

Your AI-Powered Assistant for Smart Cities

SnapAdvisor & CoPilot



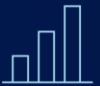
Conversational interface



Planning, replanning



Agentic AI. Multi-Agent



Analyze, Optimize



Suggestions, reports



SnapAdvisor is for

City operators

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



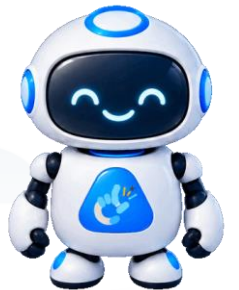
Decision makers

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 & Copilot

Technical architecture for the Snap4City Digital Twin conversational decision support system



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

Conversational / RAG

Agentic orchestration

Multi-domain

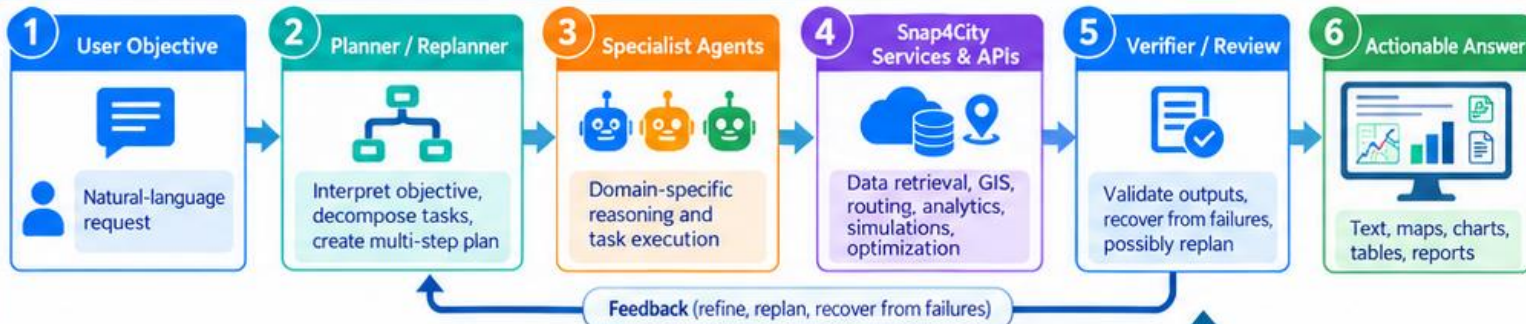
Explainable AI

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



Extend capabilities with internal skills

Turn private knowledge and web resources into reusable domain expertise



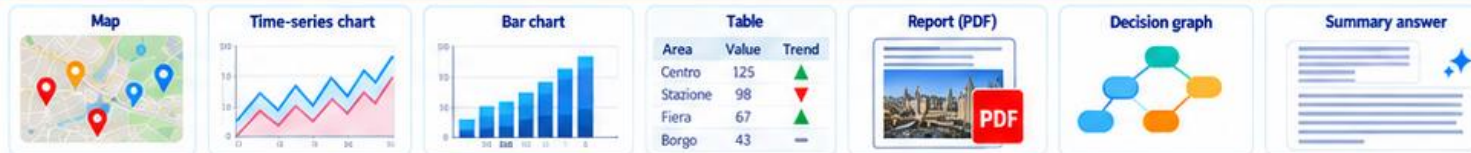
Extend to new domains and workflows as your knowledge grows.

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.



Who it supports

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



Private knowledge
Use your documents and web resources

Multi-user / multi-organisation
Secure isolation and flexible deployment

Traceable answers with sources
Explainable outputs with data sources and justifications



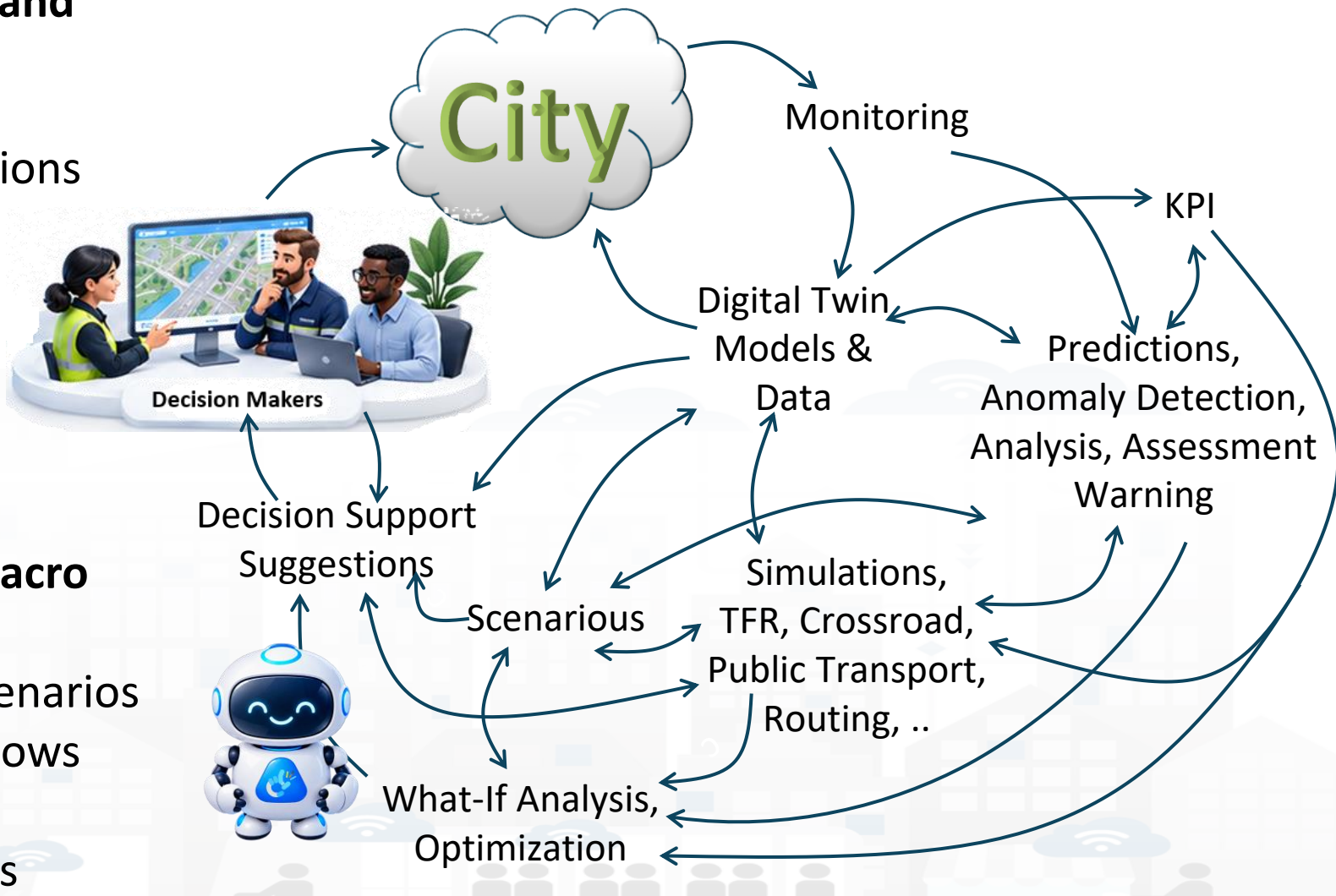
Agentic Tasks

- **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



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.



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 Guizzer 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.

Traffic flow



Air quality (CO₂)



Parking availability



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



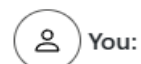
Organisations & Teams



SnapAdvisor

Current chat: solution1

Personal
Advisor LLM



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 & 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

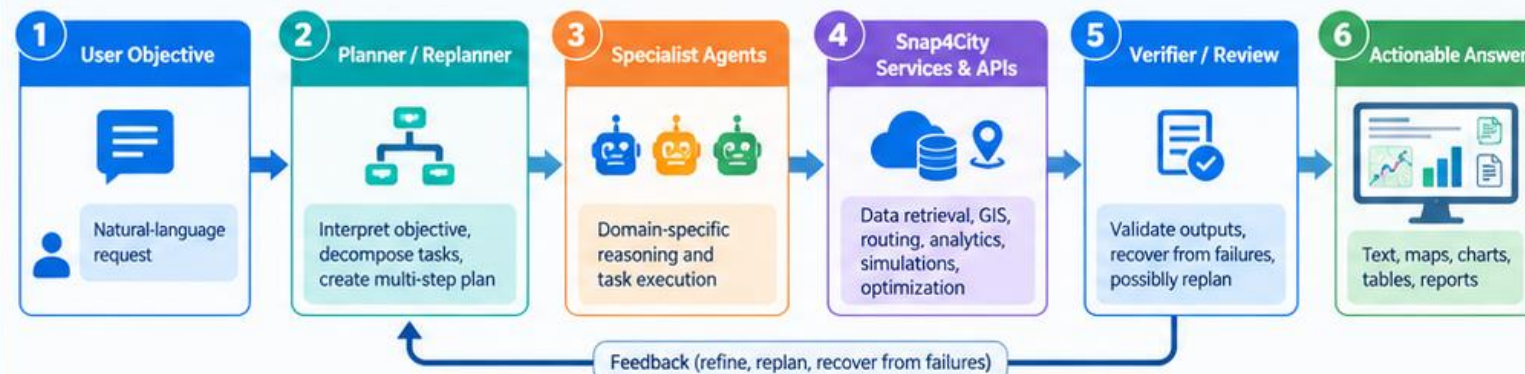
Explainable AI

Report
generation

Example Requests

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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

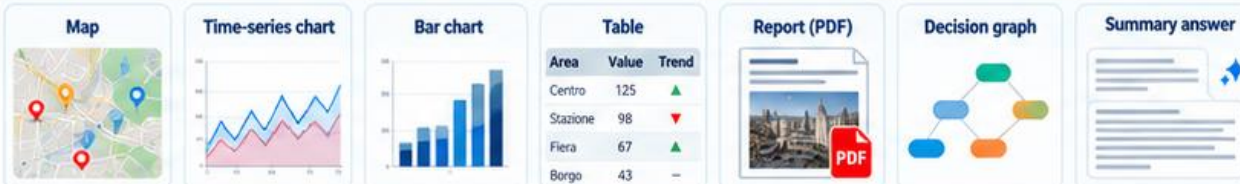
Snap4City / Km4City
ontology support

Semantic models,
linked data, urban knowledge
graphs

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Who it supports

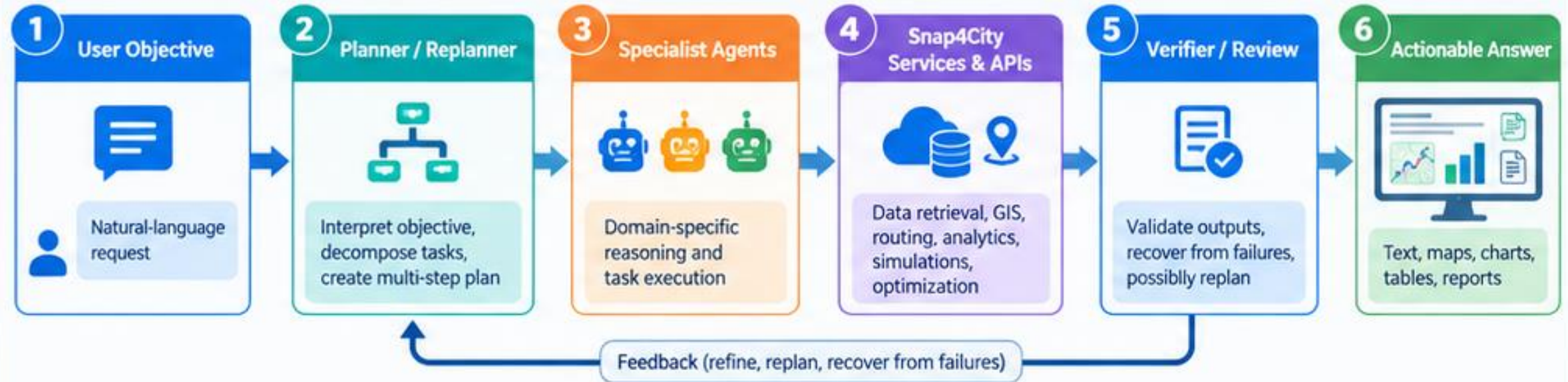
- Decision Makers**
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Collaborate across domains

Evidence from evaluation





System Architecture & Workflow



Knowledge & Expertise Layer



SnapAdvisor evolves with your organisation

Your private resources. Multiple users. Multiple departments.

Multiple users & departments



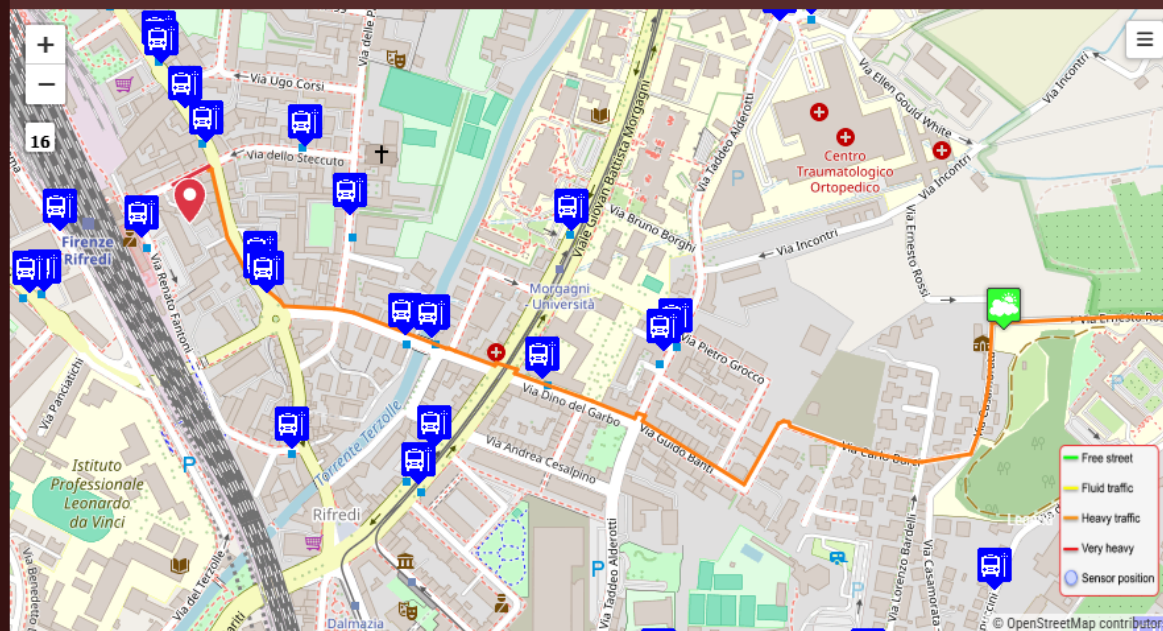
Extend expertise and capabilities with resources you control

Tool Families	
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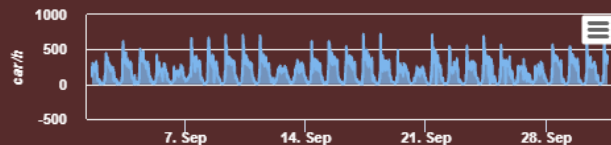
- **Data Management:** Snap4City [High Level Types](#) management, ingestion and rendering • Open to any data model and format, according to Snap4City capabilities • Discover [IoT devices](#) • Retrieve metadata • Access live and historical observations • Search entities by location and category • Automated production of data models and entities, time series generation/saving • connection to data spaces.
- **Geospatial analysis and reasoning:** Geocoding • Spatial search • Areas and polygons • Distance computation • POIs • Location-aware analysis • POI, IOT, entity information, enrichment • Utilities: geo location standards, date and time, conversions of formats.
- **Mobility and transport: reasoning and simulation** (SUMO, MODOM, TFR): Public Transport services show and analysis • mobility analysis • critical road segments identification • Mobility Routing, multimodal routing • Show and generation of [Traffic flow](#) reconstruction • Mobility and transport [What-if](#) and simulation, for traffic infrastructure, public transportation • Computing mobility and transport [KPI](#) (travel time, fuel consumption, emissions, SUMI) • Mobility and transport Optimization
- **Knowledge and expertise provided and additional:** Simple orientation information from collection of documents, slides, images • Exploitation of multiple expertise • Creating expertise as extracting data from: text, doc, pdf, slide, web pages, images • Web Search to get new expertise • Specialized events and [API](#) search from web • exploiting and extending Snap4City Ontology / [Km4City](#). Ready to use expertise on: Snap4City, Mobility and Transport, [Parking](#) management, [Waste](#) management, Smart Light, Tourism Management, etc.
- **ML/AI reasoning, inference and computing:** predictions, statistics analysis, [heatmaps](#), origin destination matrices • Open to any ML/AI tools via [MLOps](#) of Snap4City • performing new training on demand • Time-series analysis • Min/Max/Average • Correlation • PCA • Regression • Granger causality • Error metrics • computing [typical time trends](#), daily and weekly • time series interpolation • time series resampling.
- **Media processing:** Interpreting images (image to text) • generating images from descriptions • modification of images according to description.
- **Rendering on web pages and PDF files for reporting:** Generation of reports from results • Formatting data: tables, lists, plans, documents, images, itemizes, sections • Including maps, time series and barseries • [Dashboard](#) rendering on maps (IoT, POI, routing, [heatmaps](#), [traffic flow](#), [scenarios](#), etc.), multiple time series, barseries, etc. • generation of reports from chats • automated generation of reports.
- **High level reasoning, extending reasoning capabilities, production of new decision models and graphs:** Automated creation of new strategies and decision graphs according to systems thinking by accessing to local and/or external knowledge and expertise • probability charts • reporting

SnapAdvisor And CoPilot

Thu 1 Oct 14:02:33

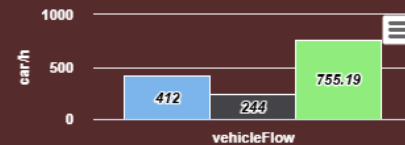


Time Trend



vehicle Flow

Bar Series



METRO20 METRO19 METRO2

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





UNIVERSITÀ
DEGLI STUDI
FIRENZE

DINFO
DIPARTIMENTO DI
INGEGNERIA
DELL'INFORMAZIONE

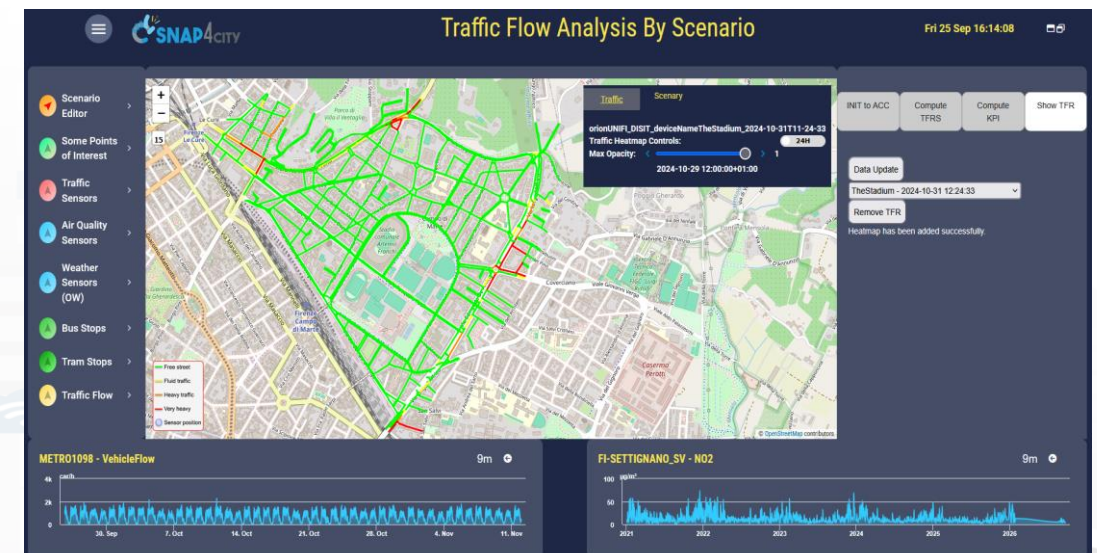
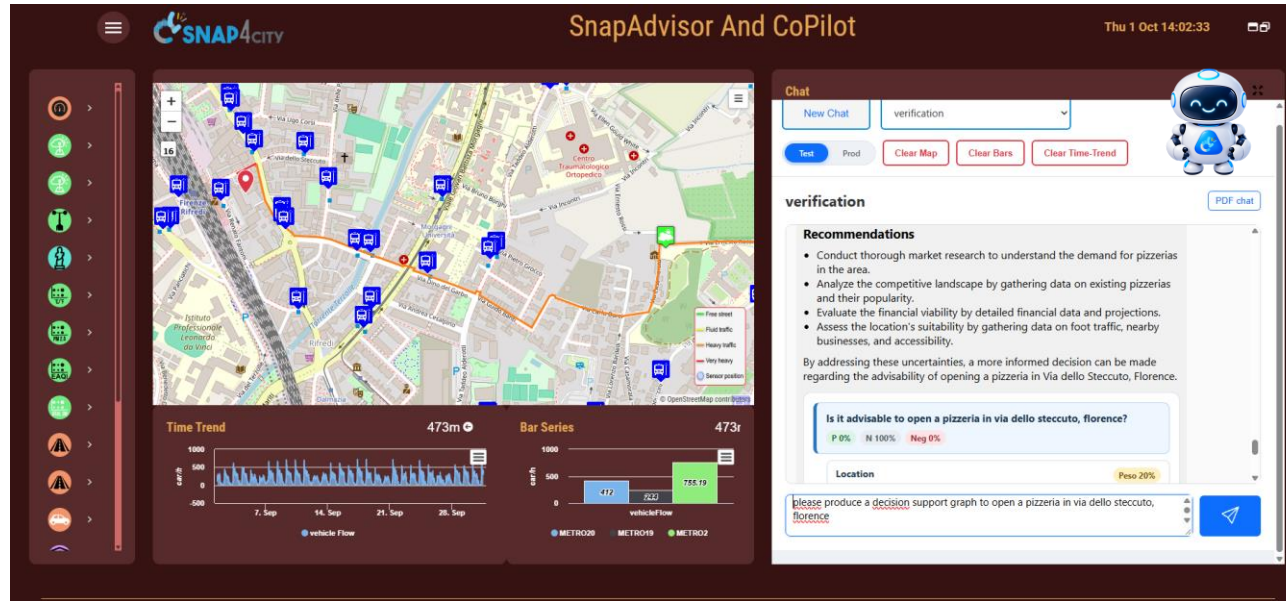
DISIT
DISTRIBUTED SYSTEMS AND
INTERNET TECHNOLOGIES LAB
DISTRIBUTED DATA INTELLIGENCE
AND TECHNOLOGIES LAB



Mobility & Transport

- Routing
- Traffic flow
- Public transport
- Simulation, KPI computation
- Optimization

SNAP4CITY



Evidence from the early 2025 evaluation

90.5%

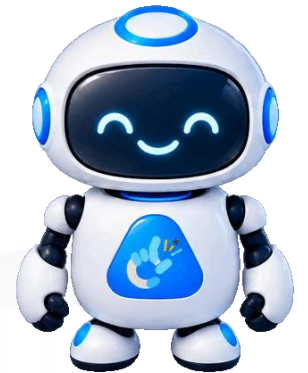
Planner F1

Specialist-agent selection

92.9%

Retrieval precision

Against semantic-search ground truth



86.6%

Expert-evaluation F1

90 queries, 4–8 reasoning steps

81.8

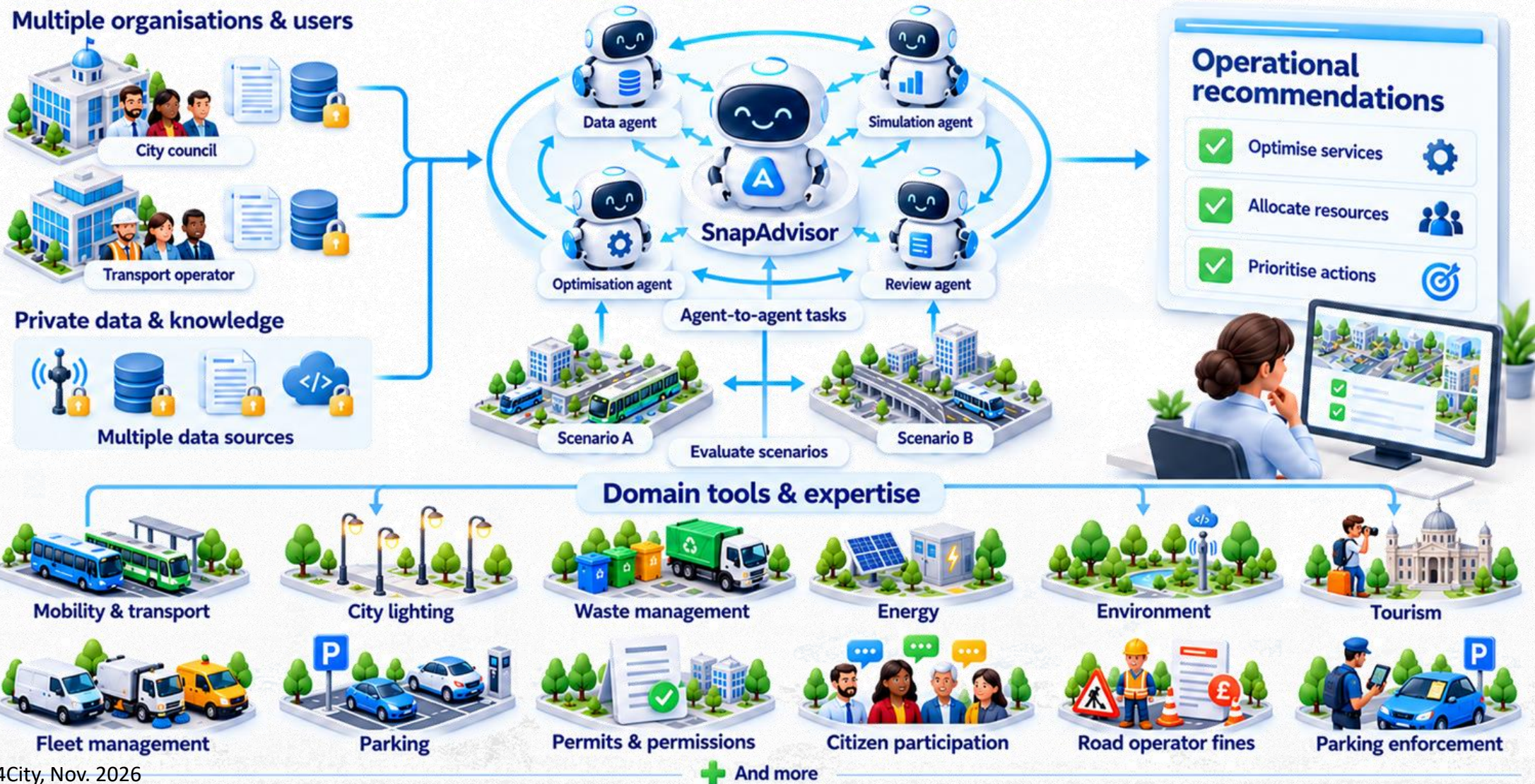
G-Eval correctness

Average score, scale not specified

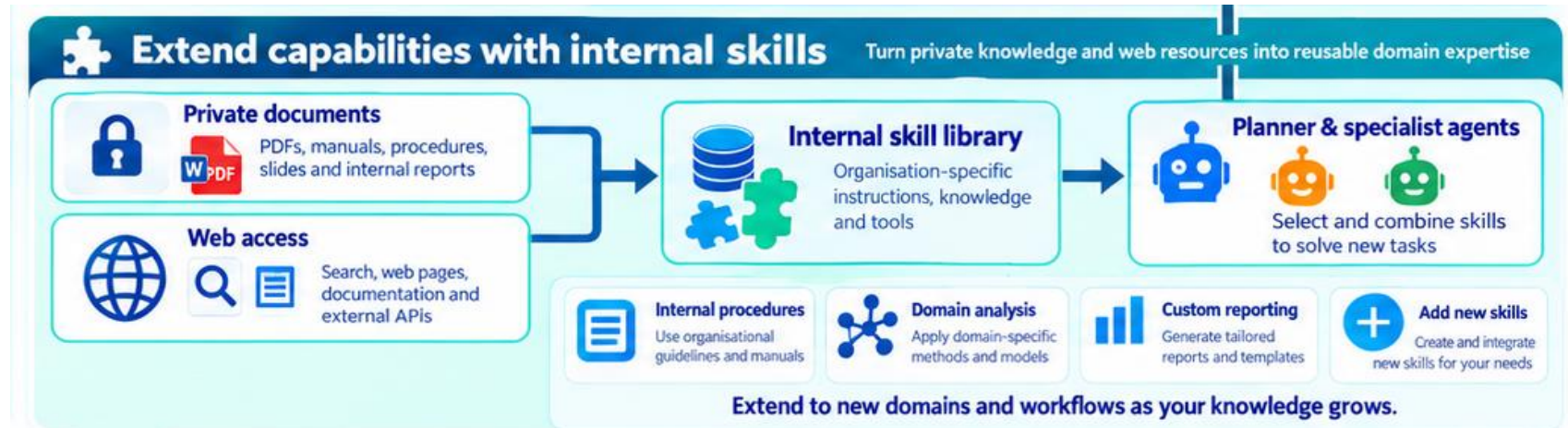
Different metrics and tasks. These results do not benchmark the broader 2026 capability set.

SnapAdvisor: tools and expertise across city services

Autonomous scenario evaluation and actionable operational recommendations



Skill Packages



- Multiple and pluggable Skills, for different users and teams
- Full Custom Skills
- Integrate internal skills with web access, when needed

snap4city4dummies

ID: 280

This collection documents the Snap4City platform, its principal development and management tools, and a...

Open

TourismExpert

ID: 281

This collection include document and skill regarding about: how to solve problem in...

Open

ParkingExpert

ID: 286

The collection covers parking policy and supply requirements; demand-responsive...

Open

CityLightExpert

ID: 287

A curated collection of 30 publicly accessible PDFs supporting expert questions abo...

Open

WasteExpert

ID: 289

This collection contains 24 authoritative PDFs supporting retrieval-augmented answers...

Open

snap4citybarc2026

ID: 293

this collection contains promotional material distributed at Smart City world expo...

Open

CivilProtectionITExpert

ID: 294

No description provided for this collection

Open

SnapAdvisor & Co-Pilot



Natural Language Intelligence

Instant query access to live city metrics, IoT sensors, and GIS layers.



Agentic Decision Support

Autonomous scenario evaluation and actionable operational recommendations.

- Multiple Users, private data and knowledge
- Multiple Agents & Agent to Agents tasks
- Multiple organisations and data sources



Digital Twin Synergy

Seamless integration with 3D models and control rooms.



What-If Simulations

Simulate and optimize, computing KPIs



GDPR & Security Shield

Privacy compliance with full on-premise cloud deployment.

AI in Smart City Governance: Infrastructure Performance Dashboards



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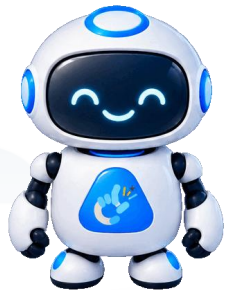
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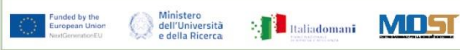


SASUAM



UrbanDT4TF

DI-DTPlatform



CAI4DSA



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