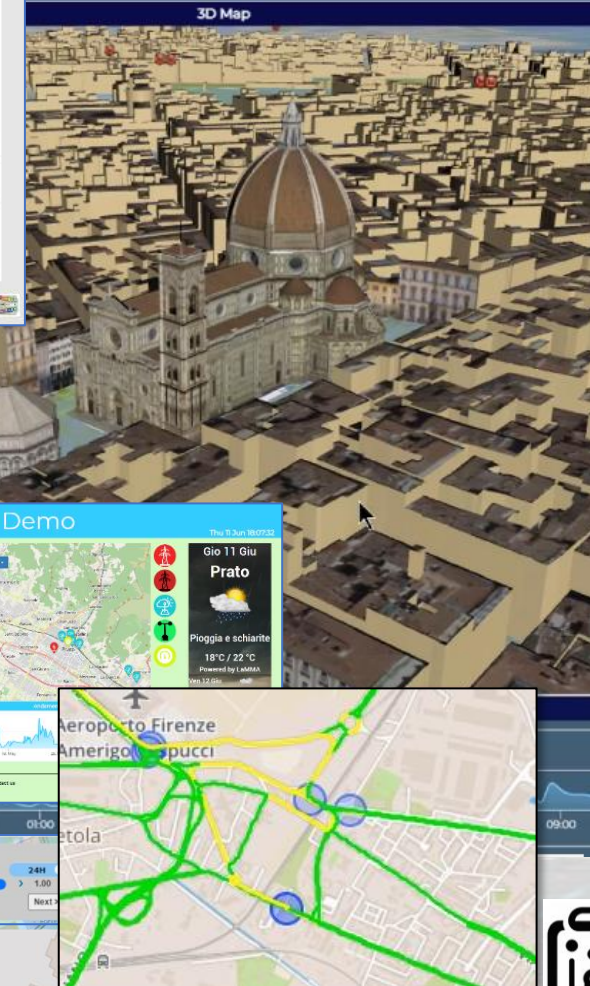
- POI, IOT Devices, shapes,..
 - **FIWARE Smart Data Models,**
 - **IoT Device Models**
 - **Any custom data model**
- GIS, maps, orthomaps, WFS/WMS, GeoTiff, calibrated heatmaps, ..
- Satellite data, any kind..
- traffic flow, typical trends, ..
- Vector fields + heatmaps, ..
- trajectories, events, workflow, ..
- 3D Models, BIM, Digital Twins, ..
- OD Matrices of several kinds, ..
- Dynamic icons/pins, ..
- Synoptics, animations, ..
- KPI, personal KPI,..
- social media data, TV Stream,
- routing, multimodal, constraints, ..
- scenarios,
- etc.

02

Data Model: standard and custom data models, dictionary, ontology; Data Spaces, MDS; data models FIWARE, etc.



SNAP4CITY
Digital Twin Global - Fire
demonstrator

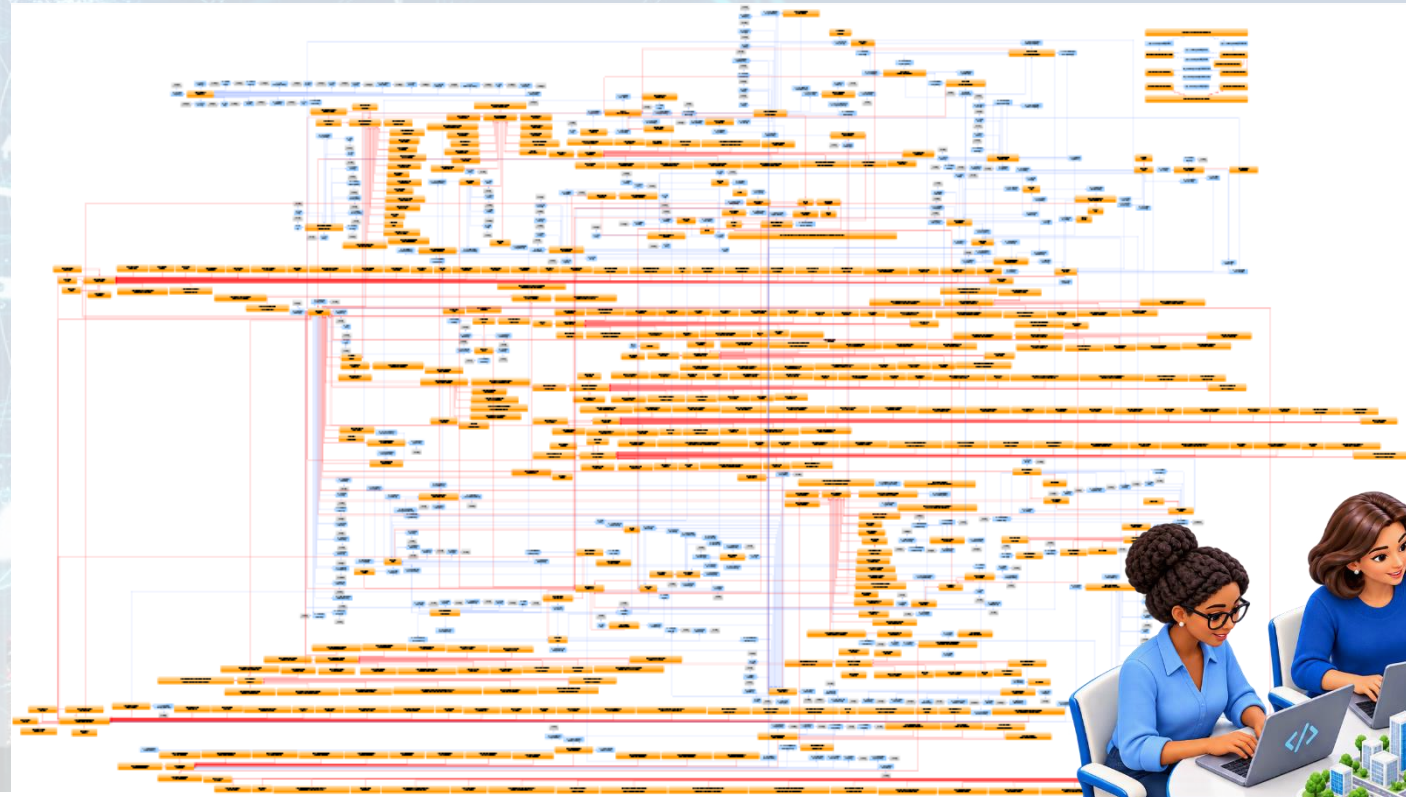


Expert System *semantic queries*

via:

- **Smart City API** for Apps and third party
- **MicroServices** data driven develop via visual language Node-RED

Extensible ontology License Free: 1.6.8



01

Interoperability: any format, any protocol, any API, visual programming node-red, Python, brokers, etc. Server Sides Business Models, ETL, ELT, ..

02

Data Model: standard and custom data models, dictionary, ontology; Data Spaces, MDS; data models FIWARE, etc.

Linked Open Data

<https://www.snap4city.org/19>



Km4City Ontology elements 1.6.8

- **Km4C:** Km4City 1.6.8, licence free
- Using all licence free vocabularies
 - **DCTERMS:** for metadata Dublin Core Metadata Initiative
 - **FOAF:** friends of a friends
 - **Good Relation:** entities relationships
 - **iot-lite:** IOT Vocabulary
 - **OTN:** Ontology of Transportation Networks
 - **OWL-Time:** time reasoning
 - **SAREF** Smart Appliances REference extension for building devices available at <https://saref.etsi.org/saref4bldg/>
 - **Schema.org** for people and organizations
 - **SSN:** Semantic Sensor Network Ontology (see <https://www.w3.org/TR/vocab-ssn/>)
 - **WGS84** Datum of Geo-Objects
 - **GTFS**, General Transit Feed Specification, and **Transmodel**, for public transport infrastructures: lines/rides time schedules, real-time records, paths, etc.;
 - **BOT:** Building Topology Ontology. <https://w3c-lbd-cg.github.io/bot/>
 - **S4CITY:** SAREF extension for Smart City. <https://saref.etsi.org/saref4city/v1.1.2/>



01

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02

Data Model: standard and custom data models, dictionary, ontology; Data Spaces, MDS; data models FIWARE, etc.

Standards and Interoperability

Compliant with:

- **IoT:** NGSI V2/LD, LoRa, LoRaWan, MQTT, AMQP, COAP, OneM2M, TheThingsNetwork, SigFOX, Libelium, IBIMET/IBE, EnOcean, Zigbee, DALI, ISEMC, Alexa, Sonoff, HUE Philips, Tplink, BACnet, TALQ, Protocol Buffer, KNX, OBD2, Proximus, ..
- **IoT model:** FIWARE Smart Data Model, Snap4City IoT Device Models
- **General:** HTTP, HTTPS, TLS, Rest Call, SNMP, TCP, UDP, SOAP, WSDL, FTP, FTPS, WebSocket, WebSocket Secure, GML, WFS, WMS, WCS, RTSP, ONVIF, AXIS TVCam, CISCO Meraki, OSM, Copernicus, The Weather Channel, Open Weather, OLAP, VMS Milestone, TIM, HERE, OGC,
- **Formats:** JSON, GeoJSON, XML, CSV, GeoTIFF, OWL, WKT, KML, SHP, db, XLS, XLSX, TXT, HTML, CSS, SVG, IFC, XPD, OSM, Enfuser FMI, Lidar, glTF, GLB, DTM, GDAL, Satellite, D3 JSON, ...
- **Database:** Open Search, MySQL, Mongo, HBASE, SOLR, SPARQL, ODBC, JDBC, Elastic Search, Phoenix, PostGres, MS Azure, ..
- **Industry:** OPC/OPC-UA, OLAP, ModBUS, RS485, RS232, ..
- **Mobility:** DATEX, GTFS, Transmodel, ETSI, NeTEx, ..
- **Social:** Twitter, FaceBook, Telegram, ..
- **Events:** SMS, EMAIL, CAP, RSS Feed, ..
- **OS:** Linux, Windows, Android, Raspberry Pi, Local File System, AXIS, ESP32, etc.

<https://www.snap4city.org/65>

01

Interoperability: any format, any protocol, any API, visual programming node-red, Python, brokers, etc. Server Sides Business Models, ETL, ELT, ..





Ciao roottooladmin!

Fri 2 Sep 19:13:07

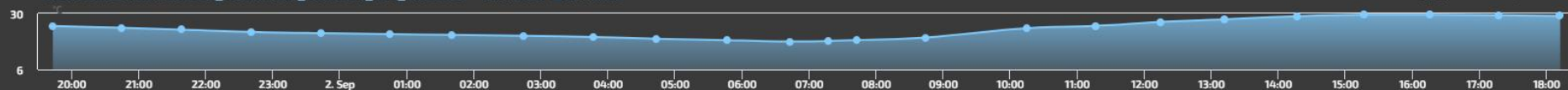
3D MAP GLOBAL DIGITAL TWIN - NEWGUI

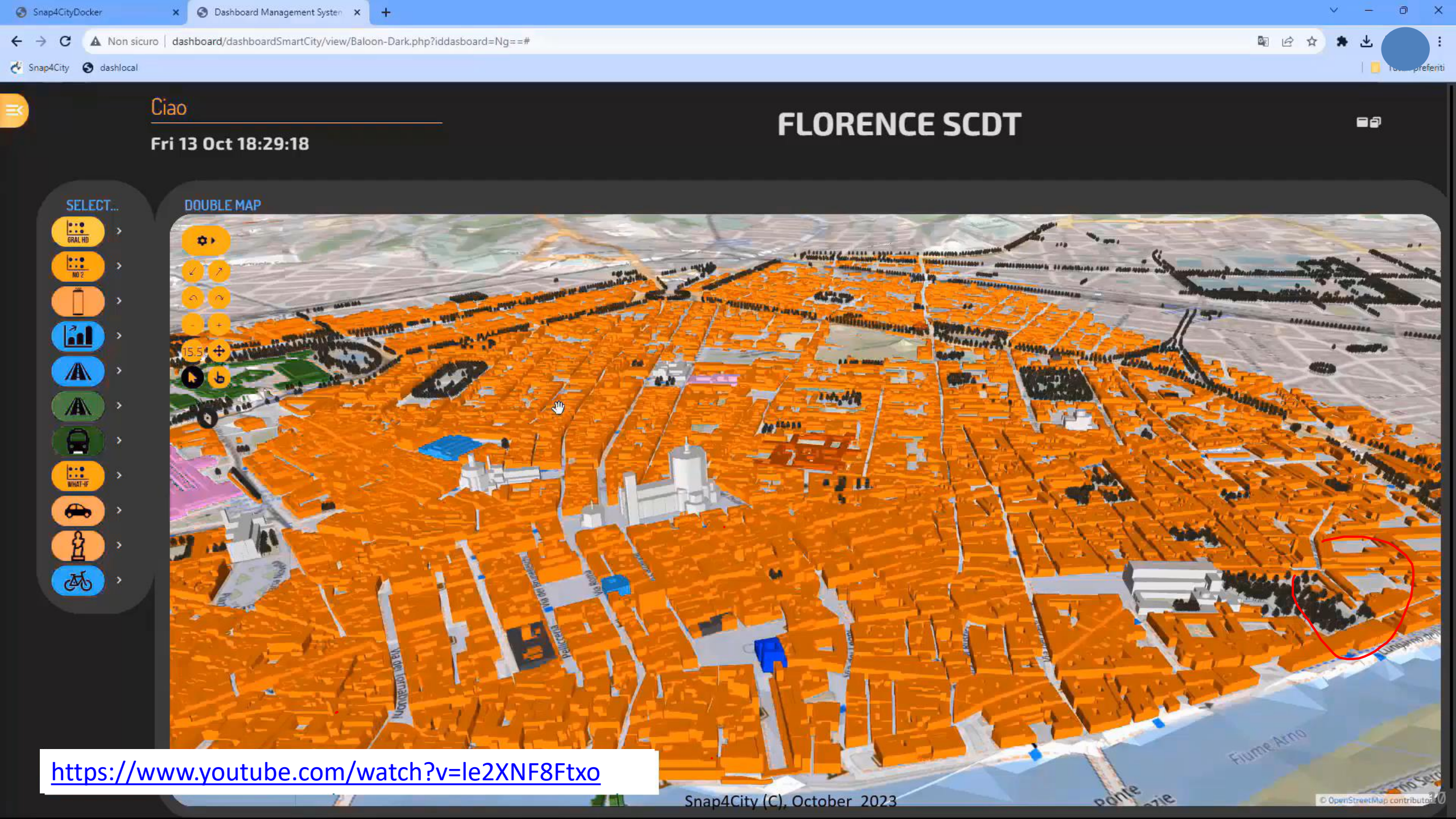


3D MAP



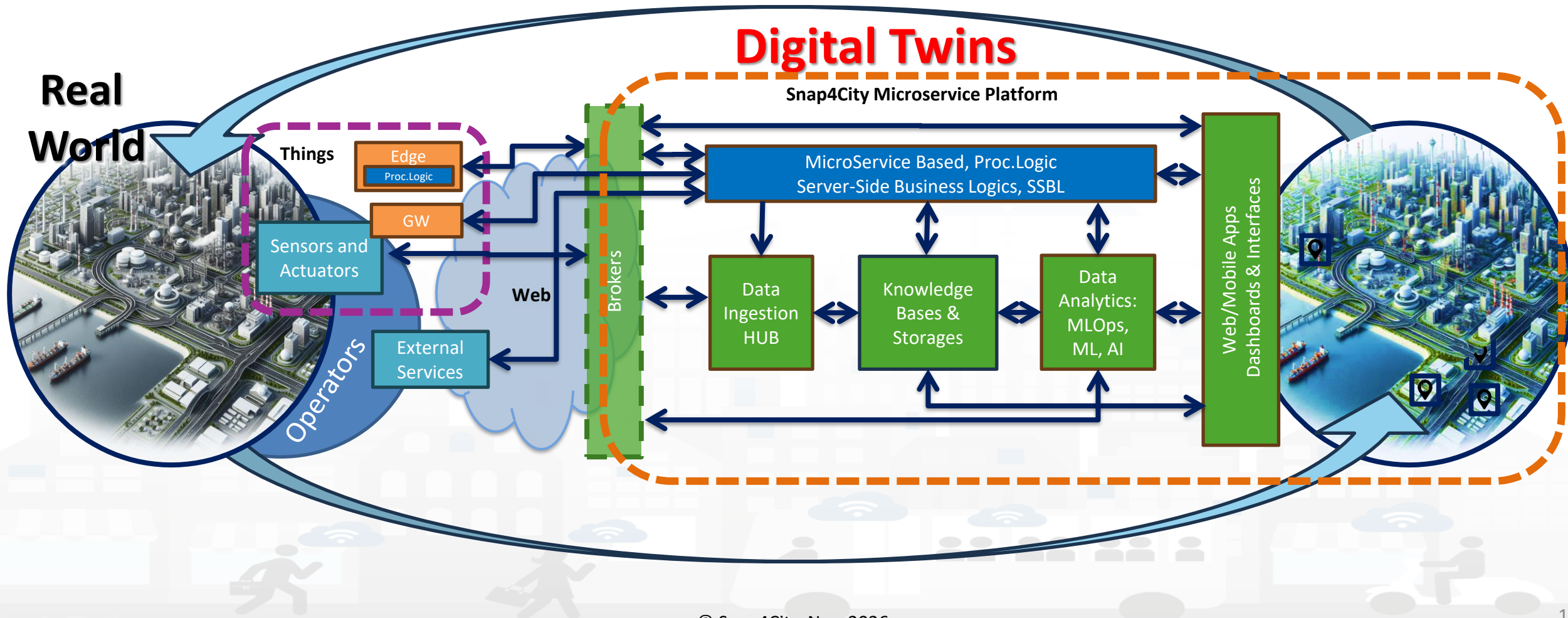
DISIT:ORIONUNIFI:TUSC_WEATHER_SENSOR_OW_3176959 - AIRTEMPERATURE





<https://www.youtube.com/watch?v=le2XNF8Ftxo>

Digital Twin Development Platform



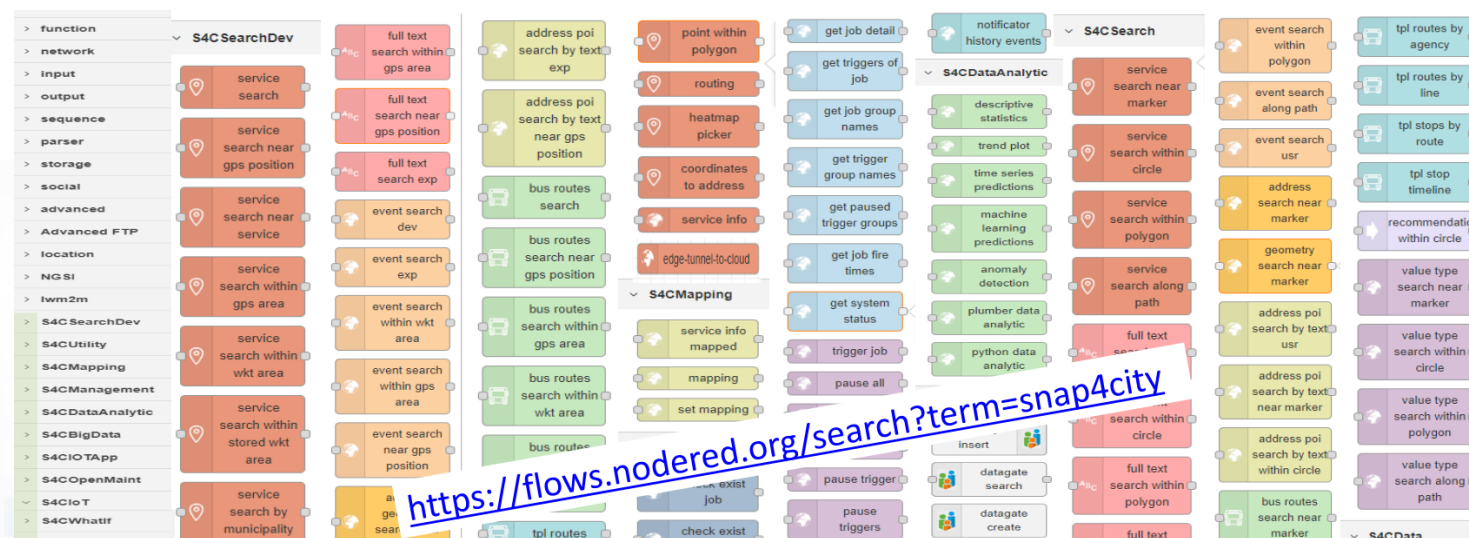


Visual development with room for custom code

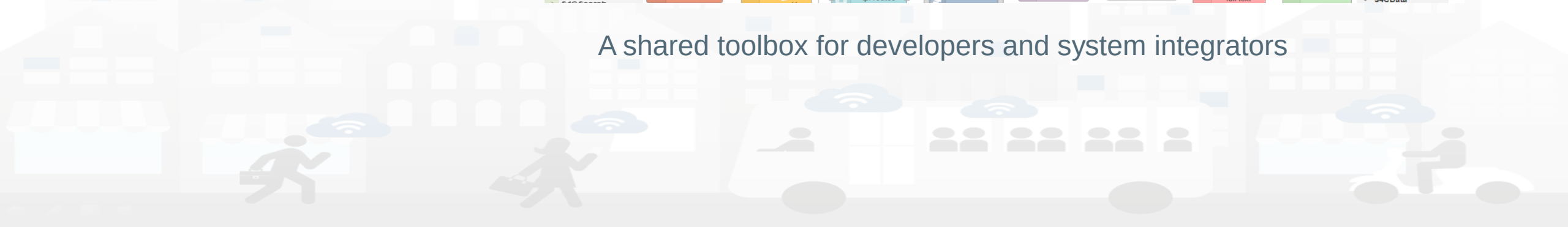
Reusable Node-RED microservices

Compose ingestion and processing flows.

Add Python or R analytics and connect external services through APIs.

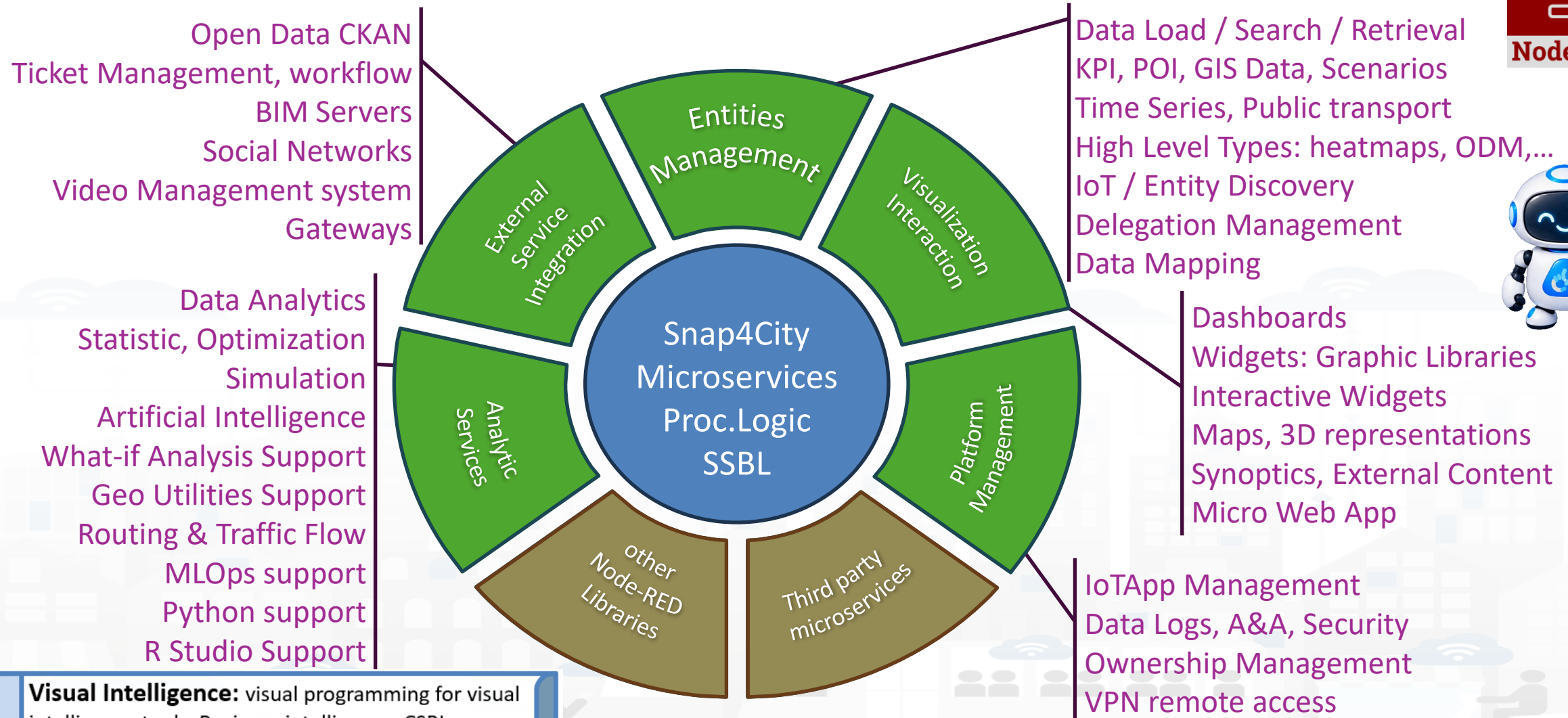


A shared toolbox for developers and system integrators



> 60.000 downloads (up to 2024)

Areas



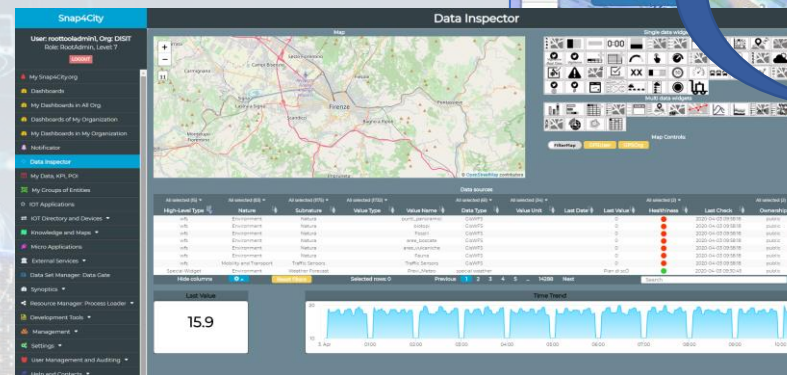
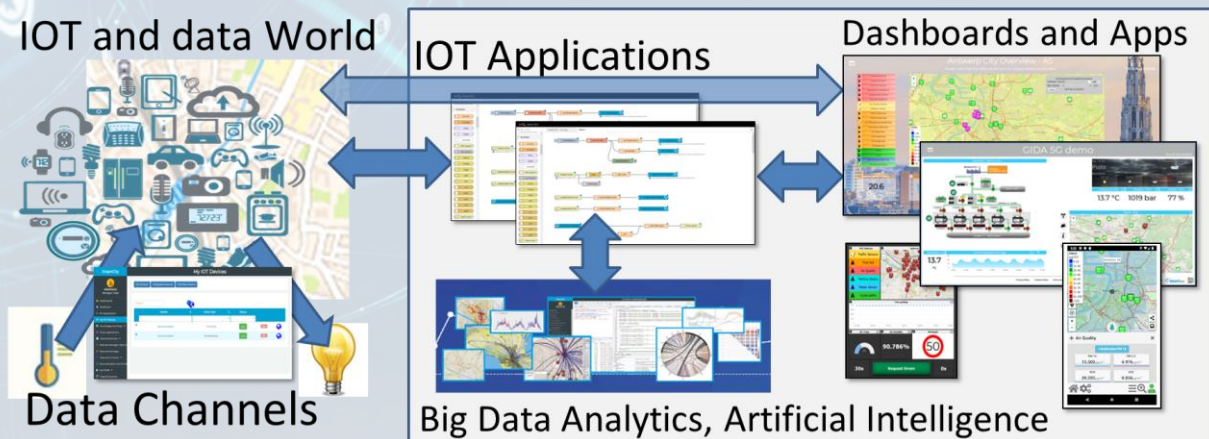
Solutions: reliable, secure and fast to realize

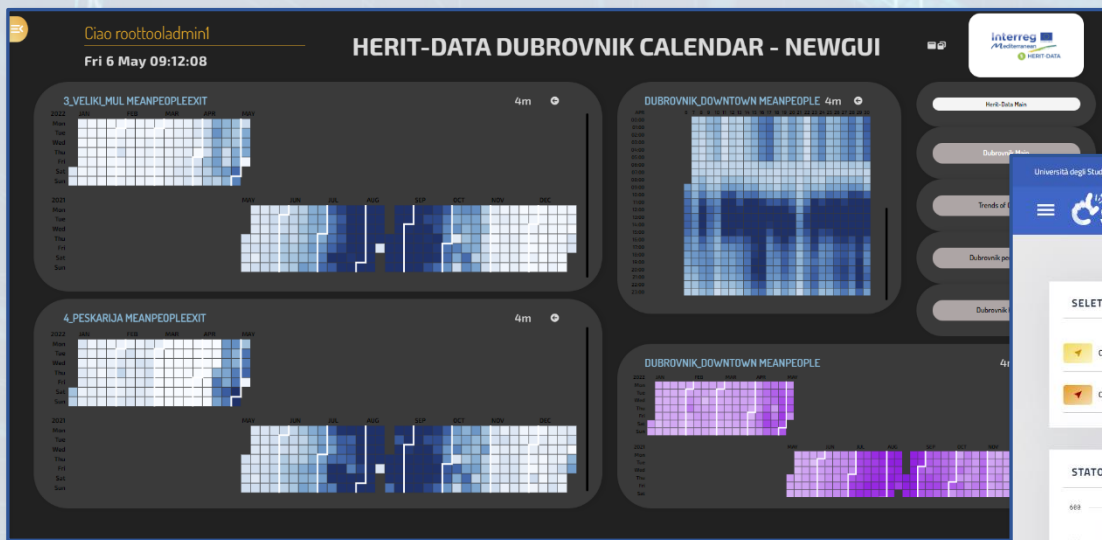
- **Via Snap4City tools**

- **Dashboard Wizard**
- **Dashboard Builder**
- **Data/Visual Analytic**

- **Smart Solutions results to be**

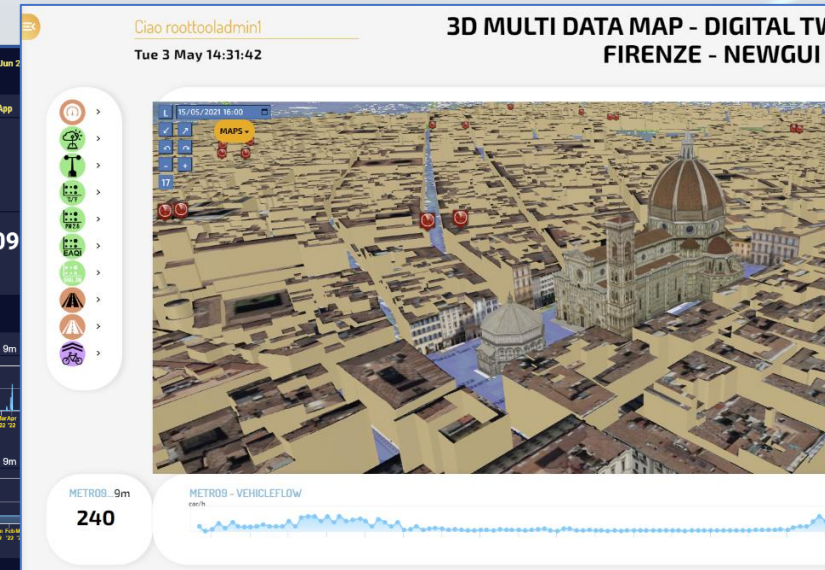
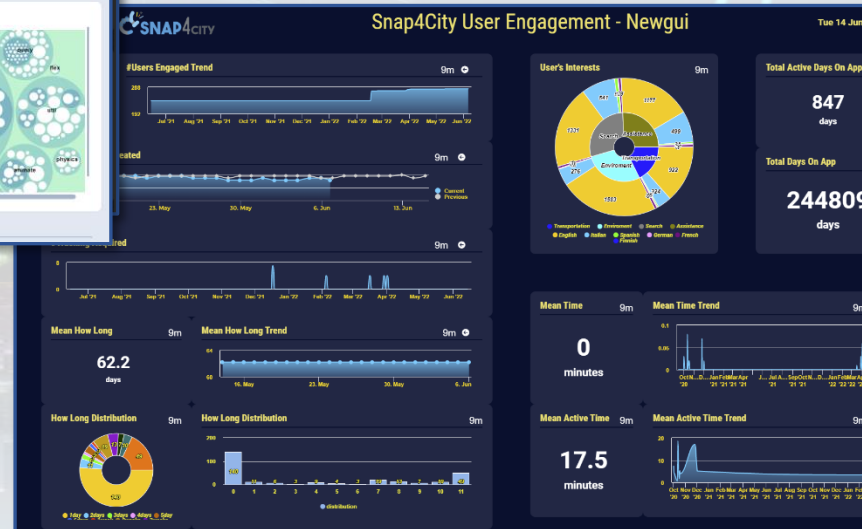
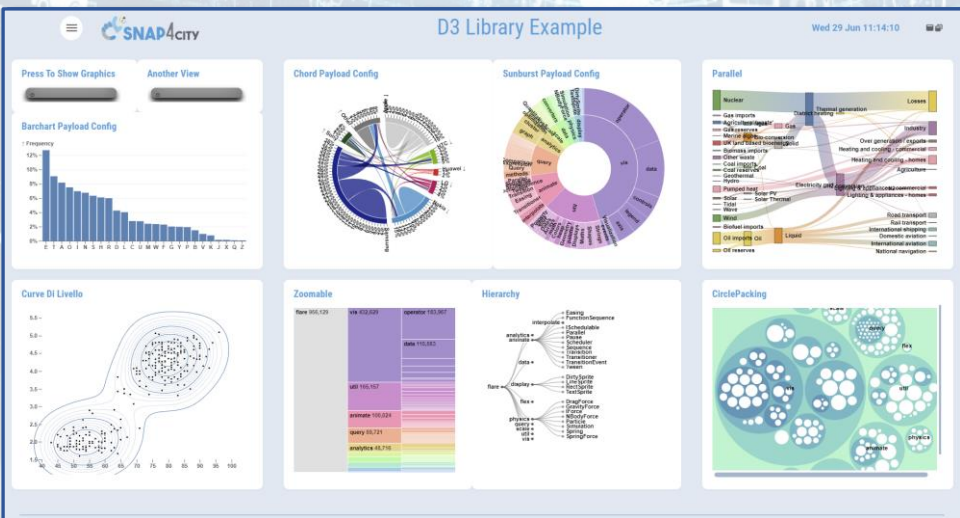
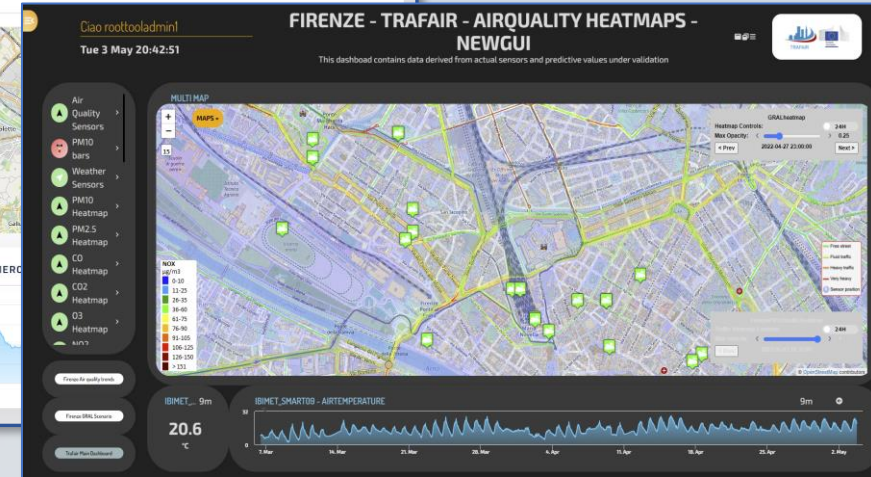
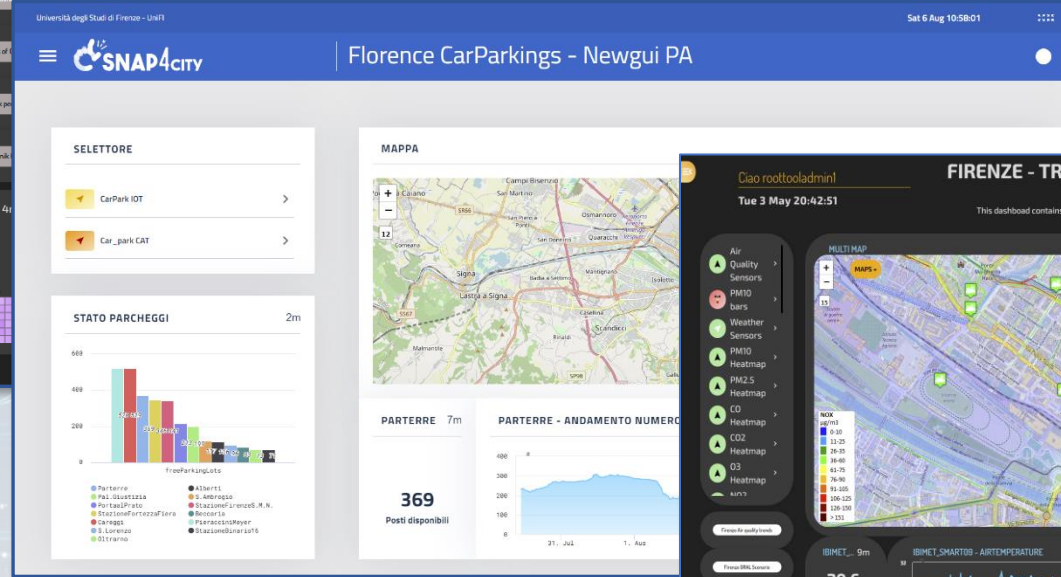
- **Real time data drive**
- **Secure end-to-end**
- **GDPR compliant**
- **Reliable, interoperable**
- **Auditable, marketable**





Different Themes

SNAP4CITY



New styles/themes can be developed by specializing a few files from open source

<https://www.snap4city.org/793>

Available AI Solutions on Snap4City



<https://www.snap4city.org/997>

More than 80 Available Solutions & 300 AI applic.

- **Mobility and Transport**
- **Waste Collection Optimisation**
- **Tourism Management**
- **City Users Behaviour**
- **Security and Safety**
- **Energy and Control**
- **Environment, Weather, Water**
- **High Level Decision Support Solutions**
 - Asset management
 - Resilience and Risks Analysis

03

Artificial Intelligence: ML, AI, DL, Fed.AI, LLM, DRL, Agentic AI, MCP tools, generative AI, ...
SnapAdvisor Copilot for developers, MLOps supp.

04

Visual Intelligence: visual programming for visual intelligence tools, Business intelligence, CSBL services, etc.

05

Smart Applications: dashboard builder, wizard, exploiting AI tools, Advisor Copilot, CSBL services, mobile Apps, multi services

<https://www.snap4city.org/download/video/course/p4/>

AI/ML developers, MLOps

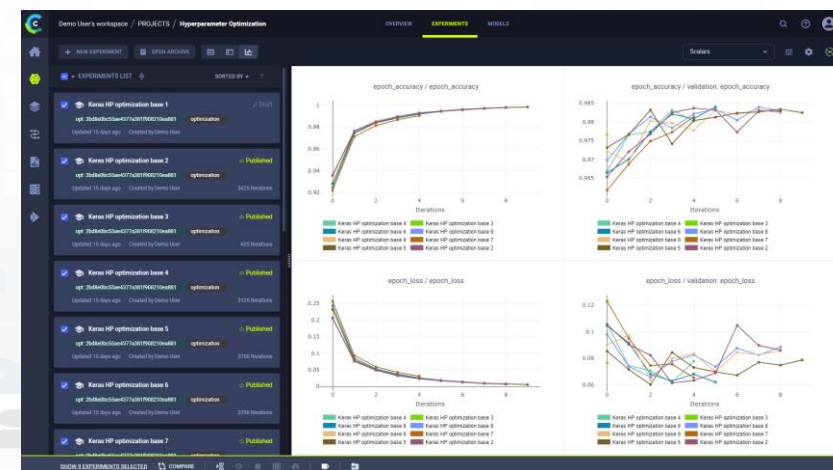
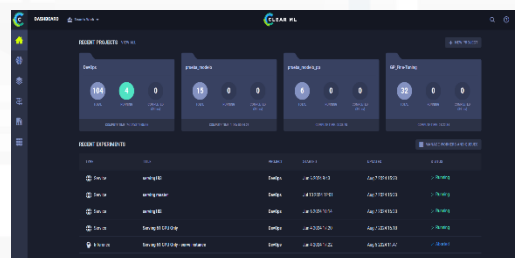
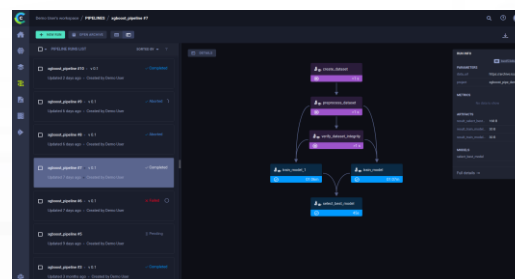
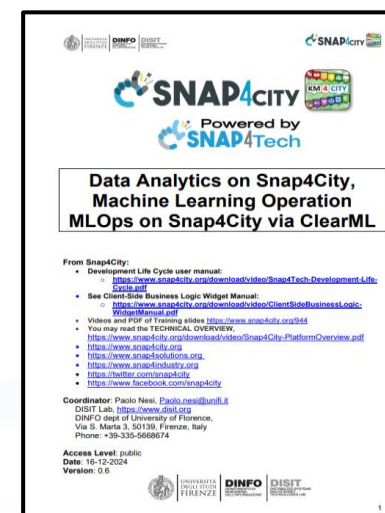
MLOps: AI, ML development
Automating training, hyperparam, optimisation
Any library and AI model, API, Agentic AI, MCP
Exploiting CPU/GPU clusters

03

Artificial Intelligence: ML, AI, DL, Fed.AI, LLM,
DRL, Agentic AI, MCP tools, generative AI, ...
SnapAdvisor Copilot for developers, MLOps supp.



<https://www.snap4city.org/download/video/Snap4City-MLOps-Manual.pdf>



SnapAdvisor & Copilot

Your AI-powered assistant for the Snap4City Digital Twin

Understand your objectives | Plan and use Snap4City services | Analyse data | Deliver actionable answers

Turn your questions
into smarter, data-driven
decisions for a smarter city.

 CLEANER CITIES

 MORE EFFICIENT
OPERATIONS

 BETTER DECISIONS

Ask in natural language



What is happening
in this area?



Find the sensors along
this route.



Which route is better
considering current
conditions?



What can be done to reduce
the CO₂ emissions in Mercy
road at 9:00?



Why are there no free
parking slots in the
Giuizzer area?



Find an API to get data of
traffic flow in Bologna?

I understand your objective.
I'll create a plan, use the right
Snap4City services, analyse
the data and give you
an actionable answer.



1

Understand & Plan

Interpret your request
and create a multi-step
plan

2

Select & Execute

Choose and invoke
the right Snap4City
services and APIs

3

Analyse & Verify

Analyse results,
recover from issues
eventually replan

4

Deliver Answer

Provide clear,
explainable results
in natural language
with visuals

Snap4City Services & APIs



Access data (live & historical)



Discover IoT devices



GIS and geospatial tools



Analytics and AI models



Optimisation & what-if analysis

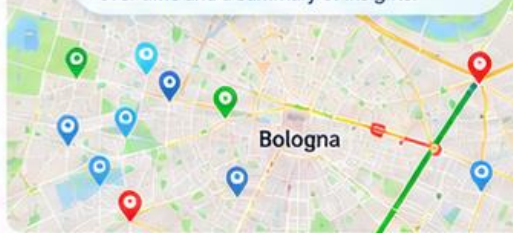


Open to any data model and format

Actionable results



Here is the analysis of the area.
I used traffic, air quality and parking data.
You can see the results on the map, the trends
over time and a summary of insights.



Key insights

- ✓ Congestion level reached 90% in Via Sparta due to an event.
- ✓ CO₂ emissions are higher at 9:00 in Mercy road.
- ✓ Alternative routes can reduce travel time by 18%.
- ✓ See the full report for details and the data sources used.



 Download PDF Report



Rich knowledge foundation

Snap4City, mobility, energy, tourism,
assets, transportation, GIS and more.



RAG with private collections

Use your PDFs, documents,
presentations, images, code and web
pages. Domain-customisable, multilingual.



Agentic capabilities

Multi-step planning, specialist agents,
execution, verification and replanning.



Exploit more resources

Integrate web search and external
resources. Generate decision graphs
and reuse them.



Explainable AI

See the plan, tools used, data sources
and reasoning behind the answer.

For multiple domains



Smart Cities



Mobility



Energy



Tourism



Assets



Transportation



GIS



Retail



Legal



Training



Help Desk

...

... and more

For everyone



Decision
Makers



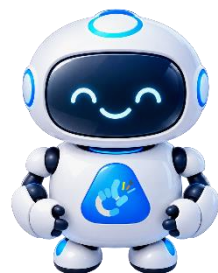
City
Operators



Developers



Organisations
& Teams



SnapAdvisor

Current chat: solution1

Agentic AI



You:

which are the possible to solutions to reduce the lenght of queue at red lights



SnapAdvisor: Tokens details: tokens in prompt: 56759; tokens in answer: 653

Possible Solutions to Reduce the Length of Queue at Red Lights

Based on the provided context passages, here are some possible solutions to reduce the length of queue at red lights:

Traffic Management and Road Safety Measures

- Optimizing Traffic Light Timing:** Adjusting the timing of traffic lights to optimize traffic flow and reduce congestion.
- Implementing Intelligent Transportation Systems (ITS):** Using ITS to dynamically adjust traffic light timing in real-time to respond to changing traffic conditions.



Run agentic mode

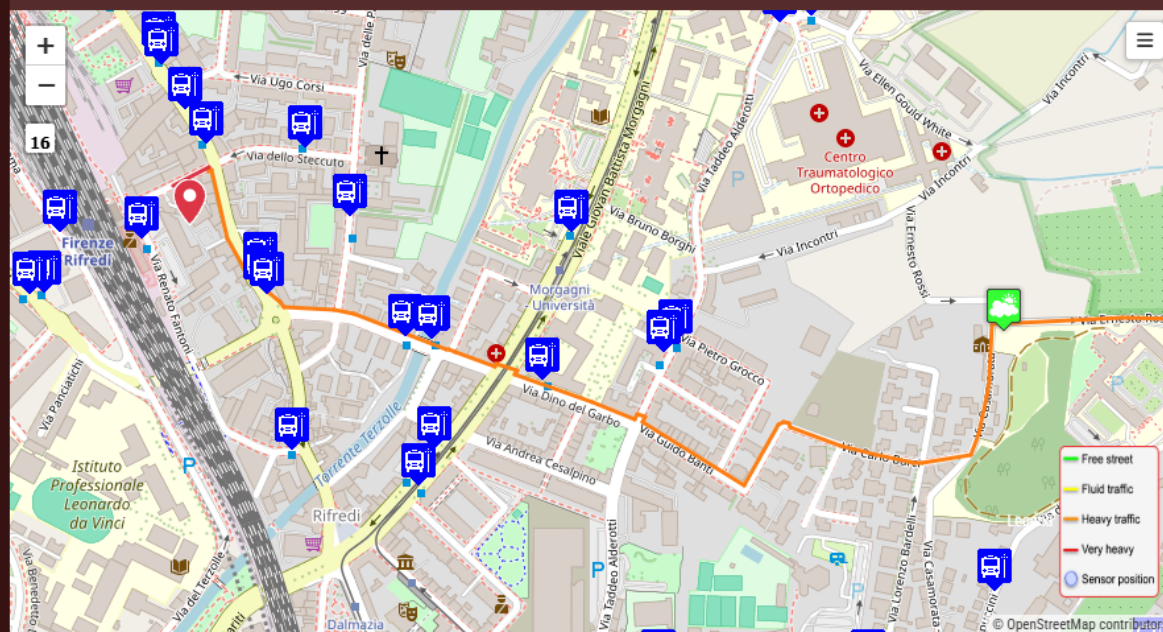


Write a message...

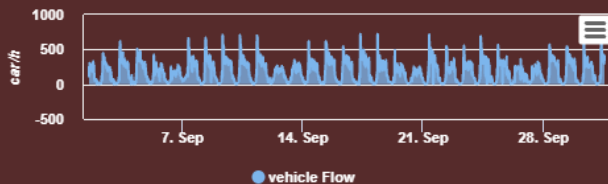


SnapAdvisor And CoPilot

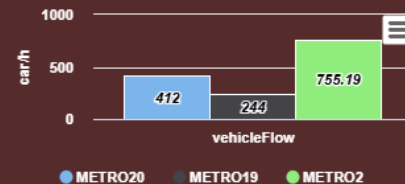
Thu 1 Oct 14:02:33



Time Trend



Bar Series



Chat

New Chat

verification

Test

Prod

Clear Map

Clear Bars

Clear Time-Trend



PDF chat

verification

Recommendations

- Conduct thorough market research to understand the demand for pizzerias in the area.
- Analyze the competitive landscape by gathering data on existing pizzerias and their popularity.
- Evaluate the financial viability by detailed financial data and projections.
- Assess the location's suitability by gathering data on foot traffic, nearby businesses, and accessibility.

By addressing these uncertainties, a more informed decision can be made regarding the advisability of opening a pizzeria in Via dello Steccuto, Florence.

Is it advisable to open a pizzeria in via dello steccuto, florence?

P 0%

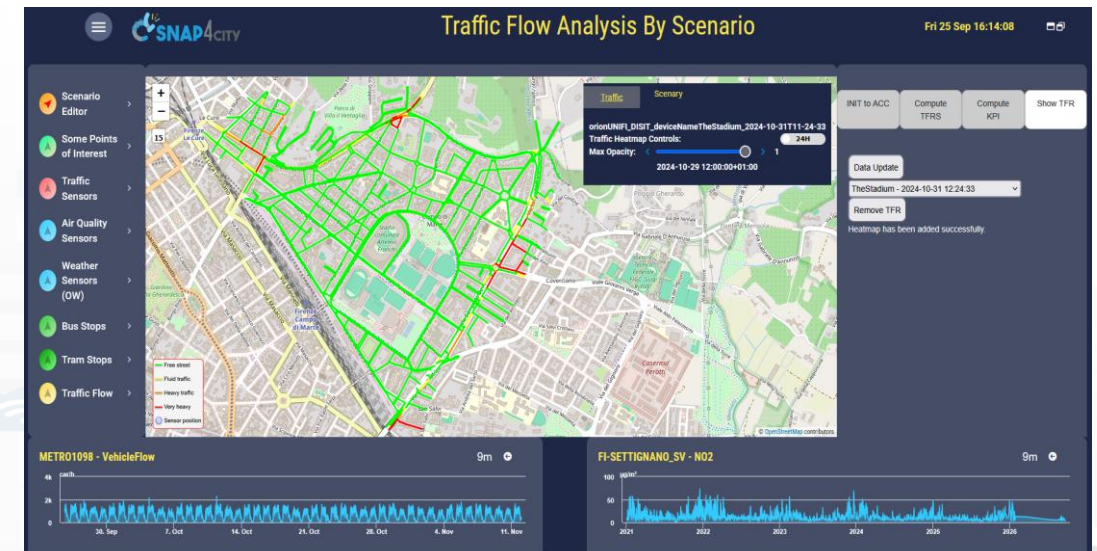
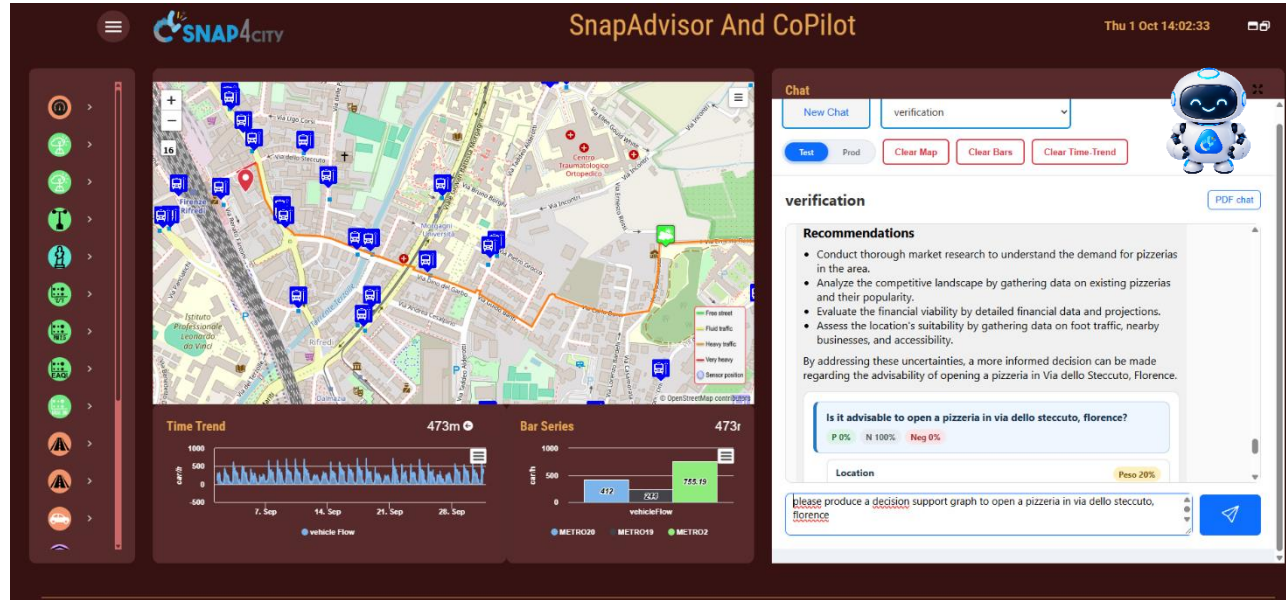
N 100%

Neg 0%

Location

Peso 20%

please produce a decision support graph to open a pizzeria in via dello steccuto, florence



Your AI-Powered Assistant for Smart Cities

SnapAdvisor & Copilot



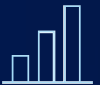
Conversational interface



Planning, replanning



Agentic AI



Analyze, Optimize



Suggestions, reports



SnapAdvisor & Copilot

Technical architecture for the Snap4City Digital Twin conversational decision support system



SMART CITIES
DATA-DRIVEN
PEOPLE-CENTRIC



From natural-language objective to orchestrated analysis, simulation, and explainable decision support.

Conversational / RAG

Agentic orchestration

Multi-domain

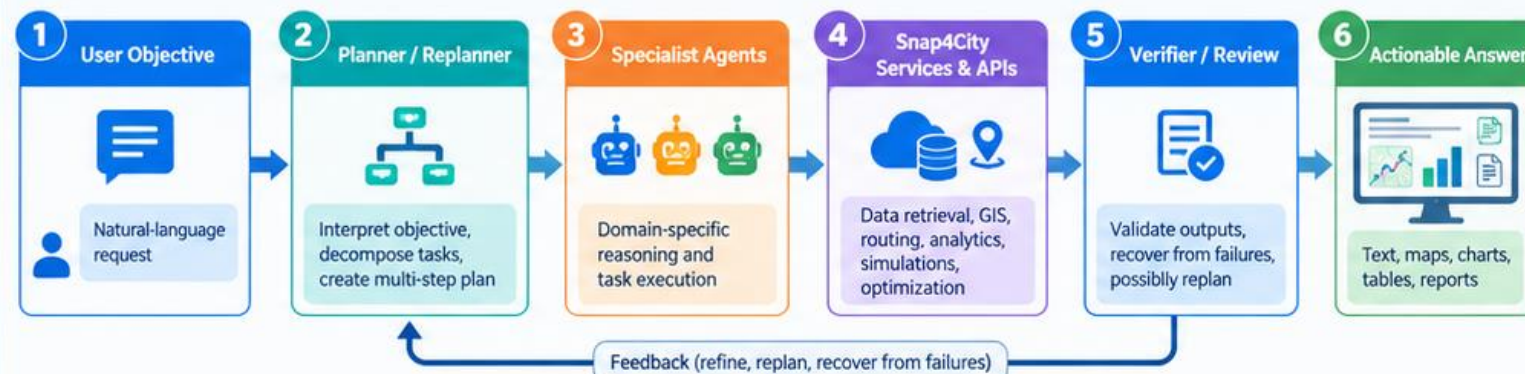
Explainable AI

Report generation

Example Requests

- "What is happening in this area?"
- "Find sensors and POIs along this route."
- "Which route is better considering current conditions?"
- "Why are there no free parking slots in this area?"
- "What can be done to reduce CO2 emissions at 9:00?"
- "Find an API to get traffic flow in Bologna."

System Architecture & Workflow



Knowledge & Expertise Layer

RAG with private collections
PDFs, documents, slides, images, code, web pages

Domain-customisable expertise
City, mobility, energy, environment, tourism, ...

Multilingual support
EN IT FR ES and more...

Web search for additional resources
External knowledge when needed

Snap4City / Km4City ontology support
Semantic models, linked data, urban knowledge graphs

Tool Families

- Data Management**
 - Metadata
 - Live/historical observations
 - Entities
 - IoT devices
- Geospatial Analysis**
 - Geocoding
 - Spatial search
 - Polygons, POIs
 - Location-aware analysis
- Mobility & Transport**
 - Routing
 - Traffic flow
 - Public transport
 - Simulation, KPI computation
 - Optimization
- ML/AI Analytics**
 - Prediction
 - Statistics, correlation
 - Regression, PCA
 - Time-series analysis
- Media Processing**
 - Image interpretation
 - Image generation
 - Image modification
- Reporting & Rendering**
 - Web pages
 - PDF reports
 - Maps, charts, tables
 - Dashboards
- High-Level Reasoning**
 - Decision graphs
 - Strategy generation
 - What-if analysis

Outputs Explainable results with evidence, data sources, and visual analytics.

Map

Time-series chart

Bar chart

Area	Value	Trend
Centro	125	▲
Stazione	98	▼
Fiera	67	▲
Borgo	43	—

Report (PDF)

Decision graph

Summary answer

Who it supports

- Decision Makers**
Strategic planning and policy making
- City Operators**
Monitor, manage and respond
- Developers**
Build solutions and integrate APIs
- Organisations / Teams**
Collaborate across domains

Evidence from evaluation

Planner specialist-agent selection (F1) 90.5%	Retrieval precision 92.9%
Domain-expert evaluation F1 on 90 queries 86.6%	Agentic configuration G-Eval correctness 81.8%

SnapAdvisor is for

City operators

Monitor conditions, compare places or periods, investigate anomalies and calculate routes.



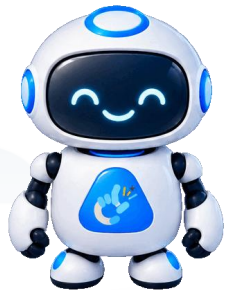
Decision makers

Collect evidence, assess scenarios and compare proposed interventions. City Officers, assessor.



Developers

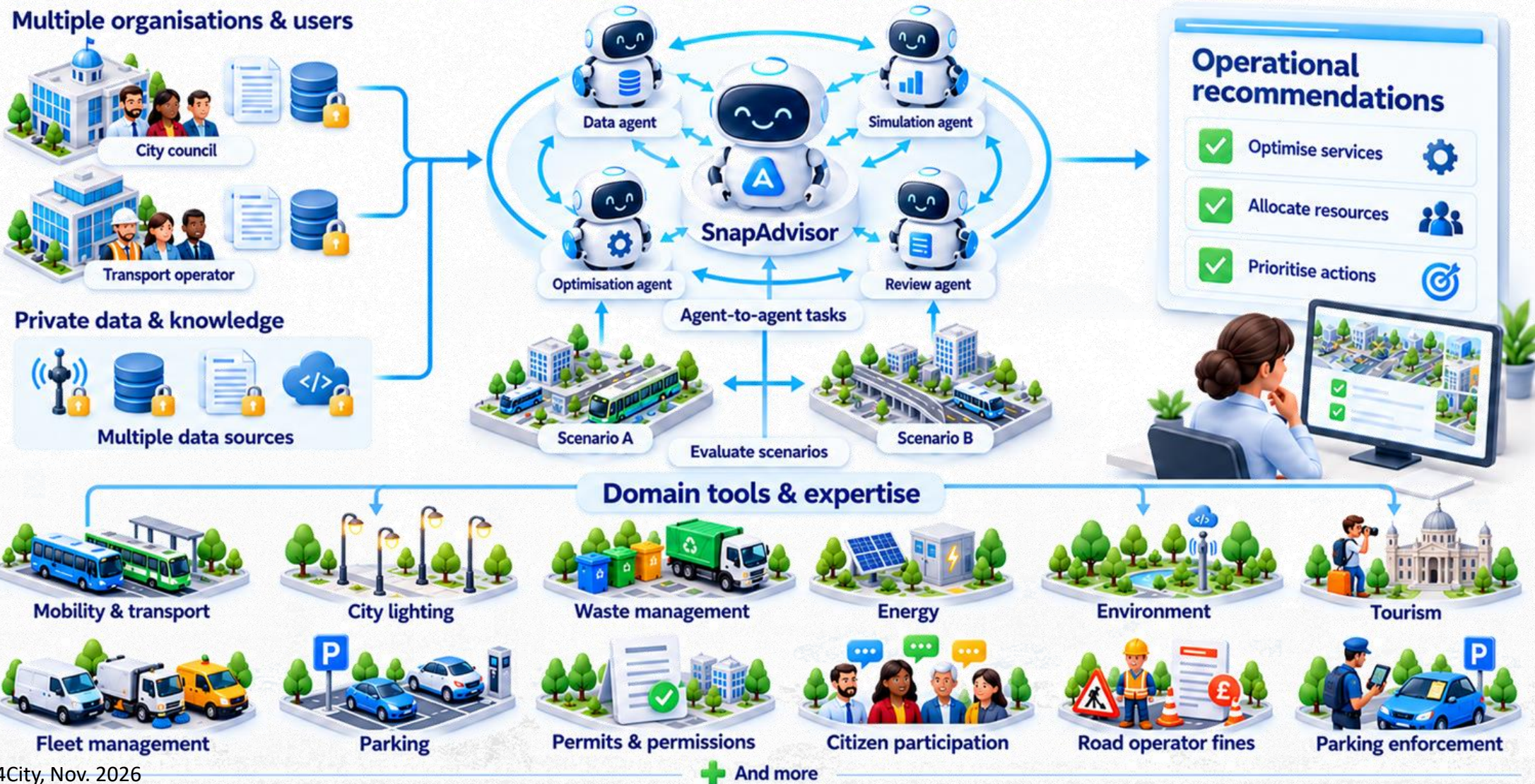
Find documentation, identify APIs and use Snap4City tools to build applications.



A multilingual interface across mobility, energy, tourism and any other domains, including your private collection of document and info.

SnapAdvisor: tools and expertise across city services

Autonomous scenario evaluation and actionable operational recommendations



SNAP4ASSETS

SNAP4CITY

AI-Powered Digital Twin and **Agentic** Asset Management



GIS & ASSETS



BUILDINGS & BIM



IoT SENSORS



MAINTENANCE



AI & PREDICTIONS



DOCUMENTS & KNOWLEDGE

ASSET STATUS

12,458
Assets

97.8%
Operational
of total assets

ACTIVE ALARMS

🚨 2 Critical

⚠️ 28 Warnings

01

LOCATE

Where is the asset?

Navigate from territory to site, building, floor, room and individual asset using GIS, 2D/3D Digital Twins and BIM.



02

UNDERSTAND

What is it and what is connected to it?

Access technical data, responsible persons, documents, photos, sensors, maintenance history and related assets.

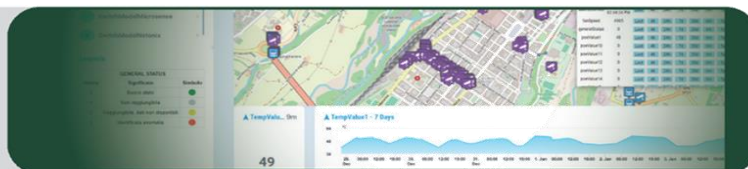


03

MONITOR

What is happening now?

Monitor real-time status, operational variables, historical trends, alarms and asset health.



04

MAINTAIN

What needs to be done?

Manage preventive and corrective maintenance, tickets, interventions, suppliers, materials and contracts.

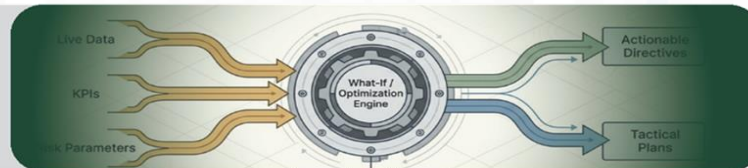


05

PREDICT

What could happen next?

Use AI to detect anomalies, predict asset health and failures, assess risk and prioritize interventions.

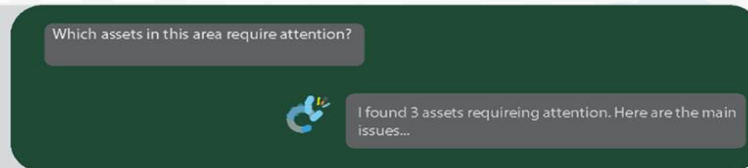


06

ASSIST

Ask your assets. Get answers.

SnapAdvisor explains alarms, retrieves documents and procedures, and support your decisions.



Standards and Interoperability

Compliant with:

- **IoT:** NGSI V2/LD, LoRa, LoRaWan, MQTT, AMQP, COAP, OneM2M, TheThingsNetwork, SigFOX, Libelium, IBIMET/IBE, Enocean, Zigbee, DALI, ISEMC, Alexa, Sonoff, HUE Philips, Tplink, BACnet, TALQ, Protocol Buffer, KNX, OBD2, Proximus, ..
- **IoT model:** FIWARE Smart Data Model, Snap4City IoT Device Models
- **General:** HTTP, HTTPS, TLS, Rest Call, SNMP, TCP, UDP, SOAP, WSDL, FTP, FTPS, WebSocket, WebSocket Secure, GML, WFS, WMS, WCS, RTSP, ONVIF, AXIS TVCam, CISCO Meraki, OSM, Copernicus, The Weather Channel, Open Weather, OLAP, VMS Milestone, TIM, HERE, OGC,
- **Formats:** JSON, GeoJSON, XML, CSV, GeoTIFF, OWL, WKT, KML, SHP, db, XLS, XLSX, TXT, HTML, CSS, SVG, IFC, XPD, OSM, Enfuser FMI, Lidar, glTF, GLB, DTM, GDAL, Satellite, D3 JSON, ...
- **Database:** Open Search, MySQL, Mongo, HBASE, SOLR, SPARQL, ODBC, JDBC, Elastic Search, Phoenix, PostGres, MS Azure, ..
- **Industry:** OPC/OPC-UA, OLAP, ModBUS, RS485, RS232, ..
- **Mobility:** DATEX, GTFS, Transmodel, ETSI, NeTEx, ..
- **Social:** Twitter, FaceBook, Telegram, ..
- **Events:** SMS, EMAIL, CAP, RSS Feed, ..
- **OS:** Linux, Windows, Android, Raspberry Pi, Local File System, AXIS, ESP32, etc.

<https://www.snap4city.org/65>

01

Interoperability: any format, any protocol, any API, visual programming node-red, Python, brokers, etc. Server Sides Business Models, ETL, ELT, ..



One operational view of your assets

GIS and Digital Twins connect location with the information teams need to act.



Dash10 - Active Municipalities Sun 6 Sep 19:12:53

municipalities

Municipality Data

Nicosia

FIELD	VALUE
activeServices	[Participation, SmartParking, SmartLight]
contextbroker	orionCyprus
district	Nicosia
email	municipality@nicosia.org.cy
groupsList	[Operators]
municipalitycolor	2
nameGreek	Δήμος Λευκωσίας
phoneNumber	+35722797000
receiptHeader	Nicosia Parking Receipt
slotPrefix	NC
webpage	https://www.nicosia.org.cy

SmartCyprus

Privacy Policy Cookies Policy Terms and Conditions Contact us

Powered by **SNAP4Tech**

Location and identity

People and documents

IoT and live status

Maintenance and KPIs

Local Digital Twin vs BIM

GIS + BIM

Navigate in 2D and 3D.

Connect spaces to
equipment, sensors and
technical information.



A shared spatial context for facilities and infrastructure teams

SnapAdvisor Copilot

Optional conversational and Agentic AI



“Which assets in this building need attention, and why?”

Ask in natural language. Bring operational data and selected organisational knowledge together.



Grounded answers

Retrieve documents and data, with references to relevant content.

Controlled assistance

Use authorised tools and resources.

People retain responsibility for operational decisions.

Understand Mobility and Transport AI Digital Twin + SnapAdvisor Co-Pilot



SNAP4MOBILITY



01

MONITOR

Unified real-time view of traffic, public transport, parking, shared mobility, people flows, events, weather and environmental conditions.



02

PREDICT

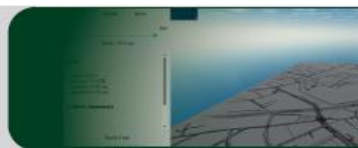
Forecast congestion, parking availability, public-transport delays, demand, pedestrian peaks, emissions and other KPIs.



03

PLAN & SIMULATE

Run scenarios and what-if analyses for road changes, traffic-light plans, routing policies and transport-service alternatives.



04

OPTIMIZE

Use decision-support and AI/DRL approaches to improve traffic signals, infrastructure and public-transport offer against measurable objectives.



05

ACT

Support dynamic routing, control-room interventions, digital signage, permissions, fleet operations and authorised workflows through APIs.



06

ASSIST

Use SnapAdvisor Copilot as a natural-language interface to data, analytics, routing, simulation, optimisation, RAG knowledge and visualisation.



- **Parking: on-road and off-road**
- **Flexible Business Models by area**
 - Any kind of parking slots
 - Any kind of vehicles
- **Mobile App for city users**
 - Parking
 - Notifications
 - Permissions and subscriptions
 - Multiservices
 - Payments
- **Mobile App for Enforcement, onroad operators, fines**
- **Integrated with**
 - Traffic intelligence
 - Public Transportation
 - Sharing mobility
 - Routing and MaaS



Decarbonization



Safety



Accessibility



Decongestion



Cost Reduction



A connected view of daily operations

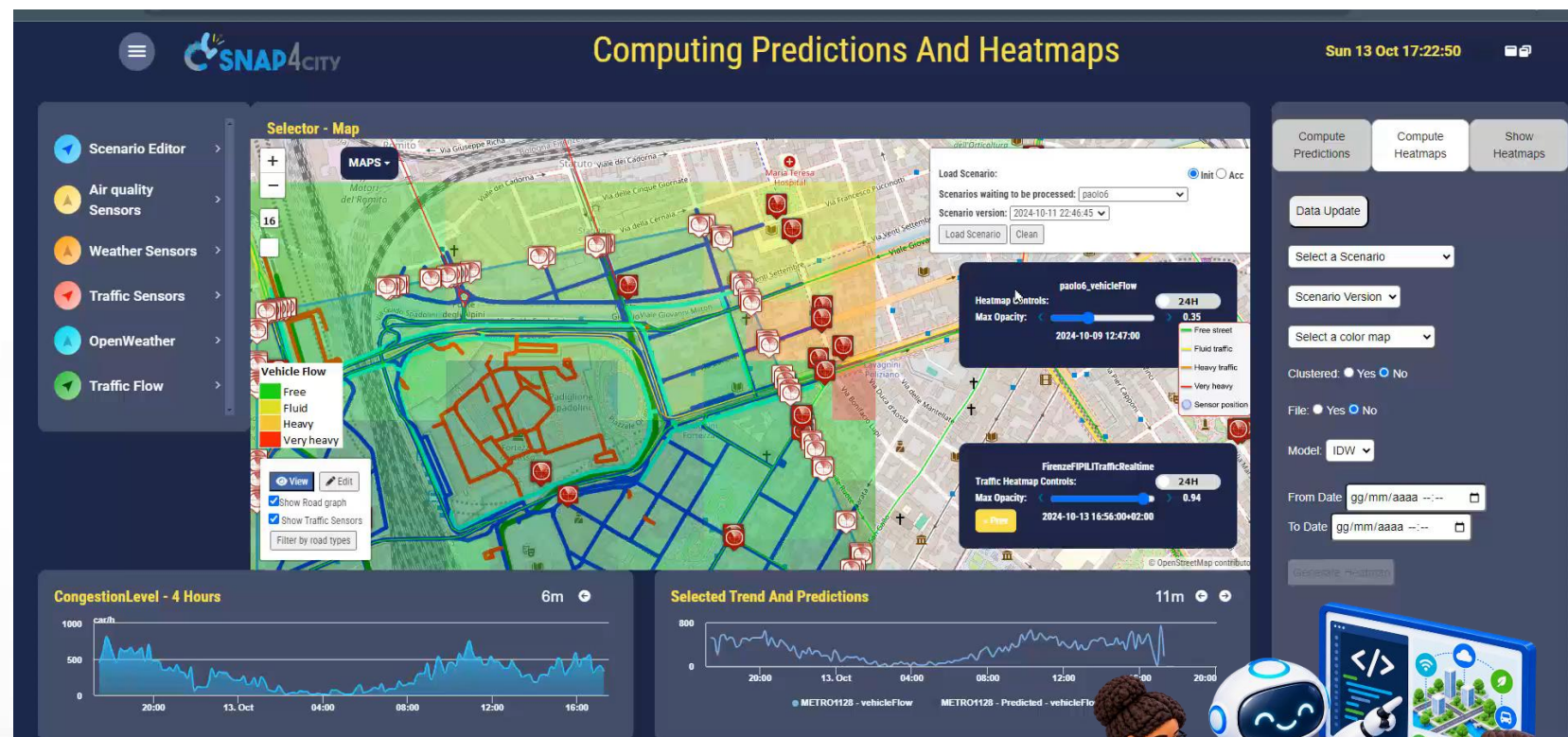
Shared context

Combine mobility conditions with roadworks, events, weather and air quality.

Early detection

Monitor queues, vehicle delays, parking occupancy and restricted-zone access.

Traffic prediction and heatmap interface



02 PREDICT
Forecast congestion, parking availability, public-transport delays, demand, pedestrian peaks, emissions and other KPIs.



Optimisation for transport priorities

Traffic signals

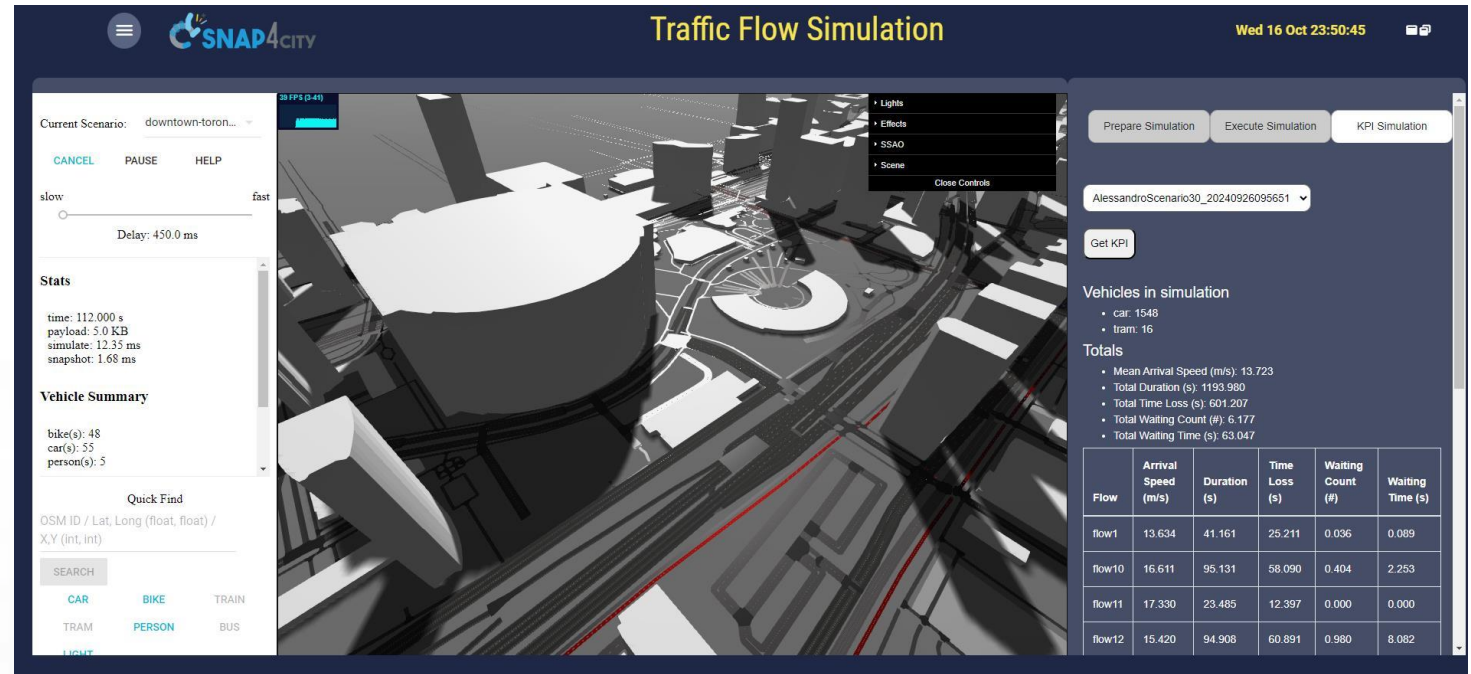
Evaluate green waves and priority for public transport or emergency vehicles.

Road infrastructure

Explore alternatives against congestion, travel time and emissions objectives.

Public transport

Assess demand versus offer to support route, timetable and dispatch decisions.



- 03 **PLAN & SIMULATE**
Run scenarios and what-if analyses for road changes, traffic-light plans, routing policies and transport-service alternatives.
- 04 **OPTIMIZE**
Use decision-support and AI/DRL approaches to improve traffic signals, infrastructure and public-transport offer against measurable objectives.





SnapAdvisor Copilot

An operator can start with a question

**“What is causing congestion here,
and which bus lines could be affected
in the next 30 minutes?”**

The Copilot selects configured tools, analyses their results and explains findings through text, maps, charts or dashboard content.

Available workflows depend on the tools and services configured for the deployment.



SNAP4PARKING

-  Sensors and Gates
-  Real time data
-  On-street / off street
-  Mobile Apps
-  Reports
-  Permissions
-  User engagement
-  Fines Management
-  Optimized Pay Models
- AI & Analytics

 **SNAP4CITY**
**Parking for Smarter
More Liveable Cities**

AI PREDICTION

HIGH AVAILABILITY

Predicted for the next 60 minutes

+18%

EXPECTED AVAILABILITY



Based on historical data, traffic, weather and events

FREE SPACES

AVAILABLE NOW



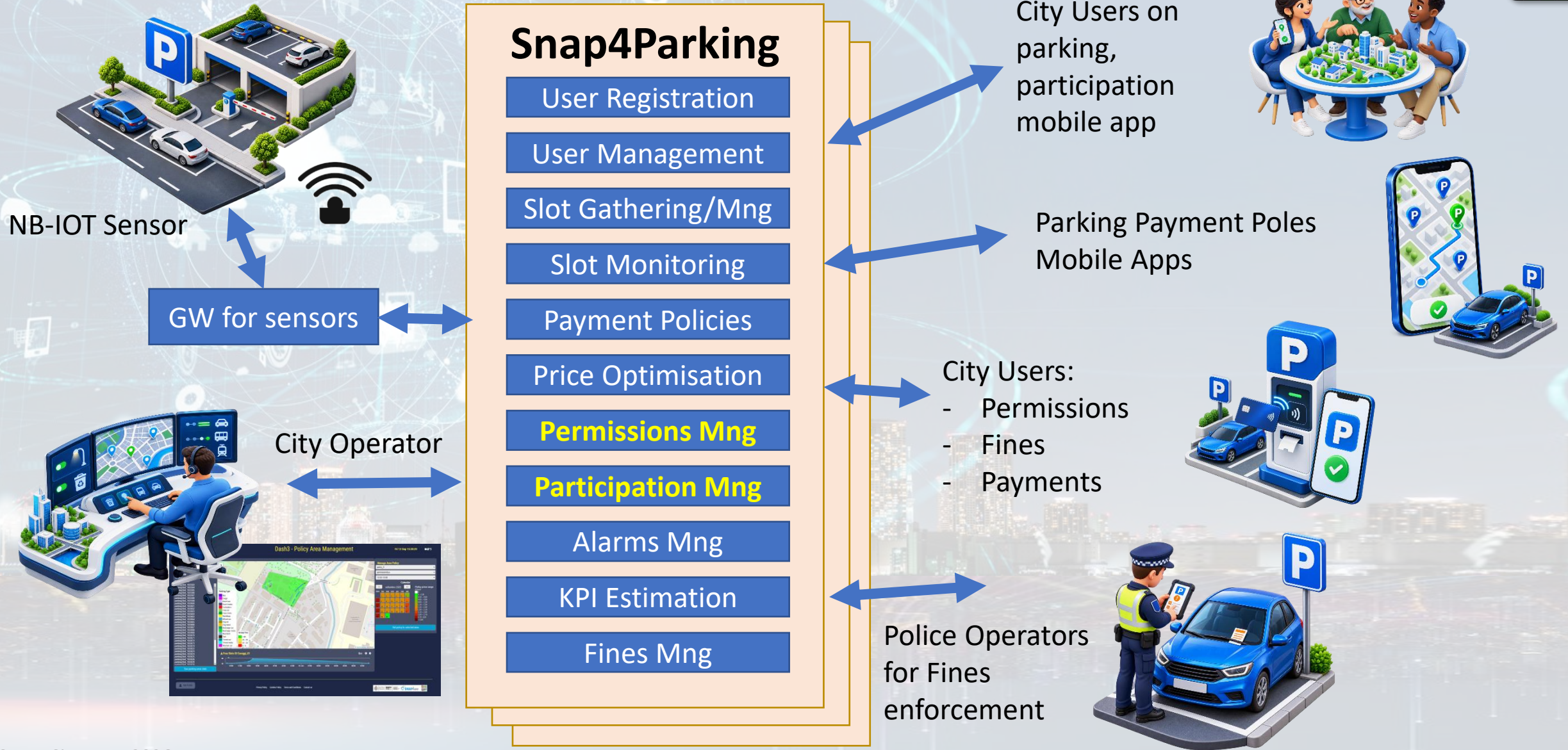
684

AVAILABLE SPACES

CITY CENTRE
✓ +42
LAST 15 MIN

UPDATED 8 SECONDS AGO

Snap4Parking Management System



Smart Parking

- payments, profiles
- Fines
- mobile for parking

Dash8 - To Be Fined Management

Fri 19 Sep 12:46:24

Fines

Show Search: 10 First << Prev 1 Next >> Last

device	dateObserved	groupid	sensorId	slotType	vehicleType	Actions
parkingSlotOffRoad_9	2025-09-10T14:16:34.344Z	alberti_offRoad	offRoad_sensor_9	handicap	car	
parkingSlotOffRoad_8	2025-09-10T14:16:14.340Z	alberti_offRoad	offRoad_sensor_8	handicap	car	
parkingSlotOffRoad_7	2025-09-10T14:15:54.338Z	alberti_offRoad	offRoad_sensor_7	handicap	car	
parkingSlotOffRoad_3	2025-09-10T14:14:34.329Z	alberti_offRoad	offRoad_sensor_3	recharge_car	car	

Fine Form

* Parking ID: parkingSlotOffRoad_8

* City: Limassol * Area: area_4

* Datetime: 19/09/2025 12:45:23

Vehicle brand: Suzuki Vehicle model: Sport

Vehicle color: red * Vehicle plate: AA456BB * Vehicle Type: Motor

Infraction Codes

- ☐ P001 - No parking zone
- ☒ P002 - Double parking
- ☐ P003 - Blocking driveway
- ☐ P004 - Expired meter
- ☐ P005 - Fire hydrant zone

* Infraction Points Deducted: 0

* Vehicle Stop Status: REMOVED

* Amount to be Paid (Euro): 43

Upload Evidence

Click or drag files here

Submit Cancel

Dash3 - Policy Area Management

Fri 12 Sep 15:38:29

Search Area

Careggi 1

Show area Show slots

View mode

Shape Pin

Slot/Area List

- parkingSlot_193593
- parkingSlot_193594
- parkingSlot_193595
- parkingSlot_193596
- parkingSlot_193597
- parkingSlot_193598
- parkingSlot_193599
- parkingSlot_193600
- parkingSlot_193601
- parkingSlot_193602
- parkingSlot_193603
- parkingSlot_193604
- parkingSlot_193605
- parkingSlot_193606
- parkingSlot_193607
- parkingSlot_193608
- parkingSlot_193609
- parkingSlot_193610
- parkingSlot_193611
- parkingSlot_193612
- parkingSlot_193613
- parkingSlot_193614
- parkingSlot_193615
- parkingSlot_193616
- parkingSlot_193617
- parkingSlot_193618
- parkingSlot_193619
- parkingSlot_193620
- parkingSlot_193621
- parkingSlot_193622
- parkingSlot_193623
- parkingSlot_193624
- parkingSlot_193625
- parkingSlot_193626
- parkingSlot_193627
- parkingSlot_193628
- parkingSlot_193629
- parkingSlot_193630

Parking Type

- Bus
- Cargo
- Event car
- Event moto
- Forbidden
- Free car
- Free moto
- Handicap
- Mixed car
- Org car
- Org moto
- Recharge car
- Recharge moto
- Resident
- Taxi
- Timed car
- Timed moto
- Women car

Group free

- > 40
- 25 - 39
- 10 - 24
- 0 - 9

Free Slots of Careggi_01

8m

See parking area stats

Manage Area Policy

policy_0

permissionBus

12:00-13:00

Calendar

settembre 2025

dom	lun	mar	mer	gio	ven	sab
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Policy price range

€/hour

- 0 - 0.30
- 0.30 - 0.60
- 0.60 - 0.90
- 0.90 - 1.20
- 1.20 - 1.50
- 1.50 - 1.80
- 1.80 - 2.10
- 2.10 - 2.40
- 2.40 - 2.70
- 2.70 - 3.00
- > 3.00

Set policy to selected area

05 PREDICT
AI-based forecast of occupancy, demand and potential congestion.

06 ASSIST
Ask the AI Assistant for insights, forecasts and recommended actions through natural-language interaction



SnapAdvisor AI for parking operations



Questions operators can ask

“Which parking areas need attention?”

Review occupancy, anomalies and expected demand using historical data, traffic, weather and events.

“What happens if we change a pricing policy?”

Explore scenarios and recommended actions while keeping permissions and access controls in place.



SNAP4TOURISM



VISITORS



ATTRACTIONS



EVENTS



DENSITY

HIGH

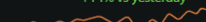
Historic Centre



VISITORS NOW

12,458

+1.4% vs yesterday



AIR QUALITY

GOOD

AQI 28

Understand the destination.
Shape the experience
Smart Tourism Management
System

1

IMPROVE
QUALITY OF LIFE

2

OVERTOURISM
MITIGATION

3

SUSTAINABILITY

4

LOWER
SERVICE COSTS

5

ACCESSIBILITY
& SAFETY

43

01

MONITOR

What is happening now?

Monitor visitor presence, density, trajectories, origin-destination patterns and hotspots in real time.



02

PREDICT

What will happen next?

AI models forecast visitor pressure, congestion and demand at attractions, events and services.



03

SIMULATE

What if we change something?

Digital Twin + what-if scenarios to evaluate the impact of decisions before implementing them.



04

OPTIMIZE

How can we redistribute visitors?

Identify alternative attractions, routes and areas to balance flows and reduce pressure on hotspots.



05

CONNECT

How can tourism support local economy?

Analyze footfall and retail data to support local business and strengthen commercial areas.

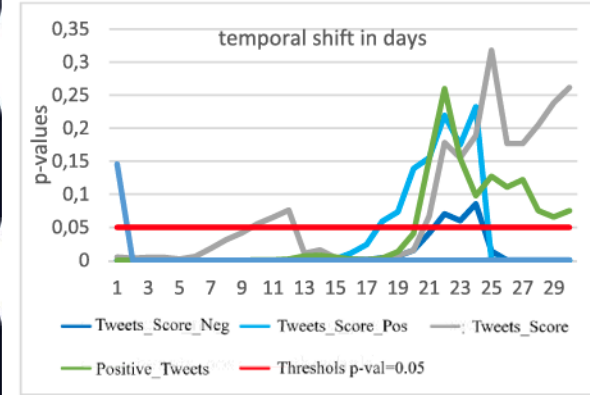
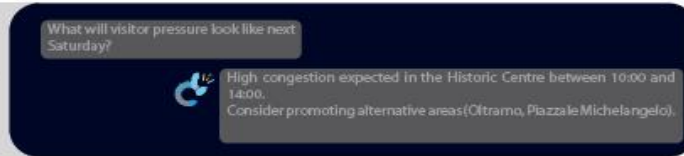


06

ASSIST

Ask the city. Get answers.

The Agentic AI Assistant understands your question and proposes the best actions with data-backed insights.



Forecasting and scenario planning

Anticipate demand and compare options before intervening.

Forecast

Visitor demand and congestion

Warn

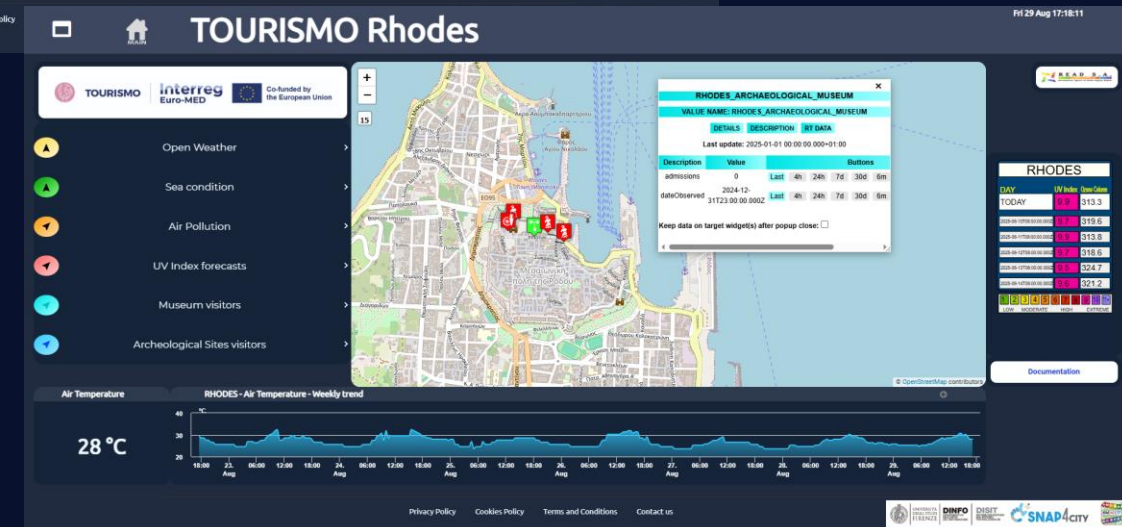
Thresholds and critical conditions

Simulate

What-if scenarios in the Digital Twin

Optimize

Alternative routes and attractions



Agentic AI for the city operator

Evolving capability built around SnapAdvisor Copilot



Example operator question

“Why is the historic centre crowded, and what could reduce pressure in the next three hours?”

- 1 Interpret the objective
- 2 Combine destination data
- 3 Use analytical tools
- 4 Explain and prioritize options

Modular knowledge and tools connect the question to destination data.
The city operator reviews the proposed actions.

SIMULATE

What if we change something?

Digital Twin + what-if scenarios to evaluate the impact of decisions before implementing them.

OPTIMIZE

How can we redistribute visitors?

Identify alternative attractions, routes and areas to balance flows and reduce pressure on hotspots.

CONNECT

How can tourism support local economy?

Analyze footfall and retail data to support local business and strengthen commercial areas.

ASSIST

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The Agentic AI Assistant understands your question and proposes the best actions with data-backed insights.

SNAP4LIGHT



Flexible and reliable Smart Light Management System

Multi-tenant, any platform



ENERGY SAVING



FAULT DETECTION & ALERTS



AUTOMATED CONTROL



ENVIRONMENT

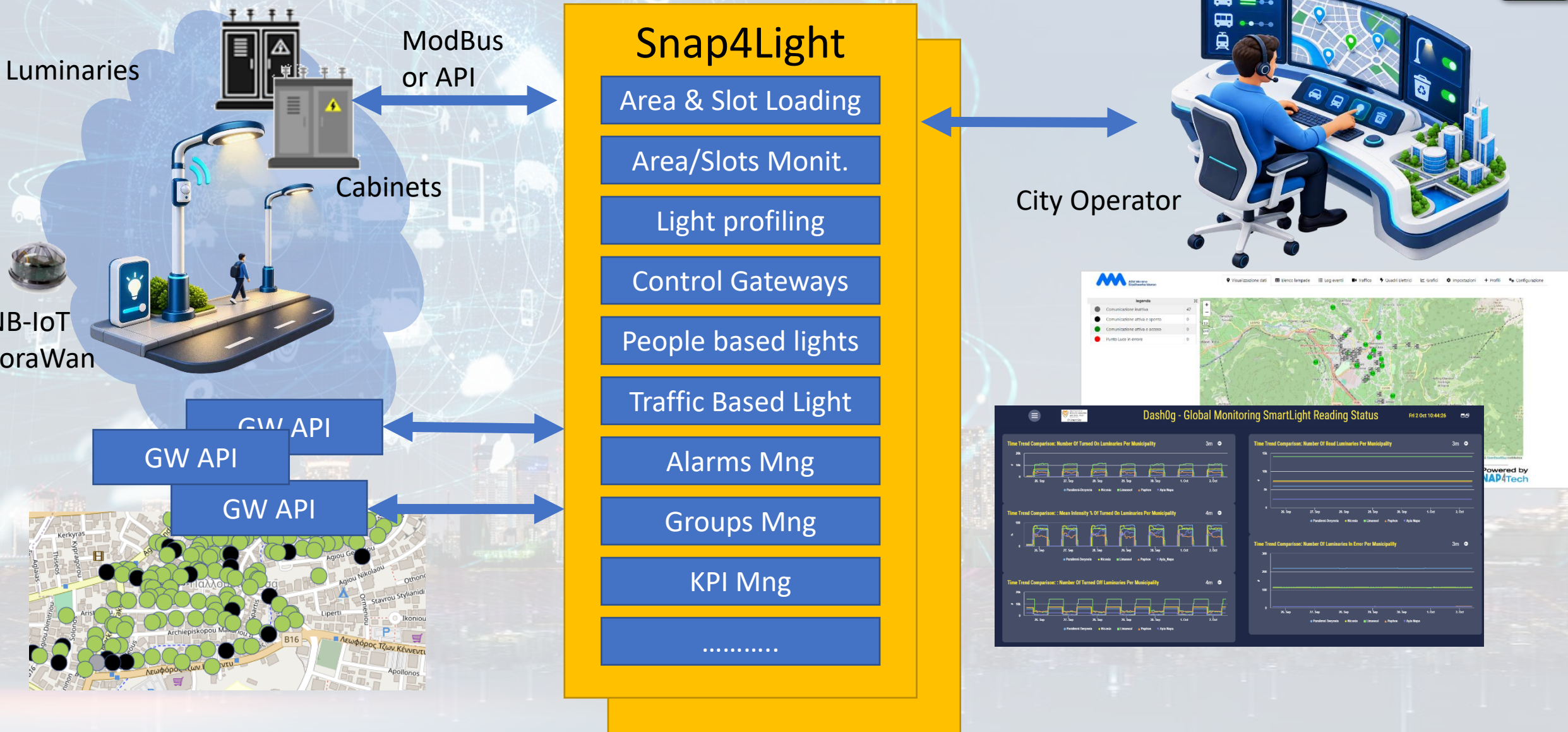


REAL TIME MONITORING

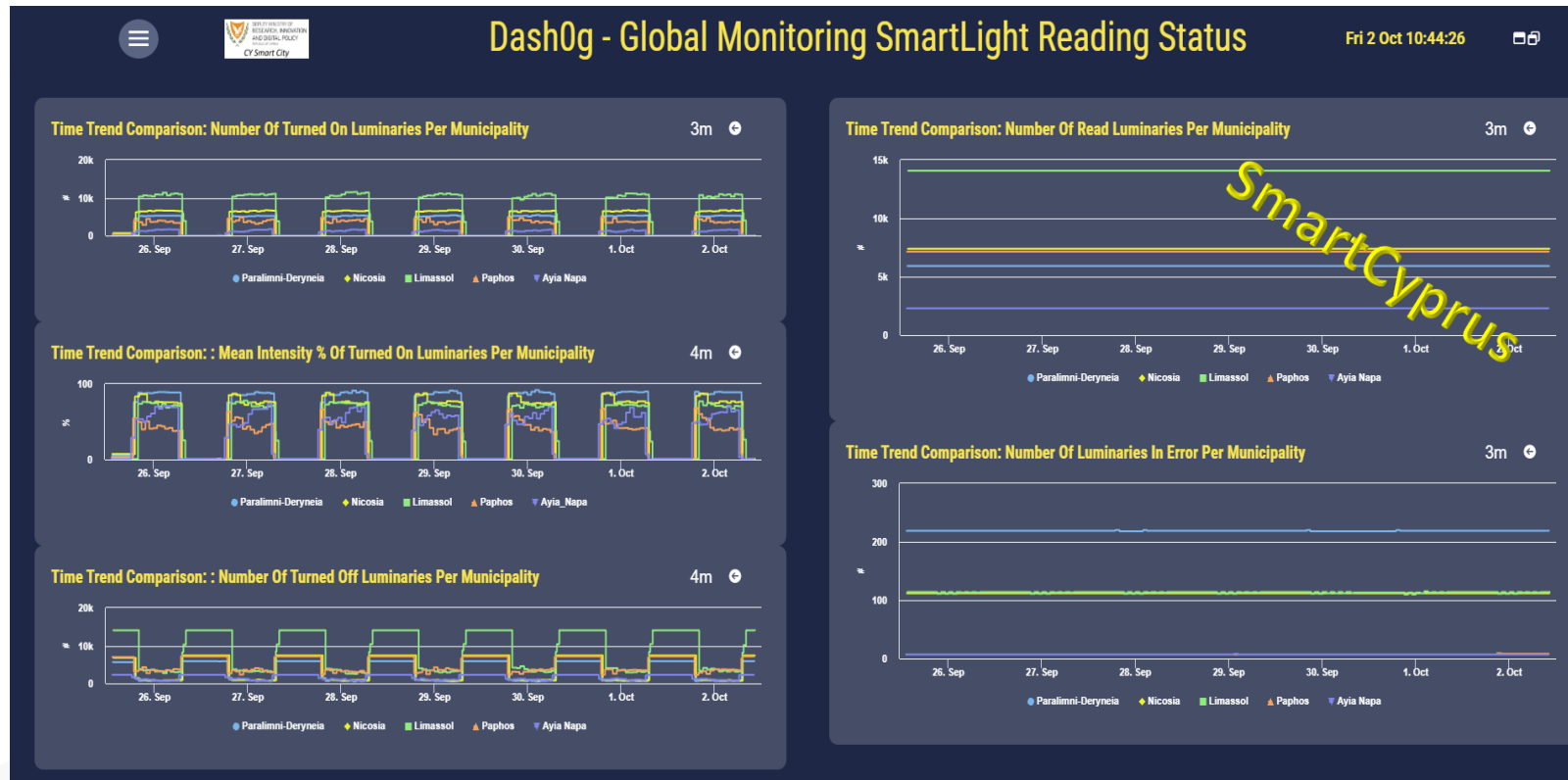


RETAIL & SERVICES

Snap4Light Smart Light Management System



Energy and service performance in view



Track consumption

Review energy trends by asset or area.

Investigate faults

Use alarms and status history to support maintenance.

Reporting gives operators evidence for lighting policy decisions.



Project references: Cyprus and Merano

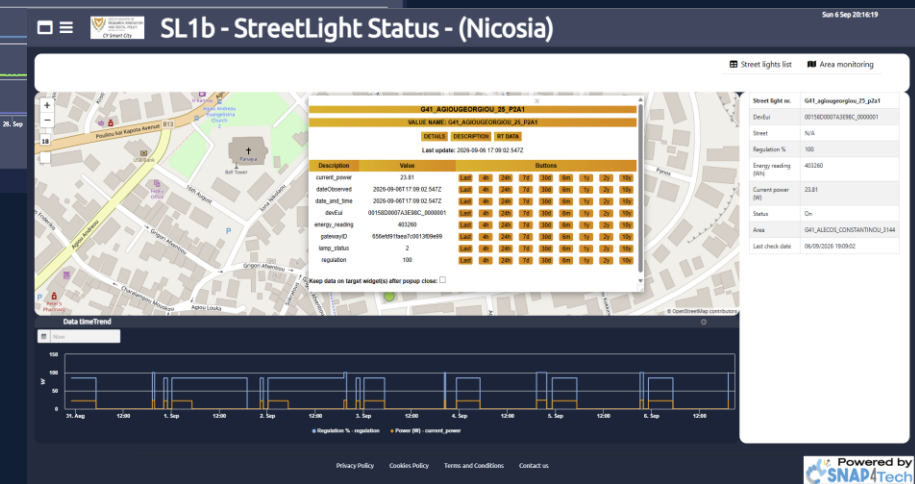
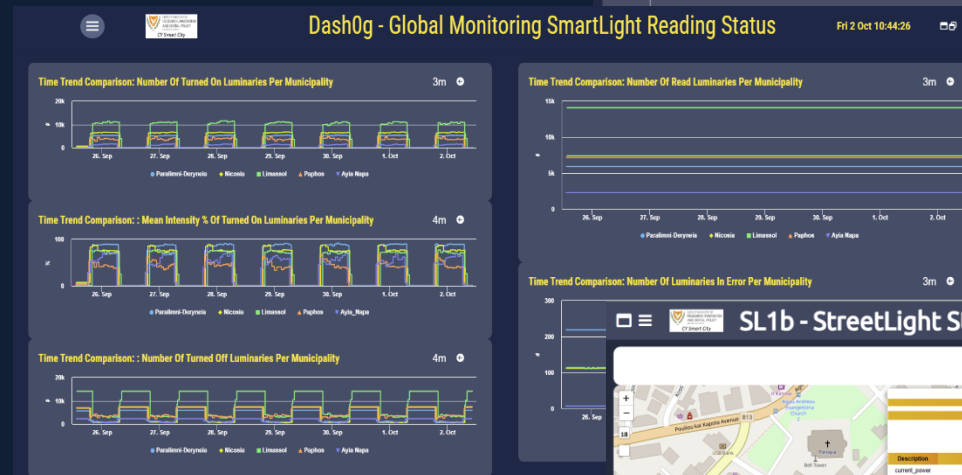
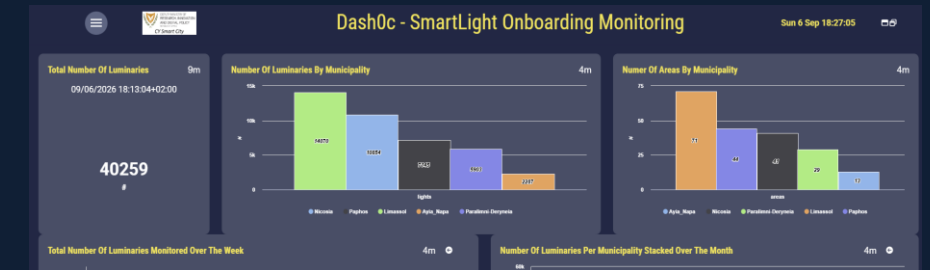


40,000+

luminaires across 5 Cyprus municipalities

~1,000

luminaires in Merano, Italy



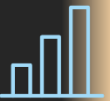
SNAP4WASTE



Optimize waste management in urban environments using AI



Bins



Prediction



Optimisation



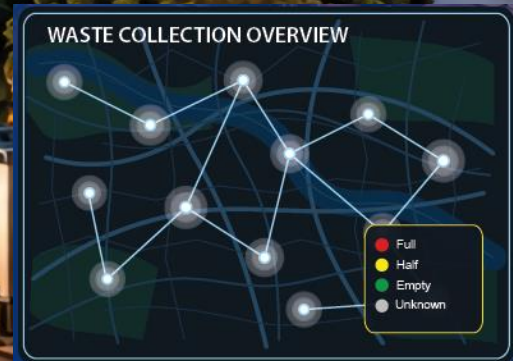
Live Monitoring



Efficient



Agentic AI



BIN FILL LEVEL

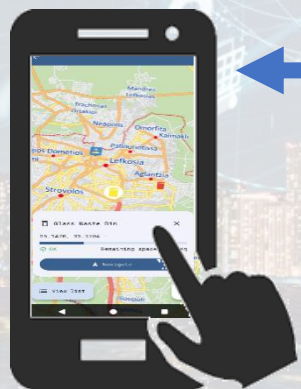
78%

Plastic - Zone A



© Snap4City, Nov. 2026

Snap4Waste Smart Waste Management System



Final Users on
monitoring
Waste bins on
mobile app

Snap4Waste

User Registration

Bin Management

Sensor/Fobs Mng

Routing Optim.

Fleet Route Assign.

Route Usage

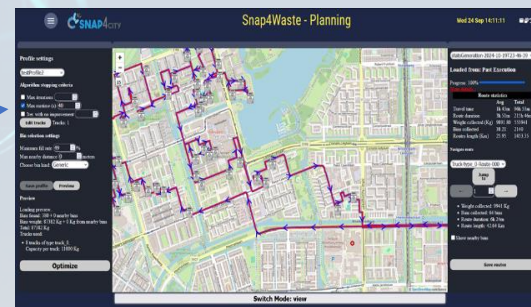
Permissions Mng

KPI Estimation

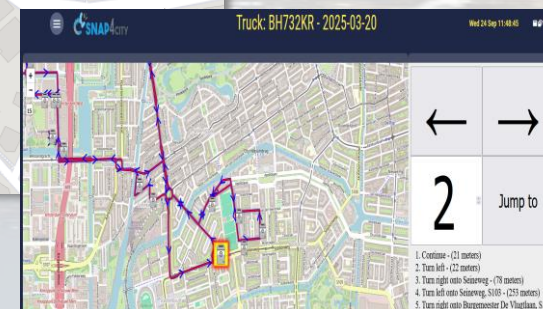
Alarms from Bins

Bin data Gathering

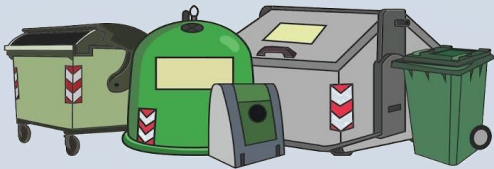
City Operator, Optimisation



Truck Operators



Routing Optimize around your service



Operational constraints

Depot locations

Truck capacity and fleet size

Bin locations and waste type

Travel times



Flexible collection strategies

Dynamic daily routing, scheduled collection and on-demand jobs.

03

OPTIMIZE
Smart routing and dynamic collection planning.

04

CONNECT
Integrate with existing systems, apps and city services.

SnapAdvisor for operational decisions



Optional SnapAdvisor integration



Example operator question

Which bins could overflow today,
and how should we adjust
the collection plan?



05	ACT Enable operators and field teams with the right informations.	Mobile App	Control Room	Reports
06	ASSIST Ask the Agentic AI. Get insights, recommendations and reports.	Which bins need collection first? 46 bins with generic waste have risk of overflow. The optimised routes for the truck fleet have been produced and are available in the Routes planned dashboard! (click here to open)		

Explain unusual conditions

Combine live data with city procedures and history.

Recommend priorities

Suggest bins that need attention and possible route changes.

Compare scenarios

Explore changes to thresholds, fleets or collection policy.

Support authorized actions

Connect approved workflows through services and APIs.

Value for buyers and delivery partners

City and enterprise teams



A shared operational view

Combine information across departments and connect it to daily decisions.

Developers



A reusable application toolbox

Use visual flows and APIs while keeping the flexibility of custom code.

System integrators



A foundation for differentiated services

Build domain applications and connect customer systems on a common platform.

Flexible deployment and controlled access

Open and interoperable

Build on the Snap4City ecosystem and connect existing data sources.

Deployment choice

Cloud, SaaS or on-premise to suit organisational needs.

Multiple cities and teams

Support multiple tenants and service domains.

Access by responsibility

Role-based access and controlled private knowledge collections.



Sources and further reading

Development framework

Developer guide: snap4city.org/843

Protocols: snap4city.org/65

Training: snap4city.org/944

Installation: snap4city.org/738

Solutions

Main applications: snap4city.org/1180

SnapAdvisor: snap4city.org/1178

Digital Twin: digitaltwin.snap4city.org

Scenariious: snap4city.org/4



SNAP4CITY



Snap4Parking



Snap4Waste



Snap4Assets



SNAP4CITY

...

Snap4...



Snap4Mobility



Snap4Light



Snap4Tourism



SnapAdvisor



PTIFaaS **SASUAM**

Funded by the European Union
Ministero dell'Università e della Ricerca
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Università degli Studi di Napoli Federico II
Politecnico di Bari

UrbanDT4TF **DI-DTPlatform** **LUTECH**

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uniss

CAI4DSA

Università degli Studi di Firenze
DIPLO
FAR Future Artificial Intelligence Research

SMARTER PLATE **UNICA**

UNIVERSITÀ DEGLI STUDI DI CAGLIARI

TOURISMO **Interreg Euro-MED**

Co-funded by the European Union
Interreg
Marittimo-IT FR-Maritime

ELLIE

Funded by the European Union
SADI-MIAC
sintra

Comune di Firenze **Comune di Prato** **Fondazione per la ricerca e l'innovazione** **Varna Economic Development Agency** **MRDD** **cyta** **italmatic** **uni-systems** **AXIS COMMUNICATIONS** **European Commission** **Joint Research Centre** **DATA ANALYTICS INSIGHTS** **CPMR CRPM**

UNIVERSITÀ VALLE D'AOSTA **rerasd** **KINO** **Santa Maria la Real** **READ S.A.** **SNAP4** **CAPELON** **Repubblica di Cipro**

FREE TRIAL **PEN Test Passed** **SNAP4 Appliances and Dockers Installations** **EU GDPR COMPLIANT** **EUROPEAN OPEN SCIENCE CLOUD** **Node-RED** **NVIDIA** **gaia-x** **Powered by FIWARE** **FIWARE SERVICES Training & Coaching** **JS Foundation** **E015 digital ecosystem** **FIWARE SERVICES Consultancy & Integration**



2020



Contract



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



- Smart Mobility
- PISA, PUMS
- Living lab



Km4City 1.6.7

Smart Ambulance (2021-22)



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



ELLIE IA 2025-2027



UrbanDT4TF

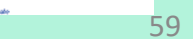
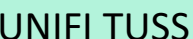
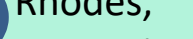


Contract, 2024-25

CAI4DSA



OPTIFaaS



- **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

- **BullVIT**, 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>
- **Sasuam**, 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.tuscanx.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