

A CLEANER
STRONGER EUROPE

INDUSTRY TODAY.
A SUSTAINABLE TOMORROW.

 **Control of emissions**

Real-time monitoring
and intelligent control

 **Reduction of emissions**

AI-optimised operations
for a lower footprint

 **Early warning**

Predict. Prevent.
Act in time.

 **Meet the EC targets**

On track for a cleaner,
more competitive Europe.

 **Reduction of EC taxation
via AI, Agentic AI,
neurosymbolic solutions**

Smarter compliance.
Lower costs. Higher impact.

Snap4Environment



AIR QUALITY

PM2.5	5 µg/m ³
NO _x	18 µg/m ³
SO ₂	6 µg/m ³
CO ₂	312 ppm

**NET ZERO
INDUSTRY
REAL IMPACT**

DATA
INTELLIGENCE
COOPERATION
A HEALTHIER PLANET

PEOPLE
PLANET
PROSPERITY

CLEAN
INDUSTRY
THRIVING
COMMUNITIES
BRIGHTER
TOMORROWS

**SENSE
ANALYSE
REASON
COORDINATE
ACT**

**AI AGENTS
FOR A CLEANER TOMORROW**

-  Monitor Agent
-  Analyse Agent
-  Plan Agent
-  Compliance Agent
-  Optimise Agent



NEUROSYMBOLIC AI



Neural Learning
Pattern Detection
Symbolic Reasoning
Rule Compliance
Explainable Actions

KNOWLEDGE + DATA + REASONING = REAL IMPACT



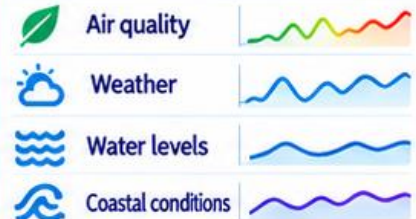
INTELLIGENT SOLUTIONS
FOR A SUSTAINABLE EUROPE

-  LOWER EMISSIONS
-  COMPETITIVE INDUSTRY
-  HEALTHIER COMMUNITIES
-  A BRIGHTER EUROPE



MONITOR & UNDERSTAND

Environmental monitoring

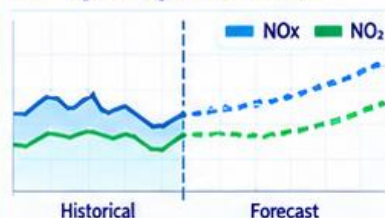


Hotspots & trends



PREDICT & SIMULATE

Air-quality forecasts



Risk scenarios



ASSESS & SUPPORT

Traffic-related CO₂ estimates



Resilience & planning



SnapAdvisor Copilot



Which areas need attention?



Review forecasts, identify hotspots and compare interventions.



Environmental data



Forecasts



Scenarios

Operator-reviewed decisions



Sensors • Open data • Territorial heatmaps



Early warnings • Dispersion models • What-if scenarios



Impact assessment • Planning KPIs • AI support



A shared view of environmental priorities

Air quality

Locate pollution hotspots and anticipate how conditions may change.

Resilience

Bring environmental warnings into the teams' daily workflows.

Emissions

Connect traffic activity with CO₂ estimates and compare interventions.

Planning

Use the same territorial context to assess options and track indicators.



01

MONITOR

Weather, airquality, land slides, water levels, ..
Production of heatmaps, distribution of data via
mobiles.

02

PREDICT

Early warning, Predictions of air quality,
identification of causality, prediction of NOX,
NO2, CO2, etc., 3D prediction of pollutant flows.

03

SIMULATE

Simulation of environmental prticles flowing
into the city, take care of city 3D, wind,
temperature, etc.

04

OPTIMIZE

Traffic flow and mobility infrastructure for the
reduction of emissions.

05

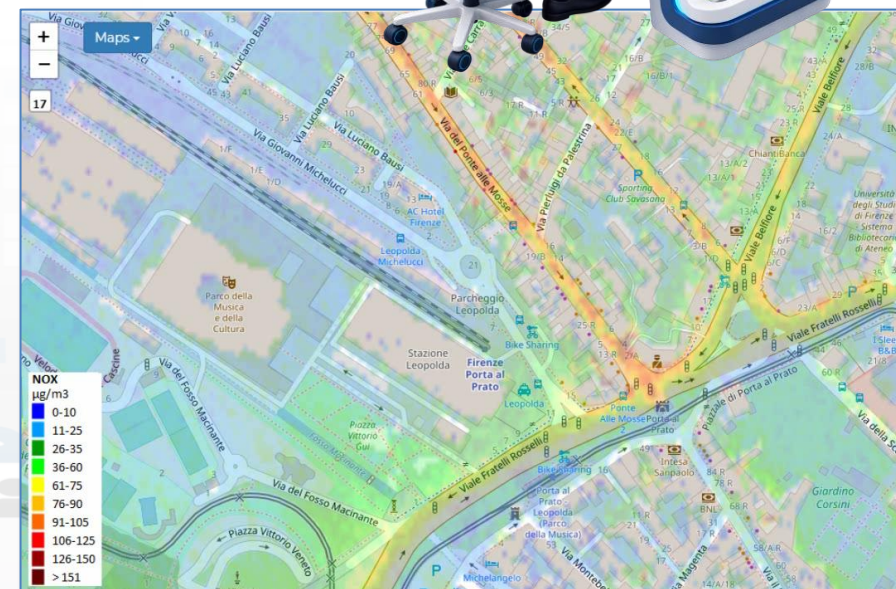
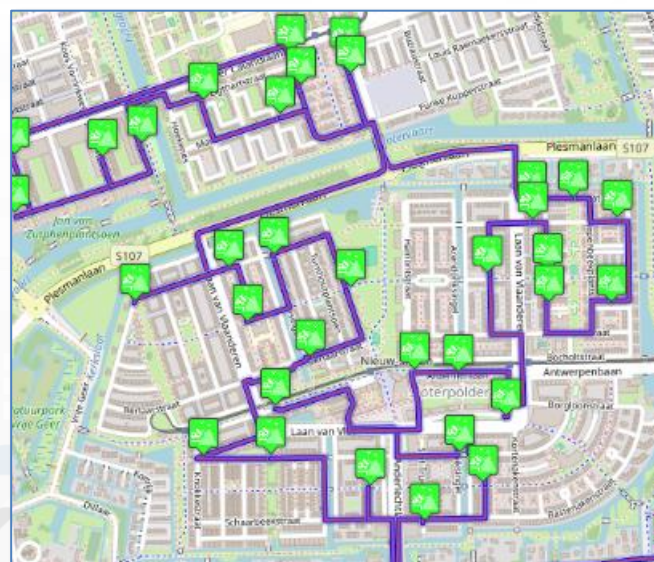
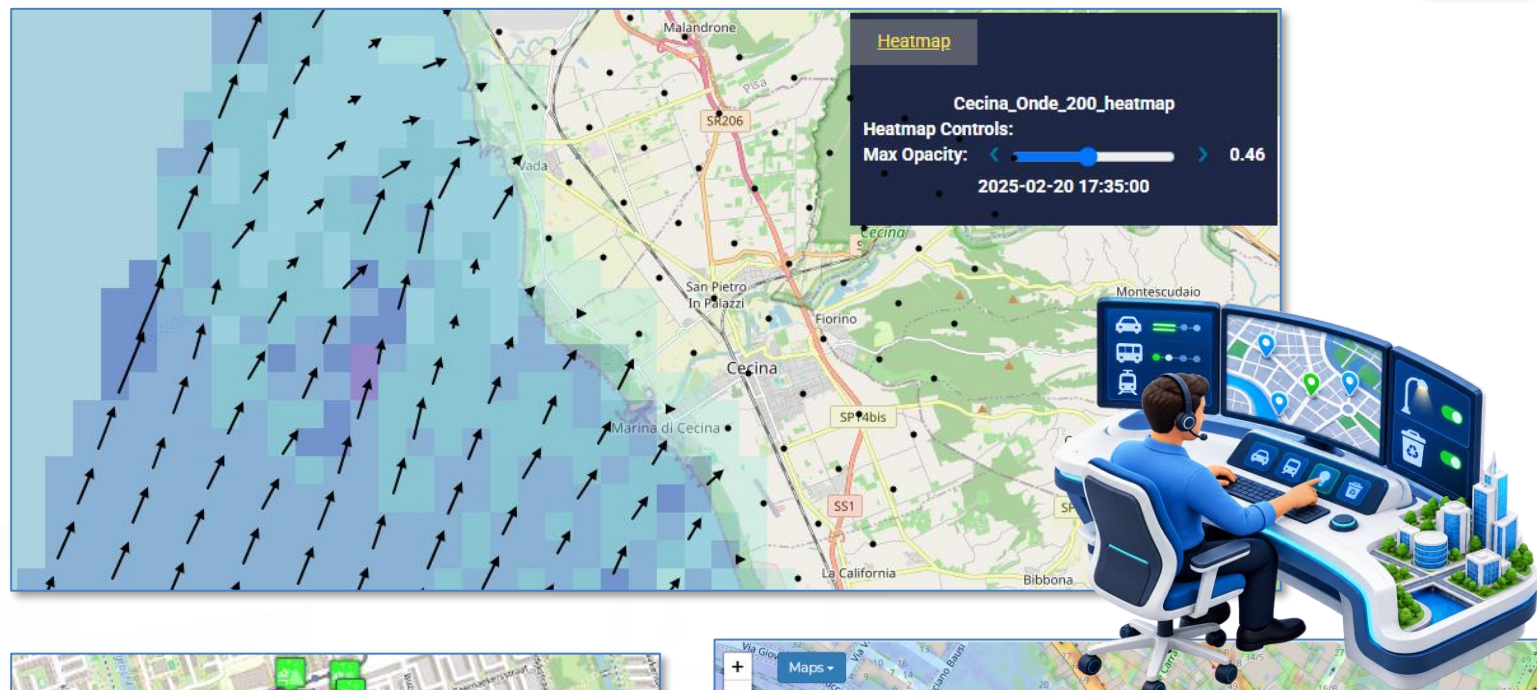
CONNECT

Causes and effects, location of cycling paths
and emissions, entropic area, 15 Min City Index,
SDG and AI algorithms, SUMI/SUMP.

06

ASSIST

SnapAdvisor co-pilot with it capabilities of
Agentic AI solution to identify solutions, and
provide results and on the fly assessments.



Early Warning, Detection

Issue:

- Detection of critical condition
- Not easily detected with other means

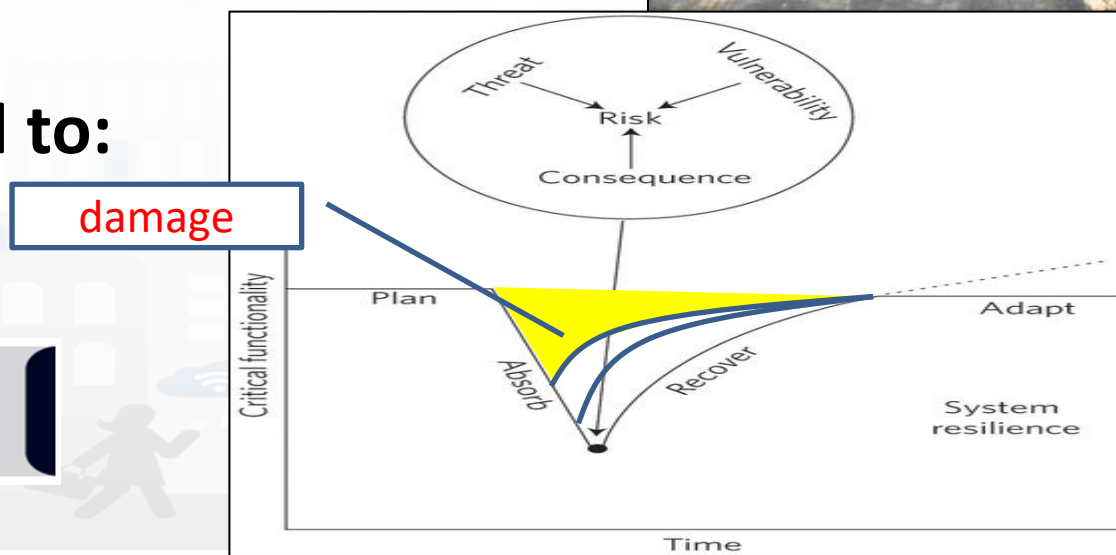
Impact:

- Early warning, faster reaction
- Increased resilience

Several metrics related to:

- Volume of retweets
- Sentiment analysis

Prepare
Absorb
Recover
Adapt

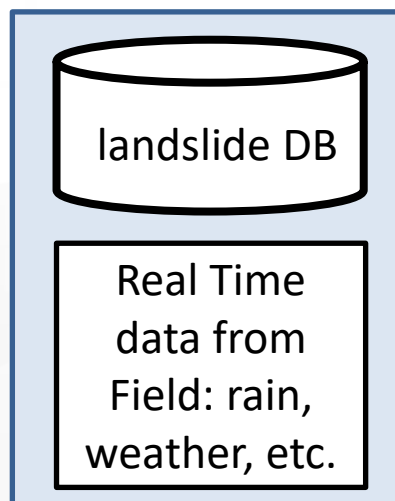
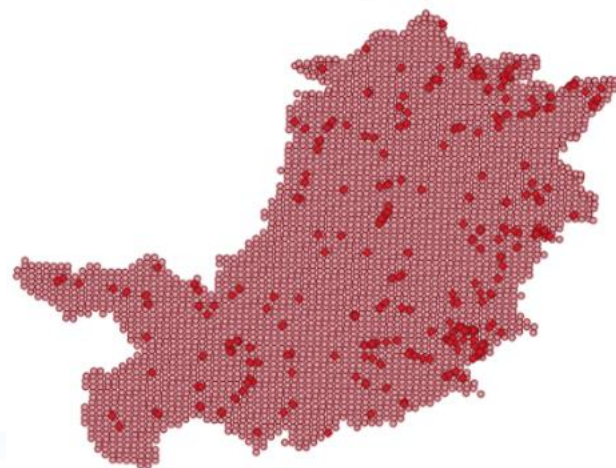


02

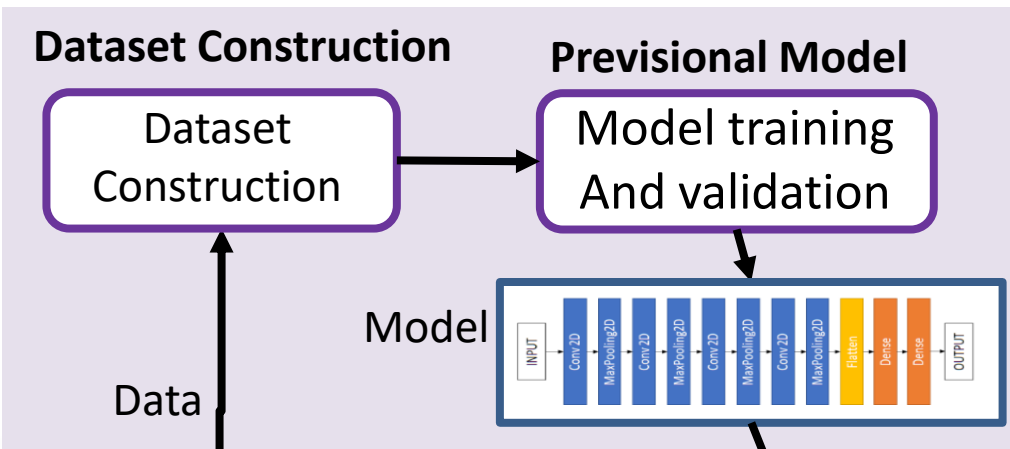
PREDICT

Early warning, Predictions of air quality, identification of causality, prediction of NOX, NO2, CO2, etc., 3D prediction of pollutant flows.

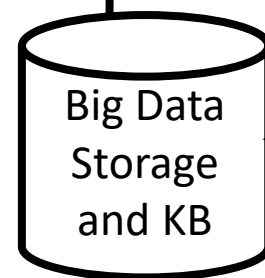
Predicting Land slides



Ingestion Processes



SNAP4City Advanced APIs

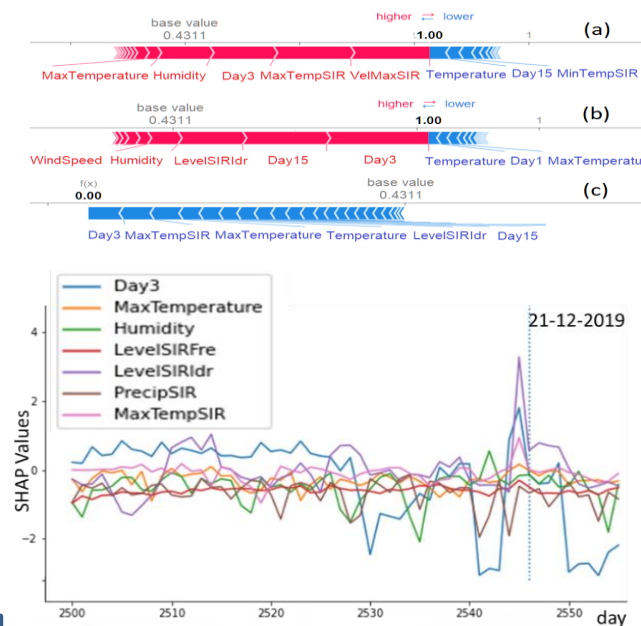


Predictions

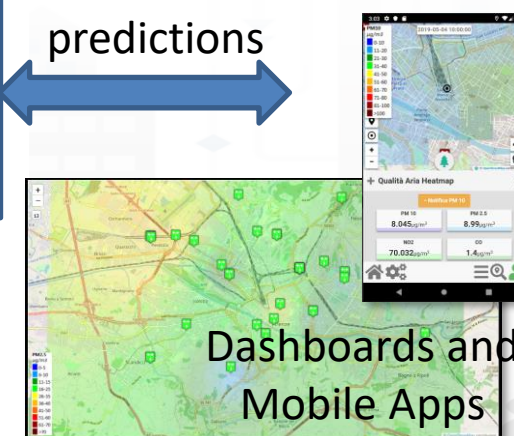
Model execution
Shap Assessment

Data Analytics IOT App
Management

Snap4City Servers and Tools:
Dashboard manager, Heatmap
manager, GeoServer, Smart City API.

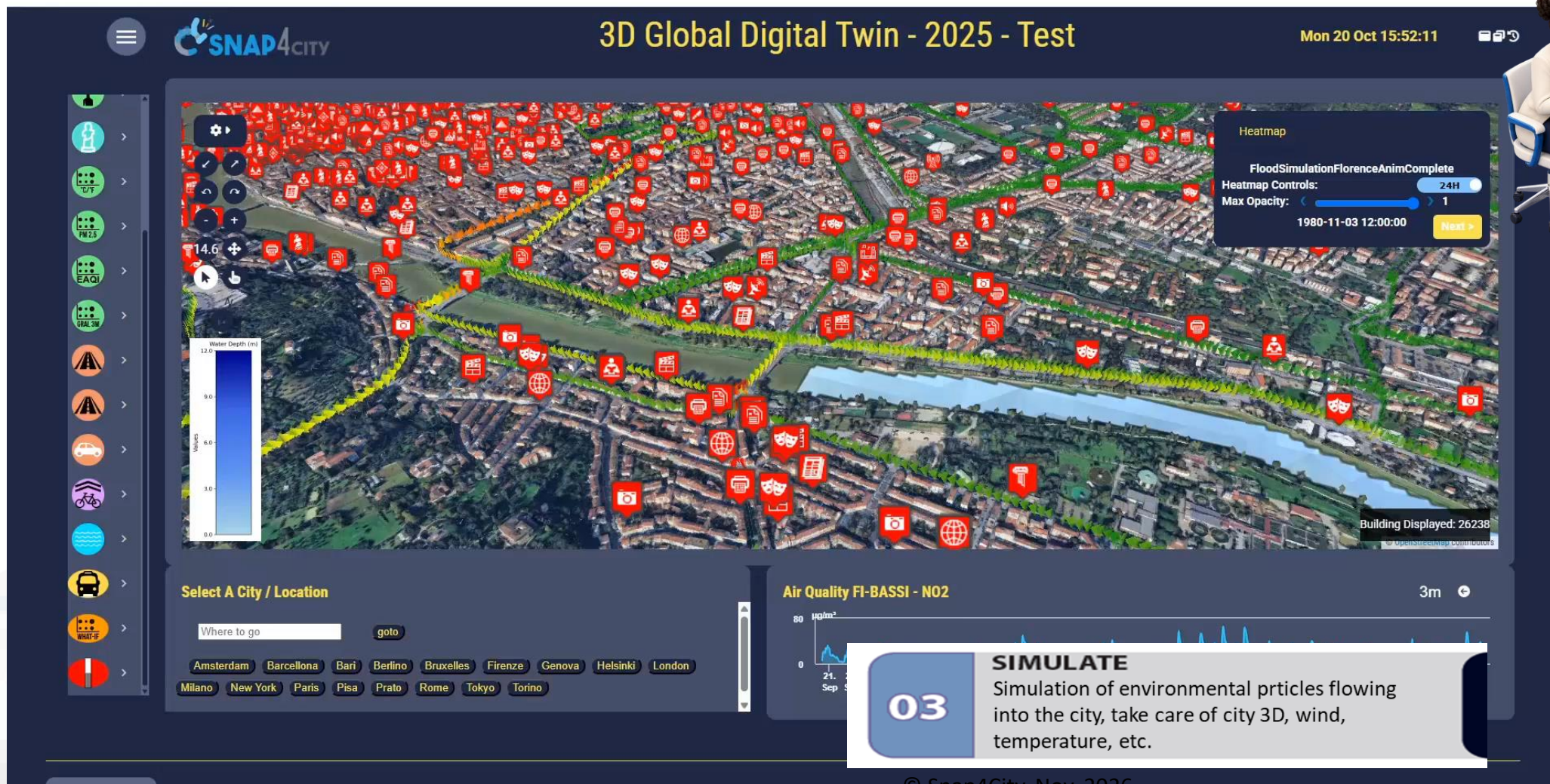


predictions



Dashboards and
Mobile Apps

Flooding Simulation for decision makers



Monitoring Coastal Bathymetry and Waves

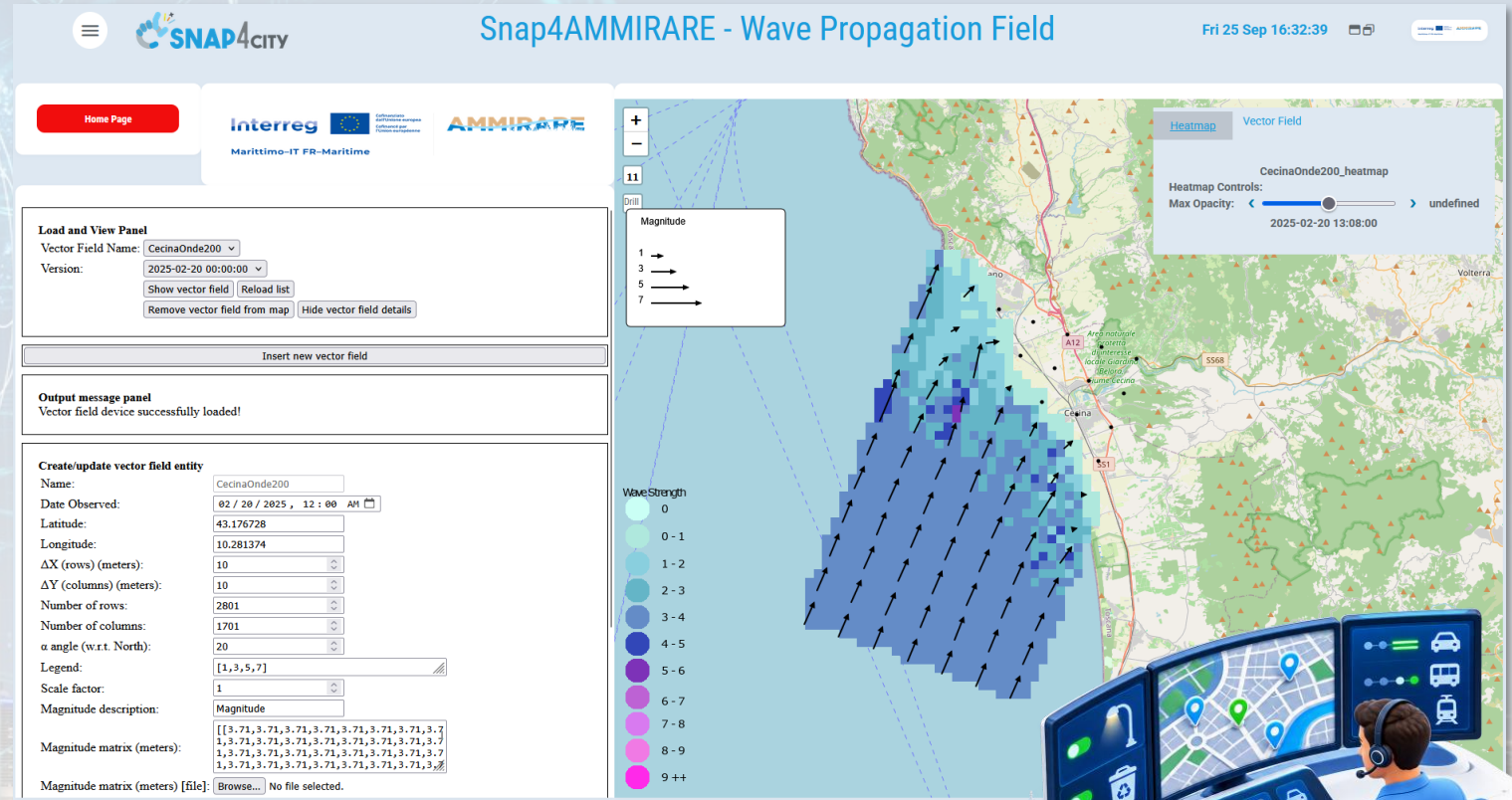


Coastal monitoring

Visualize wave direction and strength alongside coastal map layers.

Weather communication

Turn forecast data into accessible information for operators and communities.



01

MONITOR

Weather, airquality, land slides, water levels, ..
Production of heatmaps, distribution of data via
mobiles.

Monitoring Coastal Bathymetry and Waves



Snap4AMMIRARE Data Search - View

Thu 1 Oct 15:22:14



Interreg



Cofinanziato dall'Unione europea
Cofinanziato per l'Unione europea

AMMIRARE

Marittimo-IT FR-Maritime

Search

Search...

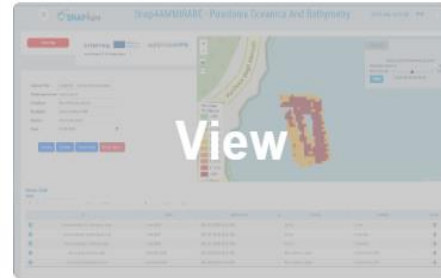
Data type▼

Zone▼

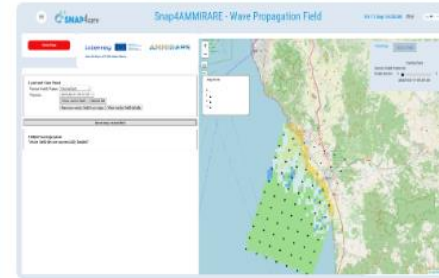
Data Provider▼

Reset

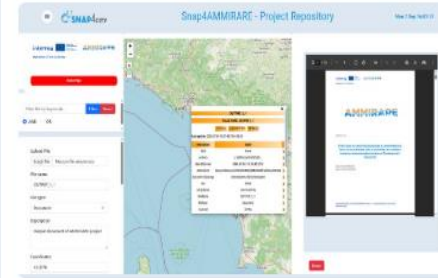
Snap4AMMIRARE - Posidonia Oceanica and Bathymetry



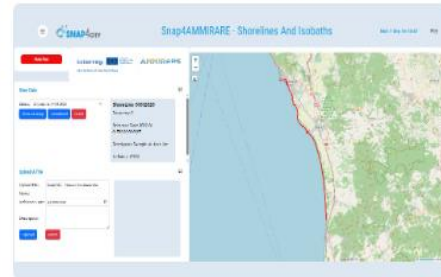
Snap4AMMIRARE - Wave Propagation Field



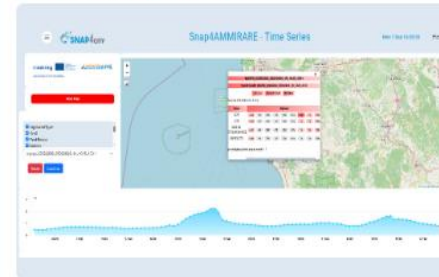
Snap4AMMIRARE - Project Repository



Snap4AMMIRARE - Shorelines and Isobaths



Snap4AMMIRARE - Time series



01

MONITOR

Weather, airquality, land slides, water levels, ..
Production of heatmaps, distribution of data via
mobiles.



Forecasts for operations and planning



24–48 hours

Short-term NO_x forecasts

Anticipate pollution patterns and prepare operational responses.

30–180 days

Progressive mean NO₂

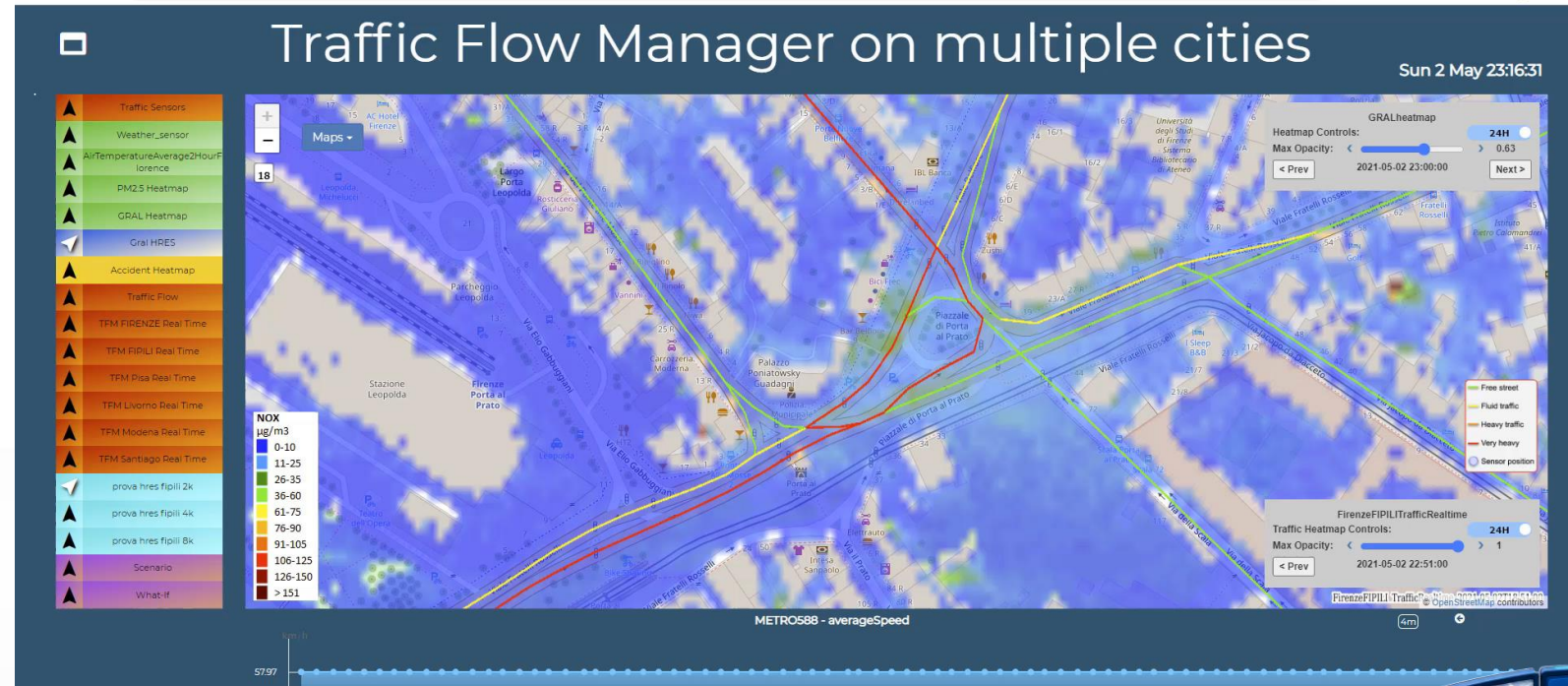
Assess the longer-term trajectory and support earlier planning decisions.

Documented model horizons. Local deployment requires suitable data and model validation.



Environment

- **Prediction**
 - **NOX Pollutant** diffusion on the basis of Traffic Flow (prediction), weather and 3D structure
 - **NO2 progressive average** (Long term)
- **Project:**
 - **Trafair CEF EC**
 - Mixed solutions of Fluidinamics modeling and AI



02

PREDICT
Early warning, Predictions of air quality, identification of causality, prediction of NOX, NO2, CO2, etc., 3D prediction of pollutant flows.

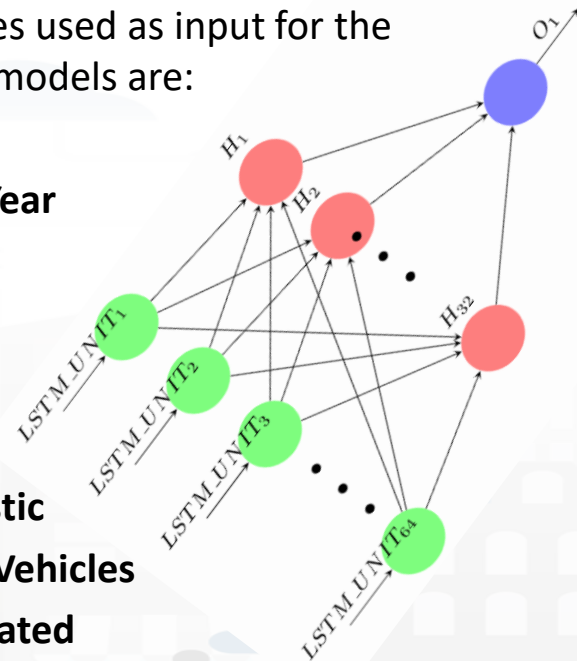
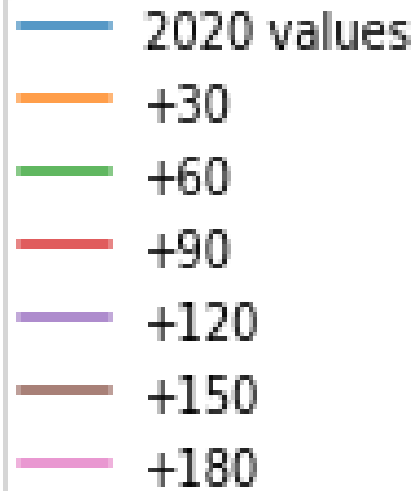
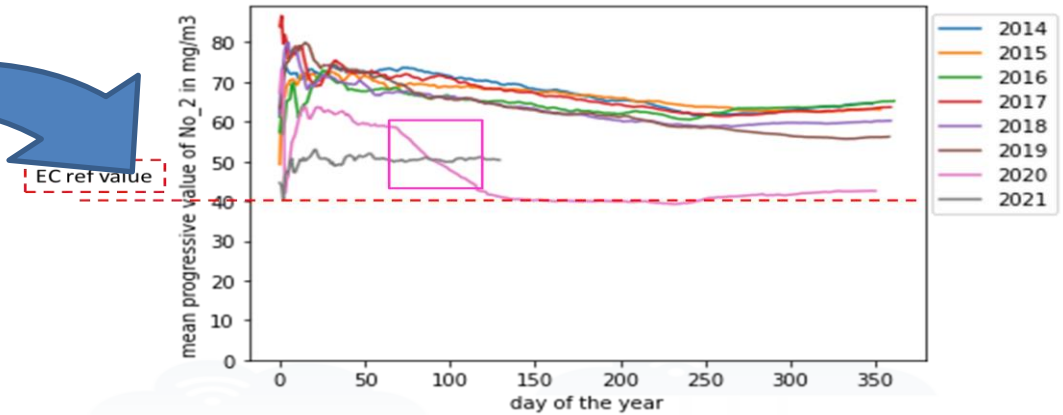
03

SIMULATE
Simulation of environmental particles flowing into the city, take care of city 3D, wind, temperature, etc.



Predicting EC's KPI on NO2 months in advance

Deep Learning Long Terms Predictions of NO2 mean values, From 30 to 180 days in advance



Pollutant	Averaging period	Air Quality Directive		WHO guidelines	
		Objective and legal nature and concentration	Comments	Concentration	Comments
PM _{2.5}	One day			25 µg/m ³ (*)	99 th percentile (3 days/year)
PM _{2.5}	Calendar year	Target value, 25 µg/m ³	The target value has become a limit value since 1 January 2015	10 µg/m ³	
PM ₁₀	One day	Limit value, 50 µg/m ³	Not to be exceeded on more than 35 days per year.	50 µg/m ³ (*)	99 th percentile (3 days/year)
PM ₁₀	Calendar year	Limit value, 40 µg/m ³ (*)		20 µg/m ³	
O ₃	Maximum daily 8-hour mean	Target value, 120 µg/m ³	Not to be exceeded on more than 25 days per year, averaged over three years	100 µg/m ³	
NO ₂	One hour	Limit value, 200 µg/m ³ (*)	Not to be exceeded more than 18 times a calendar year	200 µg/m ³ (*)	
NO ₂	Calendar year	Limit value, 40 µg/m ³		40 µg/m ³	

Artificial Intelligence to transform meteorological data into simple, useful forecasts for Tuscany

Artificial Intelligence to transform meteorological data into simple, useful forecasts for Tuscany

1

Maps of meteorological variables for the next 3 days

2

Machine learning models that combine meteorological data and territorial characteristics

3

3-day forecasts with summary icons for Tuscany

Numerical Weather Prediction model (ECMWF)

Temperature

Wind

Cloud cover

Precipitation

A

Meteorological variables

Geographic information
(elevation, coast, etc.)

Specialized models and cascade

LaMMA WEATHER BULLETIN

TODAY

Morning

TOMORROW

Morning

DAY AFTER
TOMORROW

Afternoon

Afternoon

Afternoon

Night

Wind Forecast

Sea Forecast

Slightly rough

Rough

Traffic data supports local CO₂ estimates

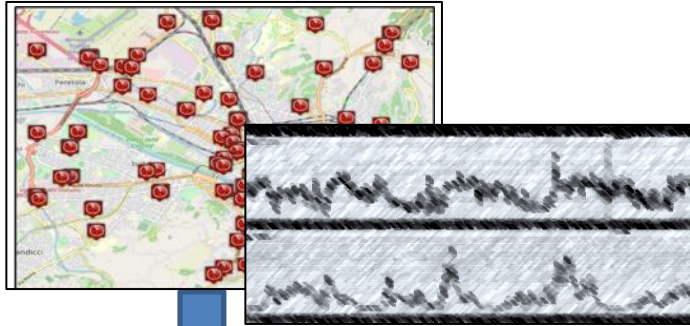
A spatial view of traffic impact

Use traffic flow and driving conditions to estimate CO₂ patterns across the city.

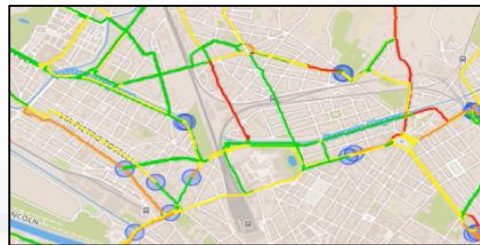
Inform corridor priorities and evaluate the potential impact of mobility measures.



Estimating City Local CO2 from Traffic Flow Data



Computing Traffic Flow
into CO2 sensor area



Traffic Flow data

- Traffic Flow is one the main source of CO2 (**ton of CO2 x Km x Vehicle**)
 - K1: Fluid Flow**
 - K2: Stop and Go**
- Dense estimation of CO2 into the city** is very useful to know to target EC's KPIs

Computing CO2 on the basis of
traffic flow data



CO2 estimation



Computing CO2 from Open Danta – Validation via Satellite



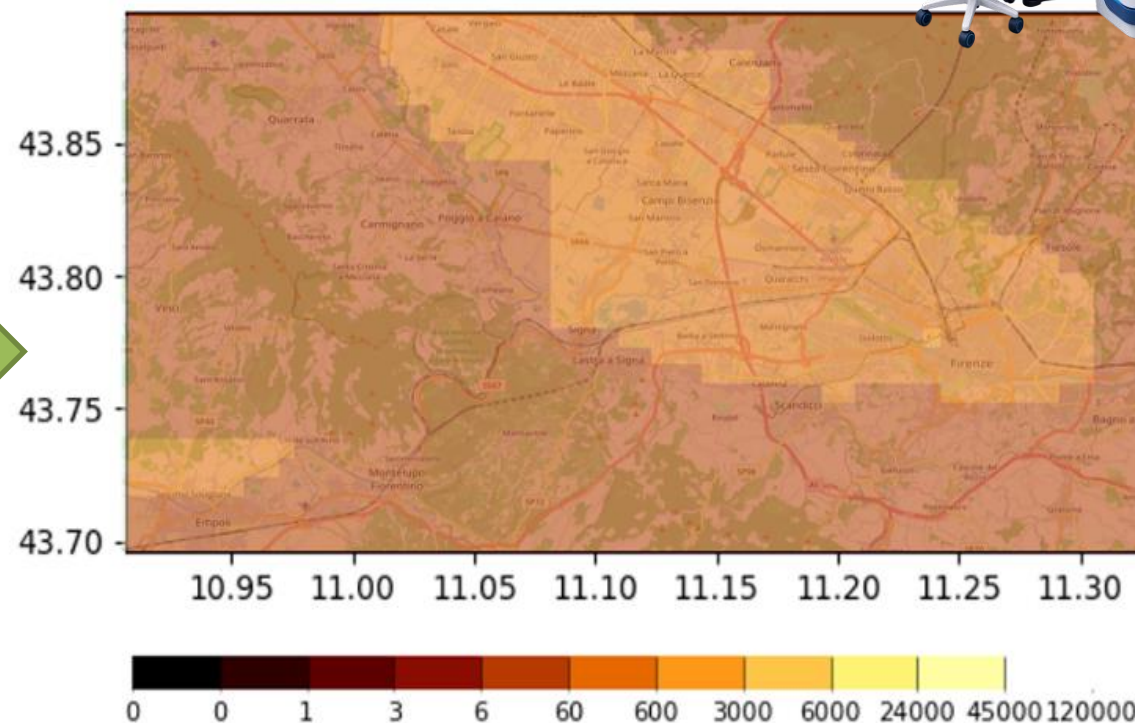
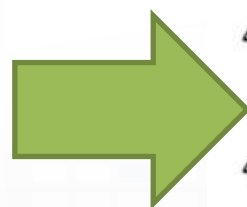
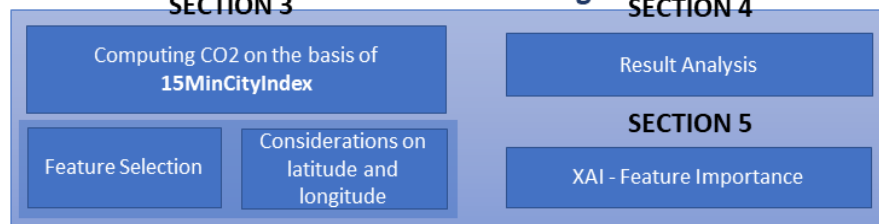
Dataset construction



Computing



Machine Learning



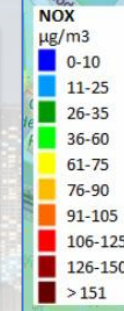
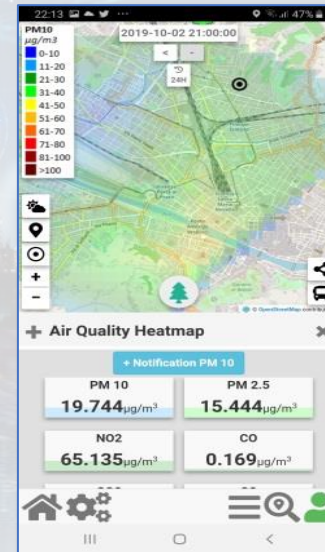
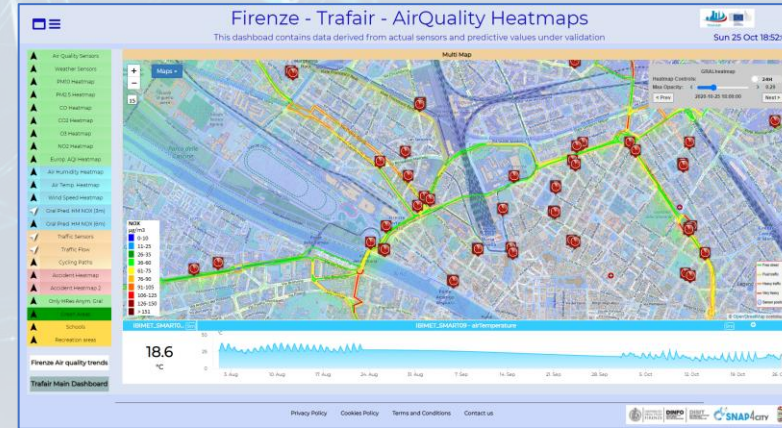
Environment and Quality of Life

Air Quality Predictions

Cities of:
Firenze, Pisa, Livorno

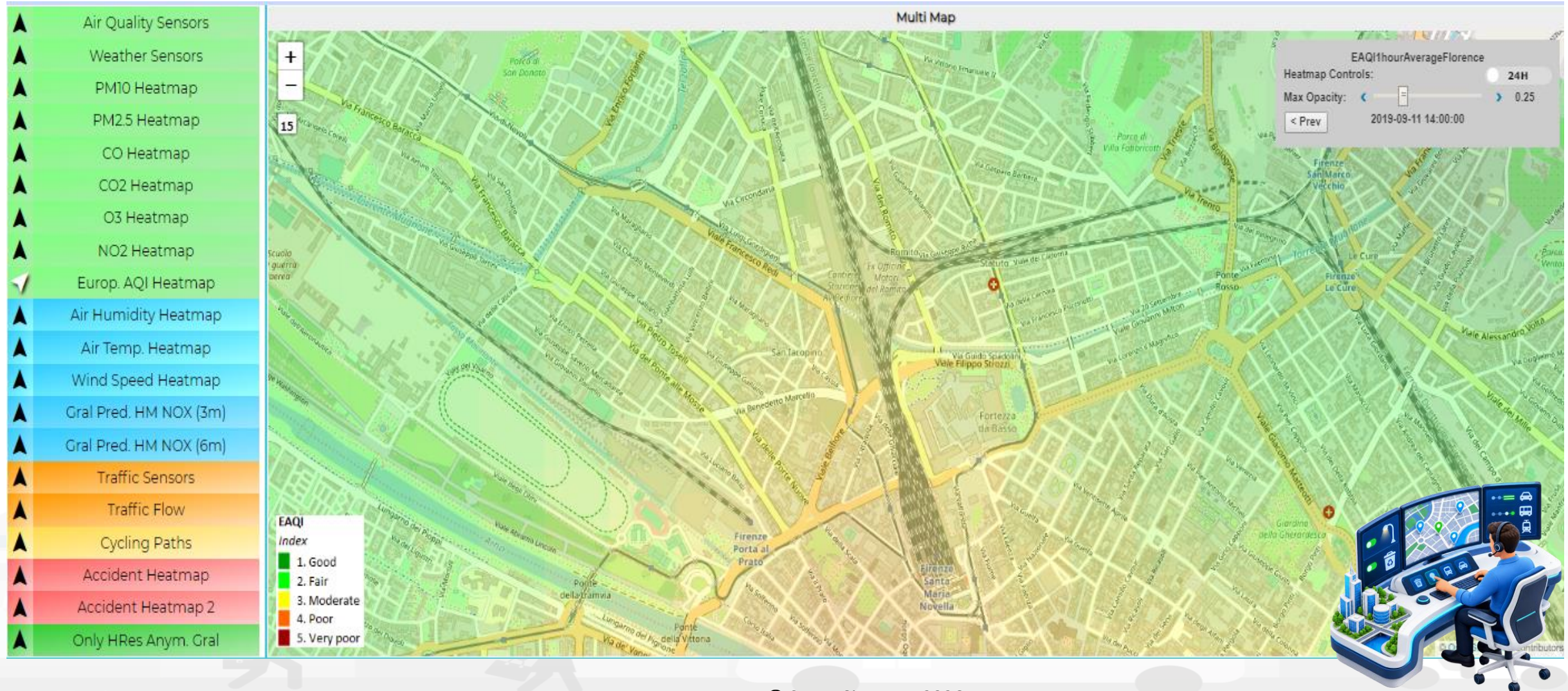


- **Multiple Domain Data**
 - Traffic Flow data, Pollutant: NOX, CO2, PM10, PM2.5, O3, ...
 - 3D City structure, weather, ...
- **Multiple Decision Makers**
 - Pollutant Predictions: NOX, NO2, ..
 - City officers, energy industries
 - Dashboards, What-IF analysis
 - Traffic Flow Reconstruction
- **Historical and Real Time data**
 - Billions of Data
- **Services Exploited on:**
 - Dashboards, Mobile App
- **Since 2020**



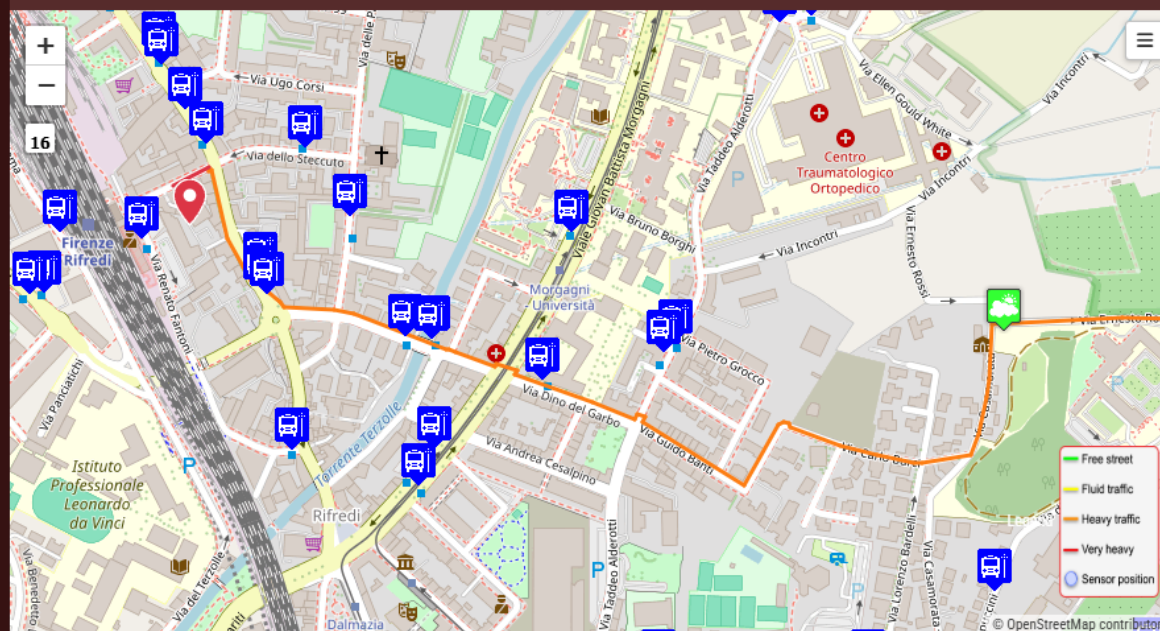
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EAQI Heatmap and sequence

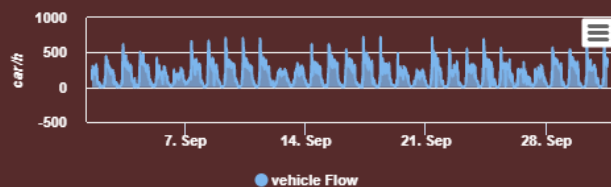


SnapAdvisor And CoPilot

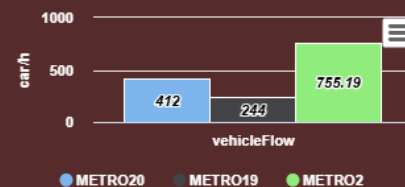
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Time Trend



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



An open platform that connects city systems



Existing data and sensors

Combine IoT, open data and legacy sources in one territorial context.

Flexible deployment

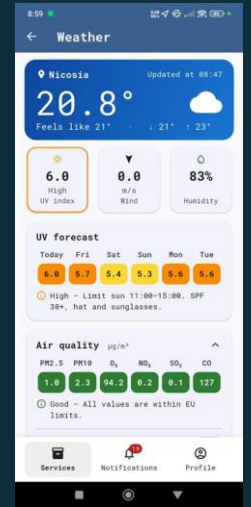
Use a service offering or install in your own environment.

Open-source foundation

Extend the platform through documented APIs and data models.

Cross-domain decisions

Connect environment with mobility, energy and city operations.



SNAP4CITY

