SNAP4CITY
WWW.SNAP4CITY.ORG

SNAPADVISOR

SnapAdvisor & Copilot
Your AI-Powered Assistant for Smart Cities

For questions to actionable insights.
SnapAdvisor & Copilot understand, plans, uses Snap4City services and delivers results.

ASK
Natural-language request
Ask complex questions about the city.

REASON
Agentic AI planning
Coordinates data, tools and specialist agents.

ACT
Actionable insight
Verified answers, forecasts and recommendations.

- CONVERSATIONAL INTERFACE
- PLANNING, REPLANNING
- AGENTIC AI
- ANALYZE, OPTIMIZE
- SUGGESTIONS, REPORTS

DIGITAL TWIN | AGENTIC AI & PREDICTIONS | REAL-TIME DATA | REPORTS & ANALYTICS | EARLY WARNINGS

UNIVERSITÀ DEGLI STUDI FIRENZE
DINFO DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE
DISIT DISTRIBUTED SYSTEMS AND INTERNET TECHNOLOGIES LAB
DISTRIBUTED DATA INTELLIGENCE AND TECHNOLOGIES LAB

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WHAT SNAP4ADVISOR CAN DO?

SnapAdvisor & Copilot is being able to orchestrate a range of tools' families for accessing, processing and generations of:

01 DATA MANAGEMENT
Discover IoT devices and entities, retrieve metadata, live and historical observations, manage data models and connect to data spaces.

02 GEOSPATIAL REASONING
Geocoding, spatial search, areas and polygons, POIs, distance computation and location-aware analysis.

03 MOBILITY AND TRANSPORT
Public Transport services show and analysis, mobility analysis, crtical road segments identification, What-If simulation, KPIs.

04 KNOWLEDGE & EXPERTIZE
Use private collections of documents, slides, images, code and web pages, search the web and extend domain expertise.

05 MACHINE LEARNING / AI RESONING
Predictions, statistics, heatmaps, OD matrices, correlations, regression, causality, interpolation and resampling.

06 MEDIA PROCESSING
Intepreting images (image to text), generating images from descriptions, modification of images according to description.

07 REPORTS & ACTIONS
Generate maps, time series, tables, images and PDF reports; create decision graphs and reusable workflows.

08 DECISION MODELS AND GRAPHS
Automated creation of new strategies and decision graphs, local and/or external knowledge and expertize, probablity charts.

SNAPADVISOR & COPILOT - YOUR AI-POWERED ASSISTANT FOR THE SNAP4CITY DIGITAL TWIN

Tomorrow, a major event is expected in the city centre between 5:00 PM and 11:00 PM. Considering predicted traffic, parking occupancy, public transport availability, weather conditions and historical event data, which areas are most likely to experience critical congestion, and what preventive actions should we take?

SnapAdvisor
Analysis completed using real-time and historical mobility, parking, public transport, weather and event data.
The highest risk of congestion is expected between 6:30 PM and 8:30 PM along the main access routes to the city centre. Parking facilities in the event area are predicted to reach 90–95% occupancy before 7:00 PM.
Recommended actions:
- Activate temporary traffic-management measures on the most critical access routes.
- Direct drivers to three peripheral parking facilities with available capacity.
- Increase park-and-ride and public transport frequency between 5:30 PM and 9:30 PM.
- Deploy traffic and parking operators at the identified hotspots.
- Send targeted notifications suggesting alternative routes and transport options.
- Monitor congestion, parking occupancy and service disruptions in real time.

If implemented, these measures are expected to reduce congestion around the event area and improve accessibility during peak arrival time.

AI

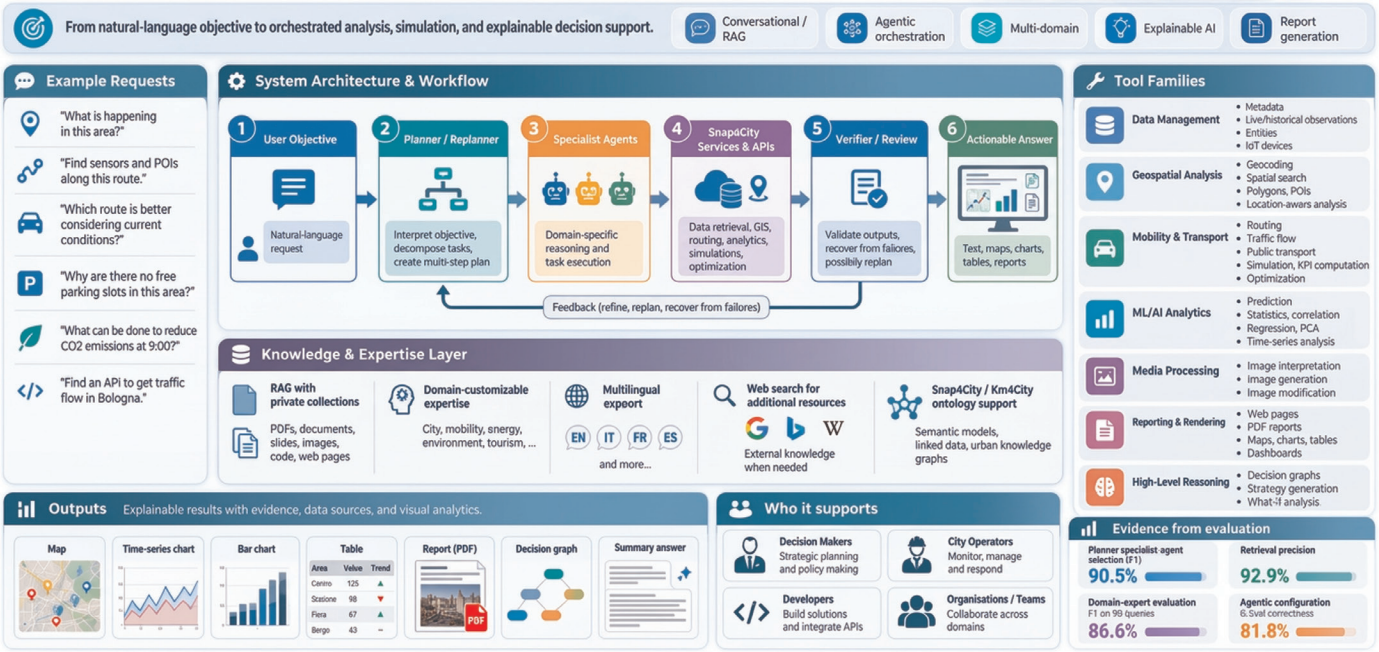
From data to action
- ☑ Detect anomalies
- ☑ Explain probable cause
- ☑ Recommend actions
- ☑ Evaluate scenarios (What-if)
- ☑ Support authorised workflow

SnapAdvisor & Copilot is the evolution of the Snap4City digital twin decision support system with conversational/RAG assistant and AI Agentic capabilities. Instead of only answering questions from documentation and private knowledge collections, the **SnapAdvisor & Copilot** can interpret a user's objective, construct a multi-step plan, select and invoke Snap4City services and APIs, analyse the returned data, recover from execution failures, eventually replan, correlate results from different domains, and finally explain the outcome in natural language. **SnapAdvisor & Copilot** brings a new generation of conversational intelligence to the **Snap4City Digital Twin**.

Users no longer need to understand APIs, data models, IoT platforms, GIS tools or complex analytical workflows. Simply describe the objective in natural language. Moreover, the S**napAdvisor & Copilot** provides information about what the user can do to solve problems and develop solutions by using and suggesting Snap4City tools. Therefore, **SnapAdvisor & Copilot is suitable** for decision makers, for city operators and for the smart application developers.

SNAPADVISOR & COPILOT

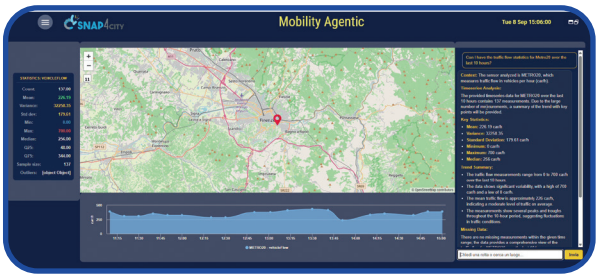
Technical architecture for the Snap4City Digital Twin conversational decision support system.

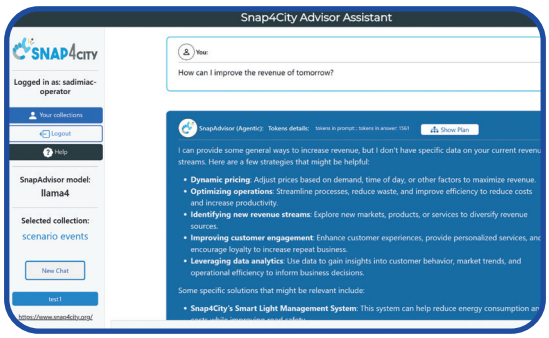


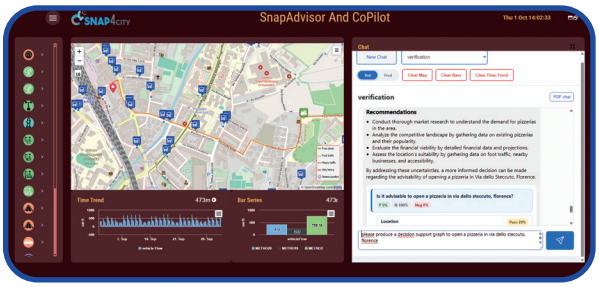
SnapAdvisor & Copilot provides a strong knowledge-oriented foundation about Snap4City, mobility, energy, tourism, assets, transportation, GIS, etc. It includes a multilingual, domain-customisable virtual assistant based on advanced Retrieval-Augmented Generation (RAG) LLM, capable of working with private collections containing PDFs, documents, presentations, images, code and web pages. Collections can be created, added and changed according to the user's domain, allowing different organisations or groups to add specialised expertise without retraining the underlying LLM.

The **SnapAdvisor & Copilot** is a support tool for developers learning and exploiting Snap4City and as a configurable assistant for operators and decision makers working with application-specific information, in the multiple domains of smart city but also for retails, legal aspects, training, help desk, etc.

The workflow of actions can be summarised as: **User request → (re)Planning → Specialist agents → specialist and Snap4City services→ verifier and review (eventual replanning) → answer (in text and graphics). SnapAdvisor & Copilot** "Understand what I want, determine how to provide, use the Digital Twin and its services to perform the required operations, and tell me the result".

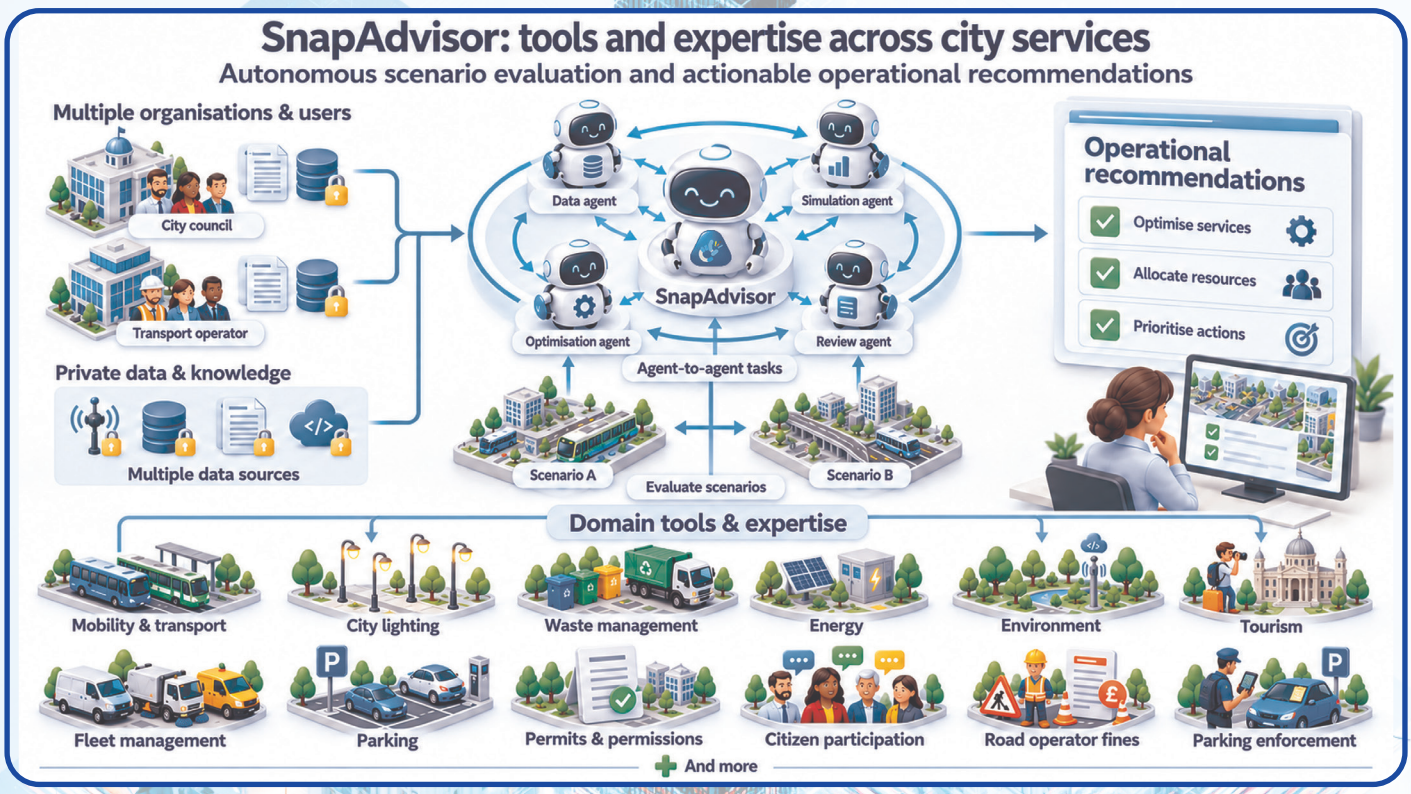






SnapAdvisor & Copilot provides for **city operators**, a conversational interface for the control room: retrieving conditions, comparing locations or periods, identifying anomalies, calculating routes or KPIs, and potentially running simulations and what-if analyses. For **decision makers**, it suggests a transition from information retrieval toward a **conversational Decision Support System**, where the agent can collect evidence, compute indicators, compare alternatives and explain proposed solutions. For **developers**, it is an expert on multidomain documentation (topics: Snap4City, mobility and Transport, Energy saving, Tourism management, parking management, waste management etc.) while potentially becoming a co-pilot can locate APIs and services, construct workflows and exploit the platform's available microservices.

ONE CITY. ONE PLATFORM.
MANY INTELLIGENT SERVICES.



OPEN
Based on Open and Full Interoperable Framework

SCALABLE
Multiple cities, tenants and verticals

SECURE
RBAC, cybersecurity & GDPR compliance

FLEXIBLE
Cloud, SaaS and on-premise deployment

SNAP4CITY
https://www.snap4city.org

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