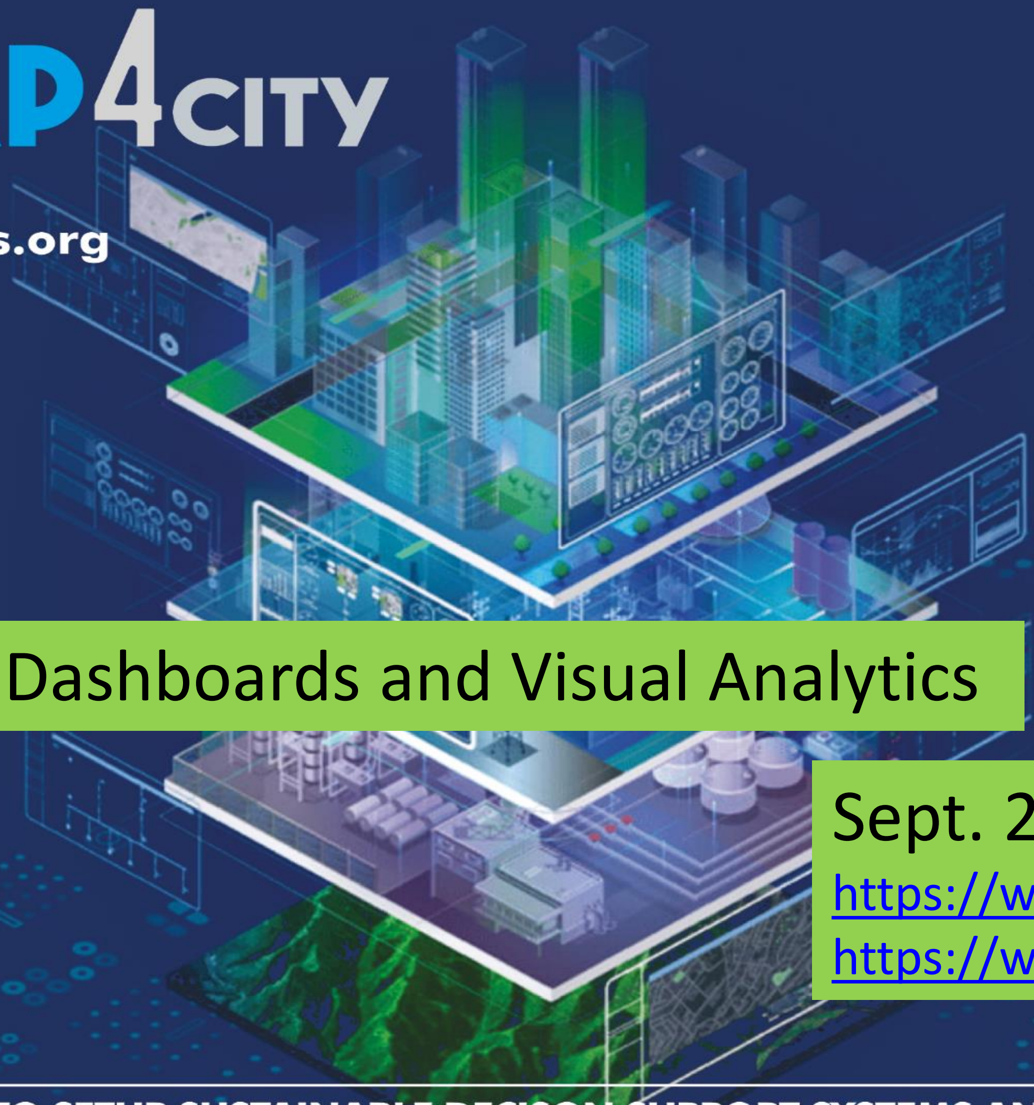
www.snap4city.org
www.snap4solutions.org

www.km4city.org



Dashboards and Visual Analytics

Sept. 2024, Course, Part 2
https://www.snap4city.org/944
https://www.snap4city.org/577

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

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

CC BY NC ND
SOME RIGHTS RESERVED

Paolo Nesi, paolo.nesi@unifi.it
https://www.Km4City.org
https://www.disit.org

SNAP4CITY

KM4CITY

SNAP4 Appliances and Dockers Installations

100% OPEN SOURCE

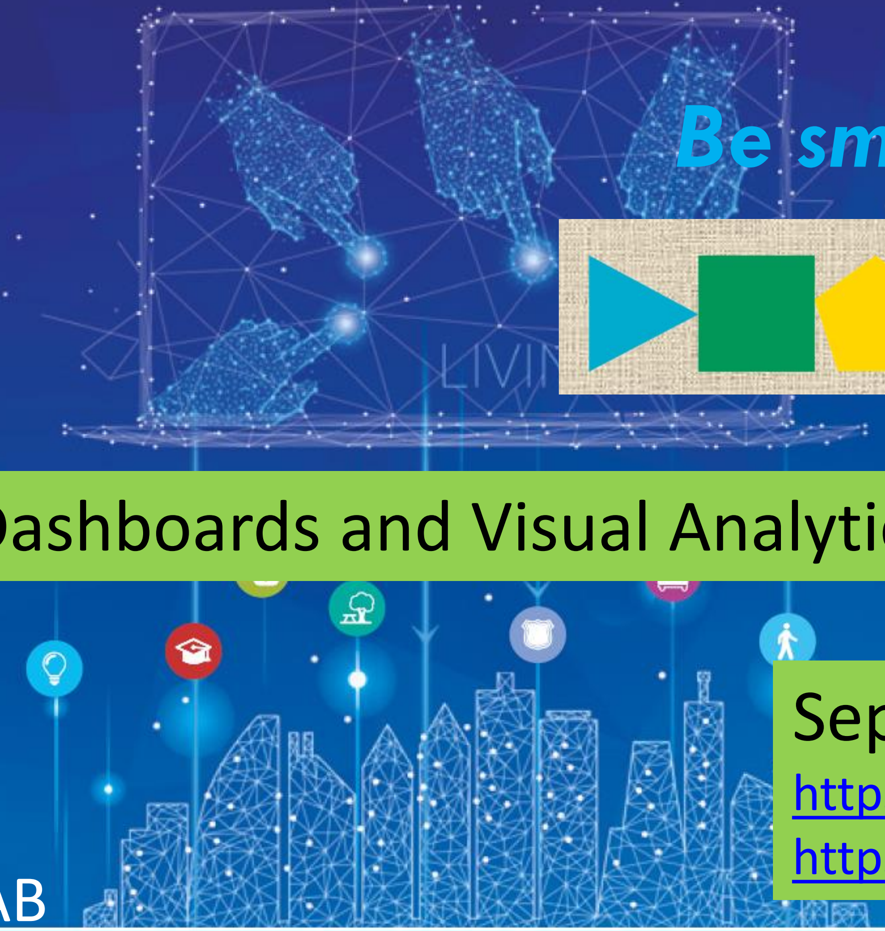
EU GDPR COMPLIANT

PEN Test Passed

Powered by FIWARE

SNAP4CITY on EUROPEAN OPEN SCIENCE CLOUD MARKETPLACE

Node-RED



Be smart in a SNAP!

SMARTCITY
EXPO WORLD CONGRESS

Dashboards and Visual Analytics

Sept. 2024, Course, Part 2
https://www.snap4city.org/944
https://www.snap4city.org/577

LIVING LAB
SCALABLE SMART ANALYTIC APPLICATION BUILDER FOR SENTIENT CITIES

BY NC ND
SOME RIGHTS RESERVED

UNIVERSITÀ DEGLI STUDI FIRENZE | DINFO | DISIT

Snap4City

UNIVERSITÀ DEGLI STUDI FIRENZE | DINFO DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE | DISIT DISTRIBUTED SYSTEMS AND INTERNET TECHNOLOGIES LAB | SNAP4CITY | KM4CITY

Digital Twin Solutions for Sustainability

100% OPEN SOURCE

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

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

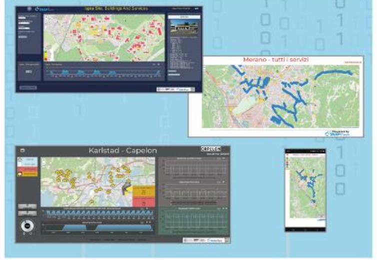
CONTROL AND PLAN

FLORENCE SCDT
City Today
2 ACCIDENTS

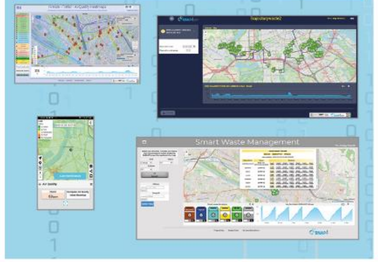
MOBILITY AND TRANSPORT

FIRENZE - TRAFAIR - AIRQUALITY HEATMAPS - NEWGUI

SMART ENERGY AND SMART BUILDING


Merano - tutti i servizi
Karlstad - Capelon

ENVIRONMENT AND WASTE MANAGEMENT

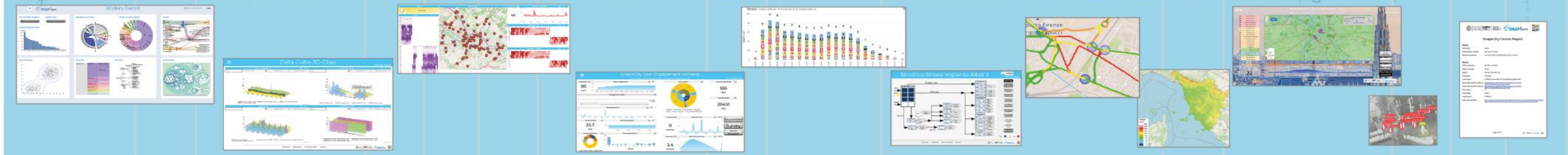

Smart Waste Management

CITY USER'S SERVICES AND TOURISM MANAGEMENT

- DEVELOMENT ENVIRONMENT AND METHODOLOGY
- VISUAL PROGRAMMING, ML, AI, HPC
- TRAINING COURSES
- LIVING LABS
- GUI CUSTOM STYLES
- FULL APPLICATIONS, DASHBOARDS AND VIEWS
- MOBILE APPS

SMART CITY LIVING LAB

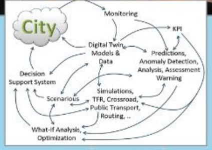
VISUAL ANALYTICS - SYNOPTICS - GRAPHICAL WIDGETS - ANALYTICS - BUSINESS INTELLIGENCE - SIMULATIONS

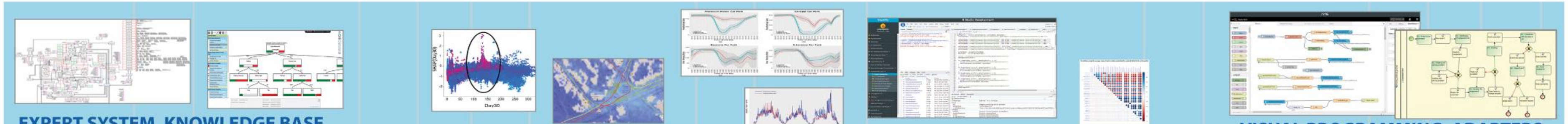

Data Cube 3D Olap

DASHBOARDS, WIDGETS TEMPLATES

PREDICTION - ANOMALY DETECTION - CLUSTERING - ROUTING - SENTIMENT NLP - TRAFFIC FLOW - PEOPLE FLOWS - SDG
15 MIN CITY INDEX - KPI - HEATMAPS - ORIGIN DESTINATION - ETC...

API - MICROSERVICES - GIS - BPM
VIDEO - REPORTS - MAPS - 3D ...


City
Monitoring
KPI
Digital Twin Models & Data
Predictions, Anomaly Detection, Analysis, Assessment Warning
Decision Support System
Scenarious
Simulations, TFR, Crossroad, Public Transport, Routing, ..
What-If Analysis, Optimization



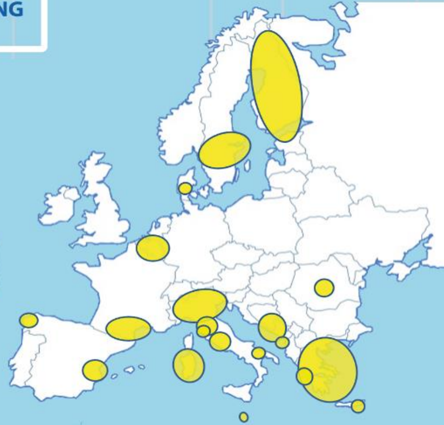
EXPERT SYSTEM, KNOWLEDGE BASE
SEMANTIC REASONING
SMART DATA MODEL
IOT DEVICE MODELS, STORAGE

BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE
EXPLAINABLE AI, MACHINE LEARNING, GENERATIVE AI
OPERATIVE RESEARCH, STATISTICS

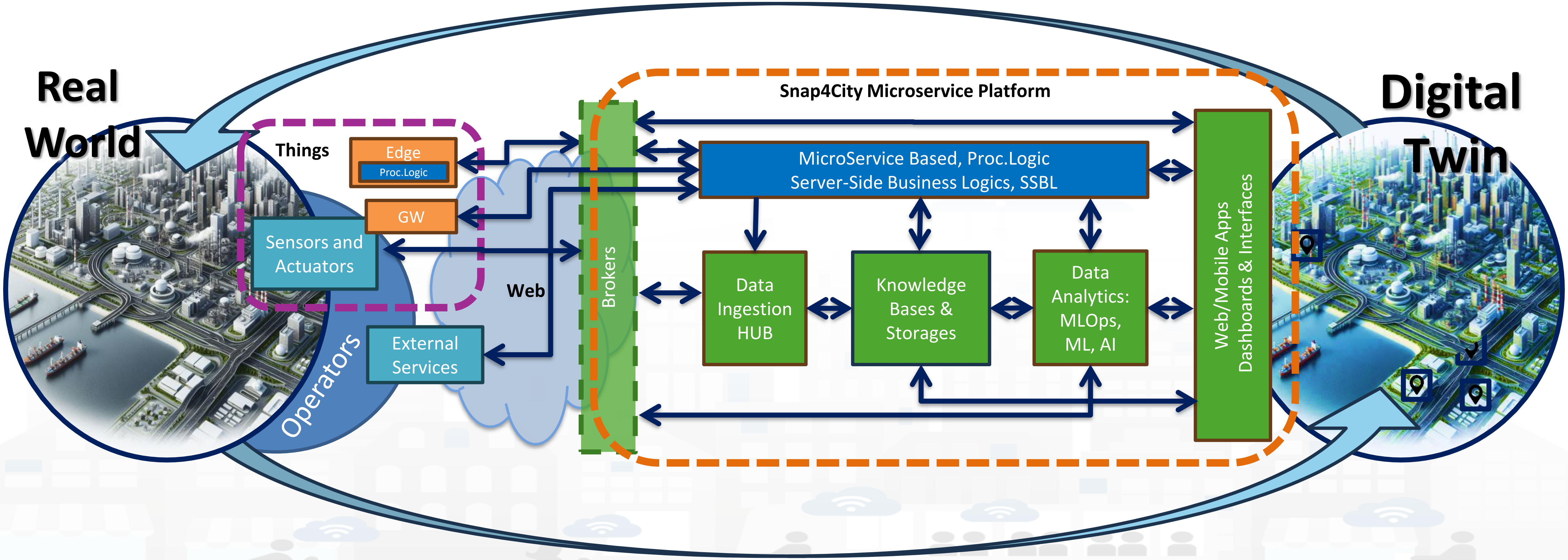
VISUAL PROGRAMMING, ADAPTERS
DATA FLOWS, WORKFLOWS
PARALLEL DISTRIBUTED PROCESSING
DATA DRIVEN

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

INDUSTRY4.0
SHARING
PARKING
AGRICOLTURE
ENVIRONMENT
ENERGY
SHOPPING
MOBILE
CONTROL ROOM
SECURITY
WASTE
BUILDING
SATELLITE
TRANSPORT
TOURISM



Digital Twin Development Platform


Real World
Digital Twin
Snap4City Microservice Platform
Things
Edge
Proc.Logic
GW
Sensors and Actuators
Operators
External Services
Web
Brokers
MicroService Based, Proc.Logic
Server-Side Business Logics, SSBL
Data Ingestion HUB
Knowledge Bases & Storages
Data Analytics: MLOps, ML, AI
Web/Mobile Apps
Dashboards & Interfaces

https://www.snap4city.org/944

On Line Training Material (free of charge)

1st part	2nd part	3rd part	4th part	5th part	6th part	7th part	8th
Overview	Dashboards	IOT App, IOT Network	Data Analytics	Data Ingestion processes	System and Deploy Install	Smart City API: Web & Mob. App	Design and Develop Smart Solutions

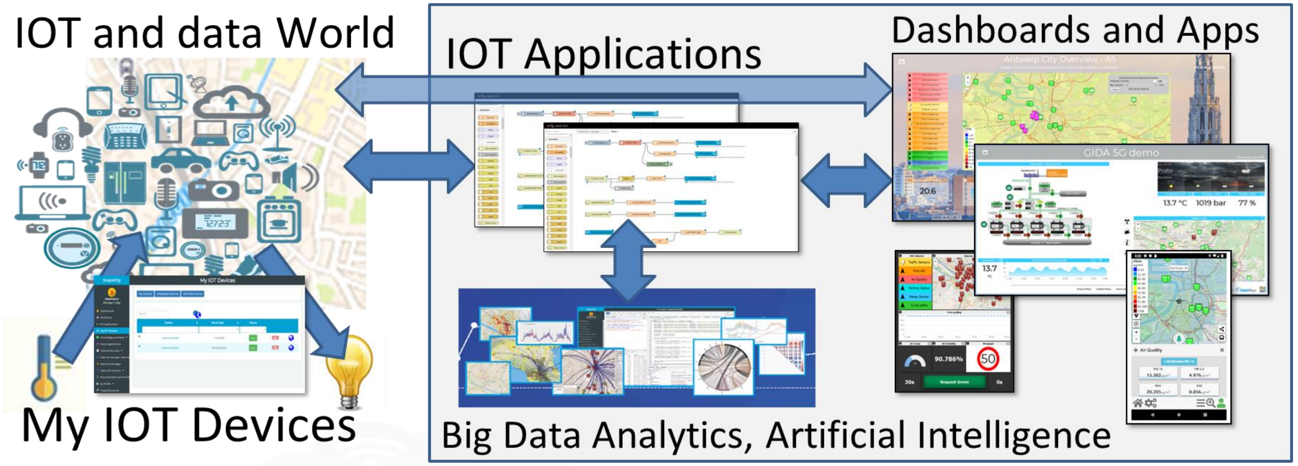
▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube
▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube
▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube

Note on Training Material

- **Course 2023**: https://www.snap4city.org/944
  - Introductionary course to Snap4City technology
- **Course** https://www.snap4city.org/577
  - Full training course with much more details on mechanisms and a wider set of cases/solutions of the Snap4City Technology
- **Documentation** includes a deeper round of details
  - Snap4City Platform Overview:
    - https://www.snap4city.org/drupal/sites/default/files/files/Snap4City-PlatformOverview.pdf
  - Development Life Cycle:
    - https://www.snap4city.org/download/video/Snap4Tech-Development-Life-Cycle.pdf
  - Client Side Business Logic:
    - https://www.snap4city.org/download/video/ClientSideBusinessLogic-WidgetManual.pdf
- **On line cases and documentation**:
  - https://www.snap4city.org/108
  - https://www.snap4city.org/78
  - https://www.snap4city.org/426

Free Trial

- Register on [WWW.snap4city.org](http://www.snap4city.org)
  - Subscribe on **DISIT Organization**
- **You can:**
  - Access on basic Tools
  - Access to a large volume of Data
  - Create Dashboards
  - Create IOT Applications
  - Connect your IOT Devices
  - Exploit Tutorials and Demonstrations


IOT and data World
IOT Applications
Dashboards and Apps
My IOT Devices
Big Data Analytics, Artificial Intelligence

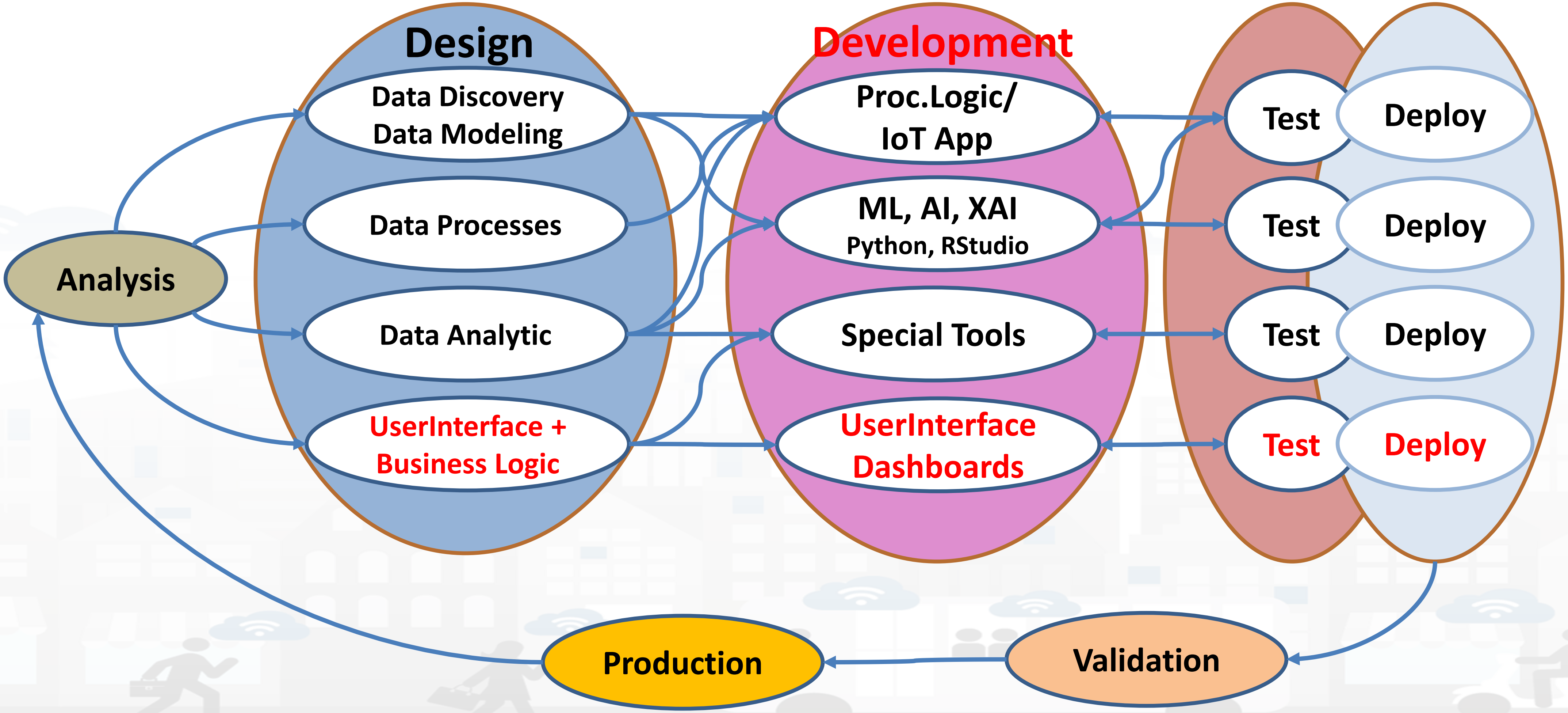
IF you need to go more in deep you can ask us to pass at the next Role becoming full AreaManager with full rights of development, also for Data Analytics, machine learning, etc.

Agenda of this second part

- Recall on Snap4City Architecture
- Snap4City Dashboards Purposes and Uses
  - Snap4City Dashboards vs Technical data monitoring dashboards
  - Snap4City Dashboards main concepts
- Main Data Kinds: data vs representations
- Snap4City DASHBOARDS: Main Concepts and simple Widgets
- Creating a Snap4City Dashboard
  - *Coffe Break*
- Snap4City Multi Data Map Widget
- Snap4City High Level Types
  - Video Streams from TV Cameras
  - External Services (integration of) your or third party web pages
  - Synoptics, Custom Widgets as External Services
- Selector for the Multi Data Map Widget
- Data Inspector vs Data Processes Details
- Dashboard Management
- Training Material

https://www.snap4city.org/944

Development Life Cycle
Smart Solutions



Design
Data Discovery
Data Modeling
Data Processes
Data Analytic
UserInterface +
Business Logic

Development
Proc.Logic/
IoT App
ML, AI, XAI
Python, RStudio
Special Tools
UserInterface
Dashboards

Test
Deploy
Test
Deploy
Test
Deploy
Test
Deploy

Analysis
Production
Validation

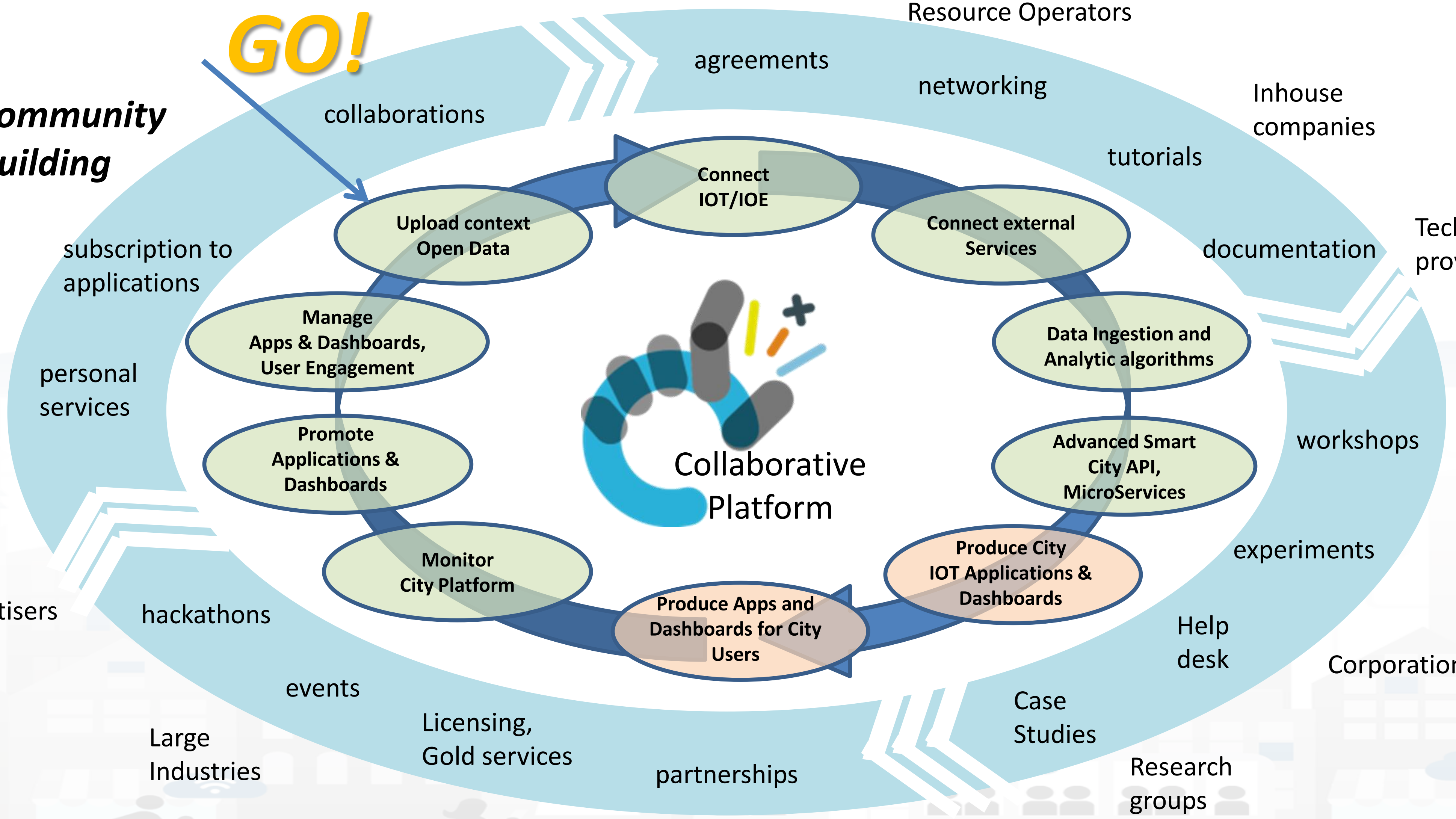
Living Lab Accelerating

SNAP4CITY

KM4CITY

SNAP4 Appliances and Dockers Installations

GO!



Community Building

City Operators

Resource Operators

agreements

networking

collaborations

Inhouse companies

tutorials

Tech providers

documentation

subscription to applications

City Users

personal services

workshops

Category Associations

experiments

Advertisers

hackathons

Help desk

Corporations

events

Case Studies

Large Industries

Licensing, Gold services

partnerships

Research groups

Early Adopters

Start-ups

Connect IOT/IOE

Upload context Open Data

Connect external Services

Manage Apps & Dashboards, User Engagement

Data Ingestion and Analytic algorithms

Promote Applications & Dashboards

Advanced Smart City API, MicroServices

Monitor City Platform

Produce City IOT Applications & Dashboards

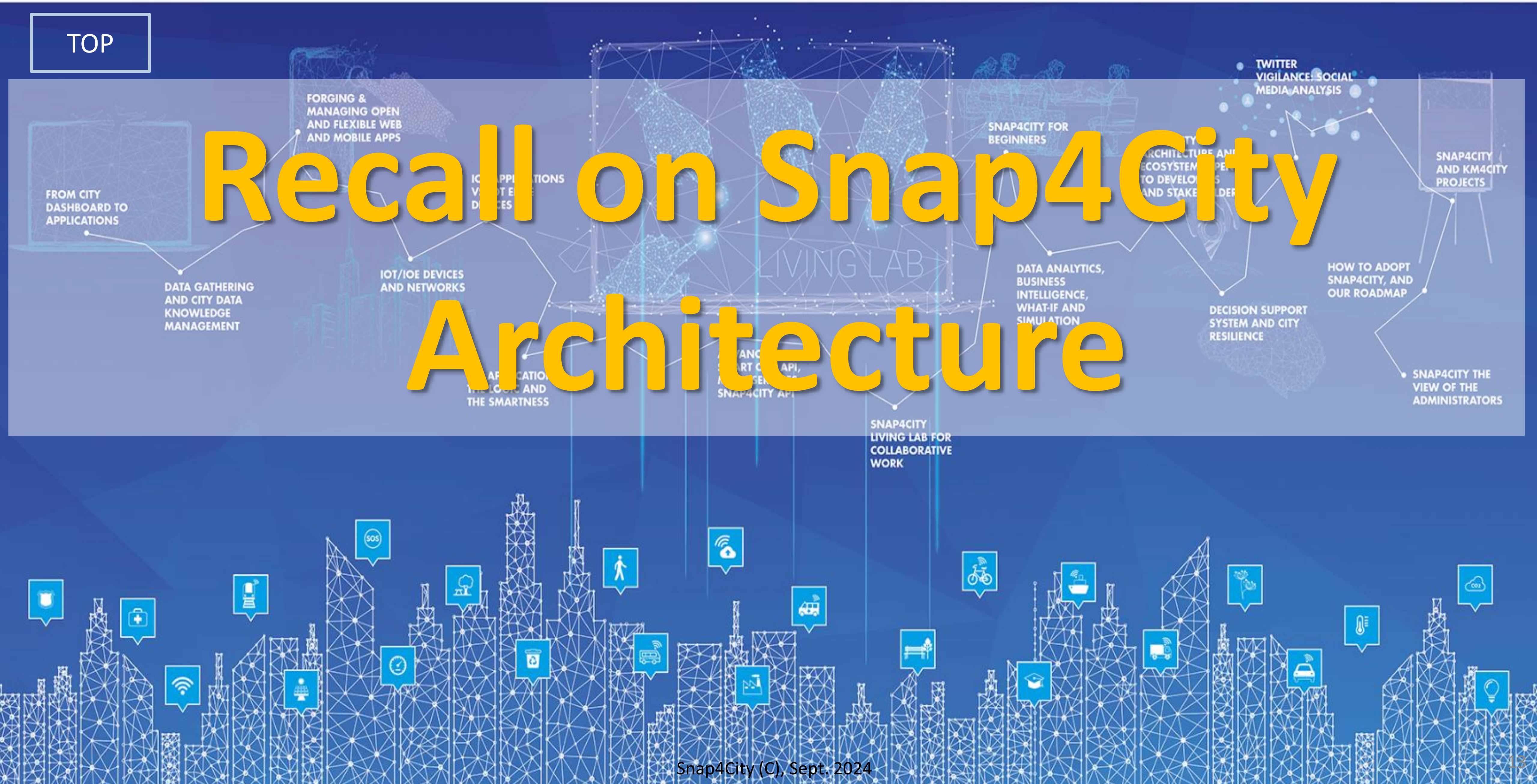
Produce Apps and Dashboards for City Users

Collaborative Platform

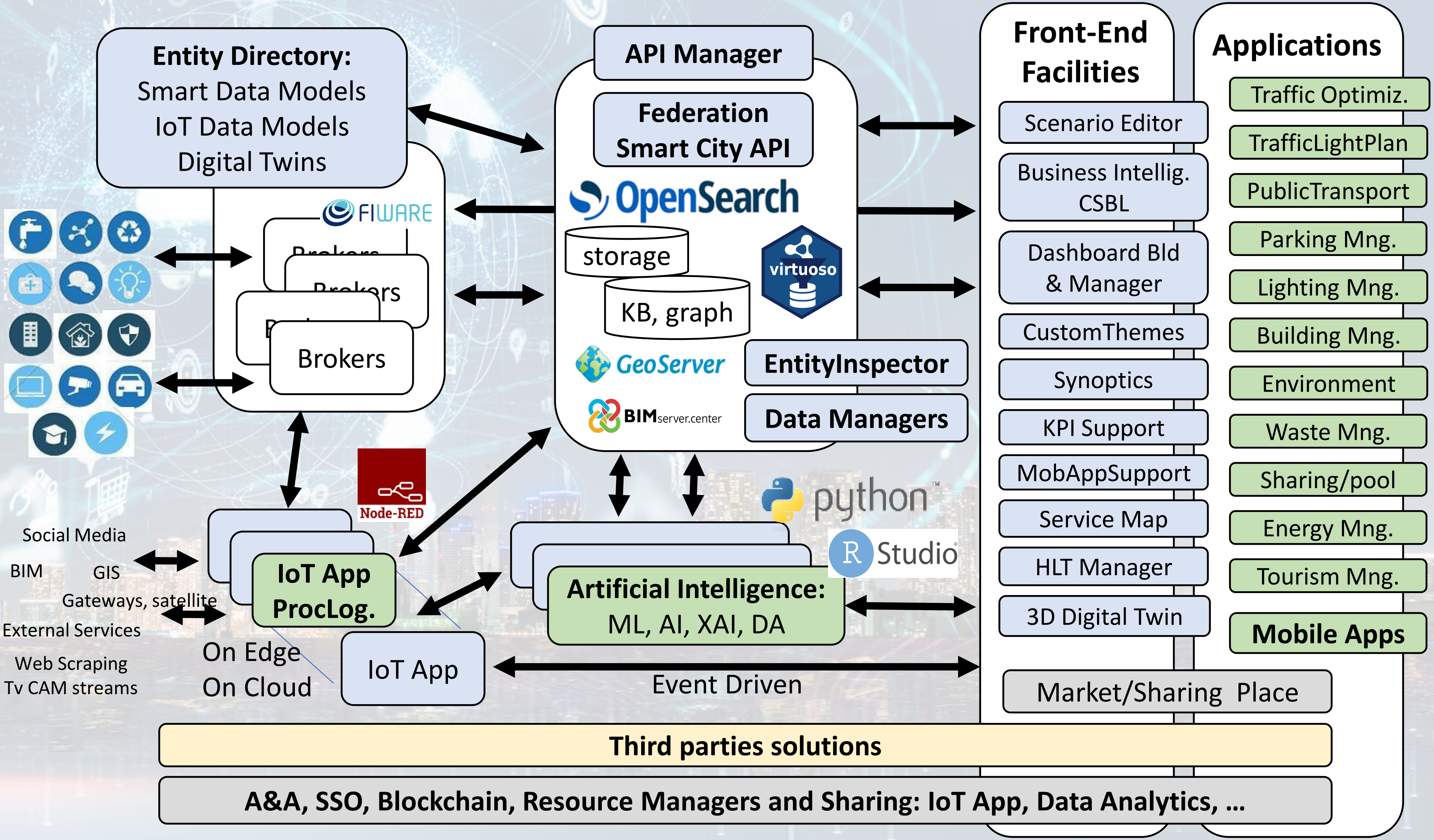
RULE OF THUMB

TOP

Recall on Snap4City Architecture


FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
FROM CITY DASHBOARD TO APPLICATIONS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
IOT/IOE DEVICES AND NETWORKS
SNAP4CITY FOR BEGINNERS
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
SNAP4CITY AND KM4CITY PROJECTS
LIVING LAB
DATA ANALYTICS, BUSINESS INTELLIGENCE, WHAT-IF AND SIMULATION
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
DECISION SUPPORT SYSTEM AND CITY RESILIENCE
THE SMARTNESS
SNAP4CITY API
SNAP4CITY THE VIEW OF THE ADMINISTRATORS
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK

Technical Architecture



Entity Directory:
Smart Data Models
IoT Data Models
Digital Twins

FIWARE

Brokers
Brokers
Brokers

API Manager

Federation
Smart City API

OpenSearch
storage
KB, graph
virtuoso
GeoServer
BIMserver.center

EntityInspector

Data Managers

Front-End Facilities
- Scenario Editor
- Business Intellig. CSBL
- Dashboard Bld & Manager
- CustomThemes
- Synoptics
- KPI Support
- MobAppSupport
- Service Map
- HLT Manager
- 3D Digital Twin

Applications
- Traffic Optimiz.
- TrafficLightPlan
- PublicTransport
- Parking Mng.
- Lighting Mng.
- Building Mng.
- Environment
- Waste Mng.
- Sharing/pool
- Energy Mng.
- Tourism Mng.
- **Mobile Apps**

Node-RED

Social Media
BIM
GIS
Gateways, satellite
External Services
Web Scraping
Tv CAM streams

IoT App ProcLog.

On Edge
On Cloud

IoT App

python
RStudio

Artificial Intelligence:
ML, AI, XAI, DA

Event Driven

Market/Sharing Place

Third parties solutions

A&A, SSO, Blockchain, Resource Managers and Sharing: IoT App, Data Analytics, …

2024/8

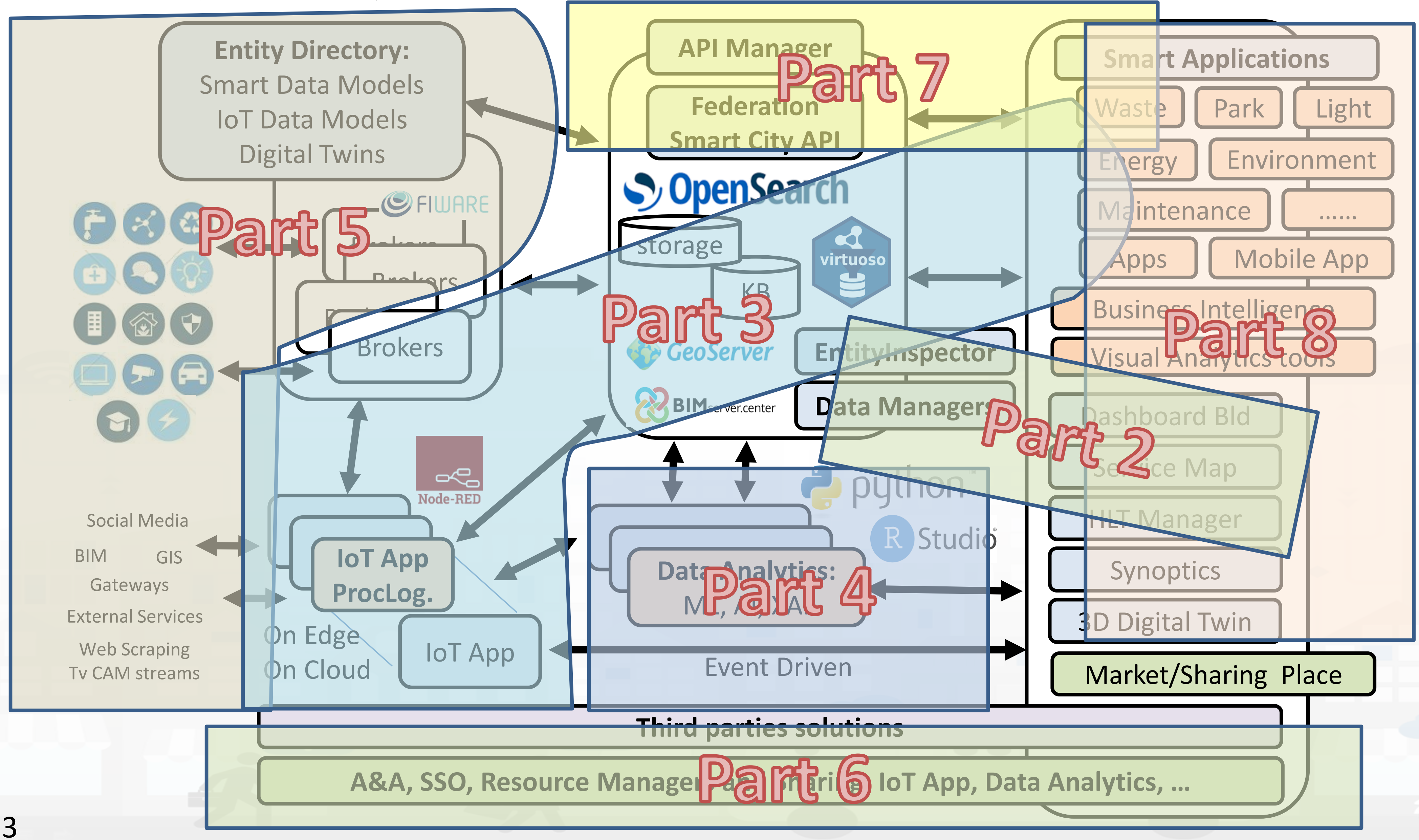
UNIVERSITÀ
DEGLI STUDI
FIRENZE

DINFO
DIPARTIMENTO DI
INGEGNERIA
DELL'INFORMAZIONE

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

Tech Arch

SNAP4CITY



Entity Directory:
Smart Data Models
IoT Data Models
Digital Twins

FIWARE
Brokers
Brokers
Brokers

Part 5

Social Media
BIM
GIS
Gateways
External Services
Web Scraping
Tv CAM streams

API Manager
Federation
Smart City API

Part 7

OpenSearch
storage
KB
virtuoso
GeoServer
BIMserver.center

Part 3

EntityInspector
Data Managers

Node-RED
IoT App
ProcLog.
On Edge
On Cloud
IoT App

python
R Studio
Data Analytics:
ML, AI, XAI

Part 4

Event Driven

Smart Applications
Waste
Park
Light
Energy
Environment
Maintenance
……
Apps
Mobile App
Business Intelligence
Visual Analytics tools

Part 8

Dashboard Bld
Service Map
HLT Manager
Synoptics
3D Digital Twin

Part 2

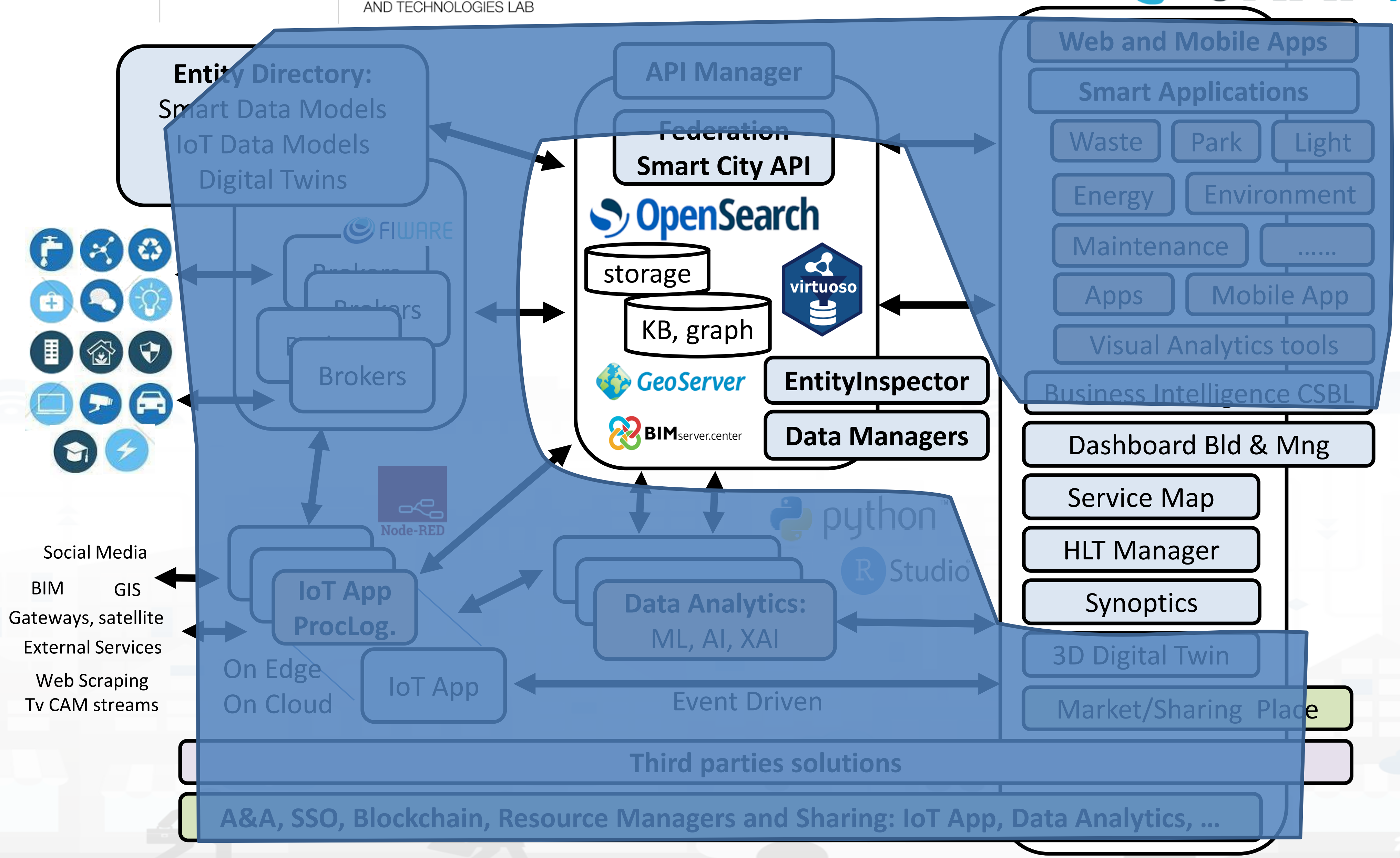
Market/Sharing Place

Third parties solutions
A&A, SSO, Resource Manager, Sharing IoT App, Data Analytics, …

Part 6

06/23

Tech Arch



Entity Directory:
Smart Data Models
IoT Data Models
Digital Twins

API Manager

Federation
Smart City API

OpenSearch
storage
KB, graph
virtuoso
GeoServer
BIMserver.center
EntityInspector
Data Managers

FIWARE
Brokers
Brokers
Brokers

Node-RED
IoT App
ProcLog.
On Edge
On Cloud
IoT App
Event Driven

Data Analytics:
ML, AI, XAI
python
RStudio

Social Media
BIM GIS
Gateways, satellite
External Services
Web Scraping
Tv CAM streams

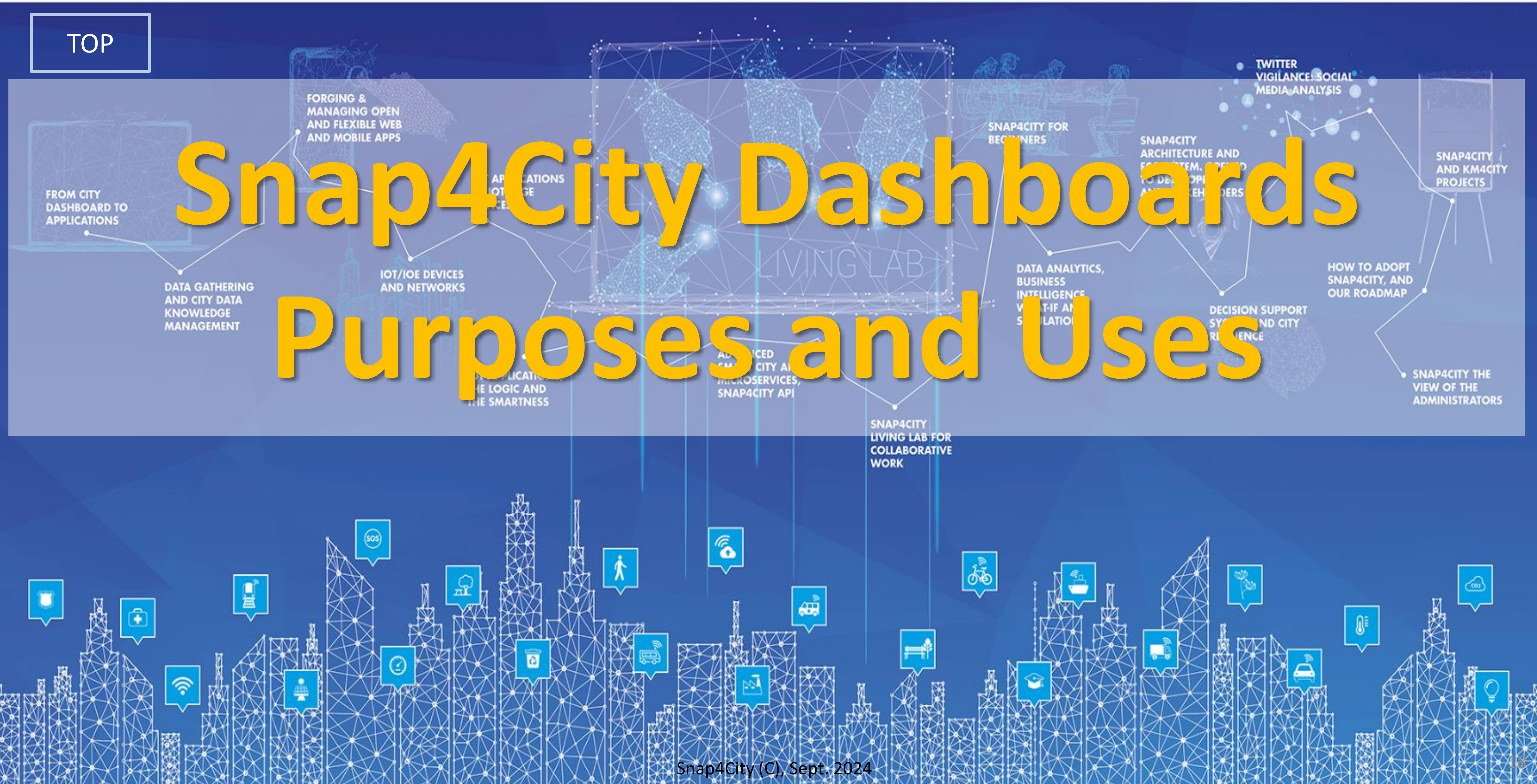
Web and Mobile Apps
Smart Applications
Waste
Park
Light
Energy
Environment
Maintenance
……
Apps
Mobile App
Visual Analytics tools
Business Intelligence CSBL
Dashboard Bld & Mng
Service Map
HLT Manager
Synoptics
3D Digital Twin
Market/Sharing Place

Third parties solutions

A&A, SSO, Blockchain, Resource Managers and Sharing: IoT App, Data Analytics, …

TOP

Snap4City Dashboards Purposes and Uses


FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
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HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY THE VIEW OF THE ADMINISTRATORS
MICROSERVICES, SNAP4CITY API
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK

TOP

Monitoring and control

FROM CITY DASHBOARD TO APPLICATIONS

DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT

FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS

IOT APPLICATIONS VS IOT EDGE DEVICES

SNAP4CITY FOR BEGINNERS

SNAP4CITY ARCHITECTURE AND ECOSYSTEM, OPEN TO DEVELOPERS AND STAKEHOLDERS

TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS

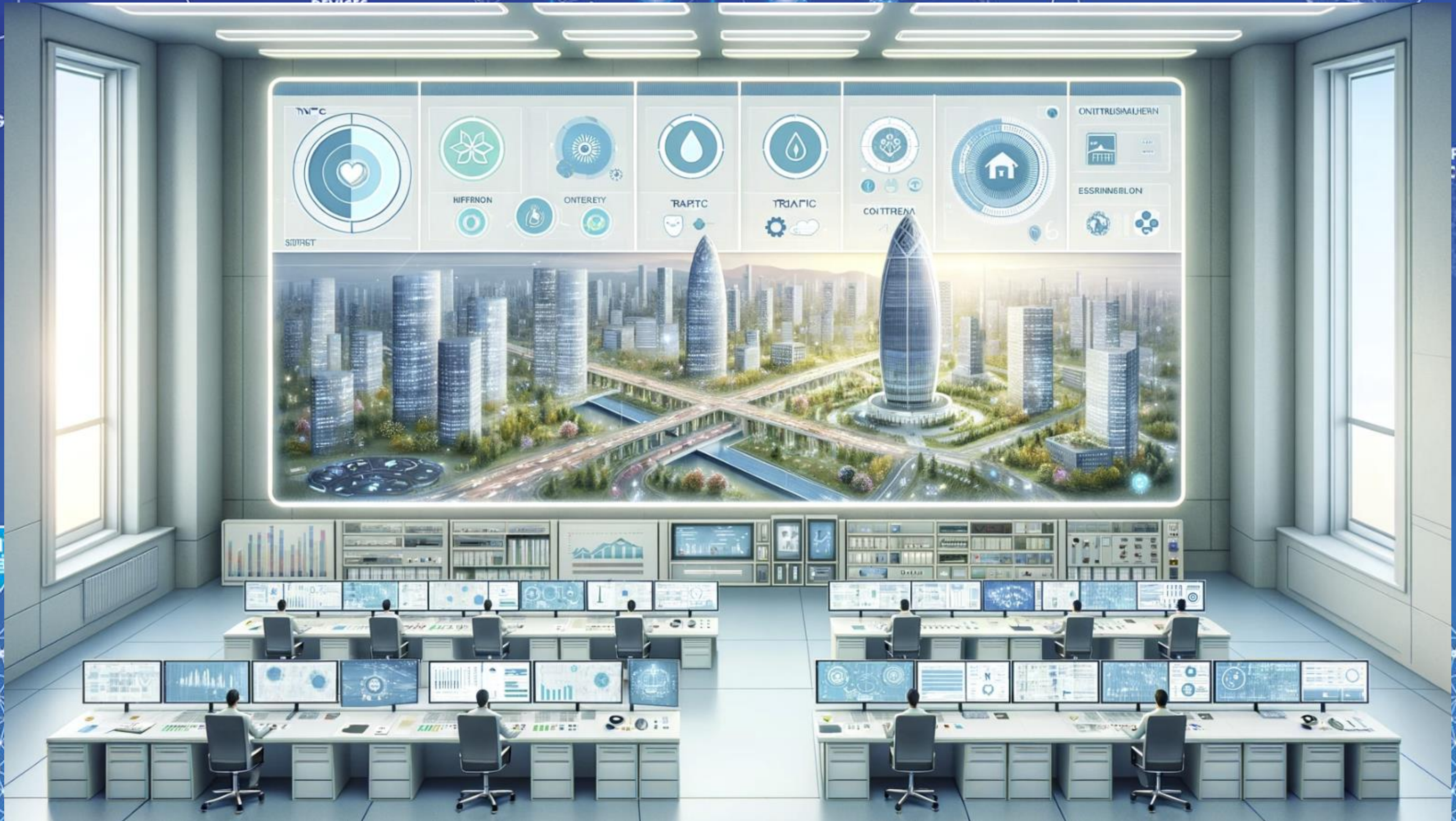
SNAP4CITY AND KM4CITY PROJECTS

HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP

SUPPORT SNAP4CITY

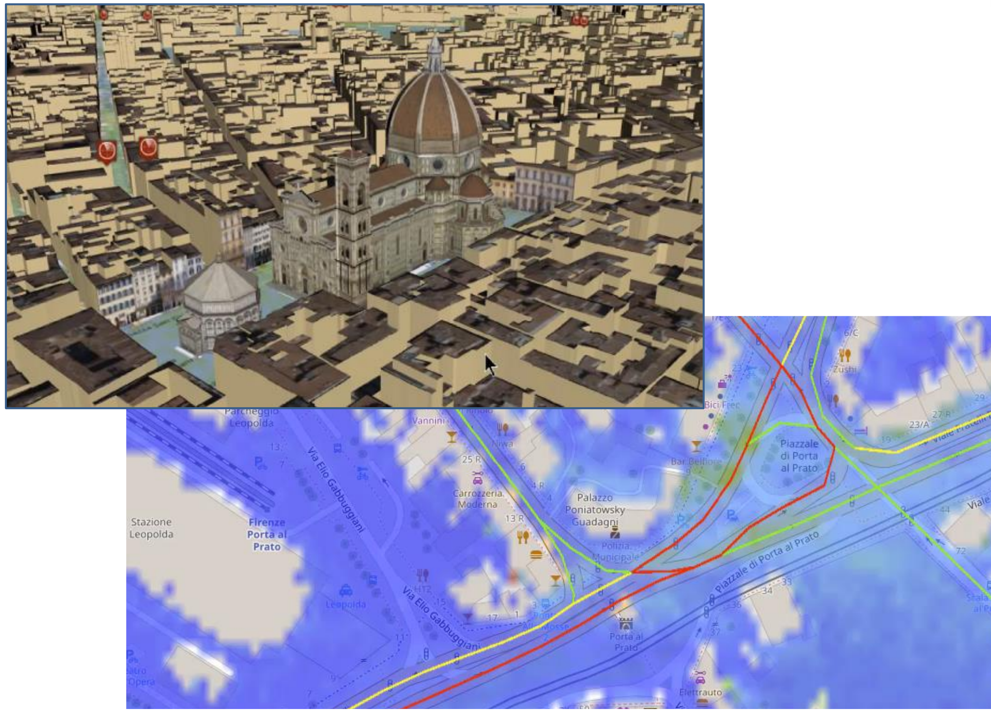
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

100% OPEN SOURCE



Monitoring

- **Controlling Status: management, and operational**
  - Monitoring via KPI
  - Computing predictions and KPI
  - Anomaly detection, Early warning
  - Control Rooms, situation rooms
- **Reacting: Computing in real time**
  - Changing semaphore maps
  - Changing Dynamic signage
  - Real time Info Mobility
  - User engagement via Mobile Apps
  - What-if analysis
  - etc.,


Stazione
Leopolda
Firenze
Porta al
Prato
Via Elio Gabbuggiani
Carrozzeria
Moderna
Palazzo
Poniatowsky
Guadagni
Piazzale
di Porta
al Prato
Viale di Porta al Prato

Aerop to Firenze
Amerigo pucci
etola

Dashboards and GUI Purposes

- **Real Time: control room, monitoring, acting**
  - H24 Video Wall representation of the status:
- **Quasi Real Time, short term monitoring and management/acting**
  - Situation Rooms: interactive data representation with visual analytics and business intelligence, What-if analysis by scenario
  - Operational management, real time What-if analysis by scenario
- **Mid and Long term, for tactic and strategic planning/restructuring**
  - Visual Analytics and in deep Business Intelligence
  - Long term What-If analysis

City Today
0 ACCIDENTS
KPI Dashboard

Mobility and Environment What-IF Analysis

Real Time: control room, monitoring

- **Video Wall:** physical and virtual:
  - – control room but also distributed control room: web and mobile views
- **Many Decision Makers** that have to
  - – Early Warning: receiving real time notifications in push, telegram, etc.
  - – share the same view monitoring a specific situation
    - may be located in multiple places
    - may be connected by using multiple kind of devices
  - – Chatting privately on the same context
  - – Receiving in real time the same changes and events

City Today
0 ACCIDENTS
KPI Dashboard

Control Room

City Today
0 ACCIDENTS
ANALYSIS
KPI Dashboard
Snap4Ispra - Main Dashboard

Snap4Ispra – KPI Dashboard
SVG Energy ISPRA HighLevel
Snap4Ispra - Main Dashboard
City Today
0 ACCIDENTS
ANALYSIS
Confirm
CLEAN

https://www.snap4city.org/621

Early Warning, Detection

Issue:

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

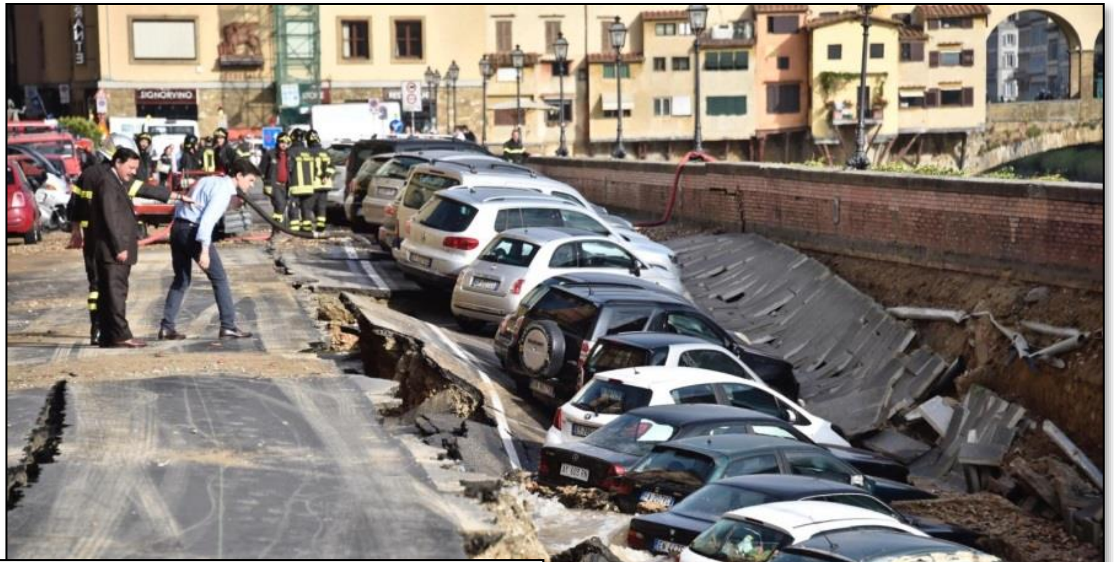
Impact:

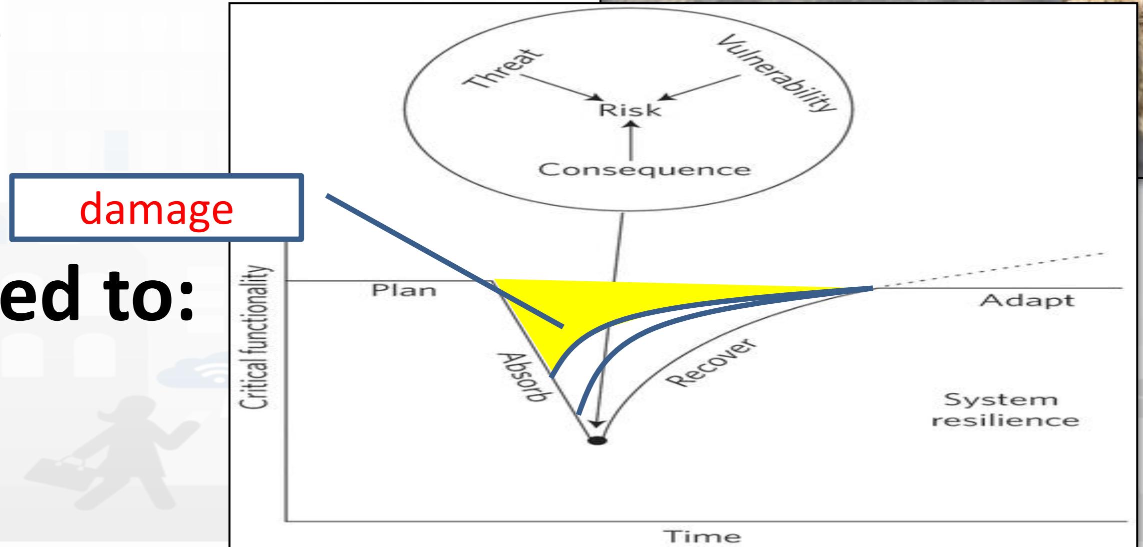
- **Early warning, faster reaction**
- **Increased resilience**

Several metrics related to:

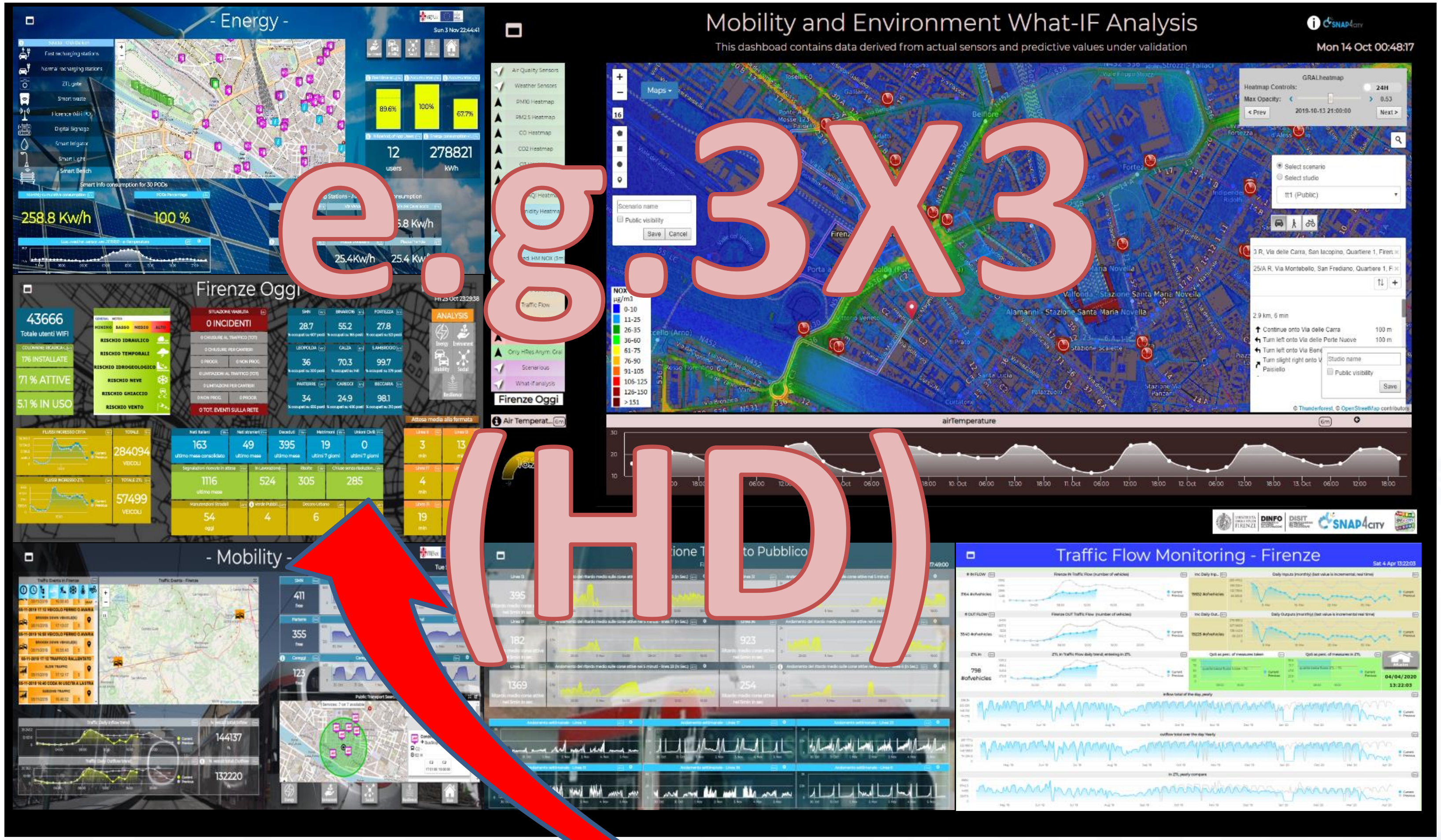
- **Volume of retweets**
- **Sentiment analysis**

*P*repare
*A*bsorb
*R*ecover
*A*dapt

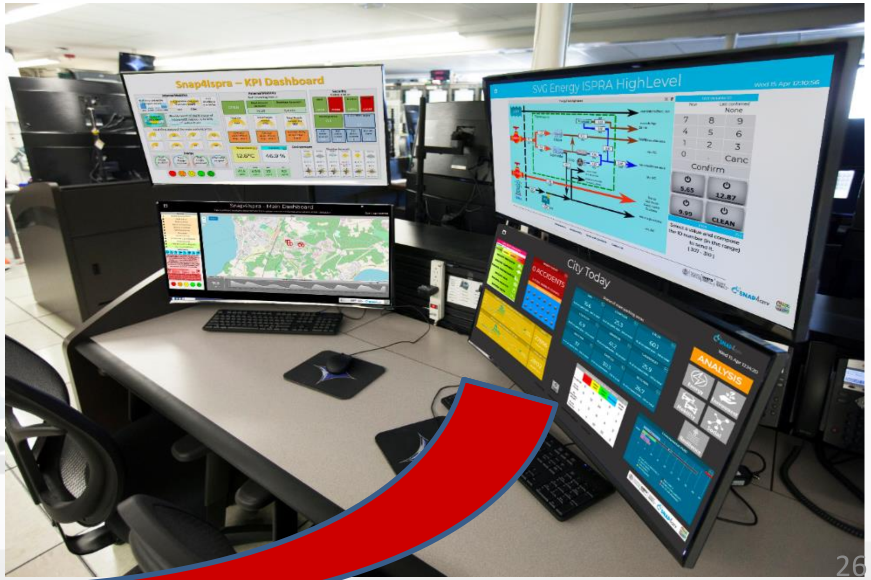



damage
Threat
Vulnerability
Risk
Consequence
Critical functionality
Plan
Absorb
Recover
Adapt
System resilience
Time

Video Wall


- Energy -
Mobility and Environment What-IF Analysis
This dashboard contains data derived from actual sensors and predictive values under validation
Mon 14 Oct 00:48:17
Firenze Oggi
- Mobility -
Traffic Flow Monitoring - Firenze

e.g.3X3 (HD)


Snap4Ispra – KPI Dashboard
SVG Energy ISPRA HighLevel
City Today

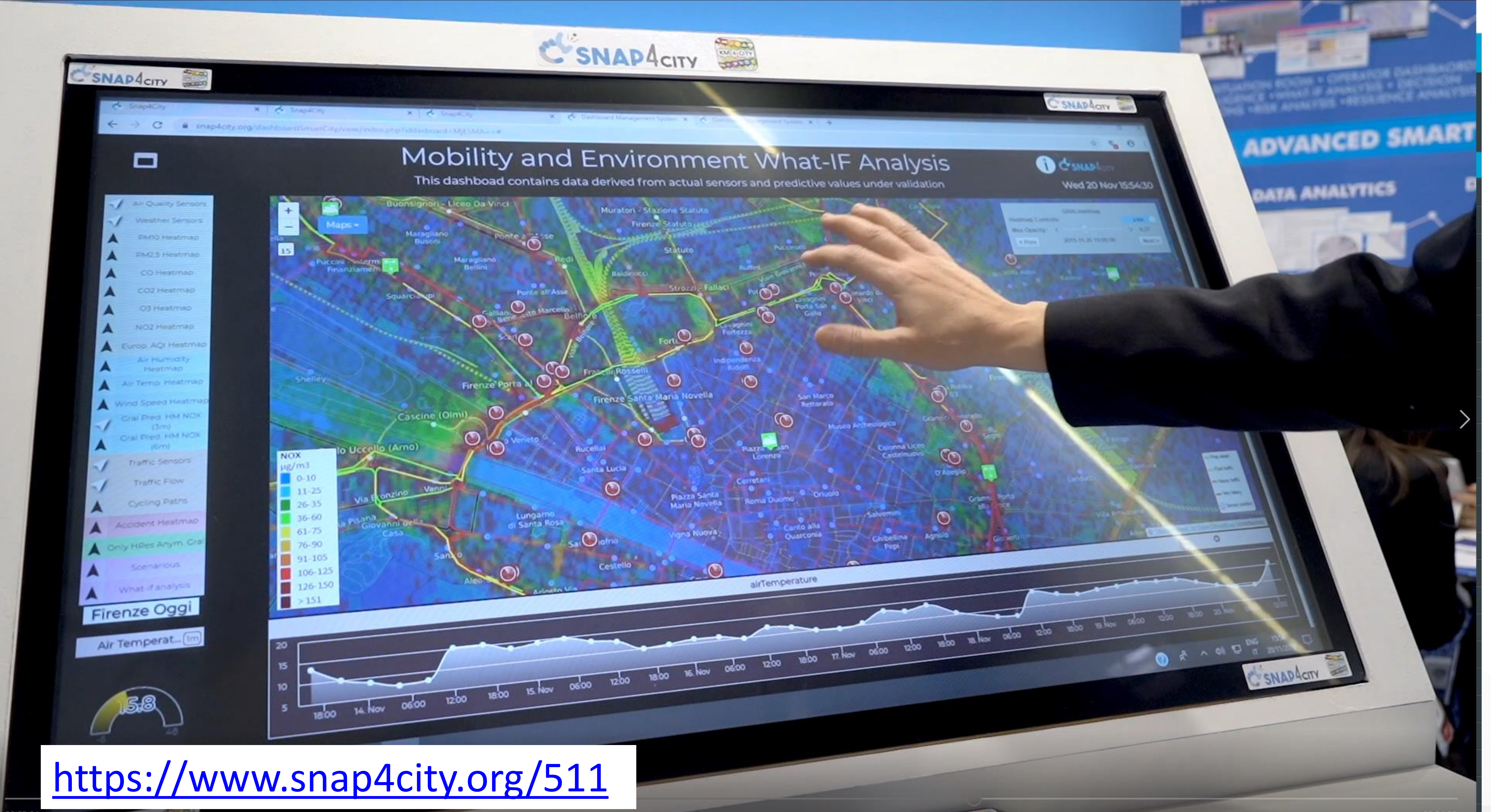
From Consolle Operator to the Video Wall

MAPPA FIRENZE
Fri 19 Oct 17:24:39
Colonnine Ricarica
Colonnine ricarica Fast
Pannelli a Messaggio Variabile
Parcheggi
Piste Ciclabili
Sensori del Traffico
Stazioni ambientali
Stazioni meteo
Traffico Real Time
Varchi ZTL
Wi-Fi
Eventi Traffico a Firenze
Concentration - 7 days
Main
DINFO
DISIT

Quasi Real Time, short term monitoring and management

- **Situation Rooms:** limited number of people in the same room on the same screen
  - possibility of modifying the data in local simulations to better assess condition and validate proposed solving scenario
  - interactive data representation with
    - visual analytics and business intelligence,
    - What-if analysis by scenario
- **Operational management**,
  - real time What-if analysis by scenario

SIGNORVINO

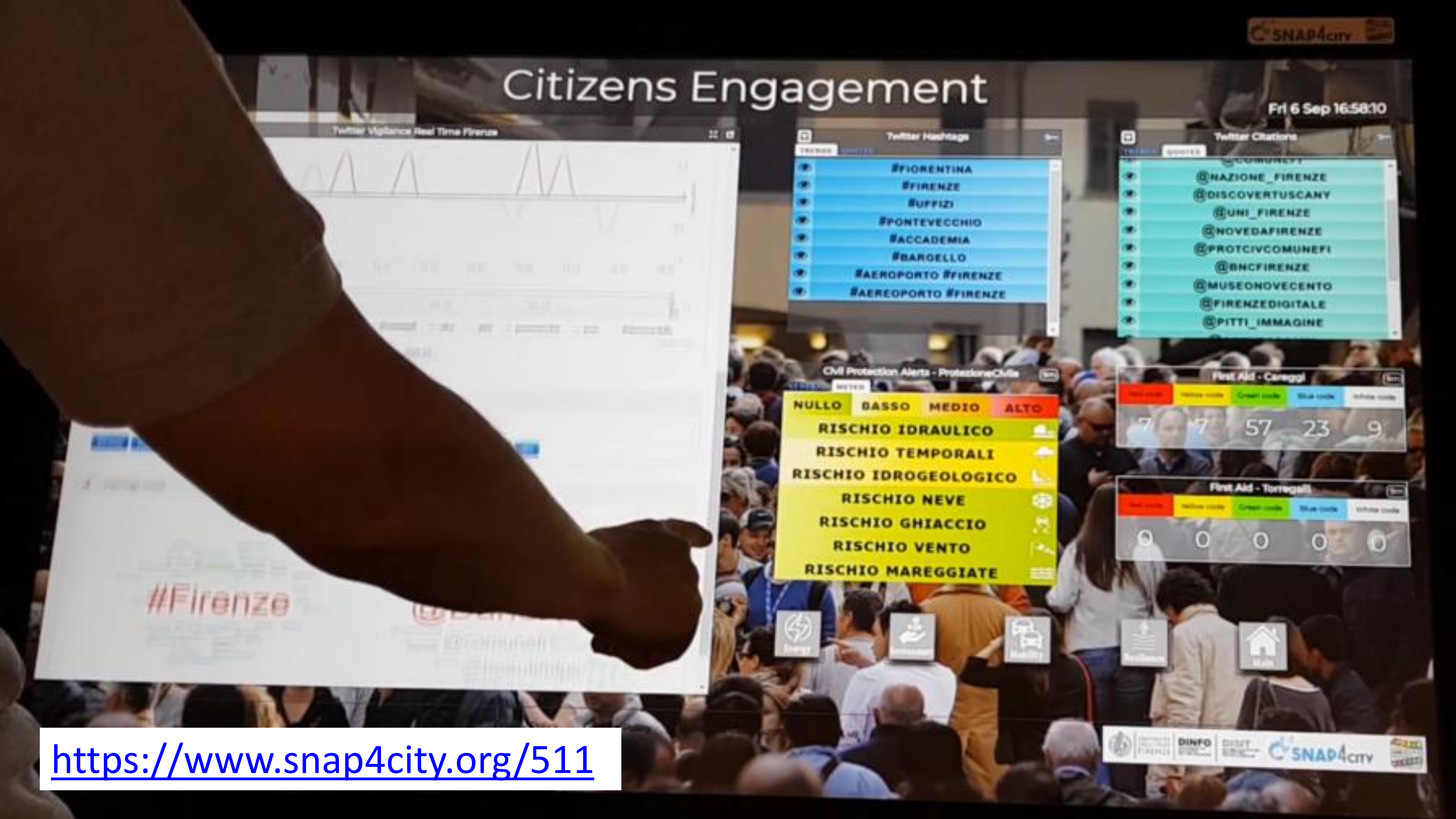


Mobility and Environment What-IF Analysis

This dashboard contains data derived from actual sensors and predictive values under validation

SNAP4CITY
Wed 20 Nov 15:54:30
Air Quality Sensors
Weather Sensors
PM10 Heatmap
PM2.5 Heatmap
CO Heatmap
CO2 Heatmap
O3 Heatmap
NO2 Heatmap
Europ. AQI Heatmap
Air Humidity Heatmap
Air Temp. Heatmap
Wind Speed Heatmap
Gral Pred. HM NOX (3m)
Gral Pred. HM NOX (6m)
Traffic Sensors
Traffic Flow
Cycling Paths
Accident Heatmap
Only HRes Anym. Gral
Scenarious
What-if analysis
Firenze Oggi
Air Temperat...
15.8
Maps
NOX
µg/m3
0-10
11-25
26-35
36-60
61-75
76-90
91-105
106-125
126-150
> 151
airTemperature
00:03:04
00:01:32

https://www.snap4city.org/511

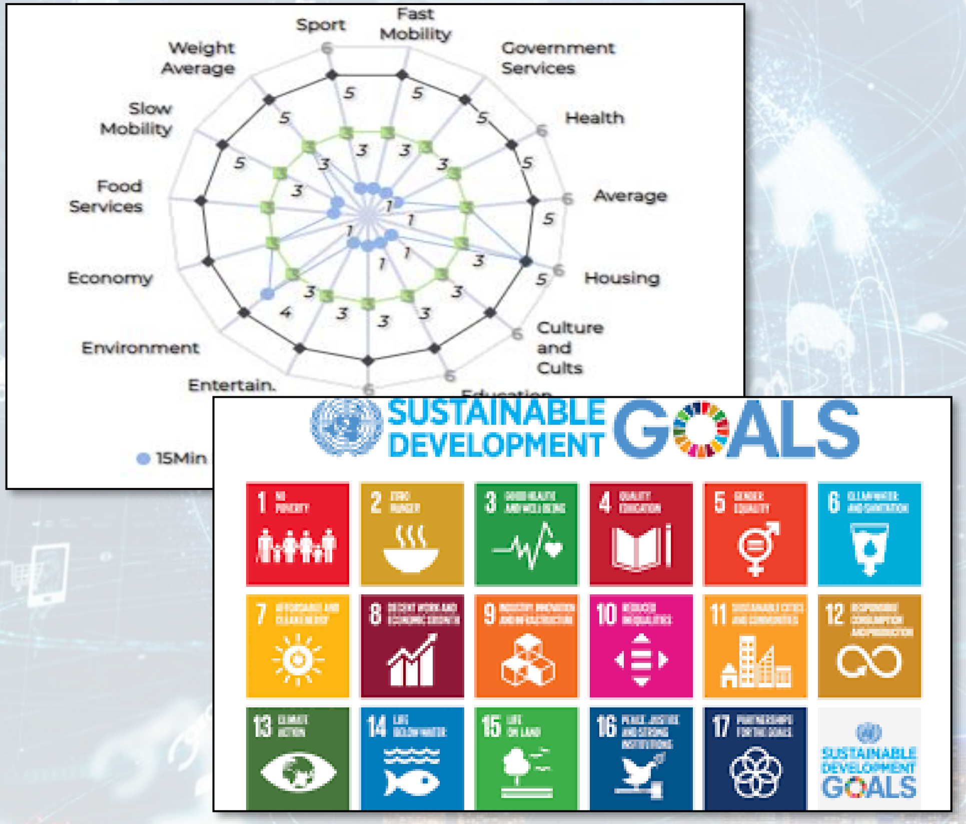

SNAP4CITY
Citizens Engagement
Fri 6 Sep 16:58:10
Twitter Vigilance Real Time Firenze
Twitter Hashtags
TRENDS
#FIORENTINA
#FIRENZE
#UFFIZI
#PONTEVECCHIO
#ACCADEMIA
#BARGELLO
#AEROPORTO #FIRENZE
#AEREOPORTO #FIRENZE
Twitter Citations
TRENDS
QUOTED
@NAZIONE_FIRENZE
@DISCOVERTUSCANY
@UNI_FIRENZE
@NOVEDAFIRENZE
@PROTCIVCOMUNEFI
@BNCFIRENZE
@MUSEONOVECENTO
@FIRENZEDIGITALE
@PITTI_IMMAGINE
Civil Protection Alerts - ProtezioneCivile
METEO
NULLO
BASSO
MEDIO
ALTO
RISCHIO IDRAULICO
RISCHIO TEMPORALI
RISCHIO IDROGEOLOGICO
RISCHIO NEVE
RISCHIO GHIACCIO
RISCHIO VENTO
RISCHIO MAREGGIATE
First Aid - Careggi
Red code
Yellow code
Green code
Blue code
White code
7
7
57
23
9
First Aid - Torregalli
Red code
Yellow code
Green code
Blue code
White code
0
0
0
0
0
#Firenze
Energy
Mobility
Resilience
DINFO
DISIT
SNAP4CITY

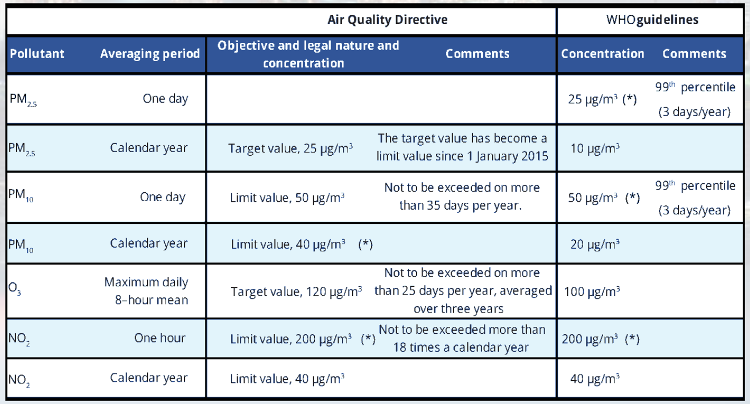
https://www.snap4city.org/511

Mid and Long term, for tactic and strategic planning/restructuring

- **Defining Scenarious**: changes in the city, rules, structure, flows, roads, etc.
  - Targeting indicators, KPI, etc.
  - Simulating decisions: visual acting on defined/supposed changes
- **Visual Analytics** in deep Business Intelligence
  - Assessing results, drill down/up on space-time-relations to see the effects of the supposed decisions
- **Long term What-If analysis**
  - Computation of long terms predictions on never seen conditions
  - Simulations of the effects

Key Performance Indicators, KPI





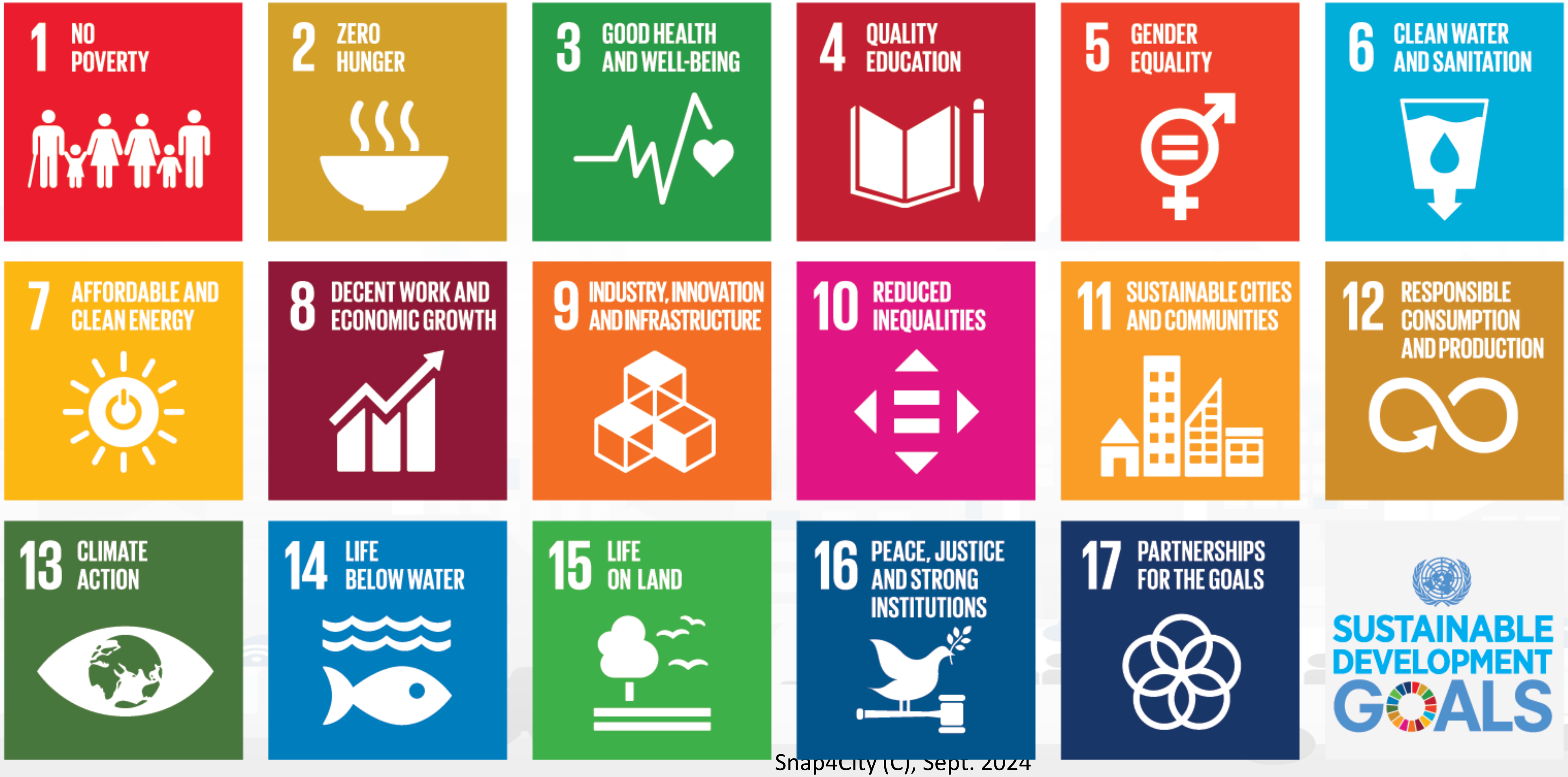
Air Quality Directive				WHOguidelines	
Pollutant	**Averaging period**	**Objective and legal nature and concentration**	**Comments**	**Concentration**	**Comments**
$PM_{2.5}$	One day			25 µg/m³ (*)	99th percentile (3 days/year)
$PM_{2.5}$	Calendar year	Target value, 25 µg/m³	The target value has become a limit value since 1 January 2015	10 µg/m³	
PM_{10}	One day	Limit value, 50 µg/m³	Not to be exceeded on more than 35 days per year.	50 µg/m³ (*)	99th percentile (3 days/year)
PM_{10}	Calendar year	Limit value, 40 µg/m³ (*)		20 µg/m³	
O_3	Maximum daily 8-hour mean	Target value, 120 µg/m³	Not to be exceeded on more than 25 days per year, averaged over three years	100 µg/m³	
NO_2	One hour	Limit value, 200 µg/m³ (*)	Not to be exceeded more than 18 times a calendar year	200 µg/m³ (*)	
NO_2	Calendar year	Limit value, 40 µg/m³		40 µg/m³	

- **United Nations Sustainable Development Goals, SDGs** (for which cities can do more to achieve some of the 17 SDGs, https://sdgs.un.org/goals);
- **15 minutes cities** (where primary services must be accessible within 15 minutes on foot);
- **objectives of the European Commission** in terms of pollutant emissions for: NO2, PM10, PM2.5 (https://environment.ec.europa.eu/topics/air_en);
- **SUMI: mobility and transport vs env**
  - https://www.snap4city.org/951
- **PUMS: mobility and transport vs env**
- **ISO indicators:** city smartness, digitization, tech level.
- **Low Level/Real Time:** global traffic, quality of service, betweenness, centrality, queue, time to travel, etc.

Global
&
Local

Periodic
&
Realtime

SUSTAINABLE DEVELOPMENT GOALS


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

10/22

1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION

- ***15 Minute City Index:***
  - 13 subindexes: energy, slow mobility, fast mobility, housing, economy education, culture and cults, health, entertainment, gov, food, security…

7 AFFORDABLE AND CLEAN ENERGY

- Monitoring and Prediction of energy consumption
- Stimulating: Bike sharing, e-bikes, car charge, etc.
- Community of Energy, planning energy plant

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

- Industry 4.0 integrated solutions
- Decisions Support Systems
- Process optimization, control
- Predictive maintenance

11 SUSTAINABLE CITIES AND COMMUNITIES

- Smart City infrastructure: monitoring and resilience, long terms predictions
- Effective and Low cost smart solutions
- What-if analysis, Simulations
- Origin Destination matrices computation

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

- business intelligence tools for decision makers
- Reduction production costs
- Monitoring resource consumption
- Optimization of Waste Collection

13 CLIMATE ACTION
15 LIFE ON LAND

- Monitoring and Predicting: NO2, NOX, CO2, Traffic flow, pollutant, landslide, waste, etc.
- Traffic flow reconstruction
- Demand vs Offer of Mobility analysis

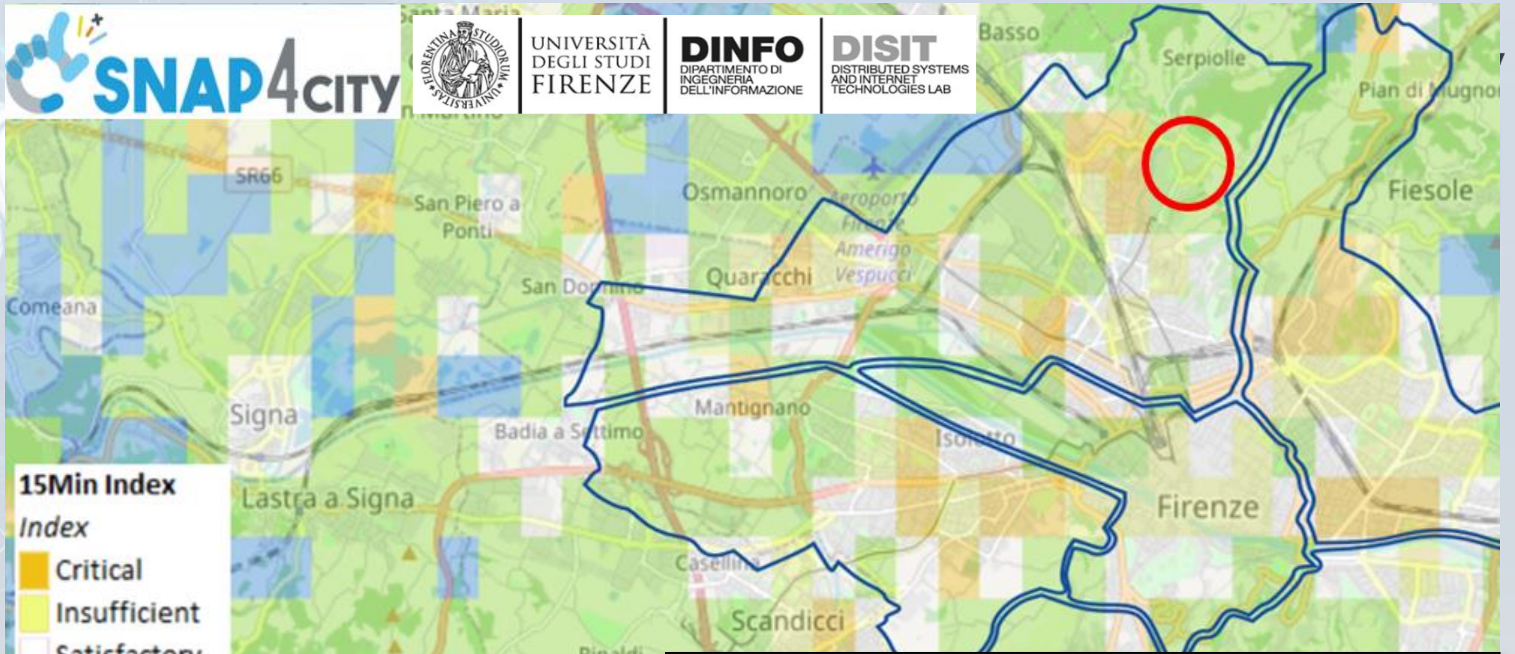
16 PEACE, JUSTICE AND STRONG INSTITUTIONS

- Shortening justice time
- Anonymization and indexing legal docs.
- Prediction of mediation proneness
- Ethical Explainable Artificial Intelligence

15MinCityIndex

What would support my neighborhood to become a 15-Minute City?

Using the Open Data:
We developed a data analytic tool based on municipal and national open data to assess services adequacy for people living in each 15 minutes areas of the city.

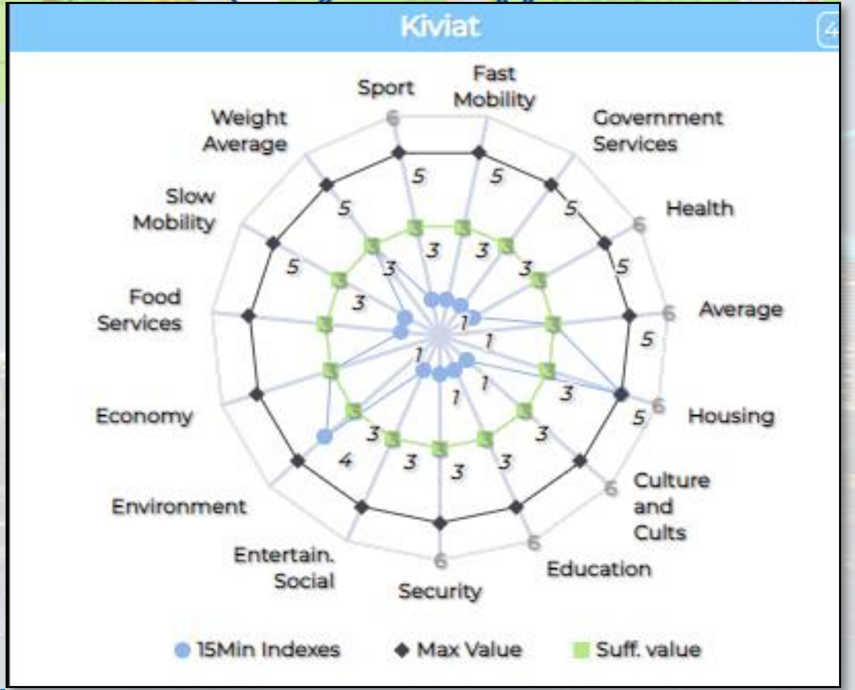


SNAP4CITY
UNIVERSITÀ DEGLI STUDI FIRENZE
DINFO DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE
DISIT DISTRIBUTED SYSTEMS AND INTERNET TECHNOLOGIES LAB
Basso
Serpiolle
Pian di Mugnone
Fiesole
SR66
San Piero a Ponti
Osmannoro
Aeroporto Firenze Amerigo Vespucci
San Donnino
Quaracchi
Comeana
Signa
Badia a Settimo
Mantignano
Isolotto
Lastra a Signa
Firenze
Casellina
Scandicci
Rinaldi

15Min Index
Index
🟧 Critical
🟨 Insufficient
⬜ Satisfactory
🟩 Fairly good
🟦 Good

Good public transport services: bus, new tram line, train stations, cycle paths.

The tool supports the becoming of a 15-Minute city evaluating the service level in various domains.



Careggi/Rifredi is a relevant district in Florence because of hosting the main Florence/Tuscany hospitals Careggi and Meyer, but also university headquarters and many other workplaces.

Viale G. B. Morgagni

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjkzOA==

UNIVERSITÀ DEGLI STUDI FIRENZE

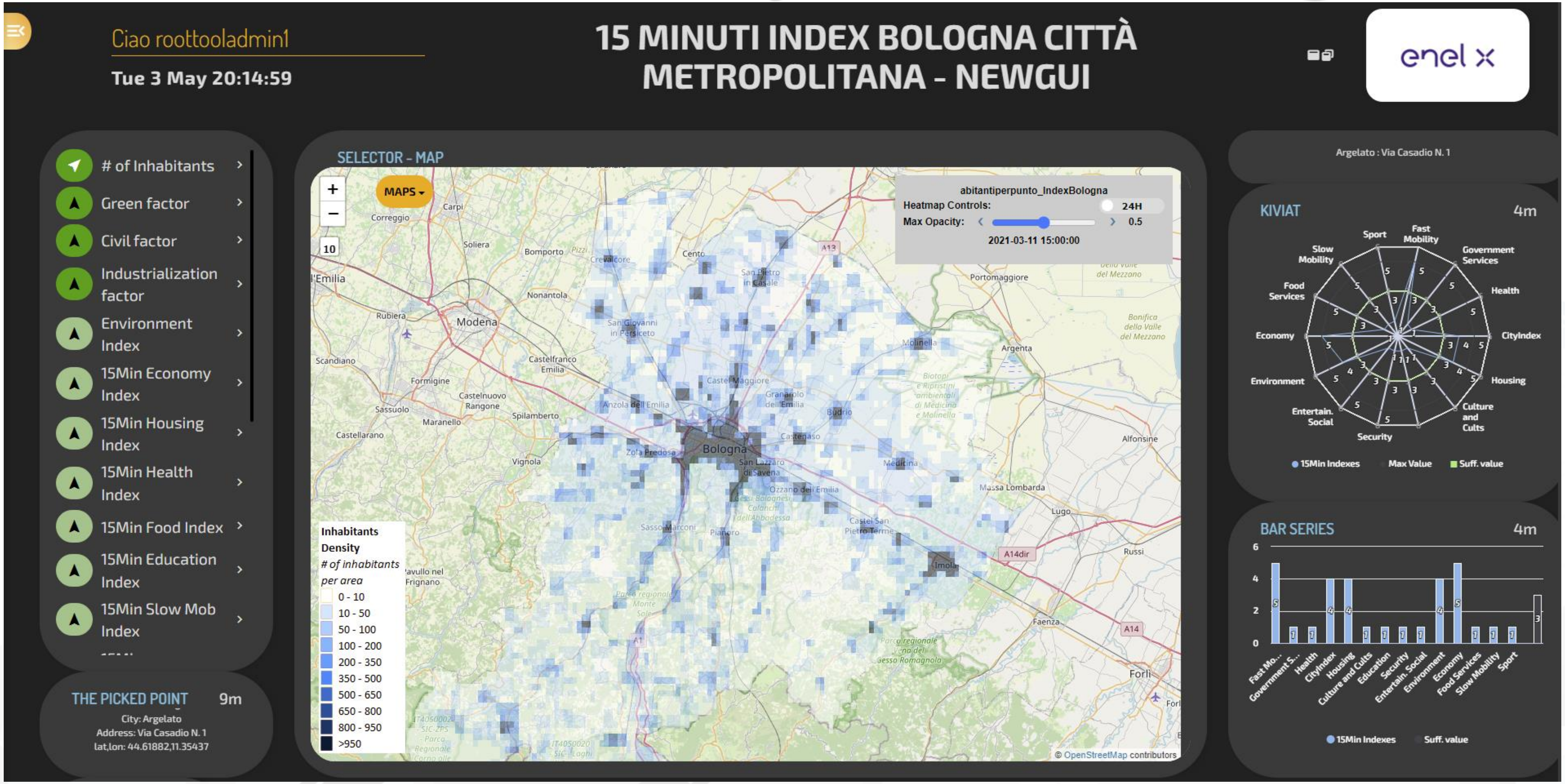
DINFO DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE

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

enel x

SNAP4CITY

15MinCityIndex on Bologna


Ciao roottooladmin1
Tue 3 May 20:14:59
15 MINUTI INDEX BOLOGNA CITTÀ METROPOLITANA - NEWGUI
enel x
# of Inhabitants
Green factor
Civil factor
Industrialization factor
Environment Index
15Min Economy Index
15Min Housing Index
15Min Health Index
15Min Food Index
15Min Education Index
15Min Slow Mob Index
SELECTOR - MAP
MAPS
Bologna
Modena
Imola
Argelato : Via Casadio N. 1
KIVIAT
4m
Sport
Fast Mobility
Government Services
Health
CityIndex
Housing
Culture and Cults
Security
Entertain. Social
Environment
Economy
Food Services
Slow Mobility
15Min Indexes
Max Value
Suff. value
BAR SERIES
4m
15Min Indexes
Suff. value

abitantiperpunto_IndexBologna

Heatmap Controls: 24H

Max Opacity: 0.5

2021-03-11 15:00:00

Inhabitants Density
# of inhabitants per area
- 0 - 10
- 10 - 50
- 50 - 100
- 100 - 200
- 200 - 350
- 350 - 500
- 500 - 650
- 650 - 800
- 800 - 950
- >950

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THE PICKED POINT 9m

City: Argelato
Address: Via Casadio N. 1
lat,lon: 44.61882,11.35437

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

7 AFFORDABLE AND CLEAN ENERGY

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

15 LIFE ON LAND

https://www.snap4city.org/dashboardSmartCity/view/Baloon-Dark.php?iddasboard=MzQxMg==

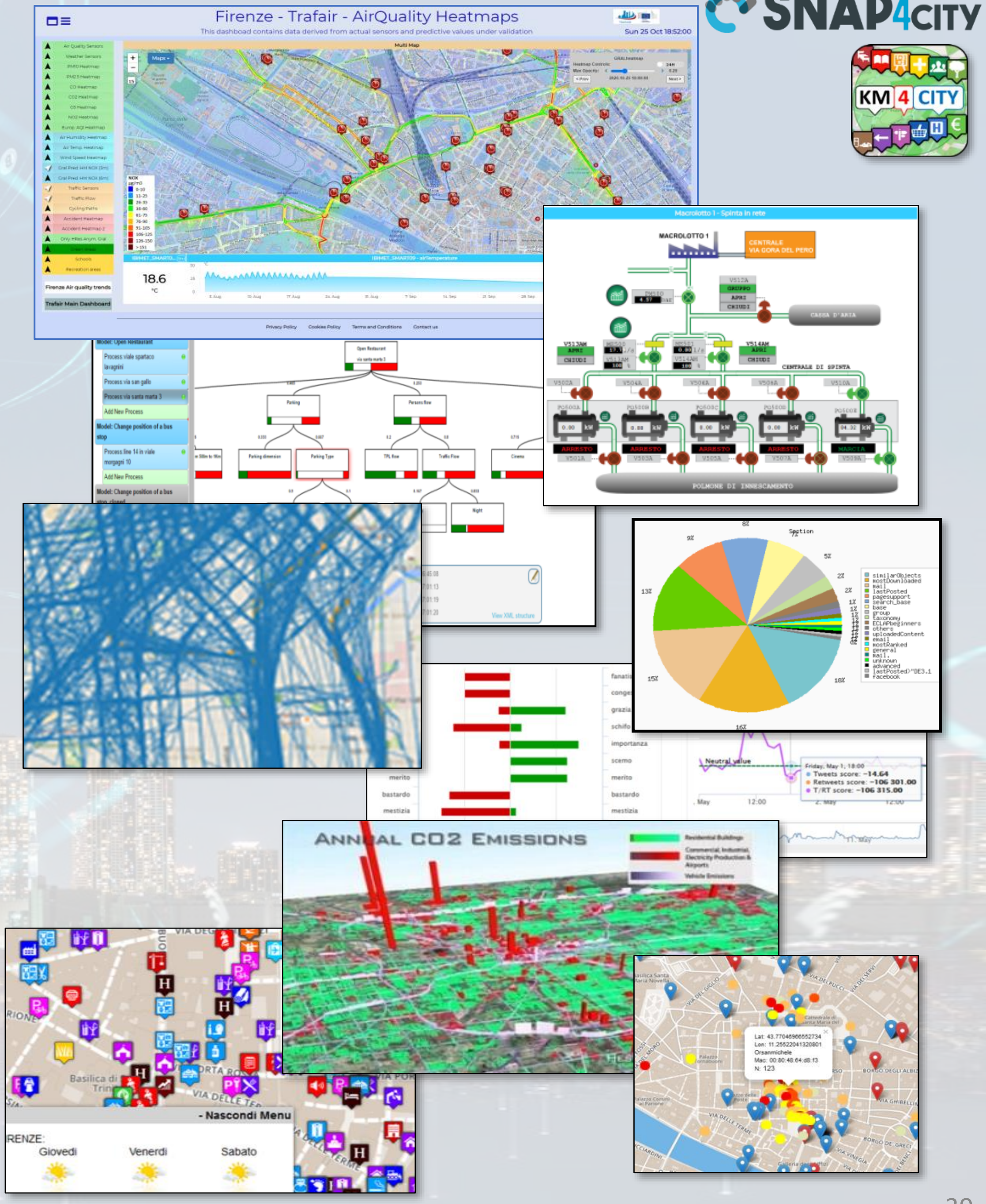
Decision Support System: Immediate response and Tactic and Strategic Plans, via What-if Analysis

TOP

Immedant Response
Immediant Response and Tactical & S Strategiv Planning

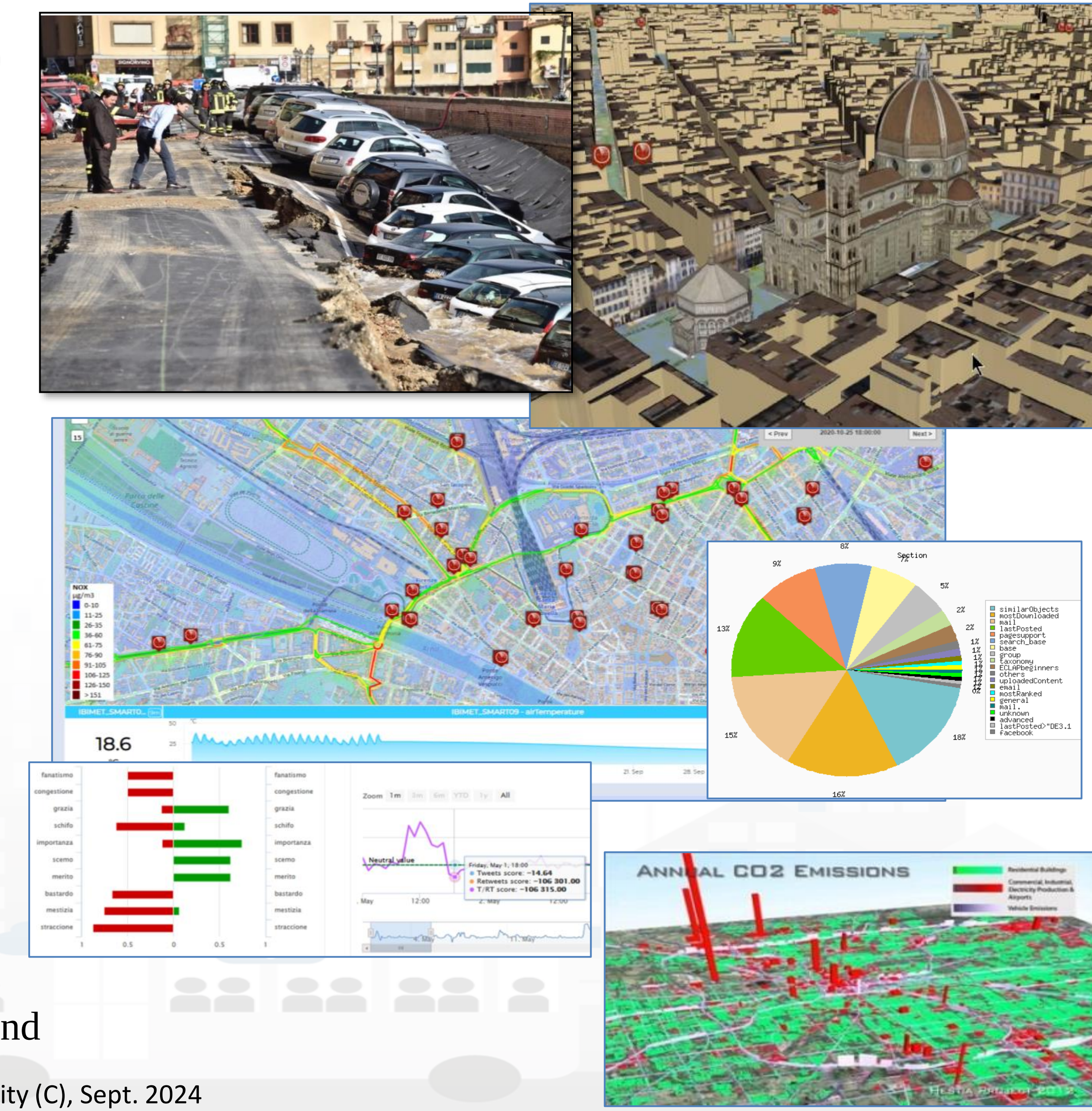
Data Driven Decision Support

- Decision Support system
- Assessment / Strategies
- Data Rendering, visual analytics
- Data Processing
- Data aggregation, Storage, indexing
- Data Ingestion


Firenze - Trafair - AirQuality Heatmaps
This dashboard contains data derived from actual sensors and predictive values under validation
Macrolotto 1 - Spinta in rete
Annual CO2 Emissions
- Nascondi Menu
Giovedì
Venerdì
Sabato

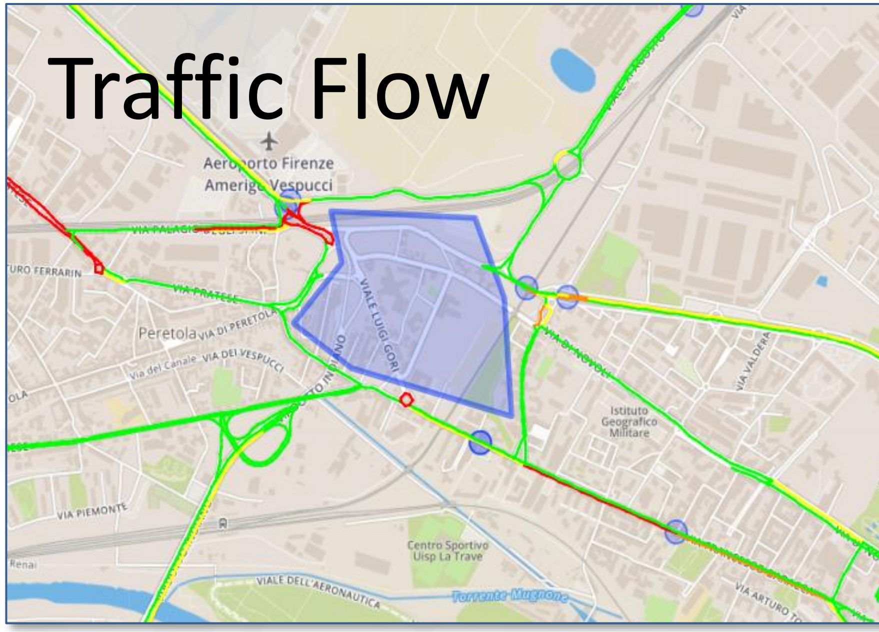
Challenges vs Technologies

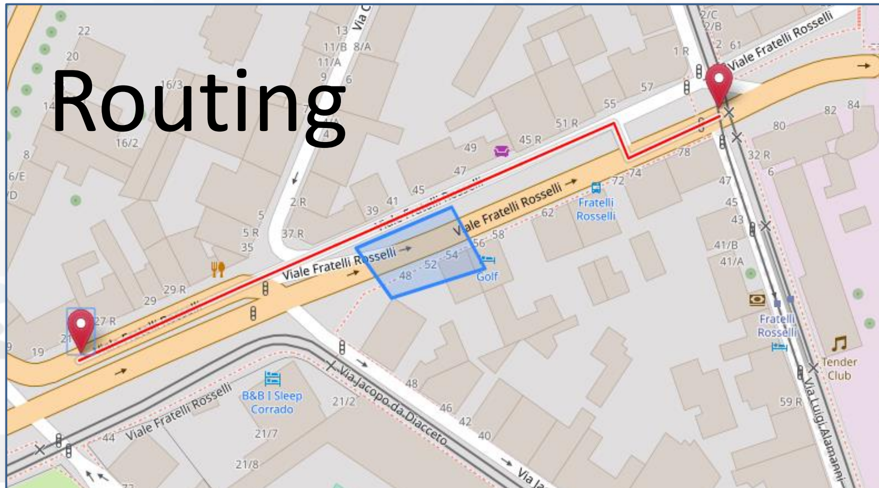
- **DSS, Decision Support Systems**, with multiple objectives:
  - **Quality of life** for citizens, improvements of services, cost reduction, innovation, attractiveness for tourists and/or industries and/or commercial activities, etc.
- **provide the decision-making process with simulation tools integrated with short-, long- and very long-term prediction algorithms**
  → ***what-if analysis***
  - Analyse *incipient events* to cope with events;
  - Analyse future situations for structural planning: tactics/strategic.
- **Opportunities and needs**
  - **heterogeneous data (Big Data)**
  - **flexible, dynamic and interoperable models and analysis tools;**
  - **accessible for:**
    - Operators, decision-makers, stakeholders;
    - citizens: illustrating and discussing possible solutions and development plans with them: cowork



Decision Support Systems, What-if

- **Event planning, via what-if analysis**
  - Change in the graph structure of the city
  - Impact on the flow of people and vehicles
  - Adaptation: public transport, traffic, pedestrian management, etc.
- **Immediate reaction to natural events or not**
  - Everything is ready and updated in real time
  - Each view is contextualized in terms of data: descriptive and prescriptive
- **Digital Twin**
  - More detail in the context integrated data
  - Greater realism in deductions and representations
  - Less fragmentation and non-uniformity in the views to support decisions


Traffic Flow
Aeroporto Firenze Amerigo Vespucci
Peretola
VIA PIEMONTE
Centro Sportivo Uisp La Trave
Istituto Geografico Militare
VIALE DELL'AERONAUTICA
Torrente Mugnone

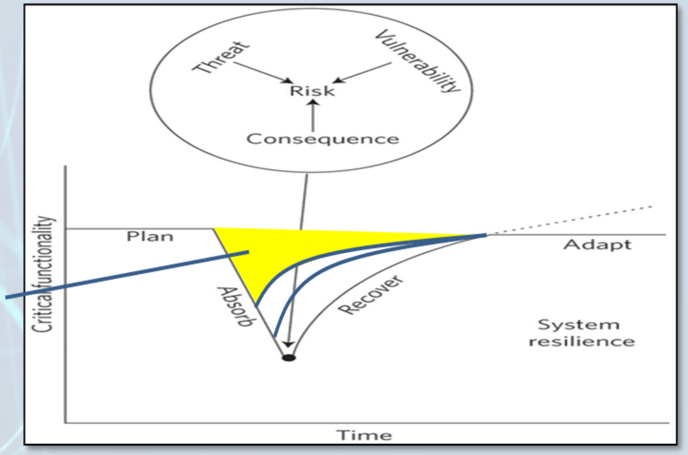

Routing
Viale Fratelli Rosselli
Fratelli Rosselli
B&B I Sleep Corrado
Via Jacopo da Diacceto
Tender Club

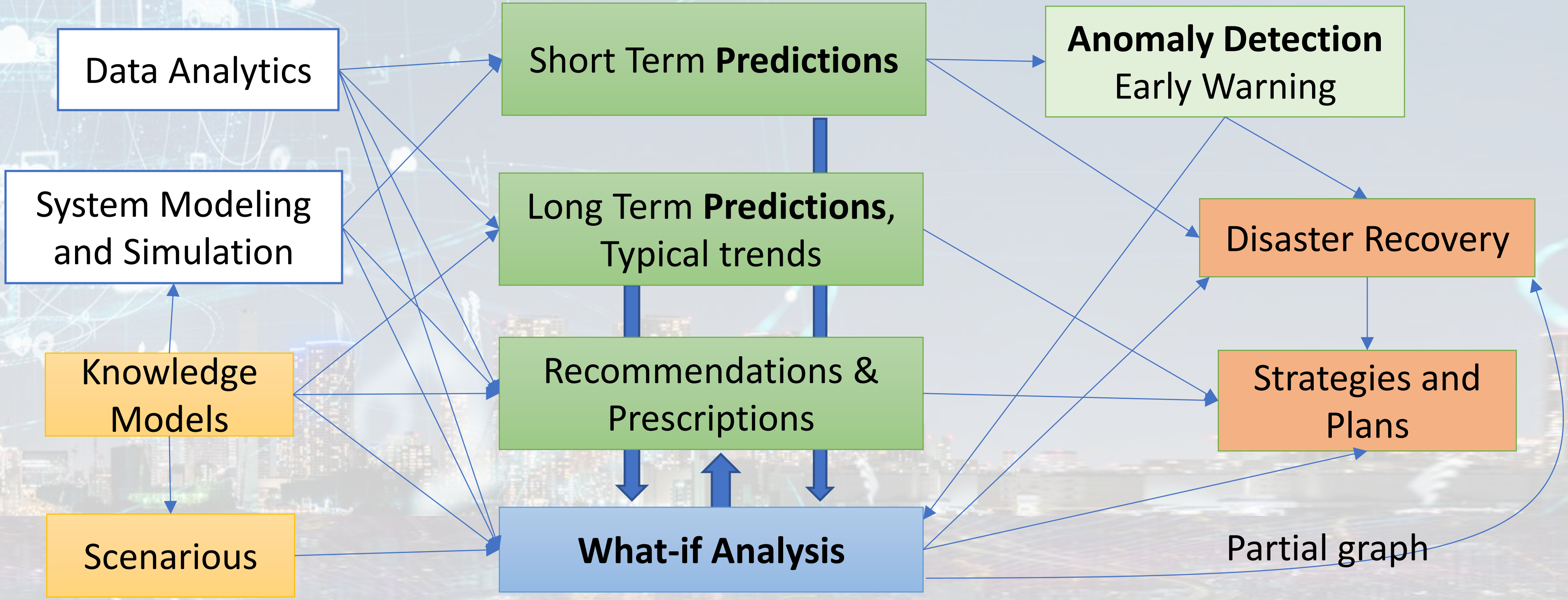
Snap4City What-If

- Decision support systems
- Improvement of life quality
- Sustainable Solutions
- Reduction of costs
- Risk Assessment
- Resilience

Prepare
Absorb
Recover
Adapt

damage





Data Analytics

System Modeling and Simulation

Knowledge Models

Scenarious

Short Term **Predictions**

Long Term **Predictions**, Typical trends

Recommendations & Prescriptions

What-if Analysis

Anomaly Detection
Early Warning

Disaster Recovery

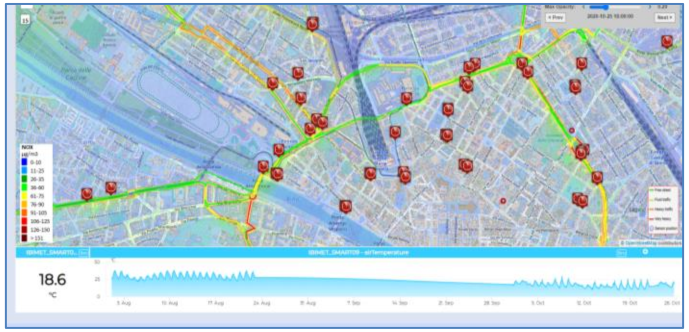
Strategies and Plans

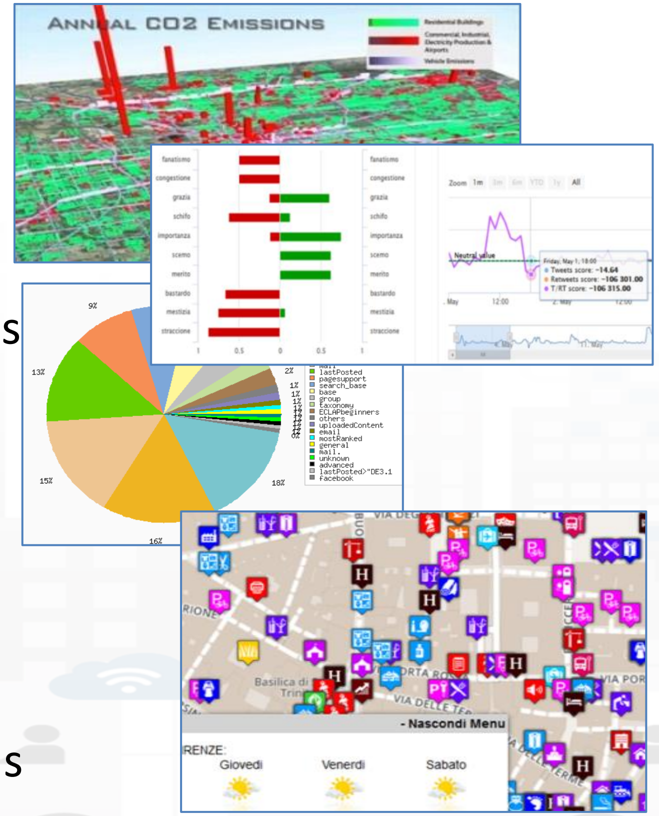
Partial graph

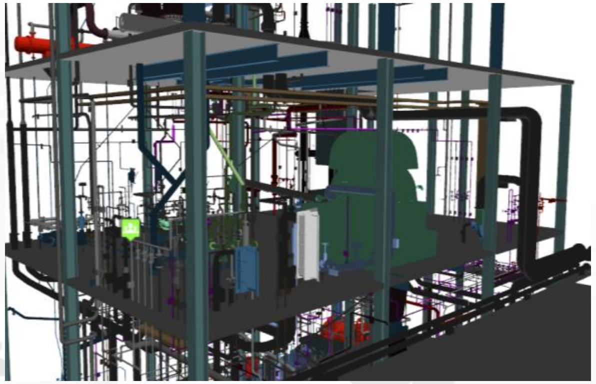
Decision Support System: neuro-symbolic reasoning
targeting Indicators: Quality of Life, PUMS, SUMI, KPI, SDG, 15MinIndex,…

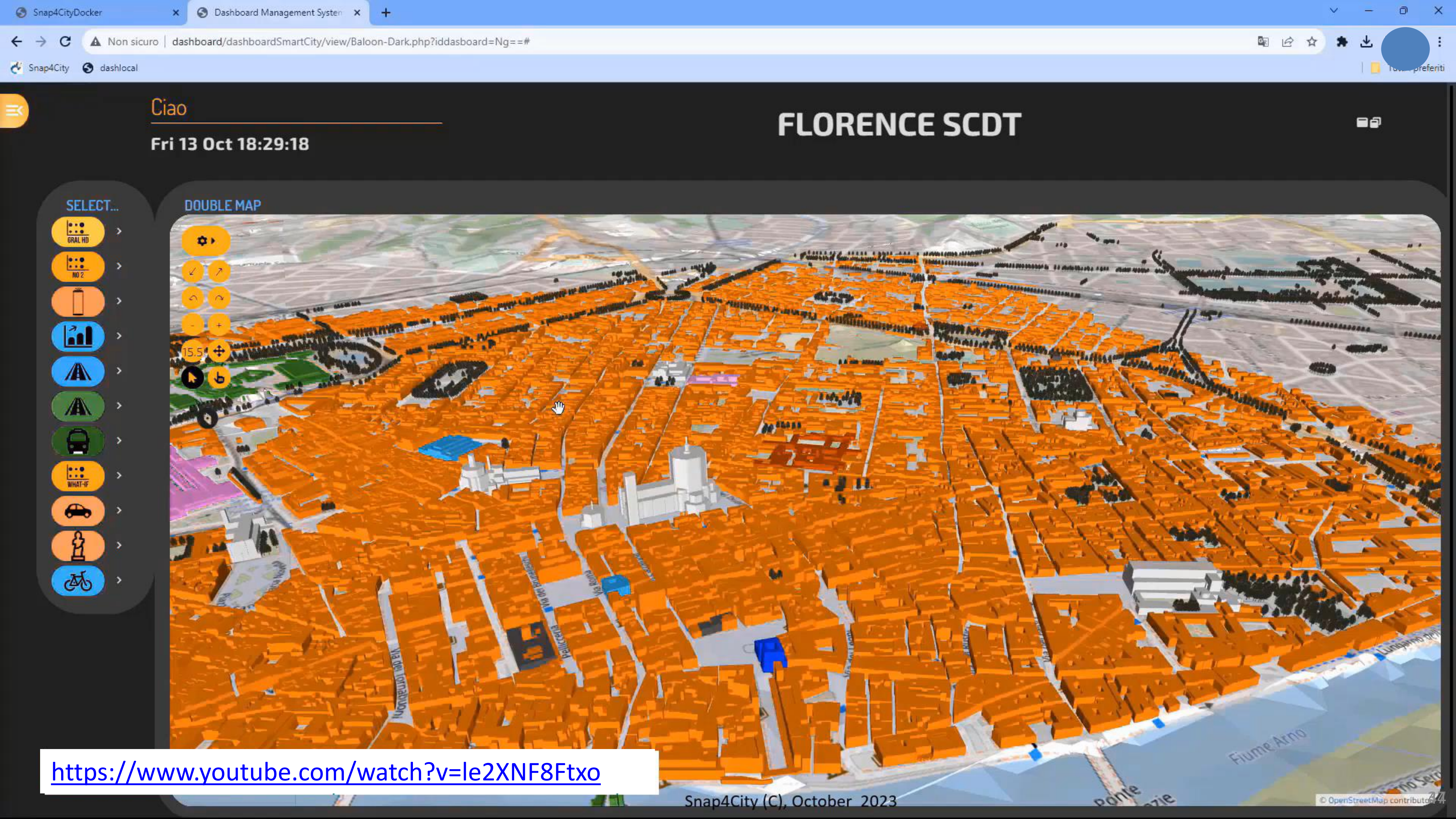
Digital Twin

- **Digital Twin**
  - **Connected** with real systems
  - **Modelling** aspects: structural, visual, informative, real time data sensors (context), POI, functional, resources, etc.
  - **Integration:** AI/XAI techniques, simulations, users' needs, etc.
- **Utility to**
  - Experiment via simulations and analysis by case
    - Reduction of costs to experiments new solutions
    - Share the possibilities with city users
  - Virtual Representation
    - Easier to understand the context, review from multiple points of view
  - Who
    - Discussion with city users, decision makers
    - Support: decision makers, proposers of solutions



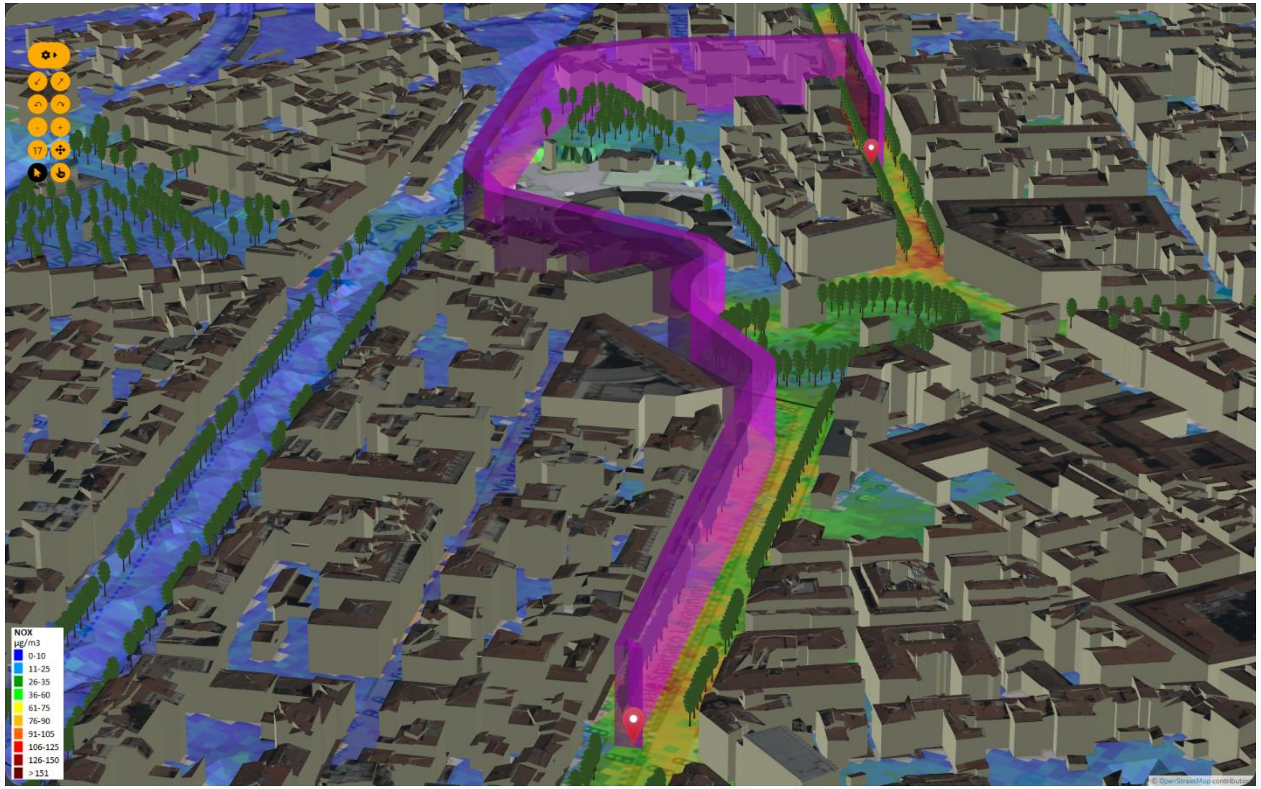

ANNUAL CO2 EMISSIONS
Residential Buildings
Commercial, Industrial, Electricity Production & Airports
Vehicle Emissions
Zoom 1m 3m 6m YTD 1y All
Neutral value
- Nascondi Menu
FIRENZE:
Giovedì
Venerdì
Sabato




Snap4CityDocker
Dashboard Management Systen
Non sicuro | dashboard/dashboardSmartCity/view/Baloon-Dark.php?iddasboard=Ng==#
Snap4City
dashlocal
preferiti
Ciao
Fri 13 Oct 18:29:18
FLORENCE SCDT
SELECT...
GRAL HD
NO 2
WHAT-IF
DOUBLE MAP
15.5
Via dei Tornabuoni
Via dei Pescioni
Pellicceria
Via Roma
Lungarno
Fiume Arno
Ponte
© OpenStreetMap contributors

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

Dyamic Routing in 3D space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µg/m3
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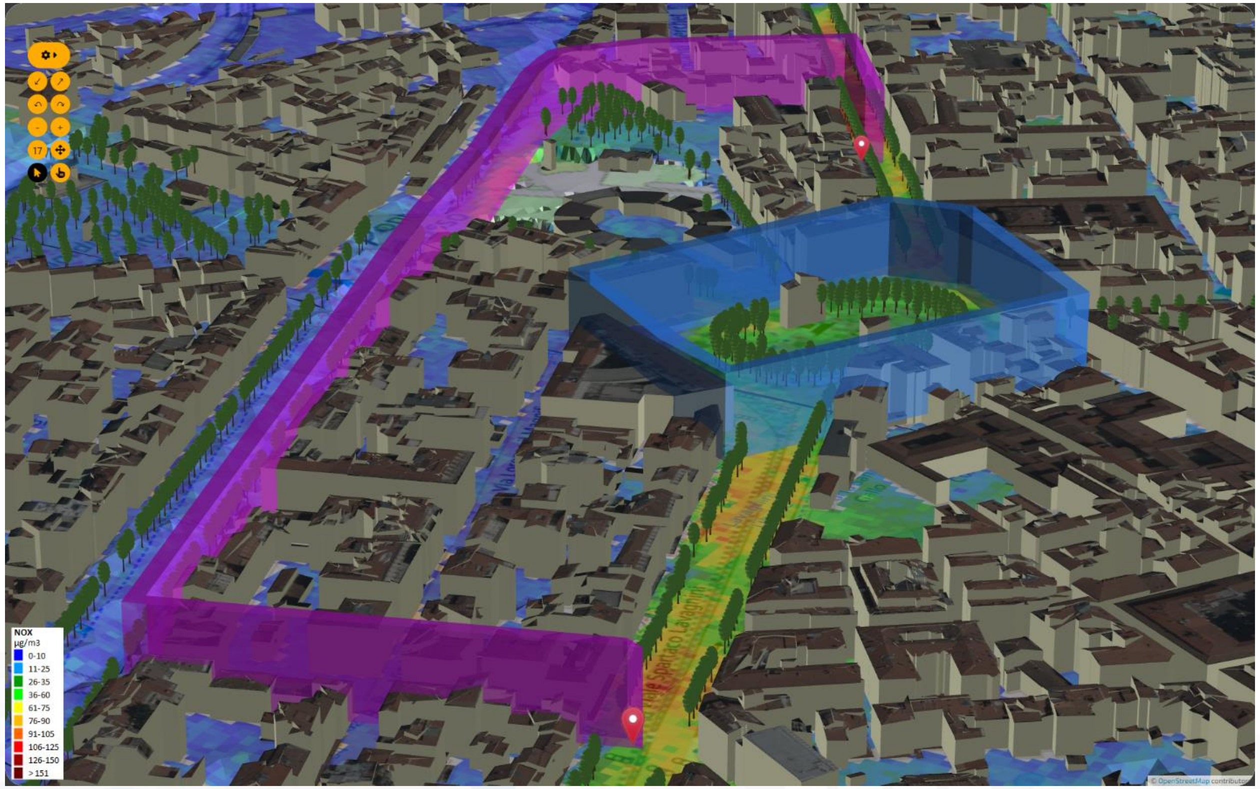
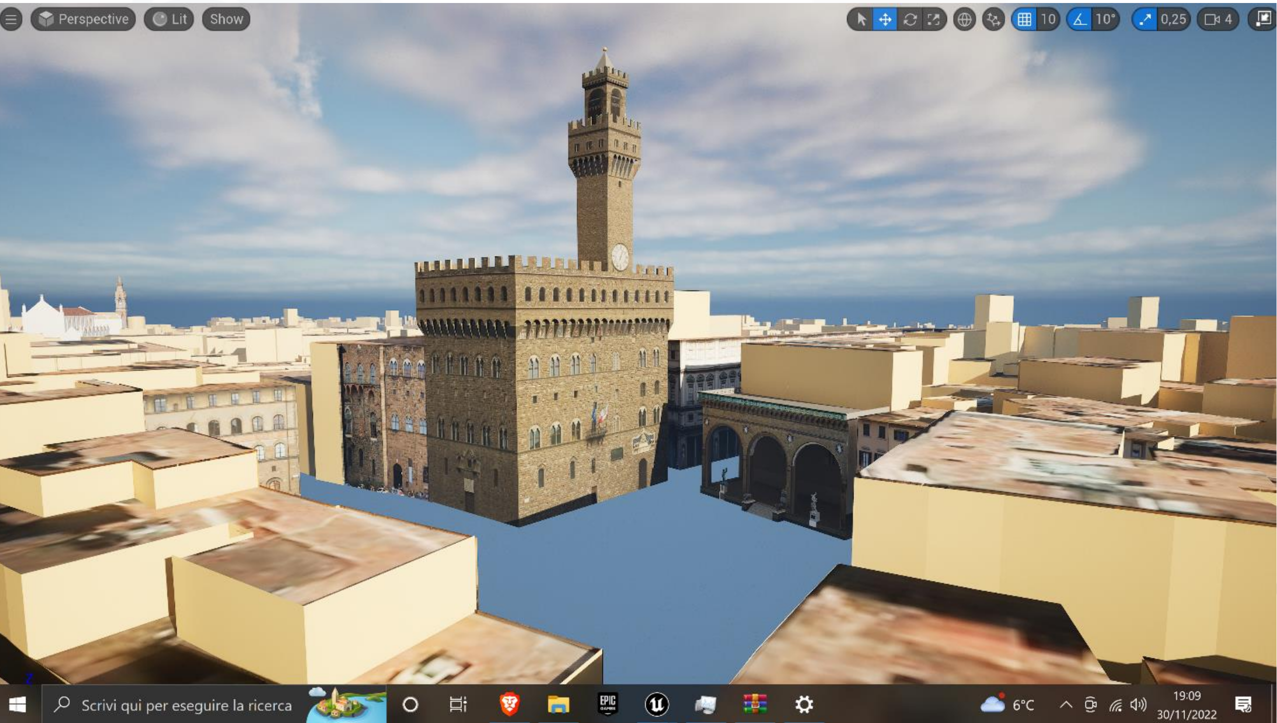
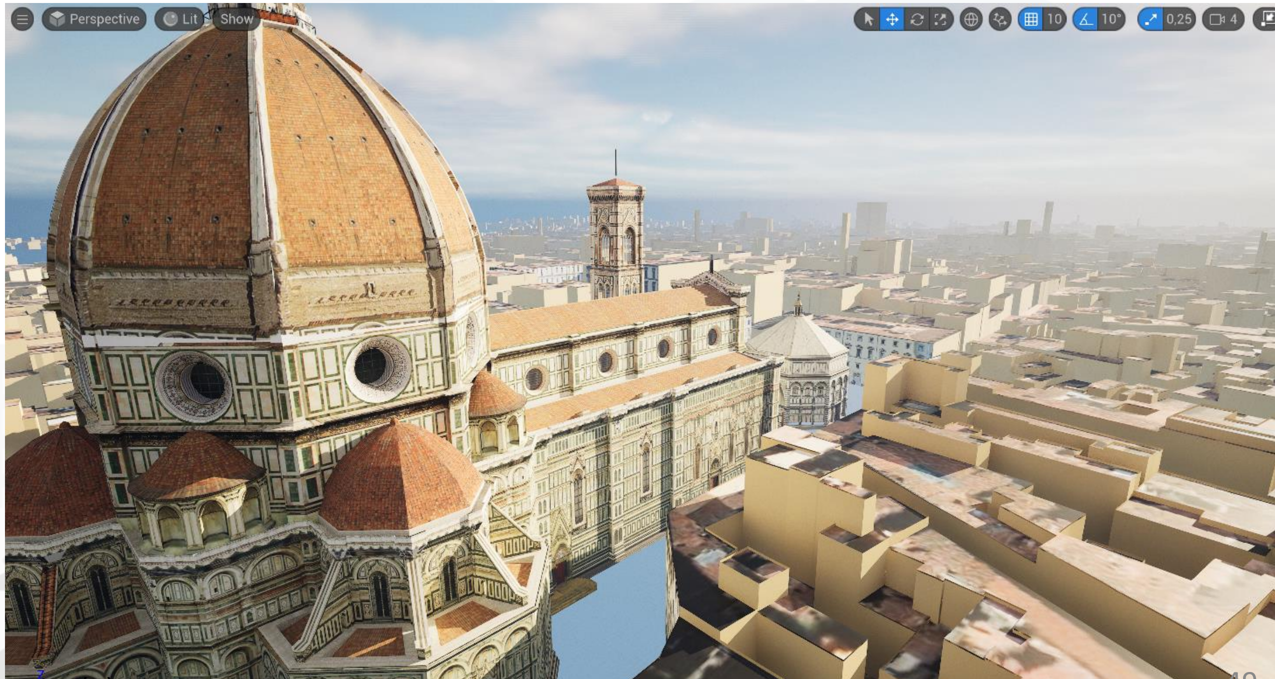
11-25
26-35
36-60
61-75
76-90
91-105
106-125
126-150
> 151


NOX
µg/m3
0-10
11-25
26-35
36-60
61-75
76-90
91-105
106-125
126-150
> 151

OCULUS


Perspective
Lit
Show
10
10°
0,25
4
Scrivi qui per eseguire la ricerca
6°C
19:09
30/11/2022


Perspective
Lit
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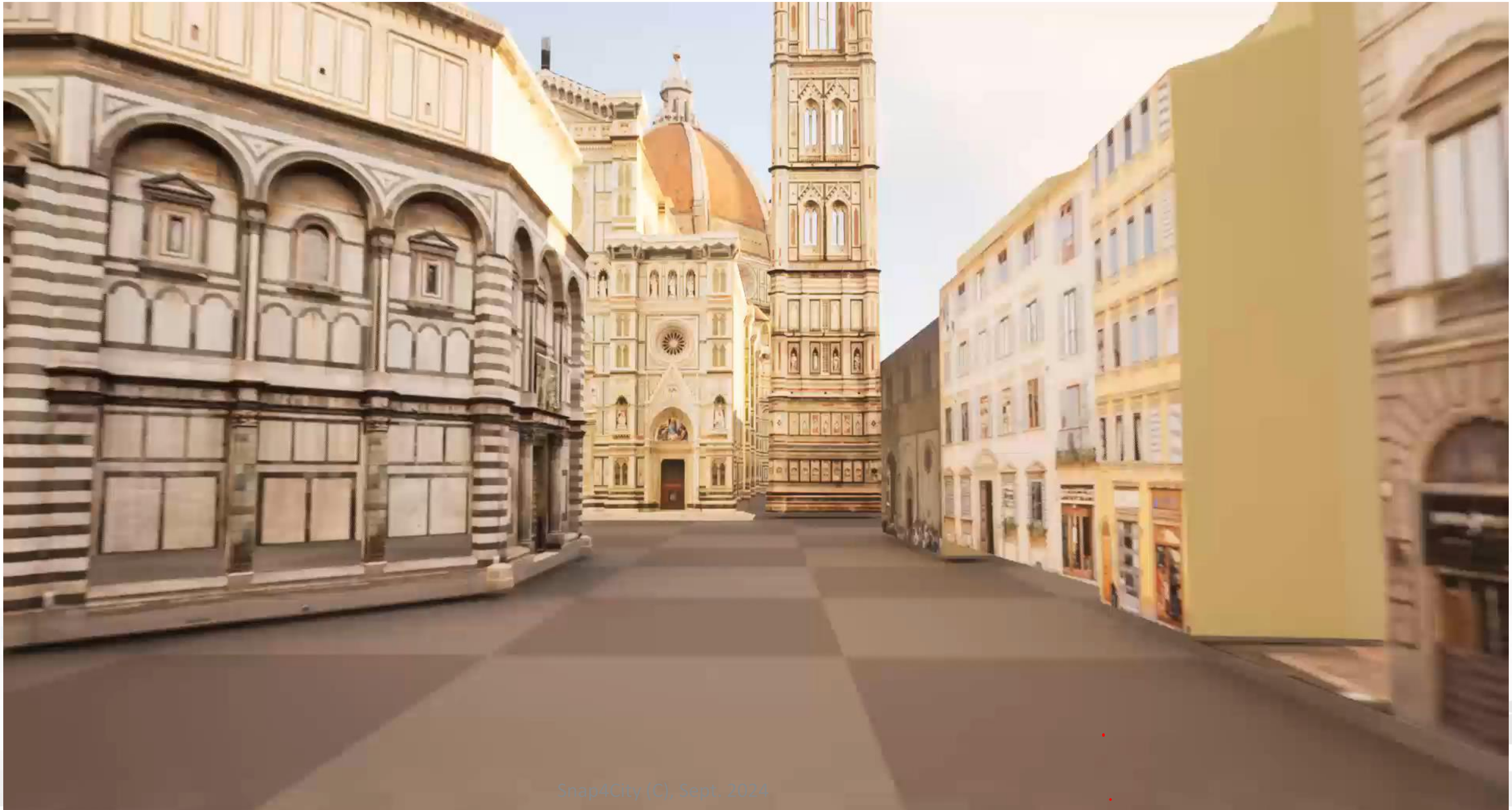
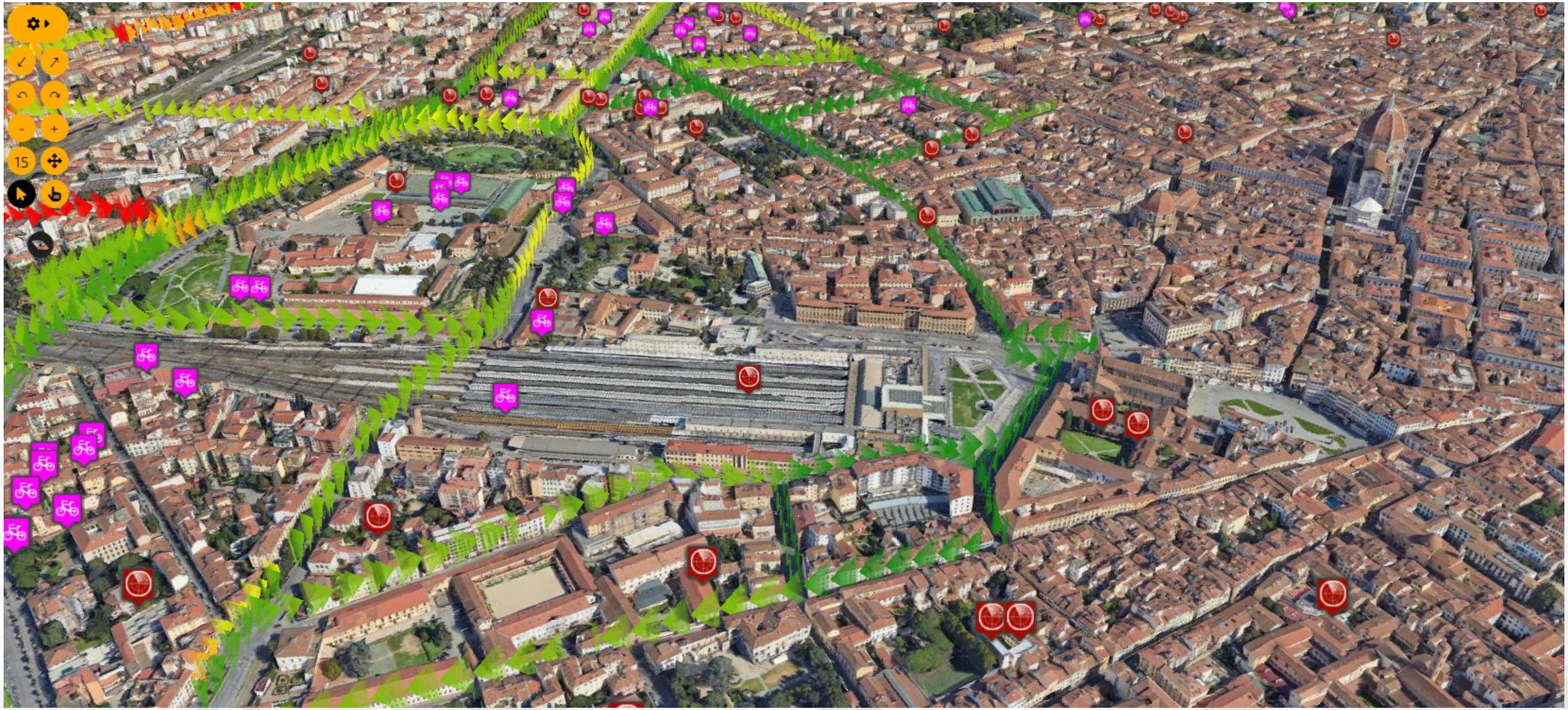
10
10°
0,25
4

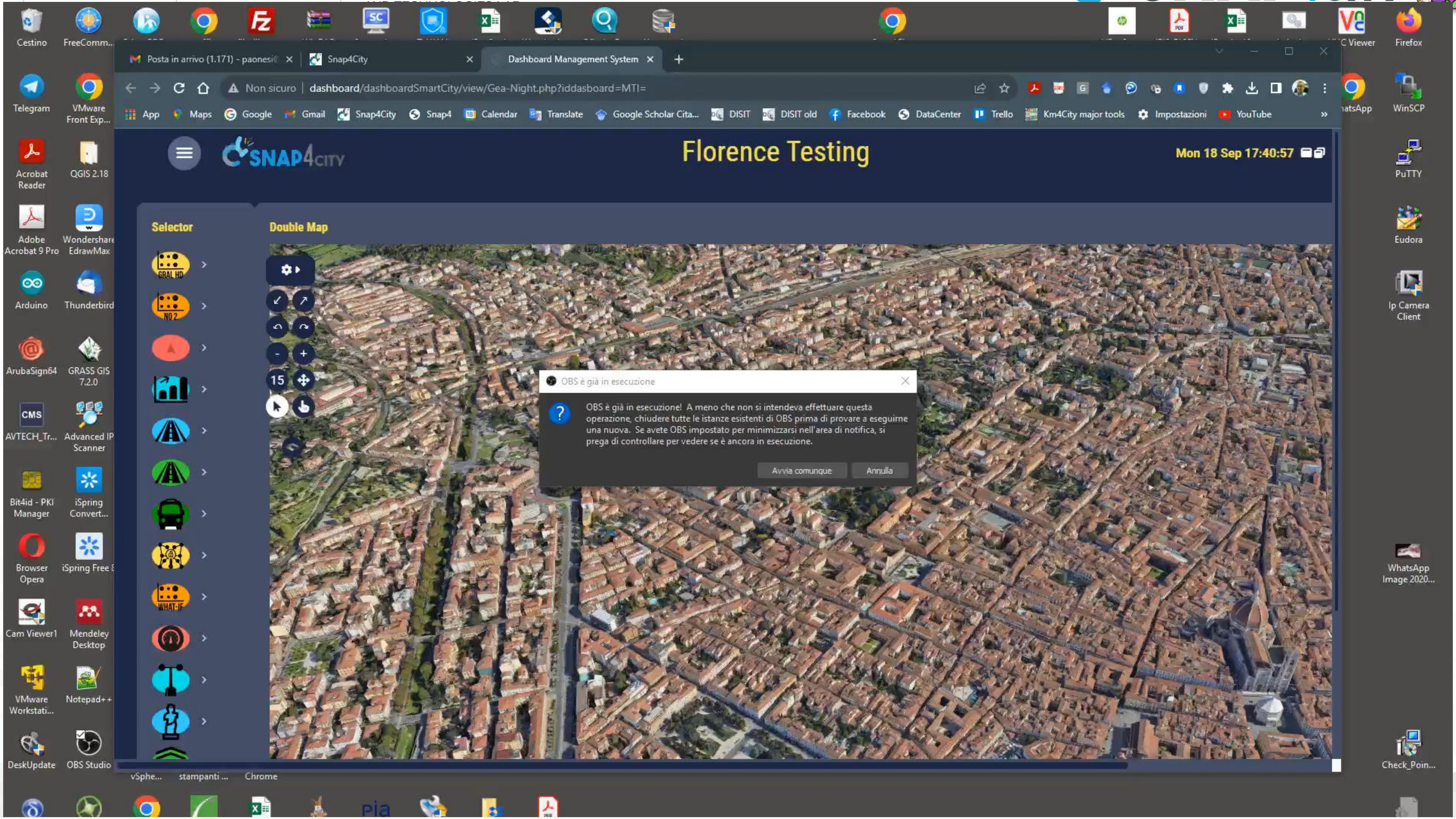
OCULUS



Snap4City Digital Twin Engine and data + 3D Google Data



Firenze

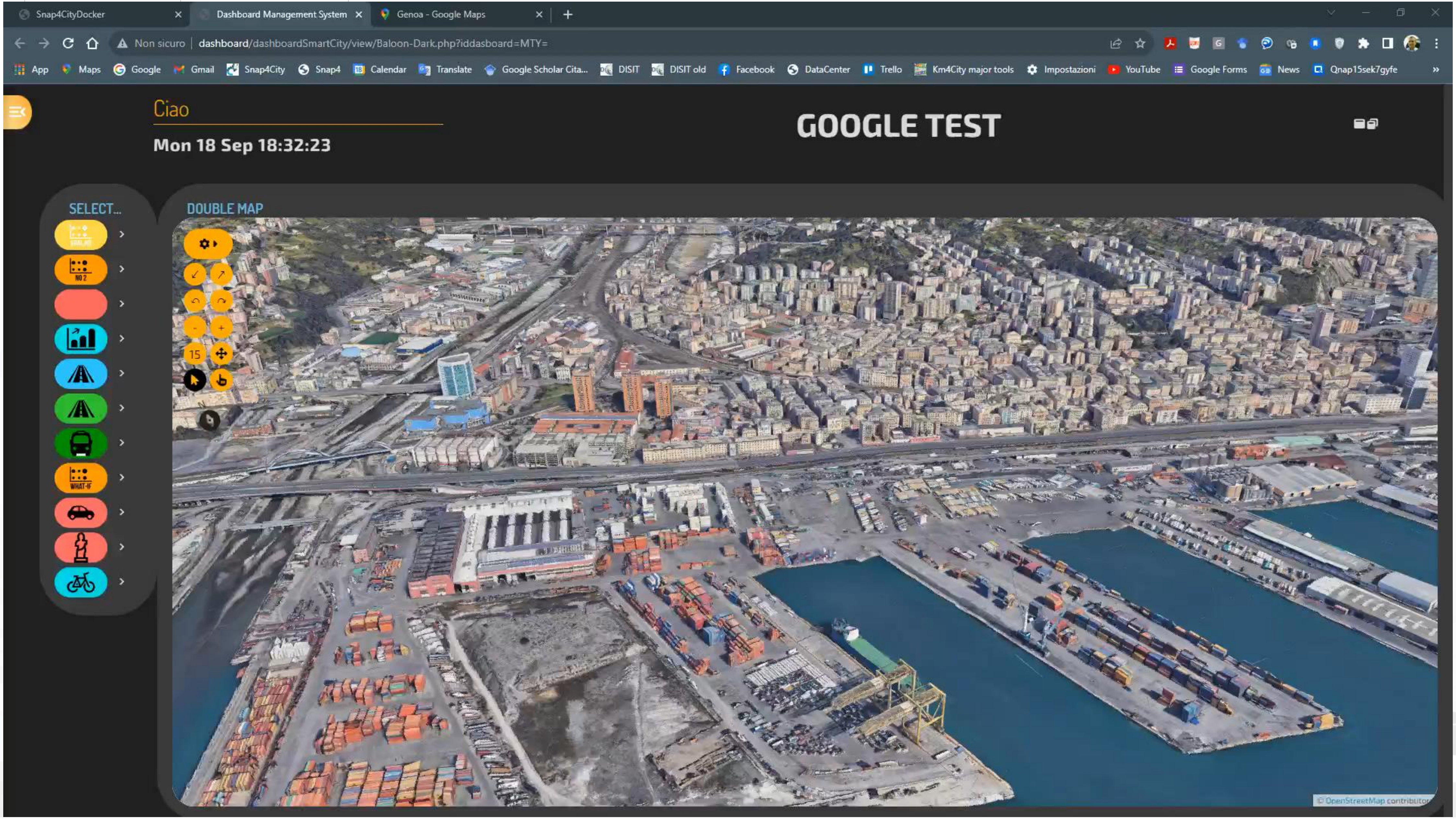

Posta in arrivo (1.171) - paonesi
Snap4City
Dashboard Management System
Non sicuro
dashboard/dashboardSmartCity/view/Gea-Night.php?iddasboard=MTI=
App
Maps
Google
Gmail
Snap4City
Snap4
Calendar
Translate
Google Scholar Cita...
DISIT
DISIT old
Facebook
DataCenter
Trello
Km4City major tools
Impostazioni
YouTube
SNAP4CITY
Florence Testing
Mon 18 Sep 17:40:57
Selector
Double Map
15
Cestino
FreeComm...
Telegram
VMware Front Exp...
Acrobat Reader
QGIS 2.18
Adobe Acrobat 9 Pro
Wondershare EdrawMax
Arduino
Thunderbird
ArubaSign64
GRASS GIS 7.2.0
AVTECH_Tr...
Advanced IP Scanner
Bit4id - PKI Manager
iSpring Convert...
Browser Opera
iSpring Free
Cam Viewer1
Mendeley Desktop
VMware Workstati...
Notepad++
DeskUpdate
OBS Studio
vSphe...
stampanti ...
Chrome
Firefox
WinSCP
PuTTY
Eudora
Ip Camera Client
WhatsApp Image 2020...
Check_Poin...

OBS è già in esecuzione

OBS è già in esecuzione! A meno che non si intendeva effettuare questa operazione, chiudere tutte le istanze esistenti di OBS prima di provare a eseguirne una nuova. Se avete OBS impostato per minimizzarsi nell'area di notifica, si prega di controllare per vedere se è ancora in esecuzione.

Avvia comunque
Annulla

Genova


Snap4CityDocker
Dashboard Management System
Genoa - Google Maps
Non sicuro | dashboard/dashboardSmartCity/view/Baloon-Dark.php?iddasboard=MTY=
App
Maps
Google
Gmail
Snap4City
Snap4
Calendar
Translate
Google Scholar Cita...
DISIT
DISIT old
Facebook
DataCenter
Trello
Km4City major tools
Impostazioni
YouTube
Google Forms
News
Qnap15sek7gyfe
Ciao
Mon 18 Sep 18:32:23
GOOGLE TEST
SELECT...
DOUBLE MAP
15
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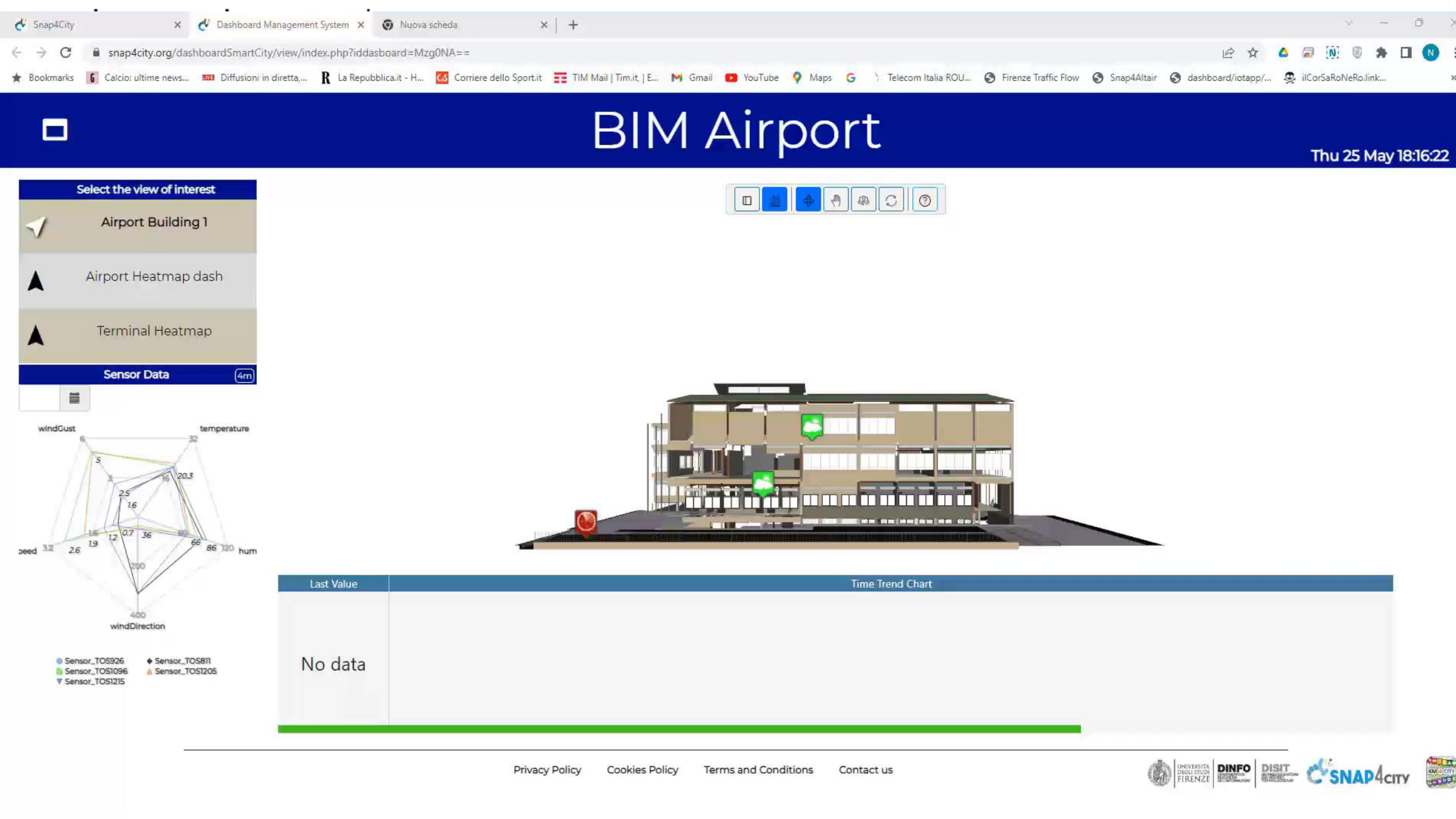
Snap4City
Dashboard Management System
Nuova scheda
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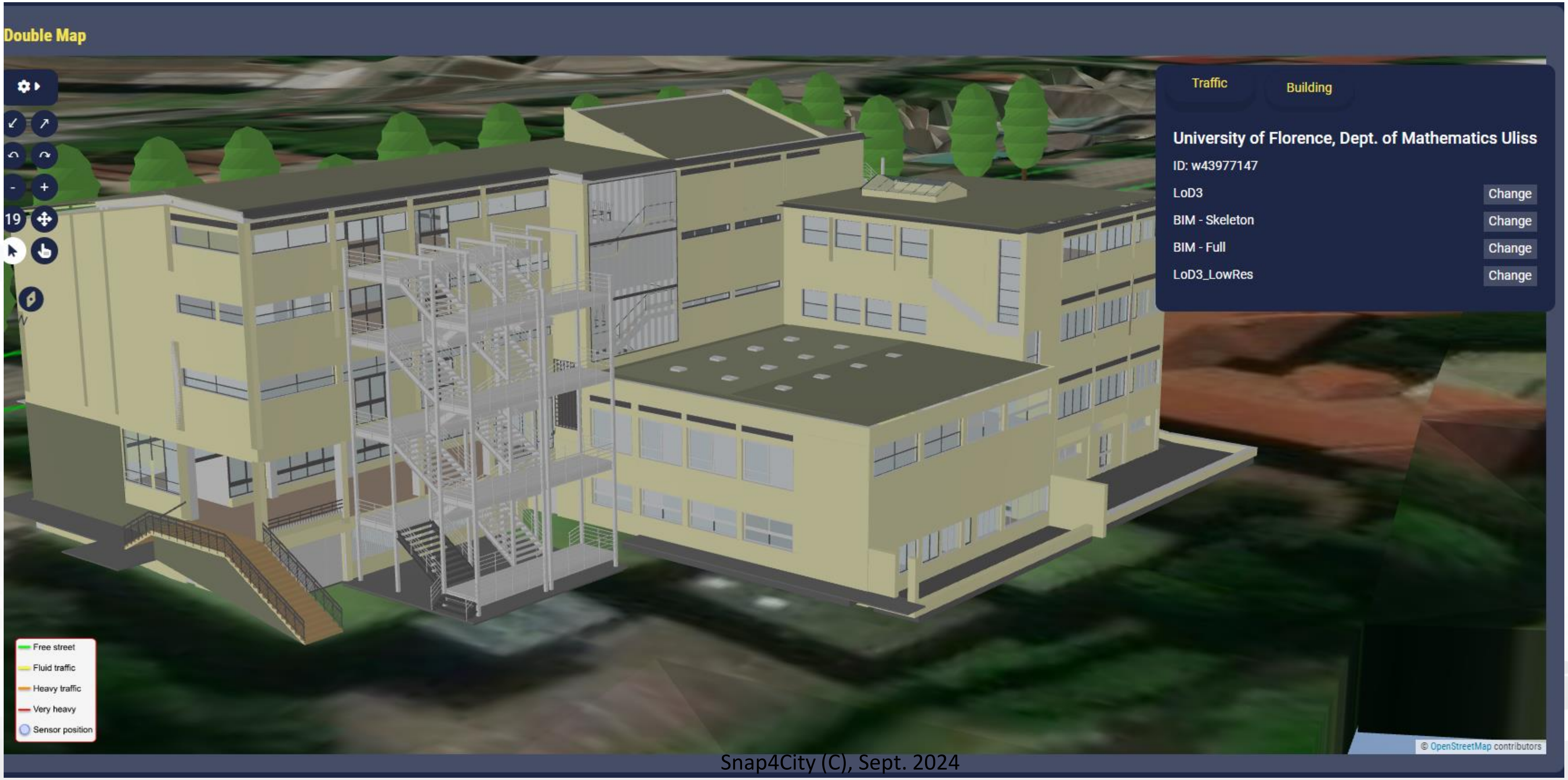
Bookmarks
Calcio: ultime news...
Diffusioni in diretta,...
La Repubblica.it - H...
Corriere dello Sport.it
TIM Mail | Tim.it, | E...
Gmail
YouTube
Maps
Telecom Italia ROU...
Firenze Traffic Flow
Snap4Altair
dashboard/iotapp/...
ilCorSaRoNeRo.link...
BIM Airport
Thu 25 May 18:16:22
Select the view of interest
Airport Building 1
Airport Heatmap dash
Terminal Heatmap
Sensor Data
4m
windGust
temperature
hum
windDirection
peed
6
5
32
20.3
16
2.5
1.6
0.7
36
1.2
1.9
2.6
3.2
66
86
120
200
400
Sensor_TOS926
Sensor_TOS1096
Sensor_TOS1215
Sensor_TOS811
Sensor_TOS1205
Last Value
Time Trend Chart
Privacy Policy
Cookies Policy
Terms and Conditions
Contact us
UNIVERSITÀ DEGLI STUDI FIRENZE
DINFO
DISIT
SNAP4CITY

No data

Local Digital Twin vs BIM



Double Map
19
Traffic
Building
Change
Change
Change
Change
Free street
Fluid traffic
Heavy traffic
Very heavy
Sensor position
© OpenStreetMap contributors

University of Florence, Dept. of Mathematics Uliss

ID: w43977147

LoD3

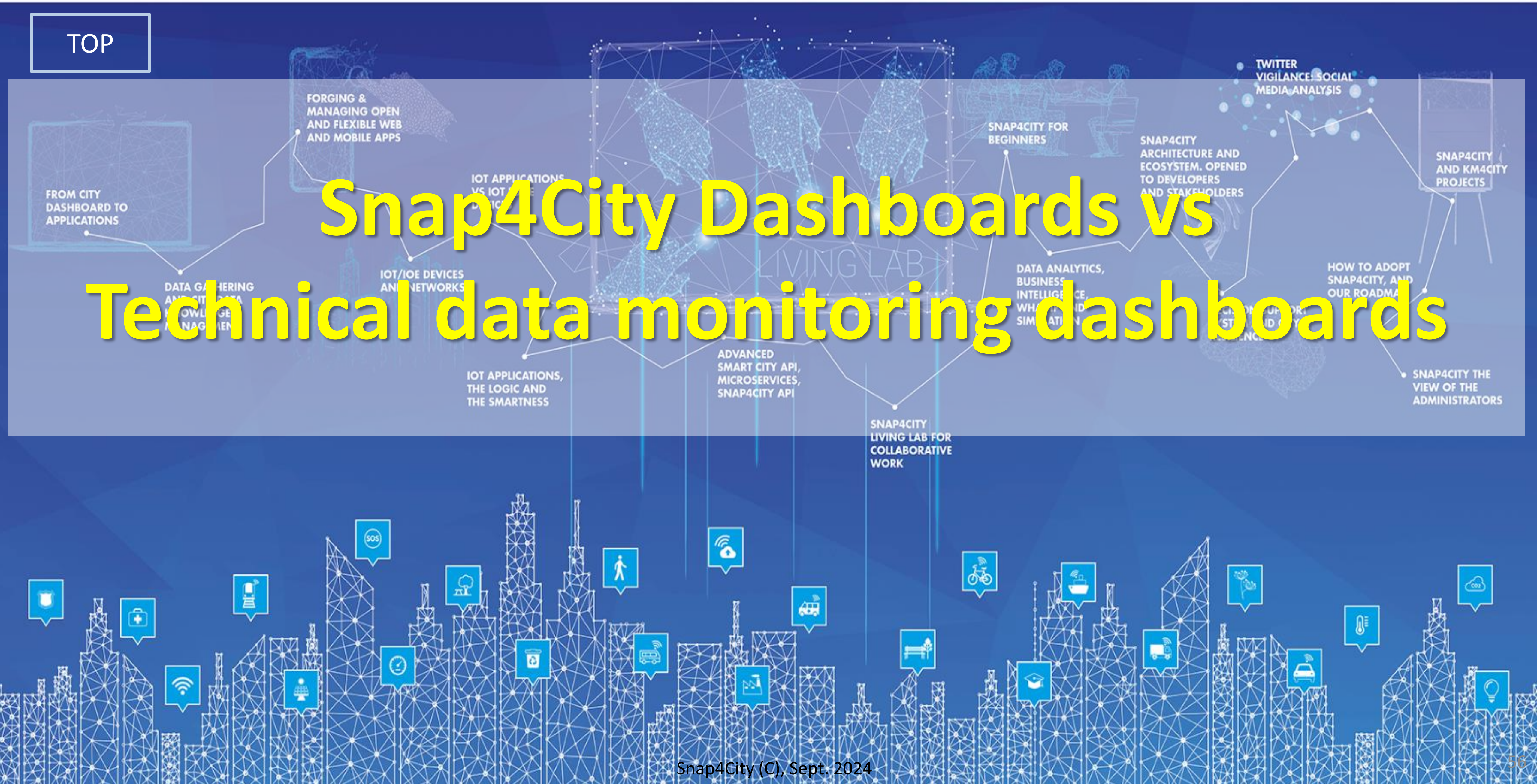
BIM - Skeleton

BIM - Full

LoD3_LowRes

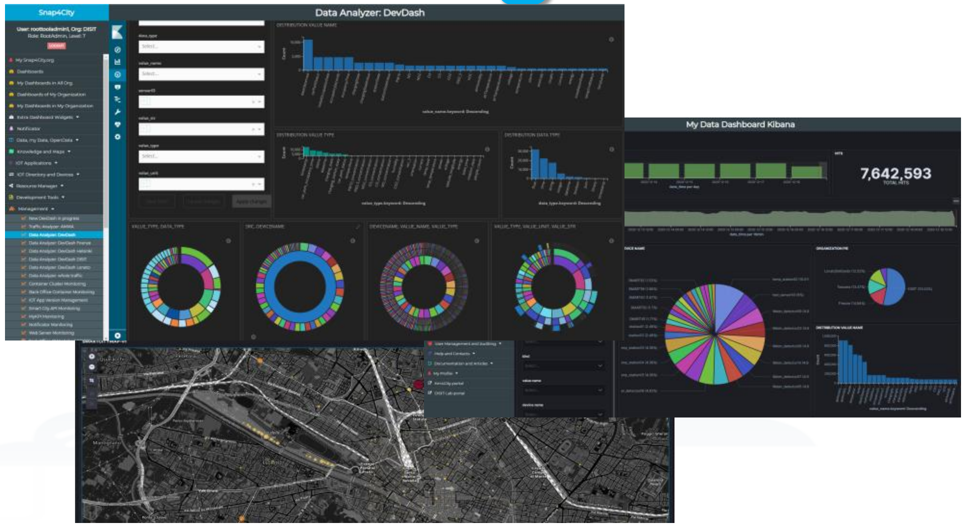
TOP

Snap4City Dashboards vs Technical data monitoring dashboards


FROM CITY DASHBOARD TO APPLICATIONS
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
IOT APPLICATIONS VS IOT
DATA GATHERING
IOT/IOE DEVICES AND NETWORKS
IOT APPLICATIONS, THE LOGIC AND THE SMARTNESS
ADVANCED SMART CITY API, MICROSERVICES, SNAP4CITY API
LIVING LAB
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
SNAP4CITY FOR BEGINNERS
DATA ANALYTICS, BUSINESS INTELLIGENCE
SNAP4CITY ARCHITECTURE AND ECOSYSTEM. OPENED TO DEVELOPERS AND STAKEHOLDERS
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
SNAP4CITY AND KM4CITY PROJECTS
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY THE VIEW OF THE ADMINISTRATORS
SOS

Two Main Lines for Dashboarding

- DevDash, My Dashboard (Dev) Kibana)


Data Analyzer: DevDash
My Data Dashboard Kibana
7,642,593

Ready to use

You can customize

Limited details

- Dashboard Builder of Snap4City

Control Room
Andamento Regione Toscana e Pr
SNAP4CITY
Demo
Prato
lampada
No alarm

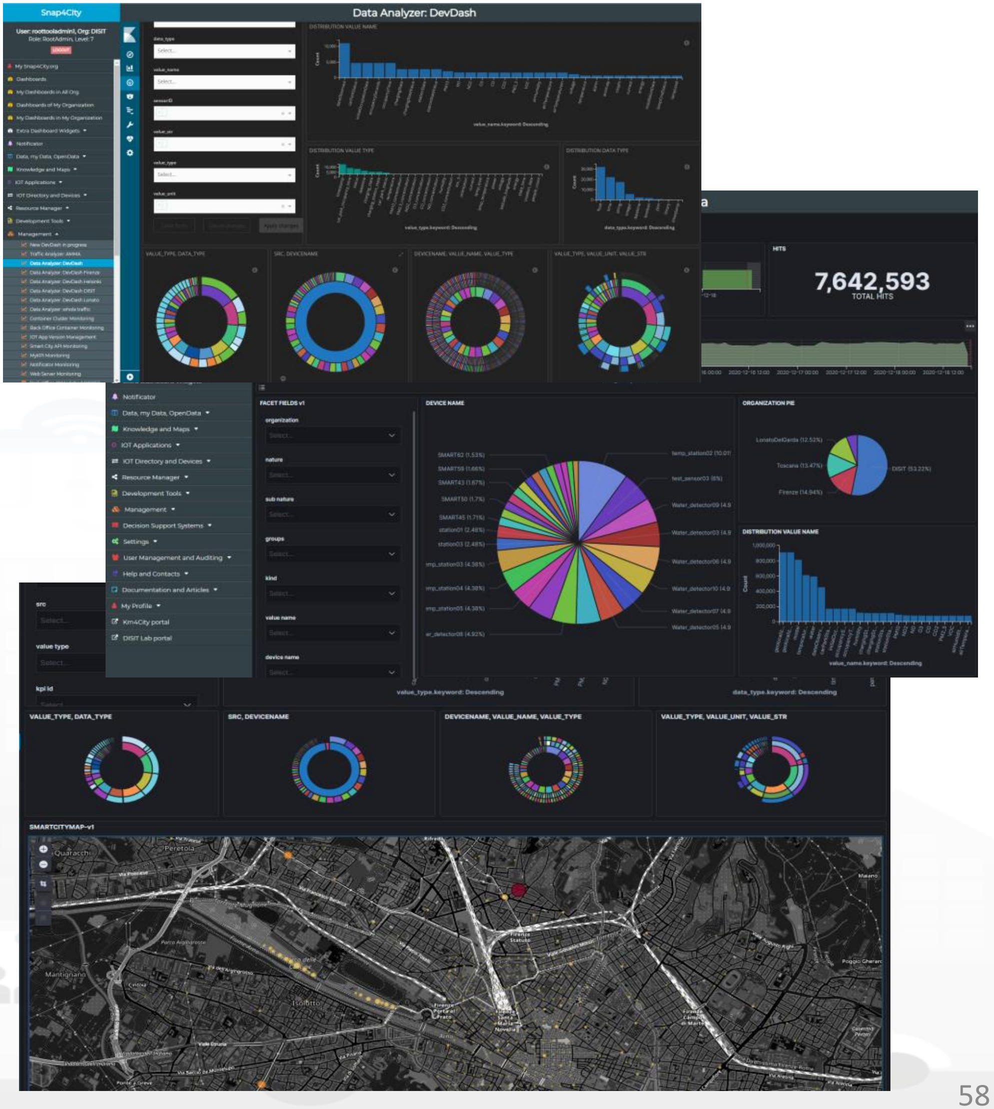
You need to create / customize

Full Control

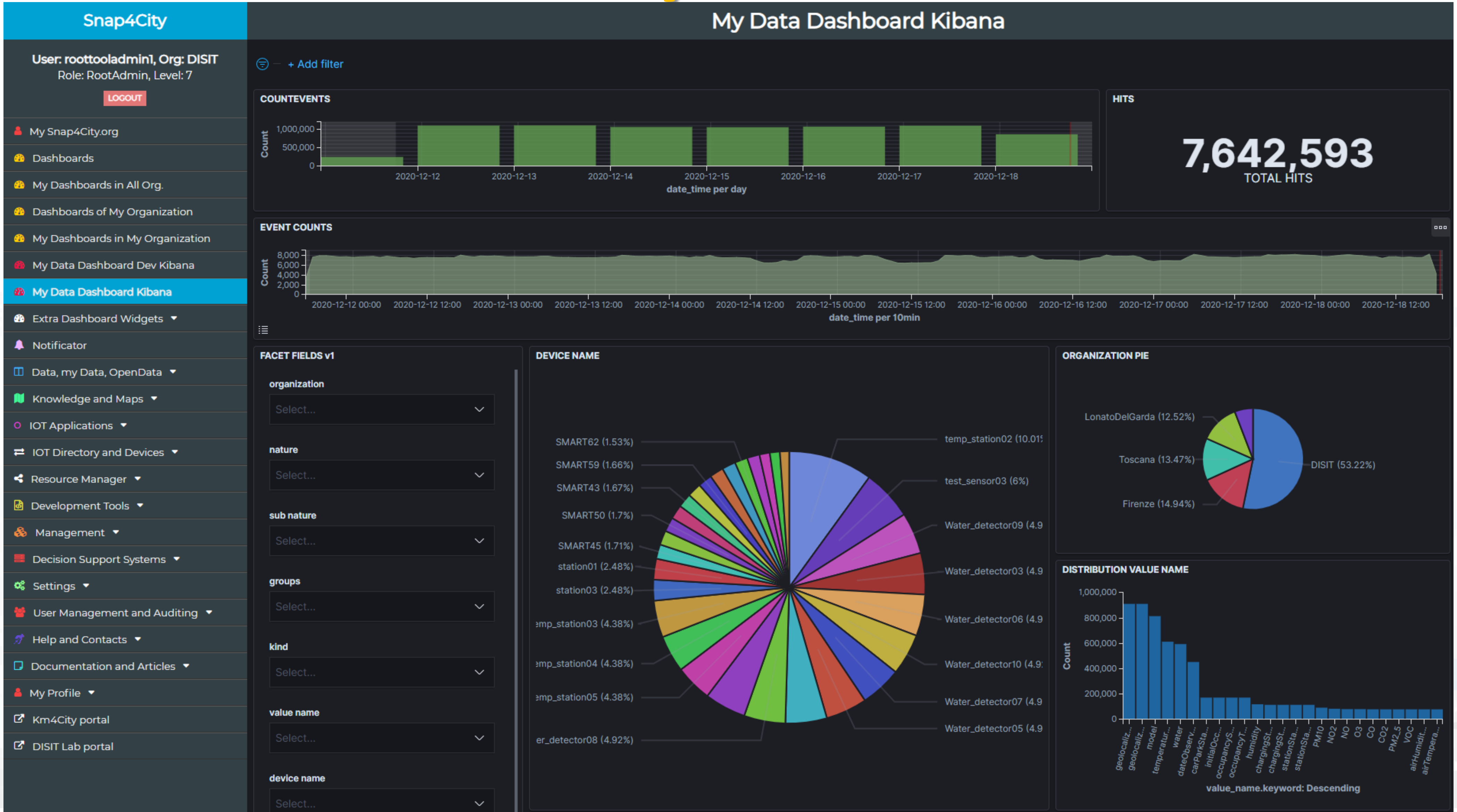
Professional details

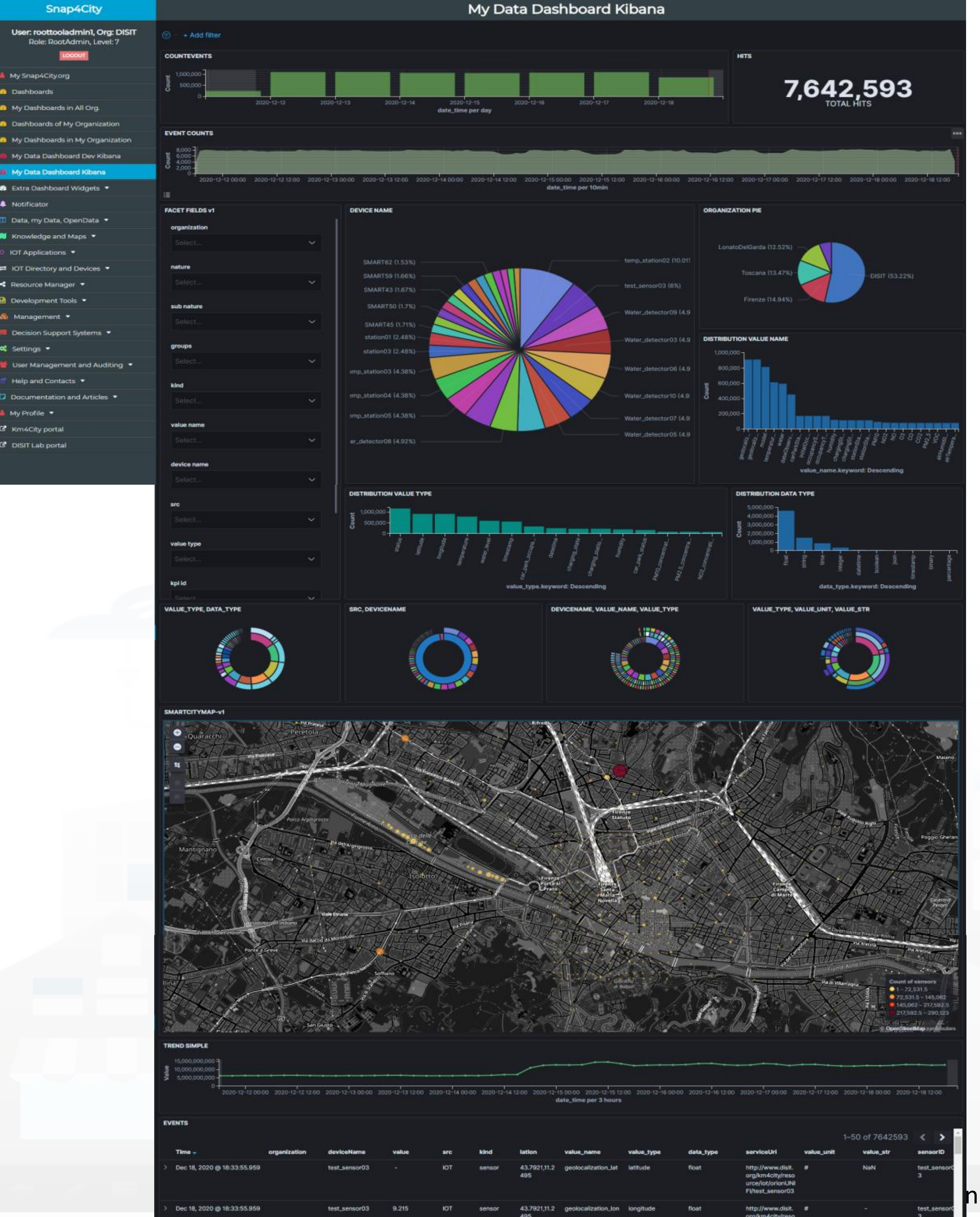
My Dev Dash (DevDash)

- For accessing and browsing data on Open Search (Elastic Search) storage and other sources supported
  - **Family of Grafana, Kibana, Banana**
- **No Support for real time event driven** widgets/panels, actuators and synoptics, no sophisticated maps, etc.
- **Not suitable for control room**, decision makers, etc.
- **Limited Business Intelligence,** Custom widgets, animation, external services.
- **Oriented to developers**, complex production of custom views, etc.
- **Partial support of GDPR** and deep control of access.
- Snap4City uses this technology only for monitoring data flow into the Storage with tools named: DevDash, or MyDevDash



DevDash: My Data Dashboard


Snap4City
My Data Dashboard Kibana
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
My Data Dashboard Dev Kibana
My Data Dashboard Kibana
Extra Dashboard Widgets
Notificator
Data, my Data, OpenData
Knowledge and Maps
IOT Applications
IOT Directory and Devices
Resource Manager
Development Tools
Management
Decision Support Systems
Settings
User Management and Auditing
Help and Contacts
Documentation and Articles
My Profile
Km4City portal
DISIT Lab portal
+ Add filter
COUNTEVENTS
Count
1,000,000
500,000
0
2020-12-12
2020-12-13
2020-12-14
2020-12-15
2020-12-16
2020-12-17
2020-12-18
date_time per day
HITS
7,642,593
TOTAL HITS
EVENT COUNTS
Count
8,000
6,000
4,000
2,000
0
2020-12-12 00:00
2020-12-12 12:00
2020-12-13 00:00
2020-12-13 12:00
2020-12-14 00:00
2020-12-14 12:00
2020-12-15 00:00
2020-12-15 12:00
2020-12-16 00:00
2020-12-16 12:00
2020-12-17 00:00
2020-12-17 12:00
2020-12-18 00:00
2020-12-18 12:00
date_time per 10min
FACET FIELDS v1
organization
Select...
nature
Select...
sub nature
Select...
groups
Select...
kind
Select...
value name
Select...
device name
Select...
DEVICE NAME
SMART62 (1.53%)
SMART59 (1.66%)
SMART43 (1.67%)
SMART50 (1.7%)
SMART45 (1.71%)
station01 (2.48%)
station03 (2.48%)
emp_station03 (4.38%)
emp_station04 (4.38%)
emp_station05 (4.38%)
er_detector08 (4.92%)
temp_station02 (10.01%
test_sensor03 (6%)
Water_detector09 (4.9
Water_detector03 (4.9
Water_detector06 (4.9
Water_detector10 (4.9
Water_detector07 (4.9
Water_detector05 (4.9
ORGANIZATION PIE
LonatoDelGarda (12.52%)
Toscana (13.47%)
Firenze (14.94%)
DISIT (53.22%)
DISTRIBUTION VALUE NAME
Count
1,000,000
800,000
600,000
400,000
200,000
0
geolocaliz...
geolocaliz...
model
temperatur...
water
dateObserv...
carParkSta...
initialOcc...
occupancyS...
occupancyT...
humidity
chargingSt...
chargingSt...
stationSta...
stationSta...
PM10
NO2
NO
O3
CO
CO2
PM2_5
VOC
airHumidit...
airTempera...
value_name.keyword: Descending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Resource Manager
Development Tools
Management
Decision Support Systems
Settings
User Management and Auditing
Help and Contacts
Documentation and Articles
My Profile
Km4City portal
DISIT Lab portal
+ Add filter
COUNTEVENTS
date_time per day
HITS
7,642,593
TOTAL HITS
EVENT COUNTS
date_time per 10min
FACET FIELDS v1
organization
nature
sub nature
groups
kind
value name
device name
src
value type
kpi id
DEVICE NAME
ORGANIZATION PIE
DISIT (53.22%)
Toscana (13.47%)
Firenze (14.94%)
LonatoDelGarda (12.52%)
DISTRIBUTION VALUE NAME
value_name.keyword: Descending
DISTRIBUTION VALUE TYPE
value_type.keyword: Descending
DISTRIBUTION DATA TYPE
data_type.keyword: Descending
VALUE_TYPE, DATA_TYPE
SRC, DEVICENAME
DEVICENAME, VALUE_NAME, VALUE_TYPE
VALUE_TYPE, VALUE_UNIT, VALUE_STR
SMARTCITYMAP-v1
Count of sensors
TREND SIMPLE
date_time per 3 hours
EVENTS
1-50 of 7642593
Time
organization
deviceName
value
src
kind
lation
value_name
value_type
data_type
serviceUri
value_unit
value_str
sensorID

Business Analysis Dashboards
For all kind of users: DevDash

- Dynamic Filtering, Adaptable, …
- Full data details, drill down,…
- Synergic with **Data Inspector** which addresses data relationships, processing and information
- **Only Your Data for**
  - Manager and Area Managers
- **All Accessible Data for**
  - ToolAdmin and RootAdmin

Dashboard Builder of Snap4City

- For accessing and browsing data on: OpenSearch, Mongo, MySQL, Smart City API, Super and thus from federated Smart City API, etc.
- **Supports sensors/actuators**: data driven data, maps in extended manner, data driven widgets, large collection of widgets, direct IoT Connections, custom widgets, animated PIN on maps, a large set of panel/widgets, etc.
- **Very simple to be used for control room**, decision makers, situation rooms, operators, tactic, strategic, etc.
- **Very well integrated with** custom widgets, animation, external services.
- **Very simple to be customized** for non programmers since all the tools are visual.
- **Custom Business Intelligence**, Visual Analytics
- **Custom Widgets**
- **Support for GDPR** and deep control of access.

Control Room
Snap4Home 5G Demo
Gio 11 Giu
Prato
Toscana e Province, COVID-19
Log view

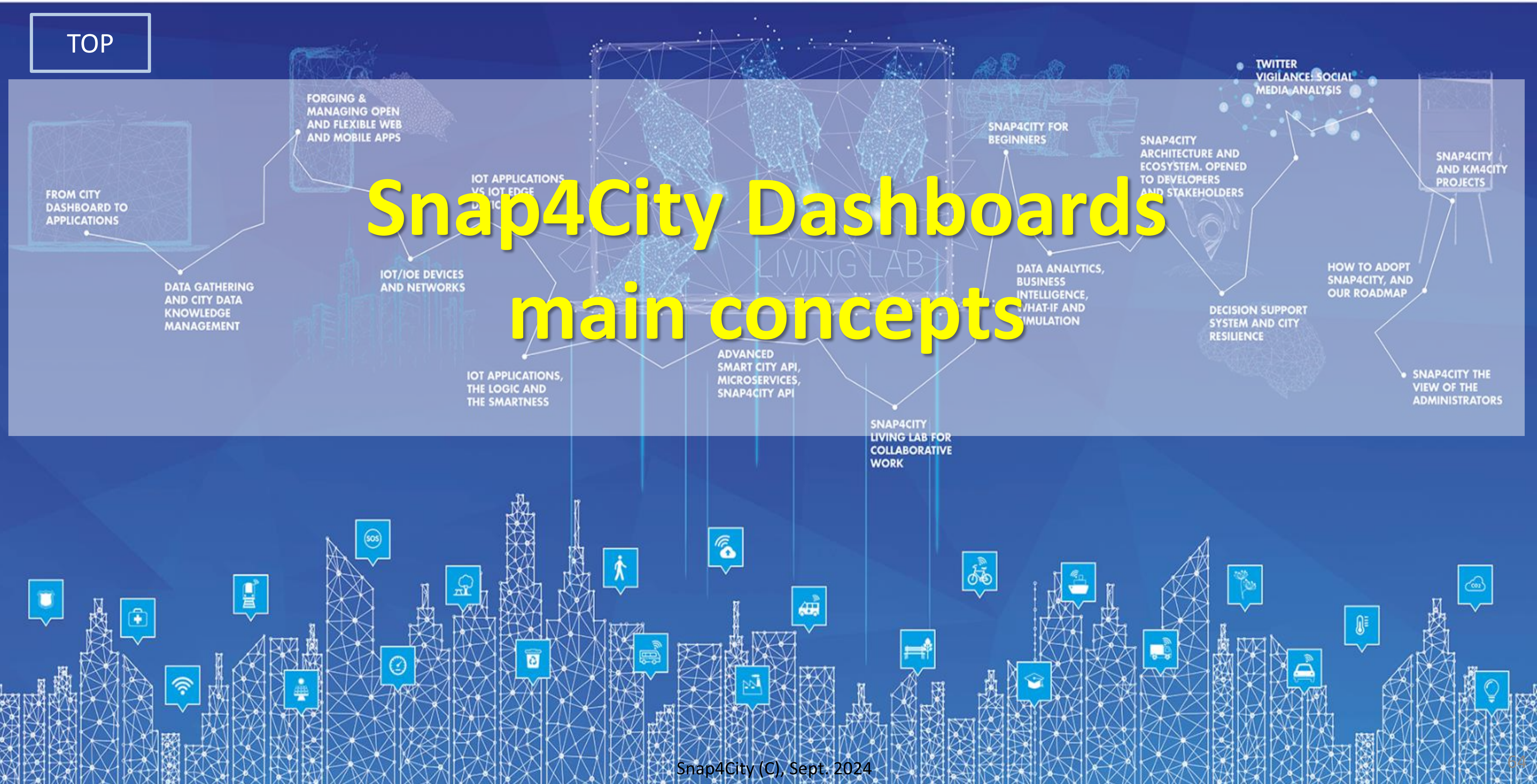
per evidenziare gli andamenti di vostro interesse: eliminare le curve che non interessano selezionandole in legenda.
Alcuni dati in passato non sono pervenuti alla protezione civile

Snap4City Dashboard Builder (2023) vs Kibana/Grafana

Features	Snap4City Dashboard Builder	Kibana, Grafana
Large Collection of Widgets, also from D3 library	YES	Nothing
Custom Widgets SVG of any kind, full defined process for customization	YES	Nothing
Real time event driven widgets and data	YES	Nothing
Server/Client Side Business Logic for data transformation with visual programming: Node-RED	YES: visual/coding	coding
Maps with custom PIN, bubbles, animated and moving, etc.	YES	Nothing
Maps with paths, shapes, traffic flow, scenarios, routing, heatmaps, what-if, Origin Destination Matrix, …	YES	Nothing
Maps with Orthomaps from WFS, WMS, GIS connection, etc.	YES	Nothing
TV camera integration and selection	YES	Nothing
Widgets for business logic integration on real time: buttons, selector, switch, etc.	YES	Nothing
Kiviat, Spider net, Calendar (also any other D3 Widgets)	YES	Nothing
Typical Time Trends: day hours, month week, month days, …..	YES	Nothing
Time Trend Compare: day, week, month, year	YES	Nothing
Selectors/Menus: text, icons, etc., also in connection with IOT APP, Node-RED	YES	Nothing
Full control of graphic layout, font, colours, refresh per widget, etc.	YES	Nothing
Iframe integration of third party widgets and web pages, nesting dashboards, embedding Kibana	YES	Nothing
Connection among multiple Dashboards and Widgets	YES	Nothing
Synchronization with Video Wall, and Operators Views	YES	Nothing
Multiseries, bar lines, charts, pie, donut, simple selectors, trends, etc., also from business logic	YES	Limited
Single content, string, html, any data, etc.	YES	Limited
Special widgets: Weather forecast, civil protection, road plates, Twitter, SVG, etc…	YES	Nothing
Digital Twin Local (BIM) and Global (3D city representation) with 3D traffic, Heatmaps, Devices, …	YES	Nothing
Faceted search	YES: selectors, forms, buttons	YES

TOP

Snap4City Dashboards main concepts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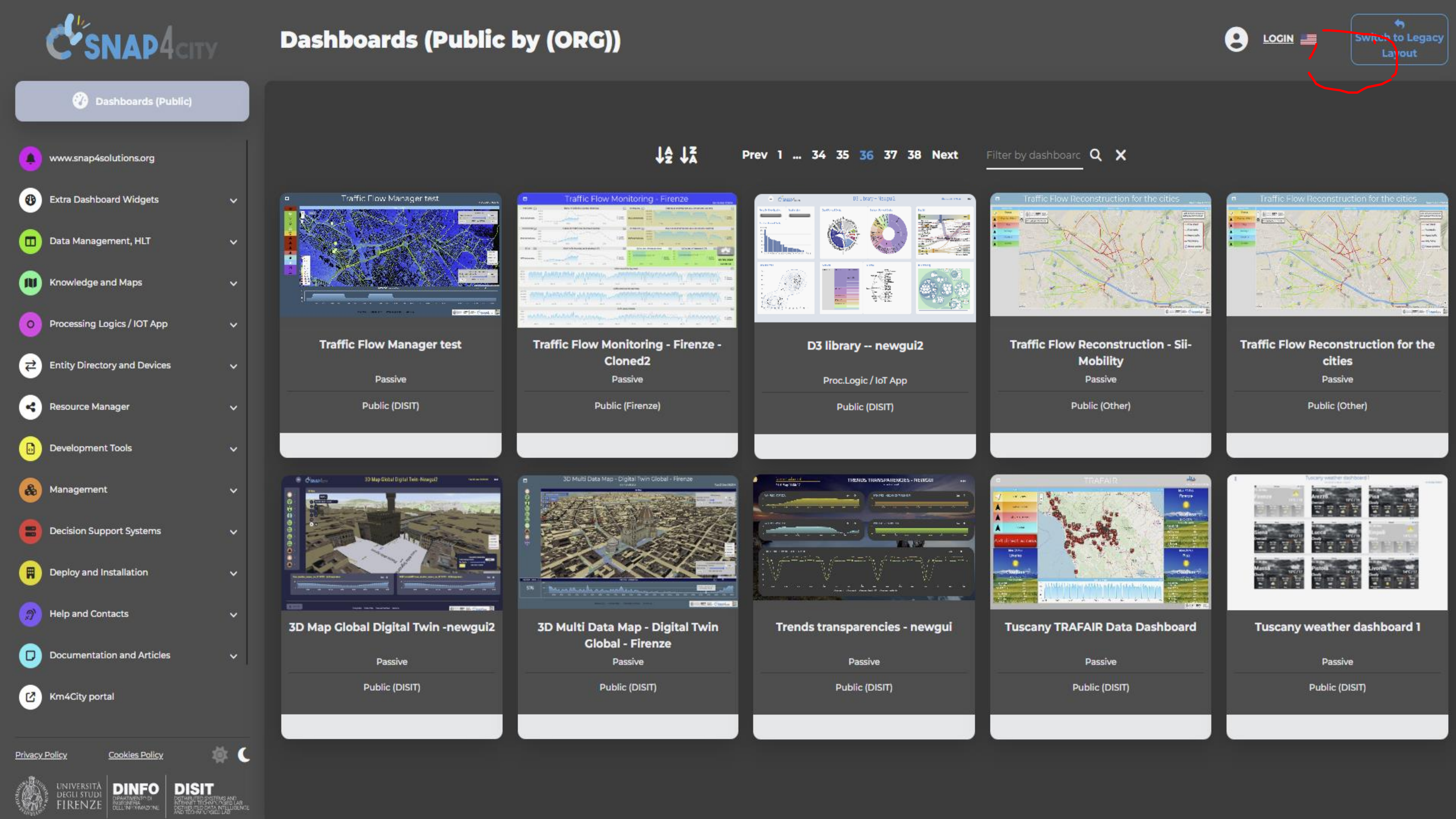
SOS
CO2



Dashboards (Public by (ORG))

LOGIN
Switch to Legacy Layout
Dashboards (Public)
www.snap4solutions.org
Extra Dashboard Widgets
Data Management, HLT
Knowledge and Maps
Processing Logics / IOT App
Entity Directory and Devices
Resource Manager
Development Tools
Management
Decision Support Systems
Deploy and Installation
Help and Contacts
Documentation and Articles
Km4City portal
Privacy Policy
Cookies Policy
Prev 1 ... 34 35 36 37 38 Next
Filter by dashboard

Traffic Flow Manager test
Passive
Public (DISIT)

Traffic Flow Monitoring - Firenze - Cloned2
Passive
Public (Firenze)

D3 library -- newgui2
Proc.Logic / IoT App
Public (DISIT)

Traffic Flow Reconstruction - Sii-Mobility
Passive
Public (Other)

Traffic Flow Reconstruction for the cities
Passive
Public (Other)

3D Map Global Digital Twin -newgui2
Passive
Public (DISIT)

3D Multi Data Map - Digital Twin Global - Firenze
Passive
Public (DISIT)

Trends transparencies - newgui
Passive
Public (DISIT)

Tuscany TRAFAIR Data Dashboard
Passive
Public (DISIT)

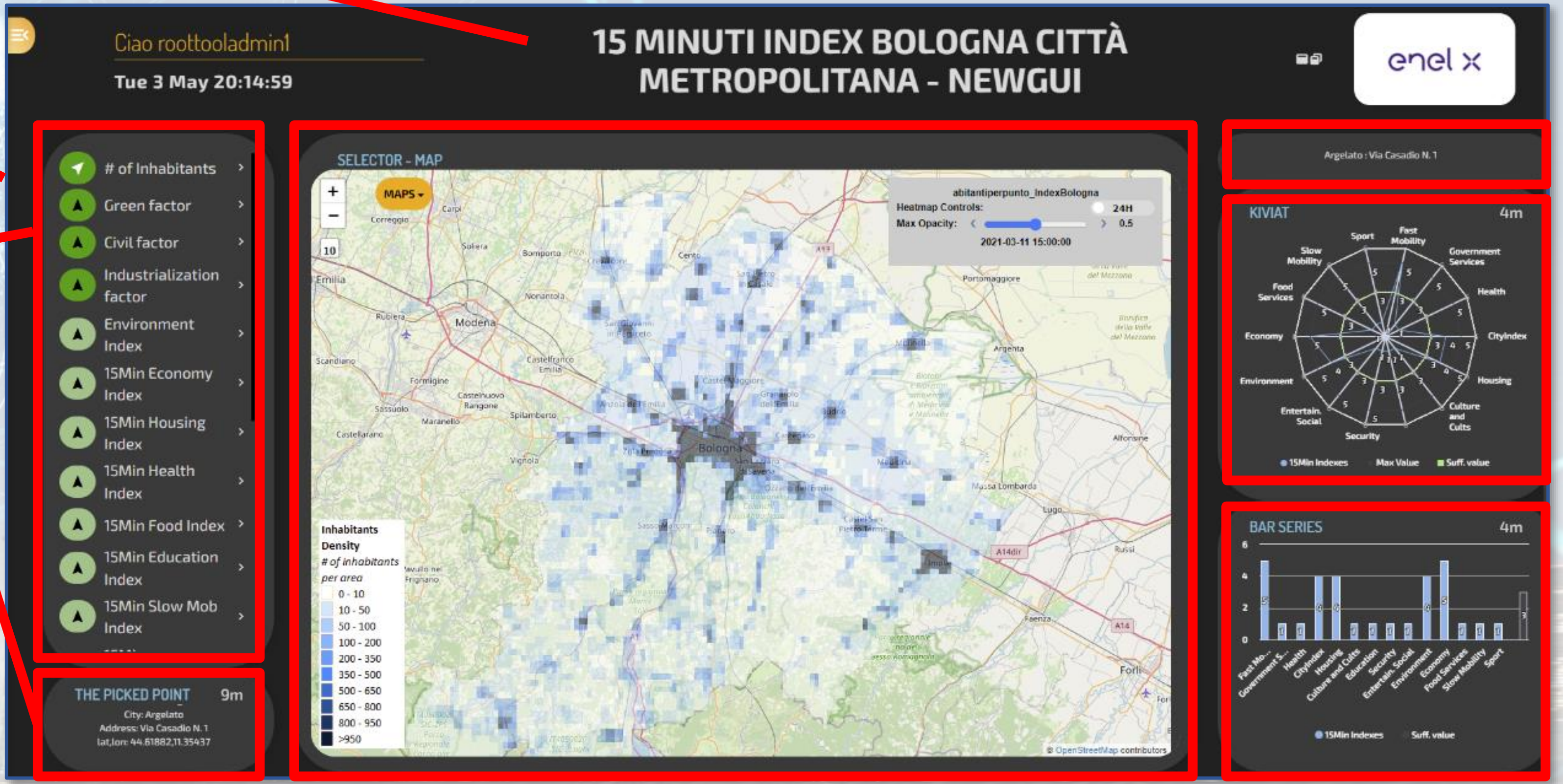
Tuscany weather dashboard 1
Passive
Public (DISIT)

Snap4City Dashboards main concepts

Header

Dashboard

Interactive Widgets


Ciao roottooladmin1
Tue 3 May 20:14:59
15 MINUTI INDEX BOLOGNA CITTÀ METROPOLITANA - NEWGUI
enel x
# of Inhabitants
Green factor
Civil factor
Industrialization factor
Environment Index
15Min Economy Index
15Min Housing Index
15Min Health Index
15Min Food Index
15Min Education Index
15Min Slow Mob Index
SELECTOR - MAP
MAPS
abitantiperpunto_IndexBologna
Heatmap Controls:
24H
Max Opacity:
0.5
2021-03-11 15:00:00
Modena
Bologna
Inhabitants Density
# of inhabitants per area
0 - 10
10 - 50
50 - 100
100 - 200
200 - 350
350 - 500
500 - 650
650 - 800
800 - 950
>950
© OpenStreetMap contributors
Argelato : Via Casadio N. 1
KIVIAT
4m
Sport
Fast Mobility
Government Services
Health
CityIndex
Housing
Culture and Cults
Security
Entertain. Social
Environment
Economy
Food Services
Slow Mobility
15Min Indexes
Max Value
Suff. value
BAR SERIES
4m
Fast Mo...
Government S...
Health
CityIndex
Housing
Culture and Cults
Education
Security
Entertain. Social
Environment
Economy
Food Services
Slow Mobility
Sport
15Min Indexes
Suff. value
THE PICKED POINT
9m

City: Argelato
Address: Via Casadio N. 1
lat,lon: 44.61882,11.35437

Server Communication

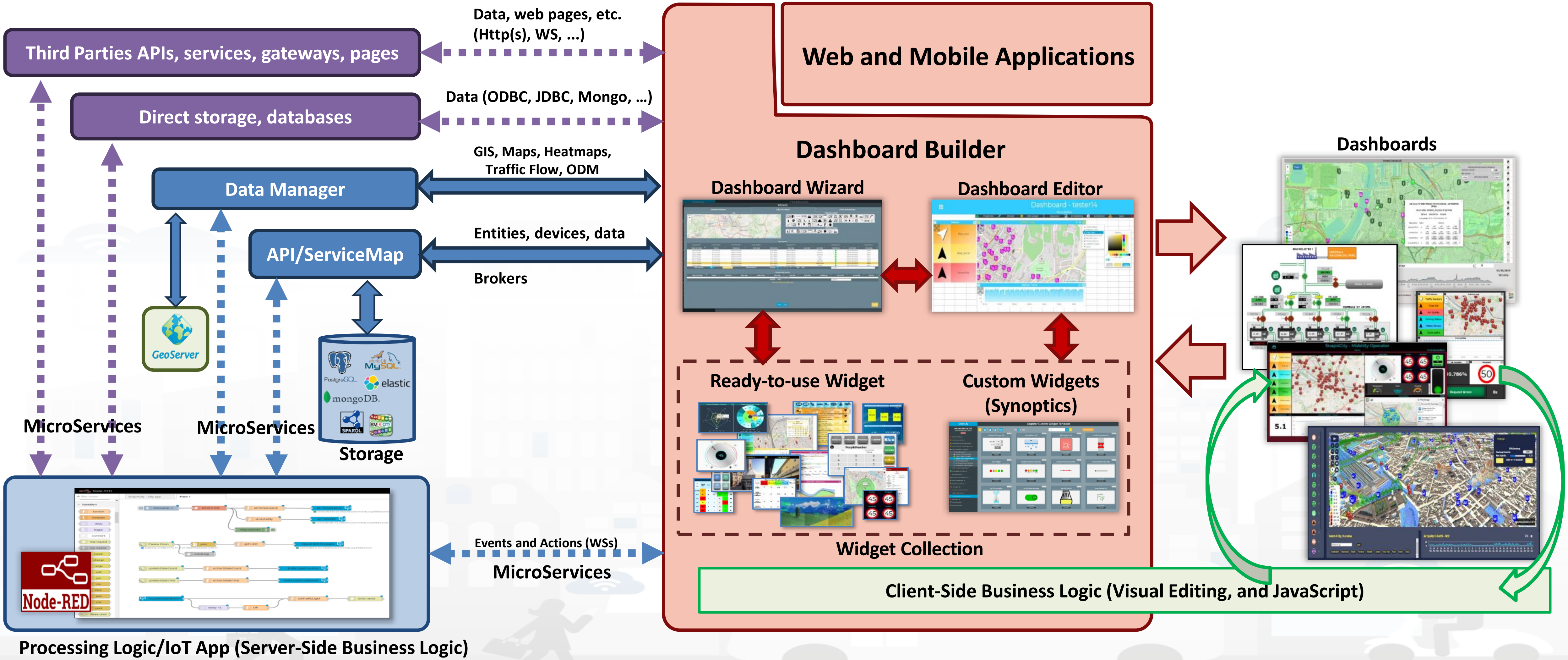
- Real Time data requests/send
- Event Driven
- Server Side Business Logic
  - See Part 3 of the course

Inter Widget Communication:

Client Side Business Logic

See part 8 of the Course

How the Dashboards / Apps Exchange data (2024/8)



Third Parties APIs, services, gateways, pages

Data, web pages, etc. (Http(s), WS, ...)

Direct storage, databases

Data (ODBC, JDBC, Mongo, ...)

Data Manager

GIS, Maps, Heatmaps, Traffic Flow, ODM

API/ServiceMap

Entities, devices, data

Brokers

GeoServer

Storage

MicroServices

MicroServices

Processing Logic/IoT App (Server-Side Business Logic)

Events and Actions (WSs)

MicroServices

Web and Mobile Applications

Dashboard Builder

Dashboard Wizard

Dashboard Editor

Ready-to-use Widget

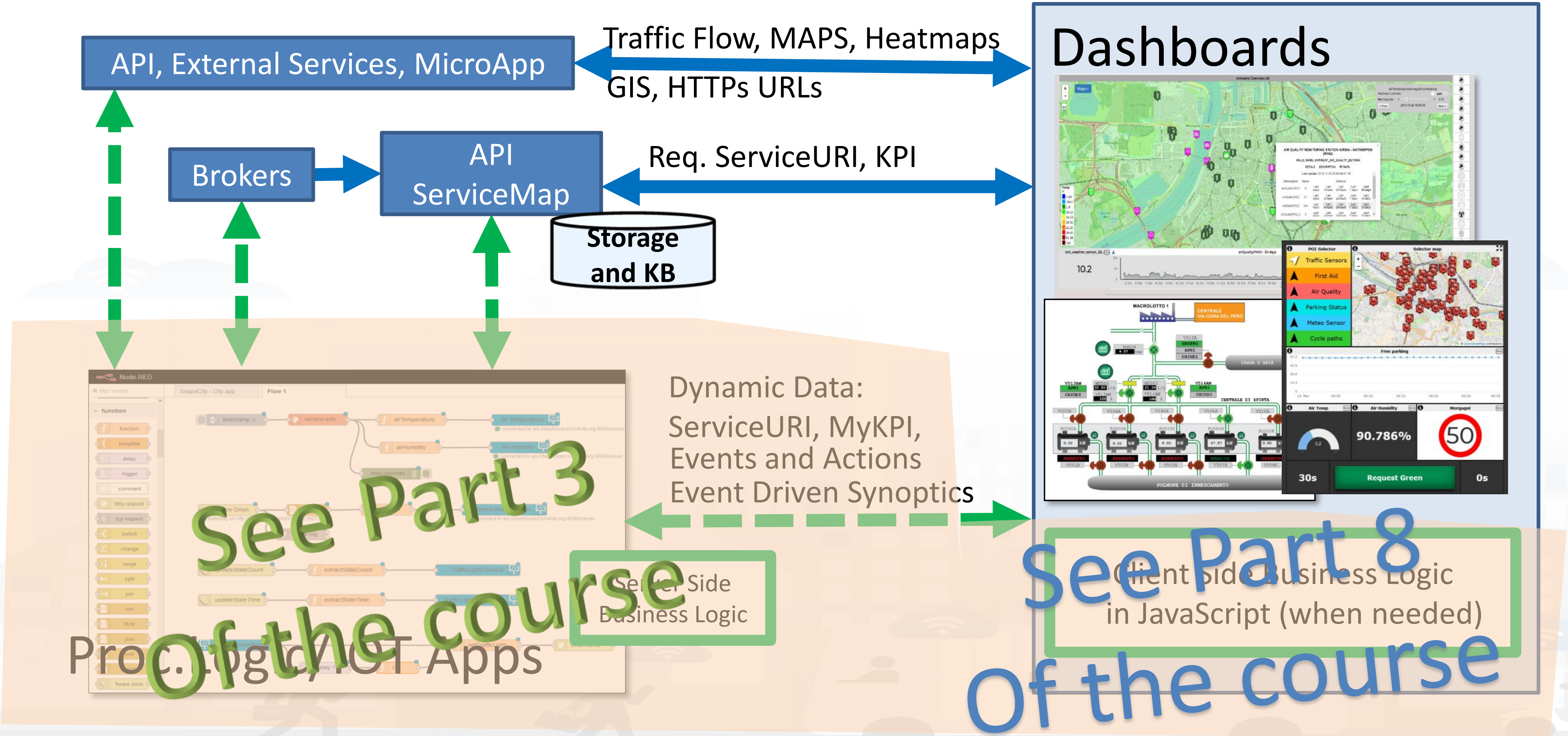
Custom Widgets (Synoptics)

Widget Collection

Client-Side Business Logic (Visual Editing, and JavaScript)

Dashboards

How the Dashboards exchange data



API, External Services, MicroApp

Traffic Flow, MAPS, Heatmaps

GIS, HTTPs URLs

Dashboards

Brokers

API ServiceMap

Storage and KB

Req. ServiceURI, KPI

Dynamic Data:
ServiceURI, MyKPI,
Events and Actions
Event Driven Synoptics

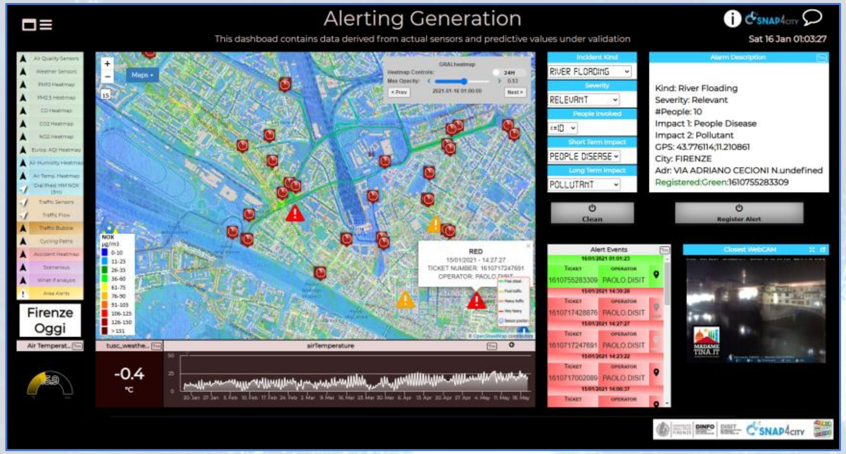
Server Side Business Logic

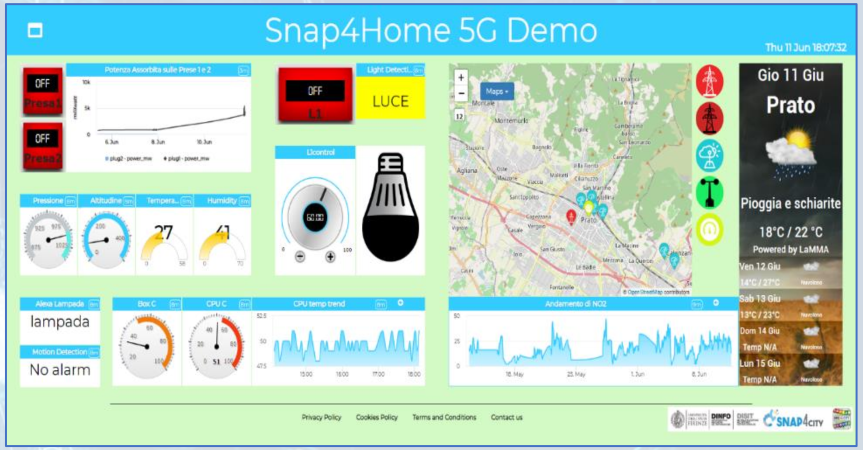
Proc.Logic / IOT Apps

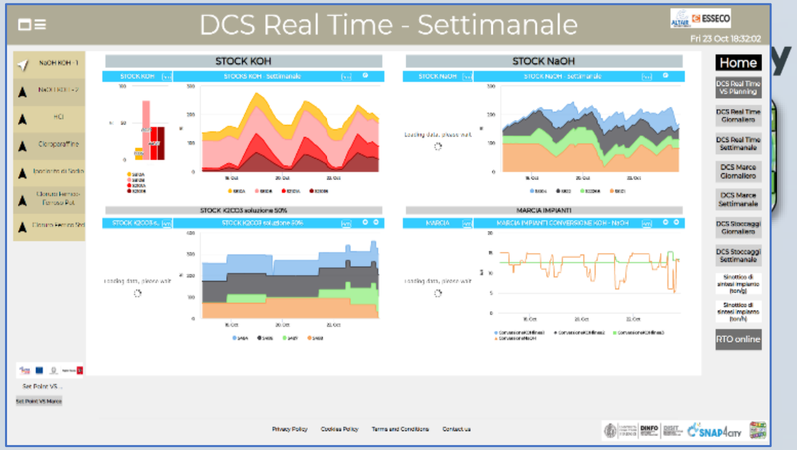
Client Side Business Logic
in JavaScript (when needed)

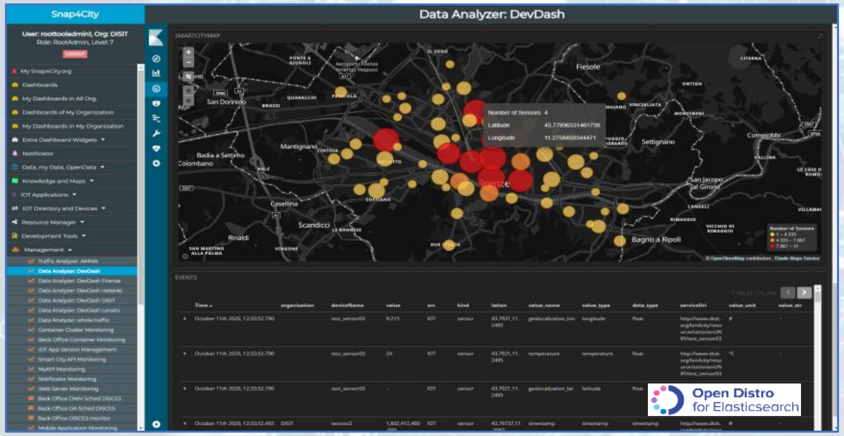
See Part 3
Of the course

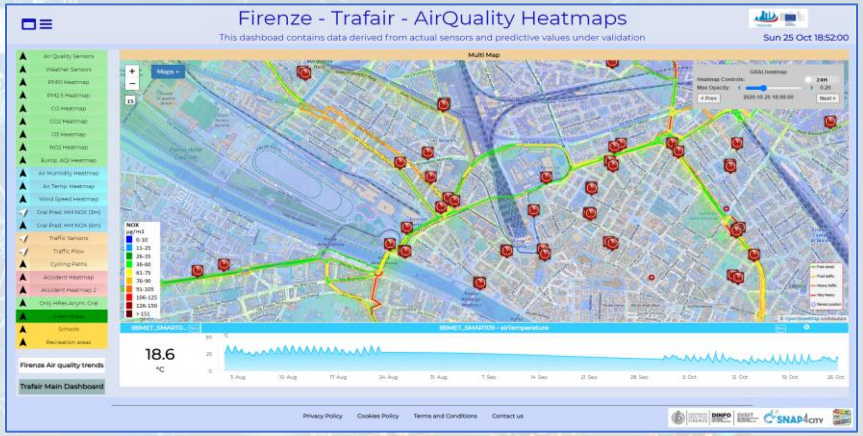
See Part 8
Of the course

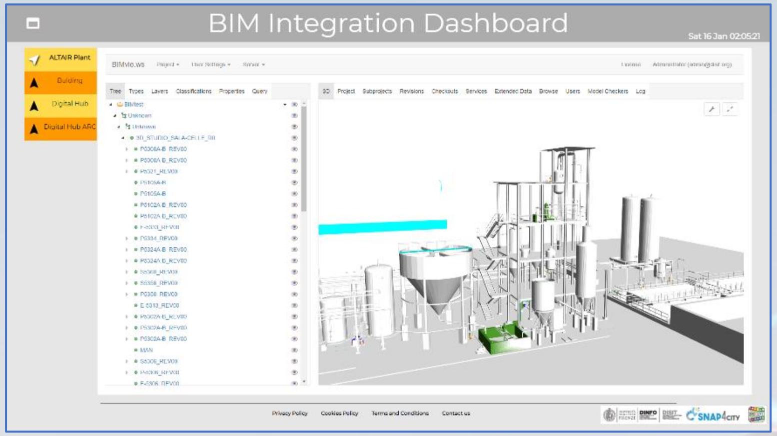

Alerting Generation
This dashboard contains data derived from actual sensors and predictive values under validation
Sat 16 Jan 01:03:27
Firenze Oggi
-0.4
°C

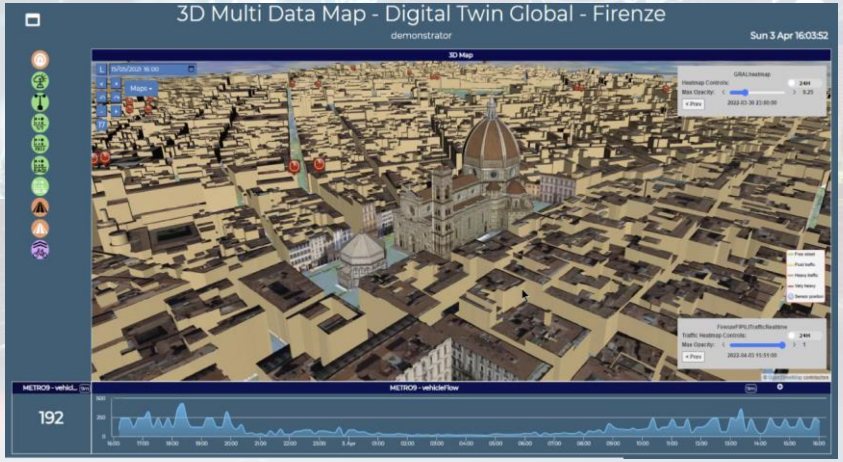

Snap4Home 5G Demo
Thu 11 Jun 18:07:32
OFF
LUCE
lampada
No alarm
Gio 11 Giu
Prato
Pioggia e schiarite
18°C / 22 °C
Powered by LaMMA

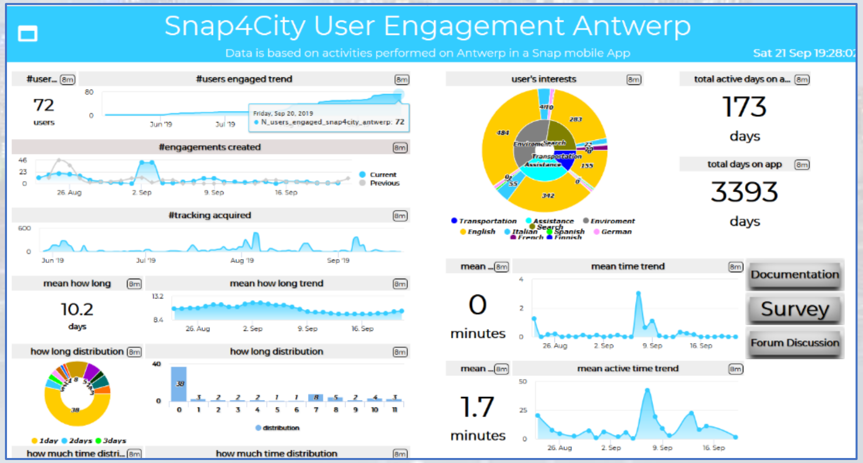

DCS Real Time - Settimanale
STOCK KOH
STOCK NaOH
Home
RTO online

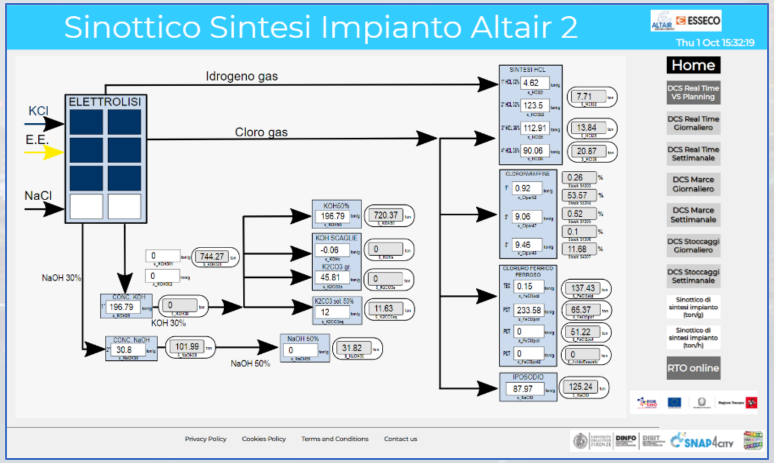

Snap4City
Data Analyzer: DevDash
Open Distro for Elasticsearch


Firenze - Trafair - AirQuality Heatmaps
This dashboard contains data derived from actual sensors and predictive values under validation
Sun 25 Oct 18:52:00
Multi Map
18.6
°C

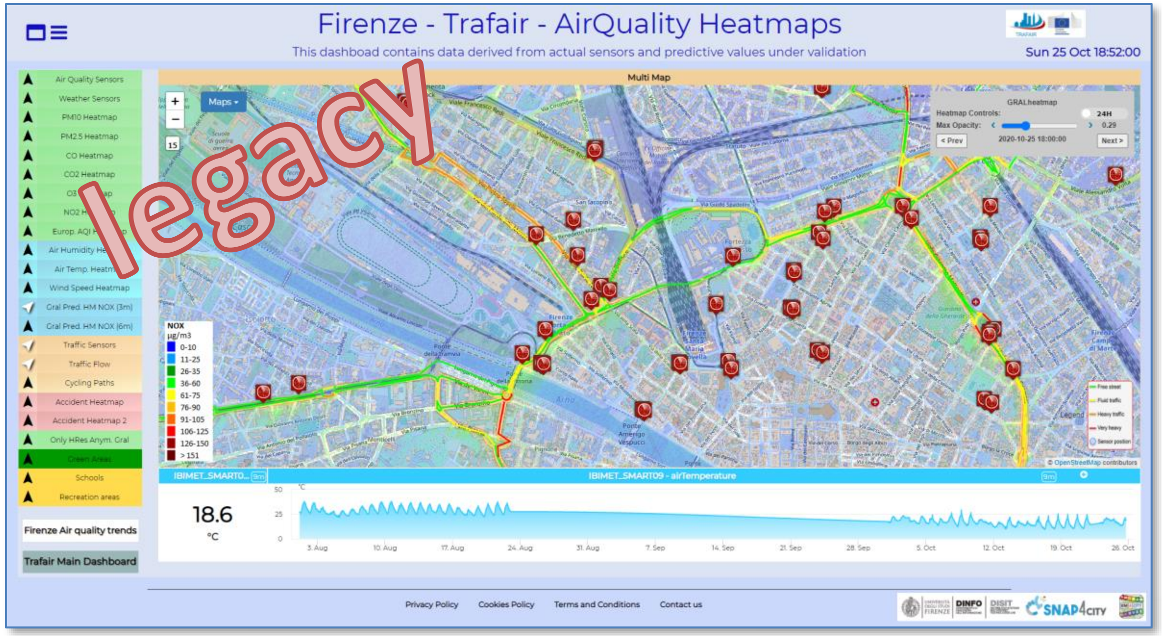

BIM Integration Dashboard
Sat 16 Jan 02:05:21

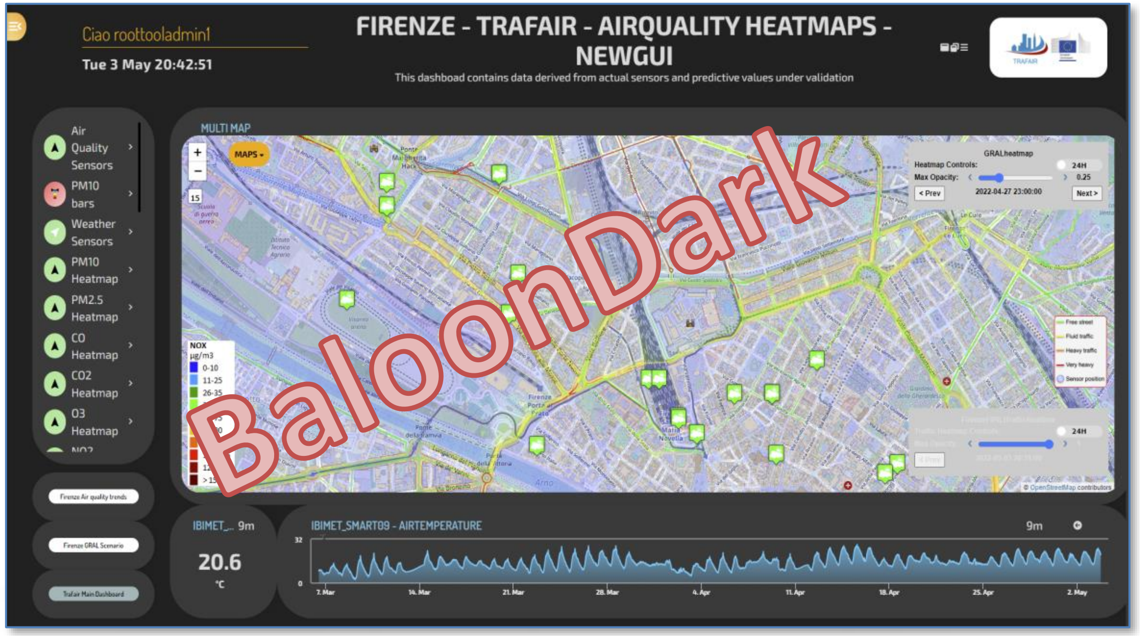

3D Multi Data Map - Digital Twin Global - Firenze
demonstrator
Sun 3 Apr 16:03:52
3D Map
192

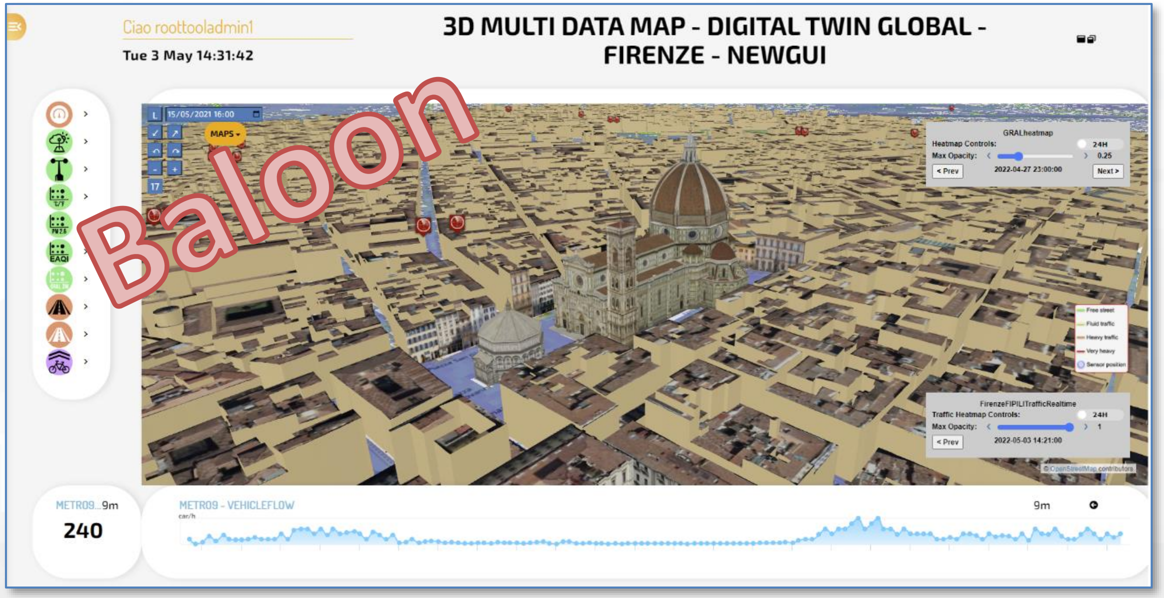

Snap4City User Engagement Antwerp
Data is based on activities performed on Antwerp in a Snap mobile App
Sat 21 Sep 19:28:0
#users engaged trend
72
users
user's interests
173
days
total days on app
3393
days
#engagements created
#tracking acquired
mean how long
10.2
days
mean time trend
0
minutes
Documentation
Survey
Forum Discussion
mean active time trend
1.7
minutes
how long distribution

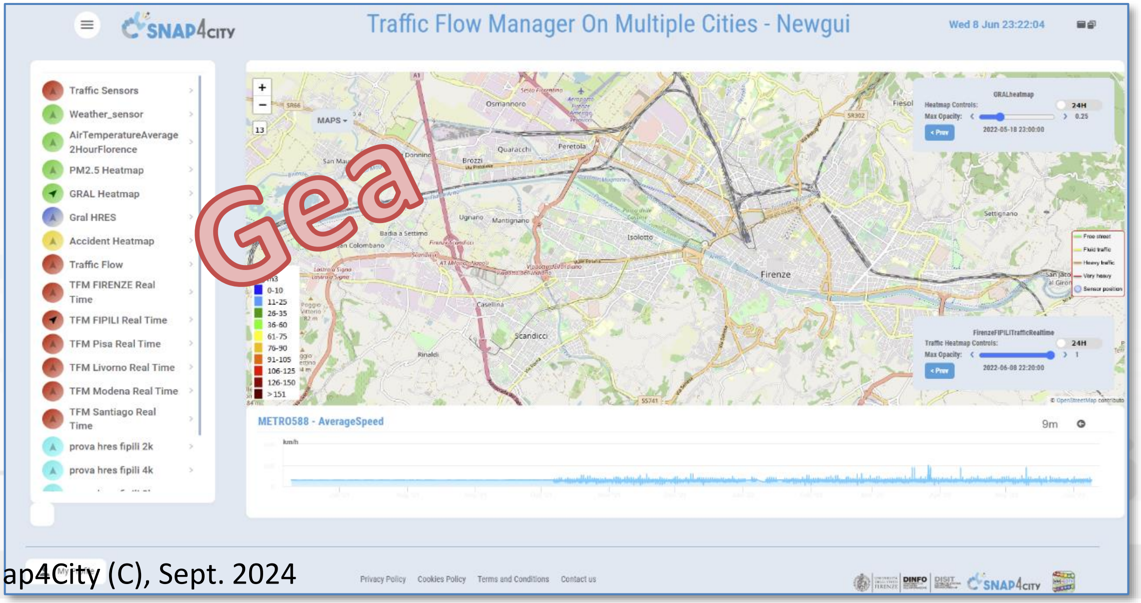

Sinottico Sintesi Impianto Altair 2
Thu 1 Oct 15:32:19
Idrogeno gas
Cloro gas
KCl
E.E.
NaCl
ELETTROLISI
NaOH 30%
KOH 30%
NaOH 50%
Home
RTO online

Themes


legacy
Firenze - Trafair - AirQuality Heatmaps
This dashboard contains data derived from actual sensors and predictive values under validation
Sun 25 Oct 18:52:00
Multi Map
Air Quality Sensors
Weather Sensors
PM10 Heatmap
PM2.5 Heatmap
CO Heatmap
CO2 Heatmap
Traffic Sensors
Traffic Flow
Cycling Paths
Accident Heatmap
Schools
Recreation areas
Firenze Air quality trends
Trafair Main Dashboard
IBIMET_SMARTO9 - airTemperature
18.6
°C
Privacy Policy
Cookies Policy
Terms and Conditions
Contact us


BaloonDark
Ciao roottooladmin1
Tue 3 May 20:42:51
FIRENZE - TRAFAIR - AIRQUALITY HEATMAPS - NEWGUI
This dashboard contains data derived from actual sensors and predictive values under validation
MULTI MAP
Air Quality Sensors
PM10 bars
Weather Sensors
PM10 Heatmap
PM2.5 Heatmap
CO Heatmap
CO2 Heatmap
O3 Heatmap
IBIMET_SMART09 - AIRTEMPERATURE
20.6
°C
9m


Baloon
Ciao roottooladmin1
Tue 3 May 14:31:42
3D MULTI DATA MAP - DIGITAL TWIN GLOBAL - FIRENZE - NEWGUI
METRO9...9m
240
METRO9 - VEHICLEFLOW
9m


Gea
SNAP4CITY
Traffic Flow Manager On Multiple Cities - Newgui
Wed 8 Jun 23:22:04
Traffic Sensors
Weather_sensor
AirTemperatureAverage 2HourFlorence
PM2.5 Heatmap
GRAL Heatmap
Gral HRES
Accident Heatmap
Traffic Flow
TFM FIRENZE Real Time
TFM FIPILI Real Time
TFM Pisa Real Time
TFM Livorno Real Time
TFM Modena Real Time
TFM Santiago Real Time
prova hres fipili 2k
prova hres fipili 4k
METRO588 - AverageSpeed
9m
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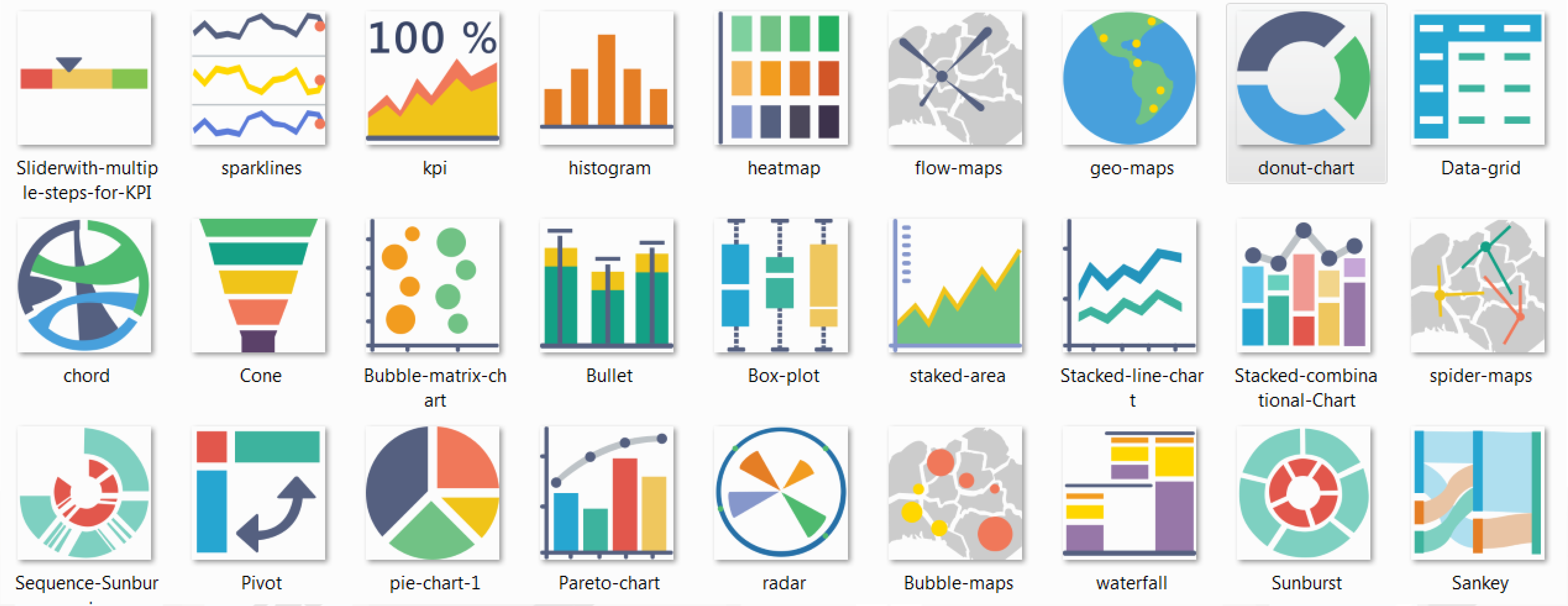
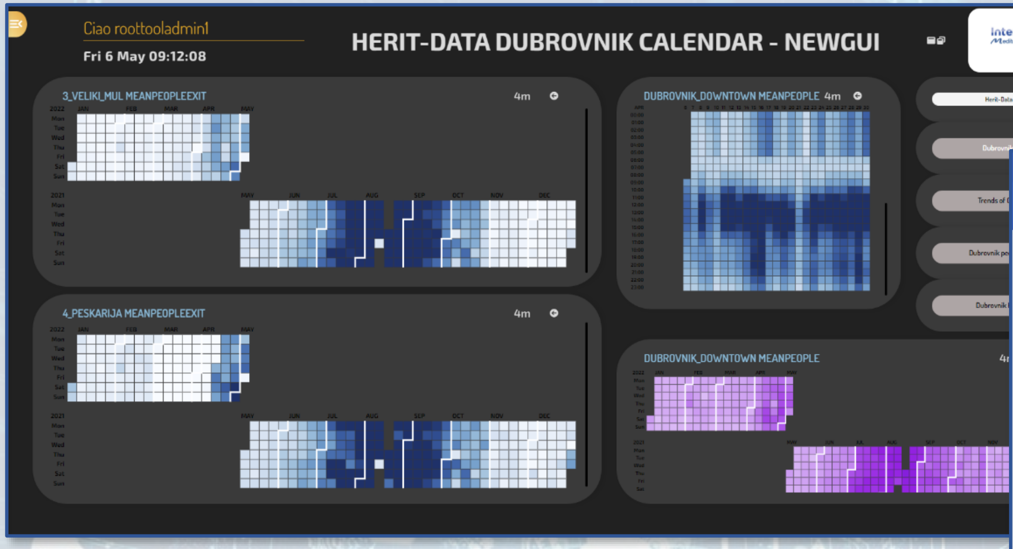
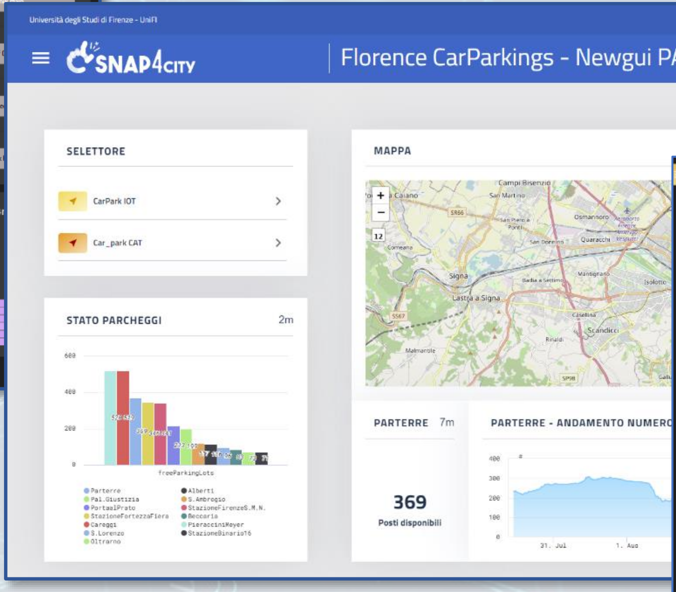
Cookies Policy
Terms and Conditions
Contact us

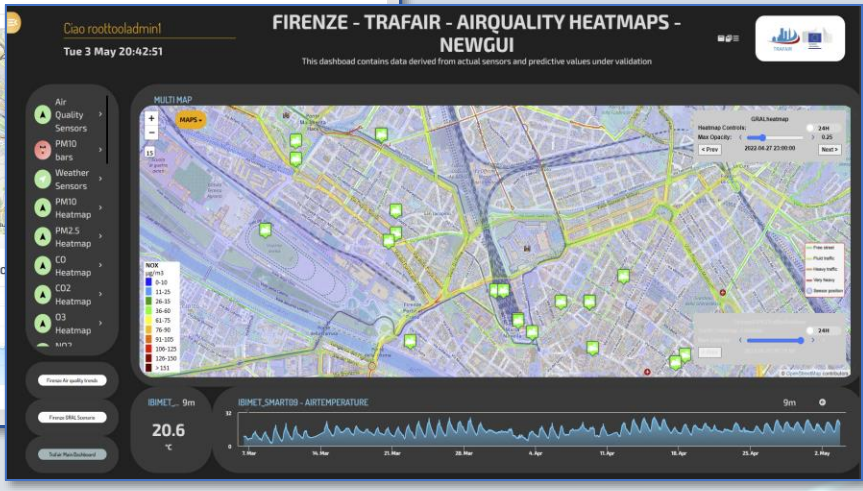
Visual Representations

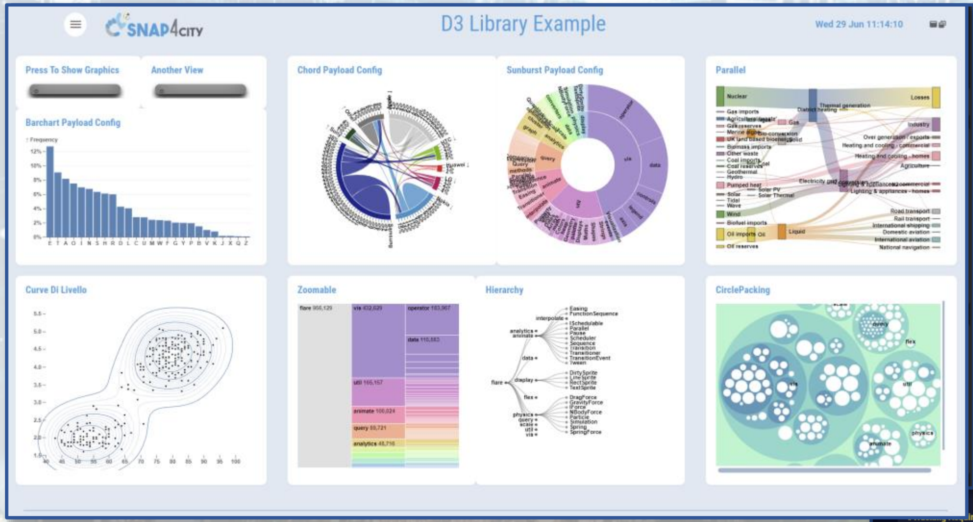

Sliderwith-multiple-steps-for-KPI
sparklines
kpi
100 %
histogram
heatmap
flow-maps
geo-maps
donut-chart
Data-grid
chord
Cone
Bubble-matrix-chart
Bullet
Box-plot
staked-area
Stacked-line-chart
Stacked-combinational-Chart
spider-maps
Sequence-Sunbur
Pivot
pie-chart-1
Pareto-chart
radar
Bubble-maps
waterfall
Sunburst
Sankey

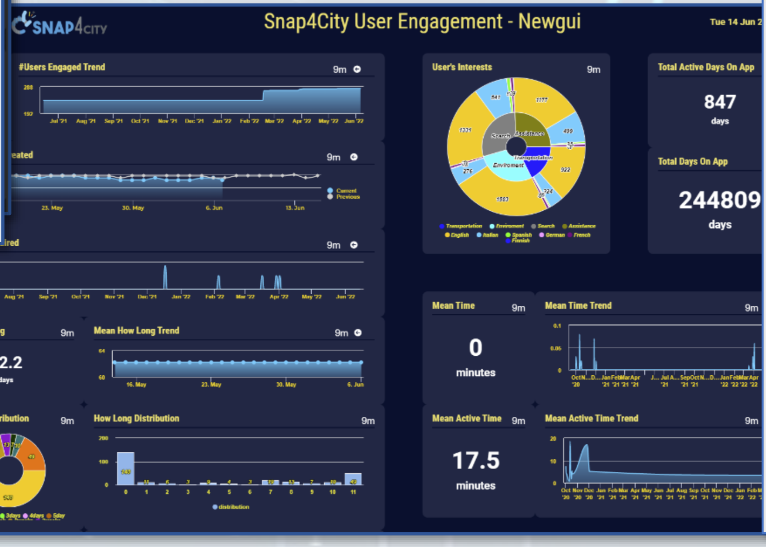
Different Themes

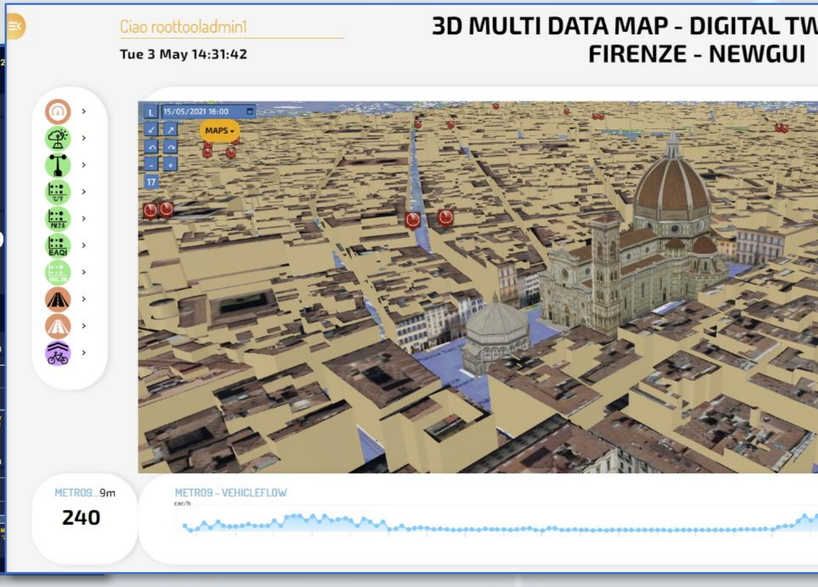

Ciao roottooladmin1
Fri 6 May 09:12:08
HERIT-DATA DUBROVNIK CALENDAR - NEWGUI
Interreg Mediterranean HERIT-DATA
3_VELIKI_MUL MEANPEOPLEEXIT
4m
4_PESKARIJA MEANPEOPLEEXIT
DUBROVNIK_DOWNTOWN MEANPEOPLE
Herit-Data Main
Dubrovnik Main
Trends of


Università degli Studi di Firenze - UniFI
Sat 6 Aug 10:58:01
SNAP4CITY
Florence CarParkings - Newgui PA
SELETTORE
CarPark IOT
Car_park CAT
MAPPA
STATO PARCHEGGI
2m
PARTERRE 7m
369
Posti disponibili
PARTERRE - ANDAMENTO NUMERO


Ciao roottooladmin1
Tue 3 May 20:42:51
FIRENZE - TRAFAIR - AIRQUALITY HEATMAPS - NEWGUI
This dashboard contains data derived from actual sensors and predictive values under validation
Air Quality Sensors
PM10 bars
Weather Sensors
PM10 Heatmap
PM2.5 Heatmap
CO Heatmap
CO2 Heatmap
O3 Heatmap
MULTI MAP
IBIMET_ 9m
20.6
°C
IBIMET_SMART09 - AIRTEMPERATURE


SNAP4CITY
D3 Library Example
Wed 29 Jun 11:14:10
Press To Show Graphics
Another View
Barchart Payload Config
Chord Payload Config
Sunburst Payload Config
Parallel
Curve Di Livello
Zoomable
Hierarchy
CirclePacking

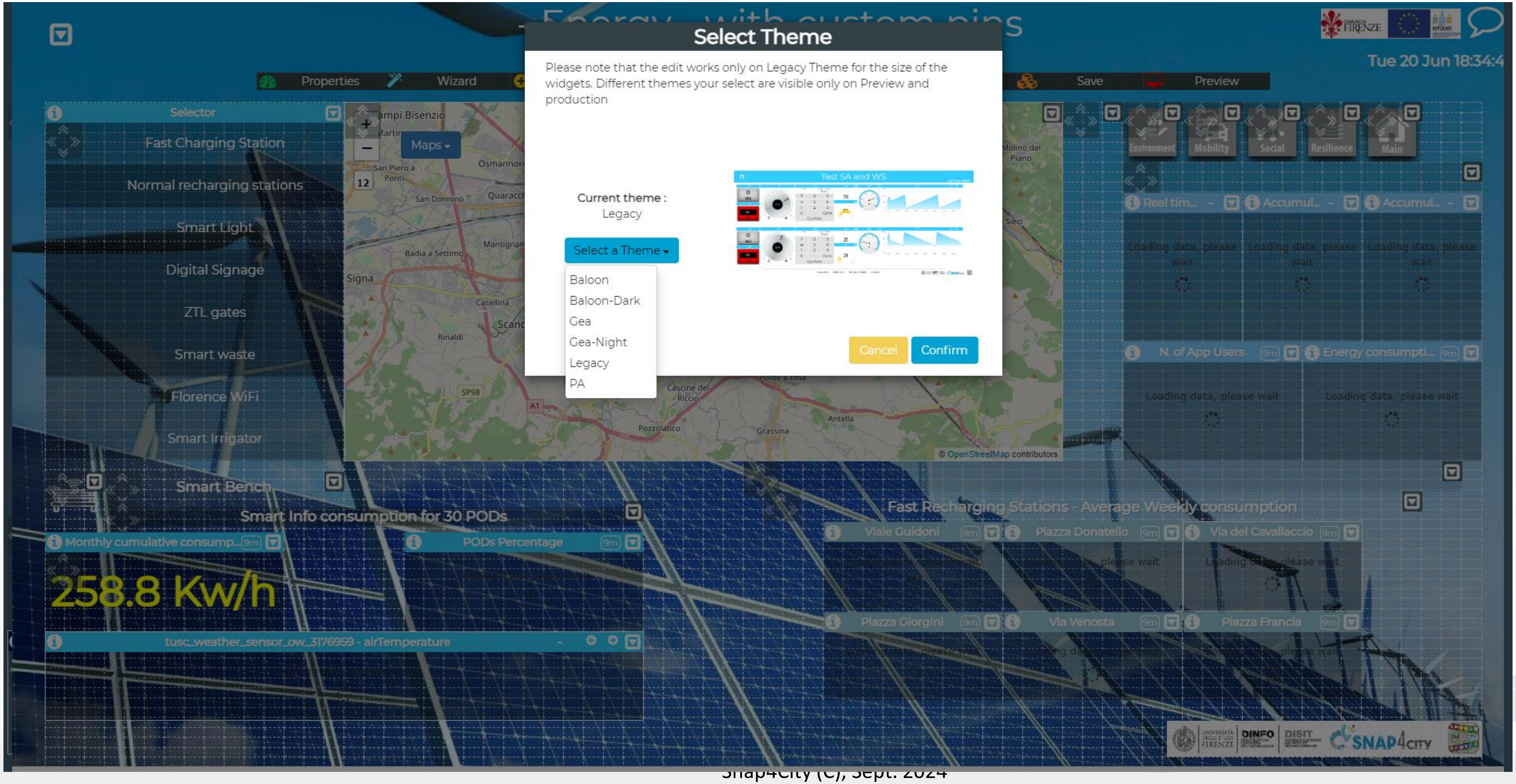

SNAP4CITY
Snap4City User Engagement - Newgui
#Users Engaged Trend
User's Interests
Total Active Days On App
847
days
Total Days On App
244809
days
Mean How Long
62.2
days
Mean How Long Trend
Mean Time
0
minutes
Mean Time Trend
How Long Distribution
Mean Active Time
17.5
minutes
Mean Active Time Trend


Ciao roottooladmin1
Tue 3 May 14:31:42
3D MULTI DATA MAP - DIGITAL TW
FIRENZE - NEWGUI
15/05/2021 16:00
MAPS
METRO9_ 9m
240
METRO9 - VEHICLEFLOW

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

https://www.snap4city.org/793

Changing Theme



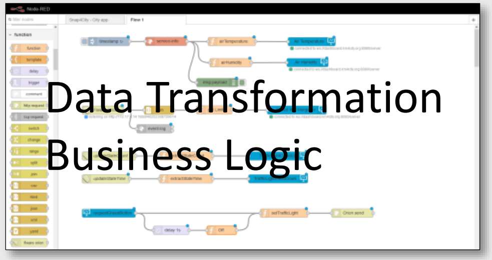
Select Theme

Please note that the edit works only on Legacy Theme for the size of the widgets. Different themes your select are visible only on Preview and production

Current theme : Legacy

Energy - with custom pins
Tue 20 Jun 18:34:4
Properties
Wizard
Save
Preview
Select a Theme
Baloon
Baloon-Dark
Gea
Gea-Night
Legacy
PA
Test SA and WS
Cancel
Confirm
Selector
Fast Charging Station
Normal recharging stations
Smart Light
Digital Signage
ZTL gates
Smart waste
Florence WiFi
Smart Irrigator
Smart Bench
Maps
Environment
Mobility
Social
Resilience
Main
Real tim...
Accumul...
Accumul...
Loading data, please wait
N. of App Users
Energy consumpti...
Smart Info consumption for 30 PODs
Monthly cumulative consump...
PODs Percentage
258.8 Kw/h
tusc_weather_sensor_ow_3176959 - airTemperature
Fast Recharging Stations - Average Weekly consumption
Viale Guidoni
Piazza Donatello
Via del Cavallaccio
Piazza Giorgini
Via Venosta
Piazza Francia
© OpenStreetMap contributors

Dashboard Builder: Development



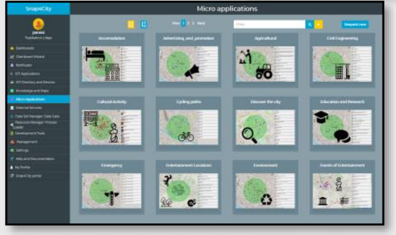
Data Transformation
Business Logic

IOT Applications

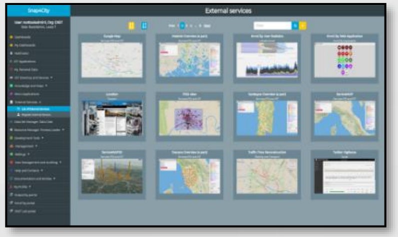
Knowledge Base,
Km4City

Knowledge and Storage
Data from the Field and
City + MyKPI ++

Widget Collection



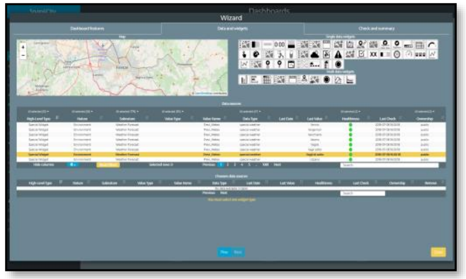
Micro
Applicat
ions

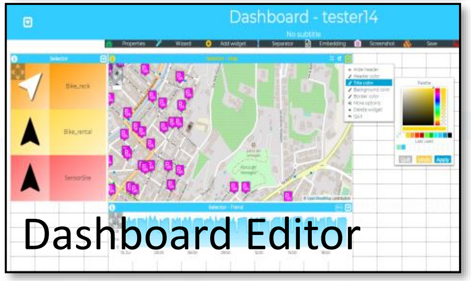


External
Services

Custom
Widgets/
Synoptics

Dashboard Wizard

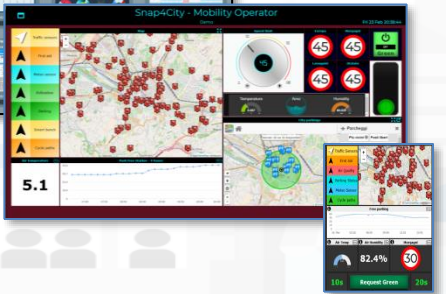



Dashboard - tester14

Dashboard Editor

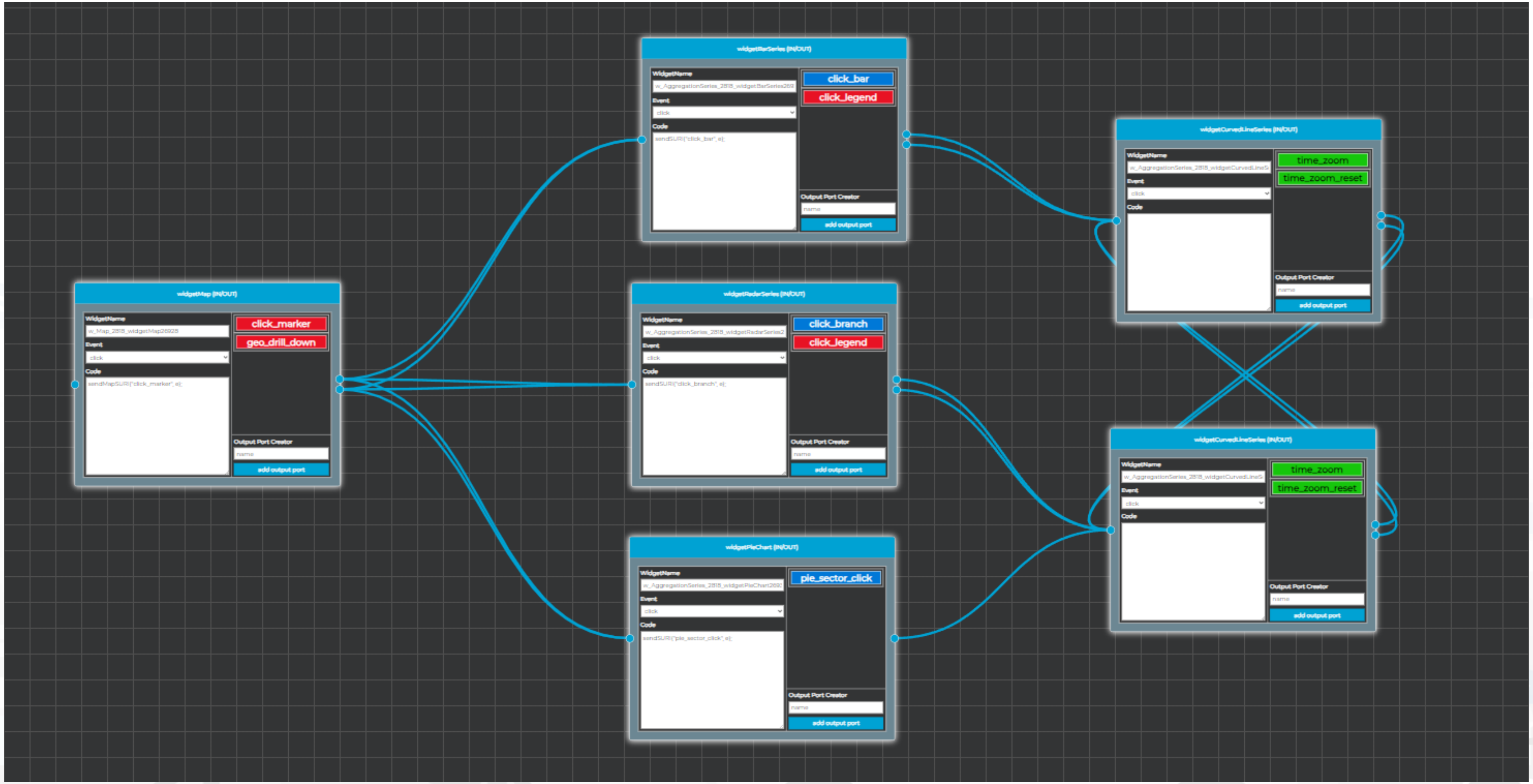
Create, save, load,
delegate, grant access,
change ownerhip

Public
Dashboard
Collection


Snap4City - Mobility Operator

My Own Dash/App

Visual programming for CSBL is coming soon


widgetBarSeries (IN/OUT)
click_bar
click_legend
widgetMap (IN/OUT)
click_marker
geo_drill_down
widgetRadarSeries (IN/OUT)
click_branch
click_legend
widgetPieChart (IN/OUT)
pie_sector_click
widgetCurvedLineSeries (IN/OUT)
time_zoom
time_zoom_reset
widgetCurvedLineSeries (IN/OUT)
time_zoom
time_zoom_reset
Output Port Creator
name
add output port

widgetBarSeries (IN/OUT)

WidgetName: w_AggregationSeries_2818_widgetBarSeries269

Event: click

Code:

```
sendSURI("click_bar", e);
```

widgetMap (IN/OUT)

WidgetName: w_Map_2818_widgetMap26928

Event: click

Code:

```
sendMapSURI("click_marker", e);
```

widgetRadarSeries (IN/OUT)

WidgetName: w_AggregationSeries_2818_widgetRadarSeries2

Event: click

Code:

```
sendSURI("click_branch", e);
```

widgetPieChart (IN/OUT)

WidgetName: w_AggregationSeries_2818_widgetPieChart2690

Event: click

Code:

```
sendSURI("pie_sector_click", e);
```

widgetCurvedLineSeries (IN/OUT)

WidgetName: w_AggregationSeries_2818_widgetCurvedLineS

Event: click

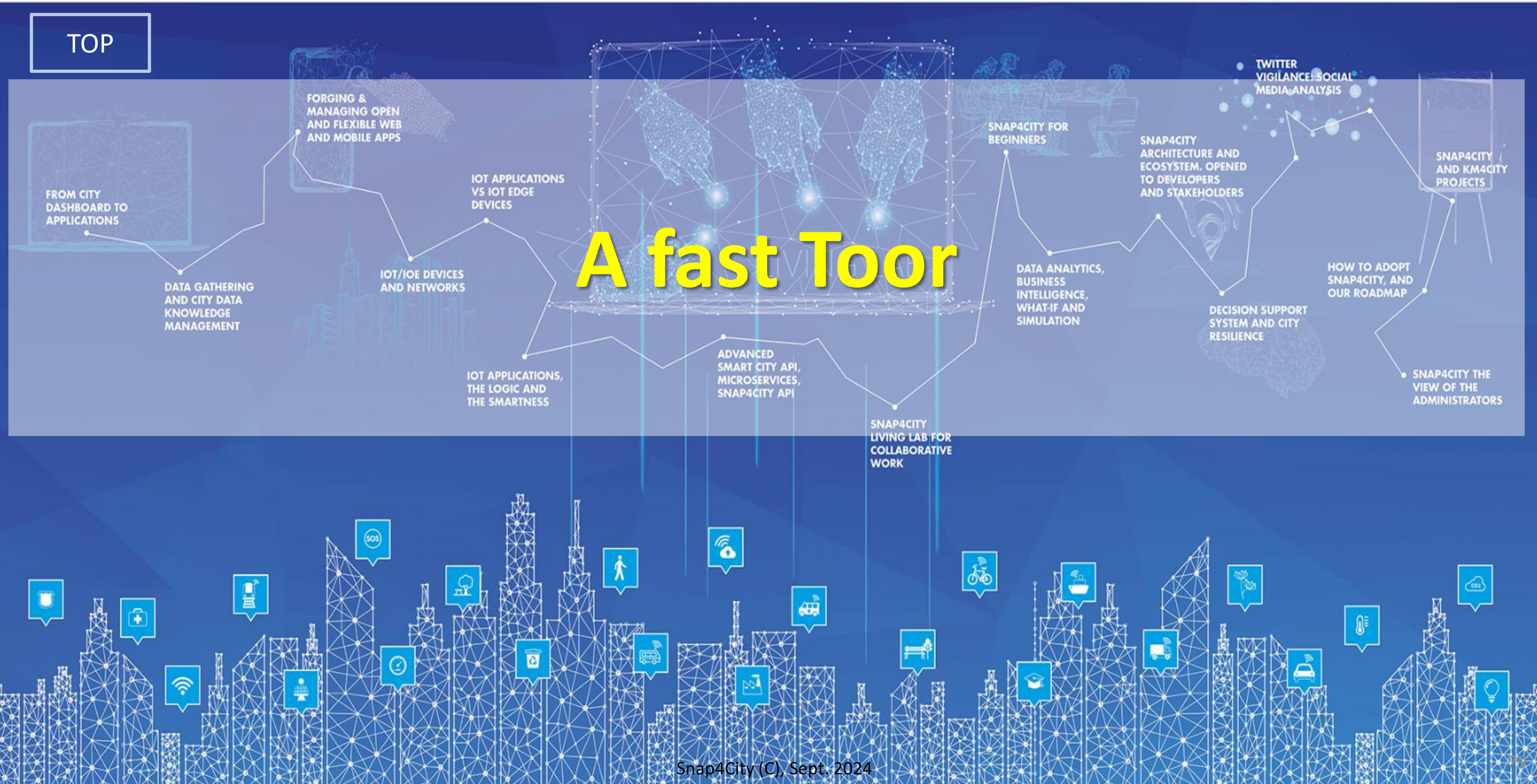
widgetCurvedLineSeries (IN/OUT)

WidgetName: w_AggregationSeries_2818_widgetCurvedLineS

Event: click

TOP

A fast Toor


FROM CITY DASHBOARD TO APPLICATIONS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
IOT/IOE DEVICES AND NETWORKS
IOT APPLICATIONS VS IOT EDGE DEVICES
IOT APPLICATIONS, THE LOGIC AND THE SMARTNESS
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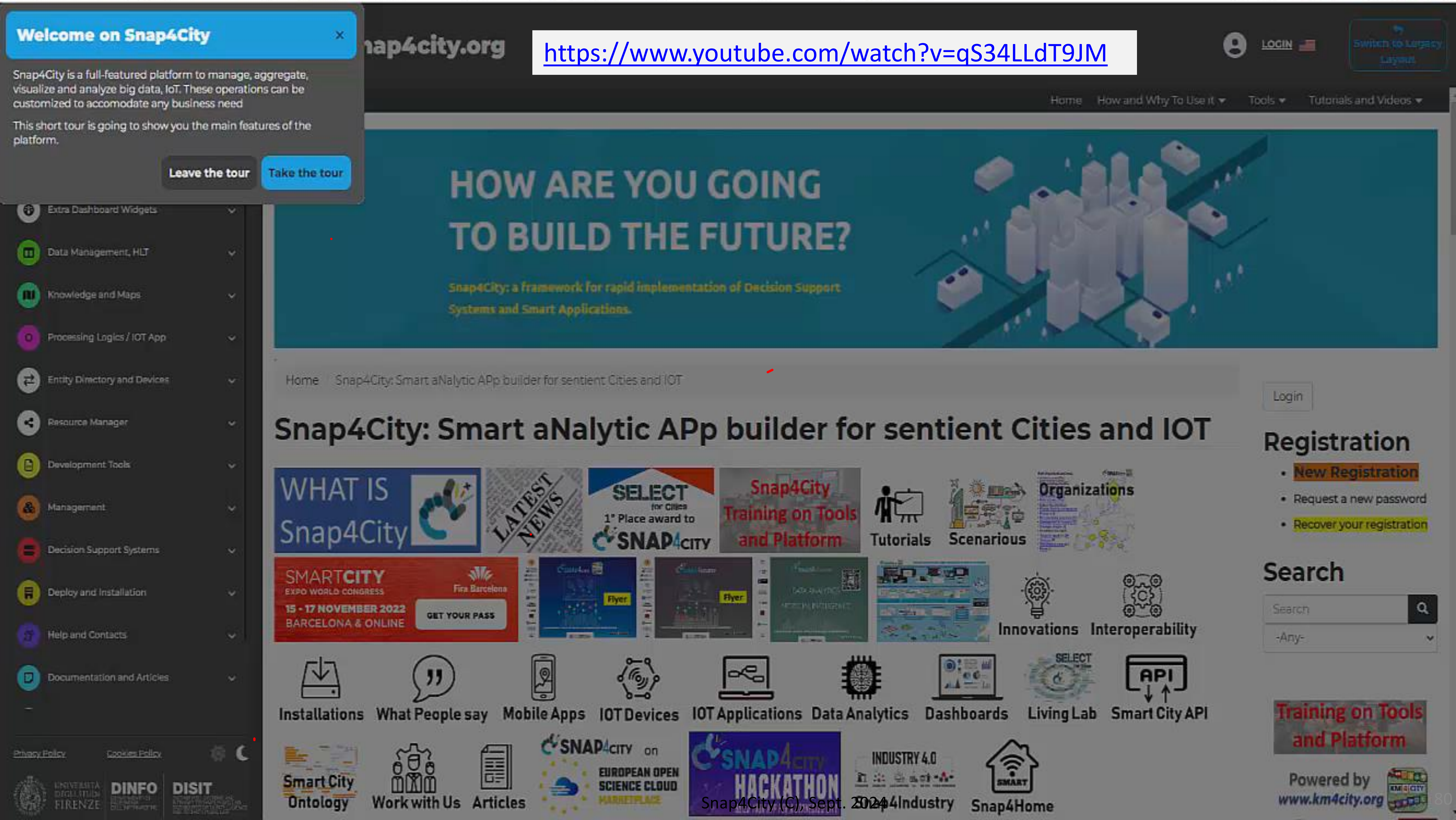
SNAP4CITY AND KM4CITY PROJECTS
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

https://www.youtube.com/watch?v=qS34LLdT9JM



snap4city.org
LOGIN
Switch to Legacy Layout
Home
How and Why To Use it
Tools
Tutorials and Videos
Extra Dashboard Widgets
Data Management, HLT
Knowledge and Maps
Processing Logics / IOT App
Entity Directory and Devices
Resource Manager
Development Tools
Management
Decision Support Systems
Deploy and Installation
Help and Contacts
Documentation and Articles
Privacy Policy
Cookies Policy
UNIVERSITÀ DEGLI STUDI FIRENZE
DINFO
DISIT

Welcome on Snap4City

Snap4City is a full-featured platform to manage, aggregate, visualize and analyze big data, IoT. These operations can be customized to accomodate any business need

This short tour is going to show you the main features of the platform.

Leave the tour
Take the tour

HOW ARE YOU GOING TO BUILD THE FUTURE?

Snap4City: a framework for rapid implementation of Decision Support Systems and Smart Applications.

Home   Snap4City: Smart aNalytic APp builder for sentient Cities and IOT

Snap4City: Smart aNalytic APp builder for sentient Cities and IOT

WHAT IS Snap4City
LATEST NEWS
SELECT for Cities 1° Place award to SNAP4CITY
Snap4City Training on Tools and Platform
Tutorials
Scenarious
Organizations
SMARTCITY EXPO WORLD CONGRESS
Fira Barcelona
15 - 17 NOVEMBER 2022 BARCELONA & ONLINE
GET YOUR PASS
Flyer
Flyer
Innovations
Interoperability
Installations
What People say
Mobile Apps
IOT Devices
IOT Applications
Data Analytics
Dashboards
Living Lab
Smart City API
Smart City Ontology
Work with Us
Articles
SNAP4CITY on EUROPEAN OPEN SCIENCE CLOUD MARKETPLACE
SNAP4CITY HACKATHON
INDUSTRY 4.0
Snap4Industry
Snap4Home

Login

Registration

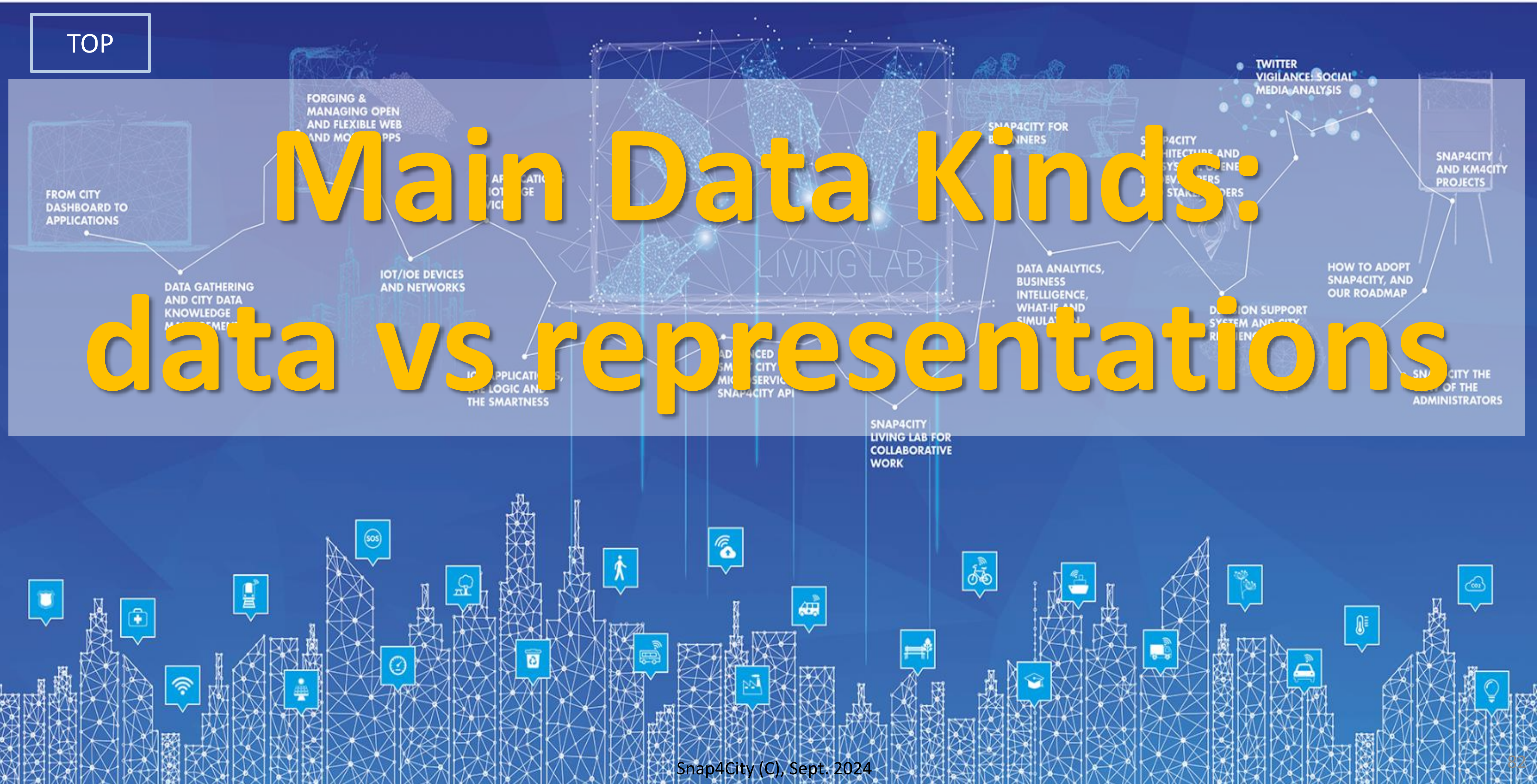
- New Registration
- Request a new password
- Recover your registration

Search

Search
-Any-
Training on Tools and Platform
Powered by www.km4city.org

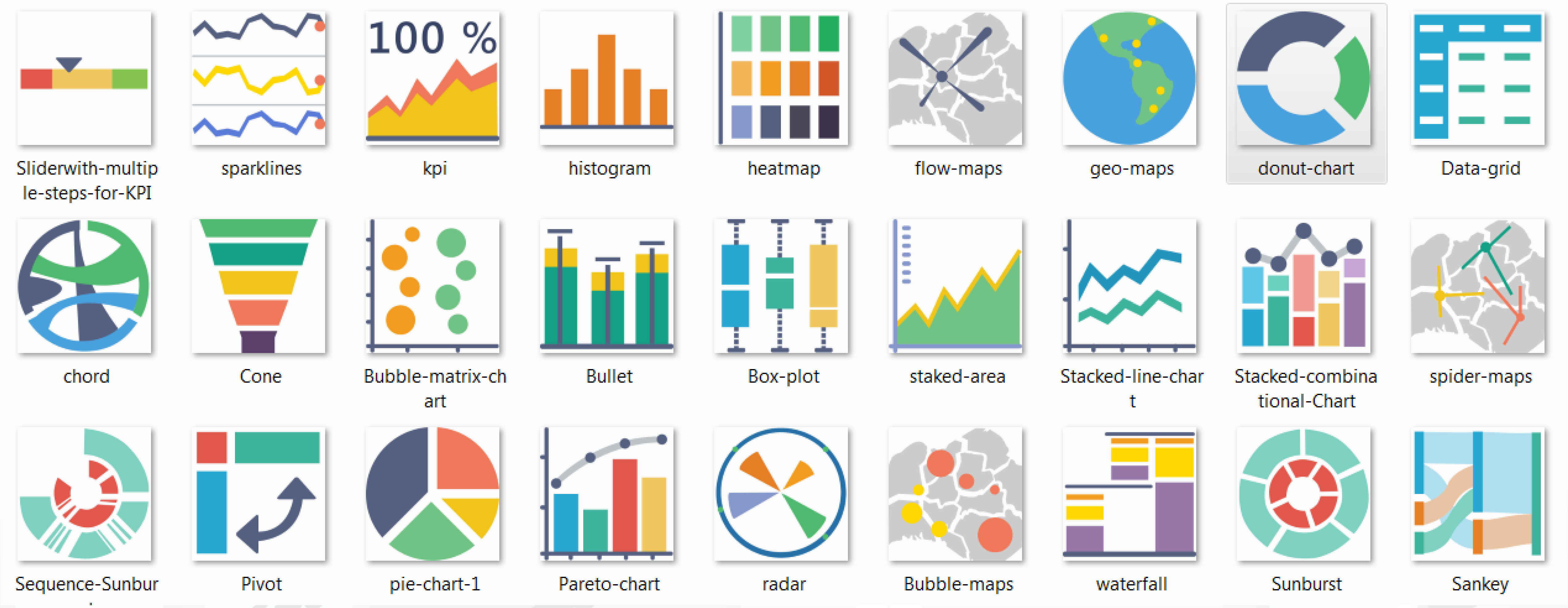
TOP

Main Data Kinds: data vs representations

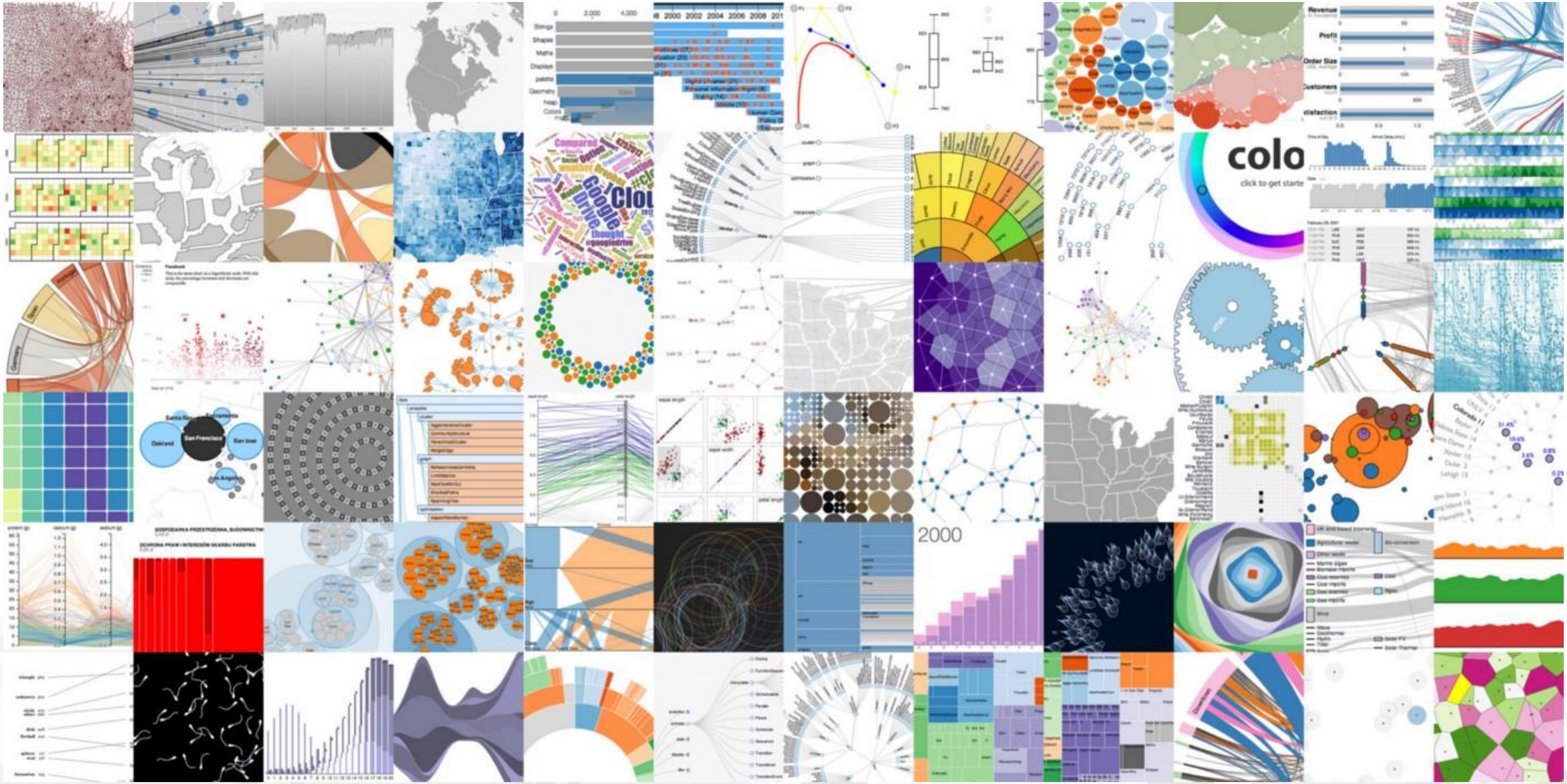

TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
FROM CITY DASHBOARD TO APPLICATIONS
SNAP4CITY AND KM4CITY PROJECTS
IOT/IOE DEVICES AND NETWORKS
DATA ANALYTICS, BUSINESS INTELLIGENCE,
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
LIVING LAB
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
THE SMARTNESS
ADMINISTRATORS

From Data to Visualization

Visual Representations


Sliderwith-multiple-steps-for-KPI
sparklines
kpi
100 %
histogram
heatmap
flow-maps
geo-maps
donut-chart
Data-grid
chord
Cone
Bubble-matrix-chart
Bullet
Box-plot
staked-area
Stacked-line-chart
Stacked-combinational-Chart
spider-maps
Sequence-Sunbur
Pivot
pie-chart-1
Pareto-chart
radar
Bubble-maps
waterfall
Sunburst
Sankey

D3.js graphs



Main Concepts

- **Time Series**
  - Data sources (sensors / actuators) which provide changes of time. E.g., a sensor of some kind.
- **Geolocated Data on maps (PINs)** can be:
  - Structural info.: roads, building, etc.
  - Maps, orthomaps, Heatmaps (HM)
  - Elements and their positions as
    - Points of Interest
    - Shapes: garden, building, cycling paths, etc.
    - Entities/Devices as Time Series: which may move over time, e.g., tracking a Car
  - Origin Destination Maps, ODM
  - Trajectories, people and traffic flows, etc.
  - etc.
- **Static non GeoLocated Data**:
  - almost nothing since……

A single Data Kind may have multiple representations:

e.g.: the position of the car at 15:30, the trjaectory of yesterday, the ODM with set of travels performed in the last year, the most freq. Visited places as HM

TOP

Time Series, multi series

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What About IoT Devices, Time Series

IOT Device

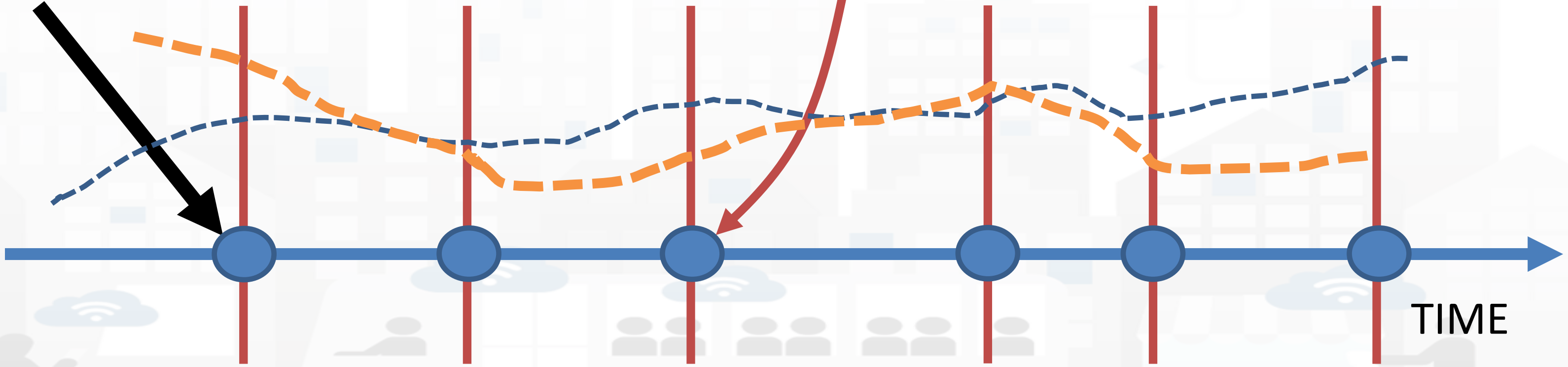
IOT Device

Sends a message

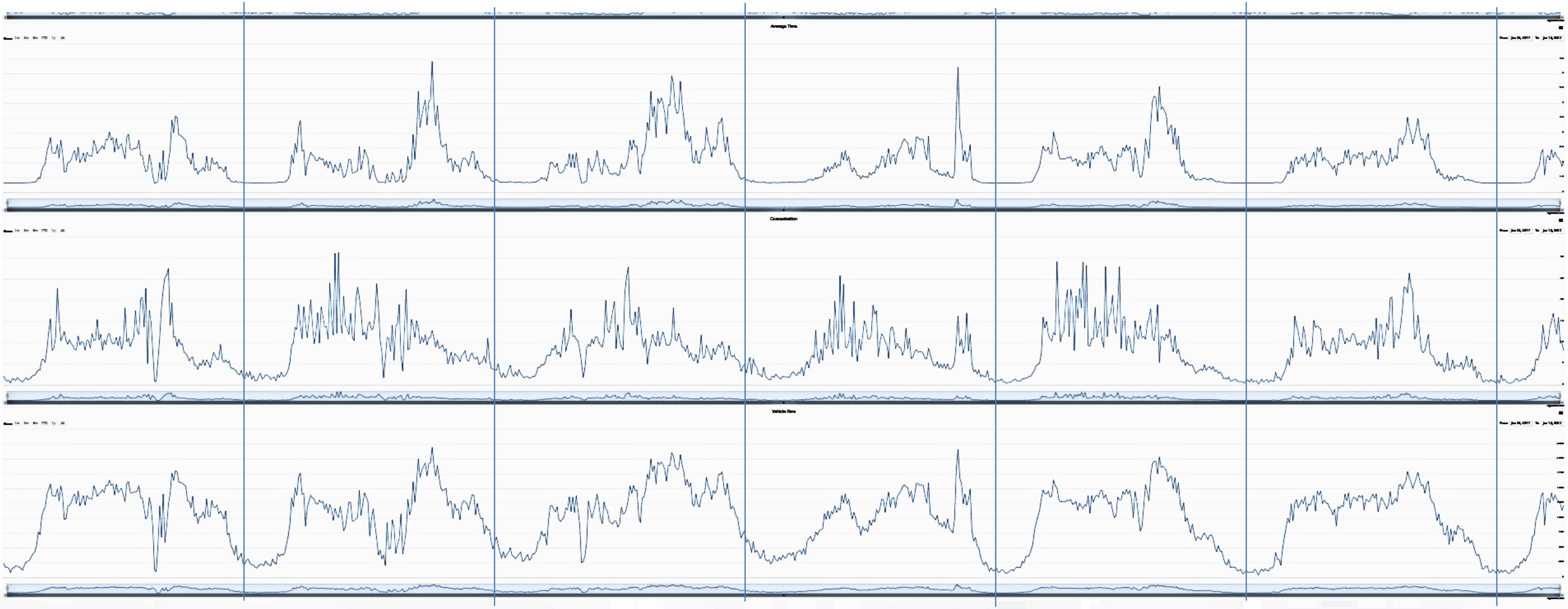
Message (
timestamp: 02-04-2020 at 10:30,
Temperature: 29.34,
Humidity: 35
)

- A set of data coming from an IoT Device with multiple sensor become a time series of values for devices.
  - For example: taking a new measure every 10 minutes (Red Lines)
  - Non regular rates can be valid data as well.
- Each new measure in Snap4City is conventionally time located in «dateObserved», which has to be **Unique.**
  - **Only one message per dateObserved is allowed**

dateObserved	Temp	Humidity
02-04-2020 10:30	34.5	23
02-04-2020 10:40	36.5	24
02-04-2020 10:50	36.0	22.5



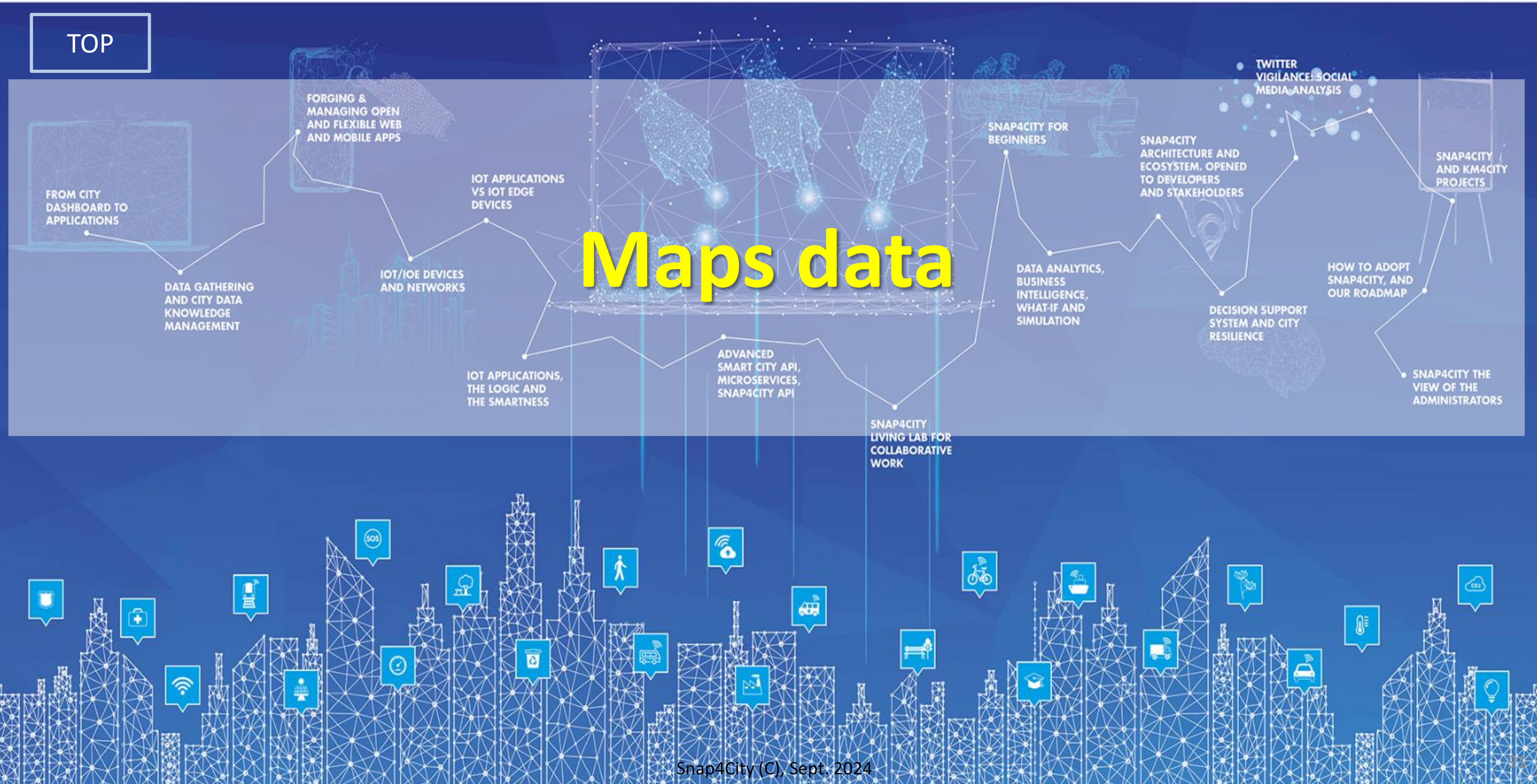
Traffic Flow data



- Day by day traffic flow, on the week data from 3 sensors

TOP

Maps data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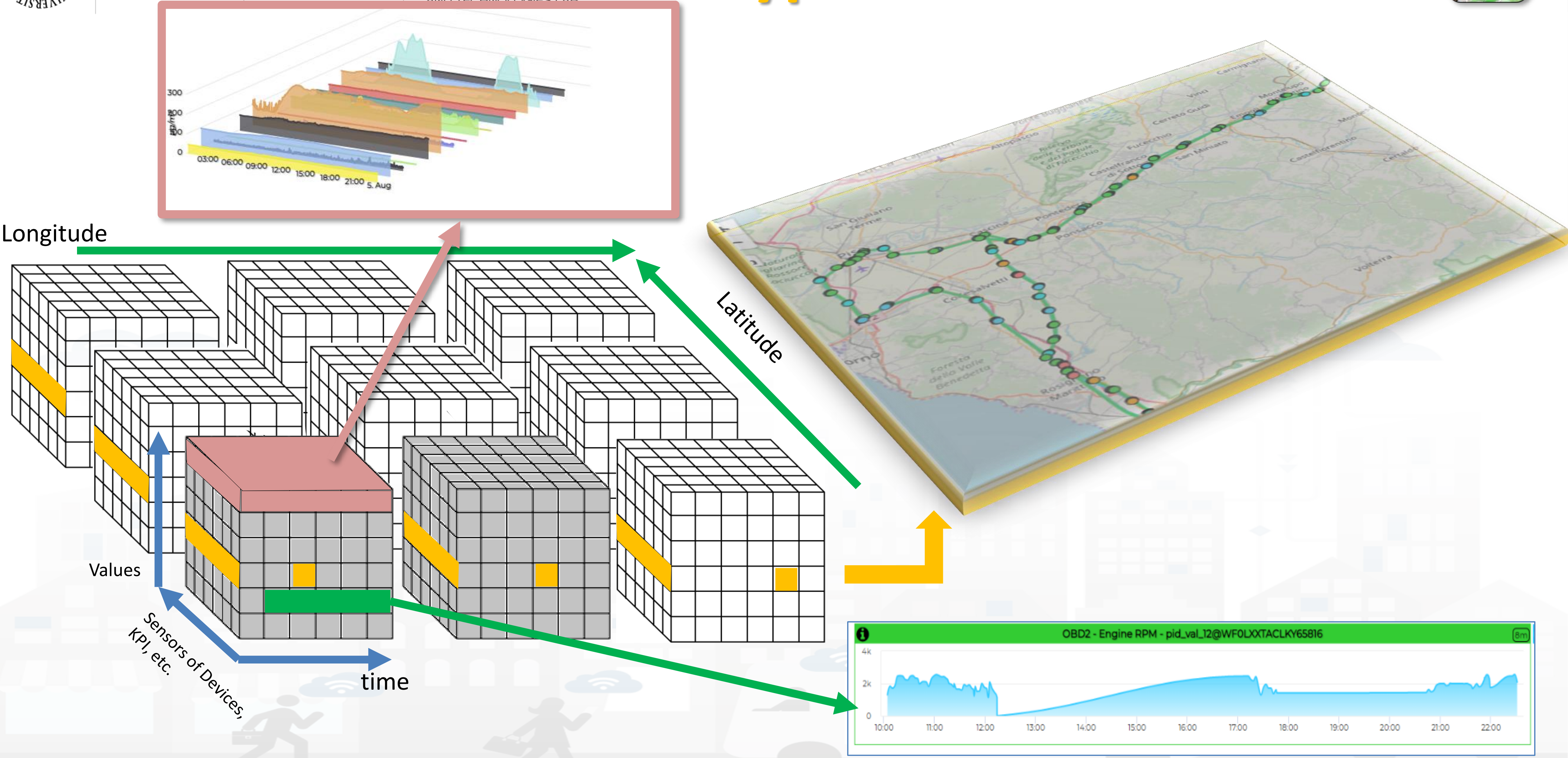
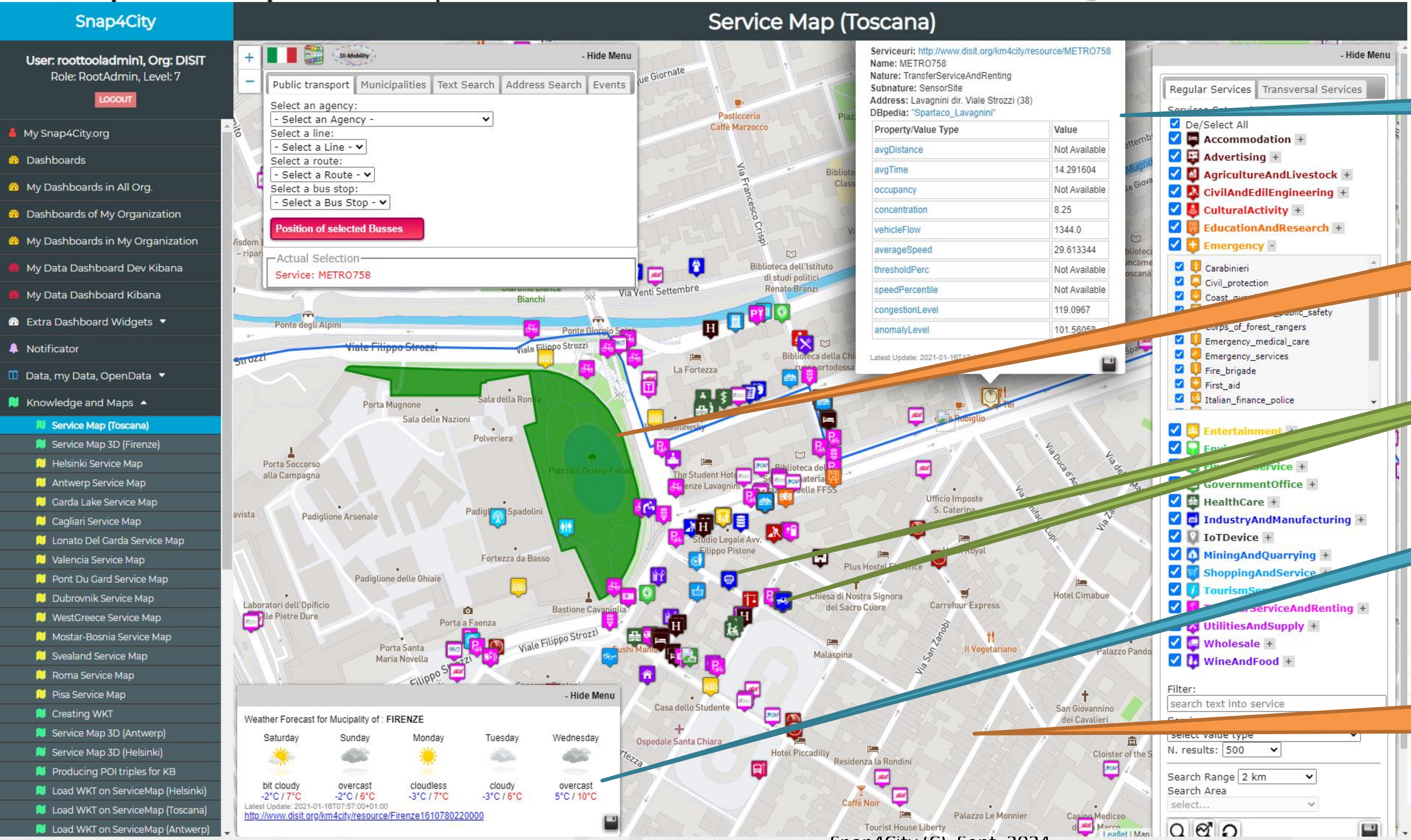
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

Hypercube


300
200
100
0
03:00
06:00
09:00
12:00
15:00
18:00
21:00
5. Aug
Longitude
Latitude
Values
Sensors of Devices, KPI, etc.
time
OBD2 - Engine RPM - pid_val_12@WF0LXXTACLKY65816
4k
2k
0
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00

KB, ServiceMap


Snap4City
Service Map (Toscana)
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
My Data Dashboard Dev Kibana
My Data Dashboard Kibana
Extra Dashboard Widgets
Notificator
Data, my Data, OpenData
Knowledge and Maps
Service Map (Toscana)
Service Map 3D (Firenze)
Helsinki Service Map
Antwerp Service Map
Garda Lake Service Map
Cagliari Service Map
Lonato Del Garda Service Map
Valencia Service Map
Pont Du Gard Service Map
Dubrovnik Service Map
WestGreece Service Map
Mostar-Bosnia Service Map
Svealand Service Map
Roma Service Map
Pisa Service Map
Creating WKT
Service Map 3D (Antwerp)
Service Map 3D (Helsinki)
Producing POI triples for KB
Load WKT on ServiceMap (Helsinki)
Load WKT on ServiceMap (Toscana)
Load WKT on ServiceMap (Antwerp)
- Hide Menu
Public transport
Municipalities
Text Search
Address Search
Events
Select an agency:
- Select an Agency -
Select a line:
- Select a Line -
Select a route:
- Select a Route -
Select a bus stop:
- Select a Bus Stop -
Position of selected Busses
- Hide Menu
Regular Services
Transversal Services
De/Select All
Accommodation
Advertising
AgricultureAndLivestock
CivilAndEdilEngineering
CulturalActivity
EducationAndResearch
Emergency
Carabinieri
Civil_protection
Corps_of_forest_rangers
Emergency_medical_care
Emergency_services
Fire_brigade
First_aid
Italian_finance_police
Entertainment
GovernmentOffice
HealthCare
IndustryAndManufacturing
IoTDevice
MiningAndQuarrying
ShoppingAndService
UtilitiesAndSupply
Wholesale
WineAndFood
Filter:
search text into service
N. results: 500
Search Range 2 km
Search Area
select...
Viale Filippo Strozzi
Fortezza da Basso
Piazzale Oriana Fallaci
Porta Mugnone
Padiglione Arsenale
Padiglione delle Ghiaie
Porta a Faenza
Via Venti Settembre
Via Francesco Crispi
Ospedale Santa Chiara
Hotel Piccadilly
Carrefour Express
Hotel Cimabue
Leaflet | Map

Actual Selection
Service: METRO758

Serviceuri: http://www.disit.org/km4city/resource/METRO758
Name: METRO758
Nature: TransferServiceAndRenting
Subnature: SensorSite
Address: Lavagnini dir. Viale Strozzi (38)
DBpedia: "Spartaco_Lavagnini"

Property/Value Type	Value
avgDistance	Not Available
avgTime	14.291604
occupancy	Not Available
concentration	8.25
vehicleFlow	1344.0
averageSpeed	29.613344
thresholdPerc	Not Available
speedPercentile	Not Available
congestionLevel	119.0967
anomalyLevel	101.56058

Latest Update: 2021-01-16T17

Weather Forecast for Mucipality of : FIRENZE

Saturday	Sunday	Monday	Tuesday	Wednesday
bit cloudy	overcast	cloudless	cloudy	overcast
-2°C / 7°C	-2°C / 6°C	-3°C / 7°C	-3°C / 6°C	5°C / 10°C

Latest Update: 2021-01-18T07:57:00+01:00
http://www.disit.org/km4city/resource/Firenze1610780220000

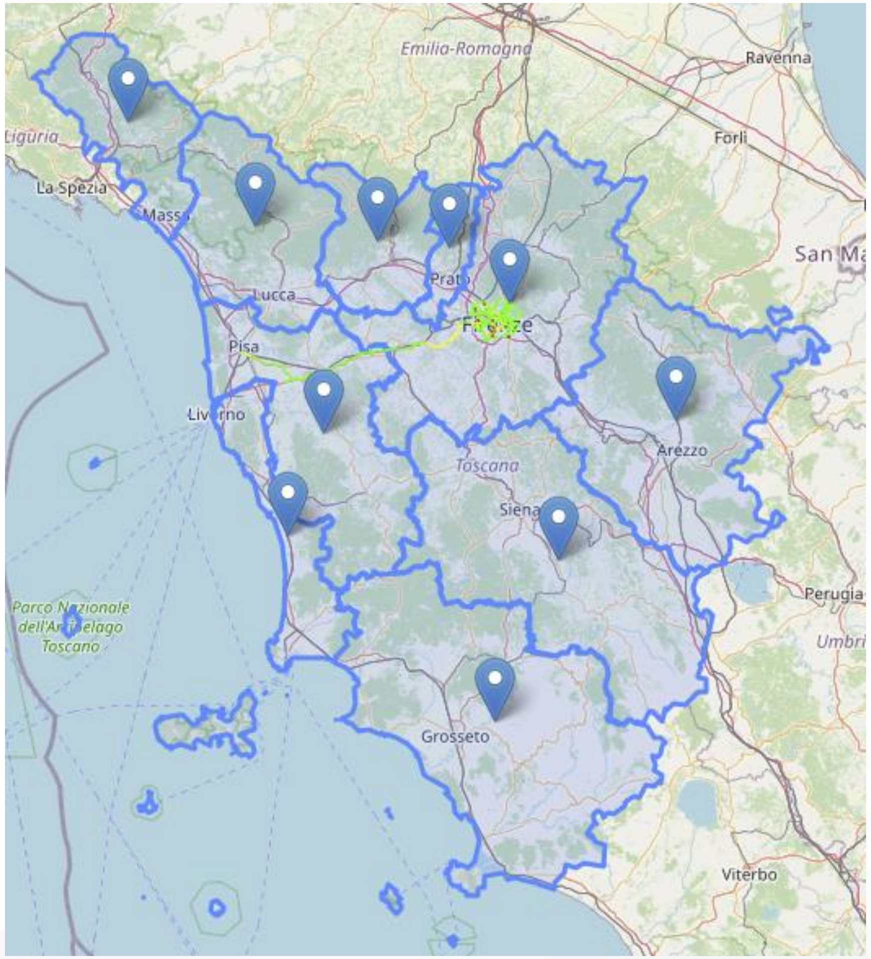
Entity/Device

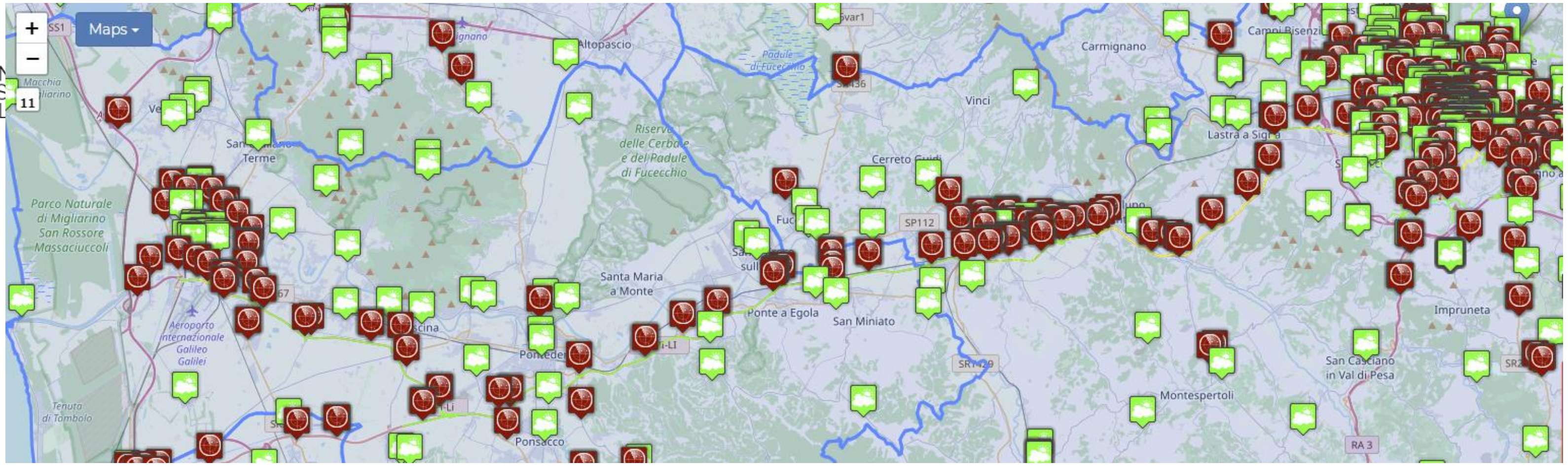
Structural information

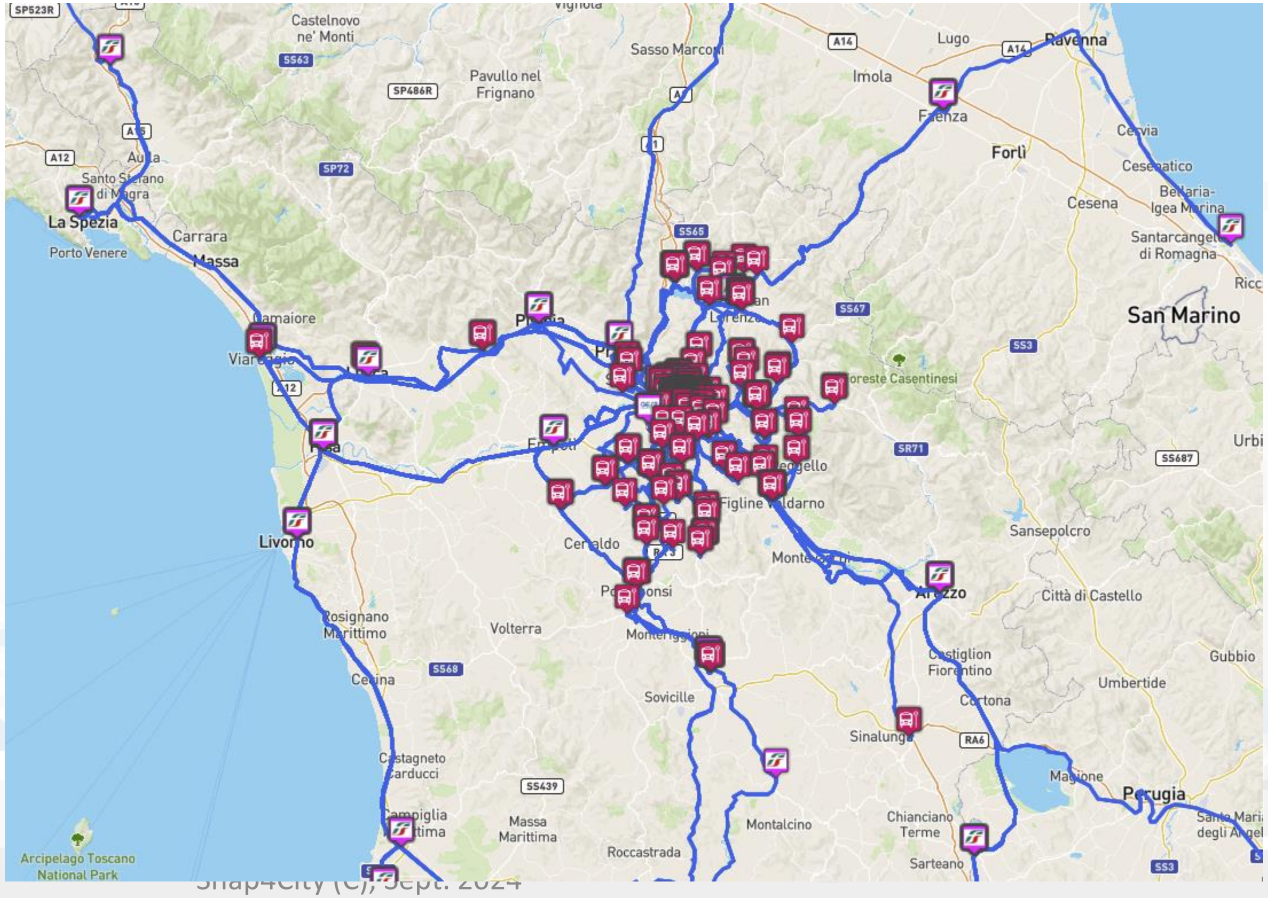
POI

Entity/Device

Map: Struct. Information

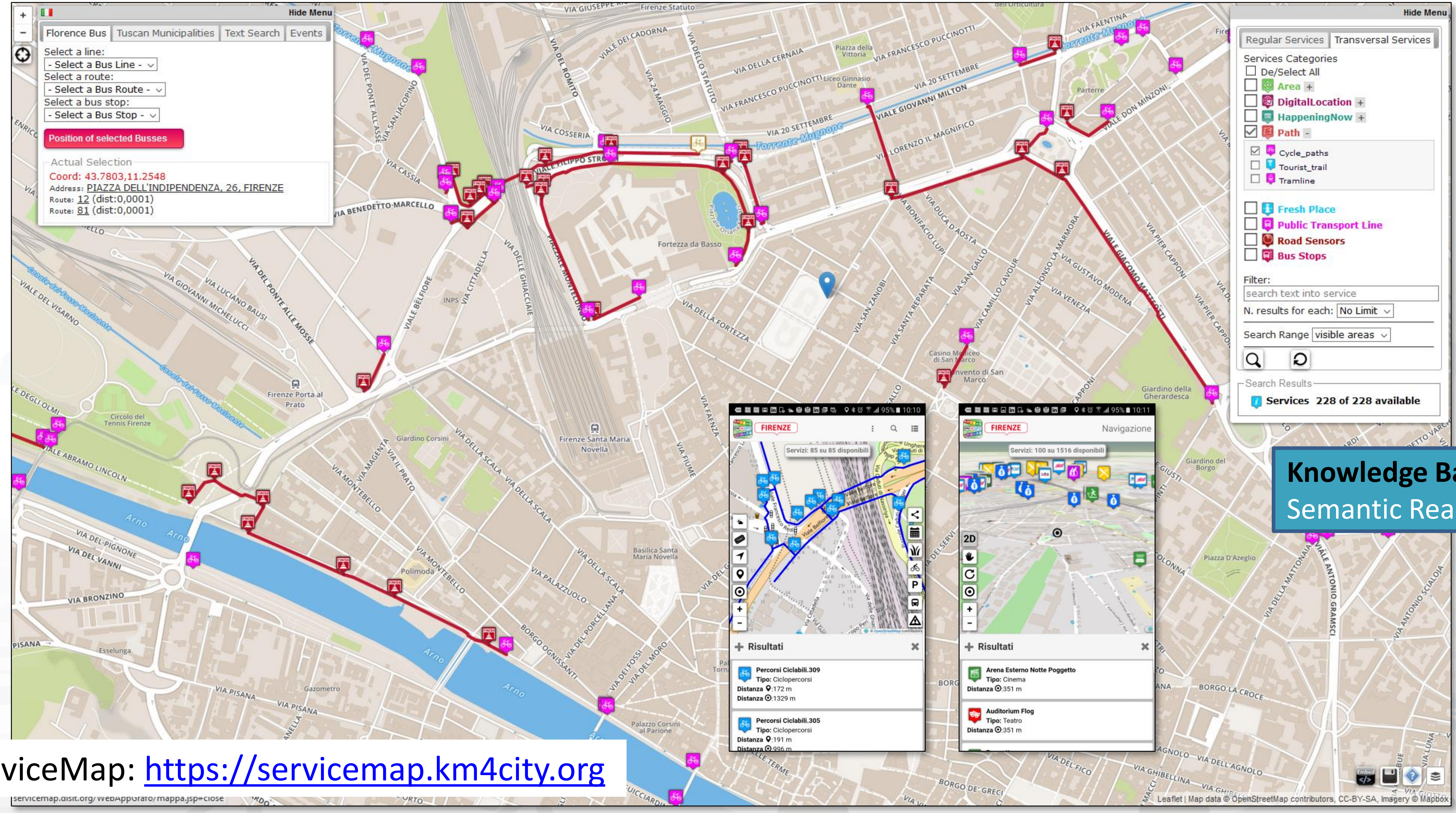

Emilia-Romagna
Ravenna
Liguria
La Spezia
Massa
Forlì
Lucca
Prato
Firenze
Pisa
San Ma
Livorno
Arezzo
Toscana
Siena
Perugia
Umbri
Parco Nazionale dell'Arcipelago Toscano
Grosseto
Viterbo


Maps
Altopascio
Carmignano
Campi Bisenzio
Vinci
Lastra a Signa
Cerreto Guidi
Fucecchio
Santa Maria a Monte
Ponte a Egola
San Miniato
Pontedera
Ponsacco
Impruneta
San Casciano in Val di Pesa
Montespertoli
Parco Naturale di Migliarino San Rossore Massaciuccoli
Aeroporto Internazionale Galileo Galilei
Tenuta di Tombolo


Castelnovo ne' Monti
Sasso Marconi
Lugo
Ravenna
Pavullo nel Frignano
Imola
Faenza
Forlì
Cervia
Aulla
Cesenatico
Santo Stefano di Magra
Cesena
Bellaria-Igea Marina
La Spezia
Carrara
Santarcangelo di Romagna
Porto Venere
Massa
San Marino
Camaiore
Pistoia
Viareggio
Lucca
Foreste Casentinesi
Pisa
Empoli
Figline Valdarno
Livorno
Certaldo
Sansepolcro
Arezzo
Città di Castello
Poggibonsi
Rosignano Marittimo
Volterra
Monteriggioni
Castiglion Fiorentino
Gubbio
Cecina
Sovicille
Umbertide
Cortona
Sinalunga
Castagneto Carducci
Magione
Perugia
Campiglia Marittima
Massa Marittima
Montalcino
Chianciano Terme
Roccastrada
Sarteano
Arcipelago Toscano National Park

Admin Models & limitations

Cycling Paths


Hide Menu
Florence Bus
Tuscan Municipalities
Text Search
Events
Select a line:
- Select a Bus Line -
Select a route:
- Select a Bus Route -
Select a bus stop:
- Select a Bus Stop -
Position of selected Busses
Hide Menu
Regular Services
Transversal Services
Services Categories
☐ De/Select All
☐ Area +
☐ DigitalLocation +
☐ HappeningNow +
☑ Path -
☑ Cycle_paths
☐ Tourist_trail
☐ Tramline
☐ Fresh Place
☐ Public Transport Line
☐ Road Sensors
☐ Bus Stops
Filter:
search text into service
N. results for each: No Limit
Search Range visible areas
Search Results
Fortezza da Basso
Firenze Santa Maria Novella
Arno
FIRENZE
Servizi: 85 su 85 disponibili
Navigazione
Servizi: 100 su 1516 disponibili
2D
Risultati
Leaflet | Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox

Actual Selection
Coord: 43.7803,11.2548
Address: PIAZZA DELL'INDIPENDENZA, 26, FIRENZE
Route: 12 (dist:0,0001)
Route: 81 (dist:0,0001)

Services 228 of 228 available

Percorsi Ciclabili.309
Tipo: Ciclopercorsi
Distanza :172 m
Distanza :1329 m

Percorsi Ciclabili.305
Tipo: Ciclopercorsi
Distanza :191 m
Distanza :996 m

Arena Esterno Notte Poggetto
Tipo: Cinema
Distanza :351 m

Auditorium Flog
Tipo: Teatro
Distanza :351 m

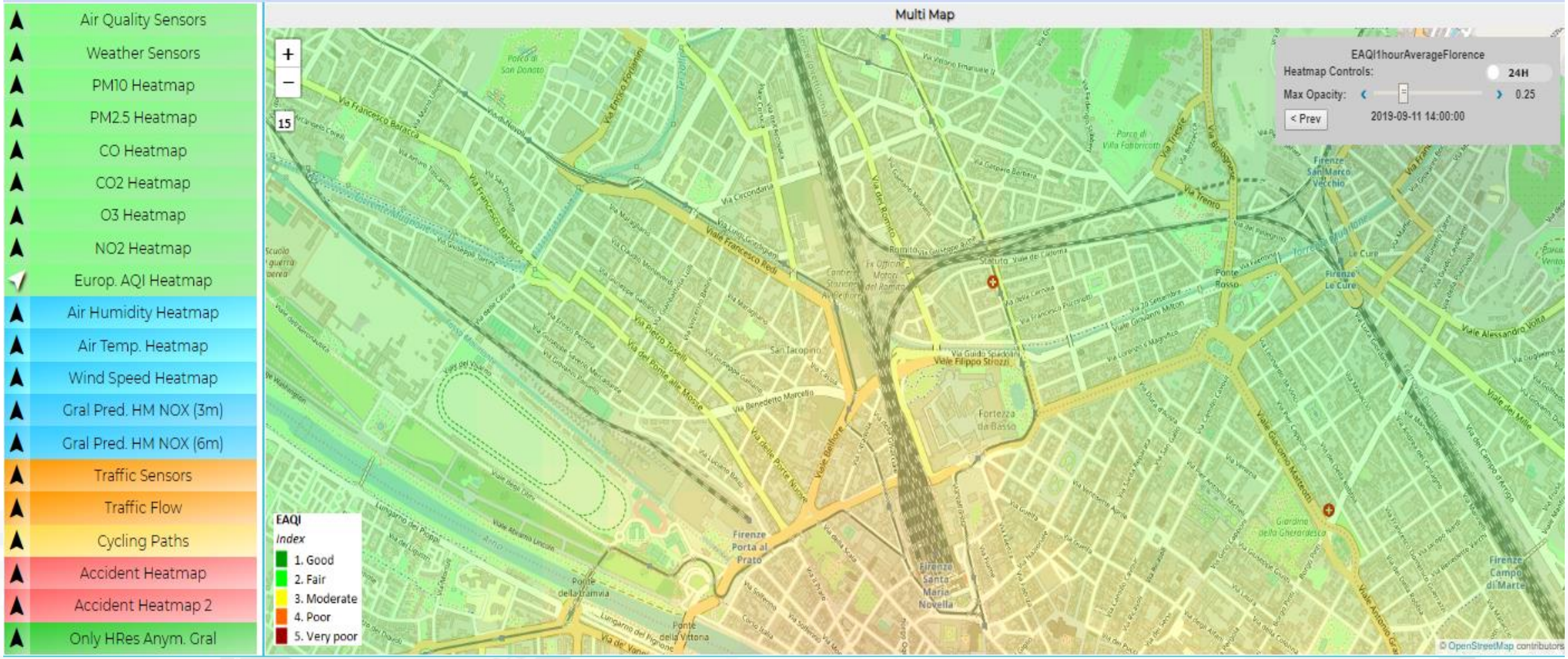
servicemap.disit.org/WebAppGrafo/mappa.jsp#close

Sii-Mobility

Knowledge Base
Semantic Reasoners

ServiceMap: https://servicemap.km4city.org

EAQI Heatmap and sequence

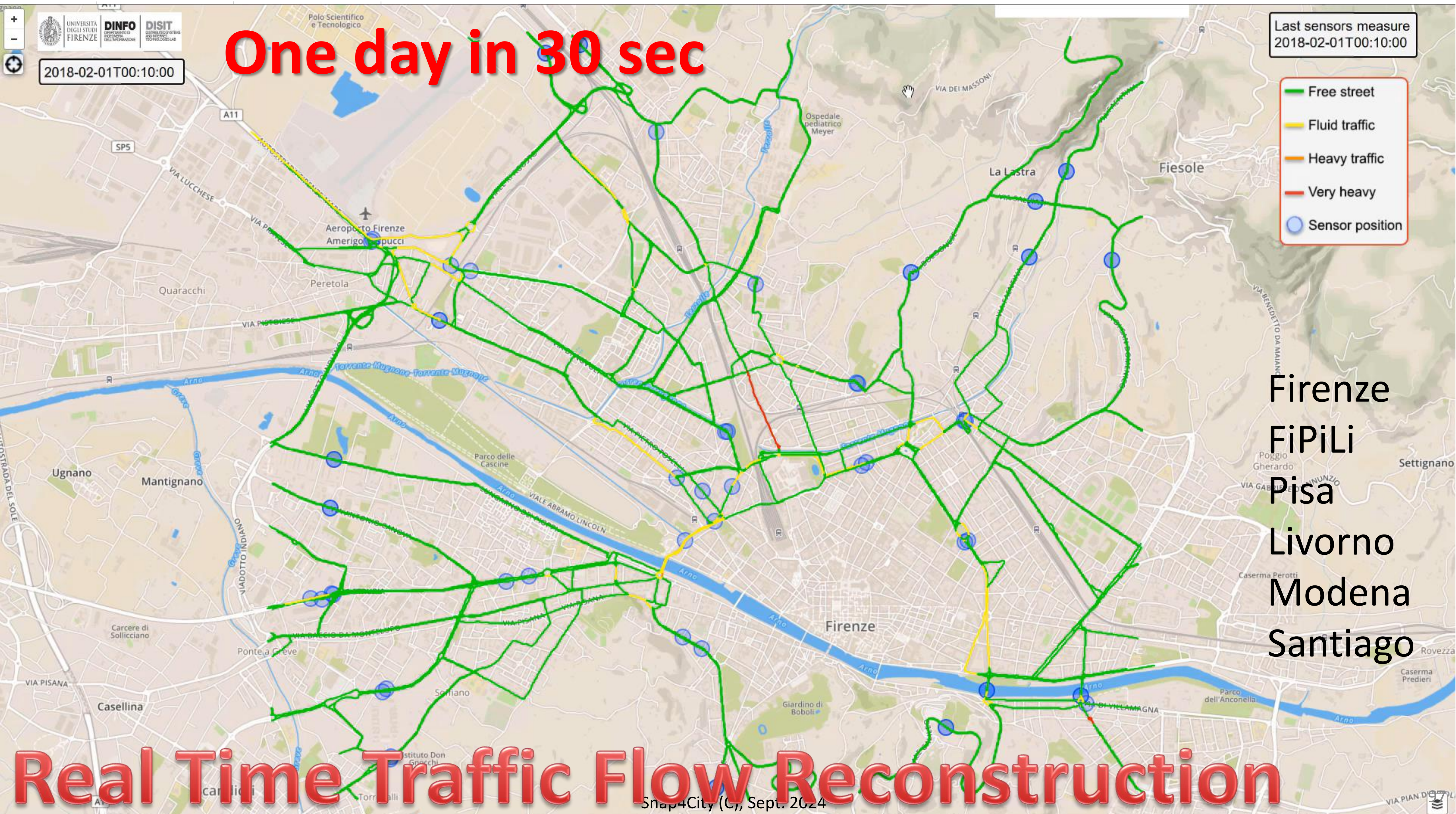

Air Quality Sensors
Weather Sensors
PM10 Heatmap
PM2.5 Heatmap
CO Heatmap
CO2 Heatmap
O3 Heatmap
NO2 Heatmap
Europ. AQI Heatmap
Air Humidity Heatmap
Air Temp. Heatmap
Wind Speed Heatmap
Gral Pred. HM NOX (3m)
Gral Pred. HM NOX (6m)
Traffic Sensors
Traffic Flow
Cycling Paths
Accident Heatmap
Accident Heatmap 2
Only HRes Anym. Gral
Multi Map
+
−
15
< Prev
Fortezza da Basso
Firenze Santa Maria Novella
Firenze Porta al Prato
© OpenStreetMap contributors

EAQI1hourAverageFlorence
Heatmap Controls: 24H
Max Opacity: 0.25
2019-09-11 14:00:00

EAQI
Index
🟩 1. Good
🟩 2. Fair
🟨 3. Moderate
🟧 4. Poor
🟥 5. Very poor

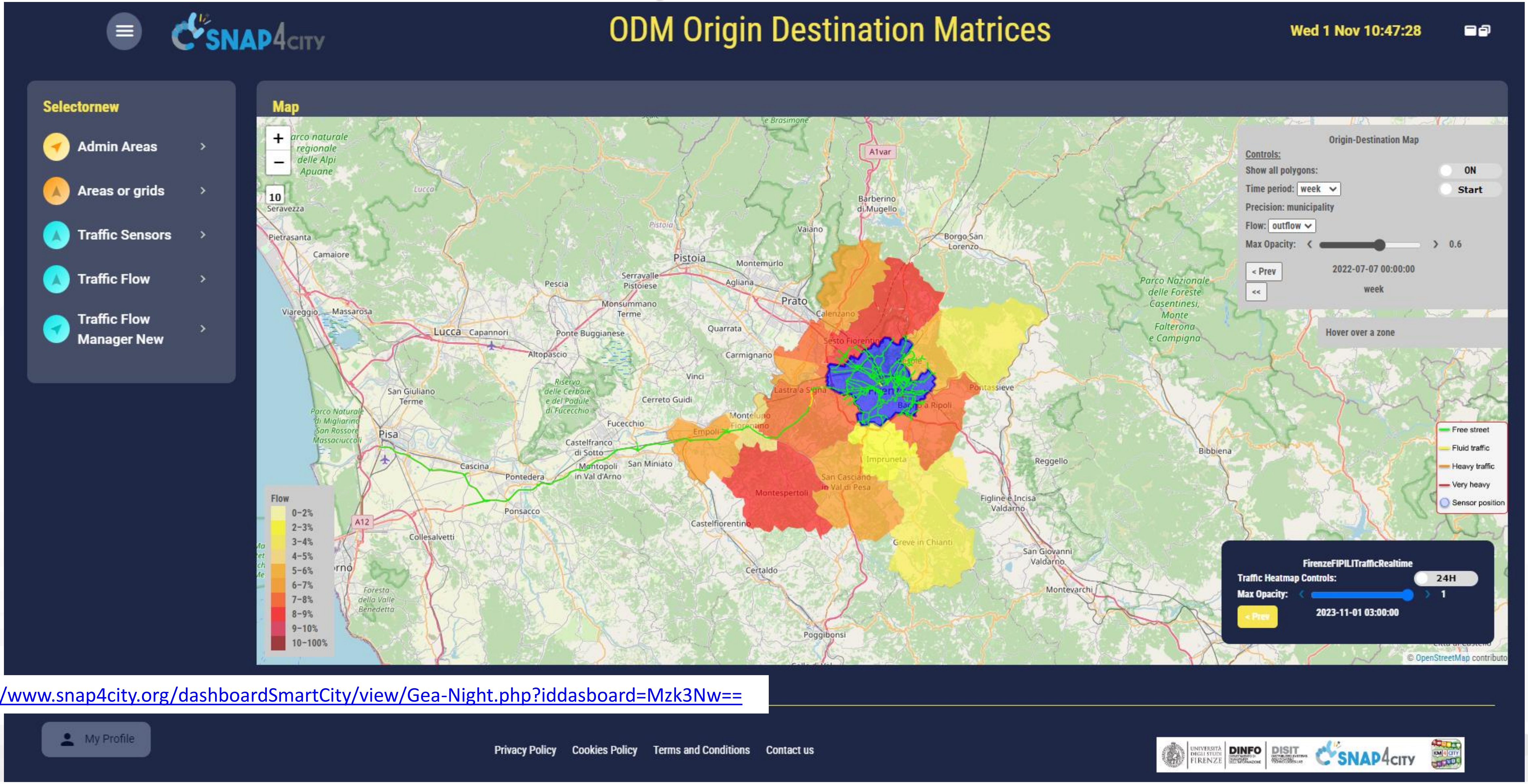
Real Time Traffic Flow Reconstruction

One day in 30 sec


UNIVERSITÀ DEGLI STUDI FIRENZE
DINFO
DISIT
2018-02-01T00:10:00
Last sensors measure
2018-02-01T00:10:00
Free street
Fluid traffic
Heavy traffic
Very heavy
Sensor position
Aeroporto Firenze Amerigo Vespucci
Peretola
Quaracchi
Ugnano
Mantignano
Parco delle Cascine
Firenze
Fiesole
La Lastra
Settignano
Poggio Gherardo
Casellina
Ponte a Greve
Carcere di Sollicciano
Soffiano
Giardino di Boboli
Parco dell'Anconella
Rovezzano
Ospedale pediatrico Meyer
Polo Scientifico e Tecnologico
Arno
VIA PISTOIESE
VIA PISANA
VIALE ABRAMO LINCOLN
VIA DI VILLAMAGNA
A11
SP5

Firenze
FiPiLi
Pisa
Livorno
Modena
Santiago

ODM, Traffic Flow



ODM Origin Destination Matrices

Wed 1 Nov 10:47:28

Selectornew

- Admin Areas
- Areas or grids
- Traffic Sensors
- Traffic Flow
- Traffic Flow Manager New

Map

Origin-Destination Map

Controls:

Show all polygons: ON

Time period: week

Start

Precision: municipality

Flow: outflow

Max Opacity: 0.6

< Prev

<<

2022-07-07 00:00:00

week

Hover over a zone

FirenzeFIPILITrafficRealtime

Traffic Heatmap Controls: 24H

Max Opacity: 1

< Prev

2023-11-01 03:00:00

Flow
0-2%
2-3%
3-4%
4-5%
5-6%
6-7%
7-8%
8-9%
9-10%
10-100%

- Free street
- Fluid traffic
- Heavy traffic
- Very heavy
- ○ Sensor position

+
−
Pistoia
Prato
Lucca
Pisa
Empoli
Pontassieve
Impruneta
Montespertoli
San Casciano in Val di Pesa
Greve in Chianti
Barberino di Mugello
Borgo San Lorenzo
Bibbiena
Reggello
Figline e Incisa Valdarno
Certaldo
Poggibonsi
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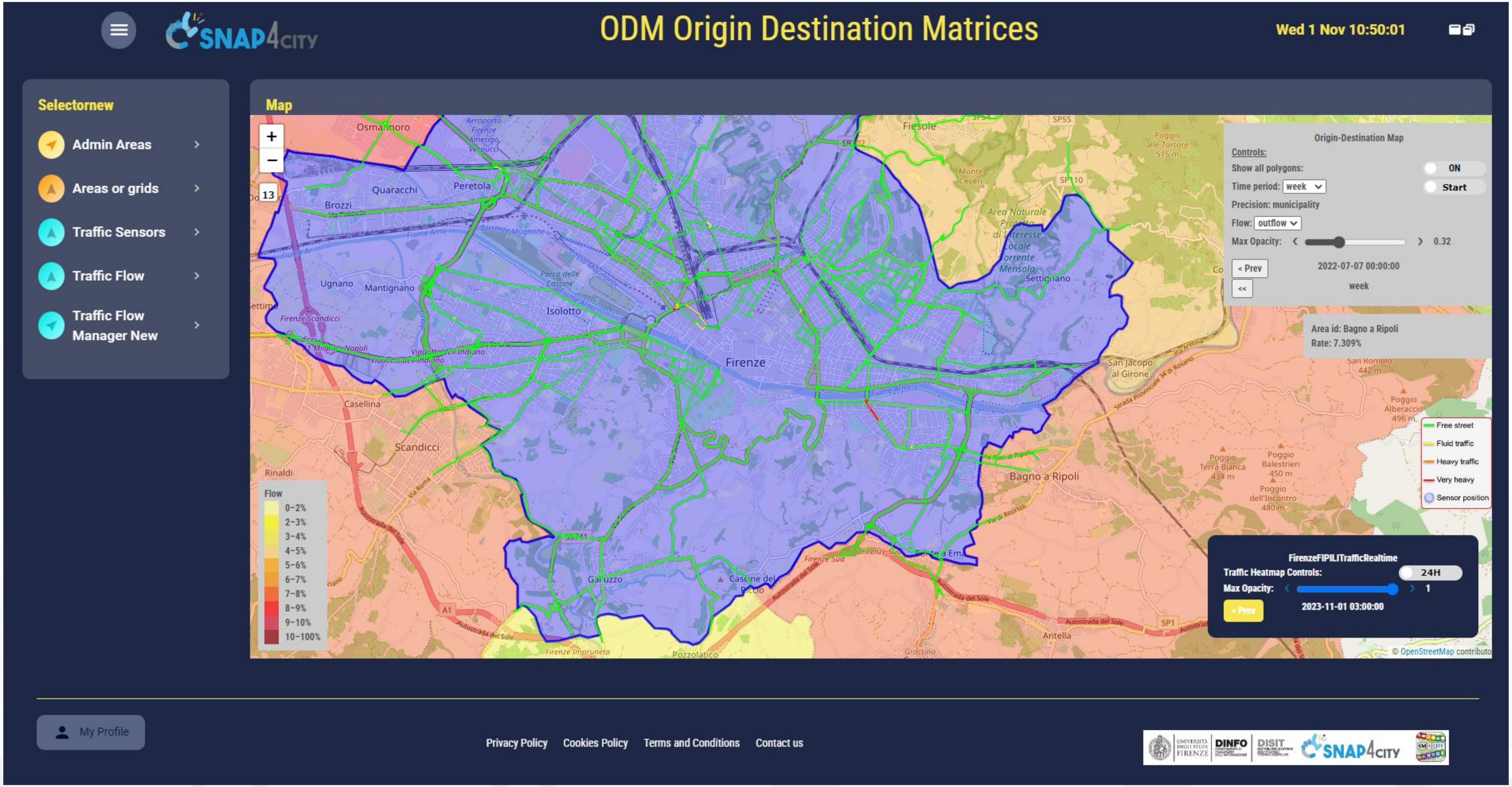
https://www.snap4city.org/dashboardSmartCity/view/Gea-Night.php?iddasboard=Mzk3Nw==



ODM Origin Destination Matrices

Wed 1 Nov 10:50:01

Selectornew

- Admin Areas
- Areas or grids
- Traffic Sensors
- Traffic Flow
- Traffic Flow Manager New

Map

Origin-Destination Map

Controls:

Show all polygons: ON

Time period: week — Start

Precision: municipality

Flow: outflow

Max Opacity: 0.32

< Prev — 2022-07-07 00:00:00 — week

Area id: Bagno a Ripoli

Rate: 7.309%

Flow
0-2%
2-3%
3-4%
4-5%
5-6%
6-7%
7-8%
8-9%
9-10%
10-100%

- Free street
- Fluid traffic
- Heavy traffic
- Very heavy
- Sensor position

FirenzeFIPILITrafficRealtime

Traffic Heatmap Controls: 24H

Max Opacity: 1

< Prev — 2023-11-01 03:00:00

+
−
13
<<
Firenze
Osmannoro
Quaracchi
Peretola
Brozzi
Ugnano
Mantignano
Isolotto
Casellina
Scandicci
Rinaldi
Fiesole
Settignano
Bagno a Ripoli
San Jacopo al Girone
Galluzzo
Cascine del Riccio
Antella
Pozzolatico
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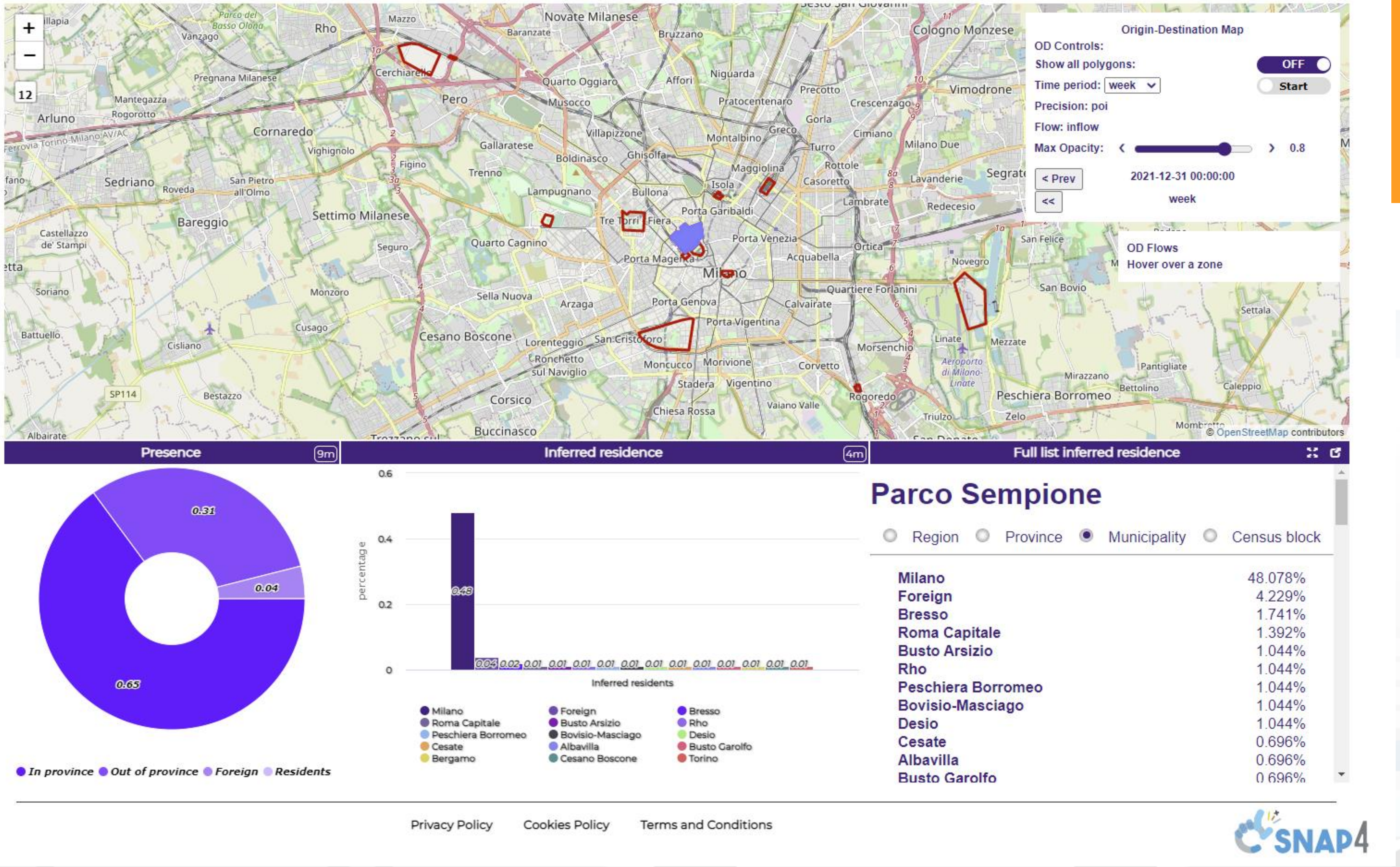
ODM Visual Analytic on Milan Area

11 SUSTAINABLE CITIES AND COMMUNITIES



Origin-Destination Map
OD Controls:
Show all polygons: OFF
Time period: week
Start
Precision: poi
Flow: inflow
Max Opacity: 0.8
< Prev
<<
2021-12-31 00:00:00
week

OD Flows
Hover over a zone

+
−
12
© OpenStreetMap contributors
Presence
9m
0.31
0.04
0.65
In province
Out of province
Foreign
Residents
Inferred residence
4m
0.6
0.4
0.2
0
percentage
0.48
0.04
0.02
0.01
Inferred residents
Milano
Foreign
Bresso
Roma Capitale
Busto Arsizio
Rho
Peschiera Borromeo
Bovisio-Masciago
Desio
Cesate
Albavilla
Busto Garolfo
Bergamo
Cesano Boscone
Torino
Full list inferred residence

Parco Sempione

○ Region ○ Province ● Municipality ○ Census block

Milano	48.078%
Foreign	4.229%
Bresso	1.741%
Roma Capitale	1.392%
Busto Arsizio	1.044%
Rho	1.044%
Peschiera Borromeo	1.044%
Bovisio-Masciago	1.044%
Desio	1.044%
Cesate	0.696%
Albavilla	0.696%
Busto Garolfo	0.696%

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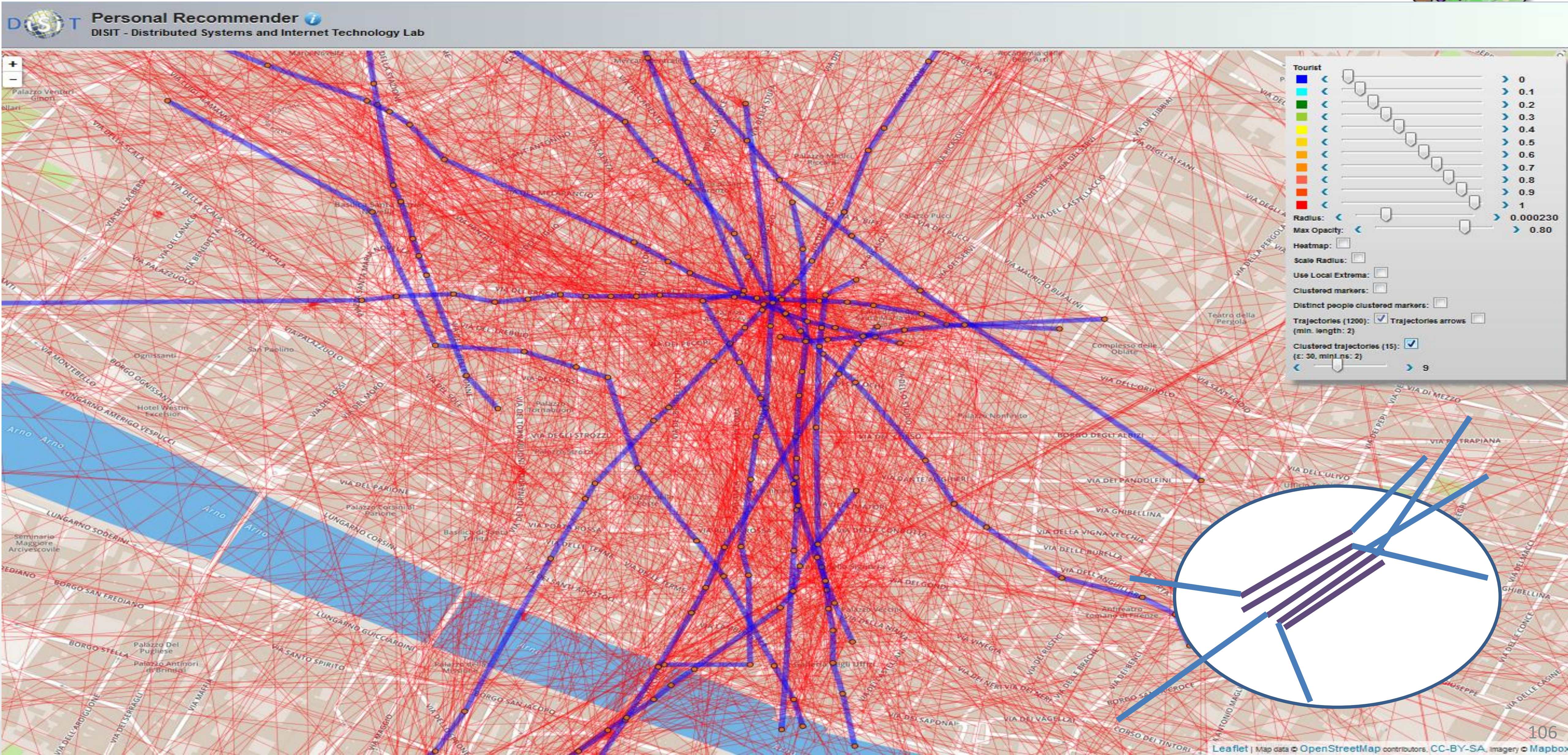
Cluster di Trajectories



Personal Recommender

DISIT - Distributed Systems and Internet Technology Lab

Tourist

- 🟦 0
- 🟦 0.1
- 🟩 0.2
- 🟩 0.3
- 🟨 0.4
- 🟨 0.5
- 🟧 0.6
- 🟧 0.7
- 🟥 0.8
- 🟥 0.9
- 🟥 1

Radius: 0.000230

Max Opacity: 0.80

Heatmap: ☐

Scale Radius: ☐

Use Local Extrema: ☐

Clustered markers: ☐

Distinct people clustered markers: ☐

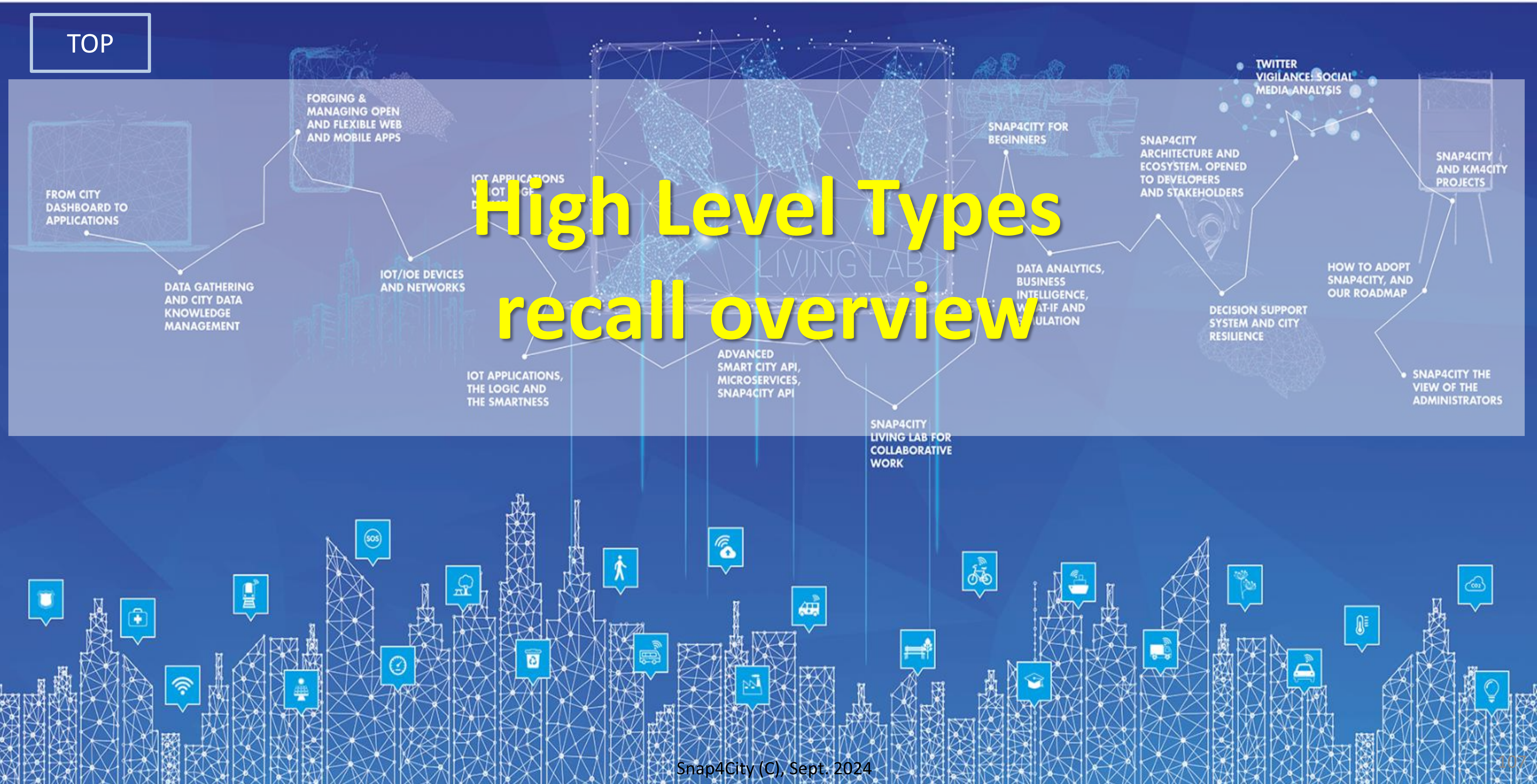
Trajectories (1200): ☑ Trajectories arrows ☐
(min. length: 2)

Clustered trajectories (15): ☑
(ε: 30, minLns: 2)
9

+
−
Leaflet | Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox
Arno
VIA DEI PANZANI
VIA DEL PROCONSOLO
VIA DEGLI STROZZI
VIA DEL CORSO
VIA DEI CALZAIUOLI
LUNGARNO CORSINI
LUNGARNO GUICCIARDINI
BORGO OGNISSANTI
VIA DEI SERVI
BORGO DEGLI ALBIZI
VIA GHIBELLINA
Palazzo Medici Riccardi
Palazzo Vecchio
Galleria degli Uffizi
Teatro della Pergola

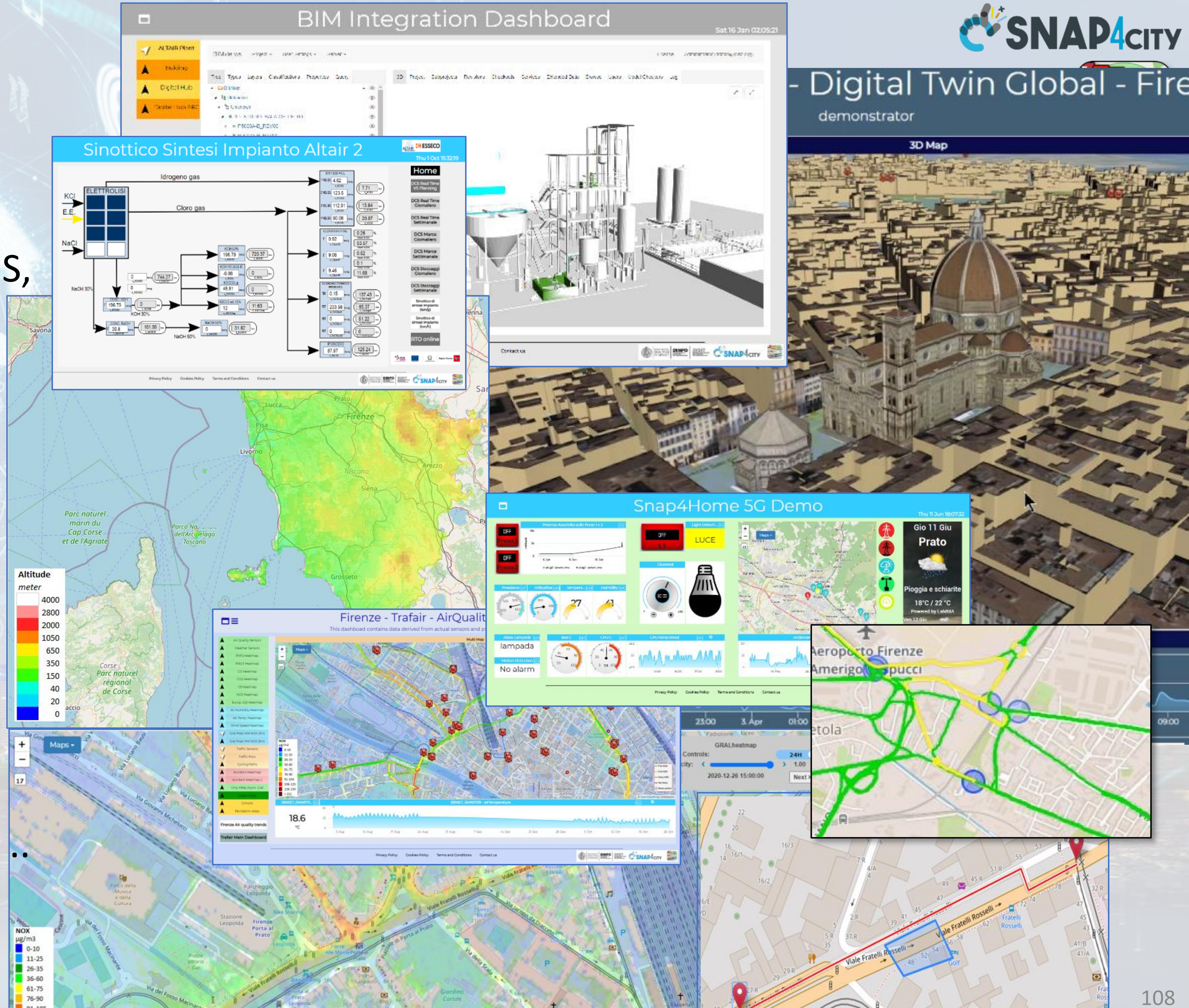
TOP

High Level Types recall overview


FROM CITY DASHBOARD TO APPLICATIONS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
IOT/IOE DEVICES AND NETWORKS
IOT APPLICATIONS
IOT APPLICATIONS, THE LOGIC AND THE SMARTNESS
ADVANCED SMART CITY API, MICROSERVICES, SNAP4CITY API
LIVING LAB
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
SNAP4CITY FOR BEGINNERS
DATA ANALYTICS, BUSINESS INTELLIGENCE, WHAT-IF AND SIMULATION
SNAP4CITY ARCHITECTURE AND ECOSYSTEM. OPENED TO DEVELOPERS AND STAKEHOLDERS
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
DECISION SUPPORT SYSTEM AND CITY RESILIENCE
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY AND KM4CITY PROJECTS
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

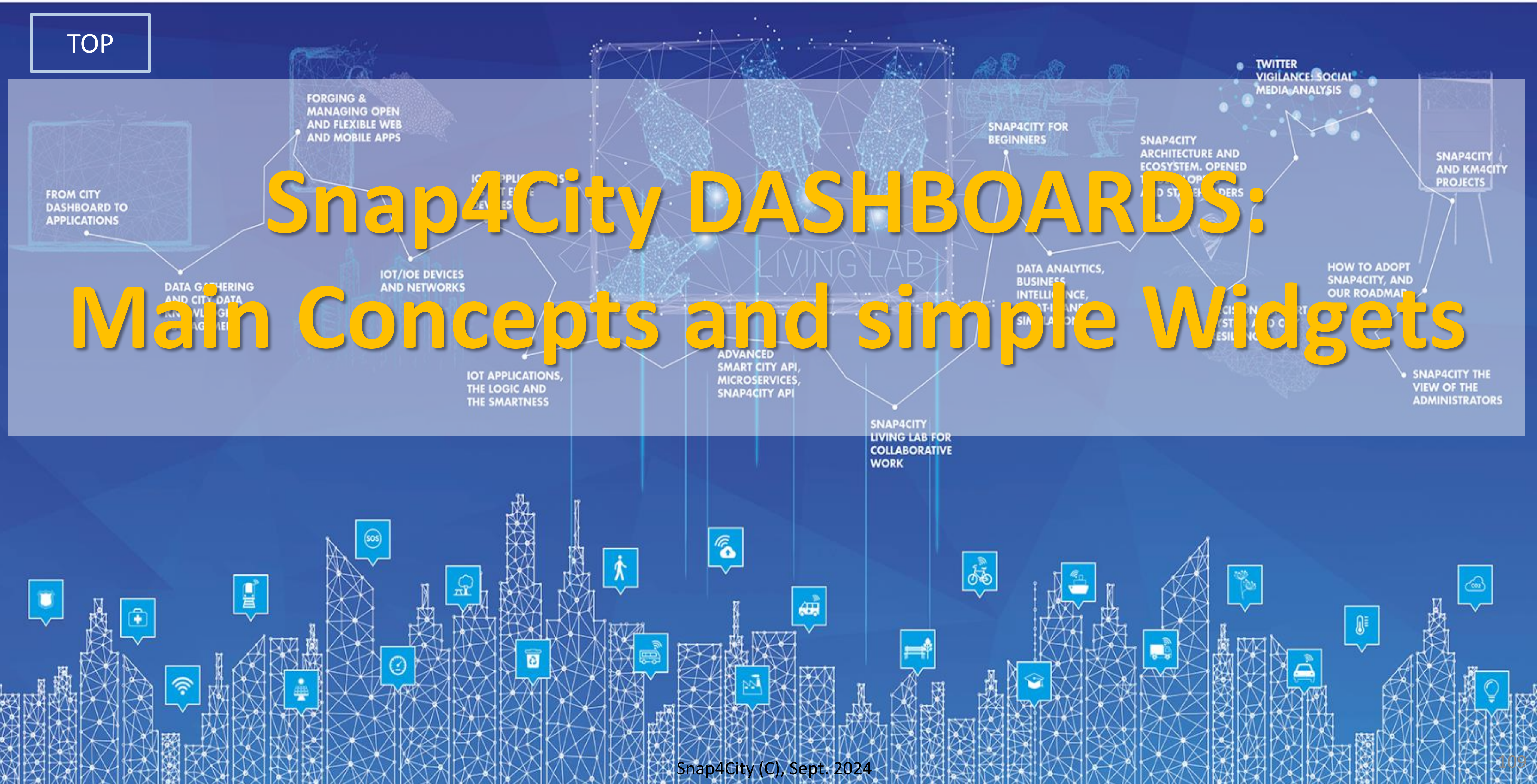
High Level Types

- POI, IOT Devices, shapes,..
  - FIWARE Smart Data Models,
  - IoT Device Models
- GIS, maps, orthomaps, WFS/WMS, GeoTiff, calibrated heatmaps, ..
- Satellite data, ..
- traffic flow, typical trends, ..
- 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, ..
- decision scenarios, ….
- etc.


BIM Integration Dashboard
- Digital Twin Global - Fire
demonstrator
3D Map
Sinottico Sintesi Impianto Altair 2
Home
Idrogeno gas
Cloro gas
ELETTROLISI
KCl
E.E.
NaCl
NaOH 30%
KOH 30%
NaOH 50%
Altitude
meter
4000
2800
2000
1050
650
350
150
40
20
0
Snap4Home 5G Demo
LUCE
lampada
No alarm
Gio 11 Giu
Prato
Pioggia e schiarite
18°C / 22 °C
Firenze - Trafair - AirQualit
18.6
Maps
NOX
µg/m3
0-10
11-25
26-35
36-60
61-75
76-90
Aeroporto Firenze
Amerigo Vespucci
GRALheatmap
Controls:
2020-12-26 15:00:00
Viale Fratelli Rosselli

TOP

Snap4City DASHBOARDS: Main Concepts and simple Widgets


FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
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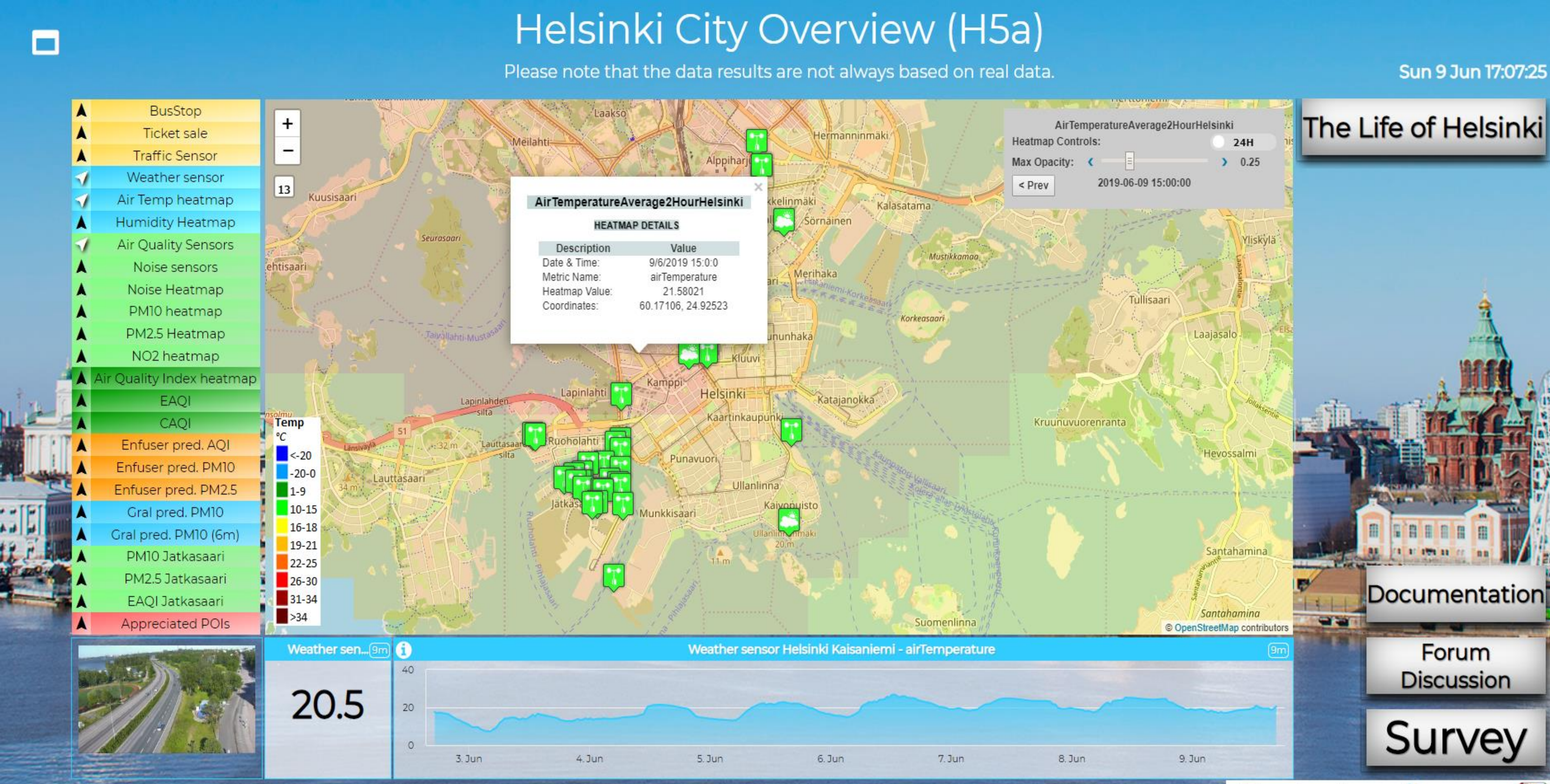
SNAP4CITY THE VIEW OF THE ADMINISTRATORS



Helsinki City Overview (H5a)

Please note that the data results are not always based on real data.

Sun 9 Jun 17:07:25

- BusStop
- Ticket sale
- Traffic Sensor
- Weather sensor
- Air Temp heatmap
- Humidity Heatmap
- Air Quality Sensors
- Noise sensors
- Noise Heatmap
- PM10 heatmap
- PM2.5 Heatmap
- NO2 heatmap
- Air Quality Index heatmap
- EAQI
- CAQI
- Enfuser pred. AQI
- Enfuser pred. PM10
- Enfuser pred. PM2.5
- Gral pred. PM10
- Gral pred. PM10 (6m)
- PM10 Jatkasaari
- PM2.5 Jatkasaari
- EAQI Jatkasaari
- Appreciated POIs

AirTemperatureAverage2HourHelsinki

HEATMAP DETAILS

Description	Value
Date & Time:	9/6/2019 15:0:0
Metric Name:	airTemperature
Heatmap Value:	21.58021
Coordinates:	60.17106, 24.92523

AirTemperatureAverage2HourHelsinki

Heatmap Controls: 24H

Max Opacity: 0.25

< Prev 2019-06-09 15:00:00

Temp °C
🟦 <-20
🟦 -20-0
🟩 1-9
🟩 10-15
🟨 16-18
🟧 19-21
🟧 22-25
🟥 26-30
🟥 31-34
🟫 >34

Weather sen... 9m

20.5

Weather sensor Helsinki Kaisaniemi - airTemperature 9m

The Life of Helsinki

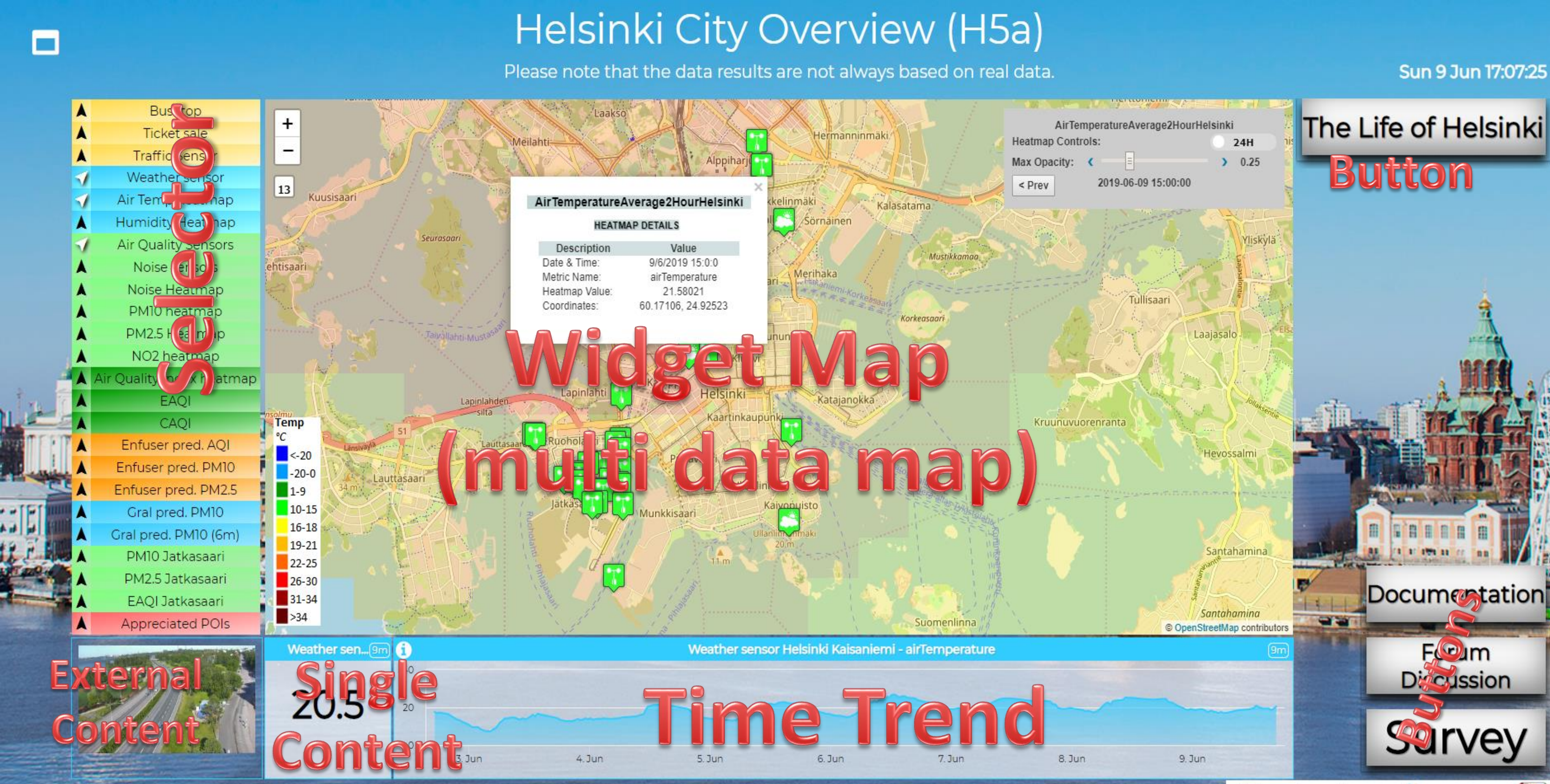
Documentation

Forum Discussion

Survey

+
−
13
Laakso
Meilahti
Hermanninmäki
Alppiharju
Kuusisaari
Kalasatama
Sörnäinen
Seurasaari
Mustikkamaa
Yliskylä
Merihaka
Tullisaari
Korkeasaari
Laajasalo
Kluuvi
Kamppi
Lapinlahti
Helsinki
Katajanokka
Kaartinkaupunki
Kruunuvuorenranta
Ruoholahti
Punavuori
Hevossalmi
Lauttasaari
Ullanlinna
Jätkäsaari
Kaivopuisto
Munkkisaari
Santahamina
Suomenlinna
© OpenStreetMap contributors
40
20
0
3. Jun
4. Jun
5. Jun
6. Jun
7. Jun
8. Jun
9. Jun

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MTQwNg==


+
−
13
Temp
°C
<-20
-20-0
1-9
10-15
16-18
19-21
22-25
26-30
31-34
>34
Helsinki
Lauttasaari
Kaivopuisto
Suomenlinna
Santahamina
© OpenStreetMap contributors
3. Jun
4. Jun
5. Jun
6. Jun
7. Jun
8. Jun
9. Jun
20
Weather sen...(9m)
9m

Helsinki City Overview (H5a)

Please note that the data results are not always based on real data.

Sun 9 Jun 17:07:25

- Bus stop
- Ticket sale
- Traffic sensor
- Weather sensor
- Air Temp Heatmap
- Humidity Heatmap
- Air Quality Sensors
- Noise sensors
- Noise Heatmap
- PM10 heatmap
- PM2.5 Heatmap
- NO2 heatmap
- Air Quality Index heatmap
- EAQI
- CAQI
- Enfuser pred. AQI
- Enfuser pred. PM10
- Enfuser pred. PM2.5
- Gral pred. PM10
- Gral pred. PM10 (6m)
- PM10 Jatkasaari
- PM2.5 Jatkasaari
- EAQI Jatkasaari
- Appreciated POIs

AirTemperatureAverage2HourHelsinki

HEATMAP DETAILS

Description	Value
Date & Time:	9/6/2019 15:0:0
Metric Name:	airTemperature
Heatmap Value:	21.58021
Coordinates:	60.17106, 24.92523

AirTemperatureAverage2HourHelsinki

Heatmap Controls: 24H

Max Opacity: ‹ › 0.25

< Prev 2019-06-09 15:00:00

The Life of Helsinki

Documentation

Forum Discussion

Survey

Weather sensor Helsinki Kaisaniemi - airTemperature

20.5

Selector

Widget Map (multi data map)

Button

Buttons

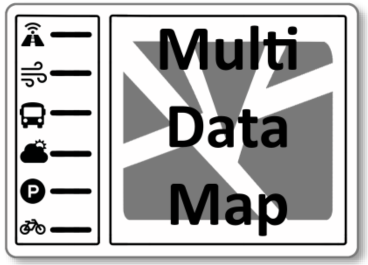
External Content

Single Content

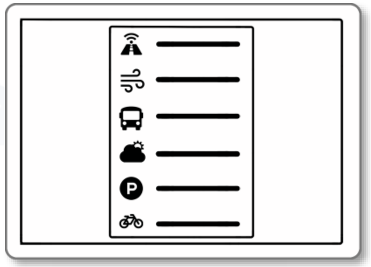
Time Trend

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MTQwNg==

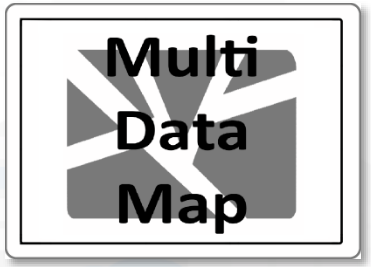
Dashboard Usage & Recipe



- https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MTQwNg==
- **Selector Widget**: (of different kinds) present “Information”, according to the HighLevelType (**HLT**), as overlapped layers on Target
  - **Additive**: PIN (POI, sensors, etc.), Cycling Paths, shapes, ...
  - **Mutual Exclusive by group**:
    - Heatmaps,
    - traffic,
    - Scenarios + what-if,
    - etc.



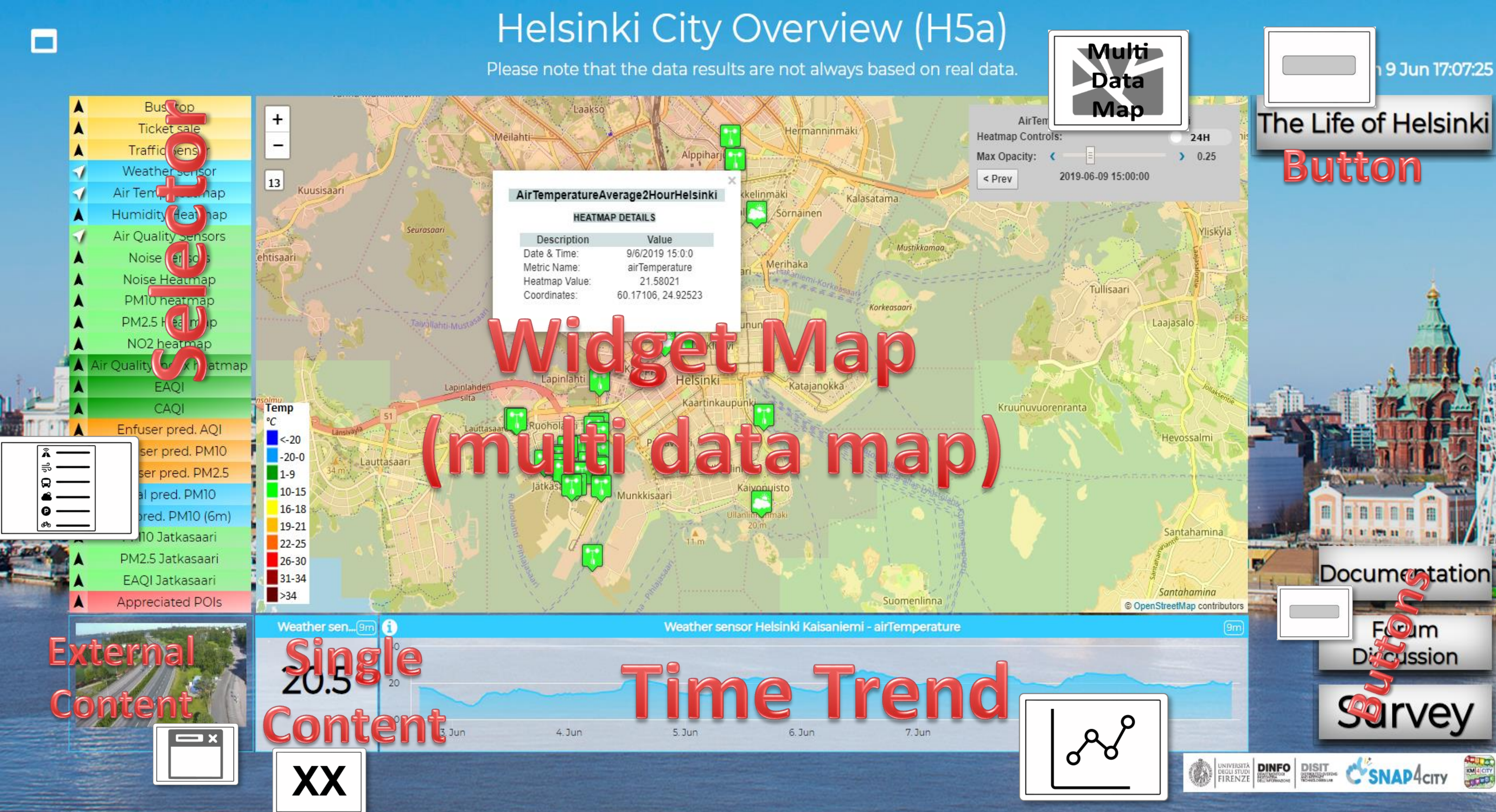
- **MultiDataMap Widget (Target**: (may be of different kind), this one may manage
  - Multiple representations on the same map
  - Each representation may provide specific interaction modalities and controls



Other Widgets in the dashboard

- **Button Widget** may be of different kind and may
  - Open external web pages, services, forum, surveys, etc.
  - Send messages on the field (IOT), etc.
- **External Content**:
  - Web pages (HTML + CSS + etc..), Video Streams
  - Many many other tools see next exercise
- **Single Content**
  - Single value: numeric, string, HTML, etc.
- **Time Trend**
  - Time Series: numeric values over time

XX



Helsinki City Overview (H5a)

Please note that the data results are not always based on real data.

9 Jun 17:07:25

AirTemperatureAverage2HourHelsinki

HEATMAP DETAILS

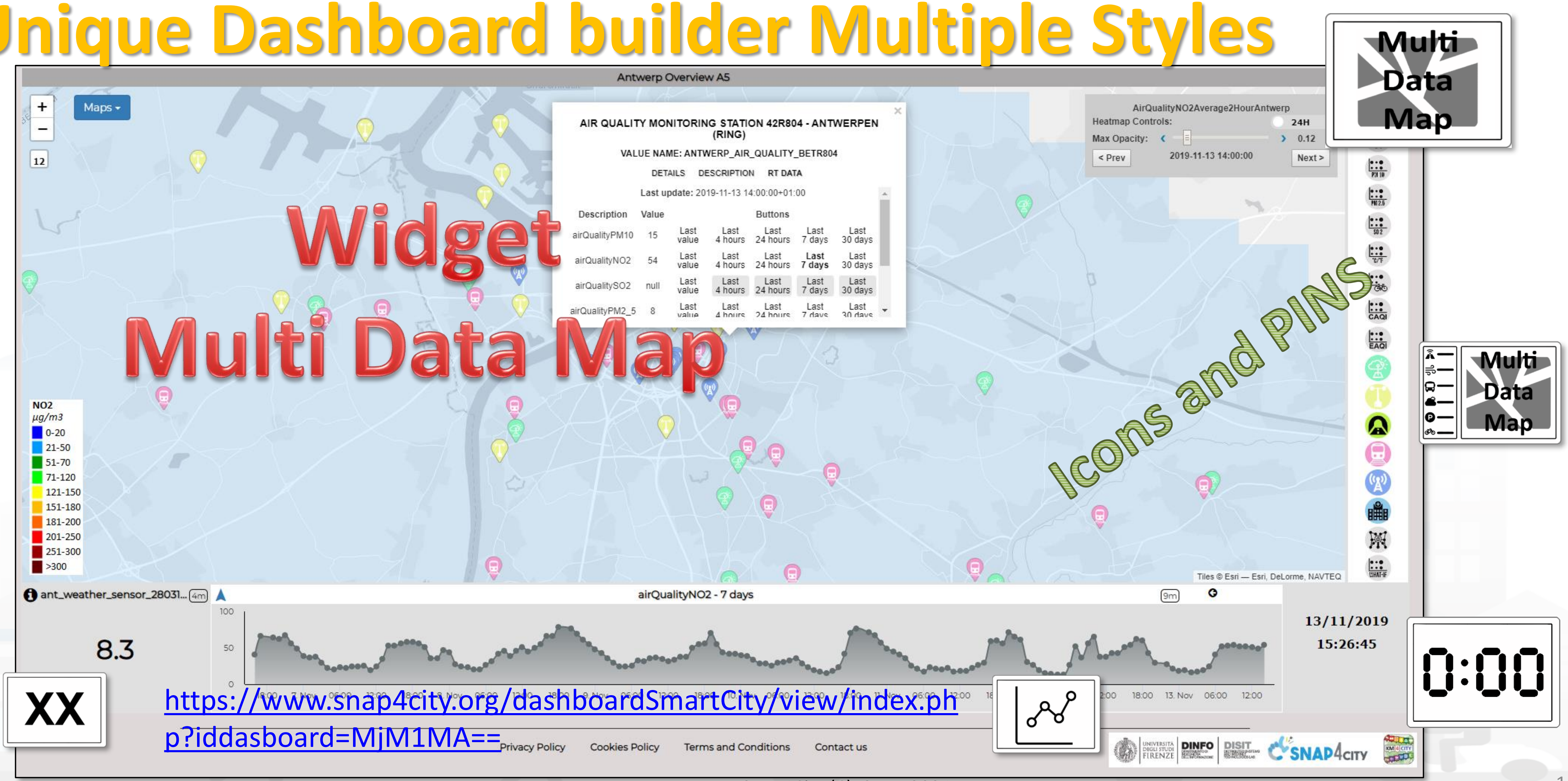
Description	Value
Date & Time:	9/6/2019 15:0:0
Metric Name:	airTemperature
Heatmap Value:	21.58021
Coordinates:	60.17106, 24.92523

Heatmap Controls: 24H
Max Opacity: 0.25
< Prev 2019-06-09 15:00:00

Weather sensor Helsinki Kaisaniemi - airTemperature

Selector
Bus Stop
Ticket sale
Traffic sensor
Weather sensor
Air Temperature heatmap
Humidity Heatmap
Air Quality Sensors
Noise sensors
Noise Heatmap
PM10 heatmap
PM2.5 Heatmap
NO2 heatmap
Air Quality Index heatmap
EAQI
CAQI
Enfuser pred. AQI
ser pred. PM10
ser pred. PM2.5
al pred. PM10
pred. PM10 (6m)
M10 Jatkasaari
PM2.5 Jatkasaari
EAQI Jatkasaari
Appreciated POIs
Widget Map
(multi data map)
Multi Data Map
AirTem
13
Temp
°C
<-20
-20-0
1-9
10-15
16-18
19-21
22-25
26-30
31-34
>34
Laakso
Meilahti
Hermanninmäki
Alppiharju
Kuusisaari
Kalasatama
Sörnäinen
Seurasaari
Mustikkamaa
Yliskylä
Merihaka
Korkeasaari
Tullisaari
Laajasalo
Lapinlahti
Helsinki
Katajanokka
Kaartinkaupunki
Kruunuvuorenranta
Ruoholahti
Lauttasaari
Hevossalmi
Jätkäsaari
Munkkisaari
Kaivopuisto
Ullanlinna
Santahamina
Suomenlinna
© OpenStreetMap contributors
External Content
Weather sen...
9m
Single Content
20.5
XX
Time Trend
3. Jun
4. Jun
5. Jun
6. Jun
7. Jun
The Life of Helsinki
Button
Documentation
Forum Discussion
Survey
Buttons
UNIVERSITÀ DEGLI STUDI FIRENZE
DINFO
DISIT
SNAP4CITY

Unique Dashboard builder Multiple Styles



Antwerp Overview A5

AIR QUALITY MONITORING STATION 42R804 - ANTWERPEN (RING)

VALUE NAME: ANTWERP_AIR_QUALITY_BETR804

DETAILS DESCRIPTION RT DATA

Last update: 2019-11-13 14:00:00+01:00

Description	Value	Buttons				
airQualityPM10	15	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days
airQualityNO2	54	Last value	Last 4 hours	Last 24 hours	**Last 7 days**	Last 30 days
airQualitySO2	null	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days
airQualityPM2_5	8	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days

AirQualityNO2Average2HourAntwerp

Heatmap Controls: 24H

Max Opacity: 0.12

2019-11-13 14:00:00

NO2 *µg/m3*
0-20
21-50
51-70
71-120
121-150
151-180
181-200
201-250
251-300
>300

ant_weather_sensor_28031... (4m)

8.3

airQualityNO2 - 7 days

13/11/2019
15:26:45

+
−
Maps
12
< Prev
Next >
Widget
Multi Data Map
Icons and PINS
Multi Data Map
Multi Data Map
Tiles © Esri — Esri, DeLorme, NAVTEQ
9m
100
50
0
13. Nov
06:00
12:00
18:00
XX
0:00
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Terms and Conditions
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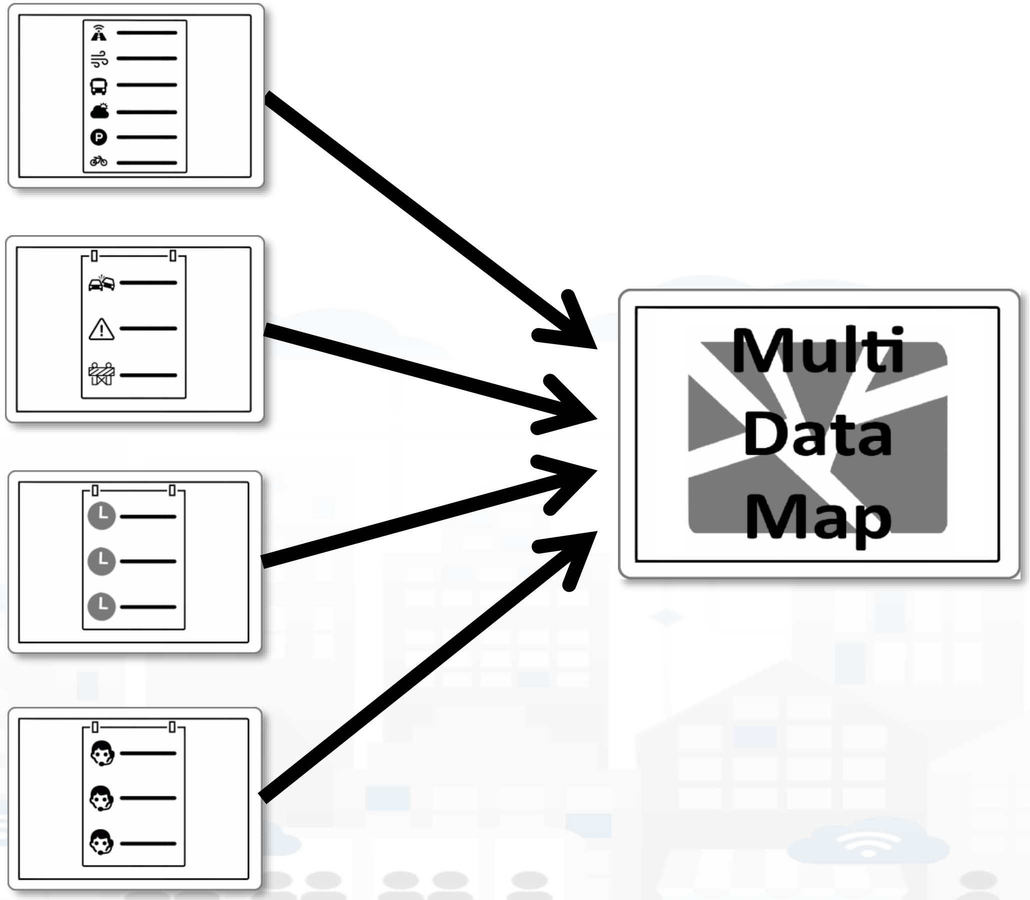
https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjM1MA==

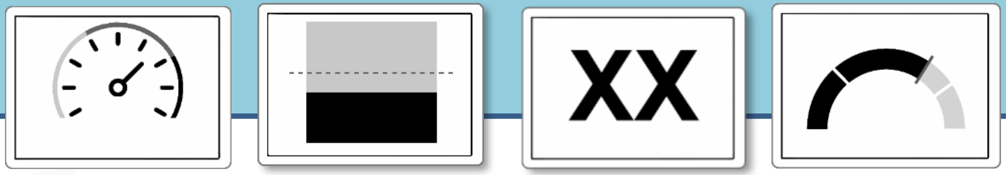
Dashboard Usage and recipe: Event map target

- Selector to Show on Map a
  - category of Map positioned elements
  - Single Entity
  - Heatmap among many
  - Traffic flow
  - Origin Destination Map
- Events which are also PIN on map



TOP

Main Single Values Widgets

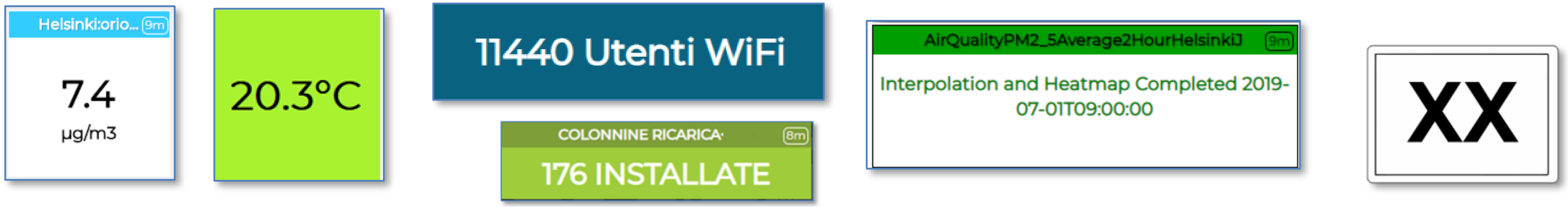


Single Value Widgets

- Entity/device can be a Time Series
- They can be connected to some Entity/device to show the last value associated with the widget
- They can be controlled to show a specific value over time

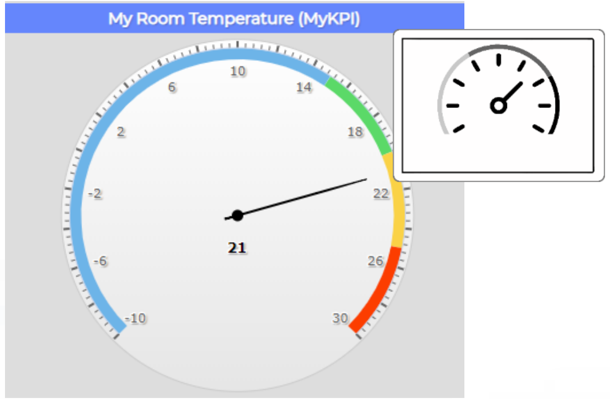
Single values

- **Single Content**

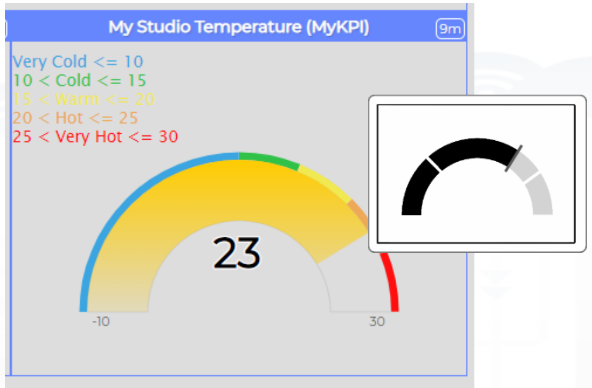

Helsinki:orio... 9m
7.4
µg/m3
20.3°C
11440 Utenti WiFi
COLONNINE RICARICA 8m
176 INSTALLATE
AirQualityPM2_5Average2HourHelsinkiJ 9m
XX

Interpolation and Heatmap Completed 2019-07-01T09:00:00

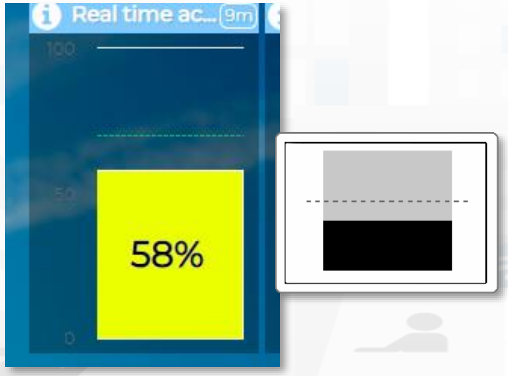
- **Speedometer**


My Room Temperature (MyKPI)
10
6
14
2
18
-2
22
-6
26
-10
30
21

- **Gauge**


My Studio Temperature (MyKPI) 9m
Very Cold <= 10
10 < Cold <= 15
15 < Warm <= 20
20 < Hot <= 25
25 < Very Hot <= 30
23
-10
30

- **Single Bar**


Real time ac... 9m
100
50
0
58%

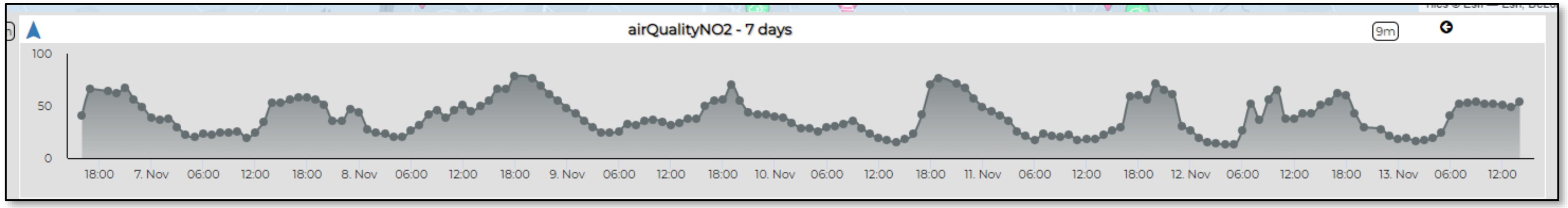
Most of the multi xxxx widgets can show also single values

TOP

Time Series, Multi Series Widgets

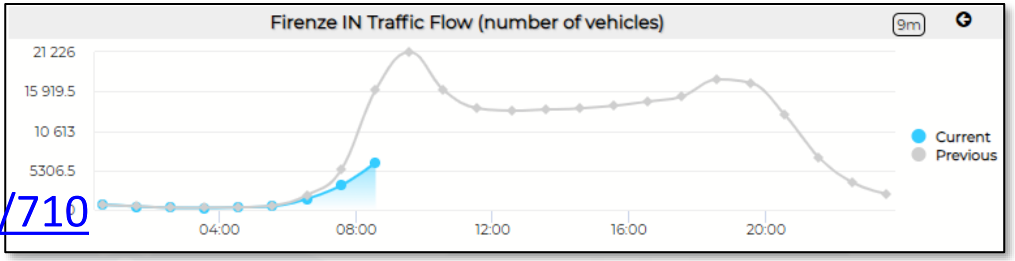
Time Series

- **Time Trend**

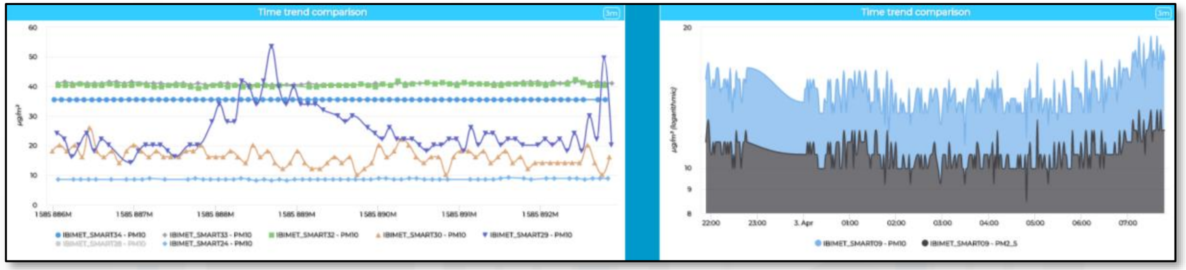


- **Time Trend Compare**
  - Comparing trends of the same time series

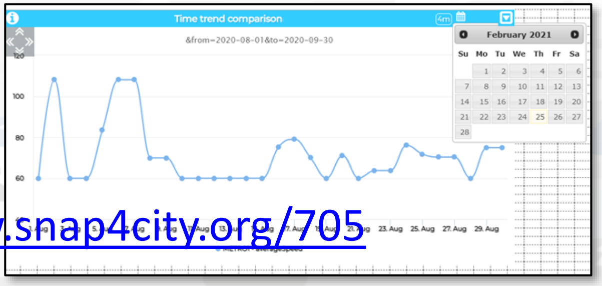
https://www.snap4city.org/710



- **Multi Series**
  - Showing multiple trends of multiple time series with same unit

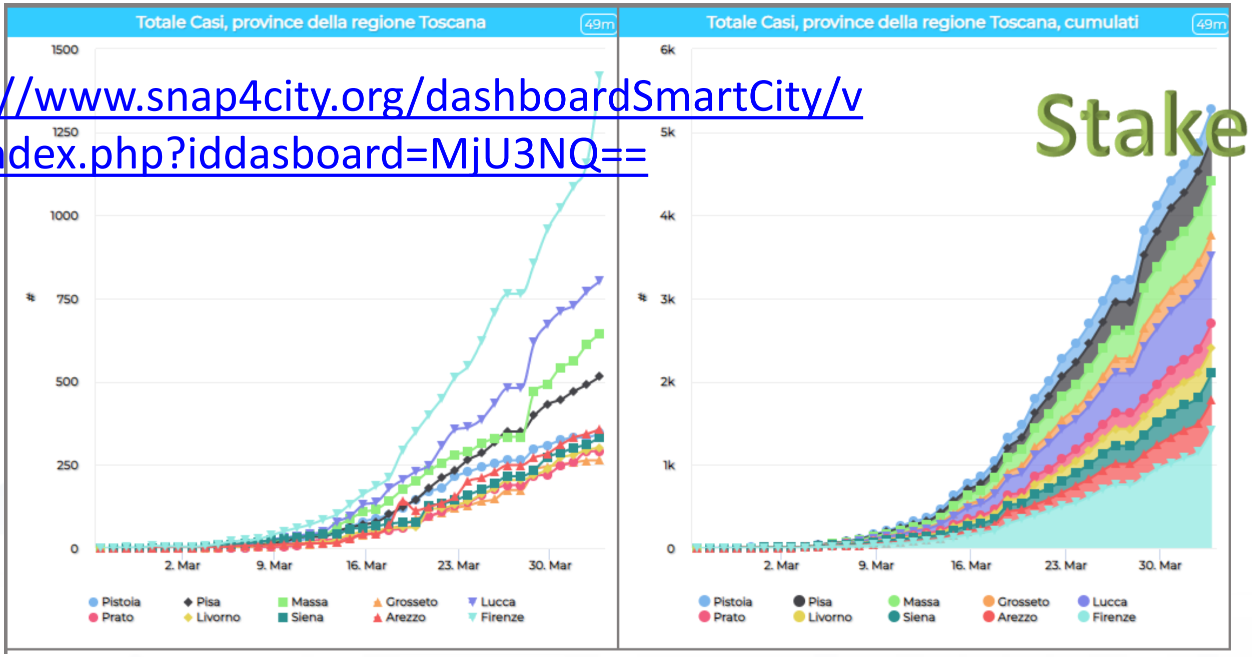

Time trend comparison
Time trend comparison
IBIMET_SMART34 - PM10
IBIMET_SMART33 - PM10
IBIMET_SMART32 - PM10
IBIMET_SMART30 - PM10
IBIMET_SMART29 - PM10
IBIMET_SMART24 - PM10
IBIMET_SMART09 - PM10
IBIMET_SMART09 - PM2_5

- **Typical Time Trend**
  - Showing the typical trend of a time serie: multiple modalities


Time trend comparison
February 2021
Su Mo Tu We Th Fr Sa

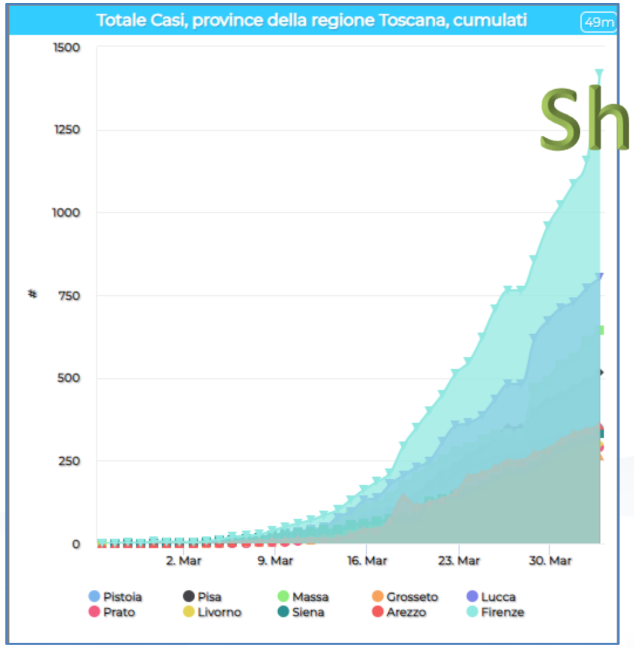
https://www.snap4city.org/705

MultiSeries



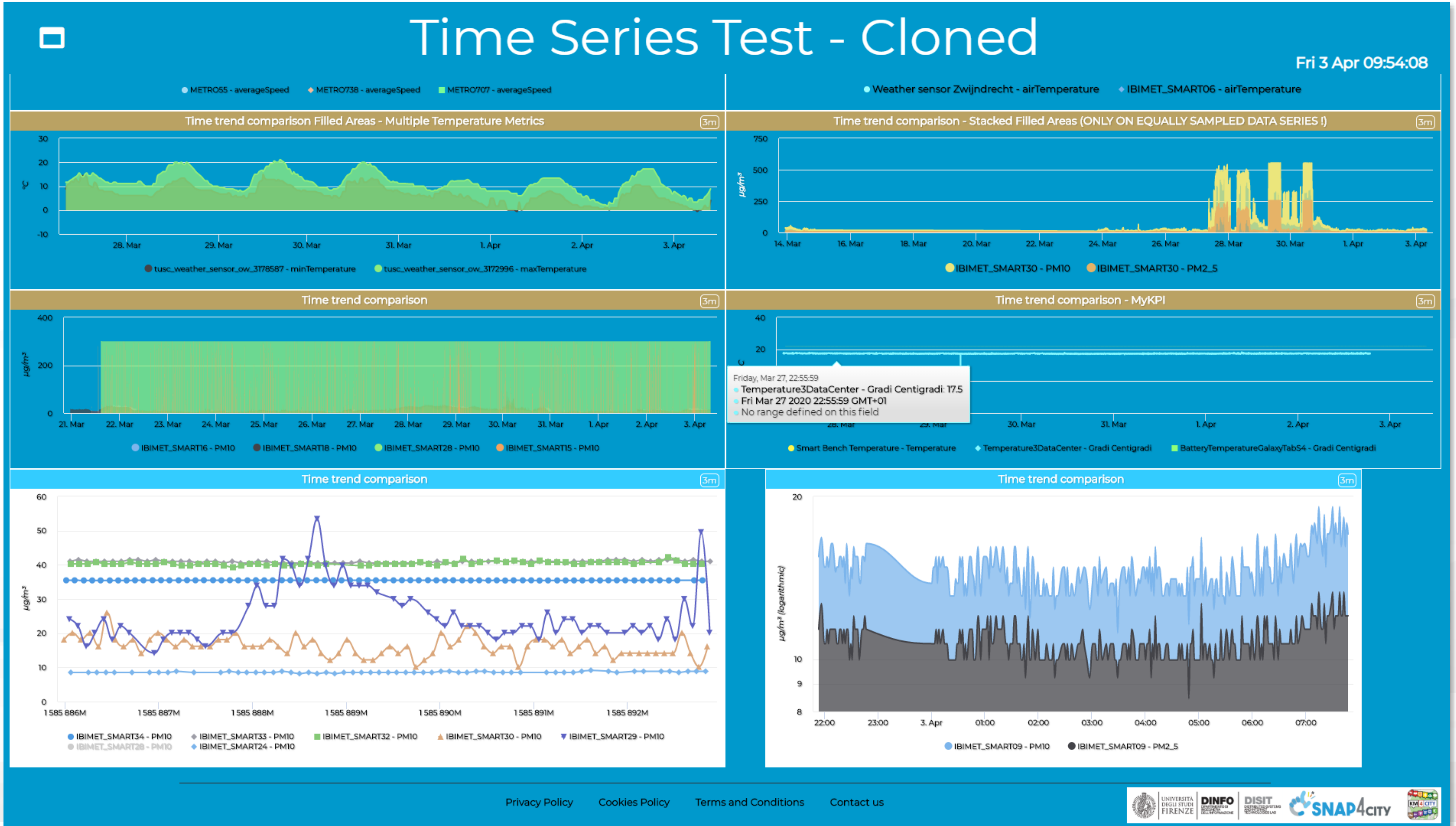
https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjU3NQ==

Staked



Shaded

- **Stacked, shaded or regular**,
- Grouped by Value_unit, **linear** or **Logarithmic**
- From historical data and/or **dynamic** data from IOT Applications


Time Series Test - Cloned
Fri 3 Apr 09:54:08
METRO55 - averageSpeed
METRO738 - averageSpeed
METRO707 - averageSpeed
Weather sensor Zwijndrecht - airTemperature
IBIMET_SMART06 - airTemperature
Time trend comparison Filled Areas - Multiple Temperature Metrics
3m
30
20
10
0
-10
°C
28. Mar
29. Mar
30. Mar
31. Mar
1. Apr
2. Apr
3. Apr
tusc_weather_sensor_ow_3178587 - minTemperature
tusc_weather_sensor_ow_3172996 - maxTemperature
Time trend comparison - Stacked Filled Areas (ONLY ON EQUALLY SAMPLED DATA SERIES !)
3m
750
500
250
0
µg/m³
14. Mar
16. Mar
18. Mar
20. Mar
22. Mar
24. Mar
26. Mar
28. Mar
30. Mar
1. Apr
3. Apr
IBIMET_SMART30 - PM10
IBIMET_SMART30 - PM2_5
Time trend comparison
3m
400
200
0
µg/m³
21. Mar
22. Mar
23. Mar
24. Mar
25. Mar
26. Mar
27. Mar
28. Mar
29. Mar
30. Mar
31. Mar
1. Apr
2. Apr
3. Apr
IBIMET_SMART16 - PM10
IBIMET_SMART18 - PM10
IBIMET_SMART28 - PM10
IBIMET_SMART15 - PM10
Time trend comparison - MyKPI
3m
40
20
C
28. Mar
29. Mar
30. Mar
31. Mar
1. Apr
2. Apr
3. Apr
Smart Bench Temperature - Temperature
Temperature3DataCenter - Gradi Centigradi
BatteryTemperatureGalaxyTabS4 - Gradi Centigradi
Time trend comparison
3m
60
50
40
30
20
10
0
µg/m³
1 585 886M
1 585 887M
1 585 888M
1 585 889M
1 585 890M
1 585 891M
1 585 892M
IBIMET_SMART34 - PM10
IBIMET_SMART33 - PM10
IBIMET_SMART32 - PM10
IBIMET_SMART30 - PM10
IBIMET_SMART29 - PM10
IBIMET_SMART28 - PM10
IBIMET_SMART24 - PM10
Time trend comparison
3m
20
10
9
8
µg/m³ (logarithmic)
22:00
23:00
3. Apr
01:00
02:00
03:00
04:00
05:00
06:00
07:00
IBIMET_SMART09 - PM10
IBIMET_SMART09 - PM2_5
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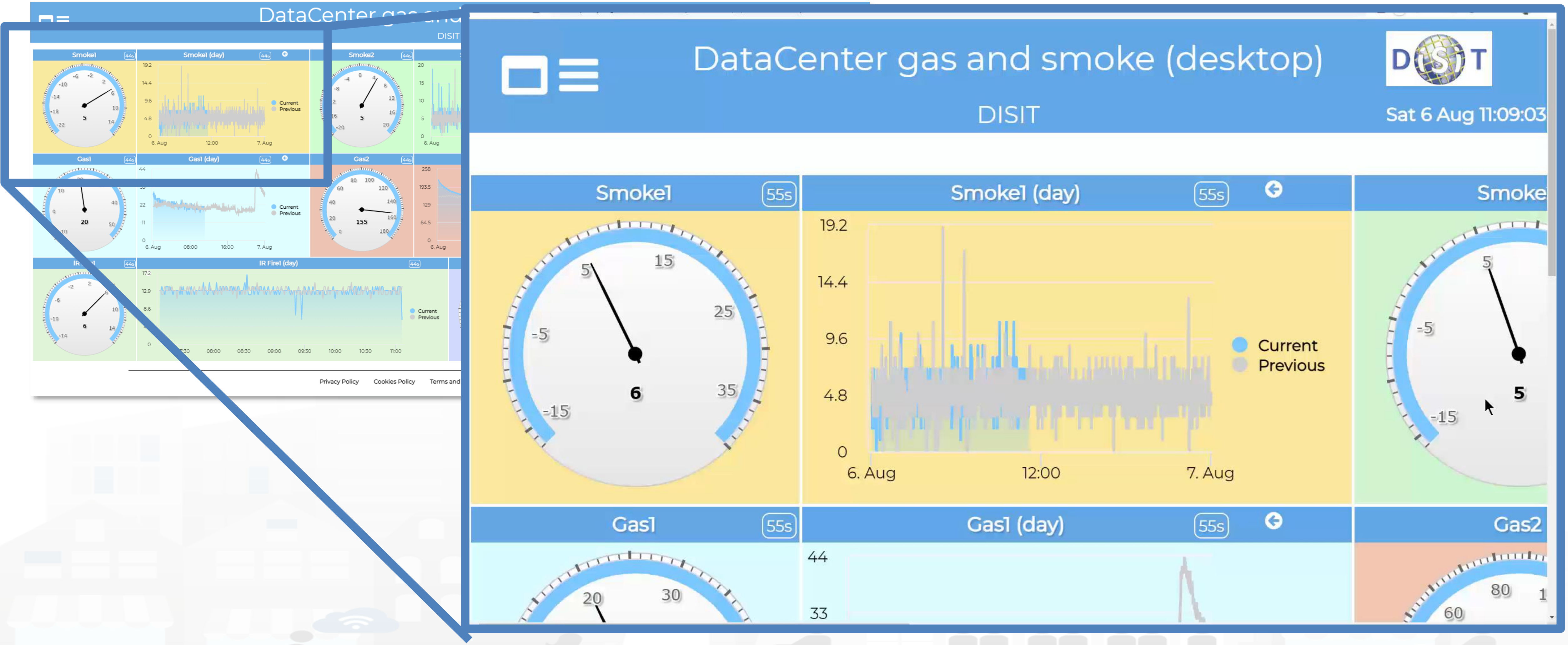
Cookies Policy
Terms and Conditions
Contact us

Friday, Mar 27, 22:55:59
● Temperature3DataCenter - Gradi Centigradi: 17.5
● Fri Mar 27 2020 22:55:59 GMT+01
● No range defined on this field

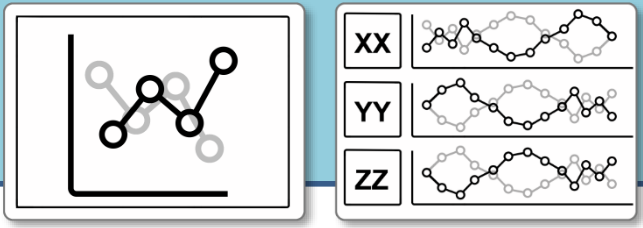
Drill Down over time


DataCenter gas and smoke (desktop)
DISIT
Sat 6 Aug 11:09:03
Smoke1
55s
Smoke1 (day)
Smoke2
Gas1
Gas1 (day)
Gas2
IR Fire1 (day)
Current
Previous
6. Aug
12:00
7. Aug
19.2
14.4
9.6
4.8
0
Privacy Policy
Cookies Policy

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjA1

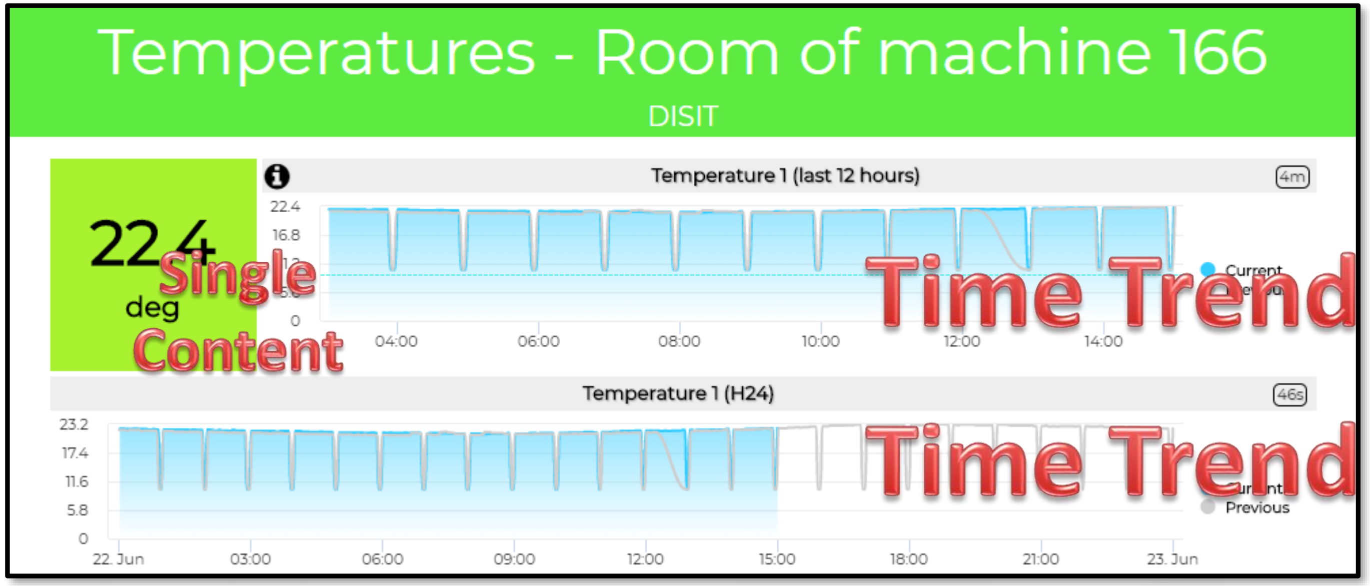
TOP

Time Trend Compare Widgets for Time Series



https://www.snap4city.org/710

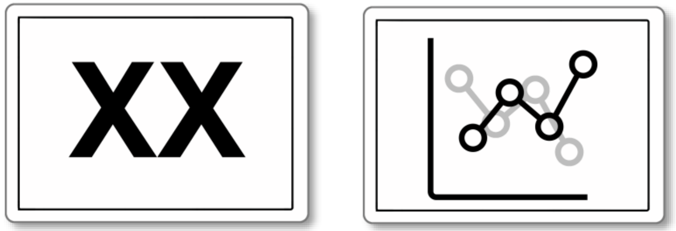
https://www.snap4city.org/710

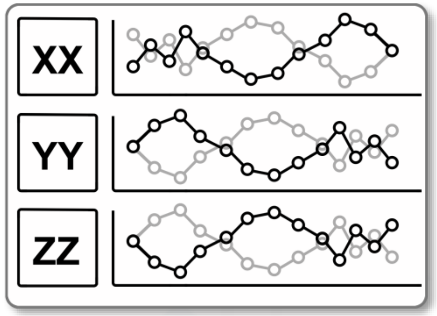

Temperatures - Room of machine 166
DISIT
22.4
deg
Temperature 1 (last 12 hours)
4m
22.4
16.8
0
04:00
06:00
08:00
10:00
12:00
14:00
Current
Temperature 1 (H24)
46s
23.2
17.4
11.6
5.8
0
22. Jun
03:00
06:00
09:00
12:00
15:00
18:00
21:00
23. Jun
Previous

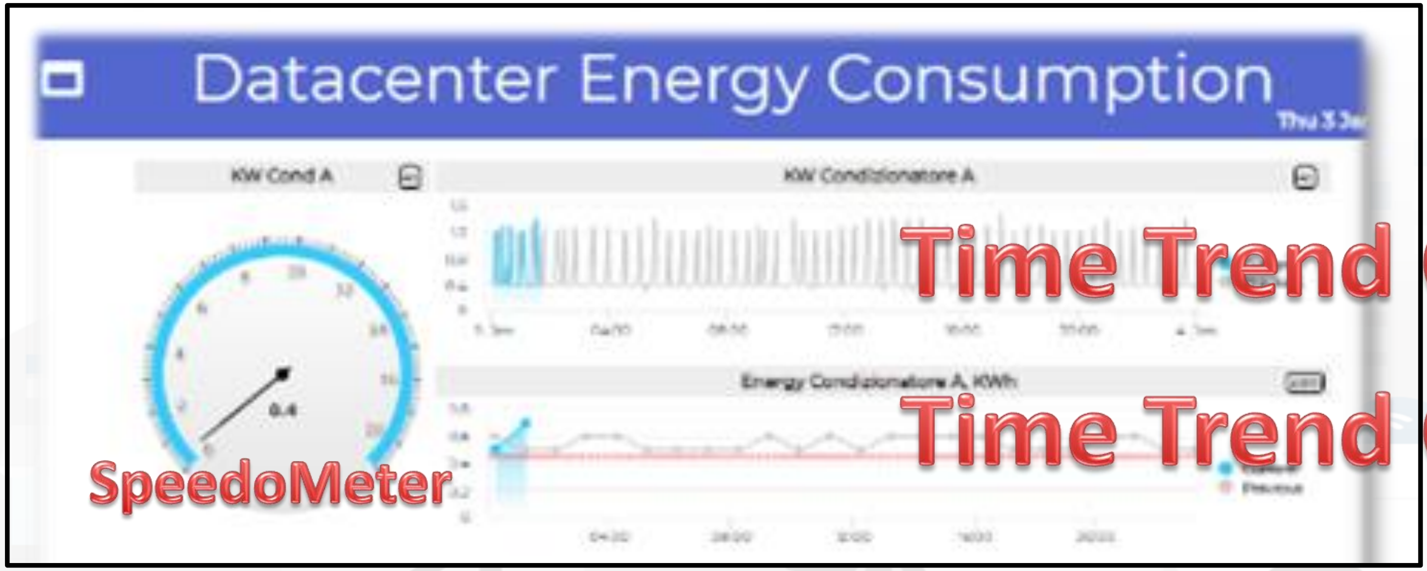
Single Content

Time Trend Compare

Time Trend Compare



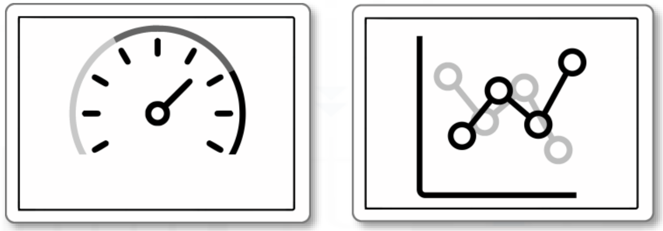



Datacenter Energy Consumption
KW Cond A
KW Condizionatore A
Energy Condizionatore A, KWh

SpeedoMeter

Time Trend Compare

Time Trend Compare

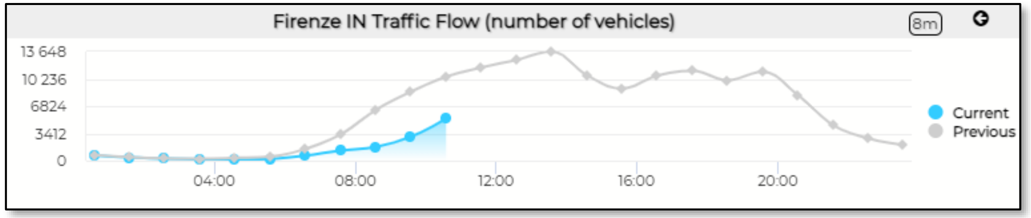


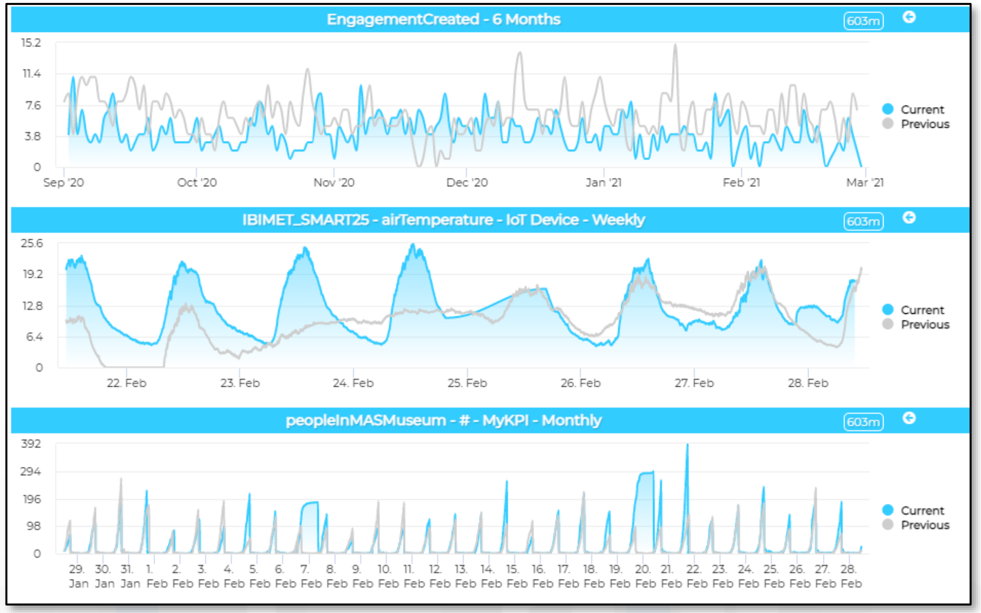
They manage HLT: Sensor

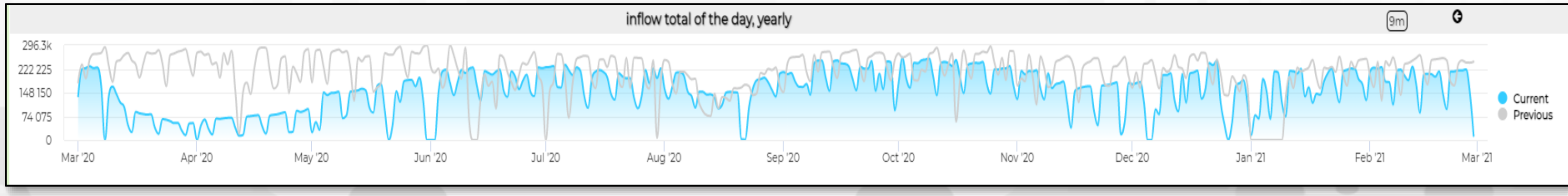
Time Trend Compare

A tool for visual Analytics, Comparing

- **4 hours** wrt those before, or same hours of previous day
- **12 hours** wrt those before, or same hours of previous day
- **Day** wrt day before, or same day of previous week or month
- **Week** wrt to previous week, or
  - week starting on Monday
- **Month** wrt to previous month, or
  - previous month starting 1st day, or
  - same month of the previous year
- **6 Months** wrt to previous 6 months, or
  - Aligned day 1 or same 6 months previous year day 1 or
  - 6 months previous year day 1 aligned 1st or 2nd semester
- **Year** wrt to previous year, or
  - previous year starting 1st day, or
  - previous year starting same month







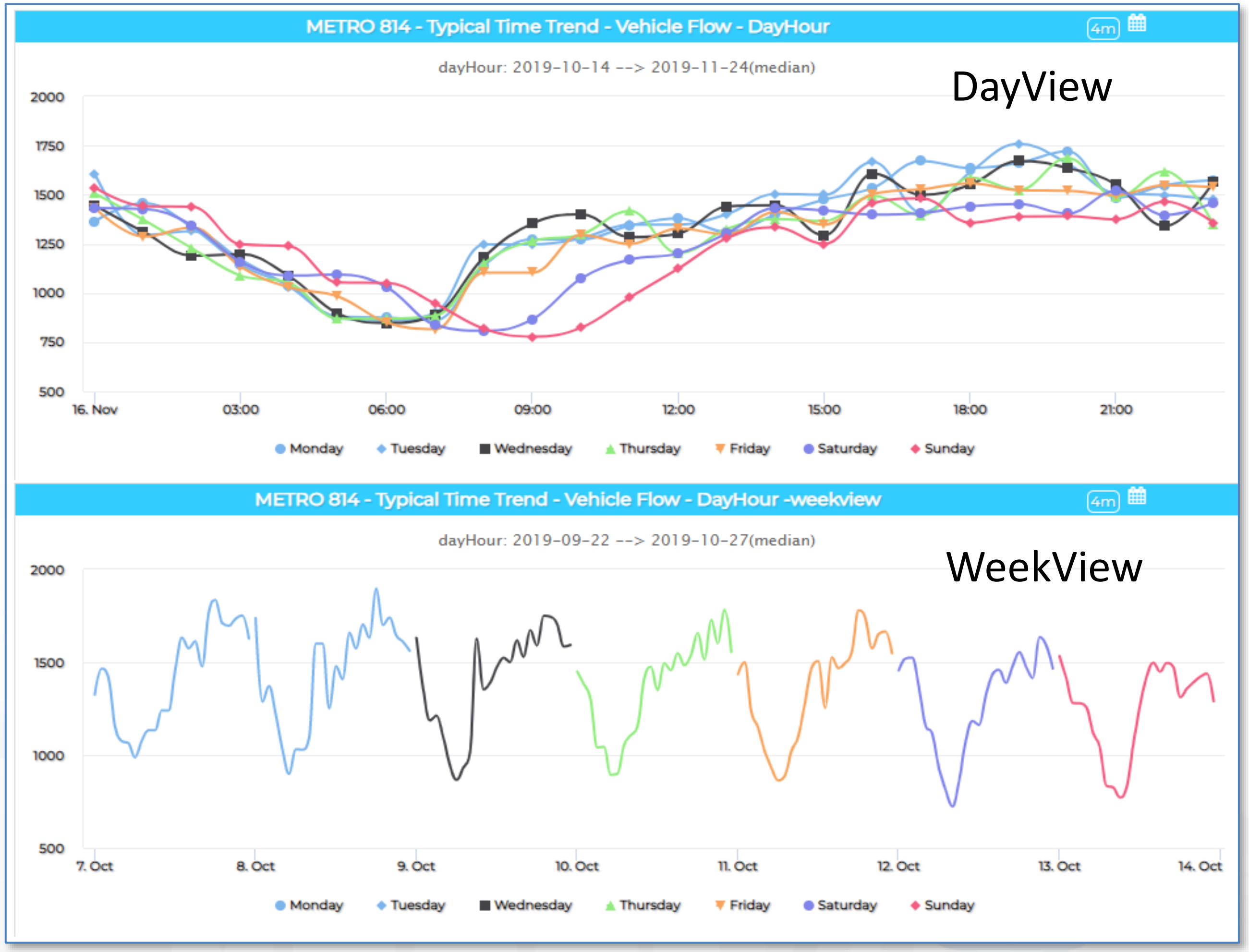
TOP

Typical Time Trend,
Visual Analytic on Time Series

https://www.snap4city.org/705

Typical Time Trend

- They:
  - **need to be computed in advance** on the basis of a Time Serie variable, and a reference period of computation.
  - **represent typical trends of: min, max, average, median**
  - You can change the data on view
- **Formats**:
  - **DayHour**: 7 time trends, one for each day of the week, each hour, 24 values.
    - As DayView or WeekView, start monday
  - **MonthDay**: a value per day, 30 values of the month.
  - **MonthWeek**: a value per day aligned to week days: 28 values, 4 weeks.
    - 1st Monday of the month
    - 3rd Friday, etc.

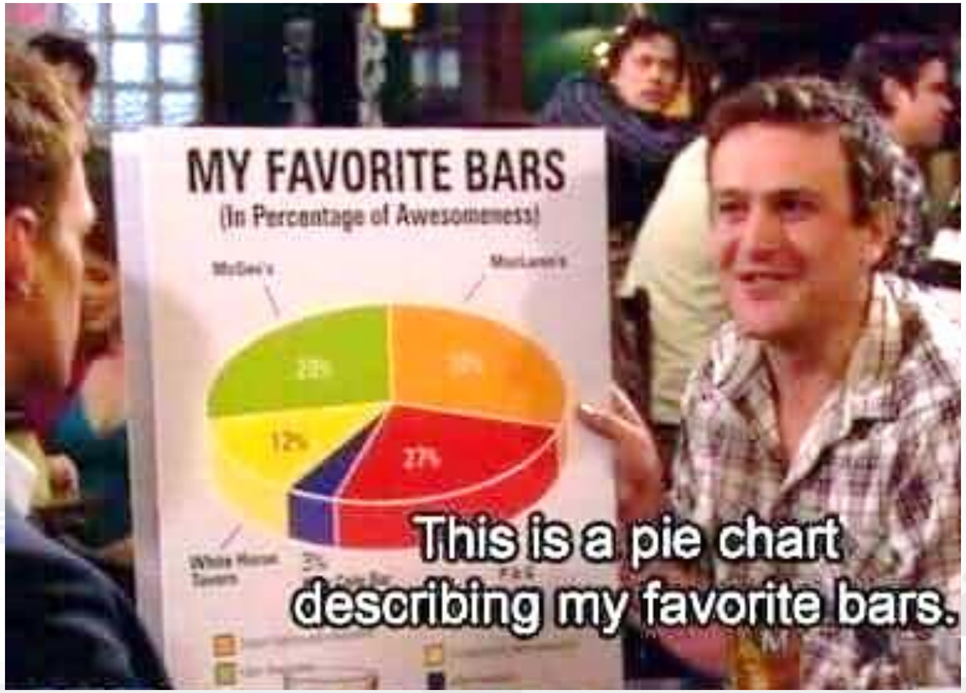


https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MzA4NA==

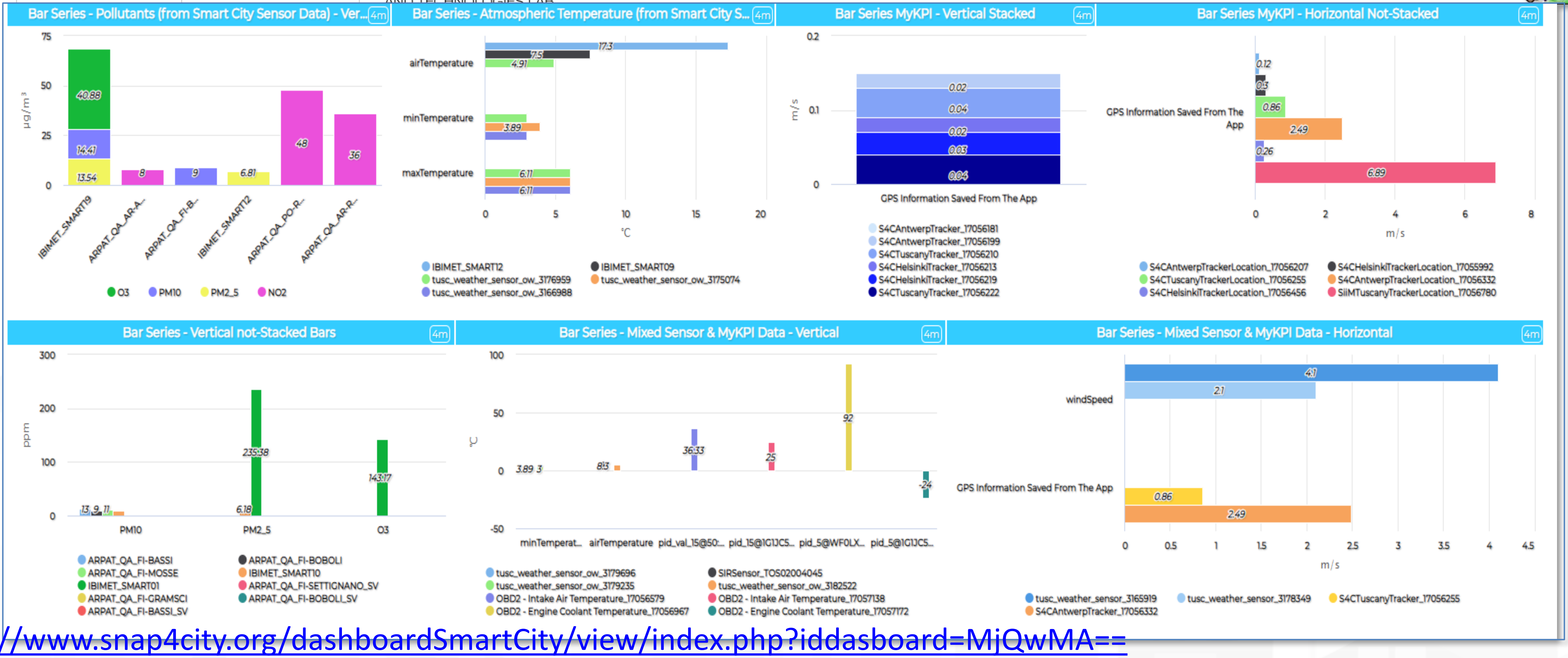
TOP

Bars, Pies, Donut, Spiders, Tables Widgets

MY FAVORITE PIES
(In Percentage of Tastiness)
And this is a bar graph
describing my favorite pies.


MY FAVORITE BARS
(In Percentage of Awesomeness)
23%
12%
27%
This is a pie chart
describing my favorite bars.

Barseries

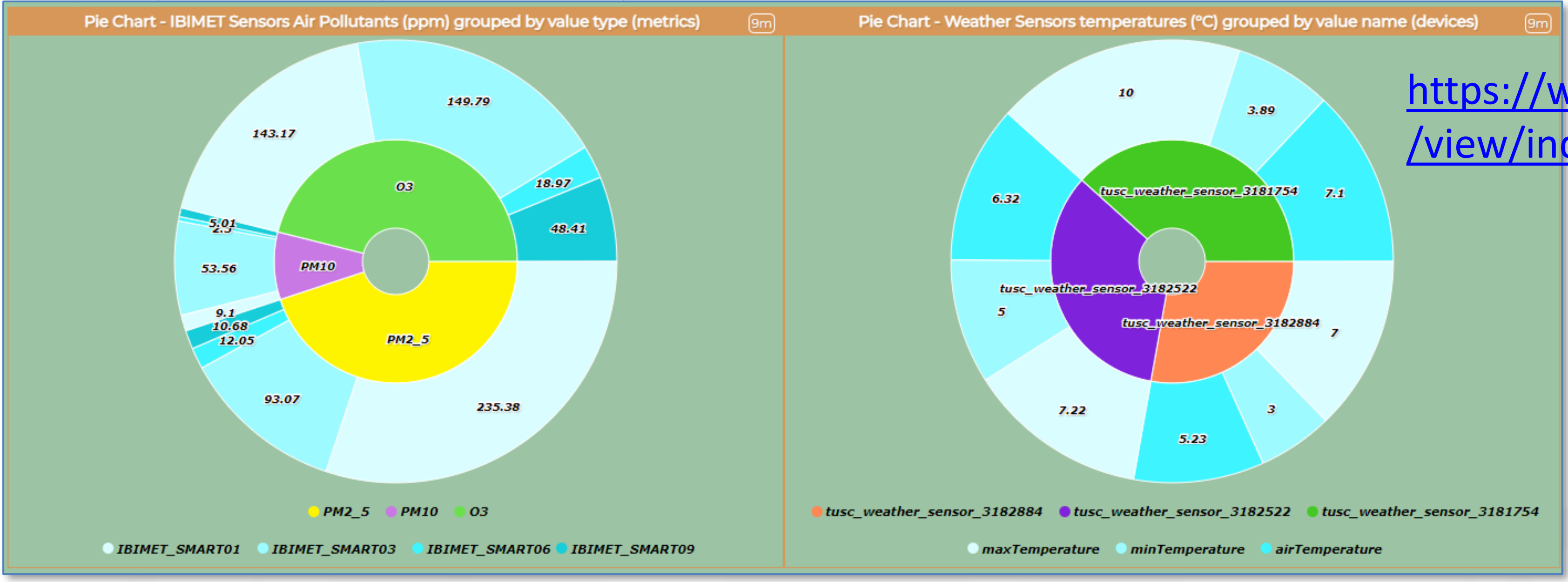


Bar Series - Pollutants (from Smart City Sensor Data) - Ver...
4m
75
50
25
0
µg/m³
40.88
14.41
13.54
8
9
6.81
48
36
IBIMET_SMART19
ARPAT_QA_AR-A...
ARPAT_QA_FI-B...
IBIMET_SMART12
ARPAT_QA_PO-R...
ARPAT_QA_AR-R...
O3
PM10
PM2_5
NO2
Bar Series - Atmospheric Temperature (from Smart City S...
4m
airTemperature
minTemperature
maxTemperature
17.3
7.5
4.91
3.89
6.11
6.11
0
5
10
15
20
°C
IBIMET_SMART12
IBIMET_SMART09
tusc_weather_sensor_ow_3176959
tusc_weather_sensor_ow_3175074
tusc_weather_sensor_ow_3166988
Bar Series MyKPI - Vertical Stacked
4m
0.2
0.1
0
m/s
0.02
0.04
0.02
0.03
0.04
GPS Information Saved From The App
S4CAntwerpTracker_17056181
S4CAntwerpTracker_17056199
S4CTuscanyTracker_17056210
S4CHelsinkiTracker_17056213
S4CHelsinkiTracker_17056219
S4CTuscanyTracker_17056222
Bar Series MyKPI - Horizontal Not-Stacked
4m
GPS Information Saved From The App
0.12
0.3
0.86
2.49
0.26
6.89
0
2
4
6
8
m/s
S4CAntwerpTrackerLocation_17056207
S4CHelsinkiTrackerLocation_17055992
S4CTuscanyTrackerLocation_17056255
S4CAntwerpTrackerLocation_17056332
S4CHelsinkiTrackerLocation_17056456
SiiMTuscanyTrackerLocation_17056780
Bar Series - Vertical not-Stacked Bars
4m
300
200
100
0
ppm
13
9
11
235.38
6.18
143.17
PM10
PM2_5
O3
ARPAT_QA_FI-BASSI
ARPAT_QA_FI-BOBOLI
ARPAT_QA_FI-MOSSE
IBIMET_SMART10
IBIMET_SMART01
ARPAT_QA_FI-SETTIGNANO_SV
ARPAT_QA_FI-GRAMSCI
ARPAT_QA_FI-BOBOLI_SV
ARPAT_QA_FI-BASSI_SV
Bar Series - Mixed Sensor & MyKPI Data - Vertical
4m
100
50
0
-50
°C
3.89
3
8.13
36.33
25
92
-24
minTemperat...
airTemperature
pid_val_15@50:...
pid_15@1G1JC5...
pid_5@WF0LX...
pid_5@1G1JC5...
tusc_weather_sensor_ow_3179696
SIRSensor_TOS02004045
tusc_weather_sensor_ow_3179235
tusc_weather_sensor_ow_3182522
OBD2 - Intake Air Temperature_17056579
OBD2 - Intake Air Temperature_17057138
OBD2 - Engine Coolant Temperature_17056967
OBD2 - Engine Coolant Temperature_17057172
Bar Series - Mixed Sensor & MyKPI Data - Horizontal
4m
windSpeed
GPS Information Saved From The App
4.1
2.1
0.86
2.49
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
m/s
tusc_weather_sensor_3165919
tusc_weather_sensor_3178349
S4CTuscanyTracker_17056255
S4CAntwerpTracker_17056332

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjQwMA==

- **Staked and grouped** by Value_Name / Value_Type
- **Oriented**: Vertical and Orizontal
- **ordered** by value: crescent, descendent
- From historical data and/or dynamic data from IOT Applications

Pie & Donut

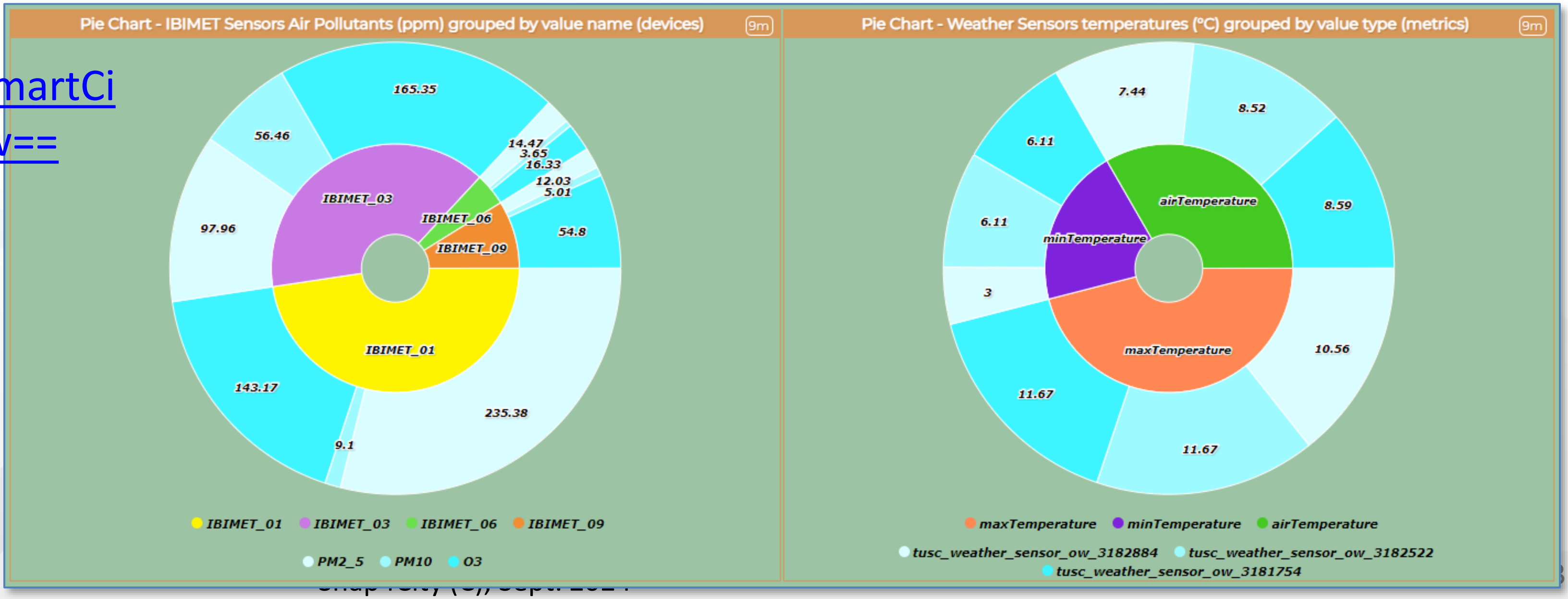

Pie Chart - IBIMET Sensors Air Pollutants (ppm) grouped by value type (metrics)

Pie Chart - Weather Sensors temperatures (°C) grouped by value name (devices)
9m
149.79
143.17
O3
18.97
48.41
5.01
2.5
53.56
PM10
9.1
10.68
12.05
PM2_5
93.07
235.38
PM2_5 PM10 O3
IBIMET_SMART01 IBIMET_SMART03 IBIMET_SMART06 IBIMET_SMART09
9m
10
3.89
6.32
tusc_weather_sensor_3181754
7.1
tusc_weather_sensor_3182522
5
tusc_weather_sensor_3182884
7
7.22
3
5.23
tusc_weather_sensor_3182884 tusc_weather_sensor_3182522 tusc_weather_sensor_3181754
maxTemperature minTemperature airTemperature

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjUxNw==

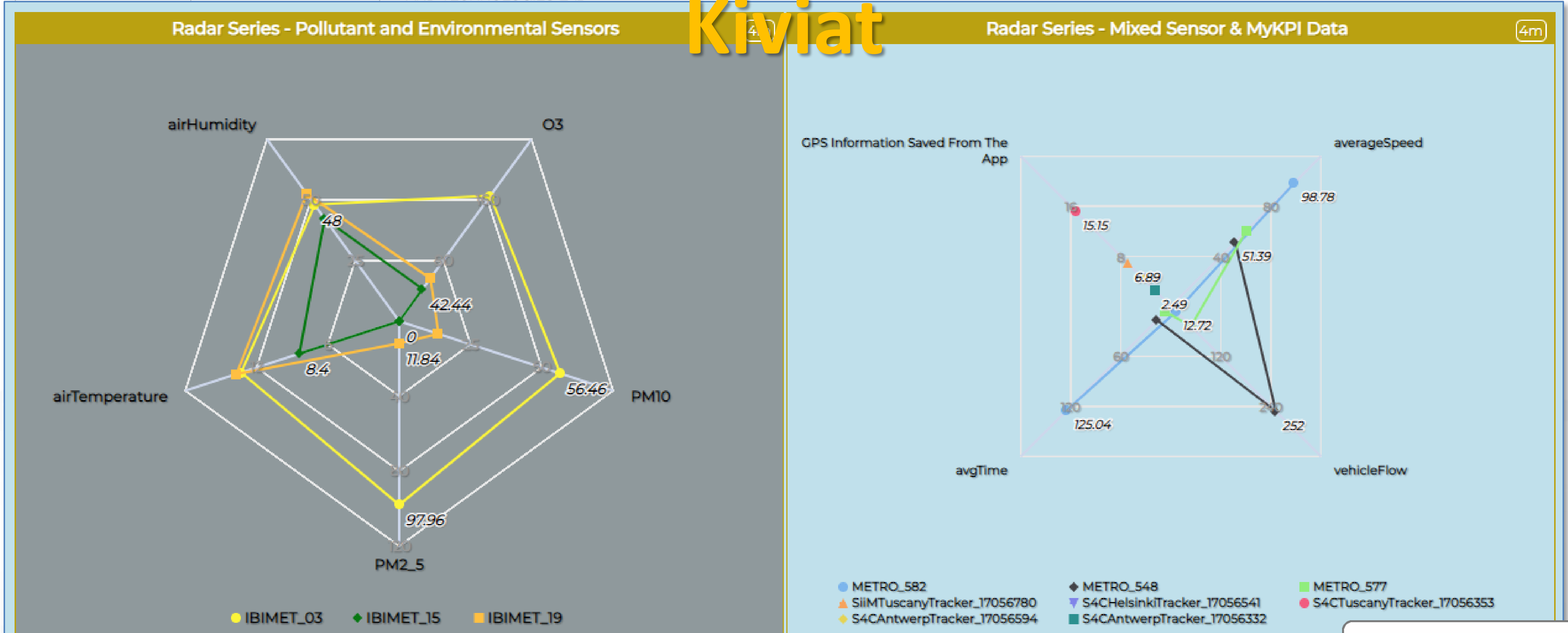
https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjUyNw==

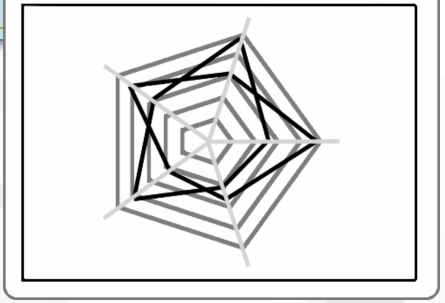
- Single level Pie and two levels as Donut
- Grouped ValueType, ValueUnit


Pie Chart - IBIMET Sensors Air Pollutants (ppm) grouped by value name (devices)

Pie Chart - Weather Sensors temperatures (°C) grouped by value type (metrics)
9m
165.35
56.46
14.47
3.65
16.33
12.03
5.01
IBIMET_03
IBIMET_06
97.96
54.8
IBIMET_09
IBIMET_01
143.17
235.38
9.1
IBIMET_01 IBIMET_03 IBIMET_06 IBIMET_09
PM2_5 PM10 O3
9m
7.44
8.52
6.11
airTemperature
8.59
6.11
minTemperature
3
maxTemperature
10.56
11.67
11.67
maxTemperature minTemperature airTemperature
tusc_weather_sensor_ow_3182884 tusc_weather_sensor_ow_3182522
tusc_weather_sensor_ow_3181754

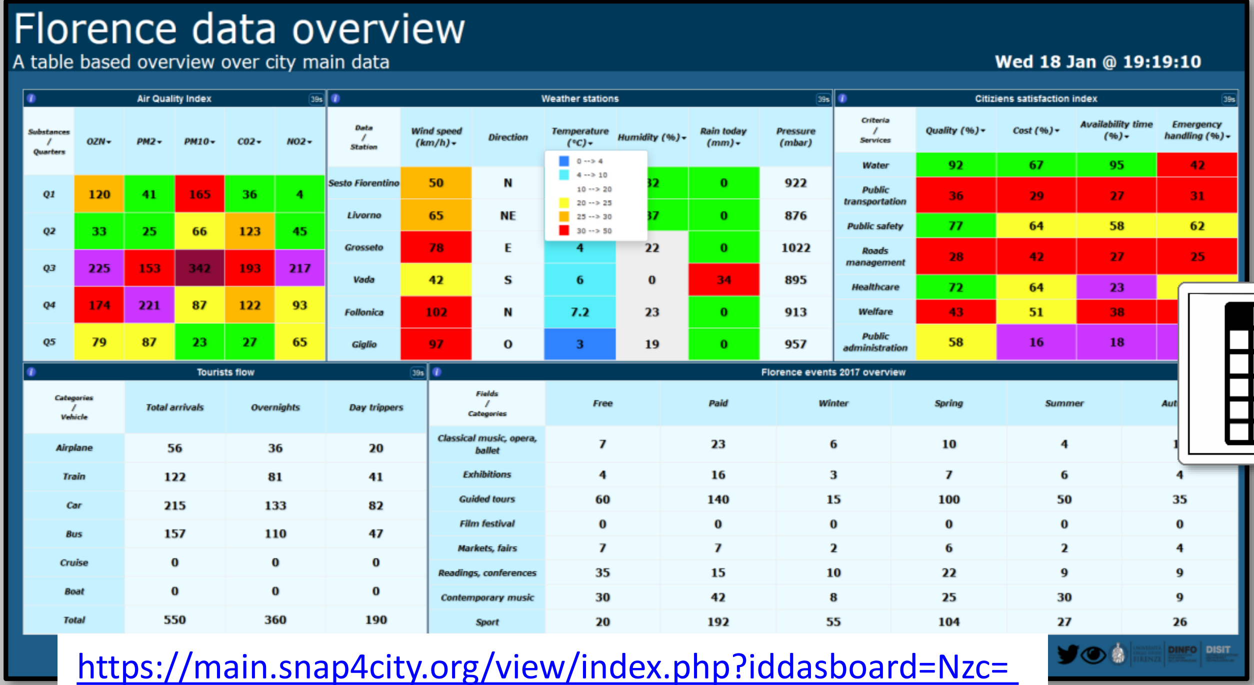
Radar, SpiderNet Kiviat


Radar Series - Pollutant and Environmental Sensors
4m
airHumidity
O3
PM10
PM2_5
airTemperature
48
42.44
0
11.84
8.4
56.46
97.96
IBIMET_03
IBIMET_15
IBIMET_19
Radar Series - Mixed Sensor & MyKPI Data
4m
GPS Information Saved From The App
averageSpeed
vehicleFlow
avgTime
98.78
15.15
6.89
51.39
2.49
12.72
125.04
252
METRO_582
METRO_548
METRO_577
SiiMTuscanyTracker_17056780
S4CHelsinkiTracker_17056541
S4CTuscanyTracker_17056353
S4CAntwerpTracker_17056594
S4CAntwerpTracker_17056332



https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjUwNQ==

- Normalized, multiple value units
- Hystorical, KPI and Dynamic from IOT App



Florence data overview

A table based overview over city main data

Wed 18 Jan @ 19:19:10

Air Quality Index 39s

Substances / Quarters	OZN	PM2	PM10	C02	NO2
Q1	120	41	165	36	4
Q2	33	25	66	123	45
Q3	225	153	342	193	217
Q4	174	221	87	122	93
Q5	79	87	23	27	65

Weather stations 39s

Data / Station	Wind speed (km/h)	Direction	Temperature (°C)	Humidity (%)	Rain today (mm)	Pressure (mbar)
Sesto Fiorentino	50	N		32	0	922
Livorno	65	NE		37	0	876
Grosseto	78	E	4	22	0	1022
Vada	42	S	6	0	34	895
Follonica	102	N	7.2	23	0	913
Giglio	97	O	3	19	0	957

🟦 0 --> 4
🟦 4 --> 10
10 --> 20
🟨 20 --> 25
🟧 25 --> 30
🟥 30 --> 50

Citiziens satisfaction index 39s

Criteria / Services	Quality (%)	Cost (%)	Availability time (%)	Emergency handling (%)
Water	92	67	95	42
Public transportation	36	29	27	31
Public safety	77	64	58	62
Roads management	28	42	27	25
Healthcare	72	64	23	
Welfare	43	51	38	
Public administration	58	16	18	

Tourists flow 39s

Categories / Vehicle	Total arrivals	Overnights	Day trippers
Airplane	56	36	20
Train	122	81	41
Car	215	133	82
Bus	157	110	47
Cruise	0	0	0
Boat	0	0	0
Total	550	360	190

Florence events 2017 overview

Fields / Categories	Free	Paid	Winter	Spring	Summer	Aut
Classical music, opera, ballet	7	23	6	10	4	1
Exhibitions	4	16	3	7	6	4
Guided tours	60	140	15	100	50	35
Film festival	0	0	0	0	0	0
Markets, fairs	7	7	2	6	2	4
Readings, conferences	35	15	10	22	9	9
Contemporary music	30	42	8	25	30	9
Sport	20	192	55	104	27	26

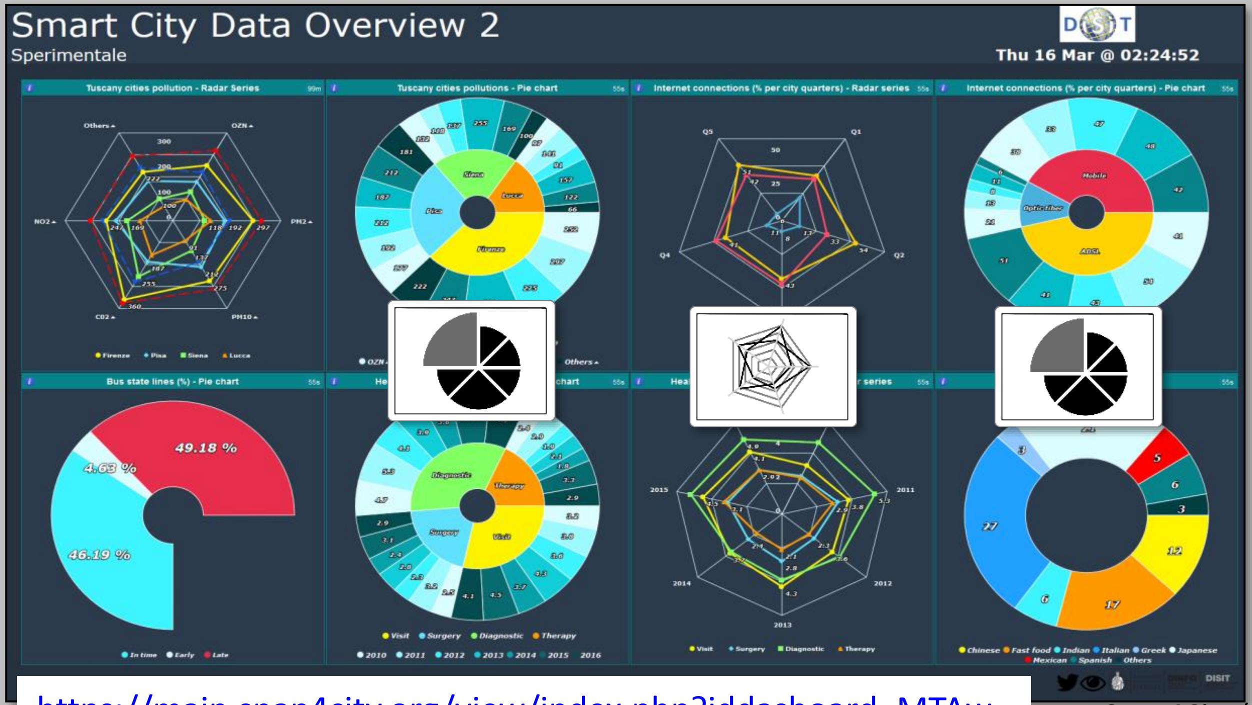
DINFO
DISIT

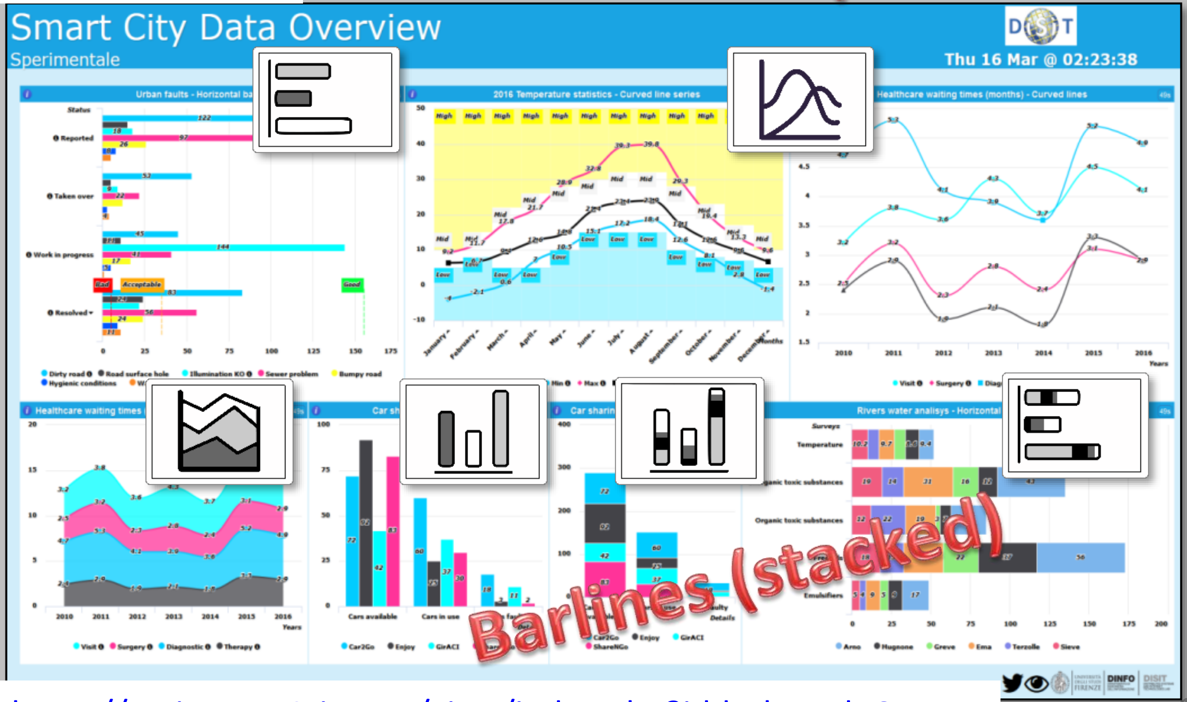
https://main.snap4city.org/view/index.php?iddasboard=Nzc=

Table

Kiviat and Pies

Curved Lines (stacked)


Smart City Data Overview 2
Sperimentale
Thu 16 Mar @ 02:24:52
Tuscany cities pollution - Radar Series
Tuscany cities pollutions - Pie chart
Internet connections (% per city quarters) - Radar series
Internet connections (% per city quarters) - Pie chart
Bus state lines (%) - Pie chart
49.18 %
4.63 %
46.19 %
In time
Early
Late
Firenze
Pisa
Siena
Lucca
Visit
Surgery
Diagnostic
Therapy
2010
2011
2012
2013
2014
2015
2016
Chinese
Fast food
Indian
Italian
Greek
Japanese
Mexican
Spanish
Others
DISIT


Smart City Data Overview
Sperimentale
Thu 16 Mar @ 02:23:38
Urban faults - Horizontal ba
2016 Temperature statistics - Curved line series
Healthcare waiting times (months) - Curved lines
Healthcare waiting times
Car sh
Car sharin
Rivers water analisys - Horizontal
Reported
Taken over
Work in progress
Resolved
Dirty road
Road surface hole
Illumination KO
Sewer problem
Bumpy road
Hygienic conditions
Visit
Surgery
Diagnostic
Therapy
Cars available
Cars in use
Car2Go
Enjoy
GirACI
ShareNGo
Temperature
Organic toxic substances
Emulsifiers
Arno
Mugnone
Greve
Ema
Terzolle
Sieve
DINFO
DISIT

Barlines (stacked)

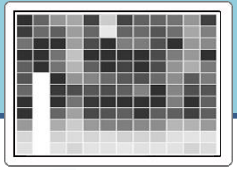
https://main.snap4city.org/view/index.php?iddasboard=MTAw

Snap4City (C),

https://main.snap4city.org/view/index.php?iddasboard=ODM=

TOP

Calendar Widgets for Time Series

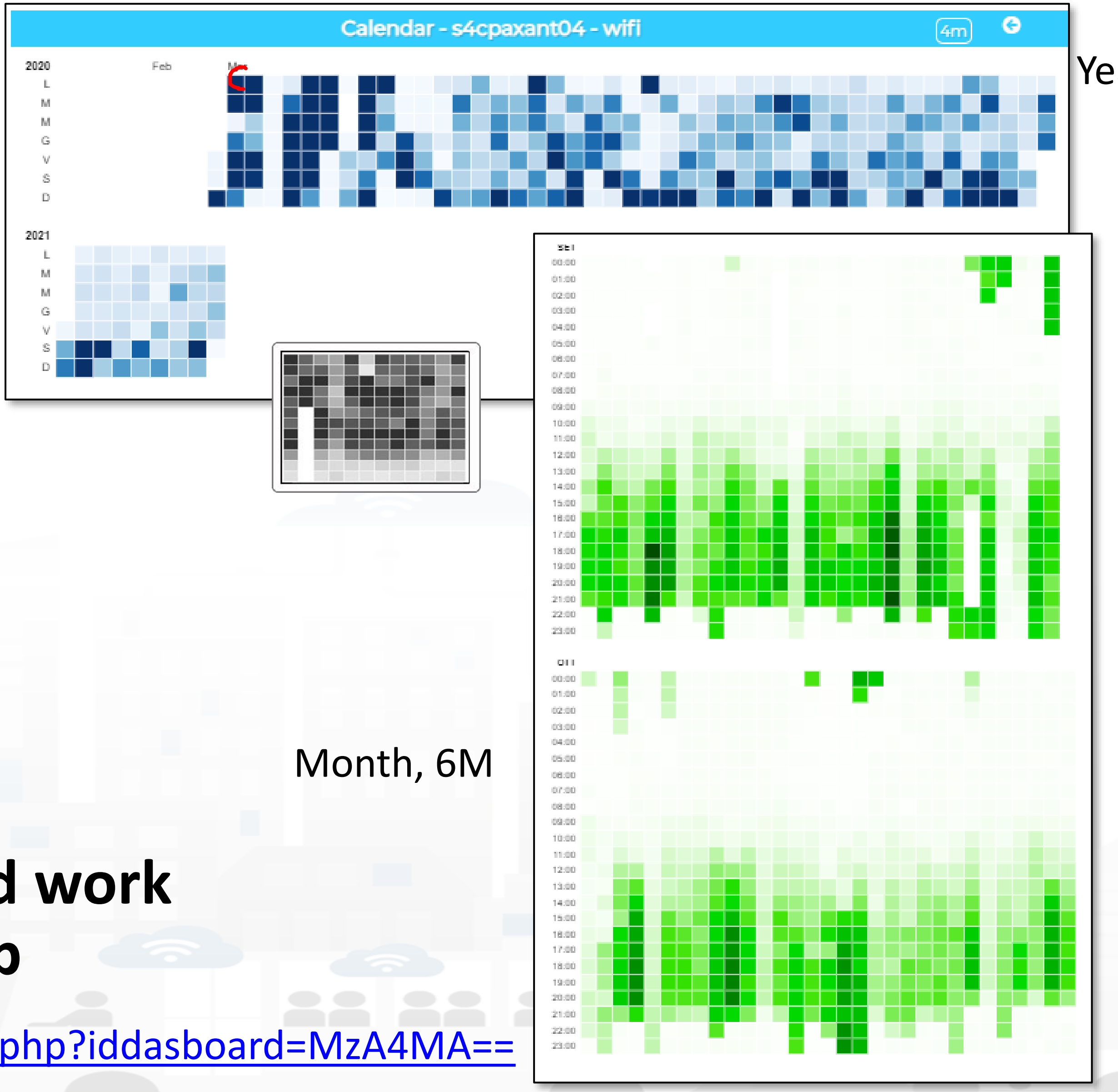


Calendar

https://www.snap4city.org/706

Showing: **Sum, Average or Median** value of a variable as a colored calendar:

- **Year**
  - 1 Year, 12 months, by weeks, per days
  - Time Range: 1D, 7D, 1M, 6M, 1Y
- **Month**
  - 30 days, 24 hours
  - Time Range: 1D, 7D, 1M, 6M, 1Y
- **You can scroll in history**
- **They manage HLT: Sensor, MyKPI and work receiving Dynamic data from IOT App**

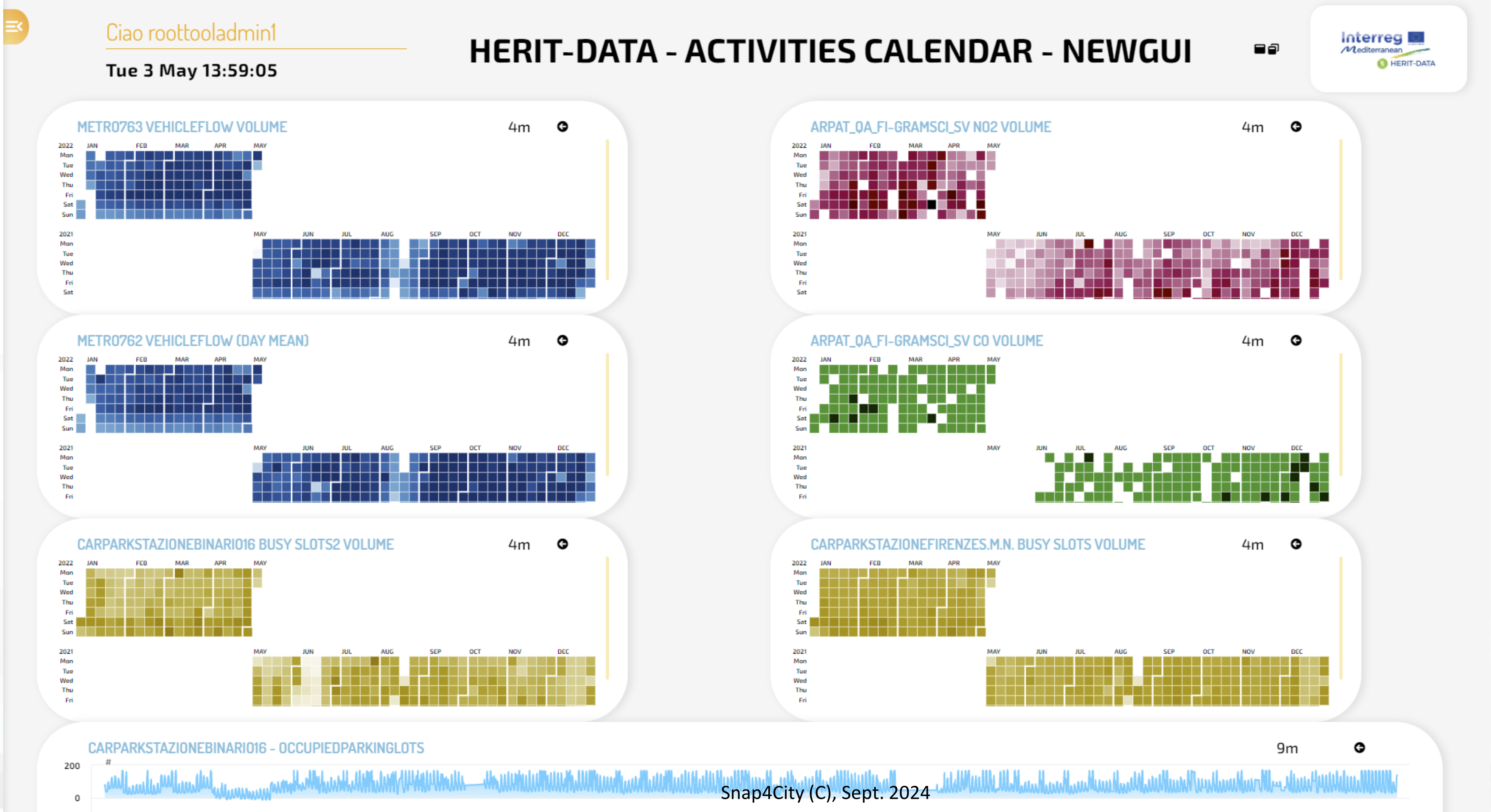


Calendar - s4cpaxant04 - wifi
4m
2020
Feb
Mar
L
M
M
G
V
S
D
2021
SET
OTT
00:00
12:00
23:00

Year, 1Y

Month, 6M

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MzA4MA==



Ciao roottooladmin1

Tue 3 May 13:59:05

HERIT-DATA - ACTIVITIES CALENDAR - NEWGUI

Interreg Mediterranean
HERIT-DATA

METRO763 VEHICLEFLOW VOLUME 4m

METRO762 VEHICLEFLOW (DAY MEAN) 4m

CARPARKSTAZIONEBINARIO16 BUSY SLOTS2 VOLUME 4m

ARPAT_QA_FI-GRAMSCI_SV NO2 VOLUME 4m

ARPAT_QA_FI-GRAMSCI_SV CO VOLUME 4m

CARPARKSTAZIONEFIRENZES.M.N. BUSY SLOTS VOLUME 4m

CARPARKSTAZIONEBINARIO16 - OCCUPIEDPARKINGLOTS 9m

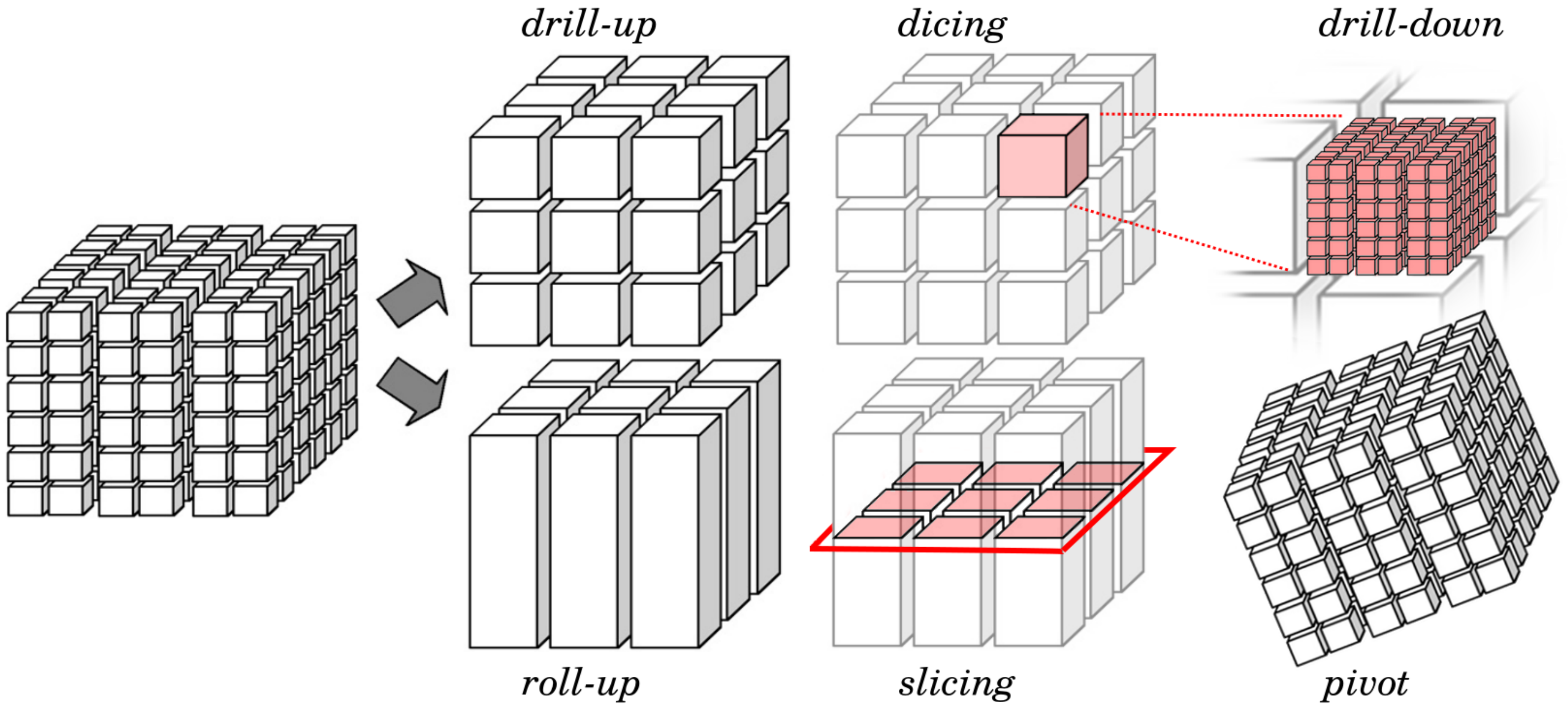
2022
JAN
FEB
MAR
APR
MAY
Mon
Tue
Wed
Thu
Fri
Sat
Sun
2021
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
200
0
#

TOP

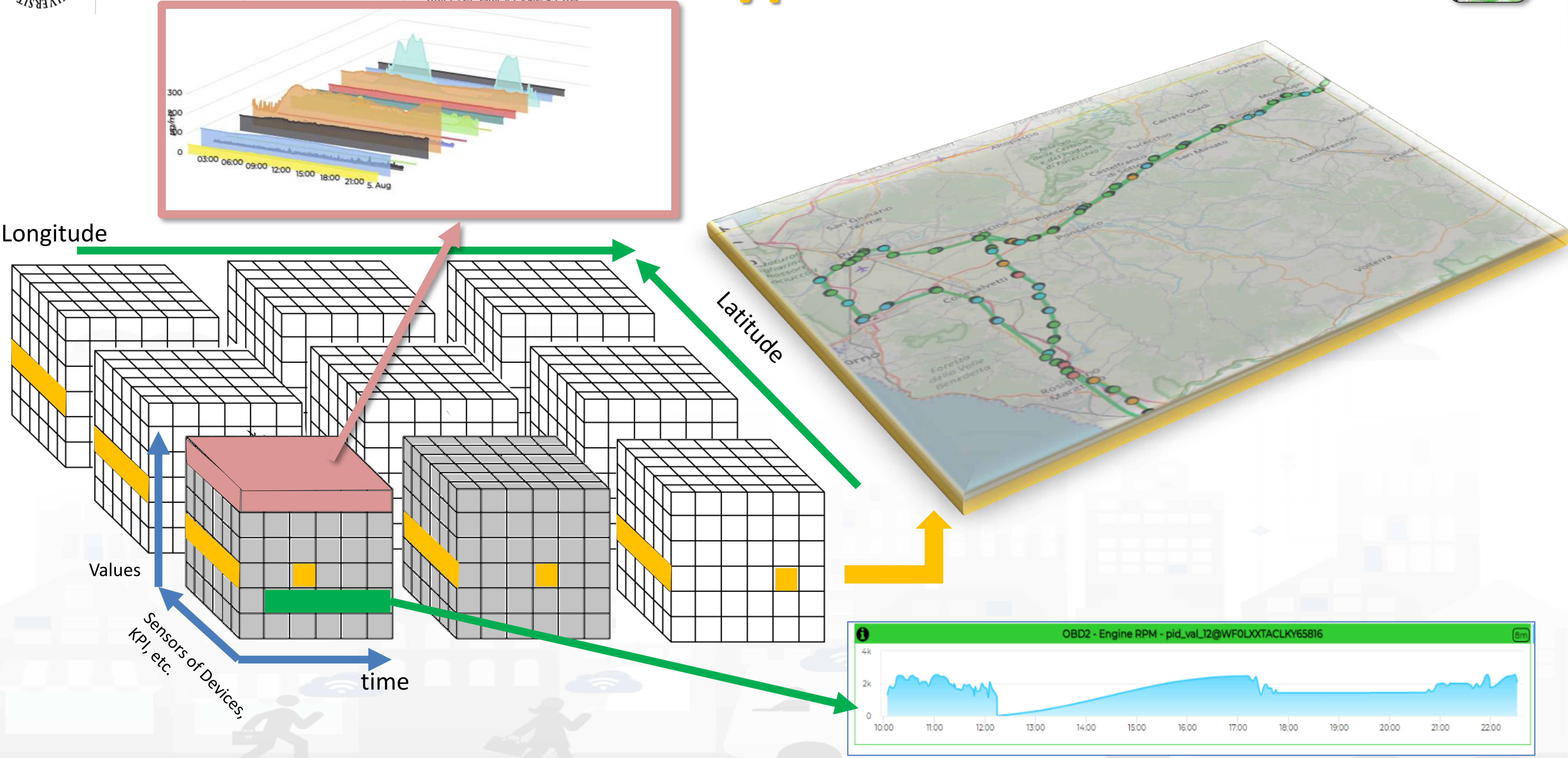
OLAP Data Cubes Widgets

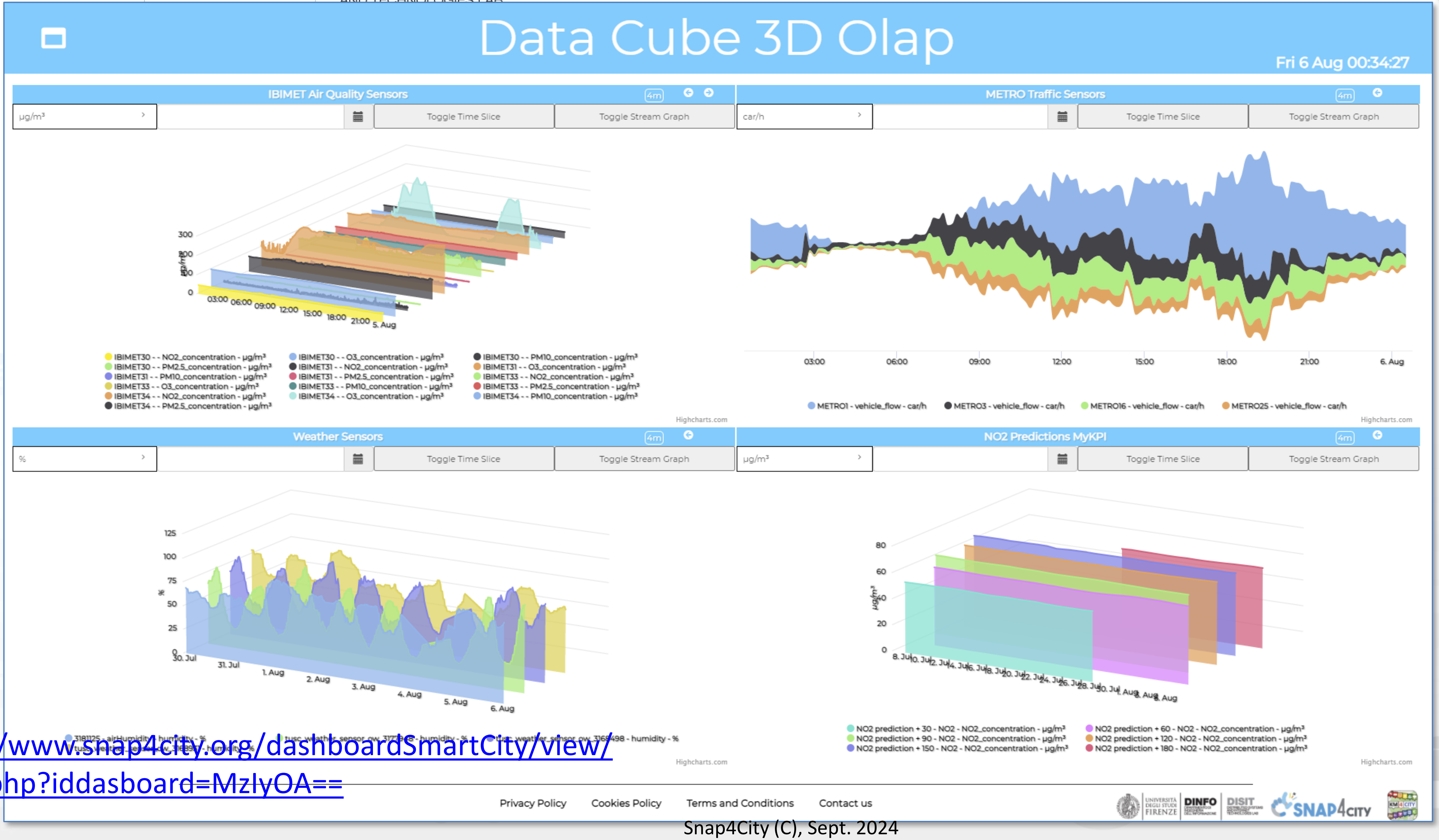
The data cubes

- Using Dashboard Wizard with Widgets all the different transformations may be possible with different representations.
- The IoT App allows to make them Dynamic


drill-up
dicing
drill-down
roll-up
slicing
pivot

Hypercube

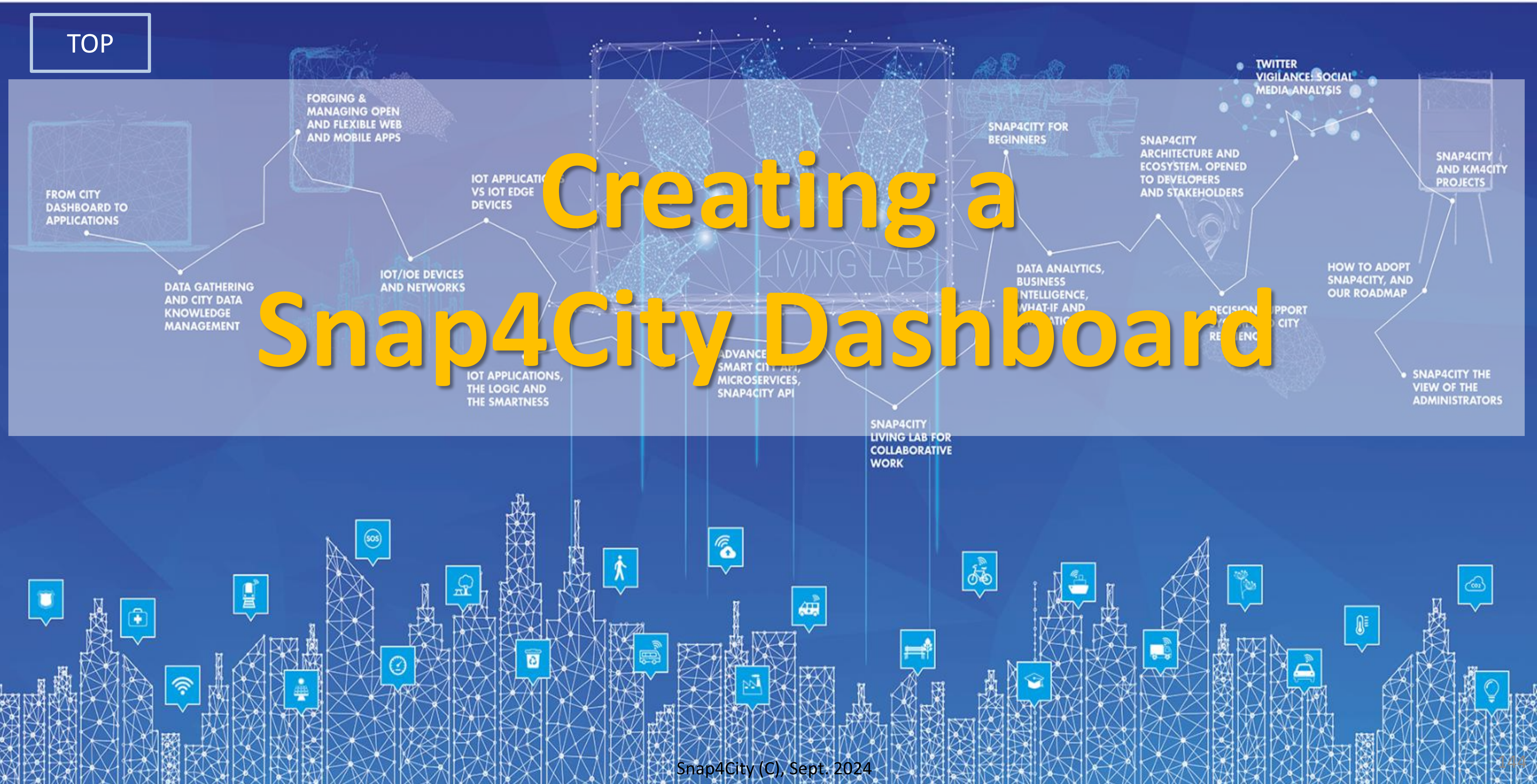

300
200
100
0
03:00
06:00
09:00
12:00
15:00
18:00
21:00
5. Aug
Longitude
Latitude
Values
Sensors of Devices, KPI, etc.
time
OBD2 - Engine RPM - pid_val_12@WF0LXXTACLKY65816
8m
4k
2k
0
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00


Data Cube 3D Olap
Fri 6 Aug 00:34:27
IBIMET Air Quality Sensors
µg/m³
Toggle Time Slice
Toggle Stream Graph
300
200
100
0
03:00
06:00
09:00
12:00
15:00
18:00
21:00
5. Aug
IBIMET30 - - NO2_concentration - µg/m³
IBIMET30 - - PM2.5_concentration - µg/m³
IBIMET31 - - PM10_concentration - µg/m³
IBIMET33 - - O3_concentration - µg/m³
IBIMET34 - - NO2_concentration - µg/m³
IBIMET34 - - PM2.5_concentration - µg/m³
IBIMET30 - - O3_concentration - µg/m³
IBIMET31 - - NO2_concentration - µg/m³
IBIMET31 - - PM2.5_concentration - µg/m³
IBIMET33 - - PM10_concentration - µg/m³
IBIMET34 - - O3_concentration - µg/m³
IBIMET30 - - PM10_concentration - µg/m³
IBIMET31 - - O3_concentration - µg/m³
IBIMET33 - - NO2_concentration - µg/m³
IBIMET33 - - PM2.5_concentration - µg/m³
IBIMET34 - - PM10_concentration - µg/m³
Highcharts.com
METRO Traffic Sensors
car/h
Toggle Time Slice
Toggle Stream Graph
03:00
06:00
09:00
12:00
15:00
18:00
21:00
6. Aug
METRO1 - vehicle_flow - car/h
METRO3 - vehicle_flow - car/h
METRO16 - vehicle_flow - car/h
METRO25 - vehicle_flow - car/h
Highcharts.com
Weather Sensors
%
Toggle Time Slice
Toggle Stream Graph
125
100
75
50
25
0
30. Jul
31. Jul
1. Aug
2. Aug
3. Aug
4. Aug
5. Aug
6. Aug
3181125 - airHumidity - humidity - %
tusc_weather_sensor_ow_3177968 - humidity - %
tusc_weather_sensor_ow_3168498 - humidity - %
tusc_weather_sensor_ow_3168937 - humidity - %
Highcharts.com
NO2 Predictions MyKPI
µg/m³
Toggle Time Slice
Toggle Stream Graph
80
60
40
20
0
NO2 prediction + 30 - NO2 - NO2_concentration - µg/m³
NO2 prediction + 90 - NO2 - NO2_concentration - µg/m³
NO2 prediction + 150 - NO2 - NO2_concentration - µg/m³
NO2 prediction + 60 - NO2 - NO2_concentration - µg/m³
NO2 prediction + 120 - NO2 - NO2_concentration - µg/m³
NO2 prediction + 180 - NO2 - NO2_concentration - µg/m³
Highcharts.com
Privacy Policy
Cookies Policy
Terms and Conditions
Contact us

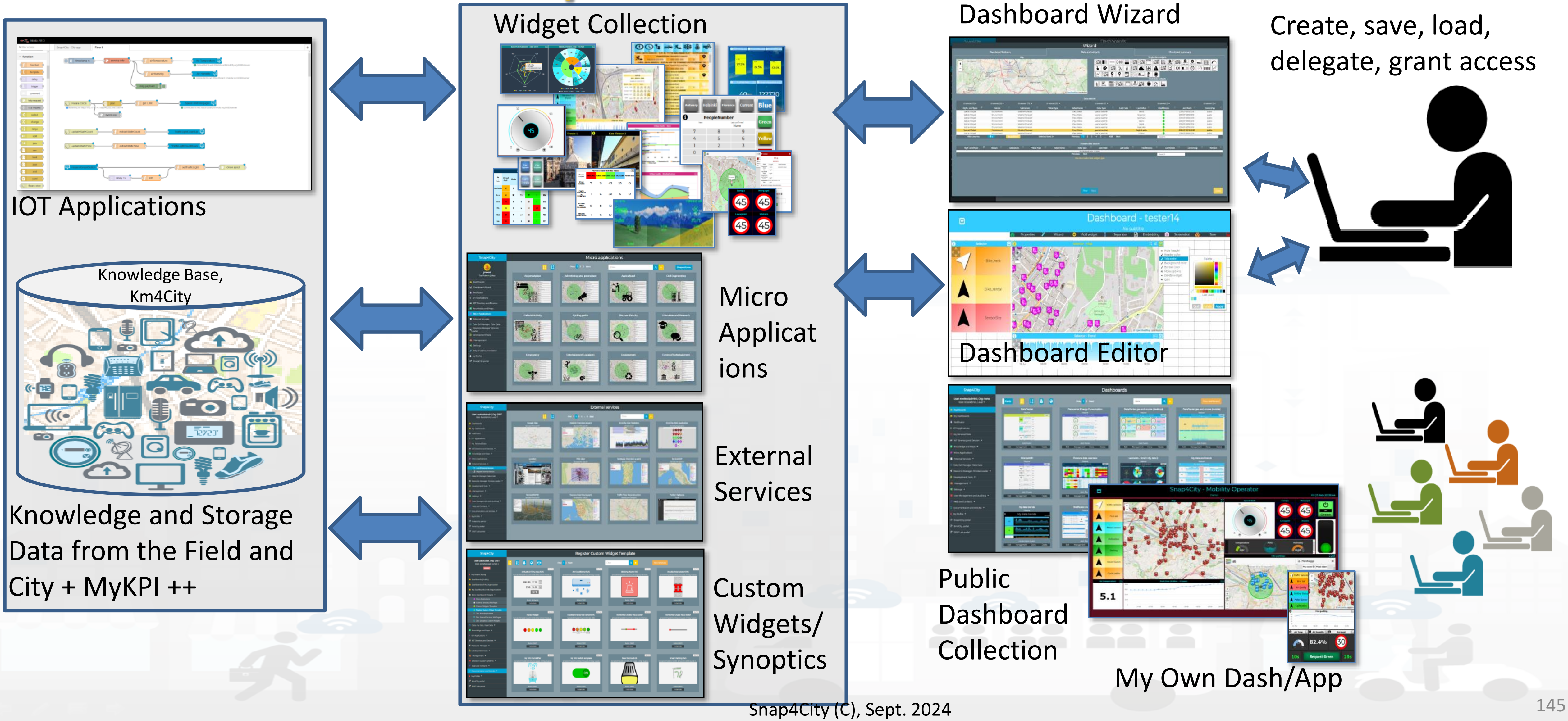
https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MzIyOA==

TOP

Creating a Snap4City Dashboard


FROM CITY DASHBOARD TO APPLICATIONS
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
IOT/IOE DEVICES AND NETWORKS
IOT APPLICATIONS VS IOT EDGE DEVICES
IOT APPLICATIONS, THE LOGIC AND THE SMARTNESS
ADVANCED SMART CITY API, MICROSERVICES, SNAP4CITY API
LIVING LAB
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
SNAP4CITY FOR BEGINNERS
DATA ANALYTICS, BUSINESS INTELLIGENCE, WHAT-IF AND
SNAP4CITY ARCHITECTURE AND ECOSYSTEM. OPENED TO DEVELOPERS AND STAKEHOLDERS
DECISION SUPPORT CITY
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
SNAP4CITY AND KM4CITY PROJECTS
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

Dashboard Development



IOT Applications

Knowledge Base, Km4City

Knowledge and Storage Data from the Field and City + MyKPI ++

Widget Collection

Micro Applications

External Services

Custom Widgets/ Synoptics

Dashboard Wizard

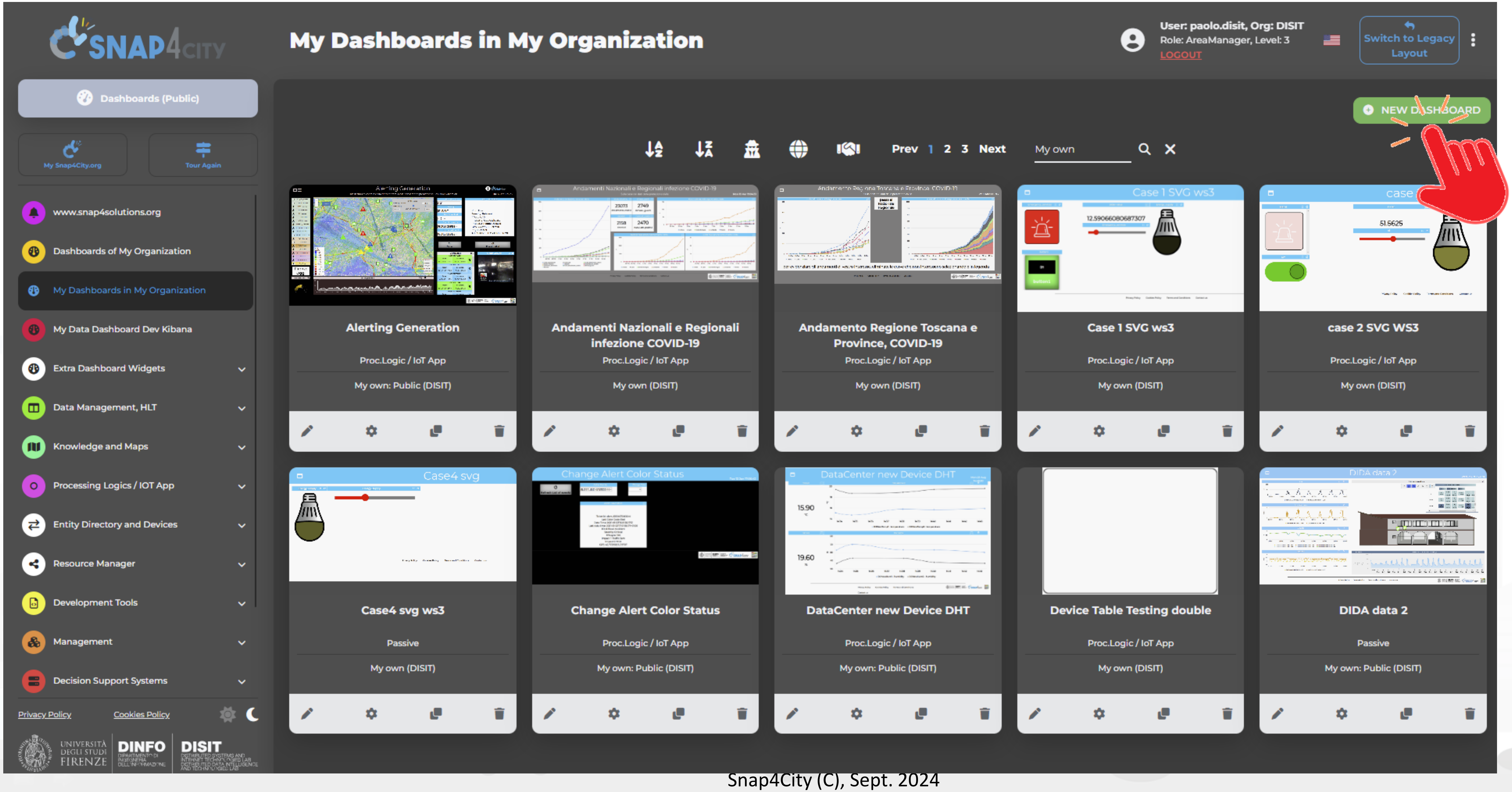
Create, save, load, delegate, grant access

Dashboard Editor

Public Dashboard Collection

My Own Dash/App

New Dash ?


SNAP4CITY
My Dashboards in My Organization
User: paolo.disit, Org: DISIT
Role: AreaManager, Level: 3
LOGOUT
Switch to Legacy Layout
Dashboards (Public)
My Snap4City.org
Tour Again
www.snap4solutions.org
Dashboards of My Organization
My Dashboards in My Organization
My Data Dashboard Dev Kibana
Extra Dashboard Widgets
Data Management, HLT
Knowledge and Maps
Processing Logics / IOT App
Entity Directory and Devices
Resource Manager
Development Tools
Management
Decision Support Systems
Privacy Policy
Cookies Policy
NEW DASHBOARD
Prev 1 2 3 Next
My own

Alerting Generation
Proc.Logic / IoT App
My own: Public (DISIT)

Andamenti Nazionali e Regionali infezione COVID-19
Proc.Logic / IoT App
My own (DISIT)

Andamento Regione Toscana e Province, COVID-19
Proc.Logic / IoT App
My own (DISIT)

Case 1 SVG ws3
Proc.Logic / IoT App
My own (DISIT)

case 2 SVG WS3
Proc.Logic / IoT App
My own (DISIT)

Case4 svg ws3
Passive
My own (DISIT)

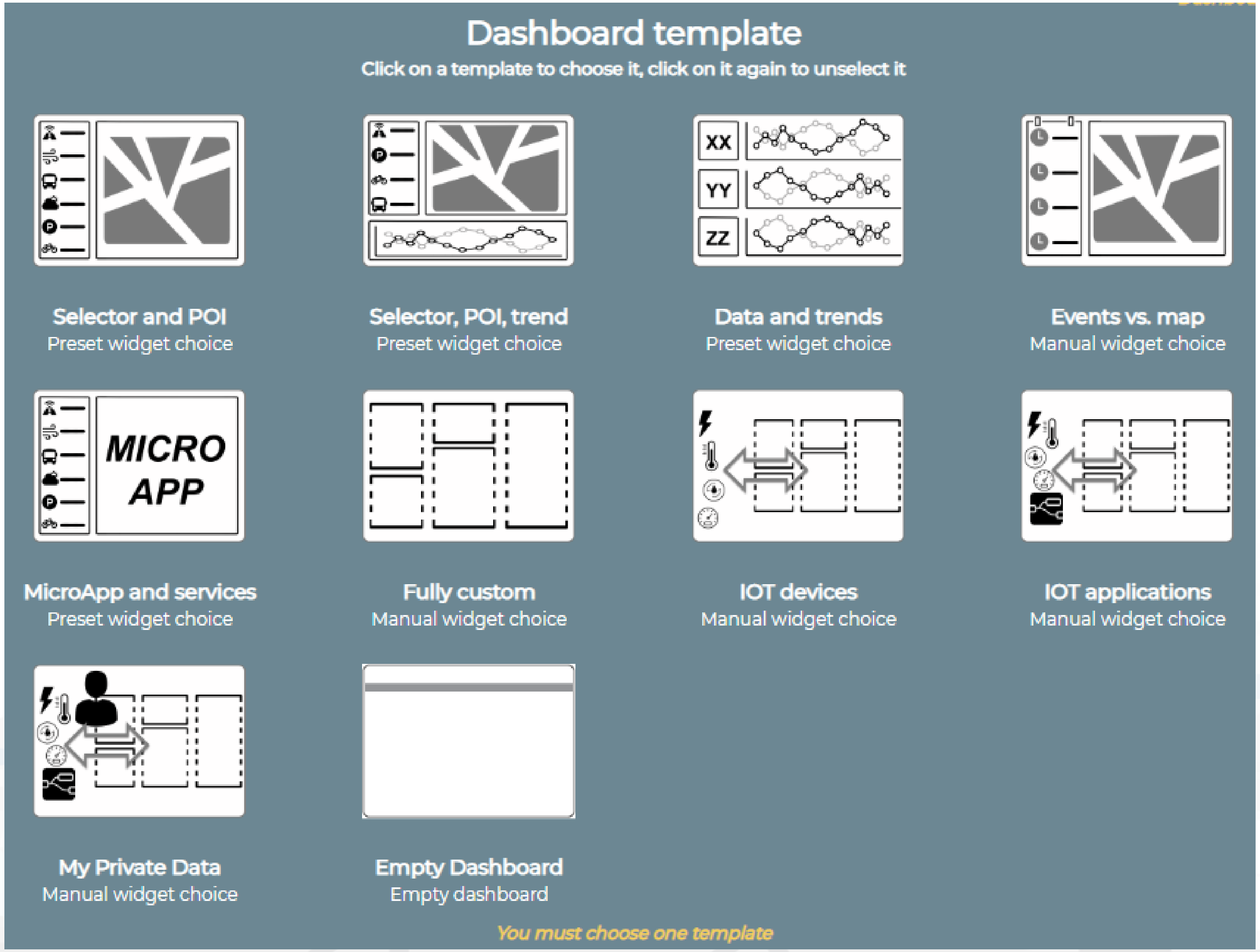
Change Alert Color Status
Proc.Logic / IoT App
My own: Public (DISIT)

DataCenter new Device DHT
Proc.Logic / IoT App
My own: Public (DISIT)

Device Table Testing double
Proc.Logic / IoT App
My own (DISIT)

DIDA data 2
Passive
My own: Public (DISIT)

From Templates to Wizard and Dashboards



Dashboard template

Click on a template to choose it, click on it again to unselect it

Selector and POI
Preset widget choice

Selector, POI, trend
Preset widget choice

Data and trends
Preset widget choice

Events vs. map
Manual widget choice

MicroApp and services
Preset widget choice

Fully custom
Manual widget choice

IOT devices
Manual widget choice

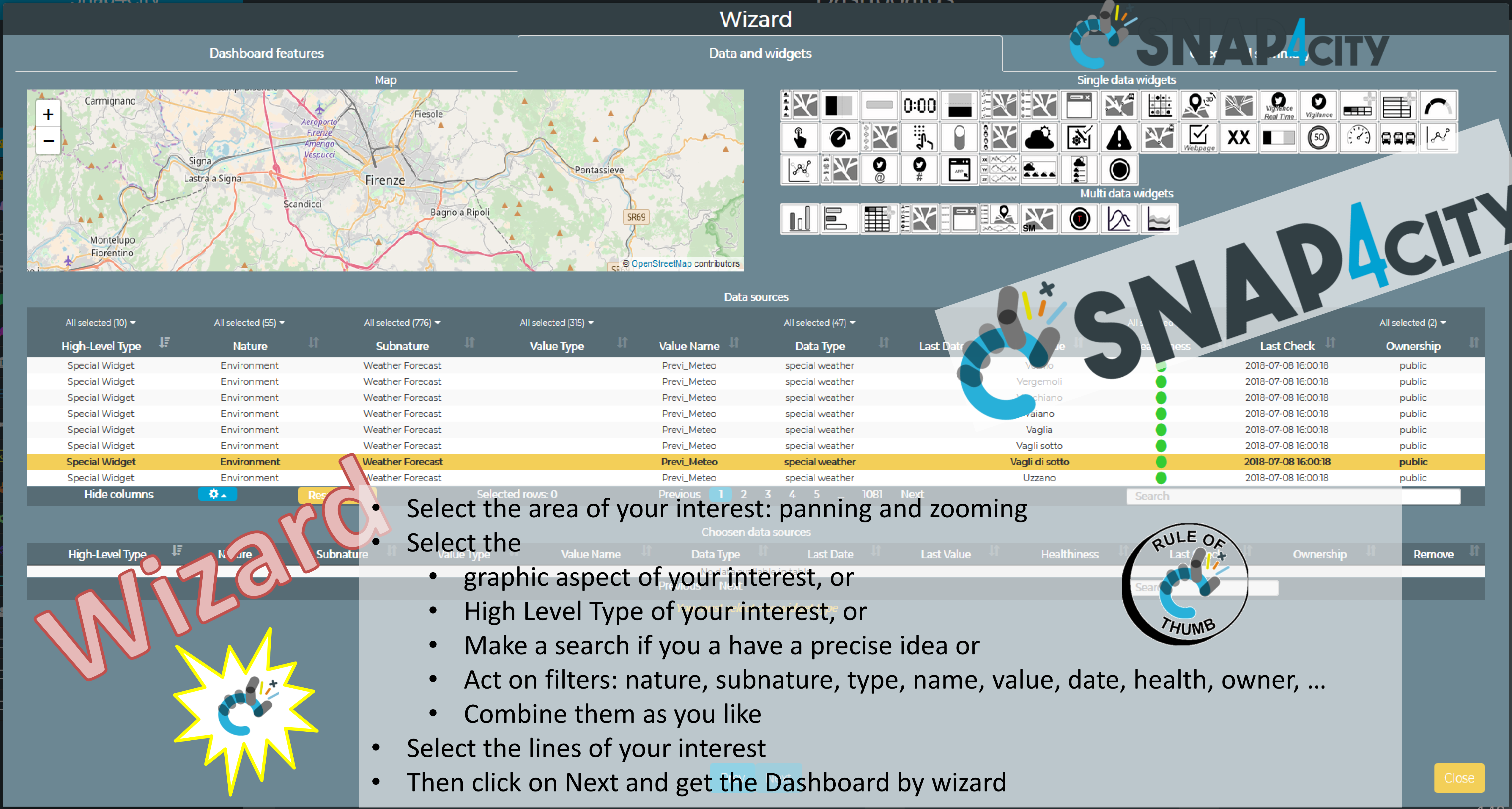
IOT applications
Manual widget choice

My Private Data
Manual widget choice

Empty Dashboard
Empty dashboard

You must choose one template

- to create a new Dashboard
- to add widgets and/or groups of them on any Dashboard

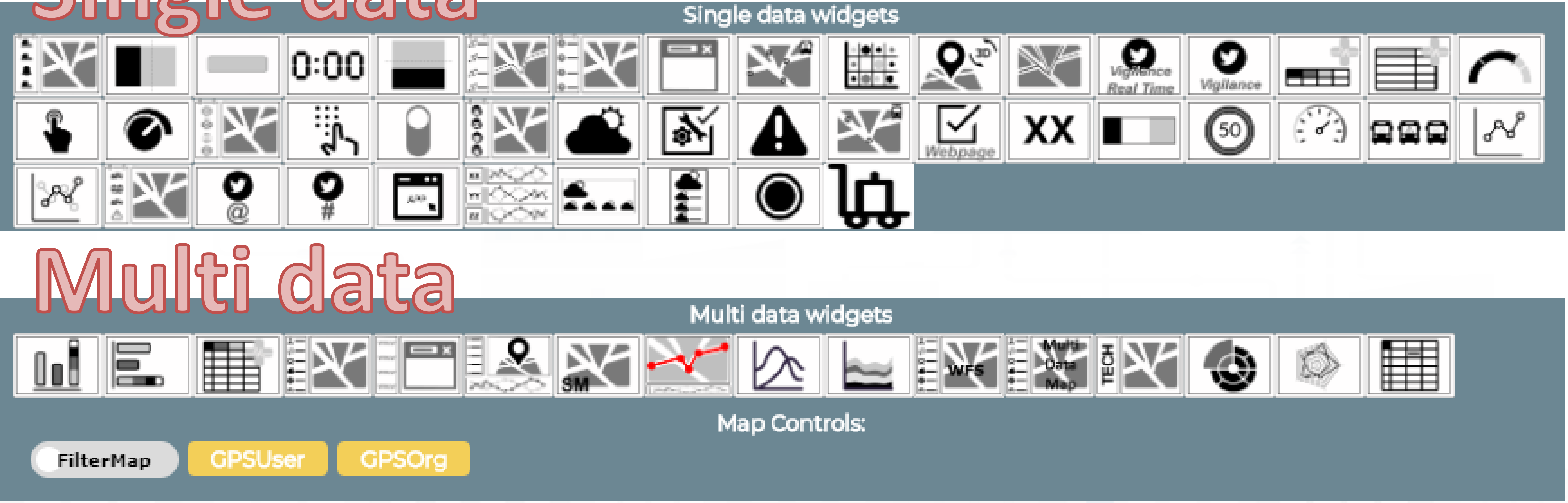

Snap4City
Dashboards
Wizard
Dashboard features
Data and widgets
Map
Single data widgets
Multi data widgets
Data sources
Hide columns
Selected rows: 0
Previous
1
2
3
4
5
1081
Next
Search
Choosen data sources
Close
Wizard
RULE OF THUMB

High-Level Type	Nature	Subnature	Value Type	Value Name	Data Type	Last Date	Last Value	Healthiness	Last Check	Ownership
All selected (10)	All selected (55)	All selected (776)	All selected (315)		All selected (47)			[illegible]		All selected (2)
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		[illegible]	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vergemoli	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		[illegible]	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		[illegible]	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vaglia	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vagli sotto	●	2018-07-08 16:00:18	public
Special Widget	**Environment**	**Weather Forecast**		**Previ_Meteo**	**special weather**		**Vagli di sotto**	●	**2018-07-08 16:00:18**	**public**
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Uzzano	●	2018-07-08 16:00:18	public

- Select the area of your interest: panning and zooming
- Select the
  - graphic aspect of your interest, or
  - High Level Type of your interest, or
  - Make a search if you a have a precise idea or
  - Act on filters: nature, subnature, type, name, value, date, health, owner, …
  - Combine them as you like
- Select the lines of your interest
- Then click on Next and get the Dashboard by wizard

Widgets' Icons

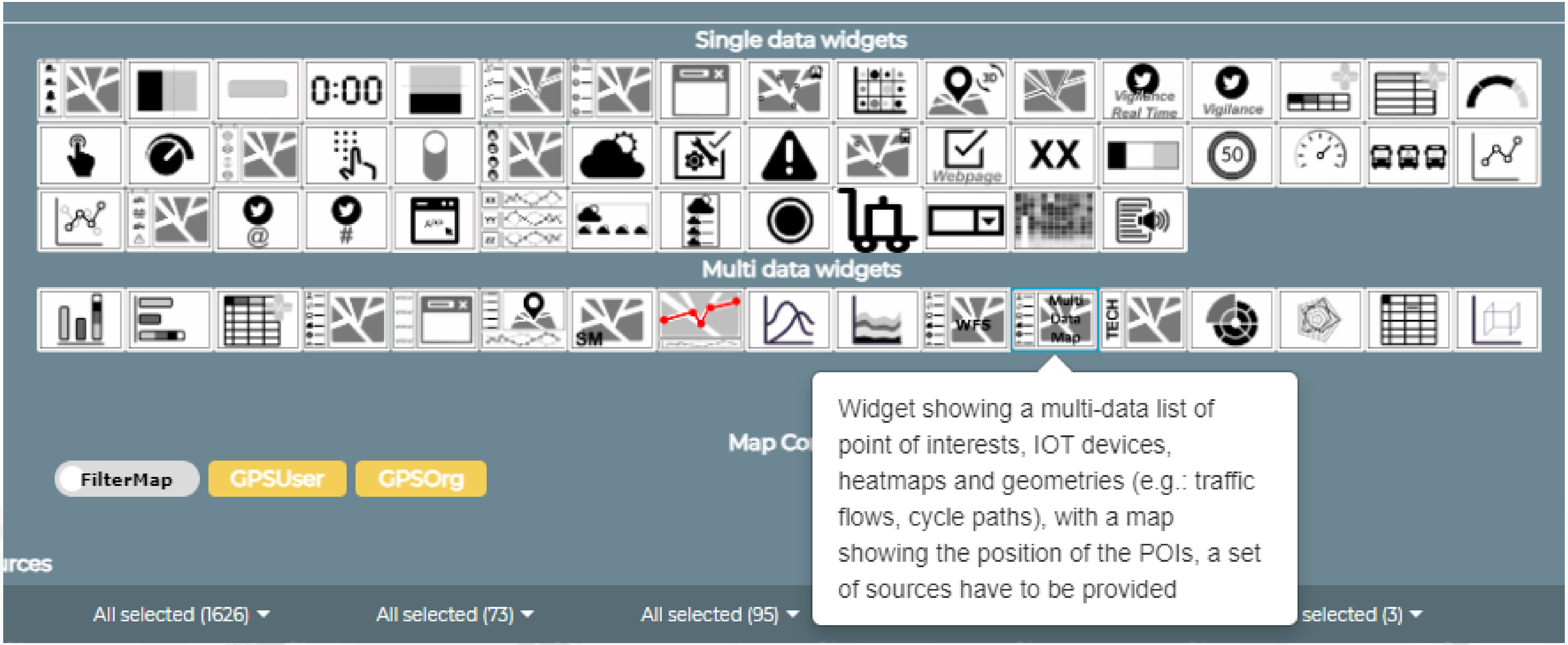
Single data


Single data widgets
0:00
Vigilance Real Time
Vigilance
Webpage
XX
50
@
#
Multi data widgets
SM
WFS
Multi Data Map
TECH
Map Controls:
FilterMap
GPSUser
GPSOrg

Multi data

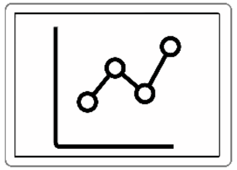
Map Controls

Widget selection

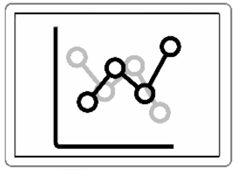

Single data widgets
0:00
Vigilance Real Time
Vigilance
Webpage
XX
50
Multi data widgets
SM
WFS
Multi Data Map
TECH
Map Co
FilterMap
GPSUser
GPSOrg
rces
All selected (1626)
All selected (73)
All selected (95)
selected (3)

Widget showing a multi-data list of point of interests, IOT devices, heatmaps and geometries (e.g.: traffic flows, cycle paths), with a map showing the position of the POIs, a set of sources have to be provided

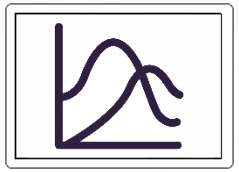
Selection of Main Widgets icons



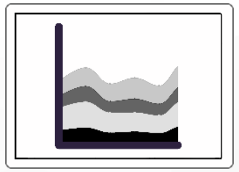
Time Trend



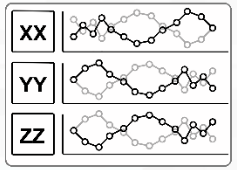
Time Trend Compare



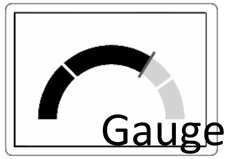
MultiSeries



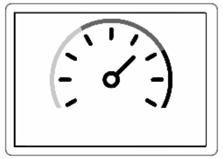
MultiSeries (stacked)



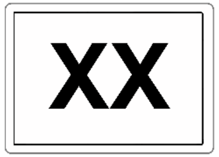
Multi TimeTrend



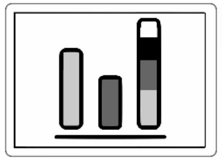
Gauge



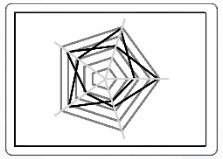
Speedometer



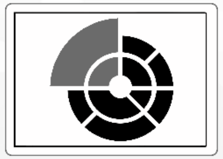
Single Content



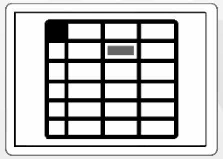
Barseries



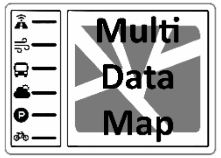
Spider / Kiviat



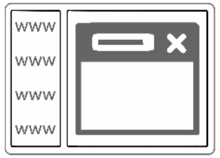
Pie / Donut



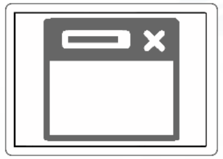
Table



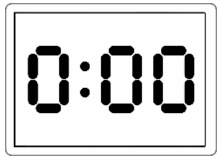
Selector + Multi Data Map



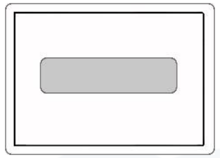
Selector + External Service



External Service



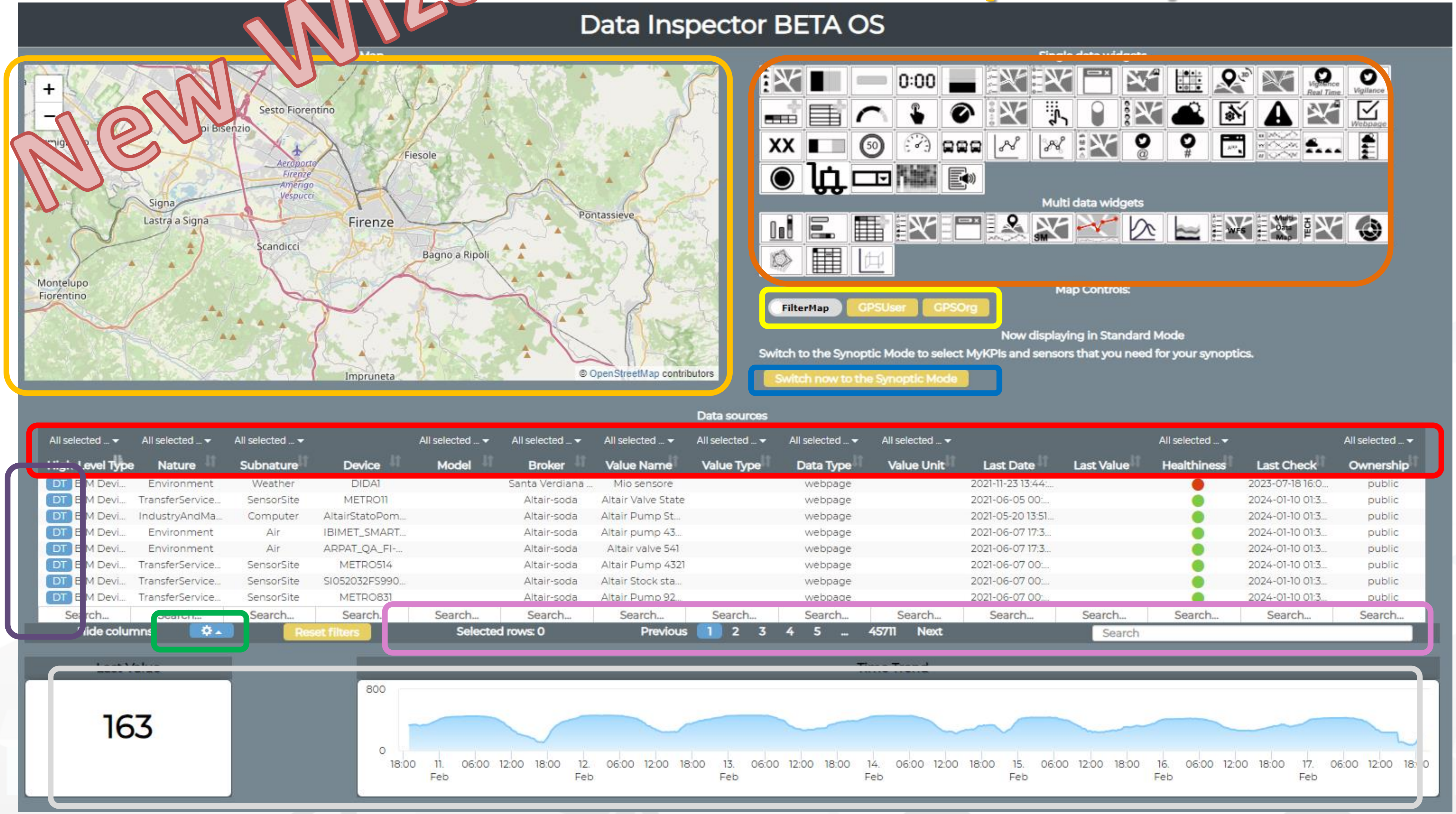
Clock



Button

New Wizard

New Data Inspector/Wizard



Data Inspector BETA OS

Map

Sesto Fiorentino
Campi Bisenzio
Aeroporto Firenze Amerigo Vespucci
Fiesole
Signa
Lastra a Signa
Firenze
Pontassieve
Scandicci
Bagno a Ripoli
Montelupo Fiorentino
Impruneta
© OpenStreetMap contributors
0:00
XX
50

Single data widgets

Multi data widgets

Map Controls:

FilterMap GPSUser GPSOrg

Now displaying in Standard Mode

Switch to the Synoptic Mode to select MyKPIs and sensors that you need for your synoptics.

Switch now to the Synoptic Mode

Data sources

High Level Type	Nature	Subnature	Device	Model	Broker	Value Name	Value Type	Data Type	Value Unit	Last Date	Last Value	Healthiness	Last Check	Ownership
All selected ...	All selected ...	All selected ...		All selected ...	All selected ...	All selected ...	All selected ...	All selected ...	All selected ...			All selected ...		All selected ...
DT EM Devi...	Environment	Weather	DIDA1		Santa Verdiana ...	Mio sensore		webpage		2021-11-23 13:44:...		🔴	2023-07-18 16:0...	public
DT EM Devi...	TransferService...	SensorSite	METRO11		Altair-soda	Altair Valve State		webpage		2021-06-05 00:...		🟢	2024-01-10 01:3...	public
DT EM Devi...	IndustryAndMa...	Computer	AltairStatoPom...		Altair-soda	Altair Pump St...		webpage		2021-05-20 13:51...		🟢	2024-01-10 01:3...	public
DT EM Devi...	Environment	Air	IBIMET_SMART...		Altair-soda	Altair pump 43...		webpage		2021-06-07 17:3...		🟢	2024-01-10 01:3...	public
DT EM Devi...	Environment	Air	ARPAT_QA_FI-...		Altair-soda	Altair valve 541		webpage		2021-06-07 17:3...		🟢	2024-01-10 01:3...	public
DT EM Devi...	TransferService...	SensorSite	METRO514		Altair-soda	Altair Pump 4321		webpage		2021-06-07 00:...		🟢	2024-01-10 01:3...	public
DT EM Devi...	TransferService...	SensorSite	SI052032FS990...		Altair-soda	Altair Stock sta...		webpage		2021-06-07 00:...		🟢	2024-01-10 01:3...	public
DT EM Devi...	TransferService...	SensorSite	METRO831		Altair-soda	Altair Pump 92...		webpage		2021-06-07 00:...		🟢	2024-01-10 01:3...	public
Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...

Hide columns ⚙ Reset filters Selected rows: 0 Previous 1 2 3 4 5 ... 45711 Next Search

Last Value

163

Time Trend

800
0
18:00
11. Feb
06:00
12:00
18:00
12. Feb
13. Feb
14. Feb
15. Feb
16. Feb
17. Feb

🟥 Filtering/Searching for individual fields (even for some fields not displayed as geographic coordinates)

🟨 Geographic Filtering

🟪 Text Search on all fields

🟩 Menu for choosing the fields to display in the table

🟧 View on Map(via PREVIEW)

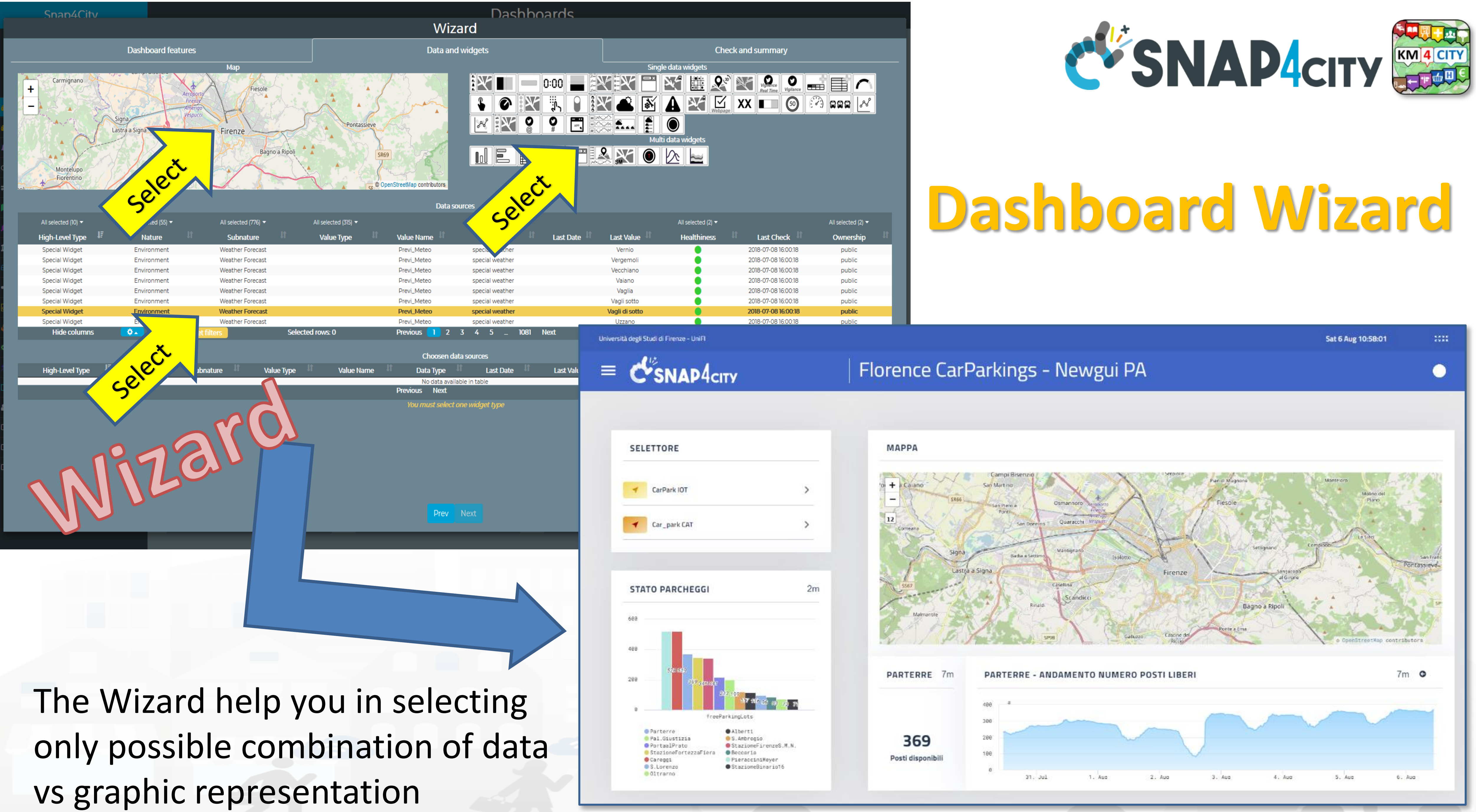
⬜ Data and Trend visualization

🟪 Opening Digital Twin

🟦 Pass to Synoptic mode

🟧 Select the graph representation

Dashboard Wizard


Snap4City
Dashboards
Wizard
Dashboard features
Data and widgets
Check and summary
Map
Single data widgets
Multi data widgets
Select
Select
Select
Wizard
Data sources
Hide columns
Selected rows: 0
Previous 1 2 3 4 5 … 1081 Next
Choosen data sources
Prev
Next
Università degli Studi di Firenze - UniFI
Sat 6 Aug 10:58:01
SNAP4CITY
Florence CarParkings - Newgui PA
SELETTORE
CarPark IOT
Car_park CAT
MAPPA
STATO PARCHEGGI 2m
freeParkingLots
PARTERRE 7m
369
Posti disponibili
PARTERRE - ANDAMENTO NUMERO POSTI LIBERI 7m
31. Jul
1. Aug
2. Aug
3. Aug
4. Aug
5. Aug
6. Aug

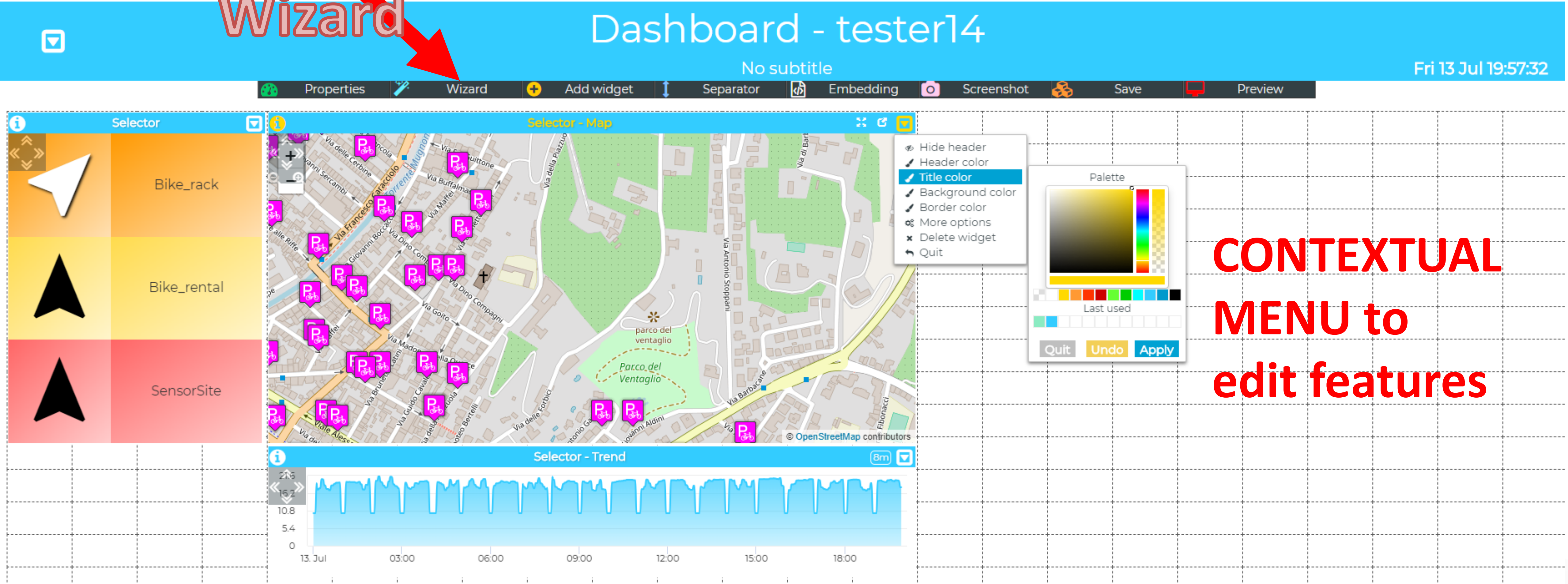
High-Level Type	Nature	Subnature	Value Type	Value Name		Last Date	Last Value	Healthiness	Last Check	Ownership
Special Widget	Environment	Weather Forecast		Previ_Meteo	speci ther		Vernio	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vergemoli	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vecchiano	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vaiano	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vaglia	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vagli sotto	●	2018-07-08 16:00:18	public
Special Widget	**Environment**	**Weather Forecast**		**Previ_Meteo**	**special weather**		**Vagli di sotto**	●	**2018-07-08 16:00:18**	**public**
Special Widget	E	Weather Forecast		Previ_Meteo	special weather		Uzzano	●	2018-07-08 16:00:18	public

No data available in table

You must select one widget type

The Wizard help you in selecting only possible combination of data vs graphic representation

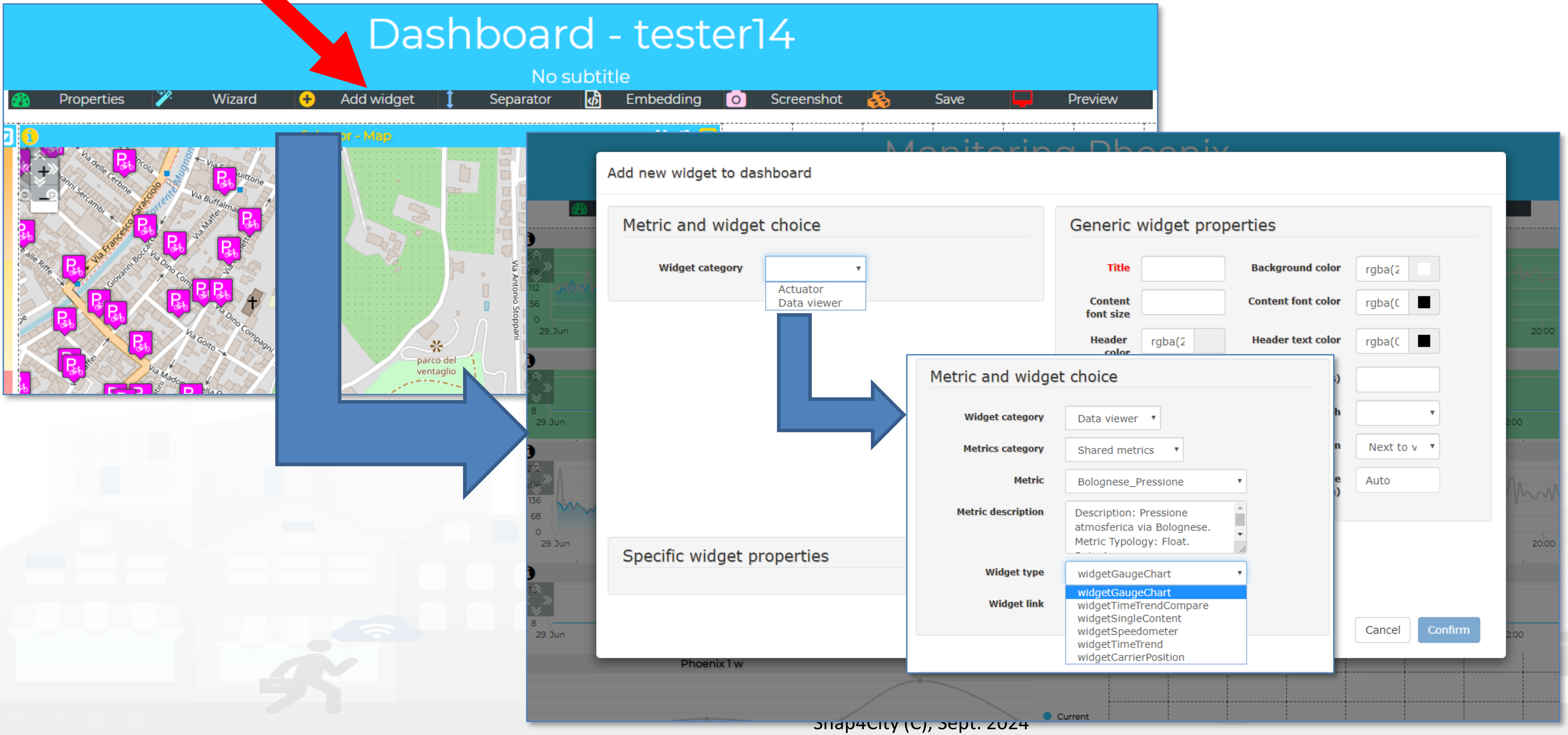
Wizard


Dashboard - tester14
No subtitle
Fri 13 Jul 19:57:32
Properties
Wizard
Add widget
Separator
Embedding
Screenshot
Save
Preview
Selector
Bike_rack
Bike_rental
SensorSite
Selector - Map
Hide header
Header color
Title color
Background color
Border color
More options
Delete widget
Quit
Palette
Last used
Quit
Undo
Apply
parco del ventaglio
Parco del Ventaglio
© OpenStreetMap contributors
Selector - Trend
8m
21.6
16.2
10.8
5.4
0
13. Jul
03:00
06:00
09:00
12:00
15:00
18:00

CONTEXTUAL MENU to edit features

Use Wizard to add more widgets

Manual Addition of Widgets



Dashboard - tester14

No subtitle

Properties
Wizard
Add widget
Separator
Embedding
Screenshot
Save
Preview
Selector - Map
Monitoring Phoenix

Add new widget to dashboard

Metric and widget choice

Widget category
Actuator
Data viewer

Generic widget properties

Title
Background color rgba(2
Content font size
Content font color rgba(0
Header color rgba(2
Header text color rgba(0
Next to v
Auto

Specific widget properties

Metric and widget choice

Widget category Data viewer
Metrics category Shared metrics
Metric Bolognese_Pressione
Metric description Description: Pressione atmosferica via Bolognese. Metric Typology: Float.
Widget type widgetGaugeChart
Widget link

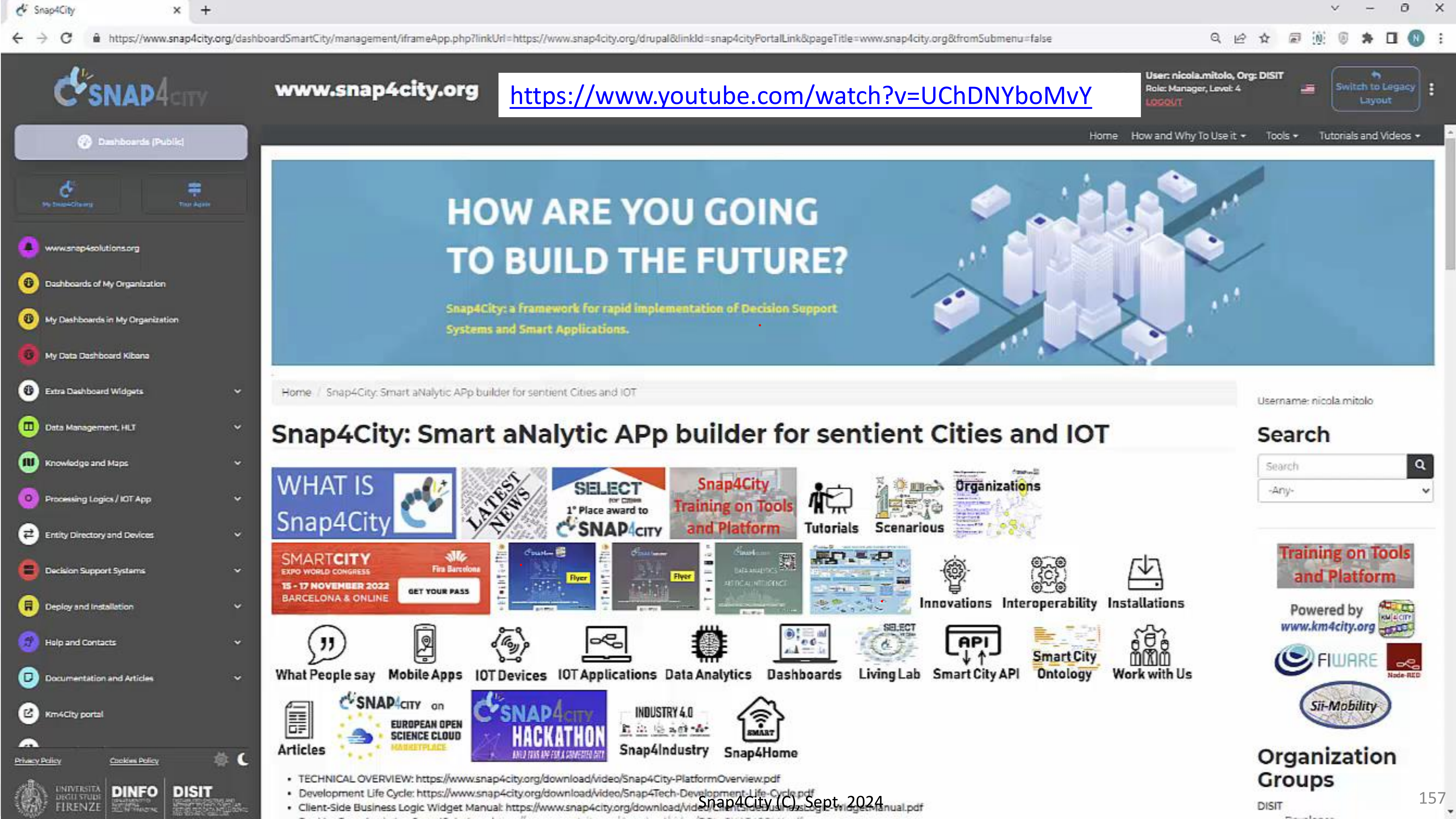
widgetGaugeChart
widgetTimeTrendCompare
widgetSingleContent
widgetSpeedometer
widgetTimeTrend
widgetCarrierPosition

Cancel
Confirm

Dashboards summary and further exercises

- **Suitable** as: City Dashboard, App interface, and Control Room Dashboards, Situation Room Dashboard, Operator Dashboard
- **Created** visually compounding graphic Widgets
  - Each widget can be set to have an autonomous update
  - Each metric/data-source may have associated with an alarm: blinking and sending events to people and machines in different manners
- **Can be**: public or private, private dash can be delegated or passed in ownership
- See https://main.snap4city.org/management/dashboards.php?linkId=dashboardsLink&fromSubmenu=false&sorts[title_header]=1
- See the following tutorials
  - **HOW TO: create a Dashboard in Snap4City**
  - **HOW TO: add data sources to the Snap4City Platform**
  - **US1. Using City Dashboards**
  - **US2. Using and Creating Snap4City Applications with Dashboards**
  - **US4. Creating City Dashboards and related Event Monitoring and Actions**

https://www.youtube.com/watch?v=UChDNYboMvY

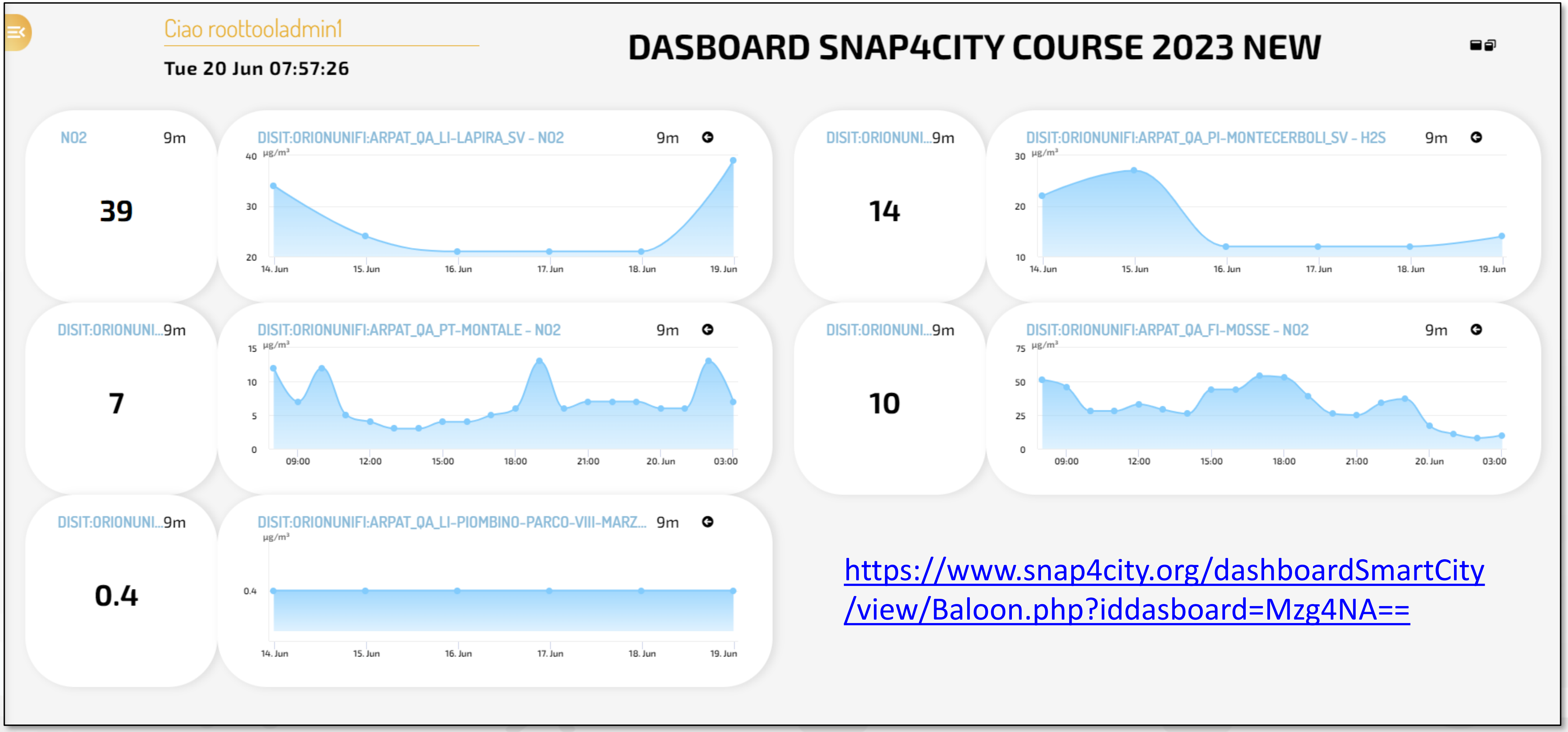


Snap4City
https://www.snap4city.org/dashboardSmartCity/management/iframeApp.php?linkUrl=https://www.snap4city.org/drupal&linkId=snap4cityPortalLink&pageTitle=www.snap4city.org&fromSubmenu=false
SNAP4CITY
www.snap4city.org
User: nicola.mitolo, Org: DISIT
Role: Manager, Level: 4
LOGOUT
Switch to Legacy Layout
Dashboards (Public)
My Snap4City.org
Tour Again
www.snap4solutions.org
Dashboards of My Organization
My Dashboards in My Organization
My Data Dashboard Kibana
Extra Dashboard Widgets
Data Management, HLT
Knowledge and Maps
Processing Logics / IOT App
Entity Directory and Devices
Decision Support Systems
Deploy and Installation
Help and Contacts
Documentation and Articles
Km4City portal
Privacy Policy
Cookies Policy
UNIVERSITÀ DEGLI STUDI FIRENZE
DINFO
DISIT
Home
How and Why To Use it
Tools
Tutorials and Videos
HOW ARE YOU GOING TO BUILD THE FUTURE?
Snap4City: a framework for rapid implementation of Decision Support Systems and Smart Applications.
Home / Snap4City: Smart aNalytic APp builder for sentient Cities and IOT
WHAT IS Snap4City
LATEST NEWS
SELECT for Cities 1° Place award to SNAP4CITY
Snap4City Training on Tools and Platform
Tutorials
Scenarious
Organizations
SMARTCITY EXPO WORLD CONGRESS
Fira Barcelona
15 - 17 NOVEMBER 2022 BARCELONA & ONLINE
GET YOUR PASS
Flyer
Flyer
Innovations
Interoperability
Installations
What People say
Mobile Apps
IOT Devices
IOT Applications
Data Analytics
Dashboards
Living Lab
Smart City API
Smart City Ontology
Work with Us
Articles
SNAP4CITY on EUROPEAN OPEN SCIENCE CLOUD MARKETPLACE
SNAP4CITY HACKATHON BUILD YOUR APP FOR A CONNECTED CITY
INDUSTRY 4.0
Snap4Industry
SMART
Snap4Home
Username: nicola.mitolo
Search
Search
-Any-
Training on Tools and Platform
Powered by www.km4city.org
FIWARE
Node-RED
Sii-Mobility
Organization Groups
DISIT

Snap4City: Smart aNalytic APp builder for sentient Cities and IOT

- TECHNICAL OVERVIEW: https://www.snap4city.org/download/video/Snap4City-PlatformOverview.pdf
- Development Life Cycle: https://www.snap4city.org/download/video/Snap4Tech-Development-Life-Cycle.pdf
- Client-Side Business Logic Widget Manual: https://www.snap4city.org/download/video/ClientSideBusinessLogic-WidgetManual.pdf

First Example



Ciao roottooladmin1

Tue 20 Jun 07:57:26

DASBOARD SNAP4CITY COURSE 2023 NEW

NO2 9m
39

DISIT:ORIONUNIFI:ARPAT_QA_LI-LAPIRA_SV - NO2 9m

DISIT:ORIONUNI...9m
14

DISIT:ORIONUNIFI:ARPAT_QA_PI-MONTECERBOLI_SV - H2S 9m

DISIT:ORIONUNI...9m
7

DISIT:ORIONUNIFI:ARPAT_QA_PT-MONTALE - NO2 9m

DISIT:ORIONUNI...9m
10

DISIT:ORIONUNIFI:ARPAT_QA_FI-MOSSE - NO2 9m

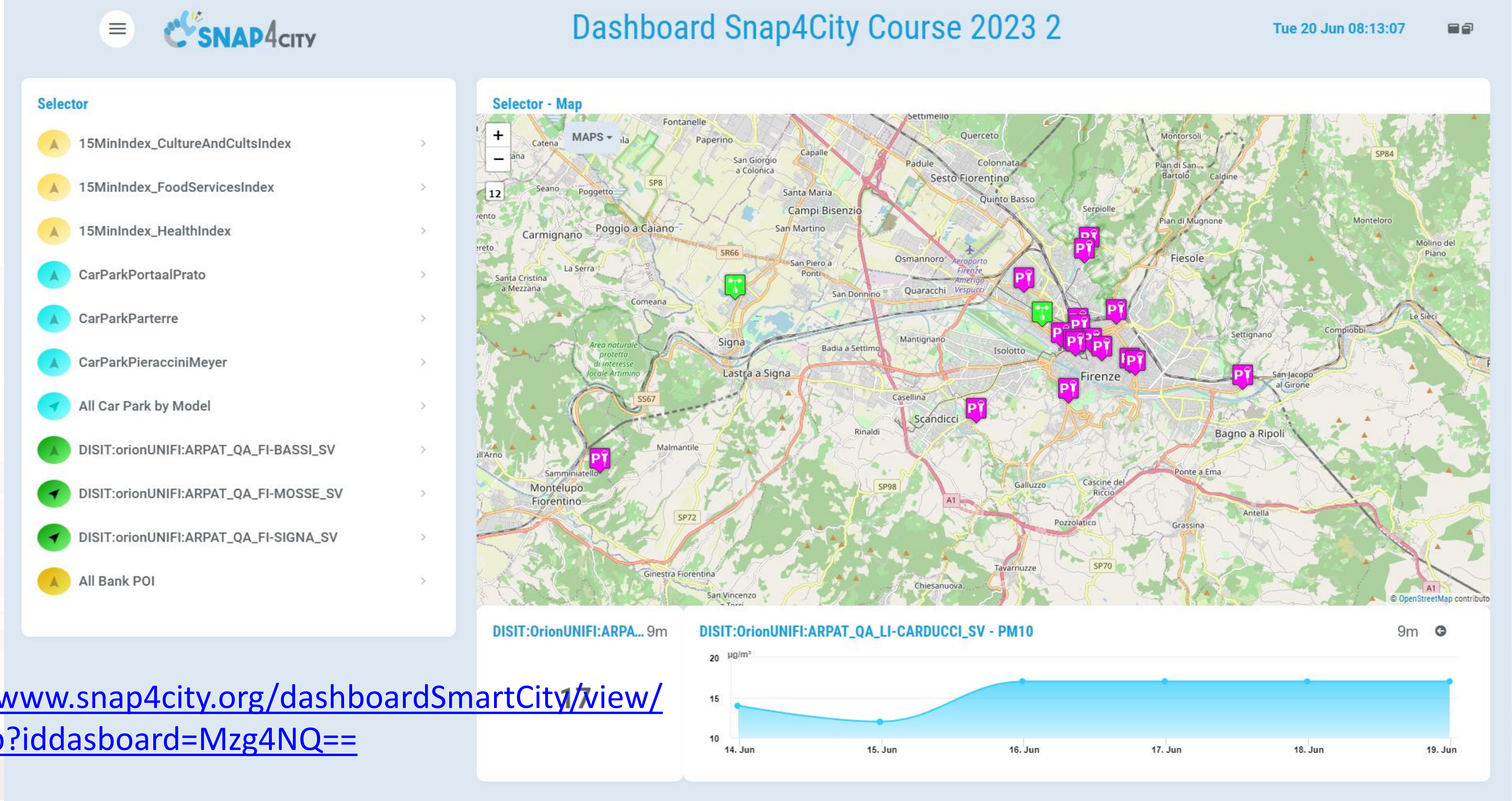
DISIT:ORIONUNI...9m
0.4

DISIT:ORIONUNIFI:ARPAT_QA_LI-PIOMBINO-PARCO-VIII-MARZ... 9m

µg/m³
40
30
20
14. Jun
15. Jun
16. Jun
17. Jun
18. Jun
19. Jun
10
15
5
0
09:00
12:00
15:00
18:00
21:00
20. Jun
03:00
75
50
25
0.4

https://www.snap4city.org/dashboardSmartCity/view/Baloon.php?iddasboard=Mzg4NA==

Second Example with some improvement



Dashboard Snap4City Course 2023 2

Tue 20 Jun 08:13:07

Selector

- 15MinIndex_CultureAndCultsIndex
- 15MinIndex_FoodServicesIndex
- 15MinIndex_HealthIndex
- CarParkPortaalPrato
- CarParkParterre
- CarParkPieracciniMeyer
- All Car Park by Model
- DISIT:orionUNIFI:ARPAT_QA_FI-BASSI_SV
- DISIT:orionUNIFI:ARPAT_QA_FI-MOSSE_SV
- DISIT:orionUNIFI:ARPAT_QA_FI-SIGNA_SV
- All Bank POI

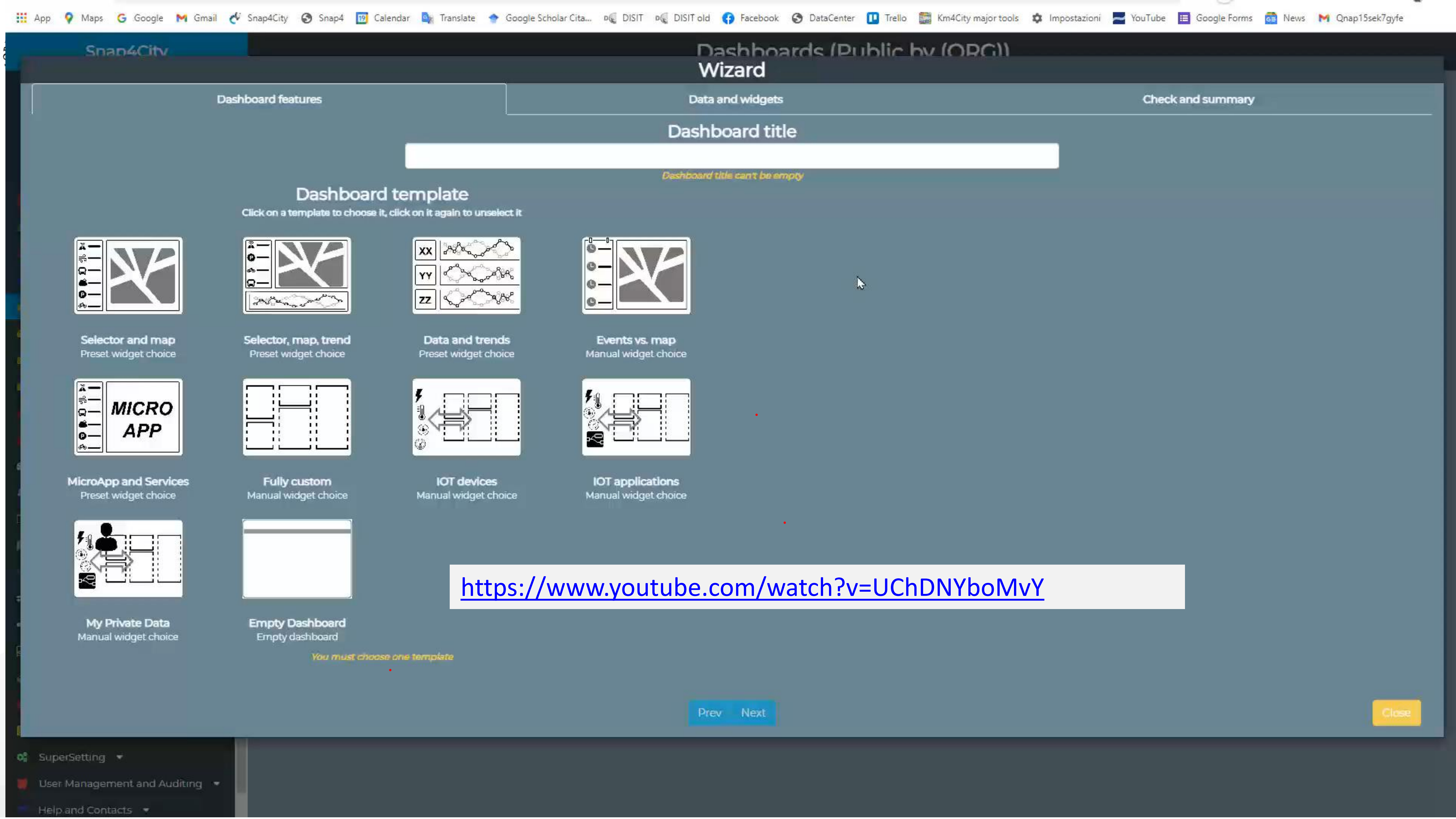
Selector - Map

DISIT:OrionUNIFI:ARPA... 9m

DISIT:OrionUNIFI:ARPAT_QA_LI-CARDUCCI_SV - PM10 9m

SNAP4CITY
MAPS
+
−
12
Firenze
Fiesole
Sesto Fiorentino
Campi Bisenzio
Signa
Lastra a Signa
Scandicci
Bagno a Ripoli
Montelupo Fiorentino
Carmignano
Poggio a Caiano
© OpenStreetMap contributo
μg/m³
20
15
10
14. Jun
15. Jun
16. Jun
17. Jun
18. Jun
19. Jun

https://www.snap4city.org/dashboardSmartCity/view/Gea.php?iddasboard=Mzg4NQ==


App
Maps
Google
Gmail
Snap4City
Snap4
Calendar
Translate
Google Scholar Cita...
DISIT
DISIT old
Facebook
DataCenter
Trello
Km4City major tools
Impostazioni
YouTube
Google Forms
News
Qnap15sek7gyfe
Snap4City
Dashboards (Public by (ORG))
Wizard
Dashboard features
Data and widgets
Check and summary
Dashboard title

Dashboard title can't be empty

Dashboard template

Click on a template to choose it, click on it again to unselect it

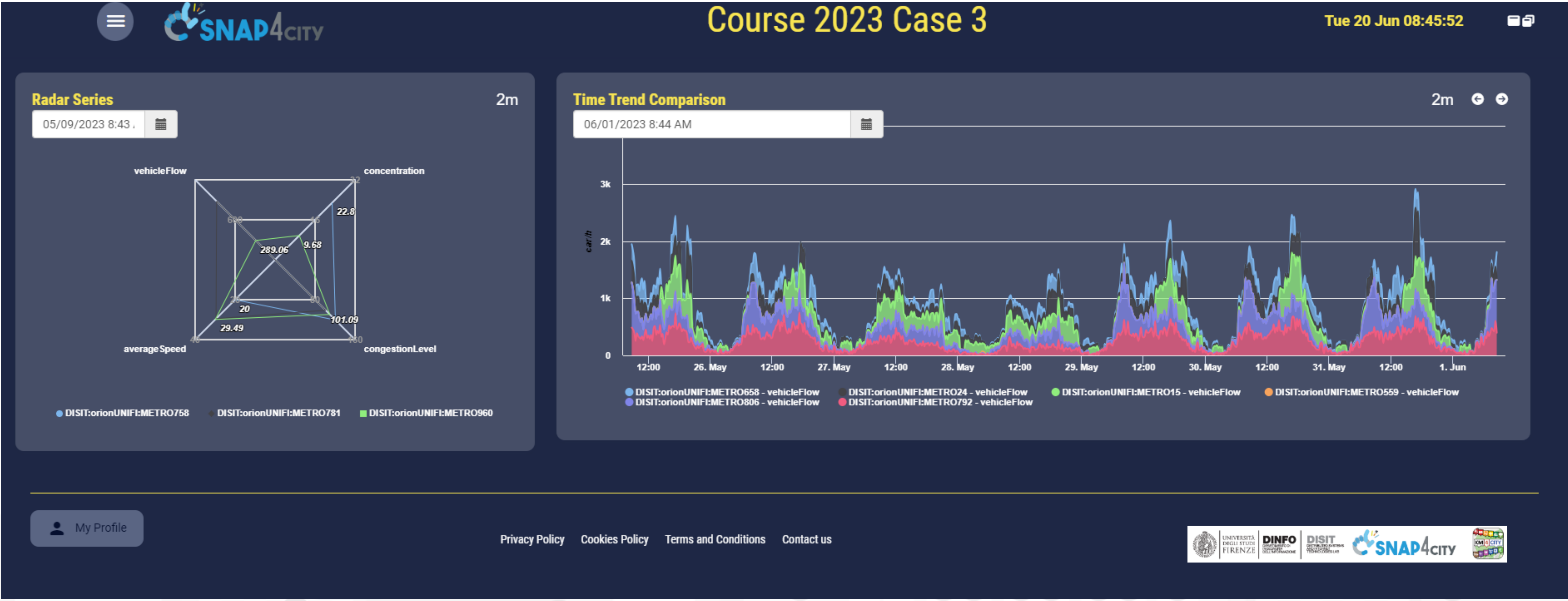
XX
YY
ZZ
Selector and map
Preset widget choice
Selector, map, trend
Preset widget choice
Data and trends
Preset widget choice
Events vs. map
Manual widget choice
MICRO APP
MicroApp and Services
Preset widget choice
Fully custom
Manual widget choice
IOT devices
Manual widget choice
IOT applications
Manual widget choice
My Private Data
Manual widget choice
Empty Dashboard
Empty dashboard

You must choose one template

Prev
Next
Close
SuperSetting
User Management and Auditing
Help and Contacts

https://www.youtube.com/watch?v=UChDNYboMvY

Example Case 3



Course 2023 Case 3

Tue 20 Jun 08:45:52

Radar Series

05/09/2023 8:43

2m
vehicleFlow
concentration
averageSpeed
congestionLevel
600
32
16
40
20
60
150
289.06
9.68
22.8
20
29.49
101.09
DISIT:orionUNIFI:METRO758
DISIT:orionUNIFI:METRO781
DISIT:orionUNIFI:METRO960

Time Trend Comparison

06/01/2023 8:44 AM

2m
car/h
3k
2k
1k
0
12:00
26. May
12:00
27. May
12:00
28. May
12:00
29. May
12:00
30. May
12:00
31. May
12:00
1. Jun
DISIT:orionUNIFI:METRO658 - vehicleFlow
DISIT:orionUNIFI:METRO24 - vehicleFlow
DISIT:orionUNIFI:METRO15 - vehicleFlow
DISIT:orionUNIFI:METRO559 - vehicleFlow
DISIT:orionUNIFI:METRO806 - vehicleFlow
DISIT:orionUNIFI:METRO792 - vehicleFlow

My Profile

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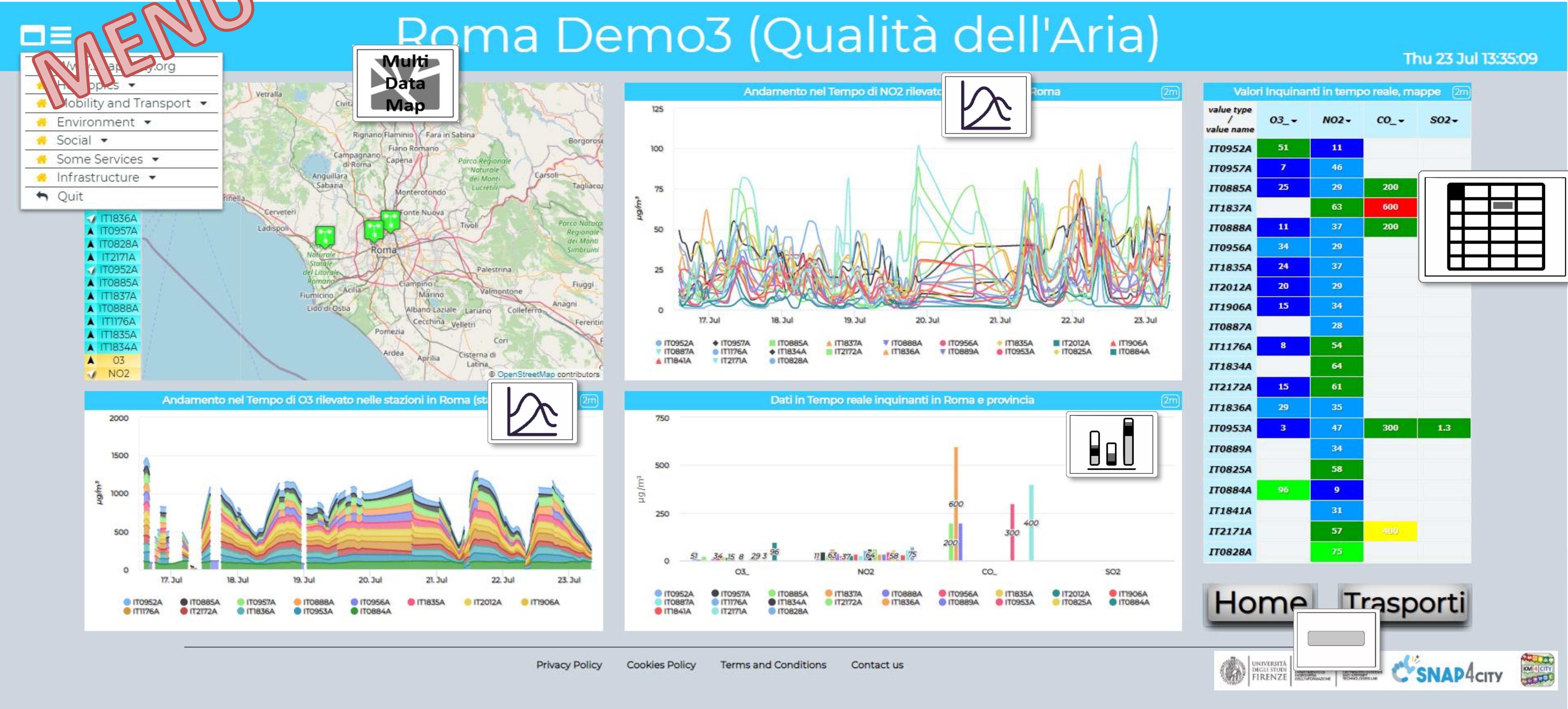
https://www.snap4city.org/dashboardSmartCity/view/Gea-Night.php?iddasboard=Mzg4Ng==

TOP

Combining Widgets:
Nesting & Linking Dashboards

Mixt per Roma


MENU
Multi Data Map
y.org
opics
obility and Transport
Environment
Social
Some Services
Infrastructure
Quit
IT1836A
IT0957A
IT0828A
IT2171A
IT0952A
IT0885A
IT1837A
IT0888A
IT1176A
IT1835A
IT1834A
O3
NO2
© OpenStreetMap contributors
Andamento nel Tempo di NO2 rilevato Roma
2m
125
100
75
50
25
0
µg/m³
17. Jul
18. Jul
19. Jul
20. Jul
21. Jul
22. Jul
23. Jul
IT0952A IT0957A IT0885A IT1837A IT0888A IT0956A IT1835A IT2012A IT1906A
IT0887A IT1176A IT1834A IT2172A IT1836A IT0889A IT0953A IT0825A IT0884A
IT1841A IT2171A IT0828A
Andamento nel Tempo di O3 rilevato nelle stazioni in Roma (st
2000
1500
1000
500
0
µg/m³
IT0952A IT0885A IT0957A IT0888A IT0956A IT1835A IT2012A IT1906A
IT1176A IT2172A IT1836A IT0953A IT0884A
Dati in Tempo reale inquinanti in Roma e provincia
750
500
250
0
µg/m³
O3_
NO2
CO_
SO2
600
200
300
400
Home
Trasporti

Roma Demo3 (Qualità dell'Aria)

Thu 23 Jul 13:35:09

Valori Inquinanti in tempo reale, mappe

value type / value name	O3_	NO2	CO_	SO2
IT0952A	51	11		
IT0957A	7	46		
IT0885A	25	29	200	
IT1837A		63	600	
IT0888A	11	37	200	
IT0956A	34	29		
IT1835A	24	37		
IT2012A	20	29		
IT1906A	15	34		
IT0887A		28		
IT1176A	8	54		
IT1834A		64		
IT2172A	15	61		
IT1836A	29	35		
IT0953A	3	47	300	1.3
IT0889A		34		
IT0825A		58		
IT0884A	96	9		
IT1841A		31		
IT2171A		57	400	
IT0828A		75		

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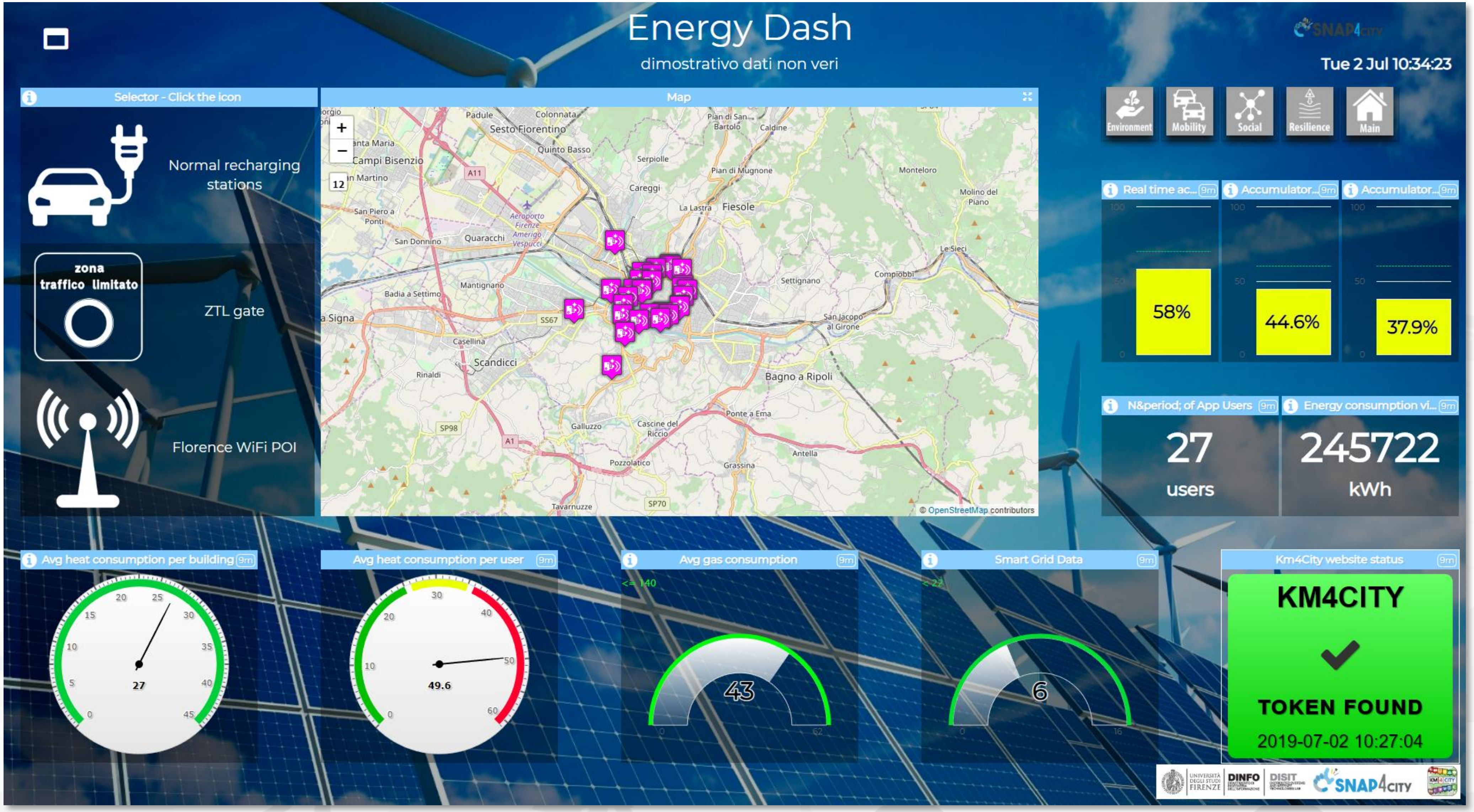
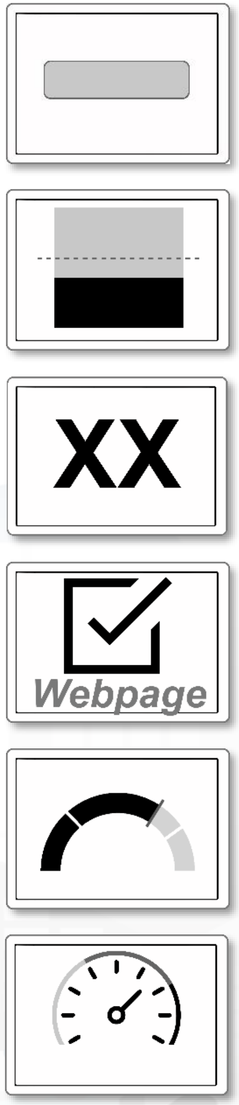
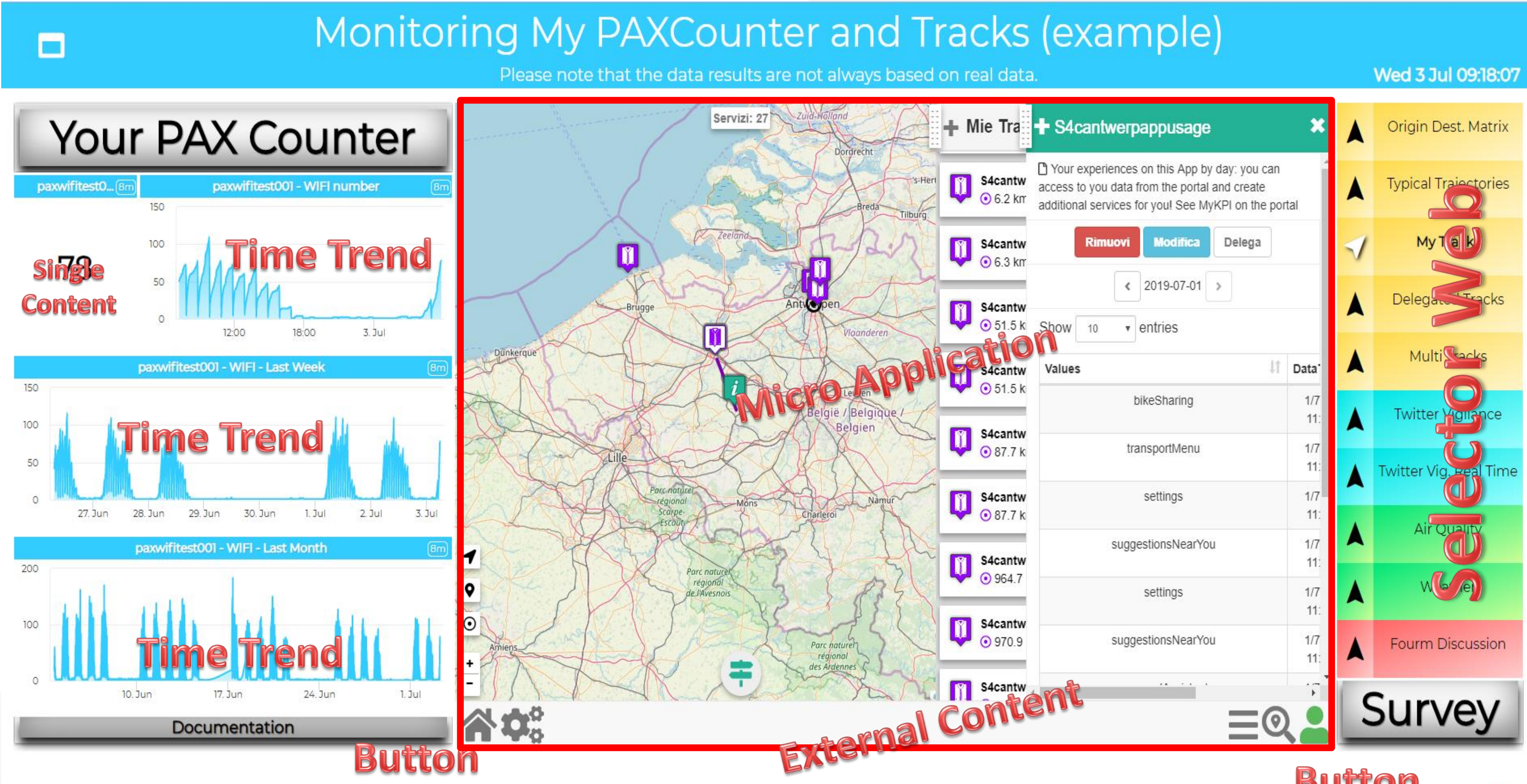
Match Widget vs Icon

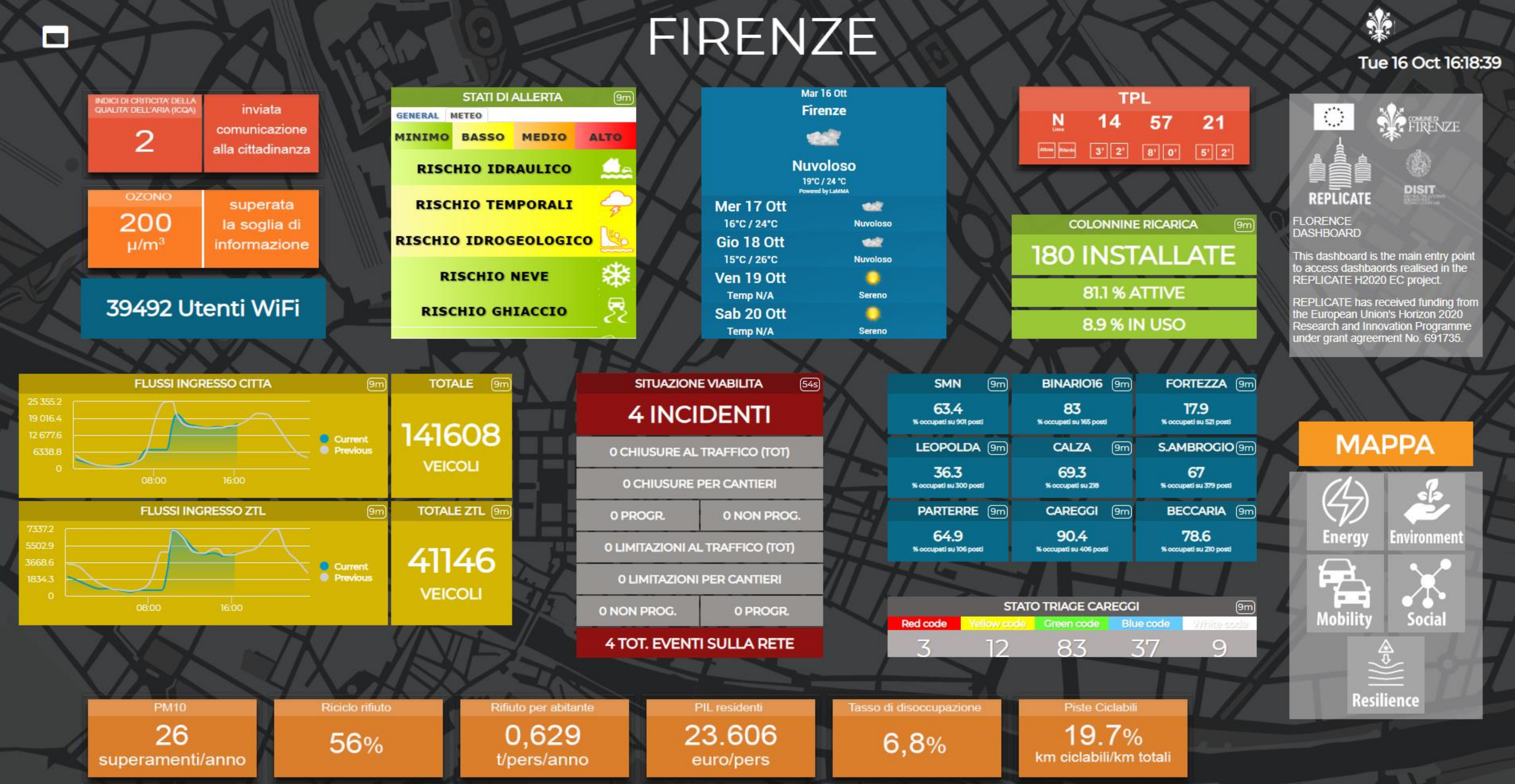

Energy Dash
dimostrativo dati non veri
Tue 2 Jul 10:34:23
Selector - Click the icon
Normal recharging stations
zona traffico limitato
ZTL gate
Florence WiFi POI
Map
Environment
Mobility
Social
Resilience
Main
Real time ac...
Accumulator...
Accumulator...
58%
44.6%
37.9%
N&period; of App Users
Energy consumption vi...
27 users
245722 kWh
Avg heat consumption per building
Avg heat consumption per user
Avg gas consumption
Smart Grid Data
Km4City website status
27
49.6
43
6
KM4CITY
TOKEN FOUND
2019-07-02 10:27:04




Monitoring My PAXCounter and Tracks (example)
Please note that the data results are not always based on real data.
Wed 3 Jul 09:18:07
Your PAX Counter
paxwifitest0... 8m
paxwifitest001 - WIFI number 8m
150
100
50
0
12:00
18:00
3. Jul
paxwifitest001 - WIFI - Last Week 8m
150
100
50
0
27. Jun
28. Jun
29. Jun
30. Jun
1. Jul
2. Jul
3. Jul
paxwifitest001 - WIFI - Last Month 8m
200
100
0
10. Jun
17. Jun
24. Jun
1. Jul
Documentation
Servizi: 27
Zuid-Holland
Dordrecht
Breda
Tilburg
Zeeland
Brugge
Antwerpen
Vlaanderen
Dunkerque
Leuven
België / Belgique / Belgien
Lille
Mons
Charleroi
Namur
Parc naturel régional Scarpe-Escaut
Parc naturel régional de l'Avesnois
Parc naturel régional des Ardennes
Amiens
Mie Tra
S4cantw 6.2 km
S4cantw 6.3 km
S4cantw 51.5 k
S4cantw 51.5 k
S4cantw 87.7 k
S4cantw 87.7 k
S4cantw 964.7
S4cantw 970.9
S4cantw
S4cantwerpappusage
Rimuovi
Modifica
Delega
2019-07-01
Show 10 entries
Origin Dest. Matrix
Typical Trajectories
My Track
Delegated Tracks
Multi Tracks
Twitter Vigilance
Twitter Vig. Real Time
Air Quality
Weather
Fourm Discussion
Survey
Single Content
Time Trend
Time Trend
Time Trend
Micro Application
External Content
Button
Button
Selector Web

Your experiences on this App by day: you can access to you data from the portal and create additional services for you! See MyKPI on the portal

Values	Data
bikeSharing	1/7 11:
transportMenu	1/7 11:
settings	1/7 11:
suggestionsNearYou	1/7 11:
settings	1/7 11:
suggestionsNearYou	1/7 11:



FIRENZE

Tue 16 Oct 16:18:39

INDICI DI CRITICITA' DELLA QUALITA' DELL'ARIA (ICQA) 2
inviata comunicazione alla cittadinanza

OZONO 200 μ/m³
superata la soglia di informazione

39492 Utenti WiFi

STATI DI ALLERTA (9m)
GENERAL | METEO
MINIMO | BASSO | MEDIO | ALTO
RISCHIO IDRAULICO
RISCHIO TEMPORALI
RISCHIO IDROGEOLOGICO
RISCHIO NEVE
RISCHIO GHIACCIO

Mar 16 Ott
Firenze
Nuvoloso
19°C / 24 °C
Powered by LaMMA

Mer 17 Ott 16°C / 24°C	Nuvoloso
Gio 18 Ott 15°C / 26°C	Nuvoloso
Ven 19 Ott Temp N/A	Sereno
Sab 20 Ott Temp N/A	Sereno

TPL
N	14	57	21
	3' 2'	8' 0'	5' 2'

COLONNINE RICARICA (9m)
180 INSTALLATE
81.1 % ATTIVE
8.9 % IN USO

REPLICATE
DISIT
COMUNE DI FIRENZE

FLORENCE DASHBOARD

This dashboard is the main entry point to access dashboards realised in the REPLICATE H2020 EC project.

REPLICATE has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 691735.

FLUSSI INGRESSO CITTA (9m)
TOTALE (9m) 141608 VEICOLI

FLUSSI INGRESSO ZTL (9m)
TOTALE ZTL (9m) 41146 VEICOLI

SITUAZIONE VIABILITA (54s)
4 INCIDENTI
0 CHIUSURE AL TRAFFICO (TOT)
0 CHIUSURE PER CANTIERI
0 PROGR. | 0 NON PROG.
0 LIMITAZIONI AL TRAFFICO (TOT)
0 LIMITAZIONI PER CANTIERI
0 NON PROG. | 0 PROGR.
4 TOT. EVENTI SULLA RETE

SMN (9m)	BINARIO16 (9m)	FORTEZZA (9m)
63.4 % occupati su 901 posti	83 % occupati su 165 posti	17.9 % occupati su 521 posti
LEOPOLDA (9m)	CALZA (9m)	S.AMBROGIO (9m)
36.3 % occupati su 300 posti	69.3 % occupati su 218	67 % occupati su 379 posti
PARTERRE (9m)	CAREGGI (9m)	BECCARIA (9m)
64.9 % occupati su 106 posti	90.4 % occupati su 406 posti	78.6 % occupati su 210 posti

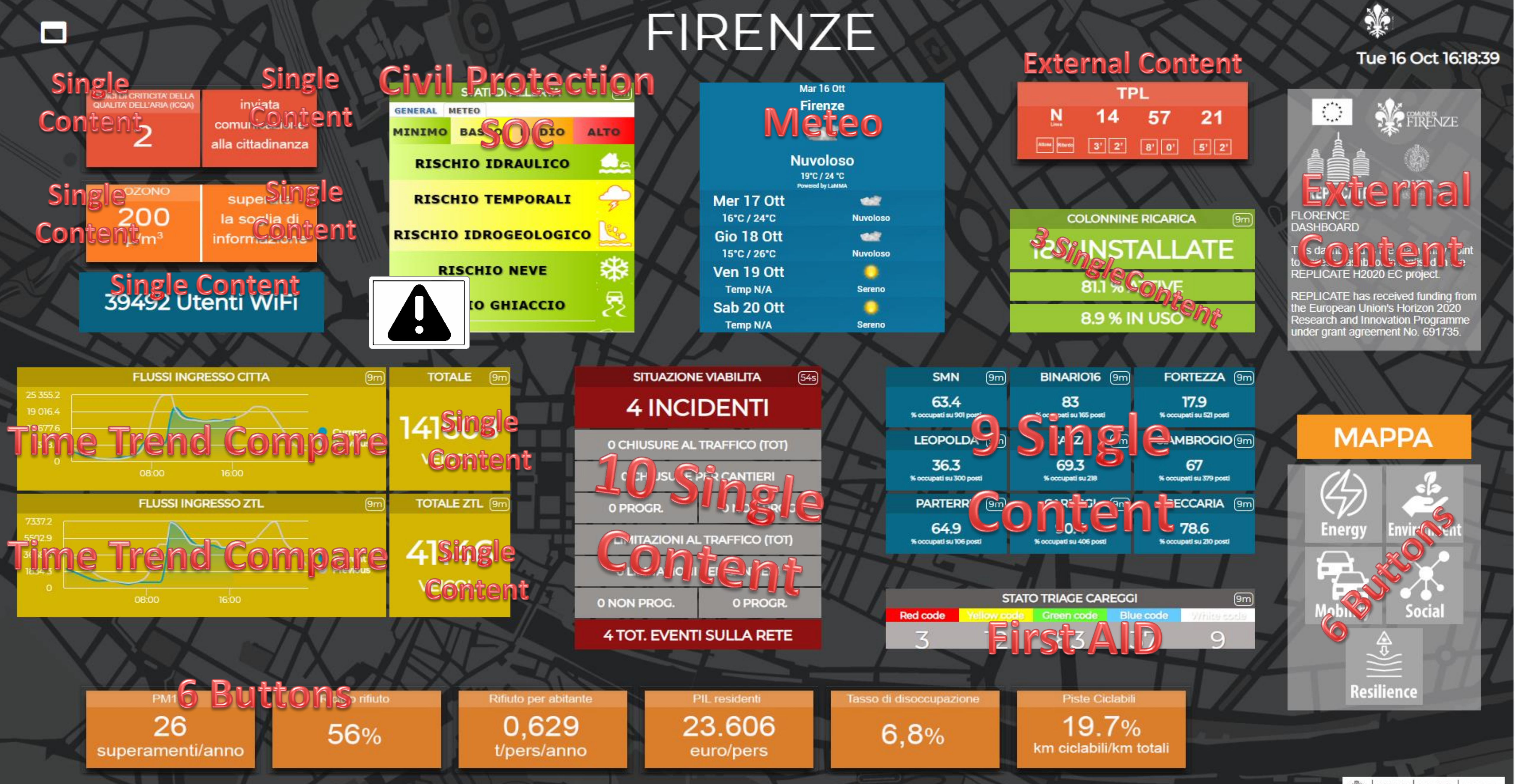
STATO TRIAGE CAREGGI (9m)

Red code	Yellow code	Green code	Blue code	White code
3	12	83	37	9

MAPPA
Energy
Environment
Mobility
Social
Resilience

PM10	Riciclo rifiuto	Rifiuto per abitante	PIL residenti	Tasso di disoccupazione	Piste Ciclabili
26 superamenti/anno	56%	0,629 t/pers/anno	23.606 euro/pers	6,8%	19.7% km ciclabili/km totali

Most of the widgets are connected to an URL to jump to other views/dashboards

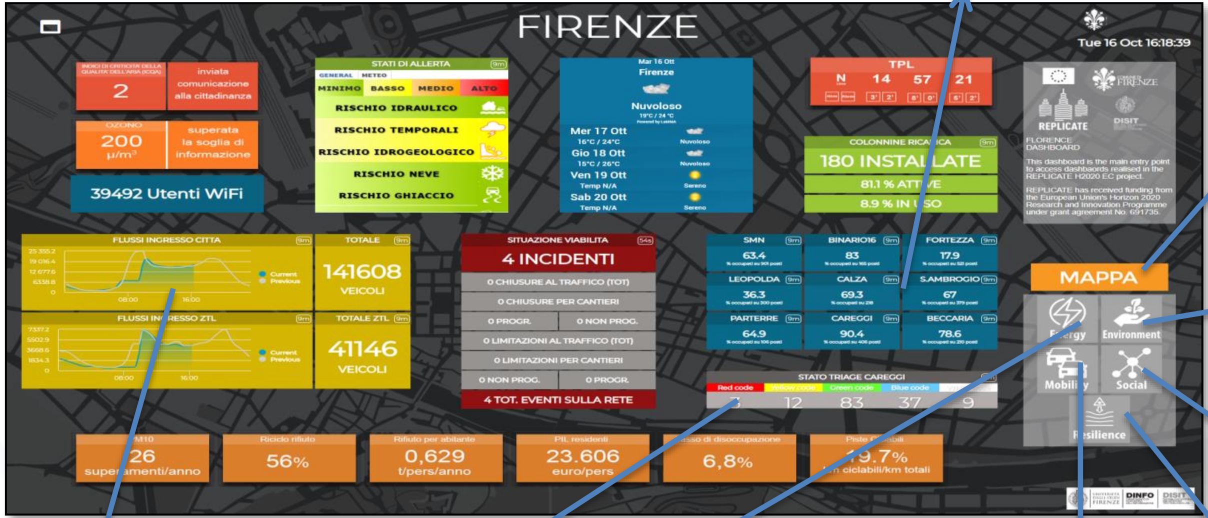

FIRENZE
Tue 16 Oct 16:18:39
Single Content
Single Content
Single Content
Single Content
Single Content
2
inviata
comunicazione
alla cittadinanza
OZONO
200
µg/m³
supera
la soglia di
informazione
39492 Utenti WiFi
Civil Protection
SOC
GENERAL
METEO
MINIMO
BASSO
MEDIO
ALTO
RISCHIO IDRAULICO
RISCHIO TEMPORALI
RISCHIO IDROGEOLOGICO
RISCHIO NEVE
RISCHIO GHIACCIO
Meteo
Mar 16 Ott
Firenze
Nuvoloso
19°C / 24 °C
Powered by LaMMA
Mer 17 Ott
16°C / 24°C
Nuvoloso
Gio 18 Ott
15°C / 26°C
Nuvoloso
Ven 19 Ott
Temp N/A
Sereno
Sab 20 Ott
Temp N/A
Sereno
External Content
TPL
N
14
57
21
3'
2'
8'
0'
5'
2'
COLONNINE RICARICA
9m
INSTALLATE
81.1 % ATTIVE
8.9 % IN USO
3 Single Content
External Content
FLORENCE DASHBOARD
REPLICATE H2020 EC project.
REPLICATE has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 691735.
FLUSSI INGRESSO CITTA
9m
25 355.2
19 016.4
0
08:00
16:00
Time Trend Compare
TOTALE
9m
Single Content
FLUSSI INGRESSO ZTL
9m
7337.2
5502.9
0
08:00
16:00
Time Trend Compare
TOTALE ZTL
9m
Single Content
SITUAZIONE VIABILITA
54s
4 INCIDENTI
0 CHIUSURE AL TRAFFICO (TOT)
0 PROGR.
0 NON PROG.
0 PROGR.
4 TOT. EVENTI SULLA RETE
10 Single Content
SMN
9m
63.4
BINARIO16
9m
83
FORTEZZA
9m
17.9
LEOPOLDA
9m
36.3
69.3
S. AMBROGIO
9m
67
PARTERRE
9m
64.9
BECCARIA
9m
78.6
9 Single Content
STATO TRIAGE CAREGGI
9m
Red code
Yellow code
Green code
Blue code
White code
3
9
First AID
MAPPA
Energy
Environment
Mobility
Social
Resilience
6 Buttons
PM10
26
superamenti/anno
56%
Rifiuto per abitante
0,629
t/pers/anno
PIL residenti
23.606
euro/pers
Tasso di disoccupazione
6,8%
Piste Ciclabili
19.7%
km ciclabili/km totali
6 Buttons

Most of the widgets are connected to an URL to jump to other views/dashboards

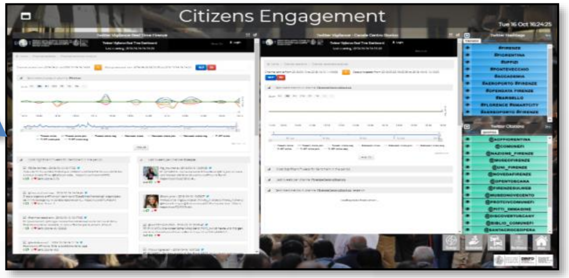
REPLICATE

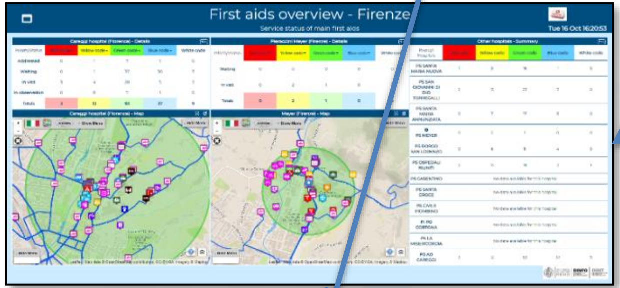
Parcheggi Firenze App
MAIN

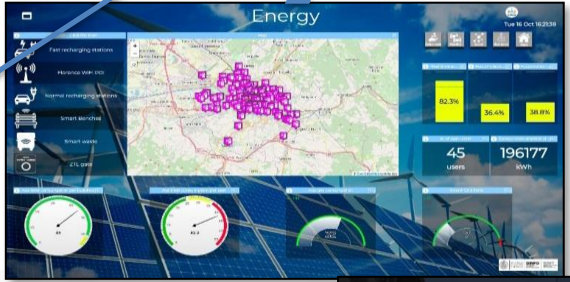
Mobility and Environment What-IF Analysis

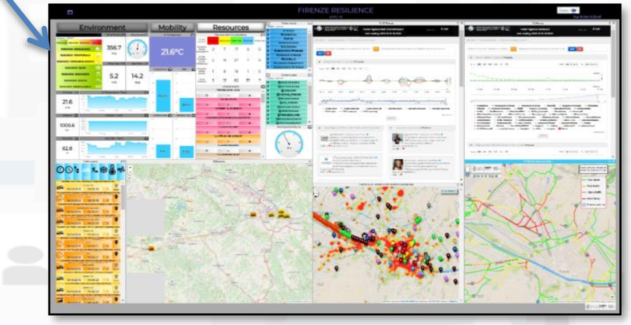

FIRENZE
Tue 16 Oct 16:18:39
2
inviata comunicazione alla cittadinanza
OZONO
200 µ/m³
superata la soglia di informazione
39492 Utenti WiFi
STATI DI ALLERTA
MINIMO
BASSO
MEDIO
ALTO
RISCHIO IDRAULICO
RISCHIO TEMPORALI
RISCHIO IDROGEOLOGICO
RISCHIO NEVE
RISCHIO GHIACCIO
Mar 16 Ott
Firenze
Nuvoloso
Mer 17 Ott
Gio 18 Ott
Ven 19 Ott
Sab 20 Ott
TPL
N
14
57
21
COLONNINE RICARICA
180 INSTALLATE
81.1 % ATTIVE
8.9 % IN USO
REPLICATE
DISIT
FLORENCE DASHBOARD
This dashboard is the main entry point to access dashboards realised in the REPLICATE H2020 EC project.
REPLICATE has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 691735.
FLUSSI INGRESSO CITTA
TOTALE
141608
VEICOLI
FLUSSI INGRESSO ZTL
TOTALE ZTL
41146
VEICOLI
SITUAZIONE VIABILITA
4 INCIDENTI
0 CHIUSURE AL TRAFFICO (TOT)
0 CHIUSURE PER CANTIERI
0 PROGR.
0 NON PROG.
0 LIMITAZIONI AL TRAFFICO (TOT)
0 LIMITAZIONI PER CANTIERI
0 NON PROG.
0 PROGR.
4 TOT. EVENTI SULLA RETE
SMN
63.4
BINARIO16
83
FORTEZZA
17.9
LEOPOLDA
36.3
CALZA
69.3
SAMBROGIO
67
PARTERRE
64.9
CAREGGI
90.4
BECCARIA
78.6
STATO TRIAGE CAREGGI
Red code
Yellow code
Green code
Blue code
12
83
37
9
MAPPA
Energy
Environment
Mobility
Social
Resilience
26 superamenti/anno
Riciclo rifiuto
56%
Rifiuto per abitante
0,629 t/pers/anno
PIL residenti
23.606 euro/pers
Tasso di disoccupazione
6,8%
Piste ciclabili
9.7% km ciclabili/km totali

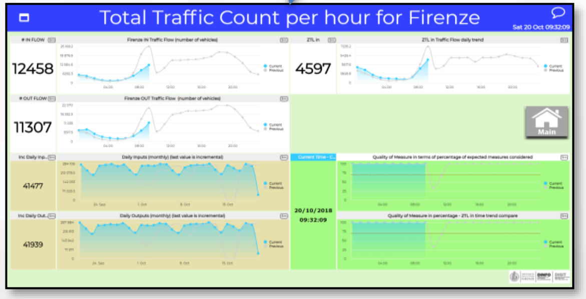
Environment
Air quality
Weather sensors
Pollen monitoring
Firenze
47m


Citizens Engagement


First aids overview - Firenze
Service status of main first aids


Energy
82.3%
36.4%
38.8%
45
users
196177
kWh


FIRENZE RESILIENCE
Environment
Mobility
Resources

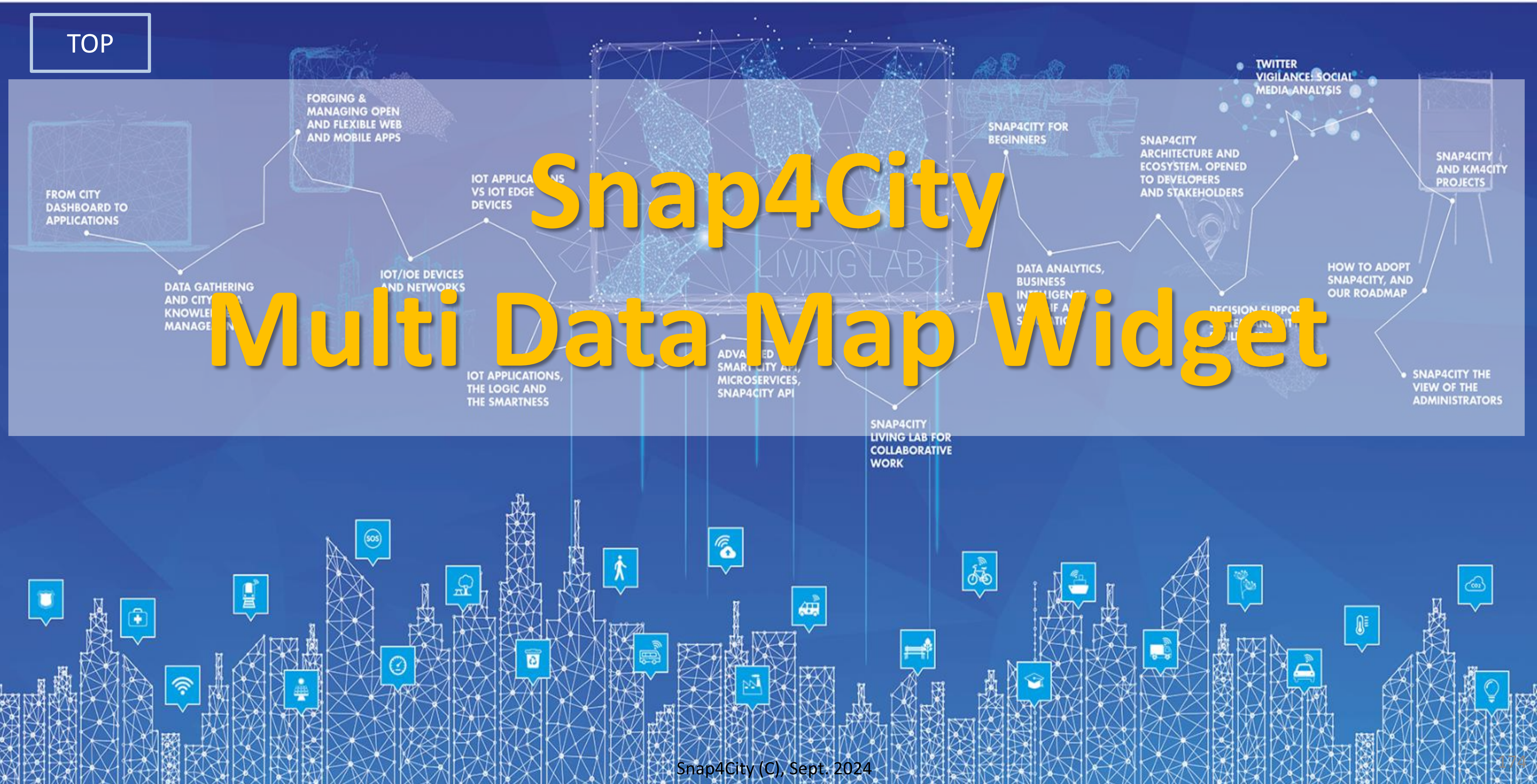

Total Traffic Count per hour for Firenze
12458
4597
11307
41477
41939
Main
20/10/2018
09:32:09

Mobility
479
431
298
Public Transport

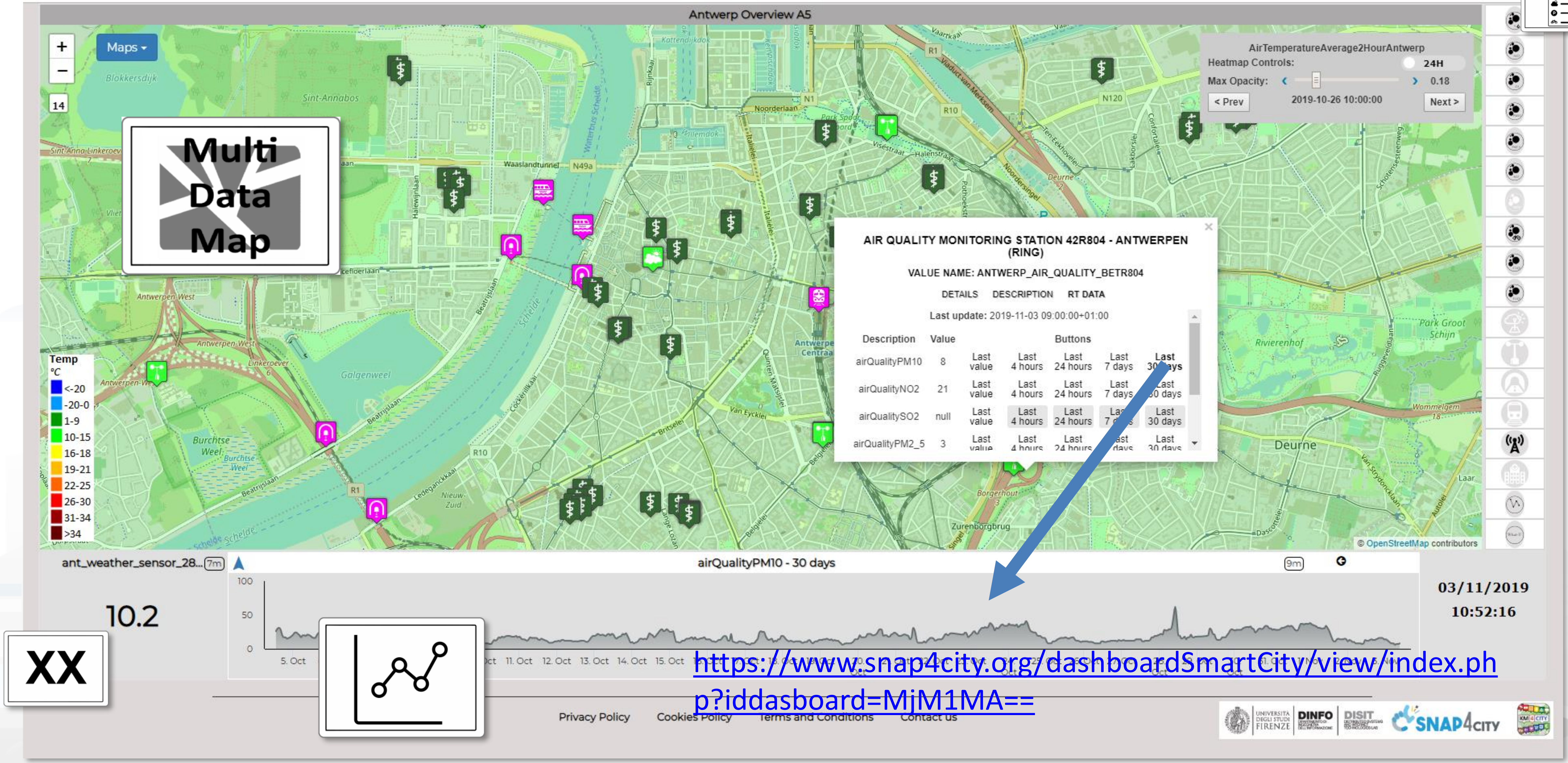
KM4CITY

TOP

Snap4City
Multi Data Map Widget


FROM CITY DASHBOARD TO APPLICATIONS
DATA GATHERING AND CITY KNOWLEDGE MANAGEMENT
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
IOT/IOE DEVICES AND NETWORKS
IOT APPLICATIONS VS IOT EDGE DEVICES
IOT APPLICATIONS, THE LOGIC AND THE SMARTNESS
ADVANCED SMART CITY API, MICROSERVICES, SNAP4CITY API
LIVING LAB
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
SNAP4CITY FOR BEGINNERS
DATA ANALYTICS, BUSINESS INTELLIGENCE
SNAP4CITY ARCHITECTURE AND ECOSYSTEM. OPENED TO DEVELOPERS AND STAKEHOLDERS
DECISION SUPPORT
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
SNAP4CITY AND KM4CITY PROJECTS
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

Unique Dashboard builder Multiple Styles



Antwerp Overview A5

AirTemperatureAverage2HourAntwerp

Heatmap Controls: 24H

Max Opacity: 0.18

< Prev 2019-10-26 10:00:00 Next >

AIR QUALITY MONITORING STATION 42R804 - ANTWERPEN (RING)

VALUE NAME: ANTWERP_AIR_QUALITY_BETR804

DETAILS DESCRIPTION RT DATA

Last update: 2019-11-03 09:00:00+01:00

Description	Value	Buttons				
airQualityPM10	8	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days
airQualityNO2	21	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days
airQualitySO2	null	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days
airQualityPM2_5	3	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days

ant_weather_sensor_28... 10.2

airQualityPM10 - 30 days

03/11/2019
10:52:16

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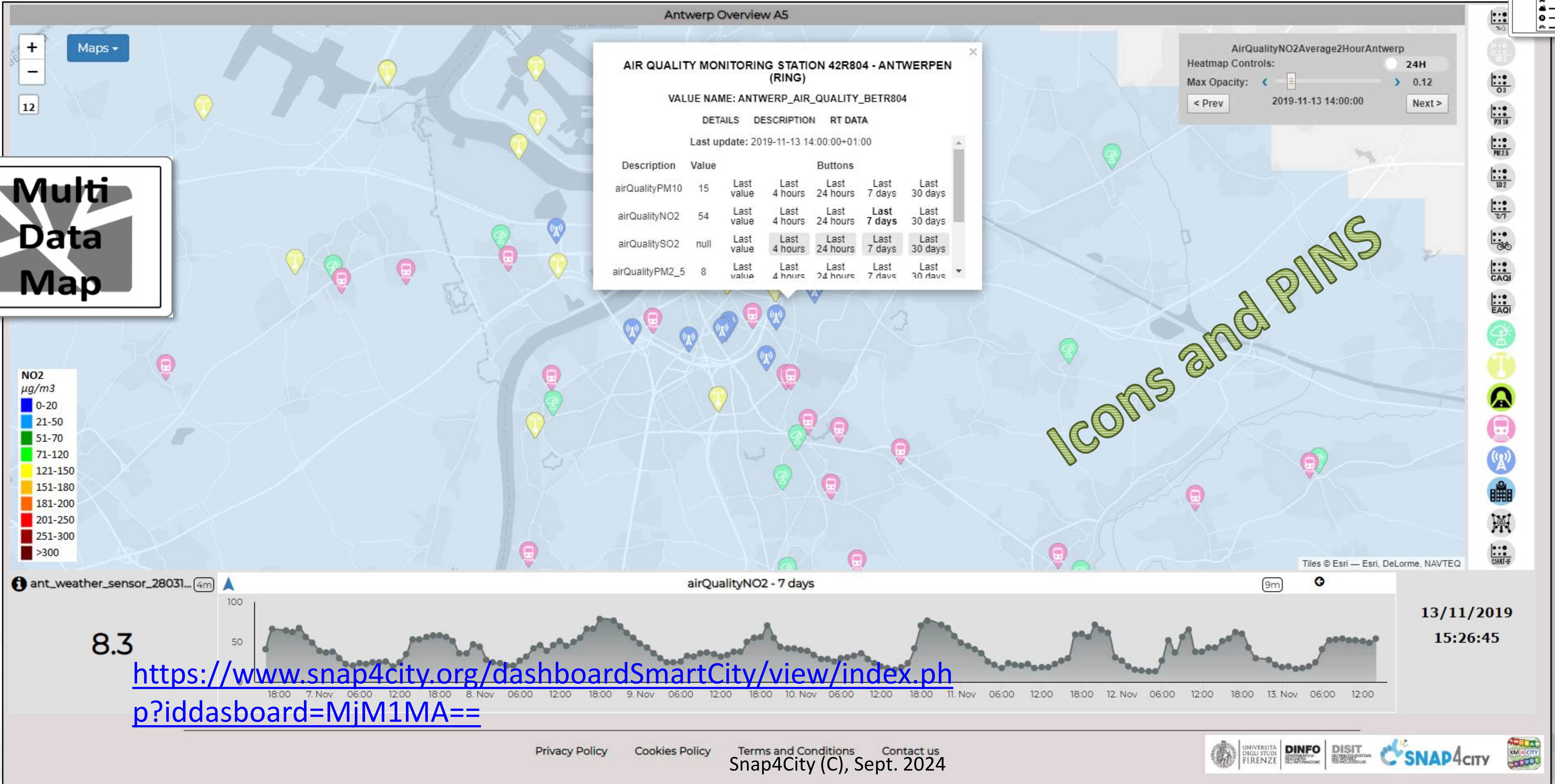
Maps
14
Multi Data Map
XX
Temp
°C
<-20
-20-0
1-9
10-15
16-18
19-21
22-25
26-30
31-34
>34
7m
9m
100
50
0
5. Oct
11. Oct
12. Oct
13. Oct
14. Oct
15. Oct
© OpenStreetMap contributors

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjM1MA==

Menu Icon and PINs as Icons

Multi Data Map


Antwerp Overview A5
Maps
12
Tiles © Esri — Esri, DeLorme, NAVTEQ
ant_weather_sensor_28031...
4m
8.3
airQualityNO2 - 7 days
9m
100
50
18:00
7. Nov
06:00
12:00
18:00
8. Nov
06:00
12:00
18:00
9. Nov
06:00
12:00
18:00
10. Nov
06:00
12:00
18:00
11. Nov
06:00
12:00
18:00
12. Nov
06:00
12:00
18:00
13. Nov
06:00
12:00
13/11/2019
15:26:45
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AIR QUALITY MONITORING STATION 42R804 - ANTWERPEN (RING)

VALUE NAME: ANTWERP_AIR_QUALITY_BETR804

DETAILS DESCRIPTION RT DATA

Last update: 2019-11-13 14:00:00+01:00

Description	Value	Buttons				
airQualityPM10	15	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days
airQualityNO2	54	Last value	Last 4 hours	Last 24 hours	**Last 7 days**	Last 30 days
airQualitySO2	null	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days
airQualityPM2_5	8	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 days

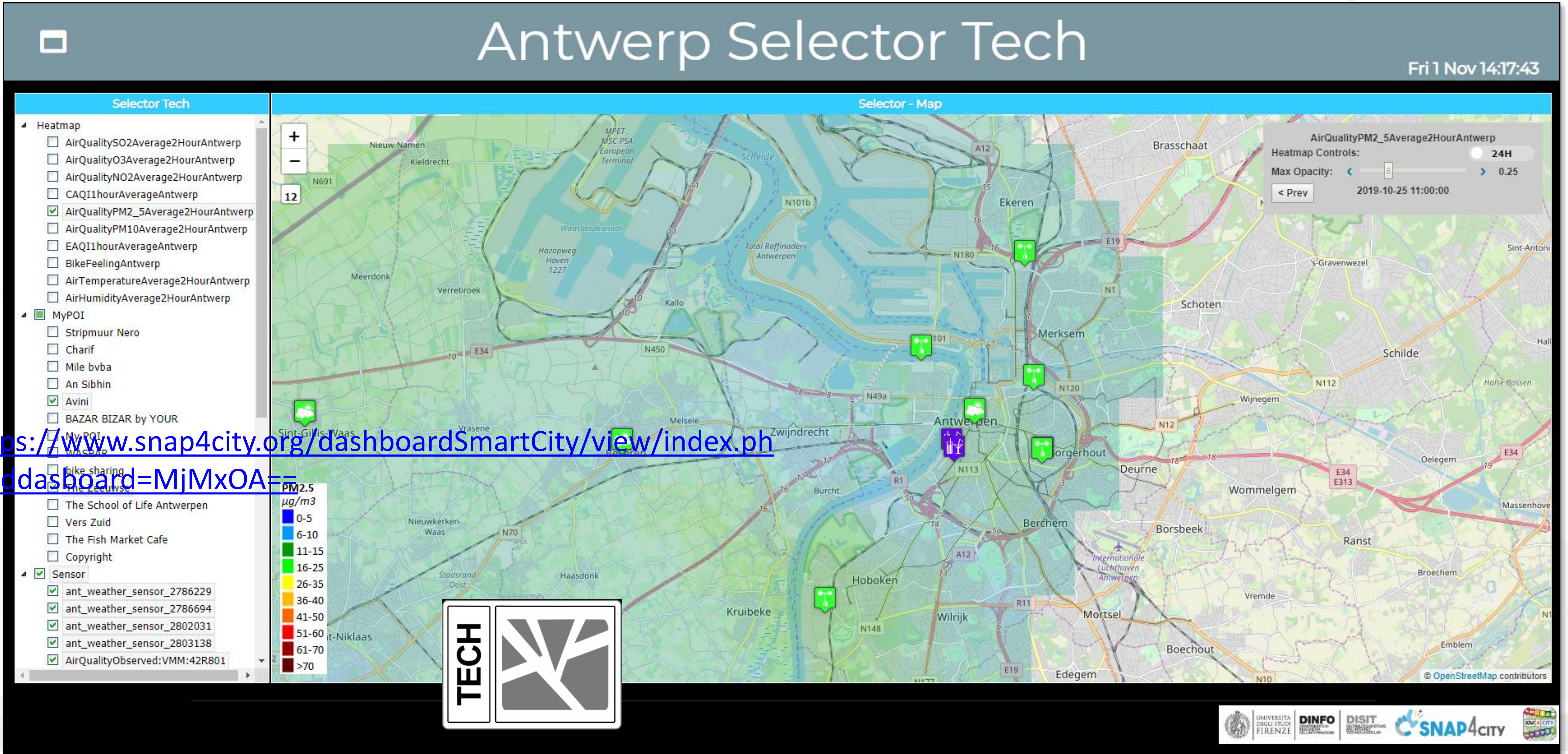
AirQualityNO2Average2HourAntwerp
Heatmap Controls: 24H
Max Opacity: 0.12
< Prev 2019-11-13 14:00:00 Next >

NO2
µg/m3
- 0-20
- 21-50
- 51-70
- 71-120
- 121-150
- 151-180
- 181-200
- 201-250
- 251-300
- >300

Icons and PINS

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjM1MA==

Technical Selector: TECH MultiDataMap



Antwerp Selector Tech

Fri 1 Nov 14:17:43

Selector Tech

- Heatmap
  - ☐ AirQualitySO2Average2HourAntwerp
  - ☐ AirQualityO3Average2HourAntwerp
  - ☐ AirQualityNO2Average2HourAntwerp
  - ☐ CAQI1hourAverageAntwerp
  - ☑ AirQualityPM2_5Average2HourAntwerp
  - ☐ AirQualityPM10Average2HourAntwerp
  - ☐ EAQI1hourAverageAntwerp
  - ☐ BikeFeelingAntwerp
  - ☐ AirTemperatureAverage2HourAntwerp
  - ☐ AirHumidityAverage2HourAntwerp
- ☐ MyPOI
  - ☐ Stripmuur Nero
  - ☐ Charif
  - ☐ Mile bvba
  - ☐ An Sibhin
  - ☑ Avini
  - ☐ BAZAR BIZAR by YOUR
  - ☐ My POI
  - ☐ WASBAR
  - ☐ bike sharing
  - ☑ The Zeeuwse
  - ☐ The School of Life Antwerpen
  - ☐ Vers Zuid
  - ☐ The Fish Market Cafe
  - ☐ Copyright
- ☑ Sensor
  - ☑ ant_weather_sensor_2786229
  - ☑ ant_weather_sensor_2786694
  - ☑ ant_weather_sensor_2802031
  - ☑ ant_weather_sensor_2803138
  - ☑ AirQualityObserved:VMM:42R801

Selector - Map

AirQualityPM2_5Average2HourAntwerp

Heatmap Controls: 24H

Max Opacity: 0.25

< Prev 2019-10-25 11:00:00

PM2.5
μg/m3

🟦	0-5
🟦	6-10
🟩	11-15
🟩	16-25
🟨	26-35
🟧	36-40
🟧	41-50
🟥	51-60
🟥	61-70
🟫	>70

+
−
12
Nieuw-Namen
Kieldrecht
Scheldе
Ekeren
Brasschaat
Waaslandkanaal
Hazopweg Haven 1227
Total Raffinaderij Antwerpen
Meerdonk
Verrebroek
Kallo
Merksem
Schoten
's-Gravenwezel
Sint-Antoni
Schilde
Wijnegem
Sint-Gillis-Waas
Melsele
Zwijndrecht
Antwerpen
Borgerhout
Deurne
Wommelgem
Oelegem
Burcht
Nieuwkerken-Waas
Haasdonk
Berchem
Borsbeek
Ranst
Hoboken
Kruibeke
Wilrijk
Mortsel
Boechout
Edegem
Internationale Luchthaven Antwerpen
TECH
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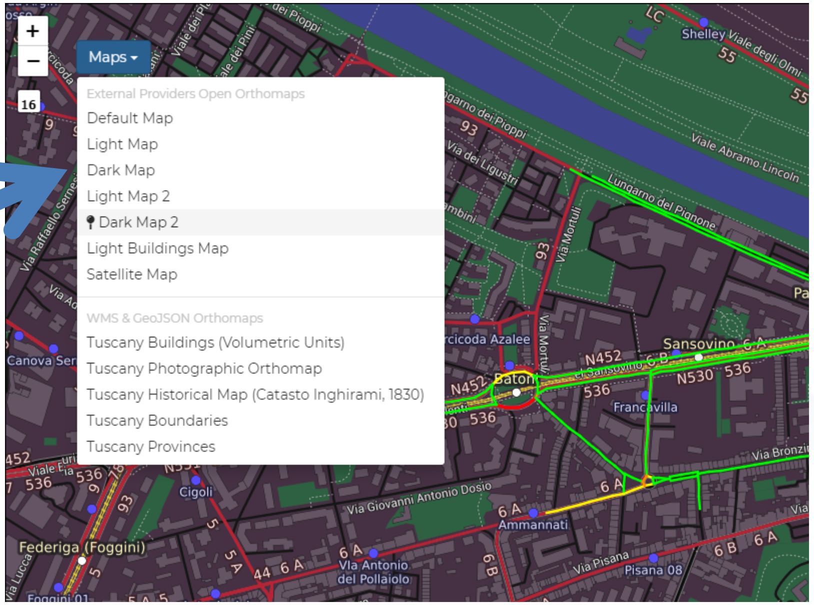
https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjMxOA==

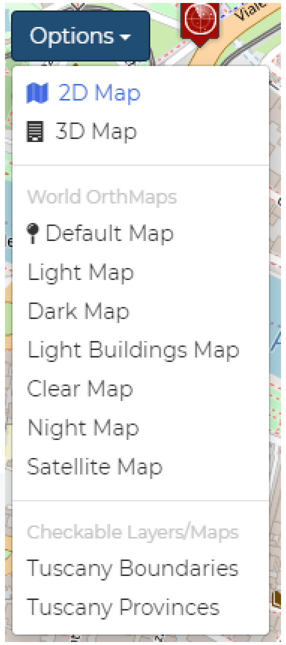
Multi Data Map: many kinds of data

- **Orthomaps**: plain maps and overlapped layers
- A range of **Pins Kinds** for marking Services, IOT Devices, etc.
- **Services**:
  - POI, MyPOI, IOT Devices, Sensors, Actuators, IOT Device Moving, etc.
  - Cycling paths
  - Areas shapes: gardens, etc…
  - GIS data
- **Heatmaps**: different types
- **Traffic Flows:** different kinds
- **OD matrices**
- **Special data:**
  - **What-If** analysis: routing, public routing, traffic flow
  - **Routing: private, public, pedestrian, public means**
  - **Scenarios** definition
- **3D** buildings on special version of MMD
- ….

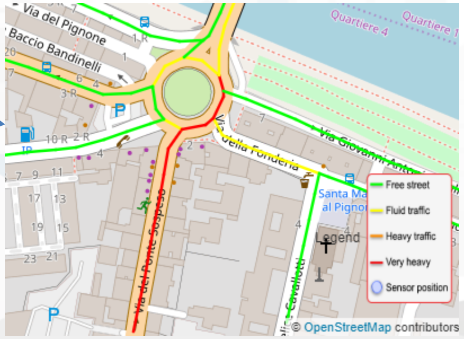
Multi Data Map Widget

- The most powerful Data Map rendering tool, it supports:
  - **KB Sensor data**: POI, sensors, actuators, etc. (see in the following), moving devices
  - **WFS data** (see in the following)
  - **WMS background maps**
    - Ask to a **RootAdmin** for activating this feature on your MultiDataMap widgets once created the dashboard
    - Maps can come from GIS servers, and WMS
  - **WMS Heatmaps GeoTiFF**
  - **WMS Traffic Flow GeoTIFF**
  - **GTFS data from Public Transport**
  - **Special tools**
    - Scenario (see in the following)
    - What-IF (see in the following)

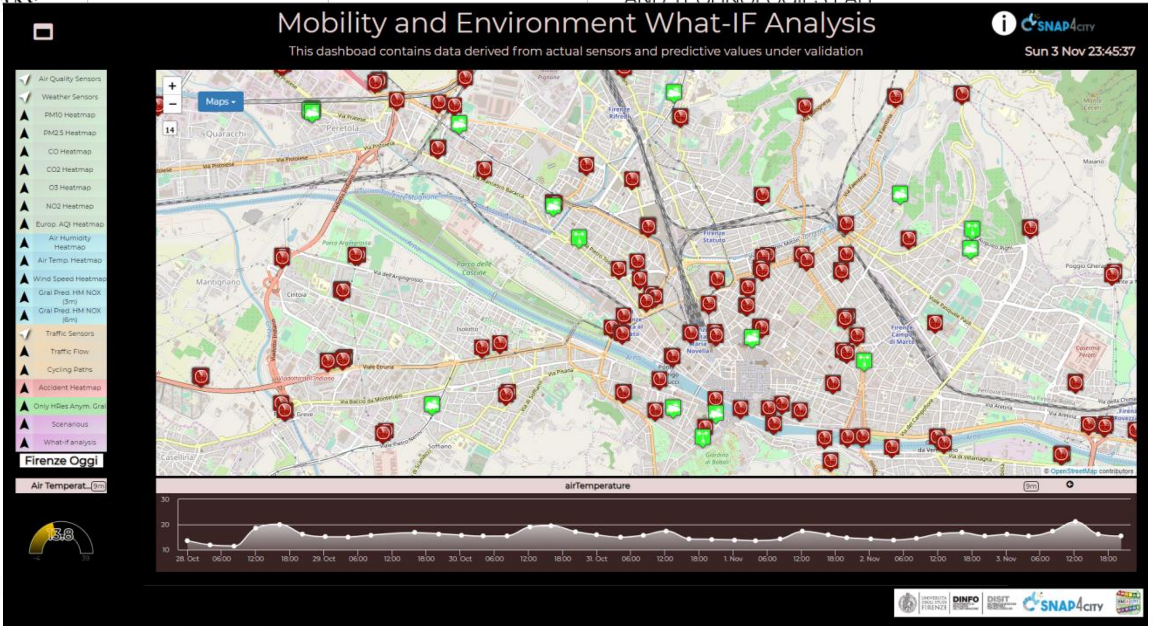

Maps ▾
External Providers Open Orthomaps
Default Map
Light Map
Dark Map
Light Map 2
Dark Map 2
Light Buildings Map
Satellite Map
WMS & GeoJSON Orthomaps
Tuscany Buildings (Volumetric Units)
Tuscany Photographic Orthomap
Tuscany Historical Map (Catasto Inghirami, 1830)
Tuscany Boundaries
Tuscany Provinces


Options ▾
2D Map
3D Map
World OrthMaps
Default Map
Light Map
Dark Map
Light Buildings Map
Clear Map
Night Map
Satellite Map
Checkable Layers/Maps
Tuscany Boundaries
Tuscany Provinces

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjE5MA==#


Legend
Free street
Fluid traffic
Heavy traffic
Very heavy
Sensor position
© OpenStreetMap contributors

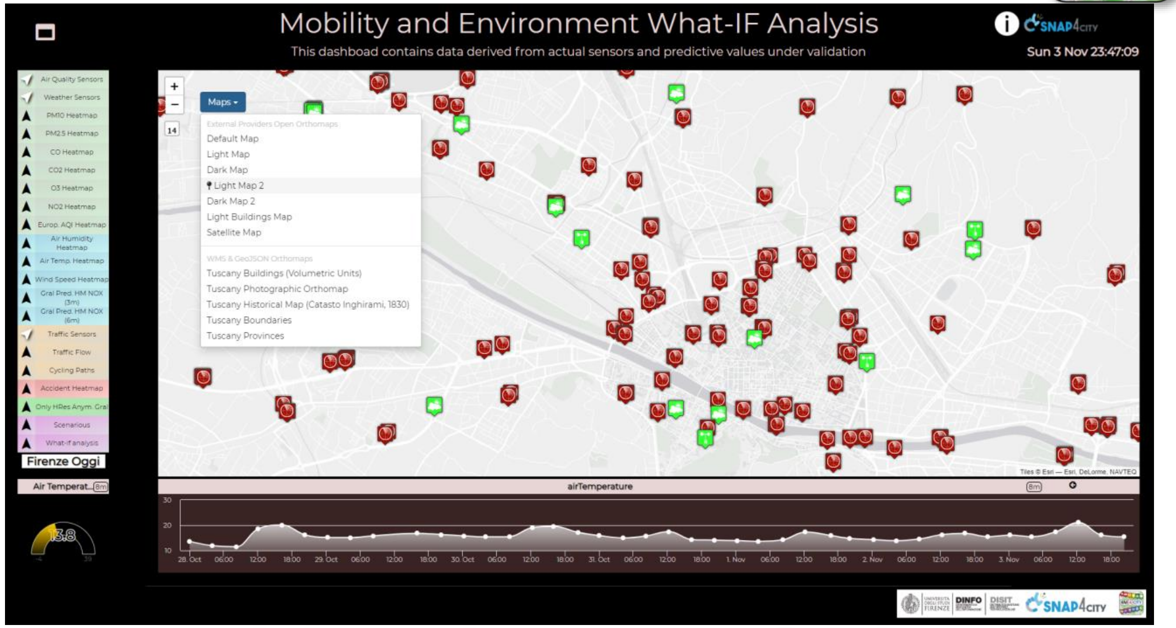
Orthomaps


Mobility and Environment What-IF Analysis

This dashboard contains data derived from actual sensors and predictive values under validation

Sun 3 Nov 23:45:37

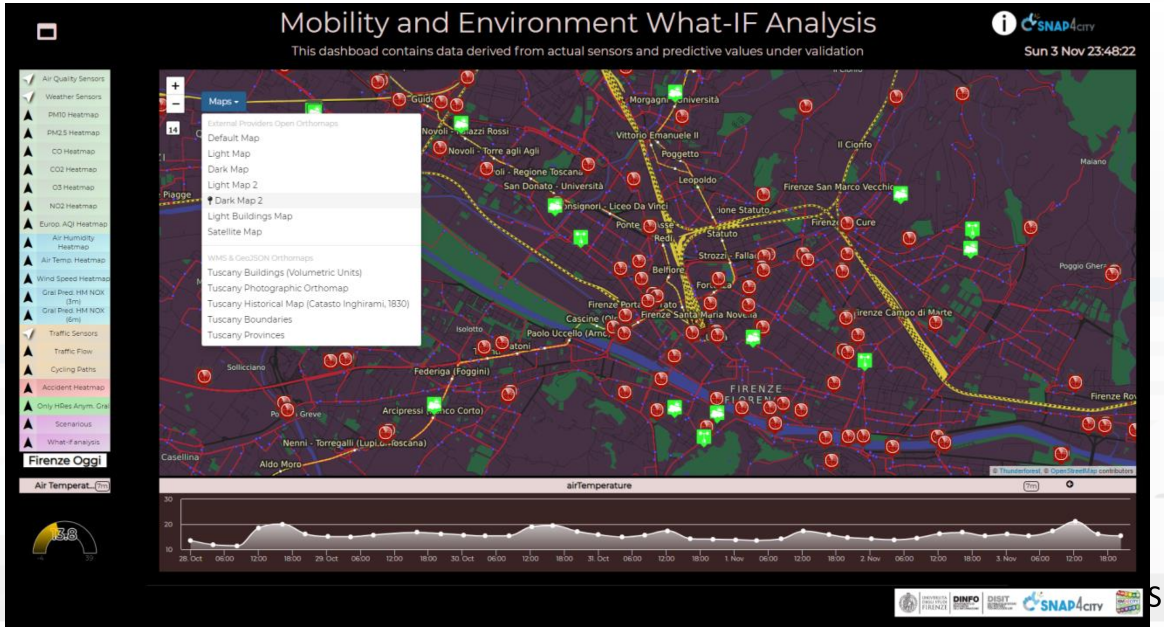
Maps
Air Quality Sensors
Weather Sensors
PM10 Heatmap
PM2.5 Heatmap
CO Heatmap
CO2 Heatmap
O3 Heatmap
NO2 Heatmap
Europ. AQI Heatmap
Air Humidity Heatmap
Air Temp. Heatmap
Wind Speed Heatmap
Gral Pred. HM NOX (3m)
Gral Pred. HM NOX (6m)
Traffic Sensors
Traffic Flow
Cycling Paths
Accident Heatmap
Only HRes Anym. Gral
Scenarious
What-if analysis
Firenze Oggi
Air Temperat...
airTemperature


Mobility and Environment What-IF Analysis

This dashboard contains data derived from actual sensors and predictive values under validation

Sun 3 Nov 23:47:09

Maps
External Providers Open Orthomaps
Default Map
Light Map
Dark Map
Light Map 2
Dark Map 2
Light Buildings Map
Satellite Map
WMS & GeoJSON Orthomaps
Tuscany Buildings (Volumetric Units)
Tuscany Photographic Orthomap
Tuscany Historical Map (Catasto Inghirami, 1830)
Tuscany Boundaries
Tuscany Provinces
Firenze Oggi
airTemperature

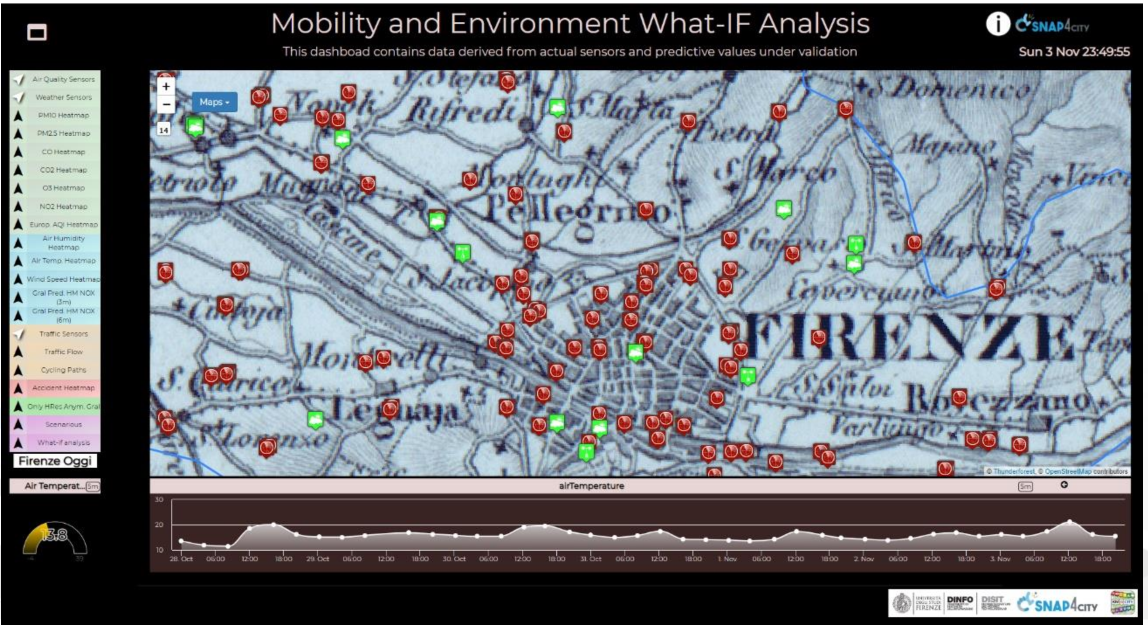

Mobility and Environment What-IF Analysis

This dashboard contains data derived from actual sensors and predictive values under validation

Sun 3 Nov 23:48:22

Maps
External Providers Open Orthomaps
Default Map
Light Map
Dark Map
Light Map 2
Dark Map 2
Light Buildings Map
Satellite Map
WMS & GeoJSON Orthomaps
Tuscany Buildings (Volumetric Units)
Tuscany Photographic Orthomap
Tuscany Historical Map (Catasto Inghirami, 1830)
Tuscany Boundaries
Tuscany Provinces
Firenze Oggi
airTemperature

Snap4C


Mobility and Environment What-IF Analysis

This dashboard contains data derived from actual sensors and predictive values under validation

Sun 3 Nov 23:49:55

Maps
FIRENZE
Firenze Oggi
airTemperature

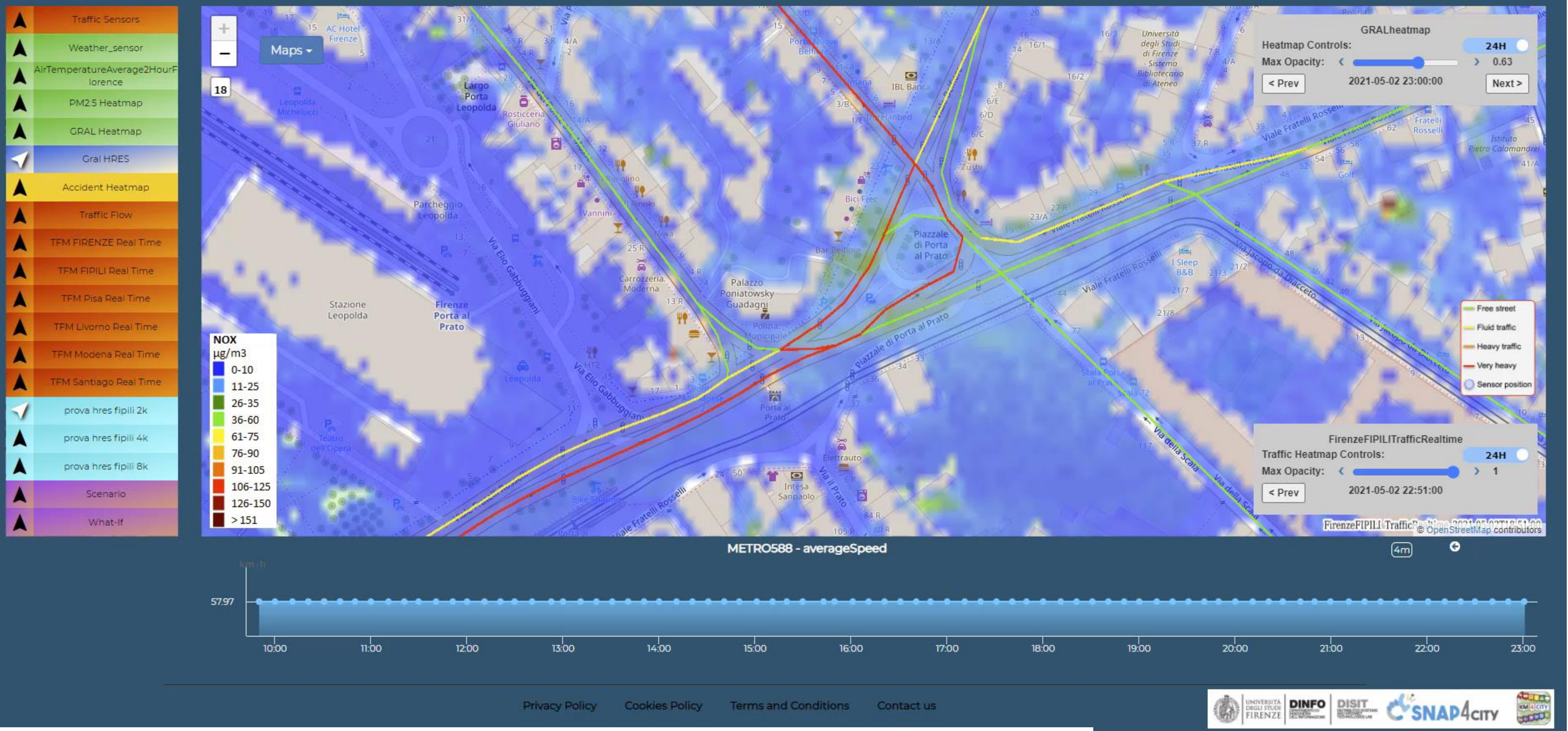
Orthomaps as graphic layers

- **Orthomaps can be**:
  - – Directly exploited from public service via WMS protocol, from some GIS services as GeoServer
  - – Loaded into the Snap4City GeoServer
  - – Layered if they can be overlapped each other, such as map with gov border above.
- The Dashboard owner can
  - – Select the Orthomaps to be used shown as default in the dashboard
- Each organization has its own set of Orthomaps

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjE5MA==

Traffic Flow Manager on multiple cities

Sun 2 May 23:16:31



- Traffic Sensors
- Weather_sensor
- AirTemperatureAverage2HourFlorence
- PM2.5 Heatmap
- GRAL Heatmap
- Gral HRES
- Accident Heatmap
- Traffic Flow
- TFM FIRENZE Real Time
- TFM FIPILI Real Time
- TFM Pisa Real Time
- TFM Livorno Real Time
- TFM Modena Real Time
- TFM Santiago Real Time
- prova hres fipili 2k
- prova hres fipili 4k
- prova hres fipili 8k
- Scenario
- What-If

NOX
µg/m3

🟦	0-10
🟦	11-25
🟩	26-35
🟩	36-60
🟨	61-75
🟧	76-90
🟧	91-105
🟥	106-125
🟥	126-150
🟫	> 151

GRALheatmap
Heatmap Controls: 24H
Max Opacity: 0.63
< Prev 2021-05-02 23:00:00 Next >

FirenzeFIPILITrafficRealtime
Traffic Heatmap Controls: 24H
Max Opacity: 1
< Prev 2021-05-02 22:51:00

- Free street
- Fluid traffic
- Heavy traffic
- Very heavy
- Sensor position

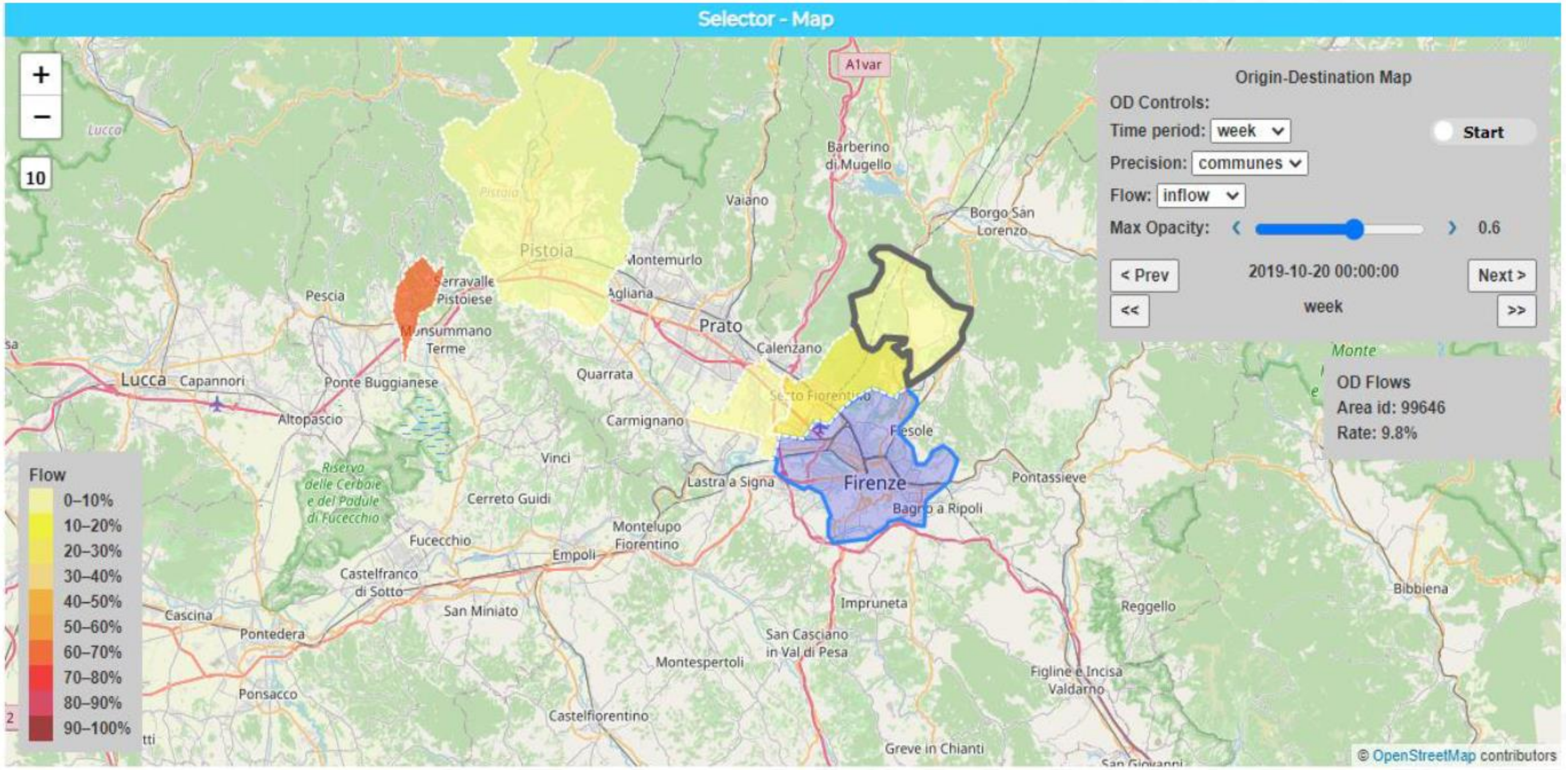
METRO588 - averageSpeed

Maps
18
Largo Porta Leopolda
Stazione Leopolda
Firenze Porta al Prato
Piazzale di Porta al Prato
Palazzo Poniatowsky Guadagni
Viale Fratelli Rosselli
Via Elio Gabbuggiani
Via Jacopo da Diacceto
Via della Scala
Piazzale di Porta al Prato
© OpenStreetMap contributors
4m
km/h
57.97
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00

Privacy Policy Cookies Policy Terms and Conditions Contact us

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MzEyNg==

Different Origin Destination Matrices



Selector - Map

Origin-Destination Map

OD Controls:

Time period: week

Precision: communes

Flow: inflow

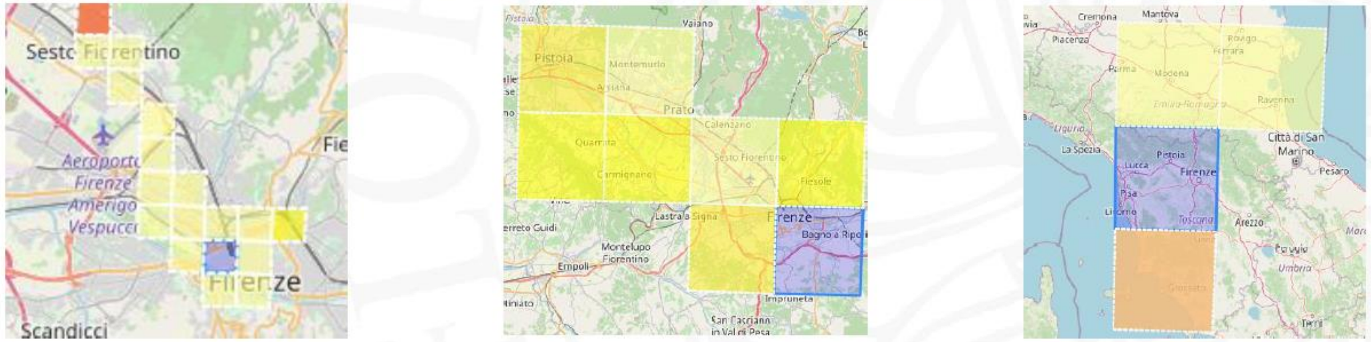
Max Opacity: 0.6

2019-10-20 00:00:00

week

OD Flows
Area id: 99646
Rate: 9.8%

Start
< Prev
Next >
<<
>>
+
−
10
Flow
0–10%
10–20%
20–30%
30–40%
40–50%
50–60%
60–70%
70–80%
80–90%
90–100%
Pistoia
Prato
Firenze
Fiesole
Bagno a Ripoli
Lucca
Empoli
© OpenStreetMap contributors



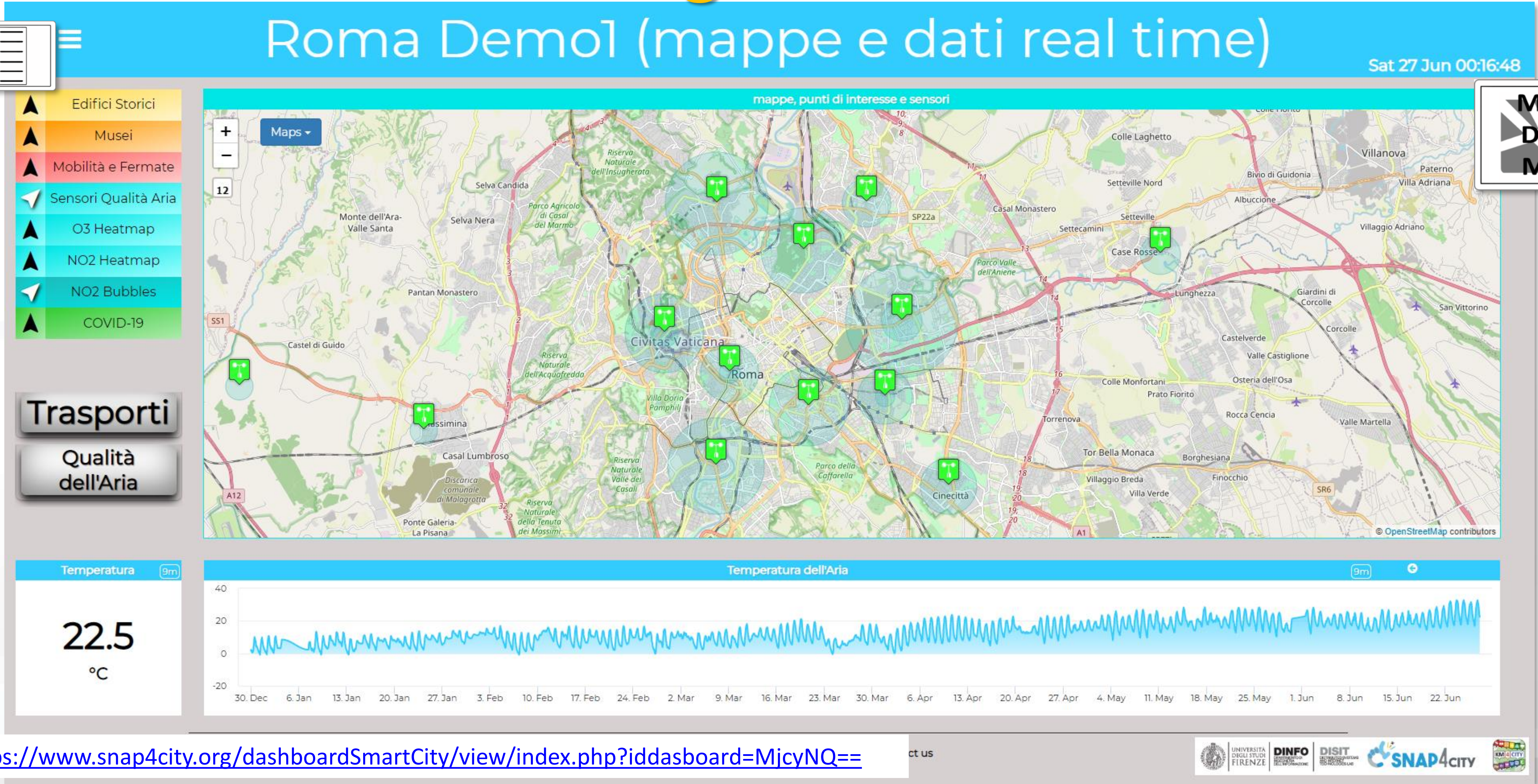
Sesto Fiorentino
Aeroporto Firenze Amerigo Vespucci
Firenze
Scandicci
Pistoia
Prato
Firenze
Bagno a Ripoli
Modena
Pistoia
Firenze

- **Get specific value**
- **Time window**
- **Opacity**
- **Animation**
- **Inflow/outflow**
- **Sequence of OD matrices: next/prev**

shapes

- **Shapes**: city, region, territories, etc.
  - GADM https://gadm.org/ , and ACE
- **Squared** MGRS:
  - 1m, 10m, 100m, **1Km, 10Km, 100Km**

Weighted Bubbles



Roma Demo1 (mappe e dati real time)

Sat 27 Jun 00:16:48

- Edifici Storici
- Musei
- Mobilità e Fermate
- Sensori Qualità Aria
- O3 Heatmap
- NO2 Heatmap
- NO2 Bubbles
- COVID-19

Trasporti

Qualità dell'Aria

mappe, punti di interesse e sensori

Temperatura

22.5
°C

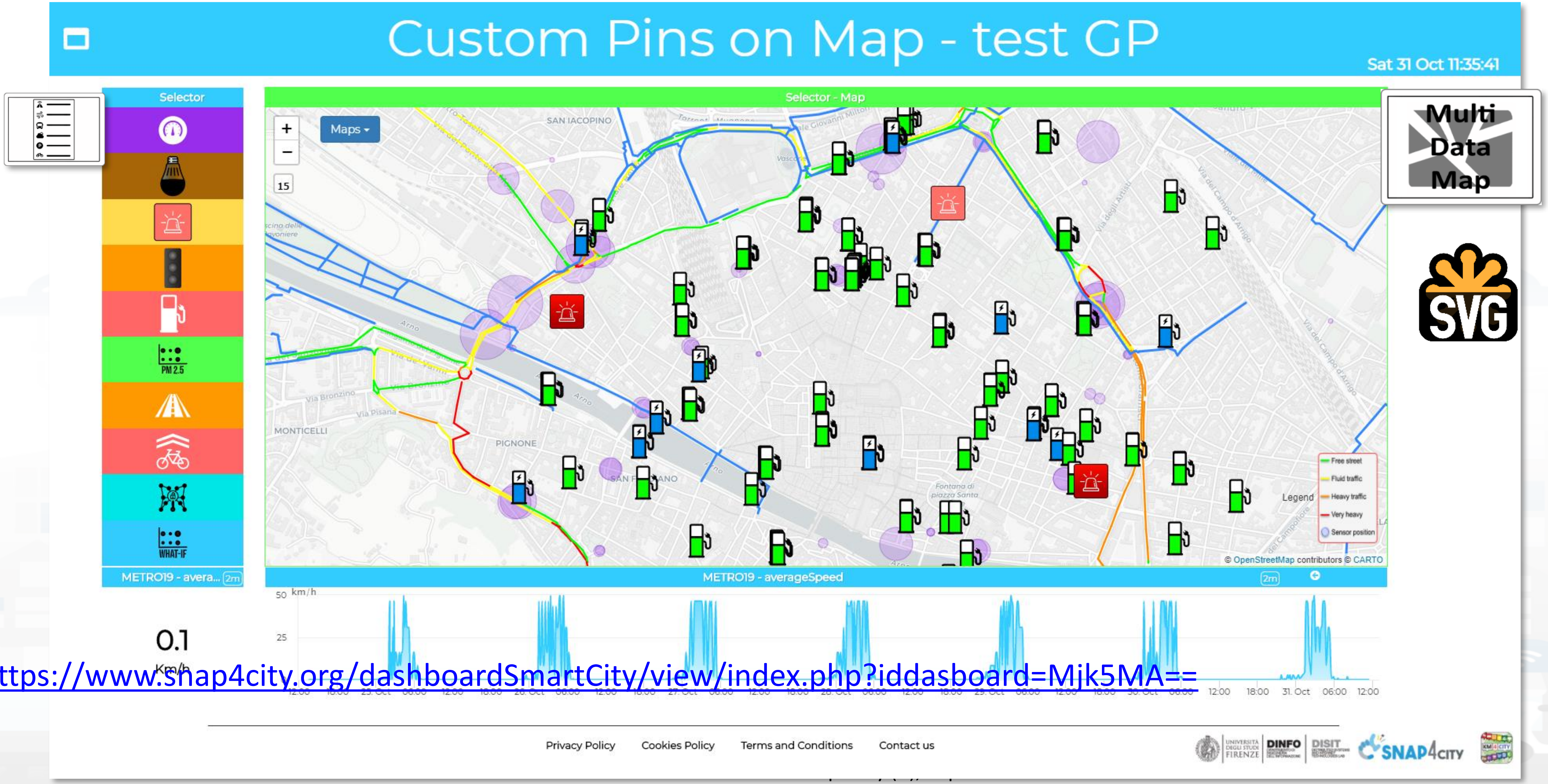
Temperatura dell'Aria

Maps
+
−
12
Selva Candida
Monte dell'Ara-Valle Santa
Selva Nera
Pantan Monastero
Castel di Guido
Casal Lumbroso
Ponte Galeria-La Pisana
Civitas Vaticana
Roma
Colle Laghetto
Villanova
Setteville Nord
Casal Monastero
Settecamini
Setteville
Case Rosse
Lunghezza
Castelverde
Colle Monfortani
Prato Fiorito
Torrenova
Tor Bella Monaca
Villaggio Breda
Villa Verde
Borghesiana
Finocchio
Cinecittà
Villaggio Adriano
San Vittorino
Corcolle
© OpenStreetMap contributors
9m
40
20
0
-20
30. Dec
6. Jan
13. Jan
20. Jan
27. Jan
3. Feb
10. Feb
17. Feb
24. Feb
2. Mar
9. Mar
16. Mar
23. Mar
30. Mar
6. Apr
13. Apr
20. Apr
27. Apr
4. May
11. May
18. May
25. May
1. Jun
8. Jun
15. Jun
22. Jun
ct us

Multi Data Map

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjcyNQ==

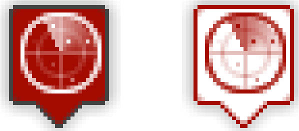
Custom Dynamic Pins


Custom Pins on Map - test GP
Sat 31 Oct 11:35:41
Selector
Selector - Map
Maps
PM 2.5
WHAT-IF
METRO19 - avera... 2m
0.1
Km/h
METRO19 - averageSpeed
km/h
50
25
Legend
Free street
Fluid traffic
Heavy traffic
Very heavy
Sensor position
© OpenStreetMap contributors © CARTO
SAN IACOPINO
MONTICELLI
PIGNONE
Arno
Multi Data Map
SVG
Privacy Policy
Cookies Policy
Terms and Conditions
Contact us

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=Mjk5MA==

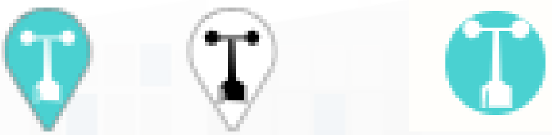
Pins on Multi Data Maps (1)

Normal Over



- **Classic**: (default)
  - Text menu or Icon Menu
    - Custom color of the Menu only
  - Fixed on the basis of Nature and Subnature

Normal Over Icon Menu

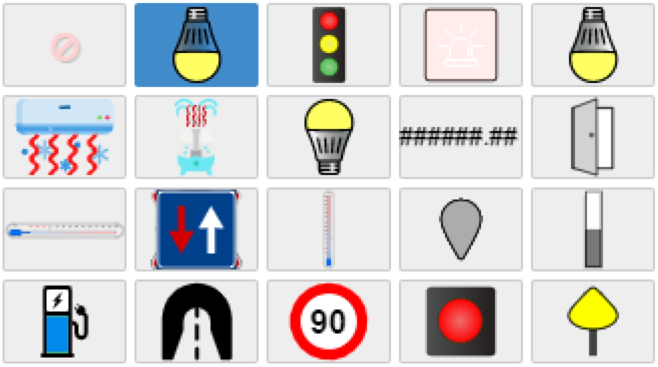


- **Icon**: (accessible as **Icon Mode** of selector)
  - Also usable with **Text Mode** of the menu
  - Selectable from a large set
  - Coherent with Icon on Menu
  - Custom Color

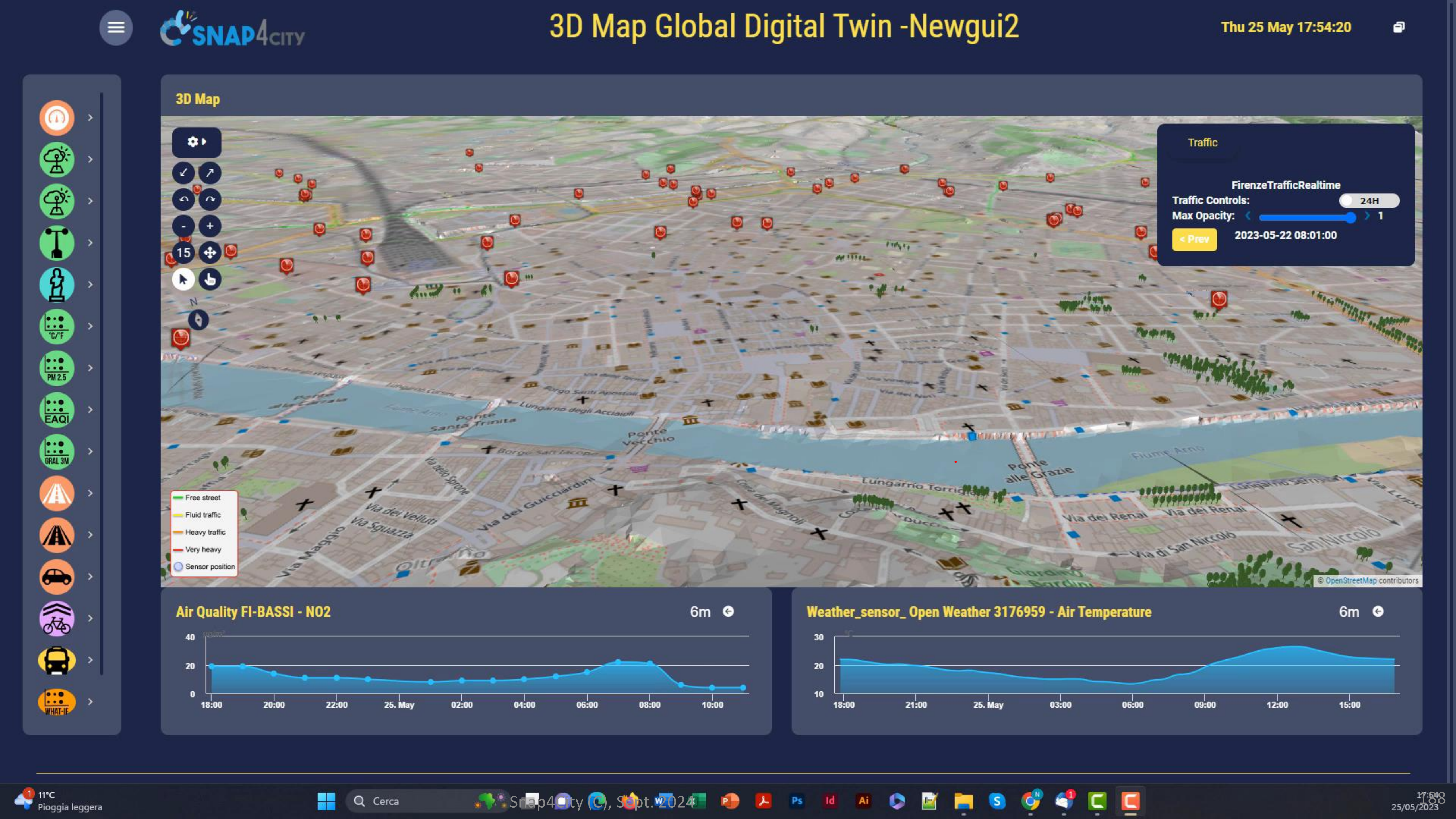
Pins on Multi Data Maps (2)

Bubble Pins

- **Bubble**:
  - Text Menu or Icon Menu
  - Custom Color
  - Size depending on ServiceURI Attribute, IOT Device ValueName
- **Custom**: (accessible from Alternate View Mode)
  - Can be created by AreaManagers as **Custom Widgets** https://www.snap4city.org/663
  - Selectable from a set
  - Coherent with Menu, also usable with text menu
  - Variable/Dynamic colors/animations associated with ServiceURI Attribute, IOT Dev ValueName



Pins and Menu icons



3D Map Global Digital Twin -Newgui2

Thu 25 May 17:54:20

3D Map

Traffic

FirenzeTrafficRealtime

Traffic Controls: 24H

Max Opacity: 1

< Prev 2023-05-22 08:01:00

- Free street
- Fluid traffic
- Heavy traffic
- Very heavy
- Sensor position

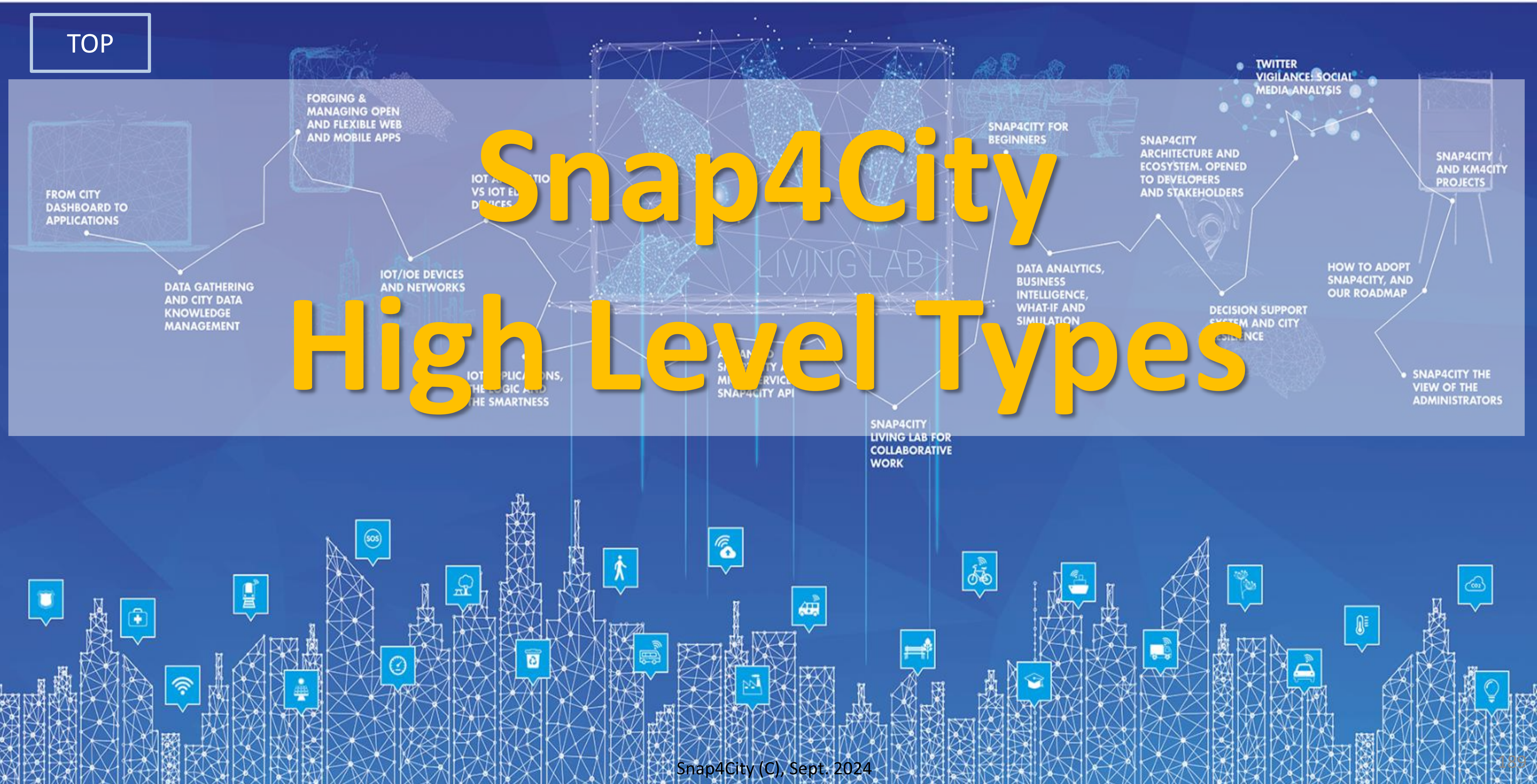
Air Quality FI-BASSI - NO2 6m

Weather_sensor_ Open Weather 3176959 - Air Temperature 6m

SNAP4CITY
15
N
Borgo Santi Apostoli
Lungarno degli Acciaioli
Ponte Santa Trinita
Ponte Vecchio
Borgo San Jacopo
Via dello Sprone
Via dei Guicciardini
Via dei Velluti
Via Squazza
Via Maggio
Ponte alle Grazie
Lungarno Torrigiani
Via dei Renai
Via di San Niccolò
Fiume Arno
© OpenStreetMap contributors
40
20
0
18:00
20:00
22:00
25. May
02:00
04:00
06:00
08:00
10:00
30
20
10
18:00
21:00
25. May
03:00
06:00
09:00
12:00
15:00
11°C
Pioggia leggera
Cerca
17:54
25/05/2023

TOP

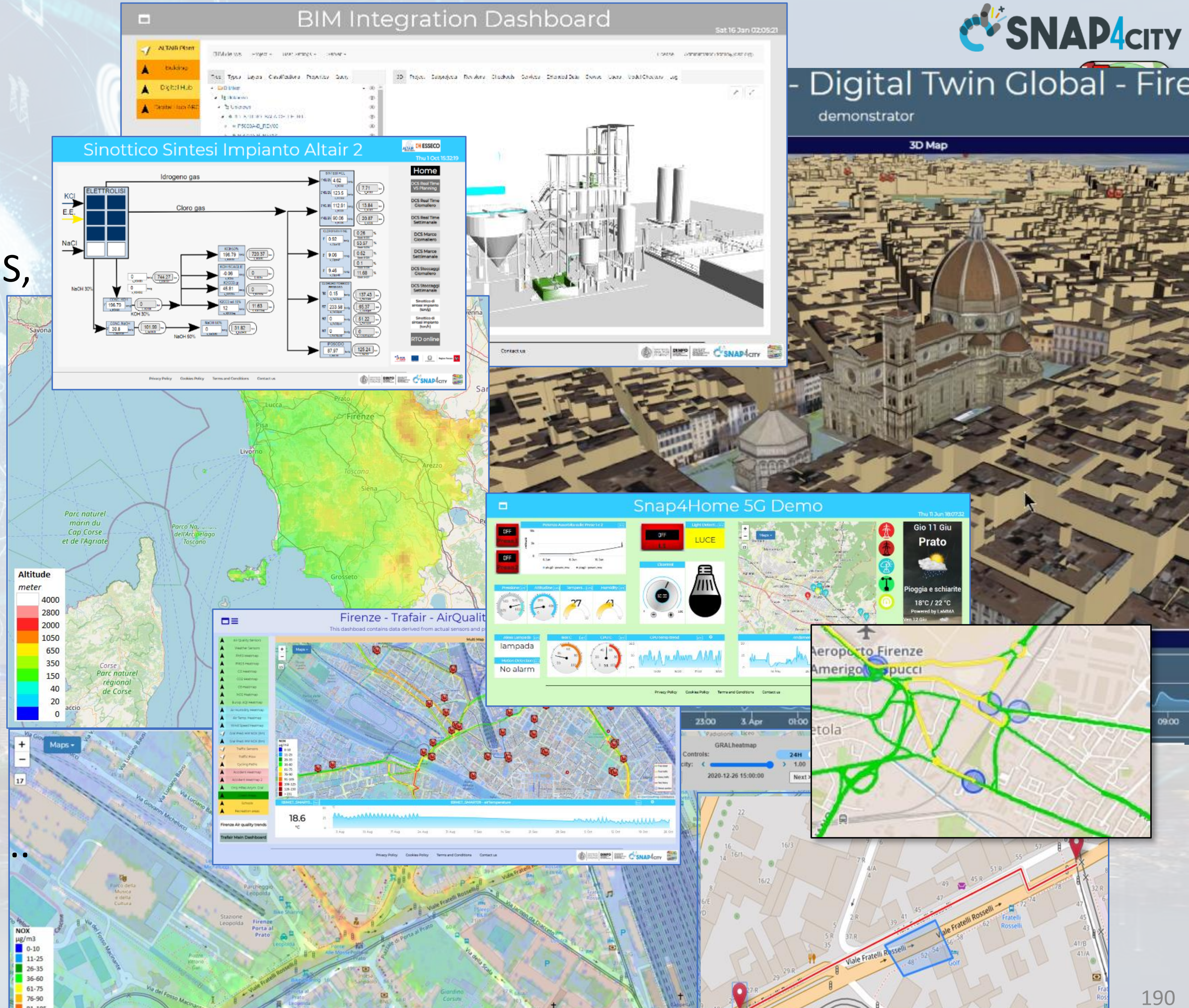
Snap4City High Level Types


FROM CITY DASHBOARD TO APPLICATIONS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
IOT/IOE DEVICES AND NETWORKS
LIVING LAB
SNAP4CITY FOR BEGINNERS
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
DATA ANALYTICS, BUSINESS INTELLIGENCE, WHAT-IF AND SIMULATION
SNAP4CITY ARCHITECTURE AND ECOSYSTEM. OPENED TO DEVELOPERS AND STAKEHOLDERS
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
SNAP4CITY AND KM4CITY PROJECTS
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

High Level Types

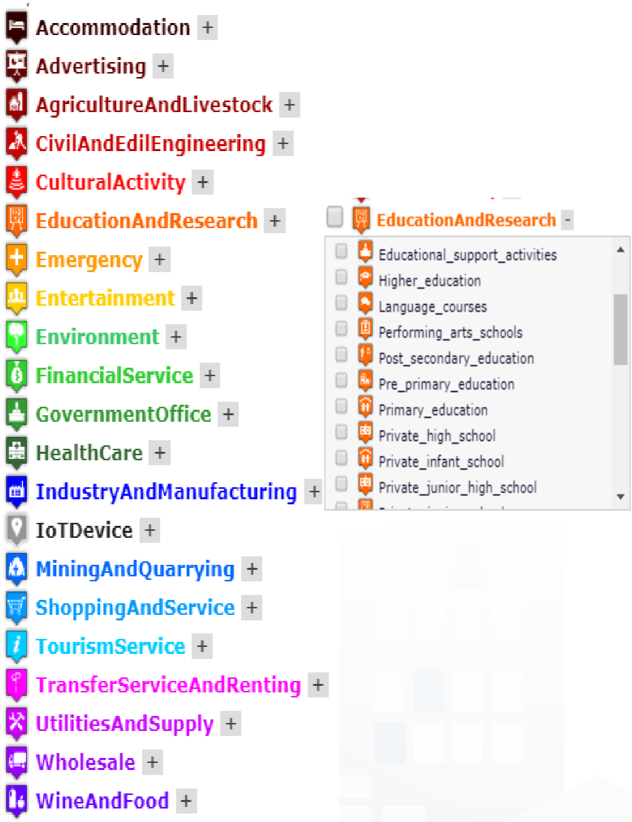
Snap4City (C), Sept. 2024

- POI, IOT Devices, shapes,..
  - FIWARE Smart Data Models,
  - IoT Device Models
- GIS, maps, orthomaps, WFS/WMS, GeoTiff, calibrated heatmaps, ..
- Satellite data, ..
- traffic flow, typical trends, ..
- 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, ..
- decision scenarios, ….
- etc.


BIM Integration Dashboard
Sinottico Sintesi Impianto Altair 2
Idrogeno gas
Cloro gas
ELETTROLISI
KCl
E.E.
NaCl
Home
- Digital Twin Global - Fire
demonstrator
3D Map
Snap4Home 5G Demo
LUCE
lampada
No alarm
Gio 11 Giu
Prato
Pioggia e schiarite
Firenze - Trafair - AirQualit
18.6
Altitude
meter
4000
2800
2000
1050
650
350
150
40
20
0
Parc naturel marin du Cap Corse et de l'Agriate
Parco Naz. dell'Arcipelago Toscano
Corse Parc naturel régional de Corse
Livorno
Firenze
Pisa
Lucca
Prato
Arezzo
Siena
Grosseto
Maps
NOX
µg/m3
0-10
11-25
26-35
36-60
61-75
76-90
Aeroporto Firenze
Amerigo Vespucci
GRALheatmap
2020-12-26 15:00:00
Viale Fratelli Rosselli

HLT: Unified Classification for Data and Services

- **Data Models**: all devices/entities sprunt from that model
  - Entity Model, IoT Device Model, Mobile Device Model, Data Table Model
- **Devices**: are instances of some model or sprunt from processes
  - Entity Device, IoT Device, Mobile Device, Data Table Device, Sensor Device
- **Variables**, Sensor/sensor-actuator, :
  - Entity Varible, IoT Device Variable, Mobile Device Variable, Data Table Variable, Sensor, Sensor-Actuator
  - **Dashboard-IOT App:** messages from GUI to Business Logic on IoT App
- **MyKPI**: dynamic GPS, info, single variable, Time Series, (Classification)
  - **KPI:** former KPI model
  - **MyPersonaData/MyData**: safes in which specific personal data are saved.
- **POI**: static GPS, info about a location, (Classification),
  - **MyPOI**: personal POI that can be leveraged to standard POI by administrator
- **Heatmaps**: matrices on some area, Time Series, (Classification)
- **Traffic Flow**: road segments with flow density, Time Series, (Classification)
- **OD Matrices**: origin destination matrices, Time Series, (Classification)
- **Complex events**: emergency, alarm, entertainment, CAP, … special widgets

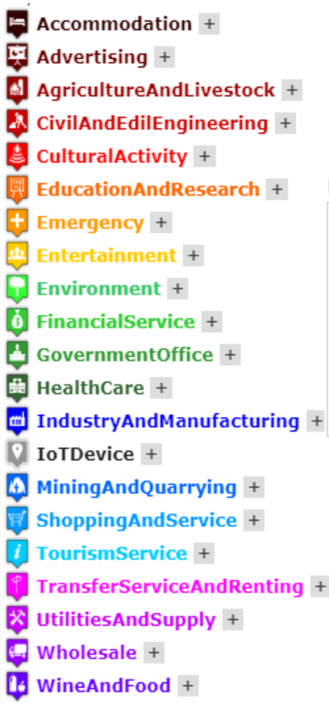


Accommodation +
Advertising +
AgricultureAndLivestock +
CivilAndEdilEngineering +
CulturalActivity +
EducationAndResearch +
Emergency +
Entertainment +
Environment +
FinancialService +
GovernmentOffice +
HealthCare +
IndustryAndManufacturing +
IoTDevice +
MiningAndQuarrying +
ShoppingAndService +
TourismService +
TransferServiceAndRenting +
UtilitiesAndSupply +
Wholesale +
WineAndFood +

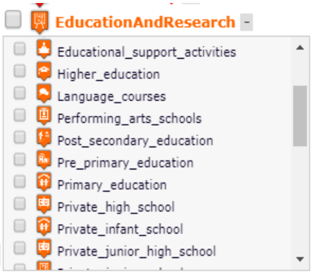
☐ EducationAndResearch -
- ☐ Educational_support_activities
- ☐ Higher_education
- ☐ Language_courses
- ☐ Performing_arts_schools
- ☐ Post_secondary_education
- ☐ Pre_primary_education
- ☐ Primary_education
- ☐ Private_high_school
- ☐ Private_infant_school
- ☐ Private_junior_high_school

HLT: Unified Classification for Data and Services

- **External Service**: third party visualization tools, iFRAMED…
  - Also TV CAMs are rendered here, and substantially all the other Services
- **Synoptics**: graphic representations with animation connected to variables and/or MyKPI and/or IoTApp, etc.
- **BIM representations**: Digital Twin Local, …
- **Micro Applications**: Snap4City, Km4City micro applications, iFRAMED
- **Special Widget**: a set of special visualization tool with their dedicated data type
- **WFS**: a specific tool for WFS GIS rendering, please note almost the same kind of data type can be visualized as Data above described

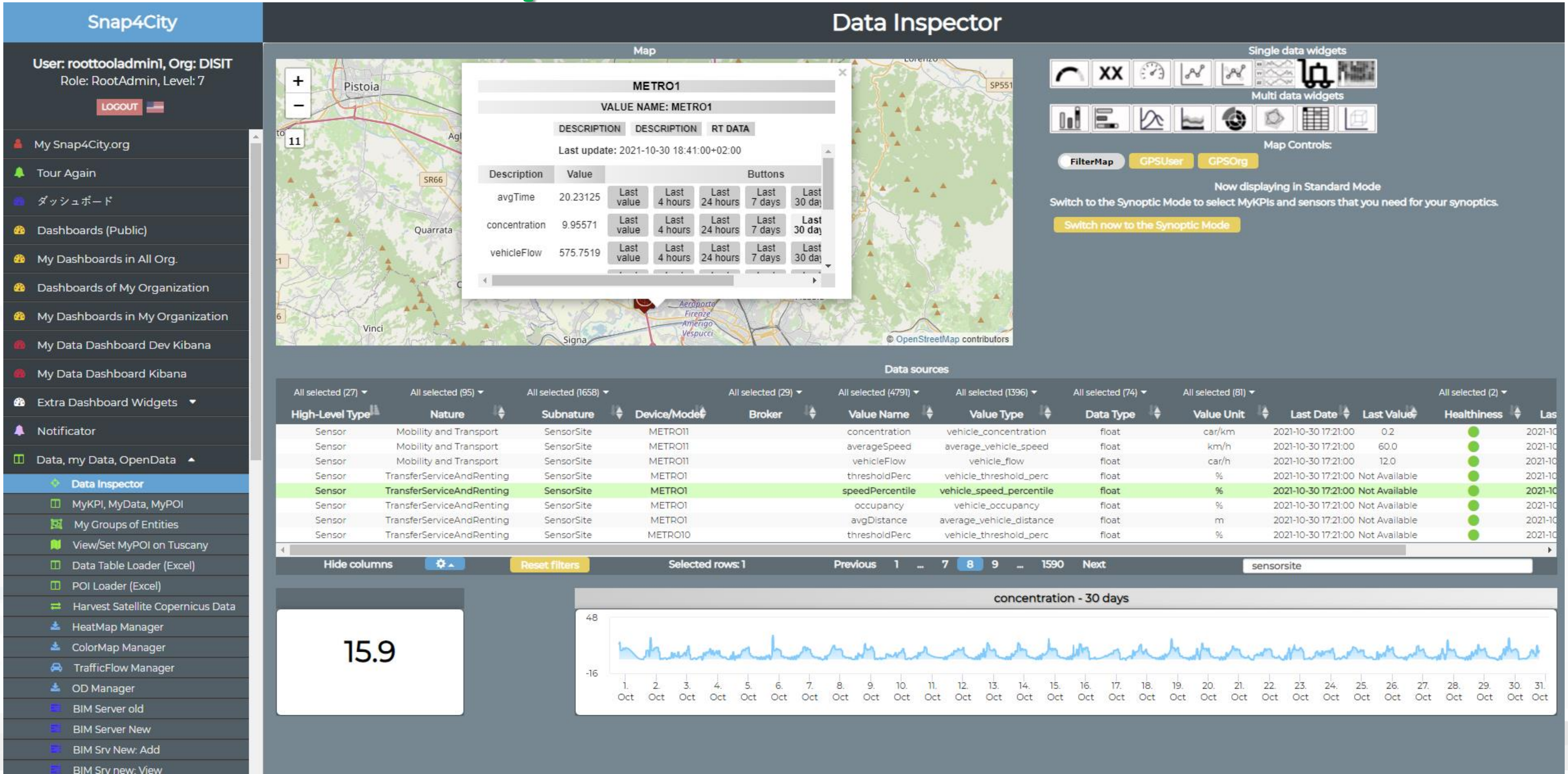


Accommodation +
Advertising +
AgricultureAndLivestock +
CivilAndEdilEngineering +
CulturalActivity +
EducationAndResearch +
Emergency +
Entertainment +
Environment +
FinancialService +
GovernmentOffice +
HealthCare +
IndustryAndManufacturing +
IoTDevice +
MiningAndQuarrying +
ShoppingAndService +
TourismService +
TransferServiceAndRenting +
UtilitiesAndSupply +
Wholesale +
WineAndFood +



☐ EducationAndResearch -
☐ Educational_support_activities
☐ Higher_education
☐ Language_courses
☐ Performing_arts_schools
☐ Post_secondary_education
☐ Pre_primary_education
☐ Primary_education
☐ Private_high_school
☐ Private_infant_school
☐ Private_junior_high_school

Data Inspector: HLT classification


Snap4City
Data Inspector
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Tour Again
ダッシュボード
Dashboards (Public)
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
My Data Dashboard Dev Kibana
My Data Dashboard Kibana
Extra Dashboard Widgets
Notificator
Data, my Data, OpenData
Data Inspector
MyKPI, MyData, MyPOI
My Groups of Entities
View/Set MyPOI on Tuscany
Data Table Loader (Excel)
POI Loader (Excel)
Harvest Satellite Copernicus Data
HeatMap Manager
ColorMap Manager
TrafficFlow Manager
OD Manager
BIM Server old
BIM Server New
BIM Srv New: Add
BIM Srv new: View
Map
Pistoia
Quarrata
Vinci
Signa
Aeroporto Firenze Amerigo Vespucci
SR66
SP551
© OpenStreetMap contributors
Single data widgets
XX
Multi data widgets
Map Controls:
FilterMap
GPSUser
GPSOrg
Switch now to the Synoptic Mode
Data sources
Hide columns
Reset filters
Previous
1
...
7
8
9
...
1590
Next
48
-16
1. Oct
2. Oct
3. Oct
4. Oct
5. Oct
6. Oct
7. Oct
8. Oct
9. Oct
10. Oct
11. Oct
12. Oct
13. Oct
14. Oct
15. Oct
16. Oct
17. Oct
18. Oct
19. Oct
20. Oct
21. Oct
22. Oct
23. Oct
24. Oct
25. Oct
26. Oct
27. Oct
28. Oct
29. Oct
30. Oct
31. Oct

METRO1

VALUE NAME: METRO1

DESCRIPTION DESCRIPTION RT DATA

Last update: 2021-10-30 18:41:00+02:00

Description	Value	Buttons				
avgTime	20.23125	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 day
concentration	9.95571	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 day
vehicleFlow	575.7519	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 day

Now displaying in Standard Mode

Switch to the Synoptic Mode to select MyKPIs and sensors that you need for your synoptics.

High-Level Type	Nature	Subnature	Device/Model	Broker	Value Name	Value Type	Data Type	Value Unit	Last Date	Last Value	Healthiness	Las
All selected (27)	All selected (95)	All selected (1658)		All selected (29)	All selected (4791)	All selected (1396)	All selected (74)	All selected (81)			All selected (2)	
Sensor	Mobility and Transport	SensorSite	METRO11		concentration	vehicle_concentration	float	car/km	2021-10-30 17:21:00	0.2	●	2021-1
Sensor	Mobility and Transport	SensorSite	METRO11		averageSpeed	average_vehicle_speed	float	km/h	2021-10-30 17:21:00	60.0	●	2021-1
Sensor	Mobility and Transport	SensorSite	METRO11		vehicleFlow	vehicle_flow	float	car/h	2021-10-30 17:21:00	12.0	●	2021-1
Sensor	TransferServiceAndRenting	SensorSite	METRO1		thresholdPerc	vehicle_threshold_perc	float	%	2021-10-30 17:21:00	Not Available	●	2021-1
Sensor	TransferServiceAndRenting	SensorSite	METRO1		speedPercentile	vehicle_speed_percentile	float	%	2021-10-30 17:21:00	Not Available	●	2021-1
Sensor	TransferServiceAndRenting	SensorSite	METRO1		occupancy	vehicle_occupancy	float	%	2021-10-30 17:21:00	Not Available	●	2021-1
Sensor	TransferServiceAndRenting	SensorSite	METRO1		avgDistance	average_vehicle_distance	float	m	2021-10-30 17:21:00	Not Available	●	2021-1
Sensor	TransferServiceAndRenting	SensorSite	METRO10		thresholdPerc	vehicle_threshold_perc	float	%	2021-10-30 17:21:00	Not Available	●	2021-1

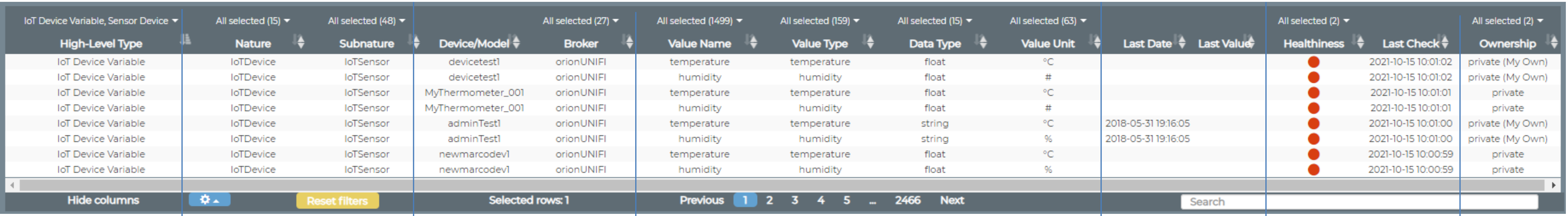
Selected rows: 1

sensorsite

15.9

concentration - 30 days

HLT: Unified Classification for Data and Services



IoT Device Variable, Sensor Device	All selected (15)	All selected (48)		All selected (27)	All selected (1499)	All selected (159)	All selected (15)	All selected (63)			All selected (2)		All selected (2)
High-Level Type	**Nature**	**Subnature**	**Device/Model**	**Broker**	**Value Name**	**Value Type**	**Data Type**	**Value Unit**	**Last Date**	**Last Value**	**Healthiness**	**Last Check**	**Ownership**
IoT Device Variable	IoTDevice	IoTSensor	devicetest1	orionUNIFI	temperature	temperature	float	°C			●	2021-10-15 10:01:02	private (My Own)
IoT Device Variable	IoTDevice	IoTSensor	devicetest1	orionUNIFI	humidity	humidity	float	#			●	2021-10-15 10:01:02	private (My Own)
IoT Device Variable	IoTDevice	IoTSensor	MyThermometer_001	orionUNIFI	temperature	temperature	float	°C			●	2021-10-15 10:01:01	private
IoT Device Variable	IoTDevice	IoTSensor	MyThermometer_001	orionUNIFI	humidity	humidity	float	#			●	2021-10-15 10:01:01	private
IoT Device Variable	IoTDevice	IoTSensor	adminTest1	orionUNIFI	temperature	temperature	string	°C	2018-05-31 19:16:05		●	2021-10-15 10:01:00	private (My Own)
IoT Device Variable	IoTDevice	IoTSensor	adminTest1	orionUNIFI	humidity	humidity	string	%	2018-05-31 19:16:05		●	2021-10-15 10:01:00	private (My Own)
IoT Device Variable	IoTDevice	IoTSensor	newmarcodev1	orionUNIFI	temperature	temperature	float	°C			●	2021-10-15 10:00:59	private
IoT Device Variable	IoTDevice	IoTSensor	newmarcodev1	orionUNIFI	humidity	humidity	float	%			●	2021-10-15 10:00:59	private

High Level Types

Nature

SubNature

Dev/Model name

Broker name

Value Name

Value Type

Data Type

Value Unit

Last Date/Time

Last Value

Healthiness

Last Check

Ownership

Organization

Semantic Classific.

Technical Source

Variables, names

Real Time

Status

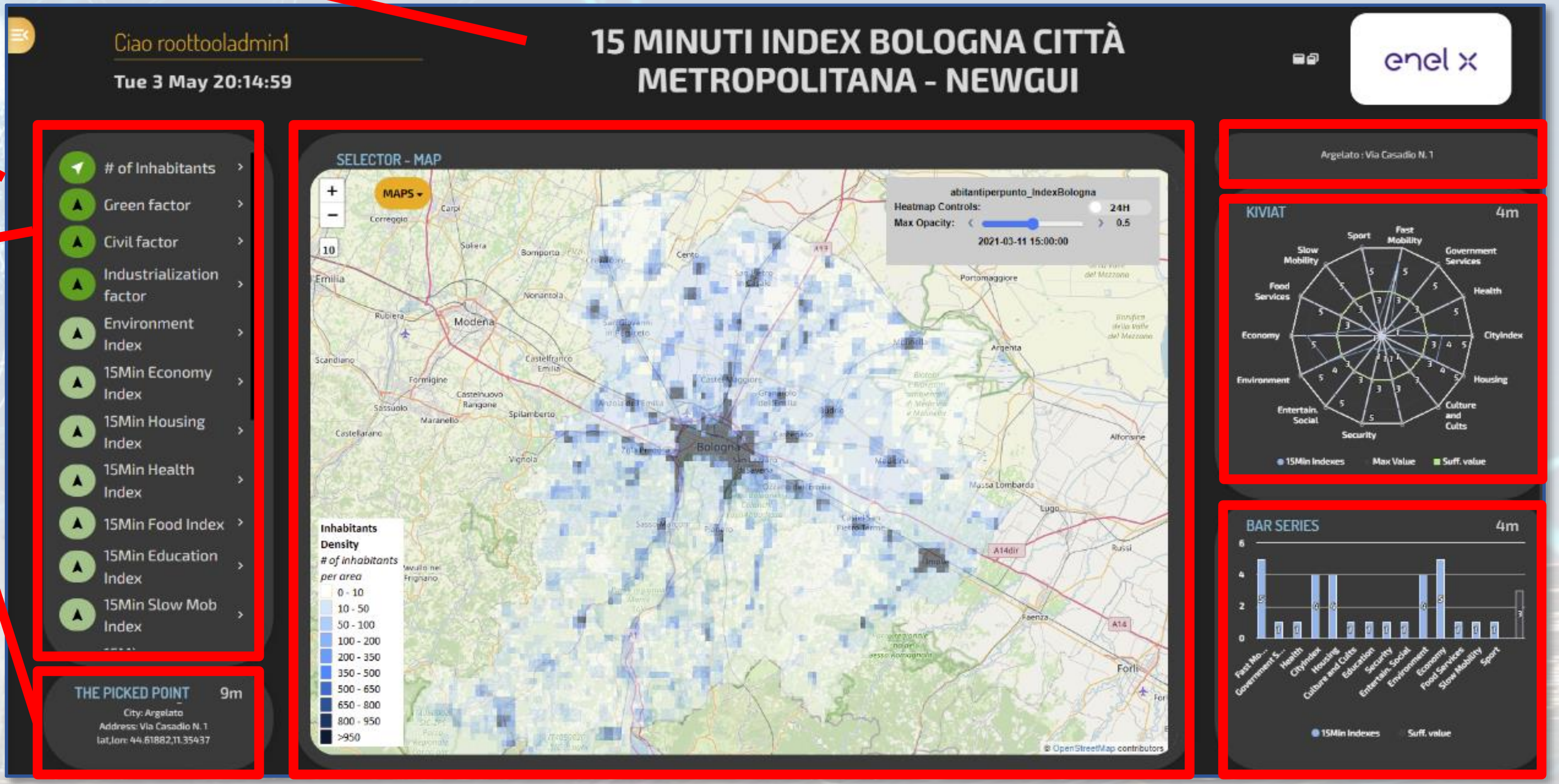
For Admi

Snap4City Dashboards main concepts

Header

Dashboard

Interactive Widgets


Ciao roottooladmin1
Tue 3 May 20:14:59
15 MINUTI INDEX BOLOGNA CITTÀ METROPOLITANA - NEWGUI
enel x
# of Inhabitants
Green factor
Civil factor
Industrialization factor
Environment Index
15Min Economy Index
15Min Housing Index
15Min Health Index
15Min Food Index
15Min Education Index
15Min Slow Mob Index
SELECTOR - MAP
MAPS
Heatmap Controls:
Max Opacity:
24H
0.5
2021-03-11 15:00:00
Inhabitants Density
# of inhabitants per area
0 - 10
10 - 50
50 - 100
100 - 200
200 - 350
350 - 500
500 - 650
650 - 800
800 - 950
>950
Modena
Bologna
Argelato : Via Casadio N. 1
KIVIAT
4m
15Min Indexes
Max Value
Suff. value
BAR SERIES
4m
15Min Indexes
Suff. value

THE PICKED POINT 9m
City: Argelato
Address: Via Casadio N. 1
lat,lon: 44.61882,11.35437

Server Communication

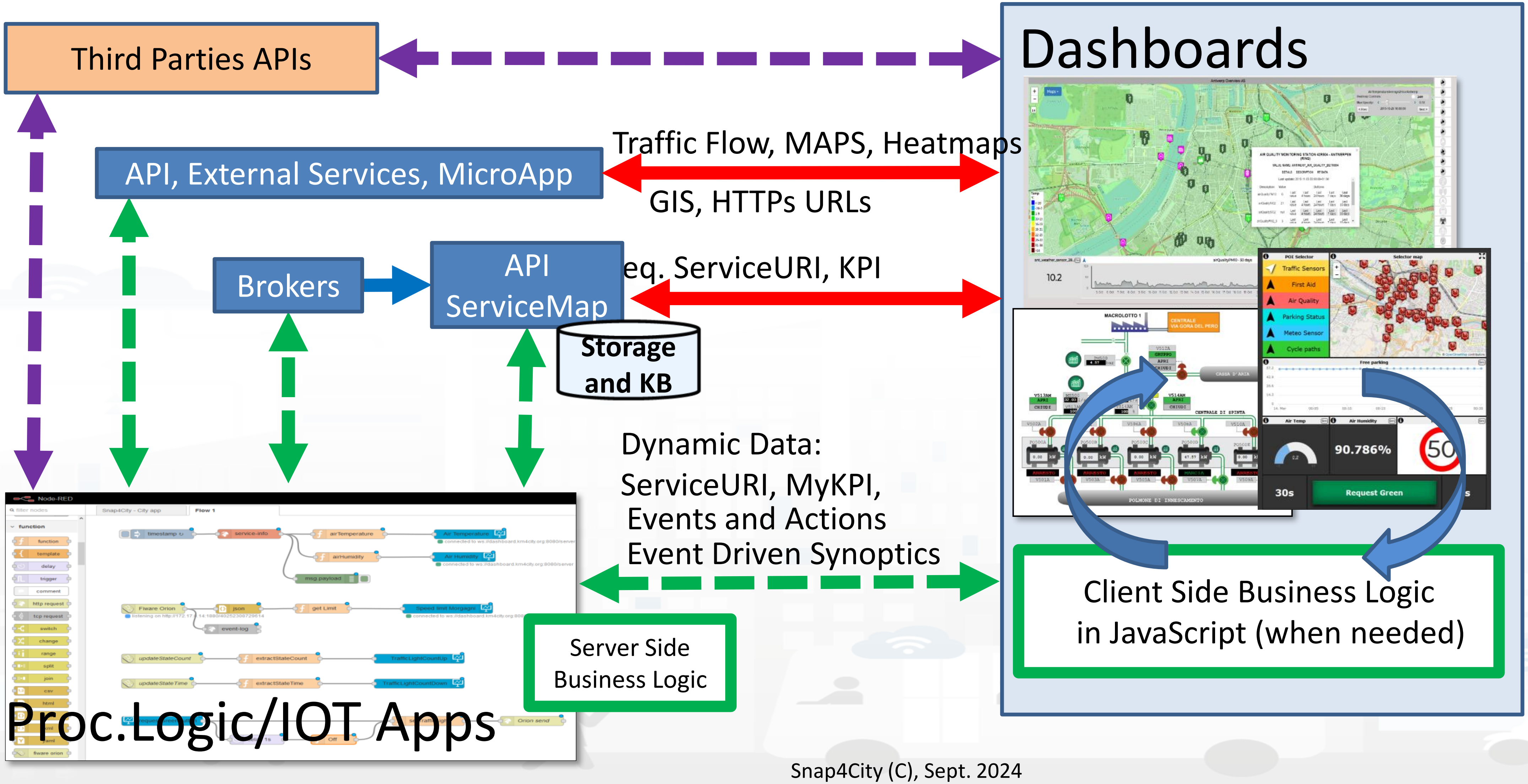
- Real Time data requests/send
- Event Driven
- Server Side Business Logic
  - See Part 3 of the course

Inter Widget Communication:

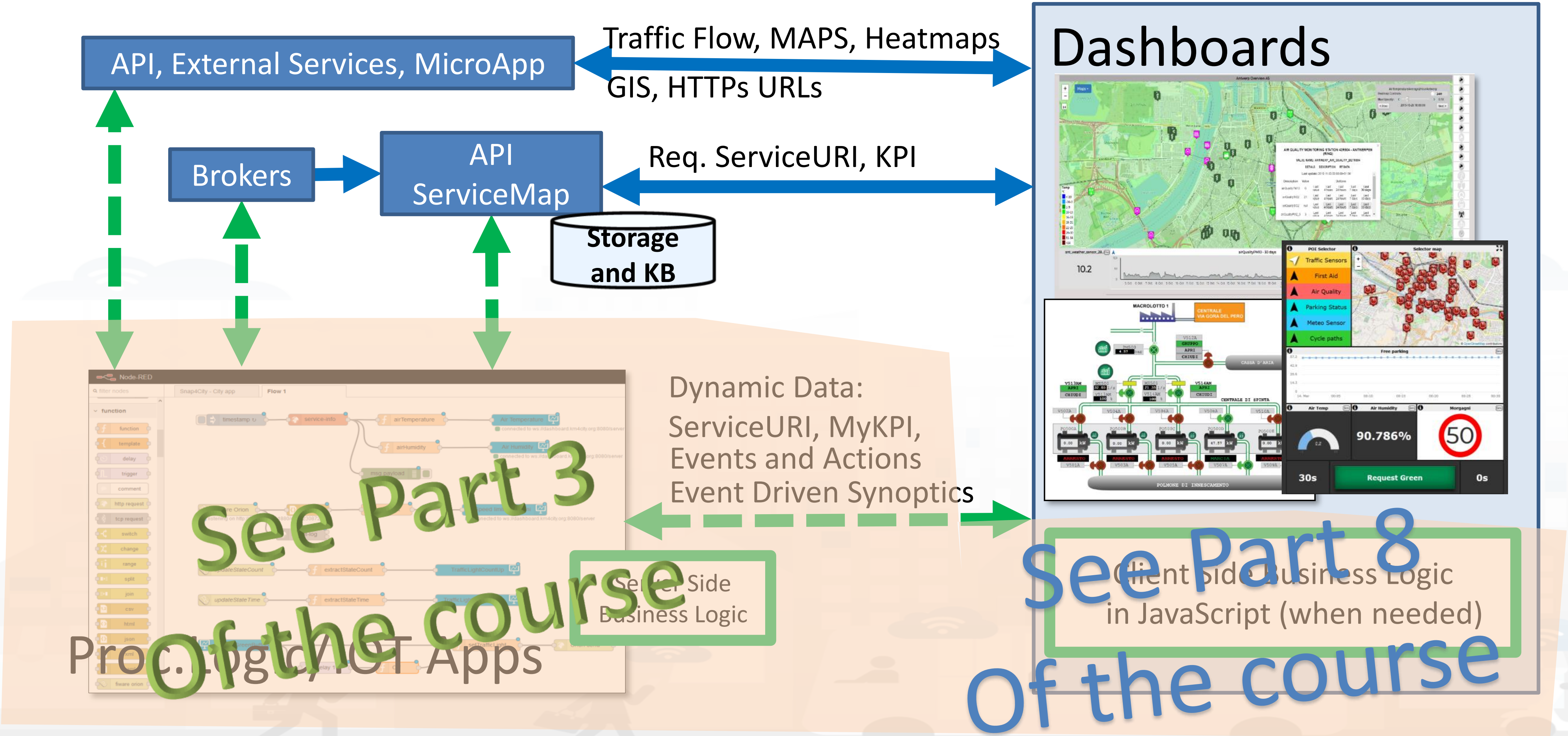
Client Side Business Logic

See part 8 of the Course

How the Dashboards exchange data

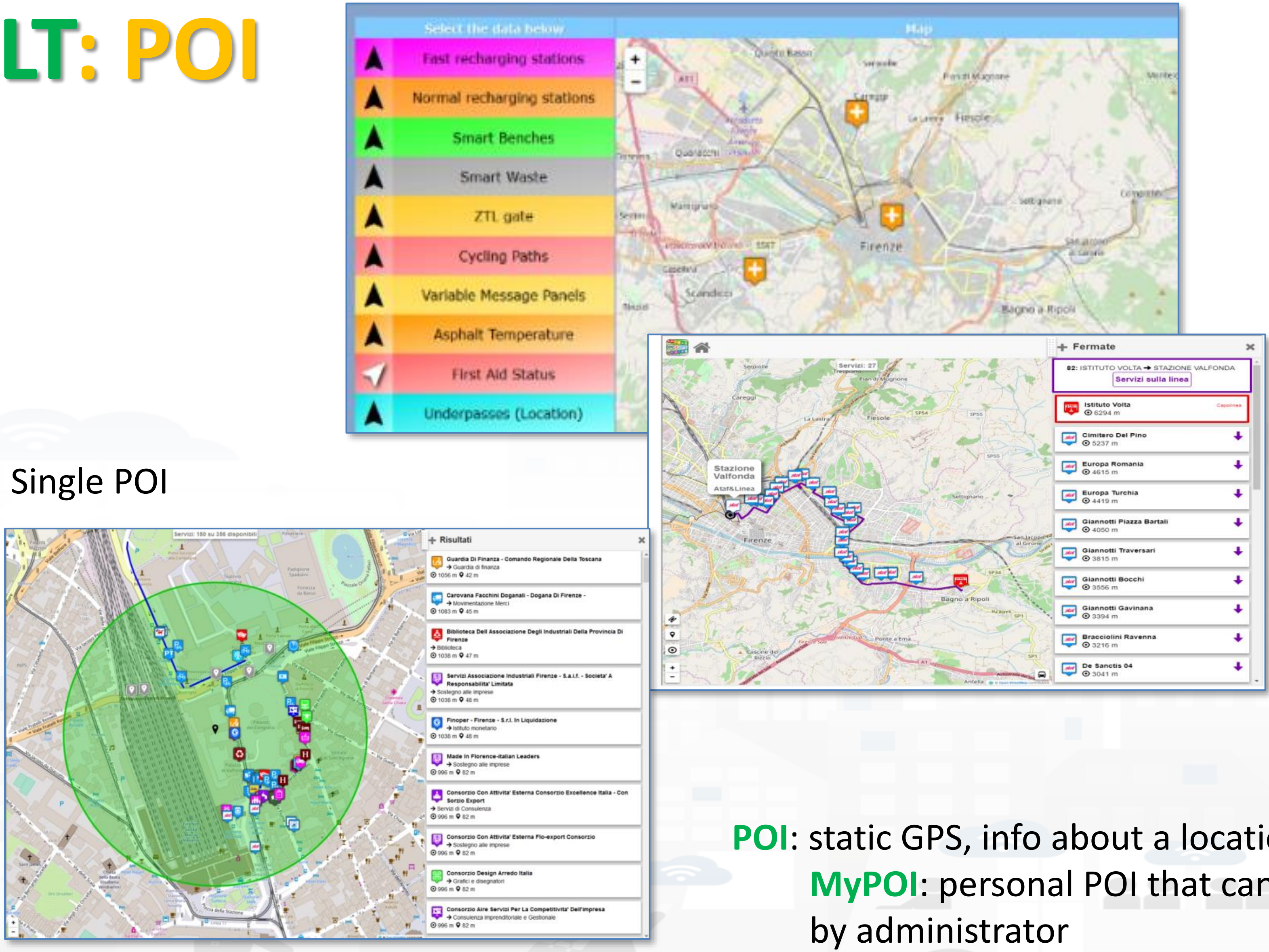

Third Parties APIs
API, External Services, MicroApp
Brokers
API ServiceMap
Storage and KB
Dashboards
Traffic Flow, MAPS, Heatmaps
GIS, HTTPs URLs
eq. ServiceURI, KPI
Dynamic Data:
ServiceURI, MyKPI,
Events and Actions
Event Driven Synoptics
Client Side Business Logic
in JavaScript (when needed)
Server Side
Business Logic
Proc.Logic/IOT Apps
Node-RED
POI Selector
Traffic Sensors
First Aid
Air Quality
Parking Status
Meteo Sensor
Cycle paths
Selector map
Free parking
Air Temp
Air Humidity
90.786%
50
30s
Request Green
MACROLOTTO 1
timestamp
service-info
airTemperature
airHumidity
Air Temperature
Air Humidity
msg.payload
Fiware Orion
json
get Limit
Speed limit Morgagni
event-log
updateStateCount
extractStateCount
TrafficLightCountUp
updateStateTime
extractStateTime
TrafficLightCountDown
Orion send

How the Dashboards exchange data


API, External Services, MicroApp
Traffic Flow, MAPS, Heatmaps
GIS, HTTPs URLs
Dashboards
Brokers
API ServiceMap
Req. ServiceURI, KPI
Storage and KB
Node-RED
Traffic Sensors
First Aid
Air Quality
Parking Status
Meteo Sensor
Cycle paths
90.786%
50
30s
Request Green
0s
Dynamic Data:
ServiceURI, MyKPI,
Events and Actions
Event Driven Synoptics
Server Side Business Logic
Client Side Business Logic in JavaScript (when needed)
Proc.Logic / IOT Apps
See Part 3 Of the course
See Part 8 Of the course

HLT: POI

High Level Types



Fermate

82: ISTITUTO VOLTA → STAZIONE VALFONDA
Servizi sulla linea

Istituto Volta — Capolinea — 6294 m
Cimitero Del Pino — 5237 m
Europa Romania — 4615 m
Europa Turchia — 4419 m
Giannotti Piazza Bartali — 4050 m
Giannotti Traversari — 3815 m
Giannotti Bocchi — 3556 m
Giannotti Gavinana — 3394 m
Bracciolini Ravenna — 3216 m
De Sanctis 04 — 3041 m

Single POI

Risultati

Guardia Di Finanza - Comando Regionale Della Toscana
→ Guardia di finanza
1056 m 42 m

Carovana Facchini Doganali - Dogana Di Firenze -
→ Movimentazione Merci
1083 m 45 m

Biblioteca Dell Associazione Degli Industriali Della Provincia Di Firenze
→ Biblioteca
1038 m 47 m

Servizi Associazione Industriali Firenze - S.a.i.f. - Societa' A Responsabilita' Limitata
→ Sostegno alle imprese
1038 m 48 m

Finoper - Firenze - S.r.l. In Liquidazione
→ Istituto monetario
1038 m 48 m

Made In Florence-italian Leaders
→ Sostegno alle imprese
996 m 82 m

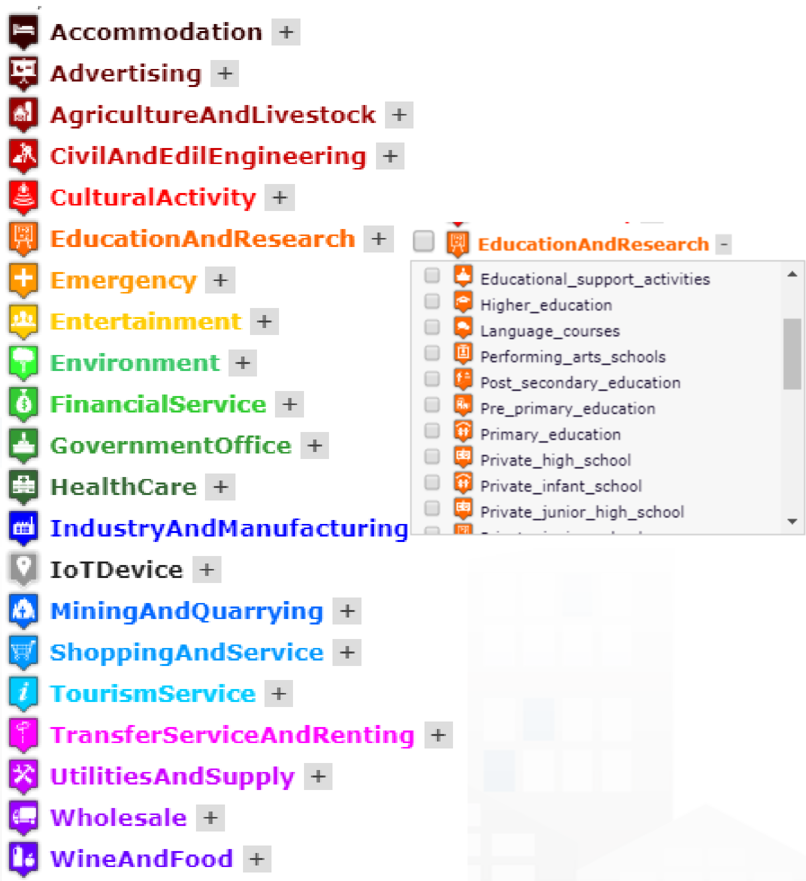
Consorzio Con Attivita' Esterna Consorzio Excellence Italia - Con Sorzio Export
→ Servizi di Consulenza
996 m 82 m

Consorzio Con Attivita' Esterna Flo-export Consorzio
→ Sostegno alle imprese
996 m 82 m

Consorzio Design Arredo Italia
→ Grafici e disegnatori
996 m 82 m

Consorzio Aire Servizi Per La Competitivita' Dell'impresa
→ Consulenza imprenditoriale e Gestionale
996 m 82 m

Categories



- Accommodation +
- Advertising +
- AgricultureAndLivestock +
- CivilAndEdilEngineering +
- CulturalActivity +
- EducationAndResearch +
- Emergency +
- Entertainment +
- Environment +
- FinancialService +
- GovernmentOffice +
- HealthCare +
- IndustryAndManufacturing
- IoTDevice +
- MiningAndQuarrying +
- ShoppingAndService +
- TourismService +
- TransferServiceAndRenting +
- UtilitiesAndSupply +
- Wholesale +
- WineAndFood +

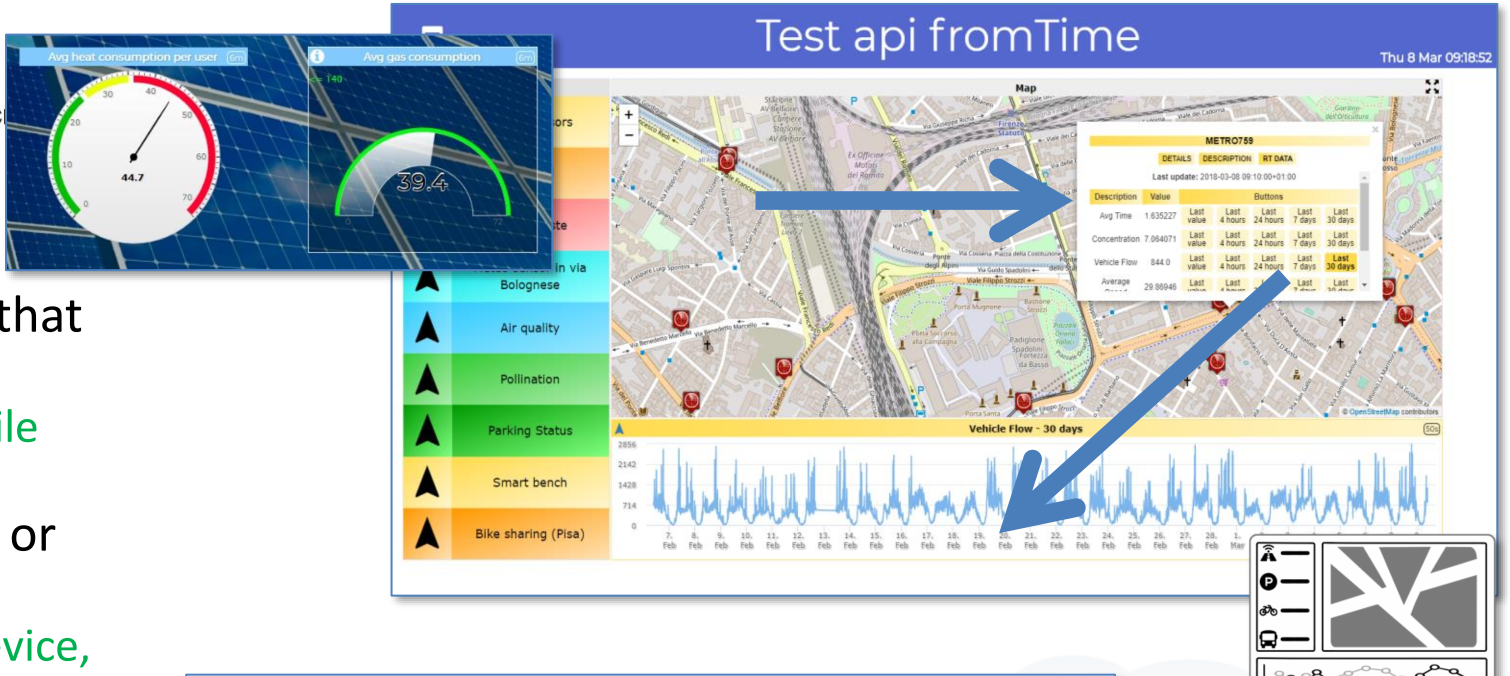
☐ EducationAndResearch -
- ☐ Educational_support_activities
- ☐ Higher_education
- ☐ Language_courses
- ☐ Performing_arts_schools
- ☐ Post_secondary_education
- ☐ Pre_primary_education
- ☐ Primary_education
- ☐ Private_high_school
- ☐ Private_infant_school
- ☐ Private_junior_high_school

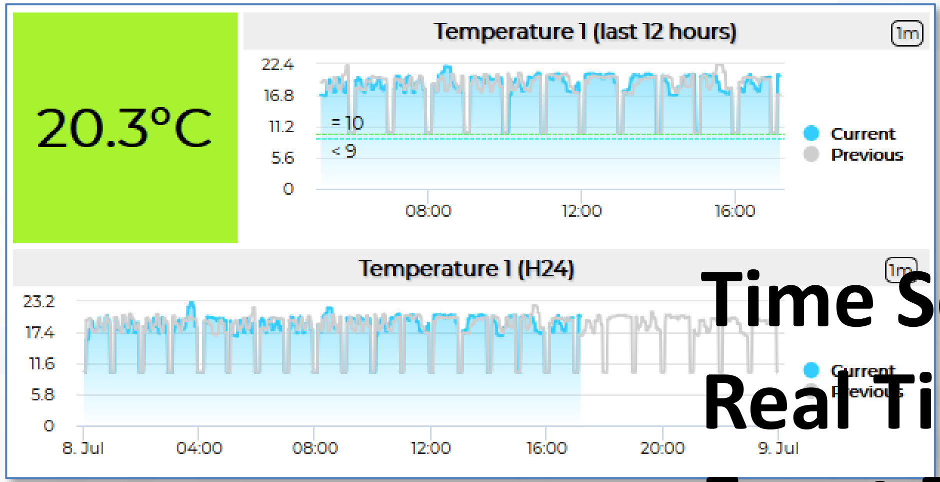
POI: static GPS, info about a location, (Classification),
MyPOI: personal POI that can be leveraged to standard POI by administrator

HLT: Entities

High Level Types

- **Data Models**: all devices sprunt from that model
  - Entity Model, IoT Device Model, Mobile Device Model, Data Table Model
- **Devices**: are instances of some model or sprunt from processes
  - Entity Instance, IoT Device, Mobile Device, Data Table Device, Sensor Device
- **Variables**, Sensor/sensor-actuator, :
  - Entity Variable, IoT Device Variable, Mobile Device Variable, Data Table Variable, Sensor, Sensor-Actuator
  - **Dashboard-IOT App:** messages from GUI to Business Logic on IoT App
- **MyKPI**: dynamic GPS, info, single variable, Time Series, (Classification)
  - **KPI**: former KPI model
  - **MyPersonaData/MyData**: safes in which specific personal data are saved.


Avg heat consumption per user
44.7
Avg gas consumption
39.4
Test api fromTime
Thu 8 Mar 09:18:52
Map
Bolognese
Air quality
Pollination
Parking Status
Smart bench
Bike sharing (Pisa)
METRO759
Vehicle Flow - 30 days

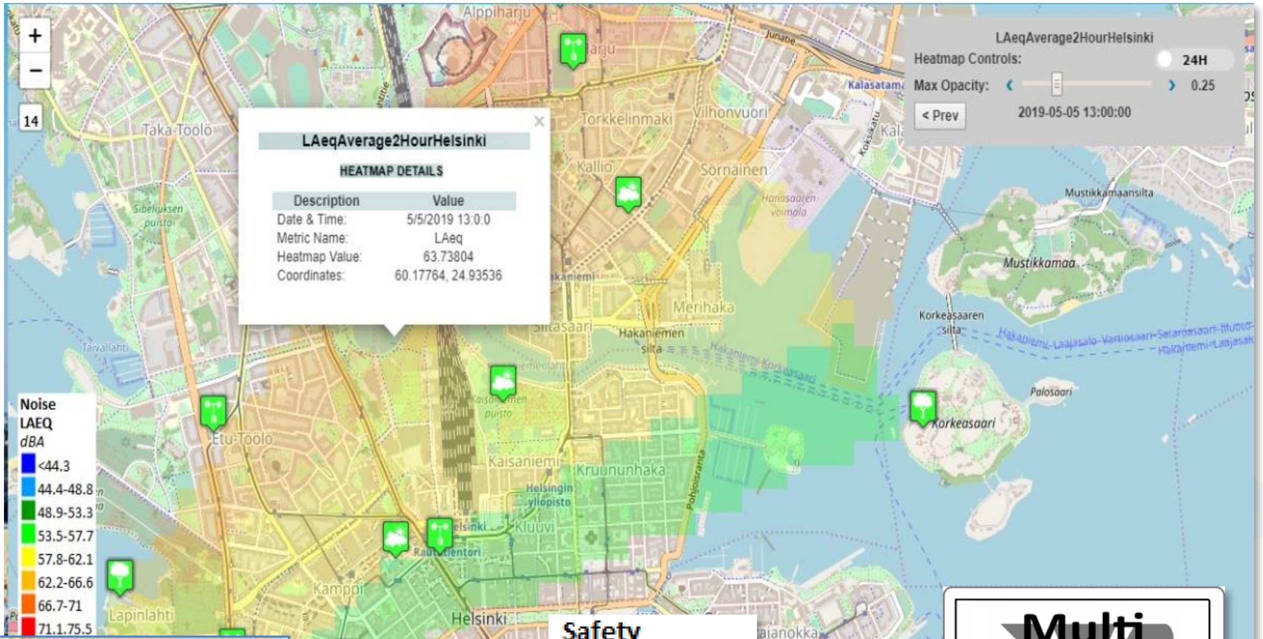


Time Series
Real Time
Event Driven
Historical Data

HLT: Heatmaps

High Level Types

Type: calibrated


+
−
14
Taka-Töölö
Etu-Töölö
Kamppi
Lapinlahti
Helsinki
Kruununhaka
Kallio
Sörnäinen
Merihaka
Hakaniemi
Kaisaniemi
Torkkelinmäki
Vilhonvuori
Mustikkamaa
Korkeasaari
Palosaari
Noise
LAEQ
dBA
<44.3
44.4-48.8
48.9-53.3
53.5-57.7
57.8-62.1
62.2-66.6
66.7-71
71.1.75.5

LAeqAverage2HourHelsinki
Heatmap Controls: 24H
Max Opacity: 0.25
< Prev 2019-05-05 13:00:00

LAeqAverage2HourHelsinki

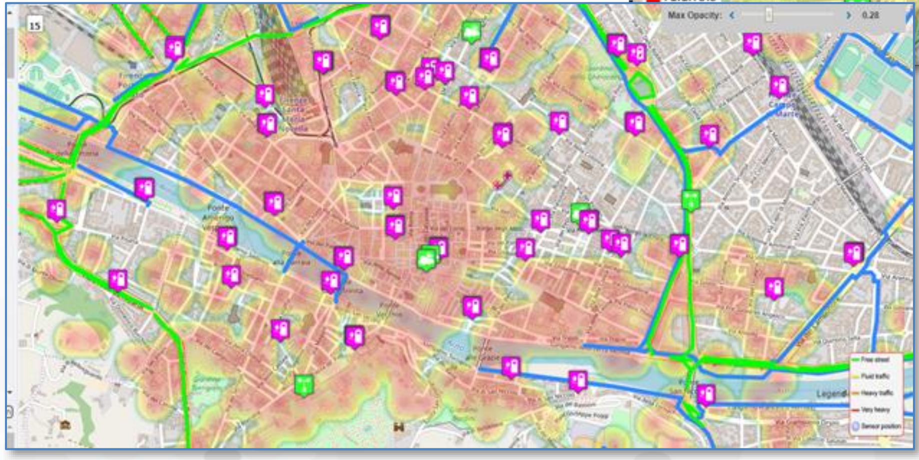
HEATMAP DETAILS

Description	Value
Date & Time:	5/5/2019 13:0:0
Metric Name:	LAeq
Heatmap Value:	63.73804
Coordinates:	60.17764, 24.93536

ColorMaps For Calibrated

EAQI
Index

🟩	1. Good
🟩	2. Fair
🟨	3. Moderate
🟧	4. Poor
🟥	5. Very poor


15
Max Opacity:
0.28
Legend

Safety on bike density

🟥	Very bad
🟧	Bad
🟧	Not so good
🟨	Neutral
🟩	Good
🟩	Very good
🟩	Excellent

Multi Data Map

Noise LAEQ
dBA

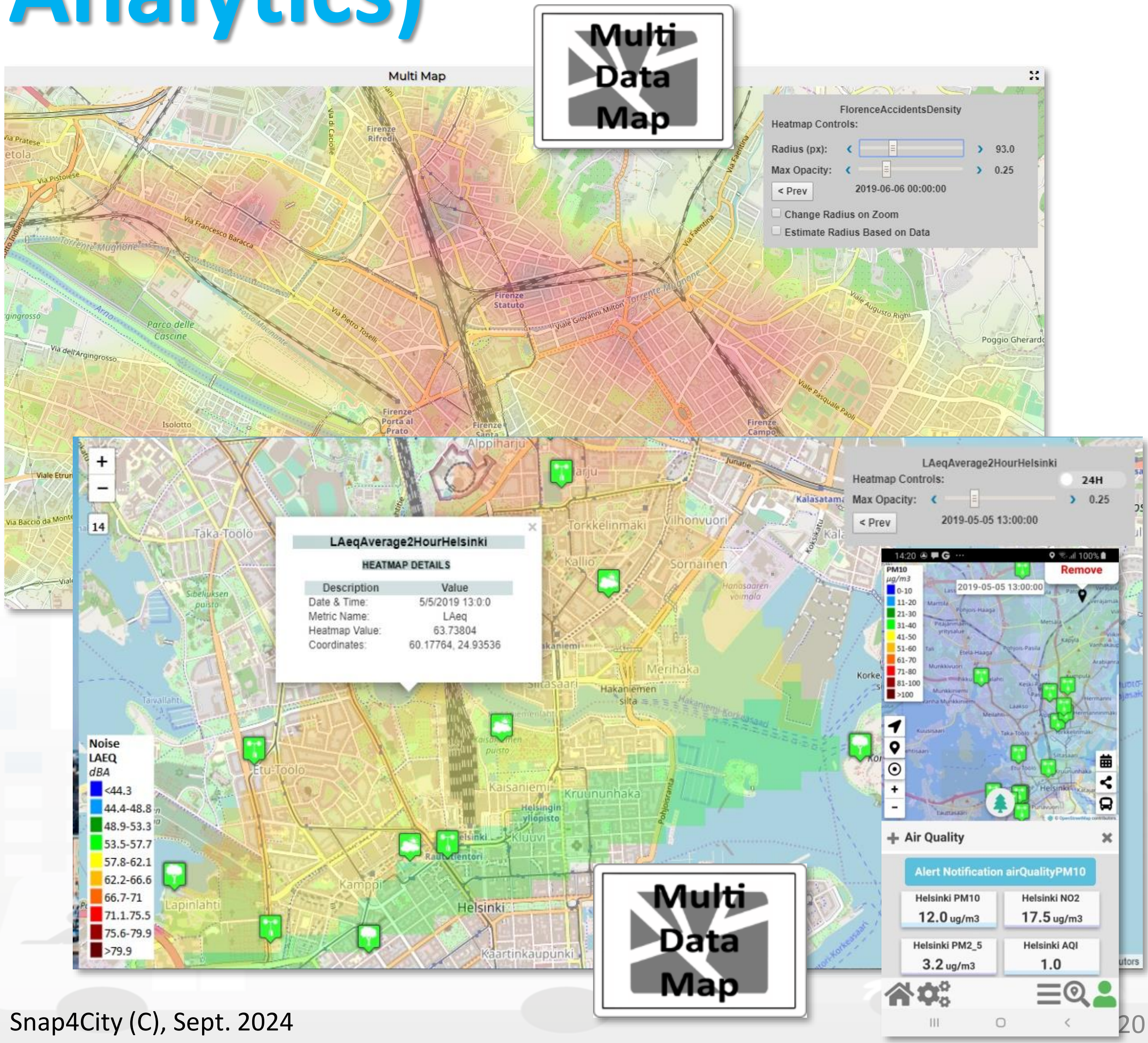
🟦	<44.3
🟦	44.4-48.8
🟩	48.9-53.3
🟩	53.5-57.7
🟨	57.8-62.1
🟧	62.2-66.6
🟧	66.7-71
🟥	71.1.75.5
🟥	75.6-79.9
🟫	>79.9

Type: Gaussian

Heatmaps (flexible Data Analytics)

- **Main:**
  - **Heatmaps are Time series**
- **A) Gaussian Heatmaps**
- **B) Calibrated heatmaps**
  - From KmxKm to 4x4 mt
  - PM10, PM2.5, SO2, NO2, Noise, NO, O3, Enfuser, **GRAL**,…. Copernicus
  - Any programmed ColorMap
  - Animations
  - Piking values in any place, values on their position.
  - On Web and Mobile App

TRAFAIR


Multi Data Map
Multi Map
Multi Data Map
Noise
LAEQ
dBA
<44.3
44.4-48.8
48.9-53.3
53.5-57.7
57.8-62.1
62.2-66.6
66.7-71
71.1.75.5
75.6-79.9
>79.9
PM10
μg/m3
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-100
>100
Remove

FlorenceAccidentsDensity
Heatmap Controls:
Radius (px): 93.0
Max Opacity: 0.25
< Prev 2019-06-06 00:00:00
☐ Change Radius on Zoom
☐ Estimate Radius Based on Data

LAeqAverage2HourHelsinki
Heatmap Controls: 24H
Max Opacity: 0.25
< Prev 2019-05-05 13:00:00

LAeqAverage2HourHelsinki

HEATMAP DETAILS

Description	Value
Date & Time:	5/5/2019 13:0:0
Metric Name:	LAeq
Heatmap Value:	63.73804
Coordinates:	60.17764, 24.93536

2019-05-05 13:00:00

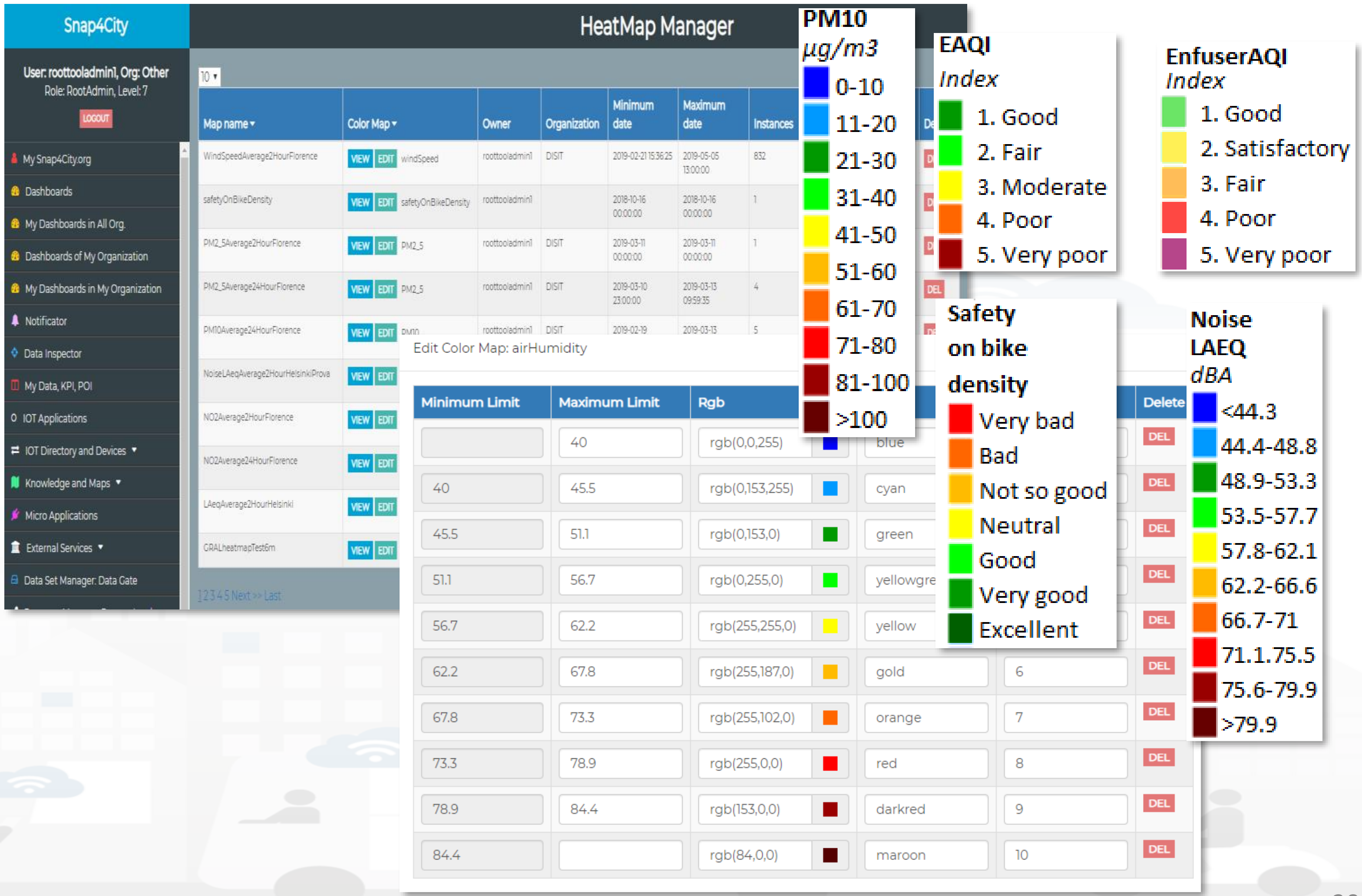
Air Quality

Alert Notification airQualityPM10

Helsinki PM10	Helsinki NO2
12.0 ug/m3	17.5 ug/m3
Helsinki PM2_5	**Helsinki AQI**
3.2 ug/m3	1.0

HeatMap Manager: managing, colormaps

- Historical data, time series
- Huge amount of data and points per heatmap
- Data coming from: sensors, IOT App, Copernicus Satellite, …
- Multiple formats
- High speed computing
- WMS (GIS) compliant
- Animations
- Color maps: from few (5) to dense color scale (1000)
- Picking any place
- Smart City API to get them
- MicroServices for IOT Applications


Snap4City
HeatMap Manager
User: roottooladmin1, Org: Other
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
Notificator
Data Inspector
My Data, KPI, POI
IOT Applications
IOT Directory and Devices
Knowledge and Maps
Micro Applications
External Services
Data Set Manager: Data Gate
10
1 2 3 4 5 Next >> Last

Map name	Color Map	Owner	Organization	Minimum date	Maximum date	Instances
WindSpeedAverage2HourFlorence	VIEW EDIT windSpeed	roottooladmin1	DISIT	2019-02-21 15:36:25	2019-05-05 13:00:00	832
safetyOnBikeDensity	VIEW EDIT safetyOnBikeDensity	roottooladmin1		2018-10-16 00:00:00	2018-10-16 00:00:00	1
PM2_5Average2HourFlorence	VIEW EDIT PM2_5	roottooladmin1	DISIT	2019-03-11 00:00:00	2019-03-11 00:00:00	1
PM2_5Average24HourFlorence	VIEW EDIT PM2_5	roottooladmin1	DISIT	2019-03-10 23:00:00	2019-03-13 09:59:35	4
PM10Average24HourFlorence	VIEW EDIT PM10	roottooladmin1	DISIT	2019-02-19	2019-03-13	5
NoiseLAeqAverage2HourHelsinkiProva	VIEW EDIT					
NO2Average2HourFlorence	VIEW EDIT					
NO2Average24HourFlorence	VIEW EDIT					
LAeqAverage2HourHelsinki	VIEW EDIT					
GRALheatmapTest6m	VIEW EDIT					

Edit Color Map: airHumidity

Minimum Limit	Maximum Limit	Rgb			Delete
	40	rgb(0,0,255)	blue		DEL
40	45.5	rgb(0,153,255)	cyan		DEL
45.5	51.1	rgb(0,153,0)	green		DEL
51.1	56.7	rgb(0,255,0)	yellowgre		DEL
56.7	62.2	rgb(255,255,0)	yellow		DEL
62.2	67.8	rgb(255,187,0)	gold	6	DEL
67.8	73.3	rgb(255,102,0)	orange	7	DEL
73.3	78.9	rgb(255,0,0)	red	8	DEL
78.9	84.4	rgb(153,0,0)	darkred	9	DEL
84.4		rgb(84,0,0)	maroon	10	DEL

PM10
µg/m3
🟦 0-10
🟦 11-20
🟩 21-30
🟩 31-40
🟨 41-50
🟧 51-60
🟧 61-70
🟥 71-80
🟥 81-100
🟫 >100

EAQI
Index
🟩 1. Good
🟩 2. Fair
🟨 3. Moderate
🟧 4. Poor
🟥 5. Very poor

EnfuserAQI
Index
🟩 1. Good
🟨 2. Satisfactory
🟧 3. Fair
🟥 4. Poor
🟪 5. Very poor

Safety on bike density
🟥 Very bad
🟧 Bad
🟧 Not so good
🟨 Neutral
🟩 Good
🟩 Very good
🟩 Excellent

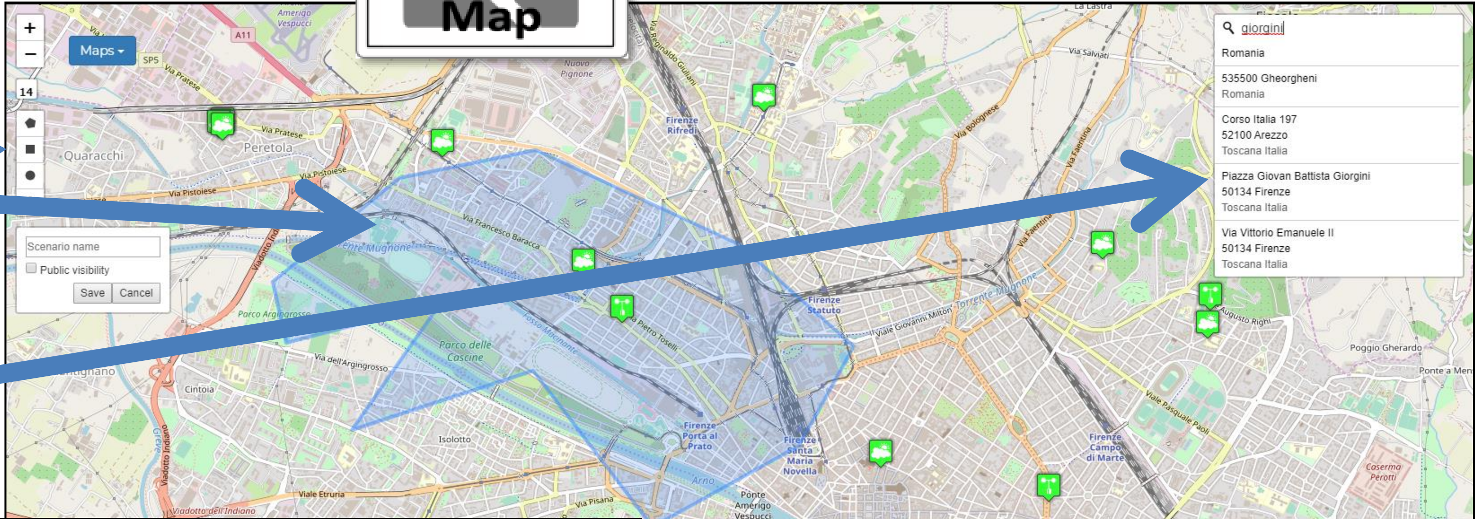
Noise LAEQ
dBA
🟦 <44.3
🟦 44.4-48.8
🟩 48.9-53.3
🟩 53.5-57.7
🟨 57.8-62.1
🟧 62.2-66.6
🟧 66.7-71
🟥 71.1.75.5
🟥 75.6-79.9
🟫 >79.9

Multi Data Map

HLT: Special Tools

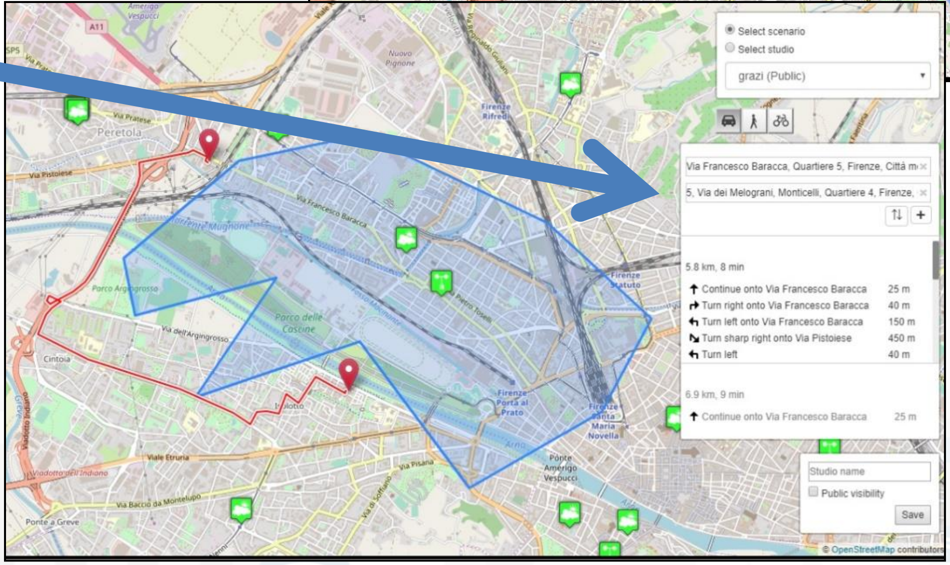
High Level Types

- **Scenarious**
  - Full text search of roads and geolocations.
  - Multiple areas, days
  - Global map of OSM
- **What-IF**
  - Conditional routing
  - Dynamic routing
  - Multiple paths
- **Traffic Flows**



Romania
535500 Gheorgheni
Romania
Corso Italia 197
52100 Arezzo
Toscana Italia
Piazza Giovan Battista Giorgini
50134 Firenze
Toscana Italia
Via Vittorio Emanuele II
50134 Firenze
Toscana Italia

Scenario name
☐ Public visibility
Save Cancel



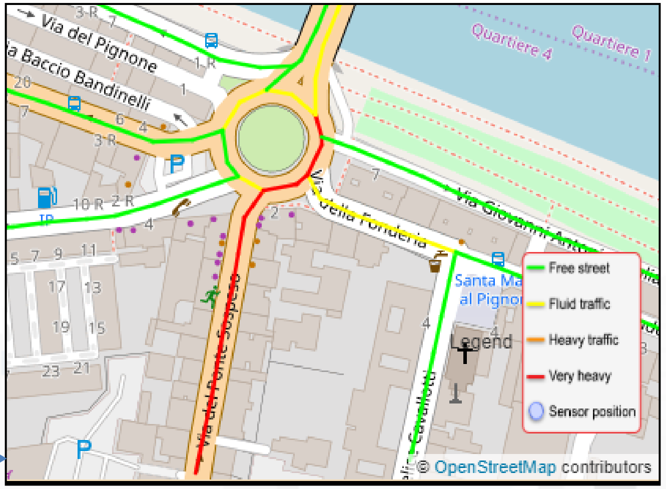
● Select scenario
○ Select studio
grazi (Public)

Via Francesco Baracca, Quartiere 5, Firenze, Città m
5, Via dei Melograni, Monticelli, Quartiere 4, Firenze,

5.8 km, 8 min
Continue onto Via Francesco Baracca 25 m
Turn right onto Via Francesco Baracca 40 m
Turn left onto Via Francesco Baracca 150 m
Turn sharp right onto Via Pistoiese 450 m
Turn left 40 m

6.9 km, 9 min
Continue onto Via Francesco Baracca 25 m

Studio name
☐ Public visibility
Save



Legend
- Free street
- Fluid traffic
- Heavy traffic
- Very heavy
- Sensor position

© OpenStreetMap contributors

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjE5MA==

TOP

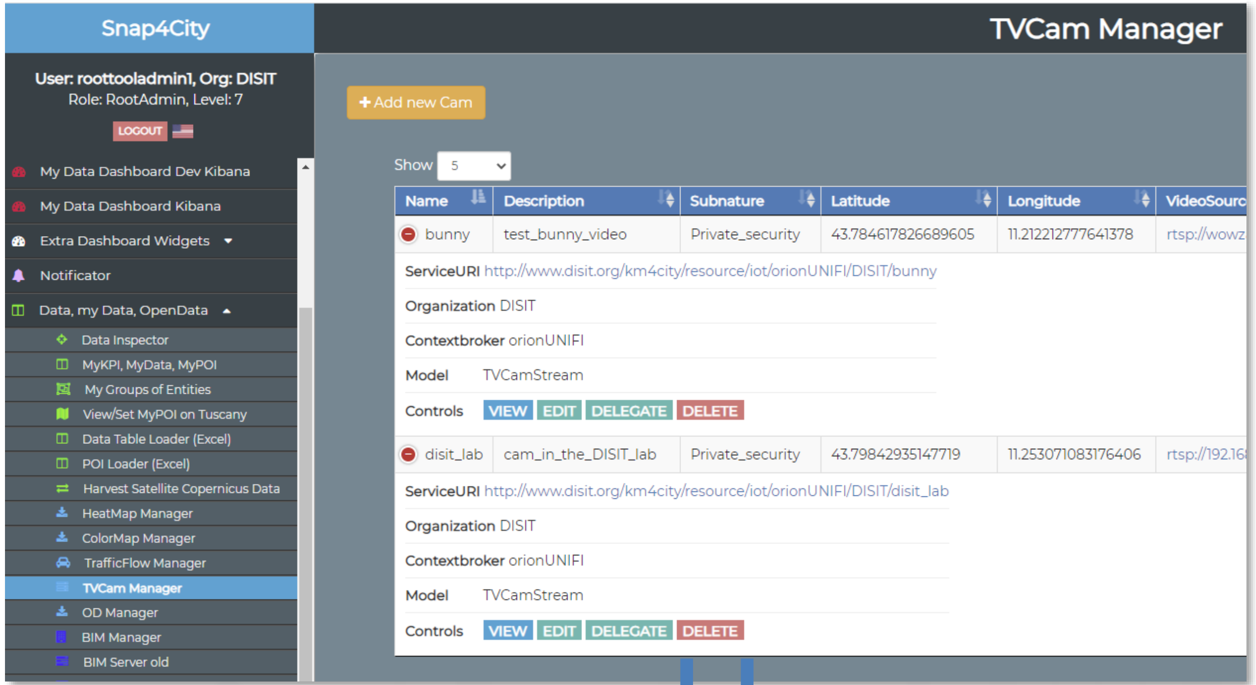
Video Streams from TV Cameras

Settings for RootAdmin Only

TV Cameras

- **Two main modalities**
  - **Image frames**, periodically updated
    - Format: JPG
    - Protocols: http/https (with and without autentication)
    - Via **IPCAM Service**
  - **Video Stream**
    - Formats: MP4, H264,
    - Protocol: RTSP, ONVIF (with and without autentication)
    - Via **TVCam Manager**
      - ***based on Kurento, TURN, WebRTC***

TVCam Manager



Snap4City

TVCam Manager

User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT

- My Data Dashboard Dev Kibana
- My Data Dashboard Kibana
- Extra Dashboard Widgets
- Notificator
- Data, my Data, OpenData
  - Data Inspector
  - MyKPI, MyData, MyPOI
  - My Groups of Entities
  - View/Set MyPOI on Tuscany
  - Data Table Loader (Excel)
  - POI Loader (Excel)
  - Harvest Satellite Copernicus Data
  - HeatMap Manager
  - ColorMap Manager
  - TrafficFlow Manager
  - TVCam Manager
  - OD Manager
  - BIM Manager
  - BIM Server old

+ Add new Cam

Show 5

Name	Description	Subnature	Latitude	Longitude	VideoSourc
bunny	test_bunny_video	Private_security	43.784617826689605	11.212212777641378	rtsp://wowz

ServiceURI http://www.disit.org/km4city/resource/iot/orionUNIFI/DISIT/bunny
Organization DISIT
Contextbroker orionUNIFI
Model TVCamStream
Controls VIEW EDIT DELEGATE DELETE

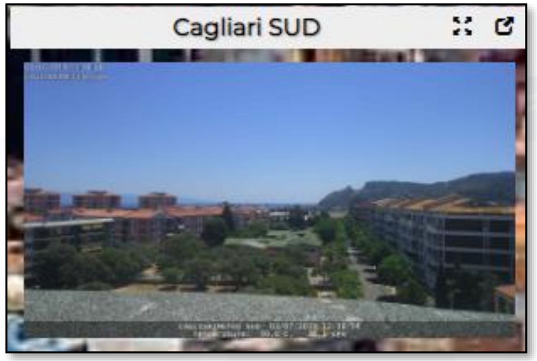
Name	Description	Subnature	Latitude	Longitude	VideoSourc
disit_lab	cam_in_the_DISIT_lab	Private_security	43.79842935147719	11.253071083176406	rtsp://192.16

ServiceURI http://www.disit.org/km4city/resource/iot/orionUNIFI/DISIT/disit_lab
Organization DISIT
Contextbroker orionUNIFI
Model TVCamStream
Controls VIEW EDIT DELEGATE DELETE

RTSP
ONVIF

TVCam Streaming Servers

WebRTC



Video Device Model: TVCamStream

Variable		example
dateObserved	Timestamp	
name	ID camera	bunny
description	Text	test_bunny_video
videoSource	Call	rtsp://wowzaec2demo.streamlock.net/vod/mp4:BigBuckBunny_115k.mp4
…. custom		It is possible to create other models extending this kind of model

In addition you have:

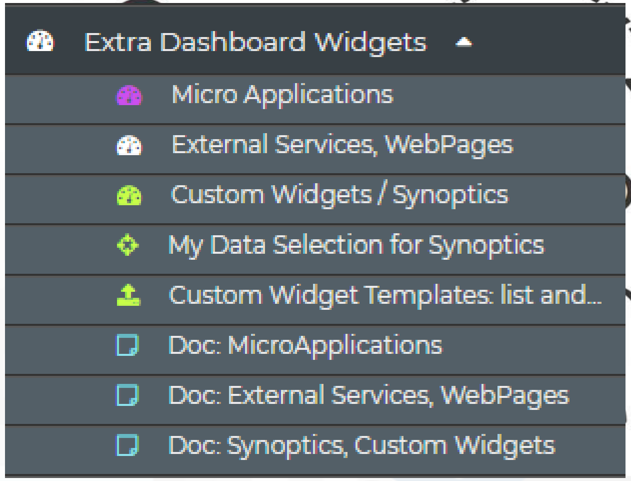
- Model: TVCamStream
    - ContextBroker: selected in the model
- ServiceURI (automatically assigned)
- Nature and Subnature: ……..
- GPS Lat, Long: you can decide at the instance

Optional:

- Username: ……..
- Password: ……...

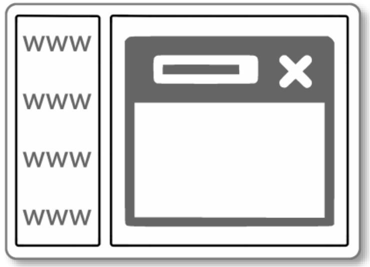
TOP

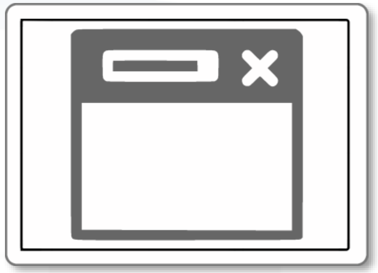
External Services (integration of) your or third-party web pages

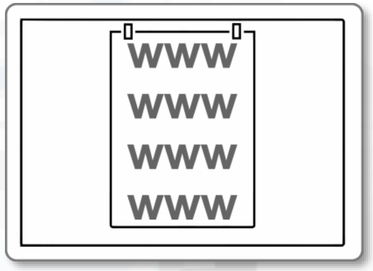

Extra Dashboard Widgets
Micro Applications
External Services, WebPages
Custom Widgets / Synoptics
My Data Selection for Synoptics
Custom Widget Templates: list and...
Doc: MicroApplications
Doc: External Services, WebPages
Doc: Synoptics, Custom Widgets

Dashboard Usage and Recipes

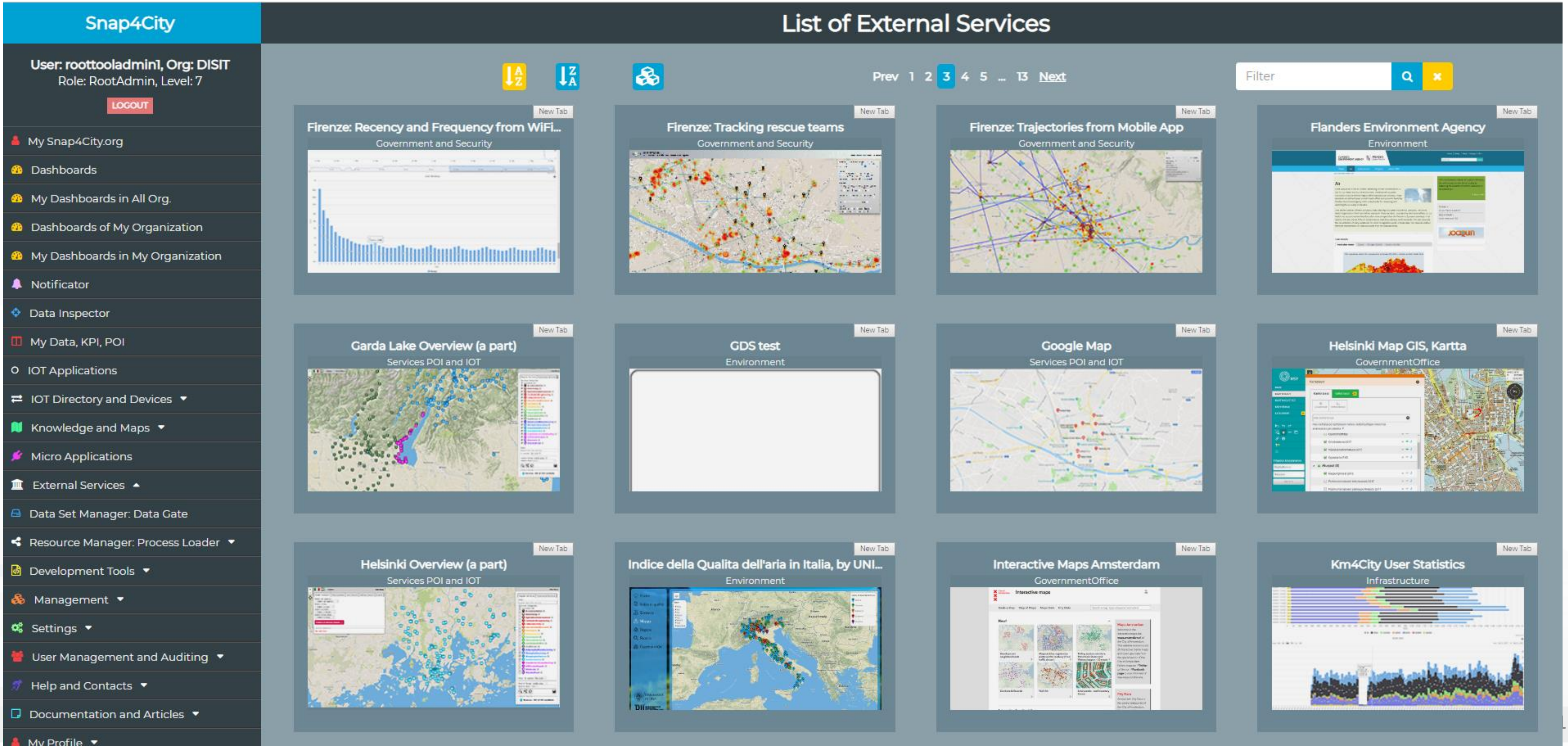
- https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MTc3NA==
- **External Content Widget (optional zoom feature):**
  - **External Services**: Web Pages, web sites, web tools (registered or not)
    - **Tools**: Twitter Vigilance, Origin Destination Matrices, WiFi Tool, …
    - **GIS & MAPs**: ServiceMap, ArcGIS, ServiceMap3D, GoogleMap, etc. etc.
    - **TV CAM** Proxy adapted, VideoCam Streams, …
  - **MicroApplications**
    - More than 300 micro applications based on Snap4City and Km4City Tech.
  - **Synoptics and Custom widgets**
  - **Snap4City pages**: Form discussion, help desk, user manual, …
  - **Snap4City Dashboards** for nested views, MultiDashboards views
    - Ultra HD screens, UHD or even wider….
- **Selector WEB**
  - Anything that can be shown on External Content WG, one or more







External Services (registered)



Snap4City

List of External Services

User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7

LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
Notificator
Data Inspector
My Data, KPI, POI
IOT Applications
IOT Directory and Devices
Knowledge and Maps
Micro Applications
External Services
Data Set Manager: Data Gate
Resource Manager: Process Loader
Development Tools
Management
Settings
User Management and Auditing
Help and Contacts
Documentation and Articles
My Profile
Prev 1 2 3 4 5 ... 13 Next
Filter
New Tab

Firenze: Recency and Frequency from WiFi...
Government and Security

Firenze: Tracking rescue teams
Government and Security

Firenze: Trajectories from Mobile App
Government and Security

Flanders Environment Agency
Environment

Garda Lake Overview (a part)
Services POI and IOT

GDS test
Environment

Google Map
Services POI and IOT

Helsinki Map GIS, Kartta
GovernmentOffice

Helsinki Overview (a part)
Services POI and IOT

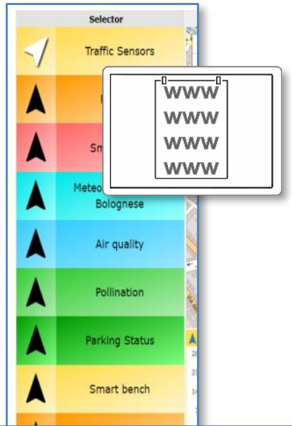
Indice della Qualita dell'aria in Italia, by UNI...
Environment

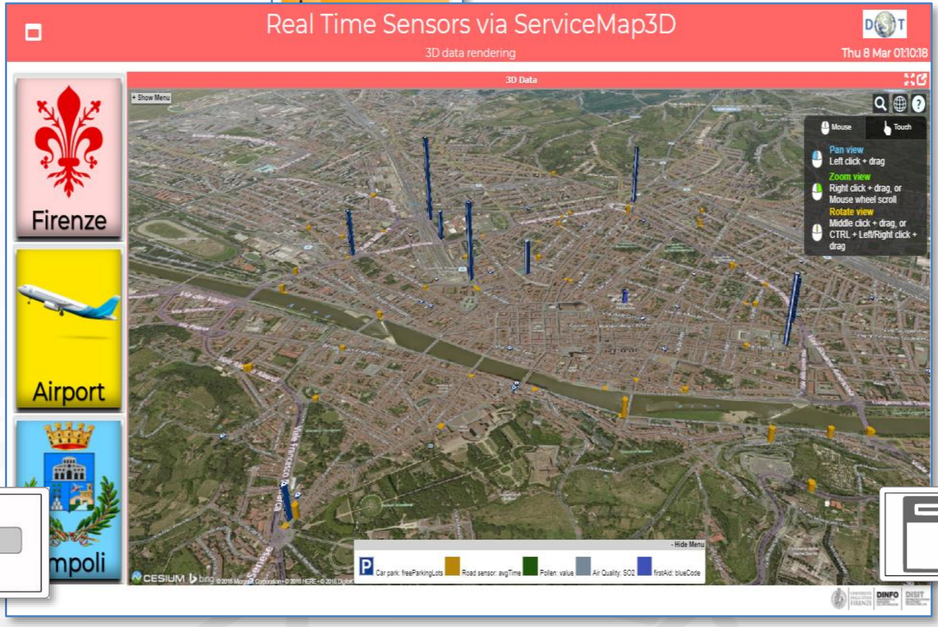
Interactive Maps Amsterdam
GovernmentOffice

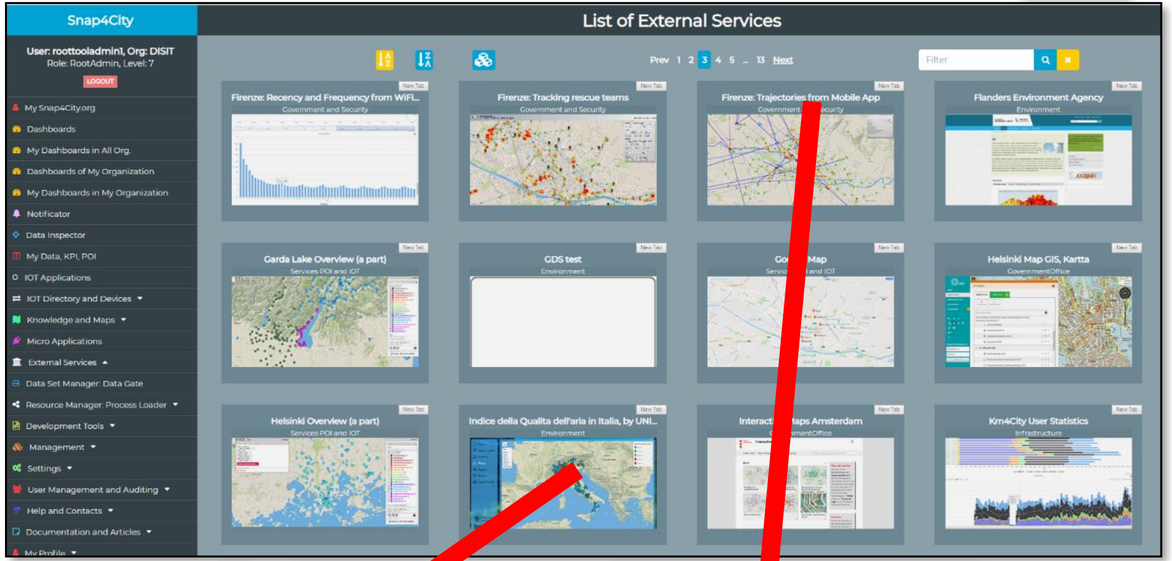
Km4City User Statistics
Infrastructure

HLT: External Services

High Level Types


Selector
Traffic Sensors
Meteo
Bolognese
Air quality
Pollination
Parking Status
Smart bench
WWW
WWW
WWW
WWW


Real Time Sensors via ServiceMap3D
3D data rendering
Thu 8 Mar 01:10:18
3D Data
Firenze
Airport
mpoli
Pan view
Left click + drag
Zoom view
Right click + drag, or Mouse wheel scroll
Rotate view
Middle click + drag, or CTRL + Left/Right click + drag
Car park: freeParkingLots
Road sensor: avgTime
Pollen: value
Air Quality: SO2
firstAid: blueCode


Snap4City
List of External Services
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
Notificator
Data Inspector
My Data, KPI, POI
IOT Applications
IOT Directory and Devices
Knowledge and Maps
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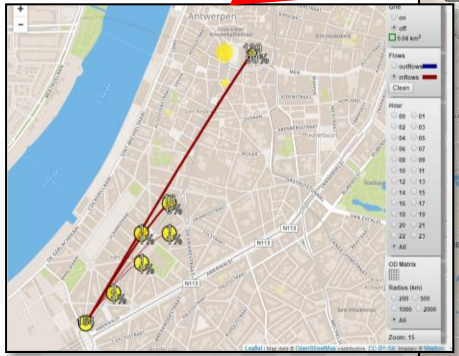
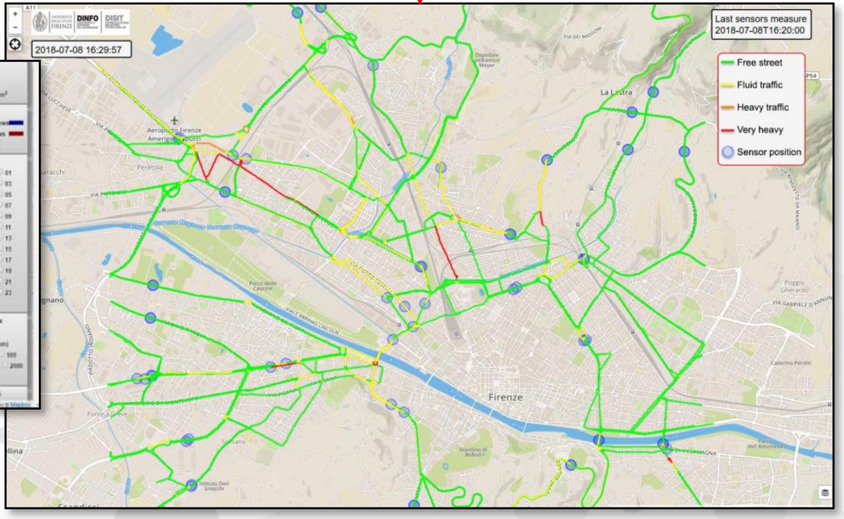
Resource Manager: Process Loader
Development Tools
Management
Settings
User Management and Auditing
Help and Contacts
Documentation and Articles
My Profile
Prev 1 2 3 4 5 ... 13 Next
Filter
Firenze: Recency and Frequency from WiFi...
Government and Security
Firenze: Tracking rescue teams
Government and Security
Firenze: Trajectories from Mobile App
Flanders Environment Agency
Environment
Garda Lake Overview (a part)
Services POI and IOT
GDS test
Environment
Map
Helsinki Map GIS, Kartta
GovernmentOffice
Helsinki Overview (a part)
Services POI and IOT
Indice della Qualita dell'aria in Italia, by UNI...
Environment
Maps Amsterdam
Km4City User Statistics
Infrastructure
New Tab

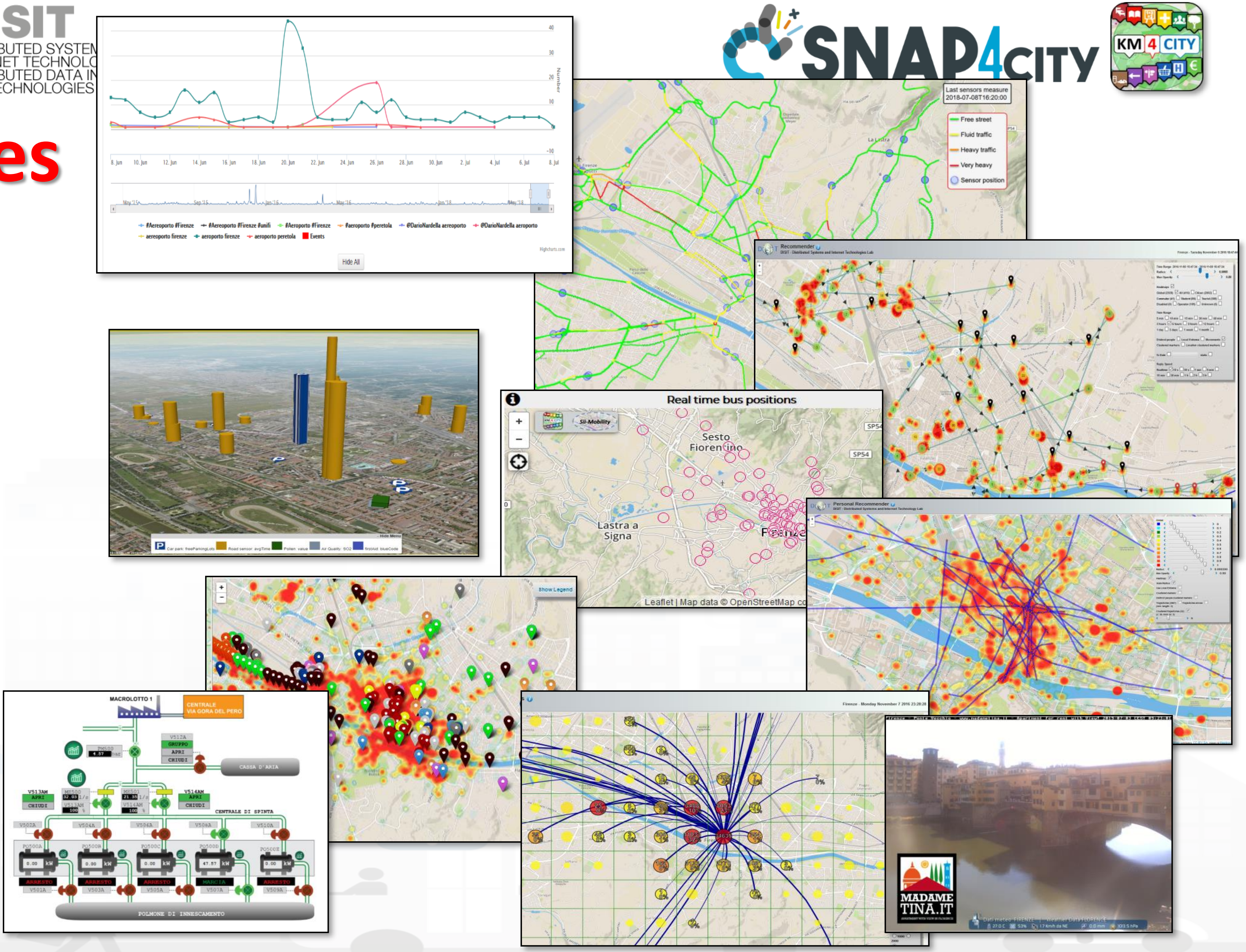



2018-07-08 16:29:57
Last sensors measure 2018-07-08T16:20:00
Free street
Fluid traffic
Heavy traffic
Very heavy
Sensor position
Firenze

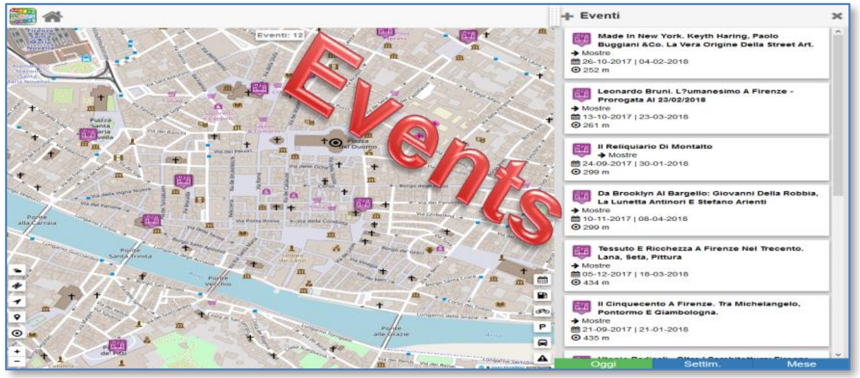
External Services

Nature

- **Twitter Vigilance:**
  - Daily and real time
  - Volume and sentiment analysis
- Services on Maps, GIS, ArcGIS
- Real time sensors on 3D
- Web HTML5 Applications
- Origin Destination Matrix
- Real Time fleets
- Routing, Multimodal tools
- **IPCAM connector**
- **Synoptics**
- **Third party tools!**
- …..
- **Other tools also internal**
  - Traffic Flow Reconstruction
  - User behaviour monitoring
  - Tracking tools
  - Heatmaps tools
  - Trajectories tools


Hide All
Last sensors measure 2018-07-08T16:20:00
Free street
Fluid traffic
Heavy traffic
Very heavy
Sensor position
Recommender
Real time bus positions
Sesto Fiorentino
Lastra a Signa
Firenze
Leaflet | Map data © OpenStreetMap
Personal Recommender
Show Legend
MACROLOTTO 1
CENTRALE VIA GORA DEL PERO
CASSA D'ARIA
CENTRALE DI SPINTA
POLMONE DI INNESCAMENTO
MADAME TINA.IT

HTML5 MicroApplications


Events
Eventi
Eventi: 12
Oggi
Settim.
Mese

Made In New York. Keyth Haring, Paolo Buggiani &Co. La Vera Origine Della Street Art.
→ Mostre
26-10-2017 | 04-02-2018
252 m

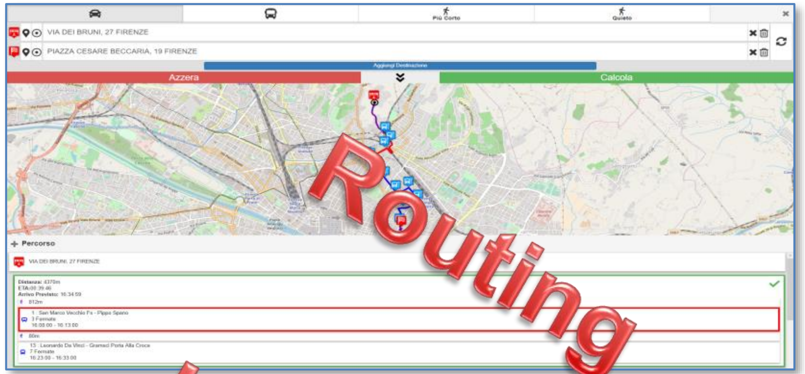
Leonardo Bruni. L?umanesimo A Firenze - Prorogata Al 23/02/2018
→ Mostre
13-10-2017 | 23-03-2018
261 m

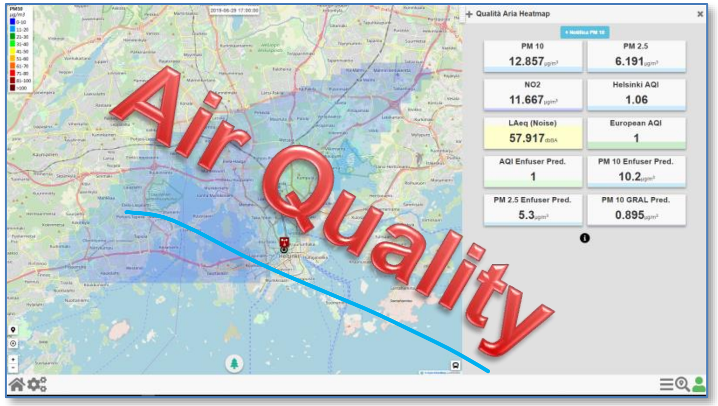
Il Reliquiario Di Montalto
→ Mostre
24-09-2017 | 30-01-2018
299 m

Da Brooklyn Al Bargello: Giovanni Della Robbia, La Lunetta Antinori E Stefano Arienti
→ Mostre
10-11-2017 | 08-04-2018
299 m

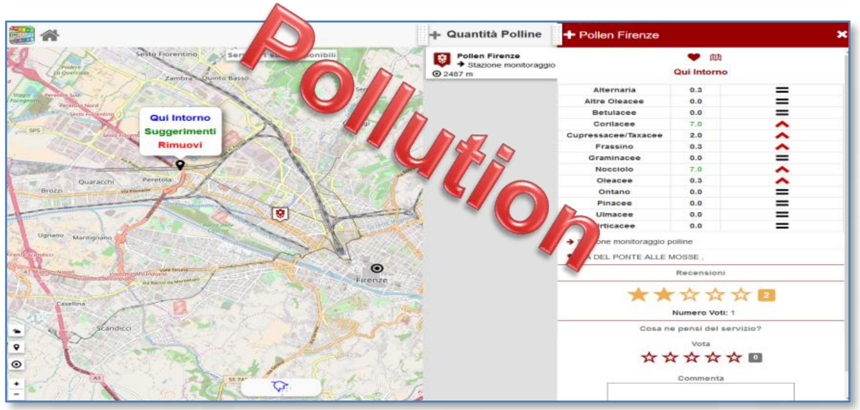
Tessuto E Ricchezza A Firenze Nel Trecento. Lana, Seta, Pittura
→ Mostre
05-12-2017 | 18-03-2018
434 m

Il Cinquecento A Firenze. Tra Michelangelo, Pontormo E Giambologna.
→ Mostre
21-09-2017 | 21-01-2018
435 m

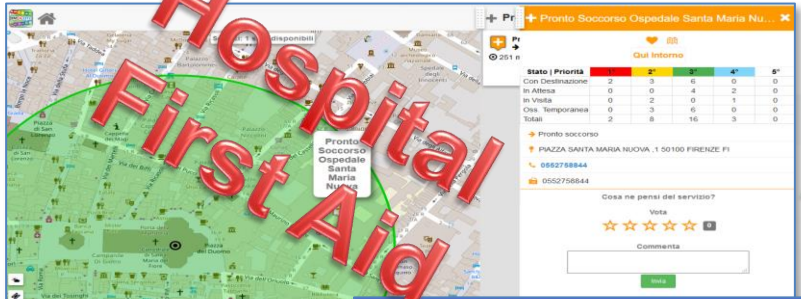

Routing
VIA DEI BRUNI, 27 FIRENZE
PIAZZA CESARE BECCARIA, 19 FIRENZE
Azzera
Calcola
Percorso


Air Quality
Qualità Aria Heatmap

PM 10	PM 2.5
12.857	6.191
NO2	Helsinki AQI
11.667	1.06
LAeq (Noise)	European AQI
57.917	1
AQI Enfuser Pred.	PM 10 Enfuser Pred.
1	10.2
PM 2.5 Enfuser Pred.	PM 10 GRAL Pred.
5.3	0.895

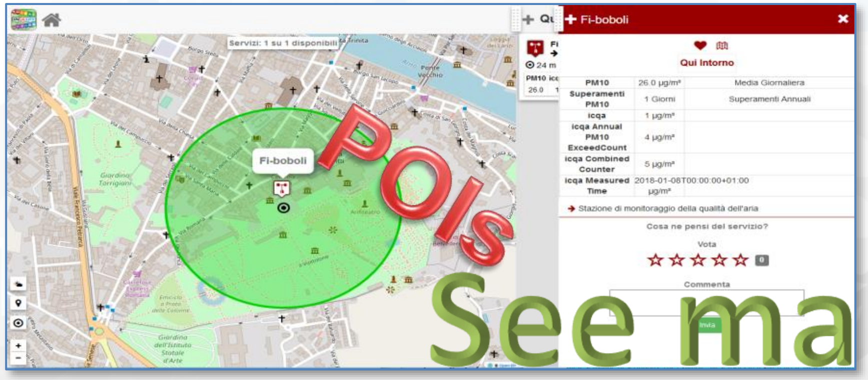

Pollution
Quantità Polline
Pollen Firenze
Qui Intorno
Suggerimenti
Rimuovi
Recensioni
Numero Voti: 1
Cosa ne pensi del servizio?
Vota
Commenta

Alternaria	0.3	
Altre Oleacee	0.0	
Betulacee	0.0	
Corilacee	7.0	
Cupressacee/Taxacee	2.0	
Frassino	0.3	
Graminacee	0.0	
Nocciolo	7.0	
Oleacee	0.3	
Ontano	0.0	
Pinacee	0.0	
Ulmacee	0.0	
Urticacee	0.0	


Hospital
First Aid
Pronto Soccorso Ospedale Santa Maria Nuova
Qui Intorno
Cosa ne pensi del servizio?
Vota
Commenta
Invia

Stato | Priorità	1°	2°	3°	4°	5°
Con Destinazione	2	3	6	0	0
In Attesa	0	0	4	2	0
In Visita	0	2	0	1	0
Oss. Temporanea	0	3	6	0	0
Totali	2	8	16	3	0

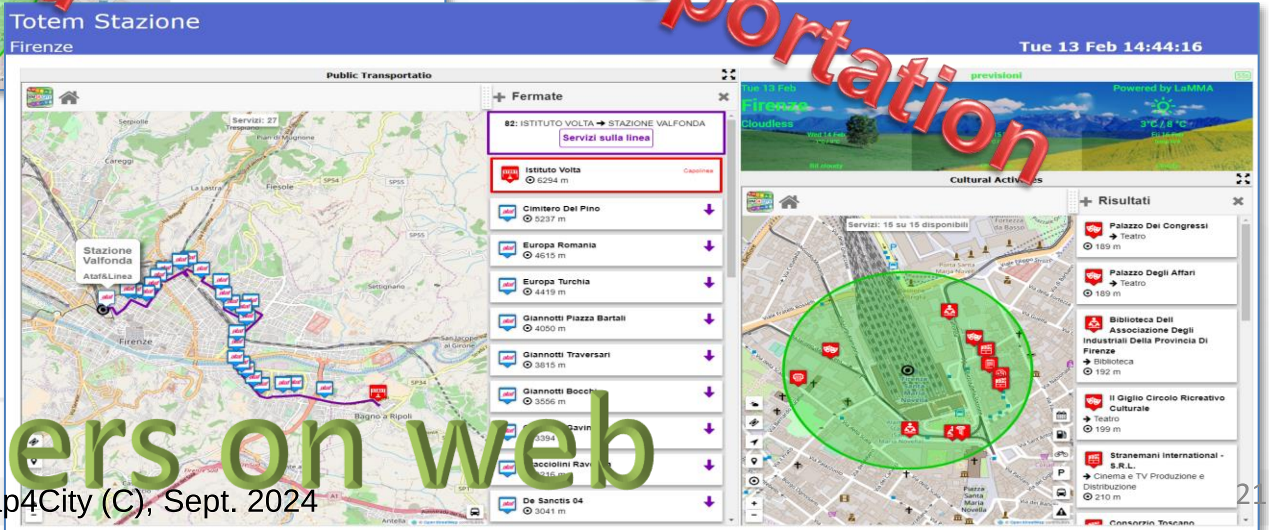
→ Pronto soccorso
PIAZZA SANTA MARIA NUOVA ,1 50100 FIRENZE FI
0552758844
0552758844


POIs
Fi-boboli
Qui Intorno
Cosa ne pensi del servizio?
Vota
Commenta

PM10	26.0 µg/m³	Media Giornaliera
Superamenti PM10	1 Giorni	Superamenti Annuali
icqa	1 µg/m³	
icqa Annual PM10 ExceedCount	4 µg/m³	
icqa Combined Counter	5 µg/m³	
icqa Measured Time	2018-01-08T00:00:00+01:00 µg/m³	

→ Stazione di monitoraggio della qualità dell'aria

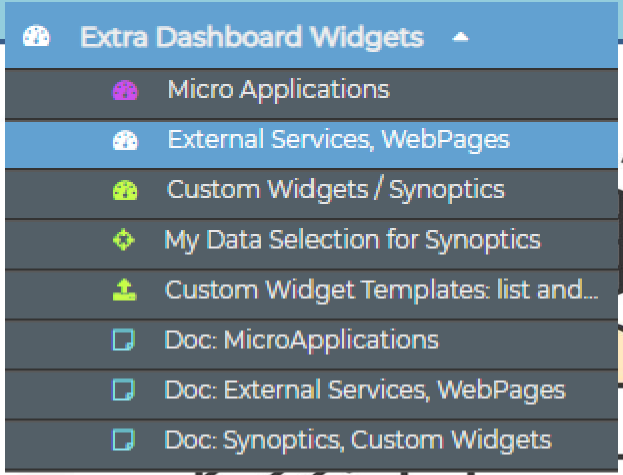
Public Transportation


Totem Stazione
Firenze
Tue 13 Feb 14:44:16
Public Transportatio
Fermate
82: ISTITUTO VOLTA → STAZIONE VALFONDA
Servizi sulla linea
Stazione Valfonda
Cultural Activities
Risultati
Powered by LaMMA

See many others on web

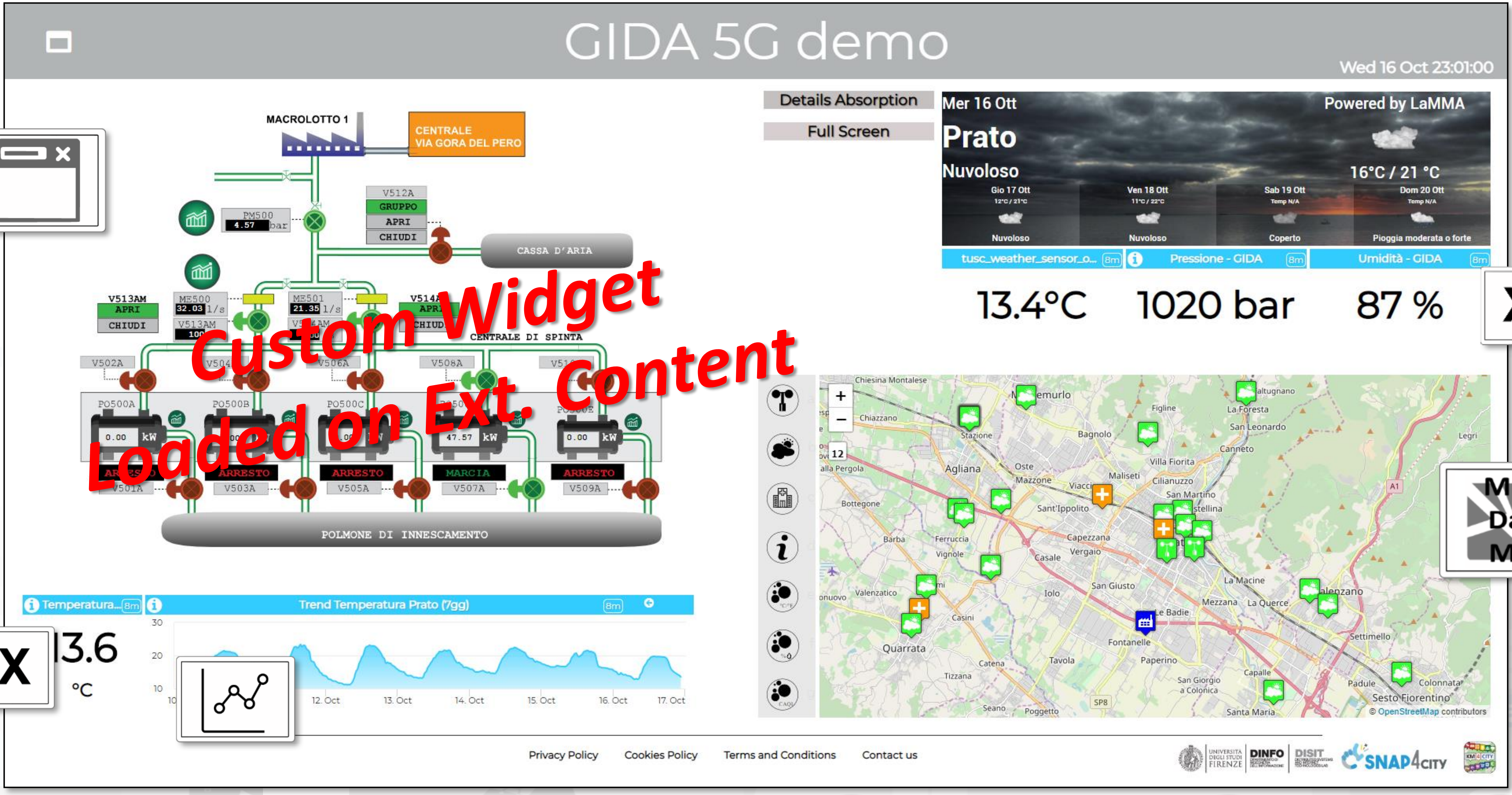
TOP

Synoptic, Custom Widgets and PINS Creation



Extra Dashboard Widgets
- Micro Applications
- External Services, WebPages
- Custom Widgets / Synoptics
- My Data Selection for Synoptics
- Custom Widget Templates: list and...
- Doc: MicroApplications
- Doc: External Services, WebPages
- Doc: Synoptics, Custom Widgets

Demo UC5 GIDA


GIDA 5G demo
Wed 16 Oct 23:01:00
Details Absorption
Full Screen
Mer 16 Ott
Powered by LaMMA
Prato
Nuvoloso
16°C / 21 °C
Gio 17 Ott
Nuvoloso
Ven 18 Ott
Nuvoloso
Sab 19 Ott
Coperto
Dom 20 Ott
Pioggia moderata o forte
tusc_weather_sensor_o...
Pressione - GIDA
Umidità - GIDA
13.4°C
1020 bar
87 %
MACROLOTTO 1
CENTRALE VIA GORA DEL PERO
V512A
GRUPPO
APRI
CHIUDI
PM500
4.57 bar
CASSA D'ARIA
V513AM
APRI
CHIUDI
ME500
32.03 l/s
ME501
21.35 l/s
V514AM
CENTRALE DI SPINTA
V502A
V506A
V508A
P0500A
P0500B
P0500C
0.00 kW
47.57 kW
ARRESTO
MARCIA
V501A
V503A
V505A
V507A
V509A
POLMONE DI INNESCAMENTO
Temperatura...
Trend Temperatura Prato (7gg)
13.6
°C
30
20
10
12. Oct
13. Oct
14. Oct
15. Oct
16. Oct
17. Oct
Prato
Quarrata
Agliana
Sesto Fiorentino
© OpenStreetMap contributors
Privacy Policy
Cookies Policy
Terms and Conditions
Contact us

Custom Widget Loaded on Ext. Content

XX

XX

Multi Data Map

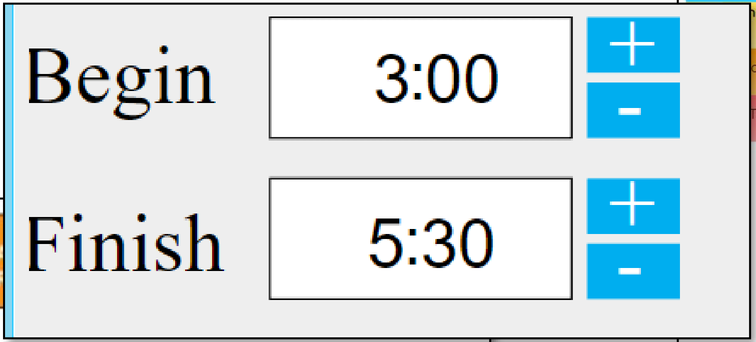
https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjIyNg==

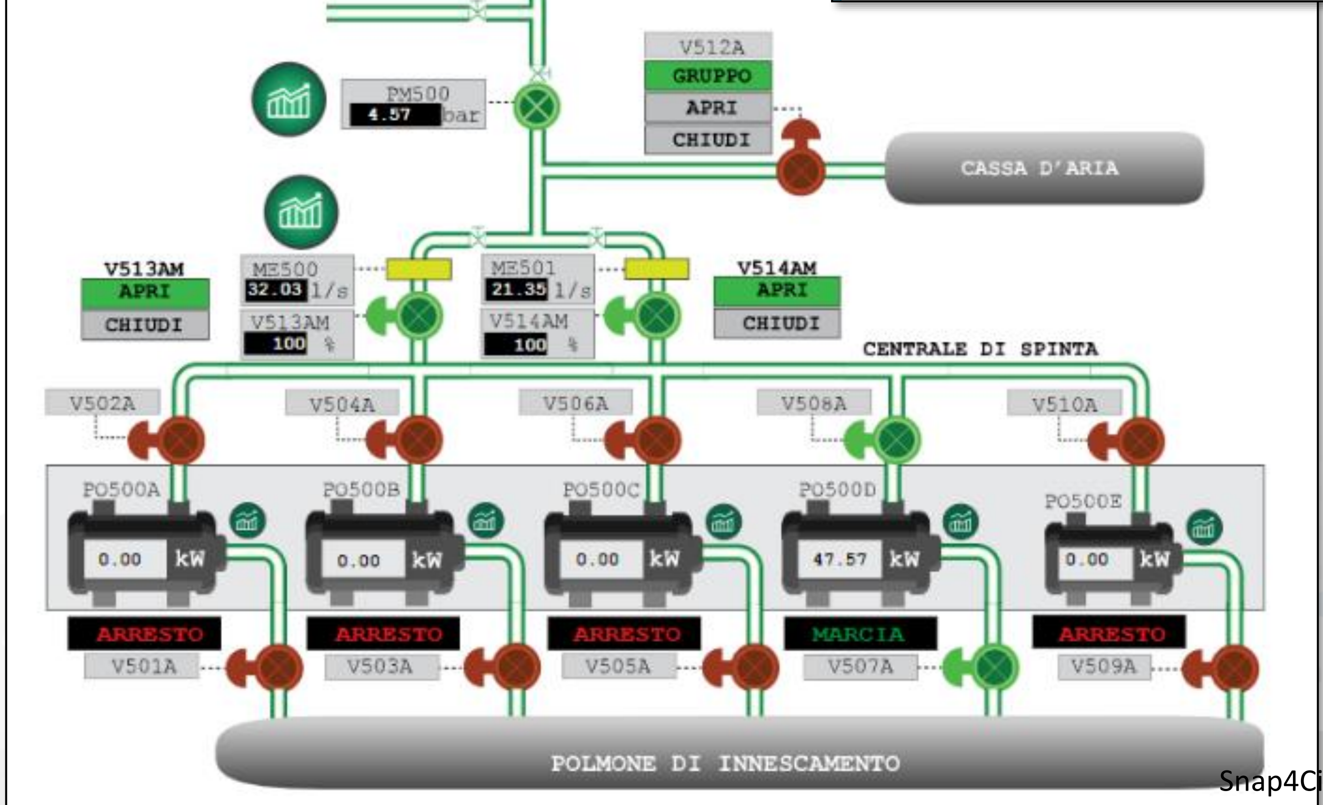
Custom Widgets

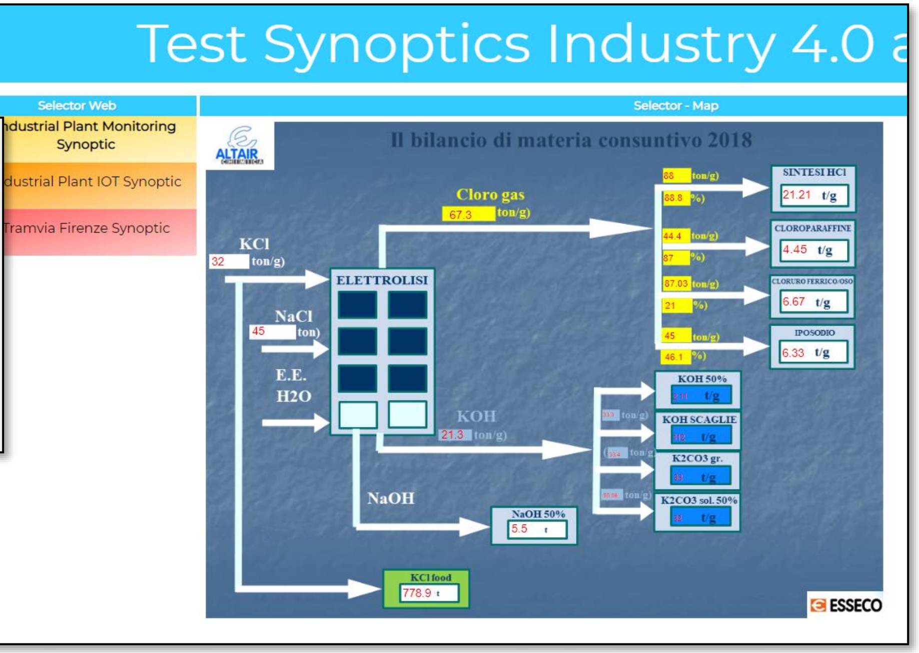
Custom Dashboards and Widgets (interactive, Animations, etc.)

-- SVG for graphic design

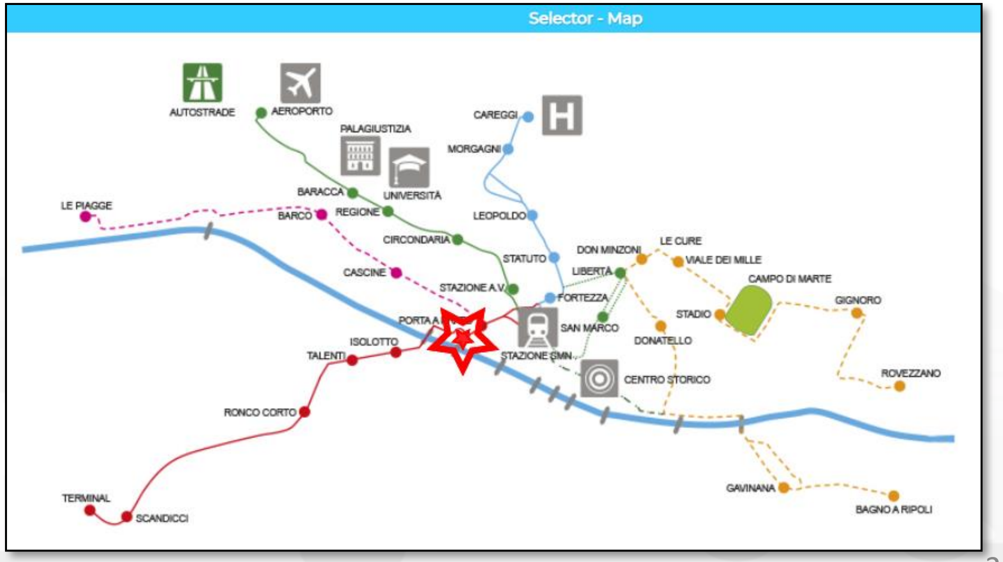
-- MyKPI for collecting data


Begin 3:00
Finish 5:30


MACROLOTTO 1
CENTRA
VIA GOR
V512A
GRUPPO
APRI
CHIUDI
PM500
4.57 bar
CASSA D'ARIA
V513AM
APRI
CHIUDI
ME500
32.03 l/s
V513AM
100 %
ME501
21.35 l/s
V514AM
100 %
V514AM
APRI
CHIUDI
CENTRALE DI SPINTA
V502A
V504A
V506A
V508A
V510A
PO500A
0.00 kW
PO500B
0.00 kW
PO500C
0.00 kW
PO500D
47.57 kW
PO500E
0.00 kW
ARRESTO
ARRESTO
ARRESTO
MARCIA
ARRESTO
V501A
V503A
V505A
V507A
V509A
POLMONE DI INNESCAMENTO

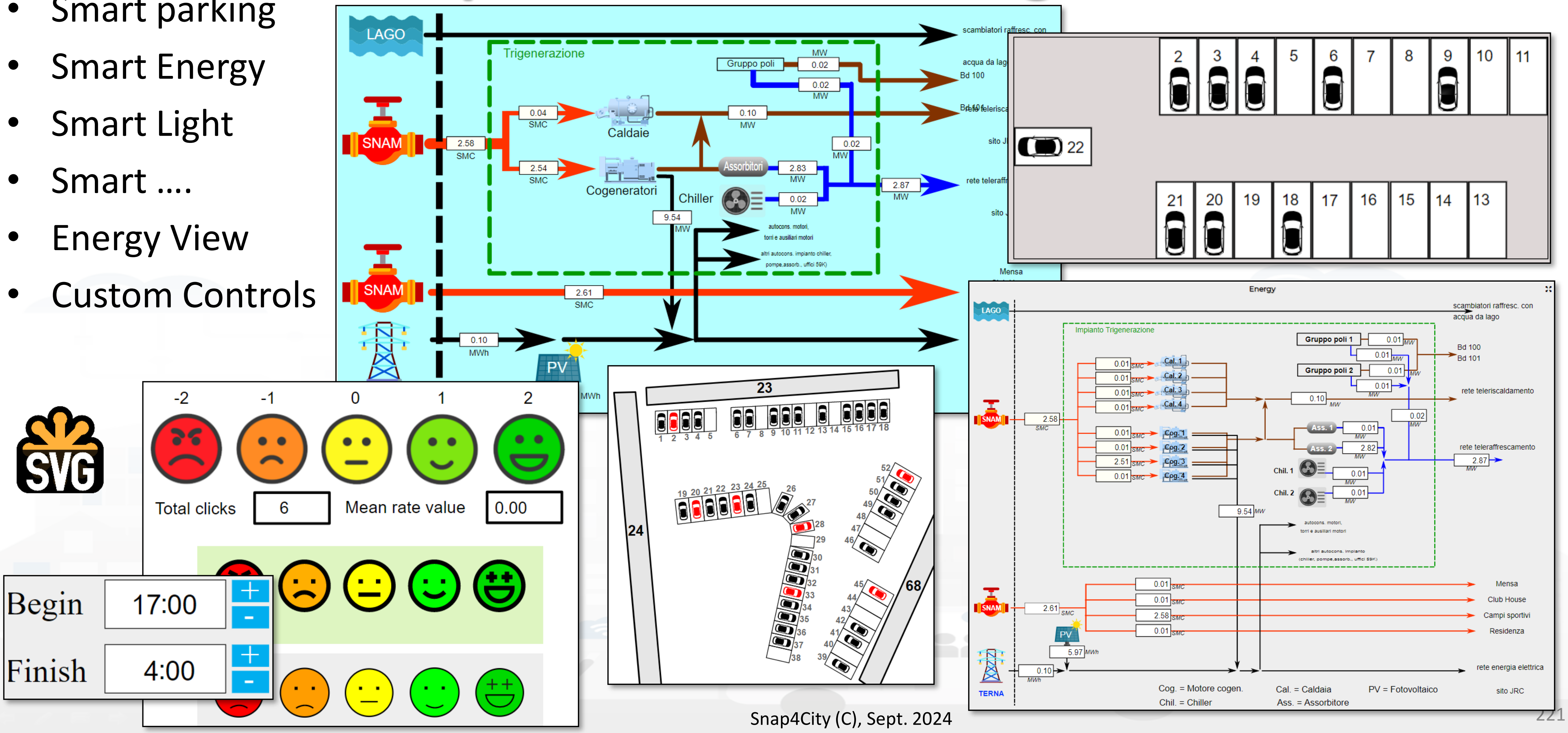

Test Synoptics Industry 4.0 a

Selector Web
ndustrial Plant Monitoring Synoptic
ndustrial Plant IOT Synoptic
Tramvia Firenze Synoptic
Selector - Map
ALTAIR
Il bilancio di materia consuntivo 2018
KCl
32 ton/g
Cloro gas
67.3 ton/g
NaCl
45 ton)
E.E.
H2O
ELETTROLISI
KOH
21.3 ton/g)
NaOH
NaOH 50%
5.5 t
KCl food
778.9 t
SINTESI HCl
21.21 t/g
CLOROPARAFFINE
4.45 t/g
CLORURO FERRICO
6.67 t/g
IPOSODIO
6.33 t/g
KOH 50%
KOH SCAGLIE
K2CO3 gr.
K2CO3 sol. 50%
ESSECO

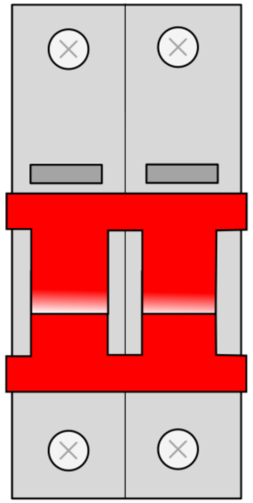

Selector - Map
AUTOSTRADE
AEROPORTO
PALAGIUSTIZIA
CAREGGI
MORGAGNI
LE PIAGGE
BARACCA
UNIVERSITÀ
BARCO
REGIONE
LEOPOLDO
CIRCONDARIA
STATUTO
DON MINZONI
LE CURE
VIALE DEI MILLE
CASCINE
LIBERTÀ
CAMPO DI MARTE
STAZIONE A.V.
FORTEZZA
GIGNORO
PORTA A
SAN MARCO
STADIO
ISOLOTTO
DONATELLO
TALENTI
STAZIONE SMN
CENTRO STORICO
ROVEZZANO
RONCO CORTO
TERMINAL
SCANDICCI
GAVINANA
BAGNO A RIPOLI

Special Custom Widgets

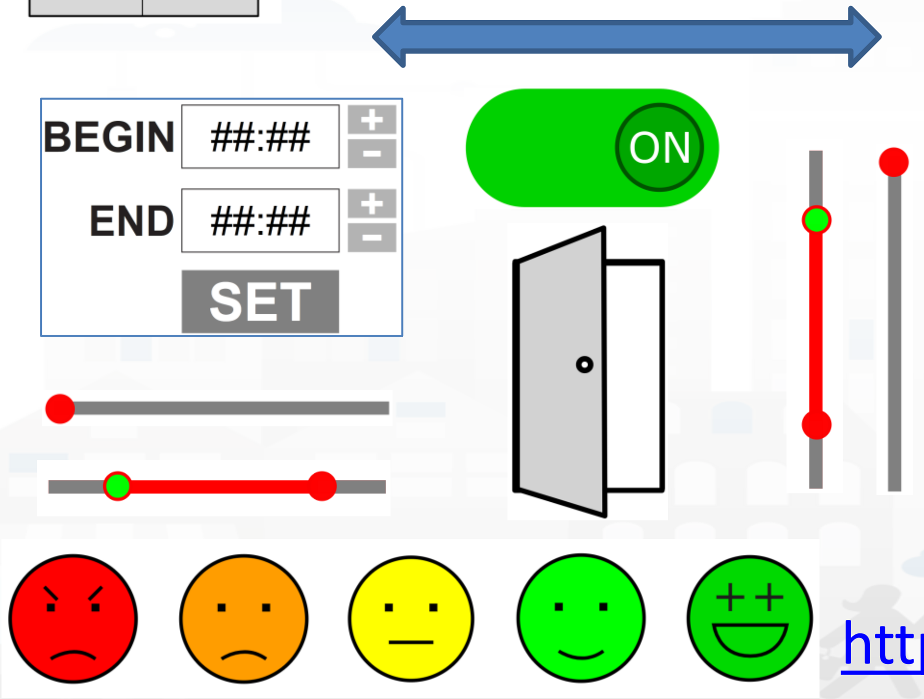
- Smart parking
- Smart Energy
- Smart Light
- Smart ....
- Energy View
- Custom Controls


LAGO
Trigenerazione
SNAM
2.58 SMC
0.04 SMC
Caldaie
2.54 SMC
Cogeneratori
Gruppo poli
0.02 MW
0.10 MW
Assorbitori
2.83 MW
Chiller
0.02 MW
2.87 MW
9.54 MW
2.61 SMC
0.10 MWh
PV
scambiatori raffresc. con acqua da lago
Bd 100
Bd 101
rete teleriscaldamento
rete teleraffrescamento
Mensa
2 3 4 5 6 7 8 9 10 11
22
21 20 19 18 17 16 15 14 13
Energy
Impianto Trigenerazione
Gruppo poli 1
Gruppo poli 2
Cal. 1
Cal. 2
Cal. 3
Cal. 4
Cog. 1
Cog. 2
Cog. 3
Cog. 4
Ass. 1
Ass. 2
Chil. 1
Chil. 2
Club House
Campi sportivi
Residenza
rete energia elettrica
TERNA
5.97 MWh
Cog. = Motore cogen.
Chil. = Chiller
Cal. = Caldaia
Ass. = Assorbitore
PV = Fotovoltaico
sito JRC
23
24
68
-2 -1 0 1 2
Total clicks
6
Mean rate value
0.00
Begin
17:00
Finish
4:00
SVG

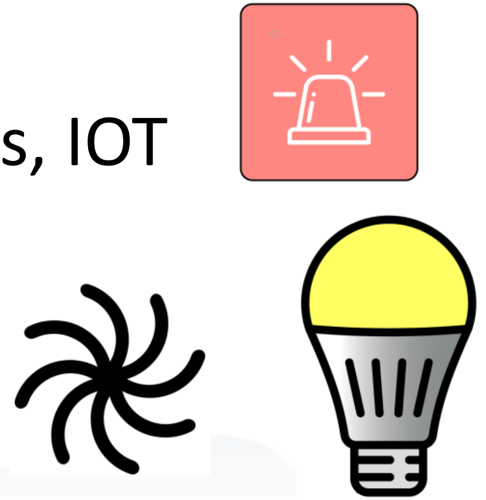
Other examples

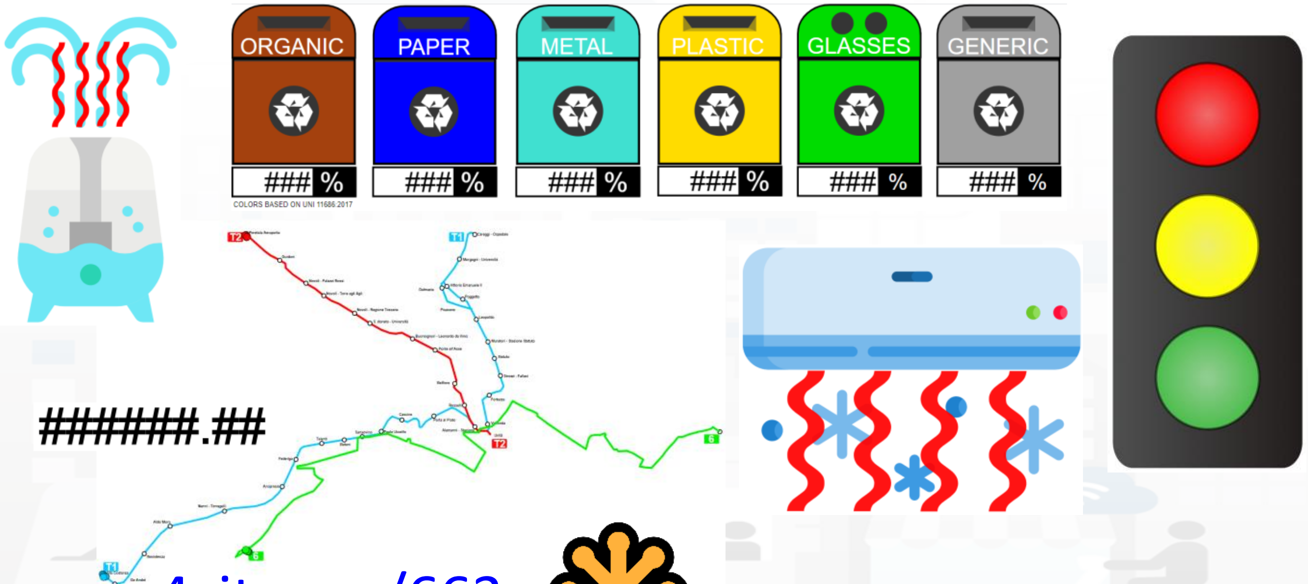


- **Virtual Actuators (sensor-actuator)**
  - From: Dashboard
  - To: IOT App, MyKPI, other Synoptics

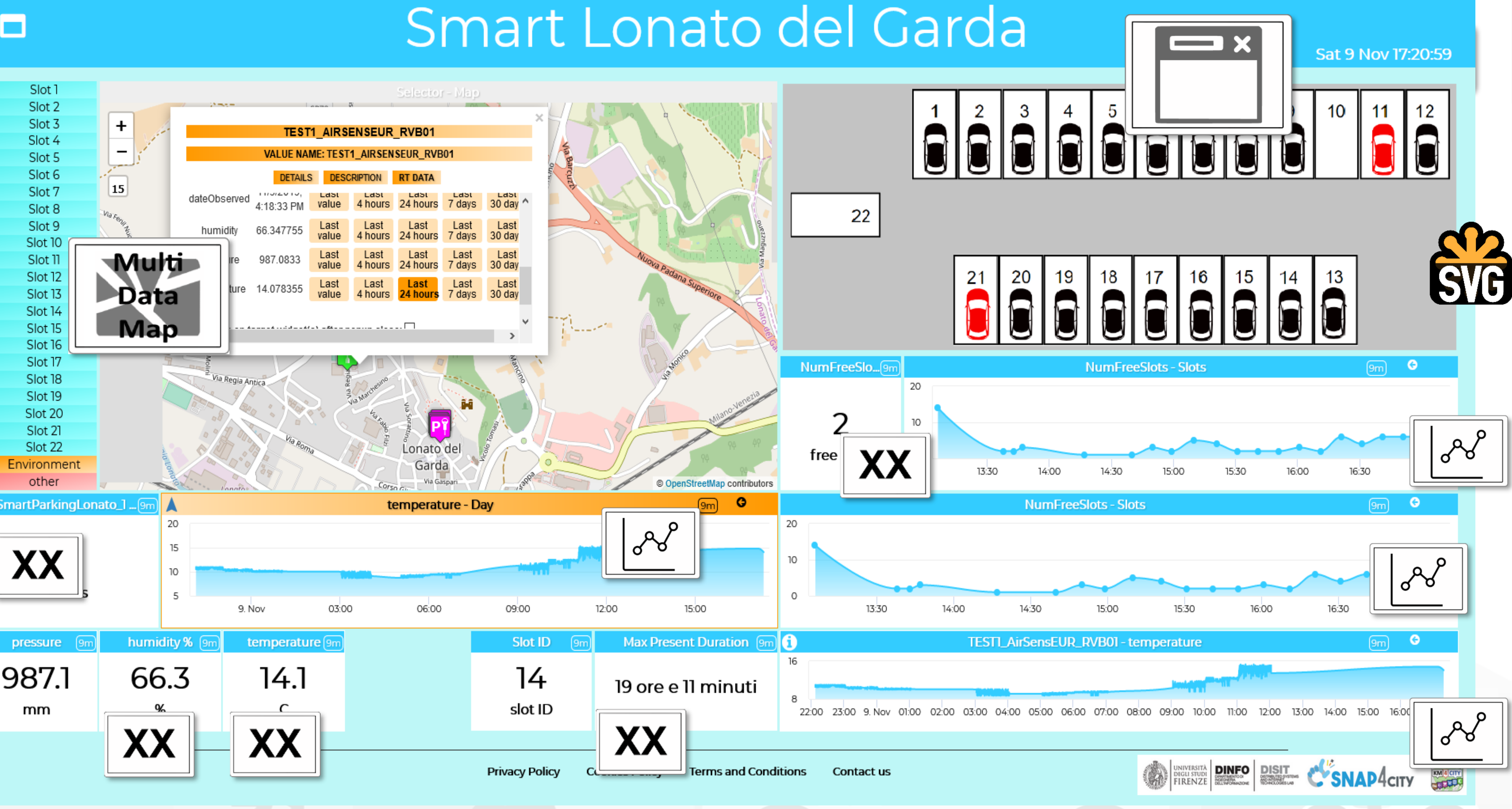

BEGIN
##:##
END
##:##
SET
ON

- **Virtual Sensors**
  - From: MyKPI, Sensors, IOT App, other Synoptics
  - To: Dashboards




ORGANIC
PAPER
METAL
PLASTIC
GLASSES
GENERIC
### %
### %
### %
### %
### %
### %
COLORS BASED ON UNI 11686:2017
######.##

https://www.snap4city.org/663



Smart Lonato del Garda

Sat 9 Nov 17:20:59

Slot 1
Slot 2
Slot 3
Slot 4
Slot 5
Slot 6
Slot 7
Slot 8
Slot 9
Slot 10
Slot 11
Slot 12
Slot 13
Slot 14
Slot 15
Slot 16
Slot 17
Slot 18
Slot 19
Slot 20
Slot 21
Slot 22
Environment
other
Selector - Map
Multi Data Map
SVG
XX
1 2 3 4 5 10 11 12
22
21 20 19 18 17 16 15 14 13
Lonato del Garda
© OpenStreetMap contributors
Via Regia Antica
Via Roma
Nuova Padana Superiore
Milano-Venezia

TEST1_AIRSENSEUR_RVB01

VALUE NAME: TEST1_AIRSENSEUR_RVB01

DETAILS | DESCRIPTION | RT DATA

dateObserved	11/9/2019, 4:18:33 PM	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 day
humidity	66.347755	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 day
...re	987.0833	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 day
...ture	14.078355	Last value	Last 4 hours	Last 24 hours	Last 7 days	Last 30 day

NumFreeSlo... 9m

2 free

NumFreeSlots - Slots 9m

SmartParkingLonato_1 ... 9m

temperature - Day 9m

20
15
10
5
9. Nov
03:00
06:00
09:00
12:00
15:00
13:30
14:00
14:30
15:00
15:30
16:00
16:30

pressure 9m	humidity % 9m	temperature 9m	Slot ID 9m	Max Present Duration 9m
987.1 mm	66.3 %	14.1 C	14 slot ID	19 ore e 11 minuti

TEST1_AirSensEUR_RVB01 - temperature 9m

16
8
22:00
23:00
9. Nov
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00

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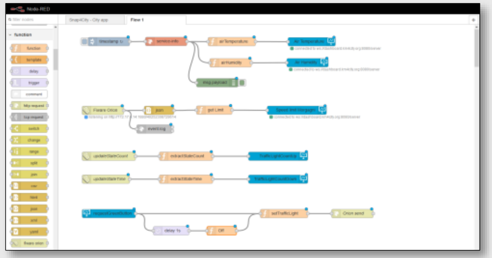
DISIT
SNAP4CITY

Custom Widget / Synoptic / PIN Development

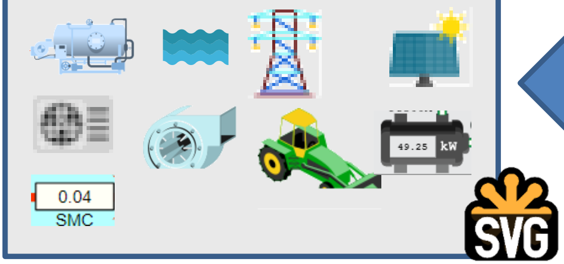


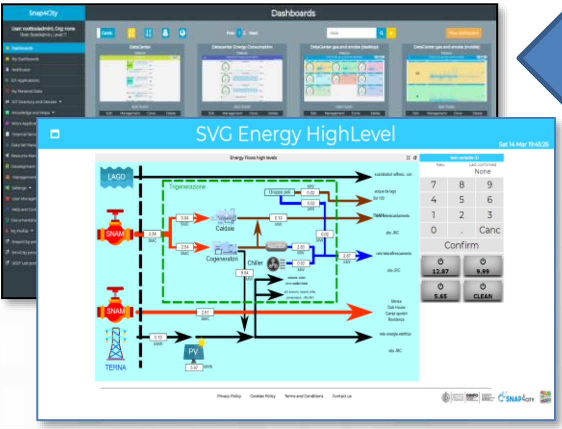
IOT Applications

Knowledge Base,
Km4City

Knowledge and Storage Data from the Field and City

SVG Symbols Collection

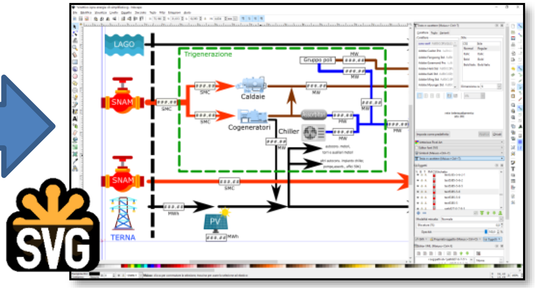

0.04
SMC
49.25 kW
SVG


Dashboards
SVG Energy HighLevel

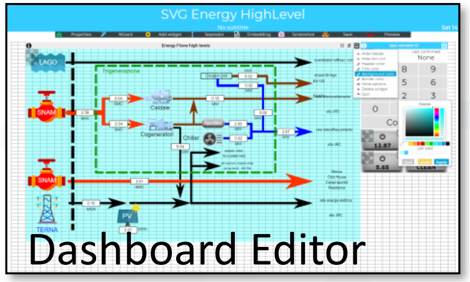
Public Dashboard Collection

My Own Dash/App

Inkscape editor on your computer



Create, save a Custom Widget in SVG

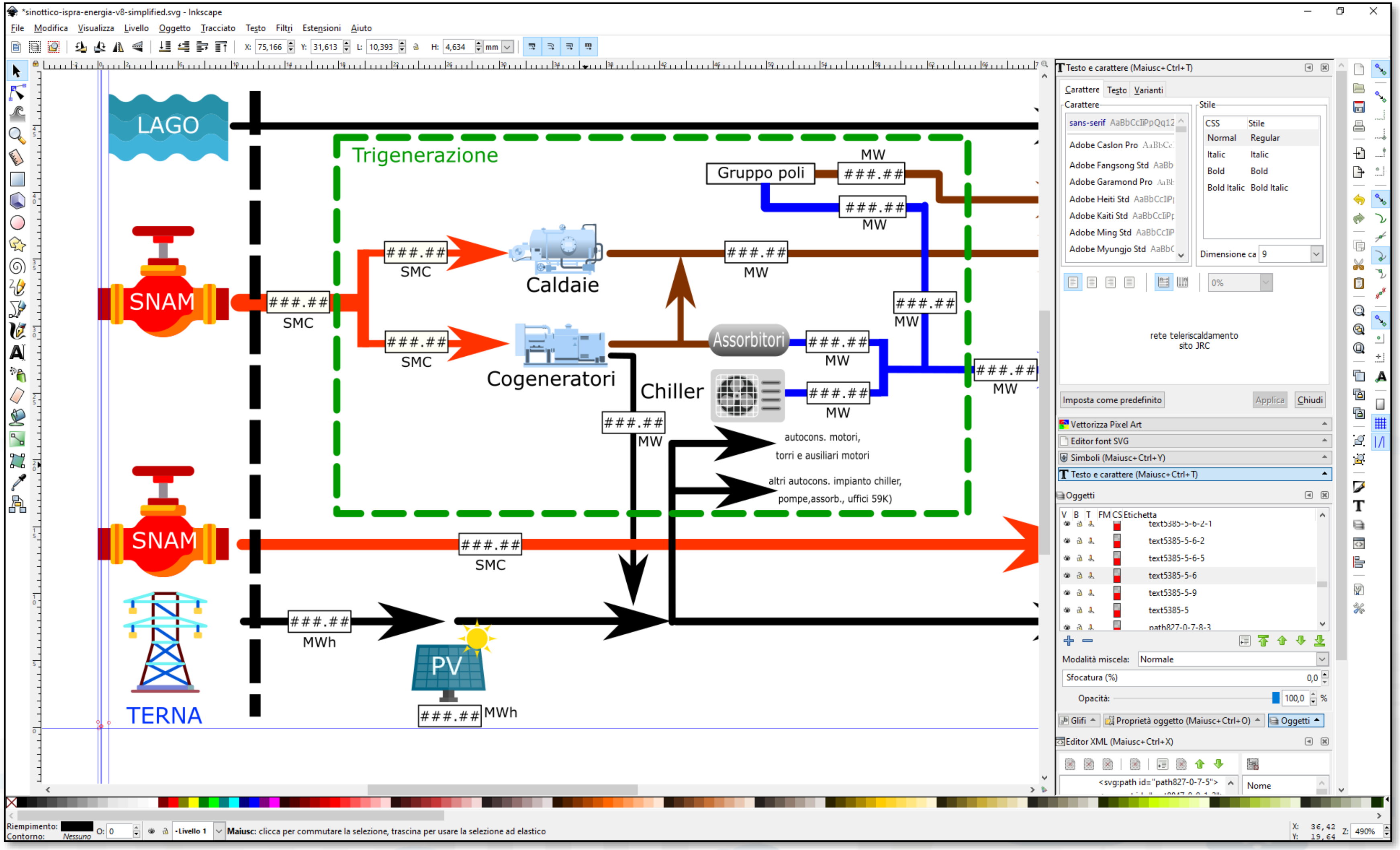

SVG Energy HighLevel

Dashboard Editor

Create, save, load, delegate, grant access

1. Create and Load a Custom SVG
2. Select/Reuse an SVG
3. Make and Instance of Synoptic by Associate Variables with MyKPI
4. Create on Dashboard a Widget based on Synoptic HLT such as Ext. Srv.:
   - https://www.snap4city.org/synoptic/v2/synoptic.html?id=xxxx

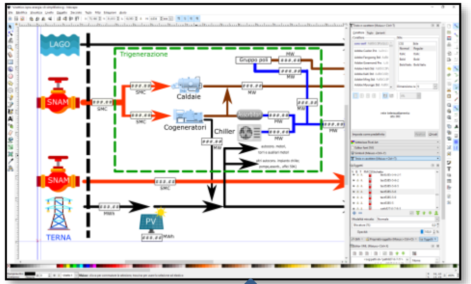
How to create a custom Widget


*sinottico-ispra-energia-v8-simplified.svg - Inkscape
File Modifica Visualizza Livello Oggetto Tracciato Testo Filtri Estensioni Aiuto
X: 75,166 Y: 31,613 L: 10,393 H: 4,634 mm
LAGO
Trigenerazione
Gruppo poli
###.## MW
SNAM
SMC
Caldaie
Cogeneratori
Assorbitori
Chiller
autocons. motori, torri e auxiliari motori
altri autocons. impianto chiller, pompe,assorb., uffici 59K)
TERNA
PV
MWh
Testo e carattere (Maiusc+Ctrl+T)
Carattere Testo Varianti
Stile
Normal Regular
Italic
Bold
Bold Italic
Dimensione ca 9
rete teleriscaldamento sito JRC
Imposta come predefinito Applica Chiudi
Vettorizza Pixel Art
Editor font SVG
Simboli (Maiusc+Ctrl+Y)
Oggetti
Modalità miscela: Normale
Sfocatura (%) 0,0
Opacità: 100,0 %
Editor XML (Maiusc+Ctrl+X)
Maiusc: clicca per commutare la selezione, trascina per usare la selezione ad elastico

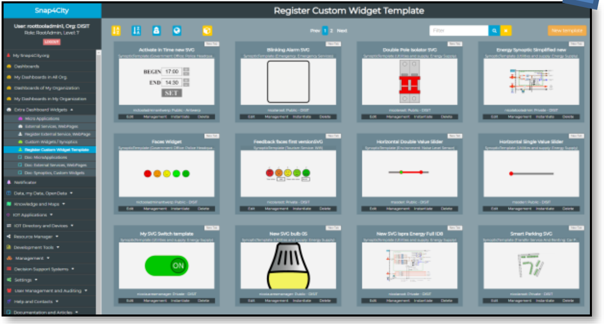
- [User manual on: https://www.snap4city.org/595](https://www.snap4city.org/595)

CW with a single READ Variable are automatically usable as PINS

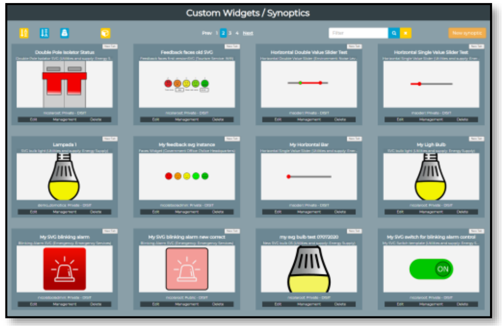
Create, save a Custom Widget in SVG



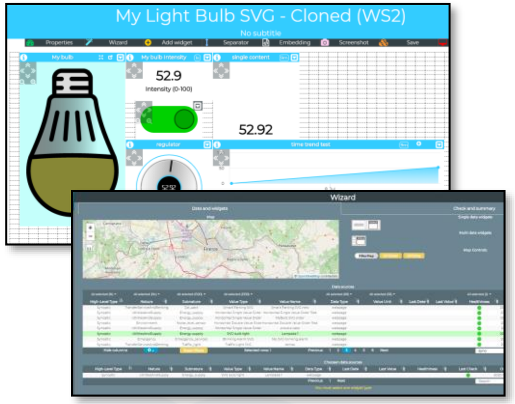
Upload as Custom Widget Template


Register Custom Widget Template

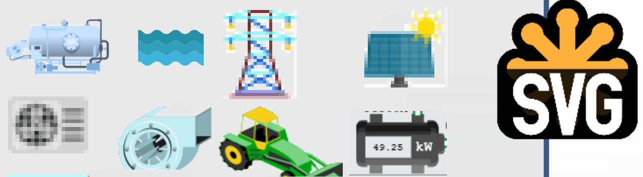
List of Custom Widgets / Synoptics

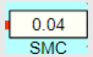

Custom Widgets / Synoptics

Dashboard Editing/wizard


My Light Bulb SVG - Cloned (WS2)
52.9
52.92
Wizard

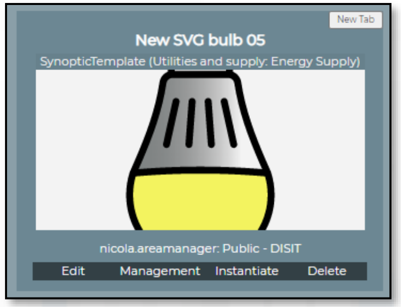
SVG Symbols Collection

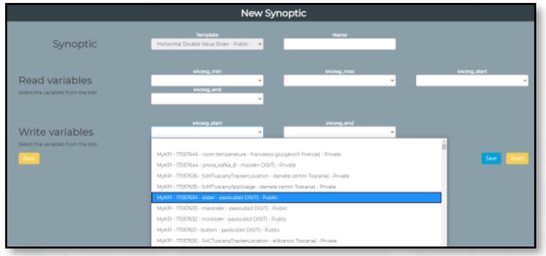




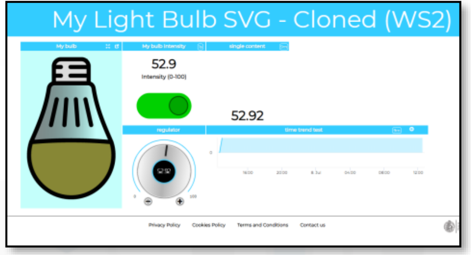
From any open library

select

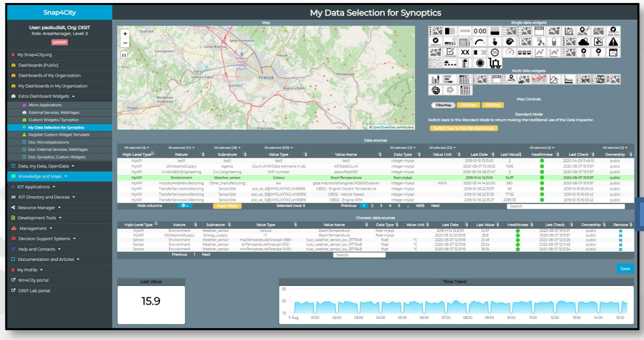

New Tab
New SVG bulb 05
SynopticTemplate (Utilities and supply: Energy Supply)
nicola.areamanager: Public - DISIT
Edit
Management
Instantiate
Delete


New Synoptic
Synoptic
Read variables
Write variables

Instantiate as Custom Widgets / Synoptics Connect with WebSockets

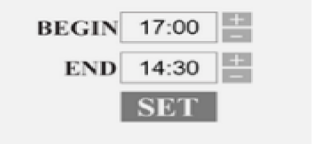
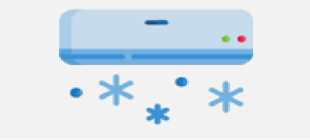
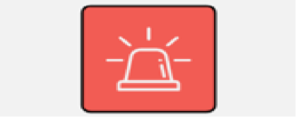
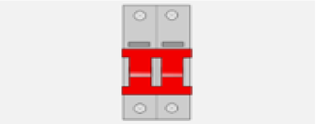
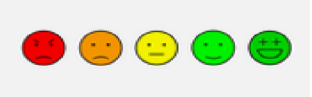

My Light Bulb SVG - Cloned (WS2)
52.9
52.92

Final Dashboard

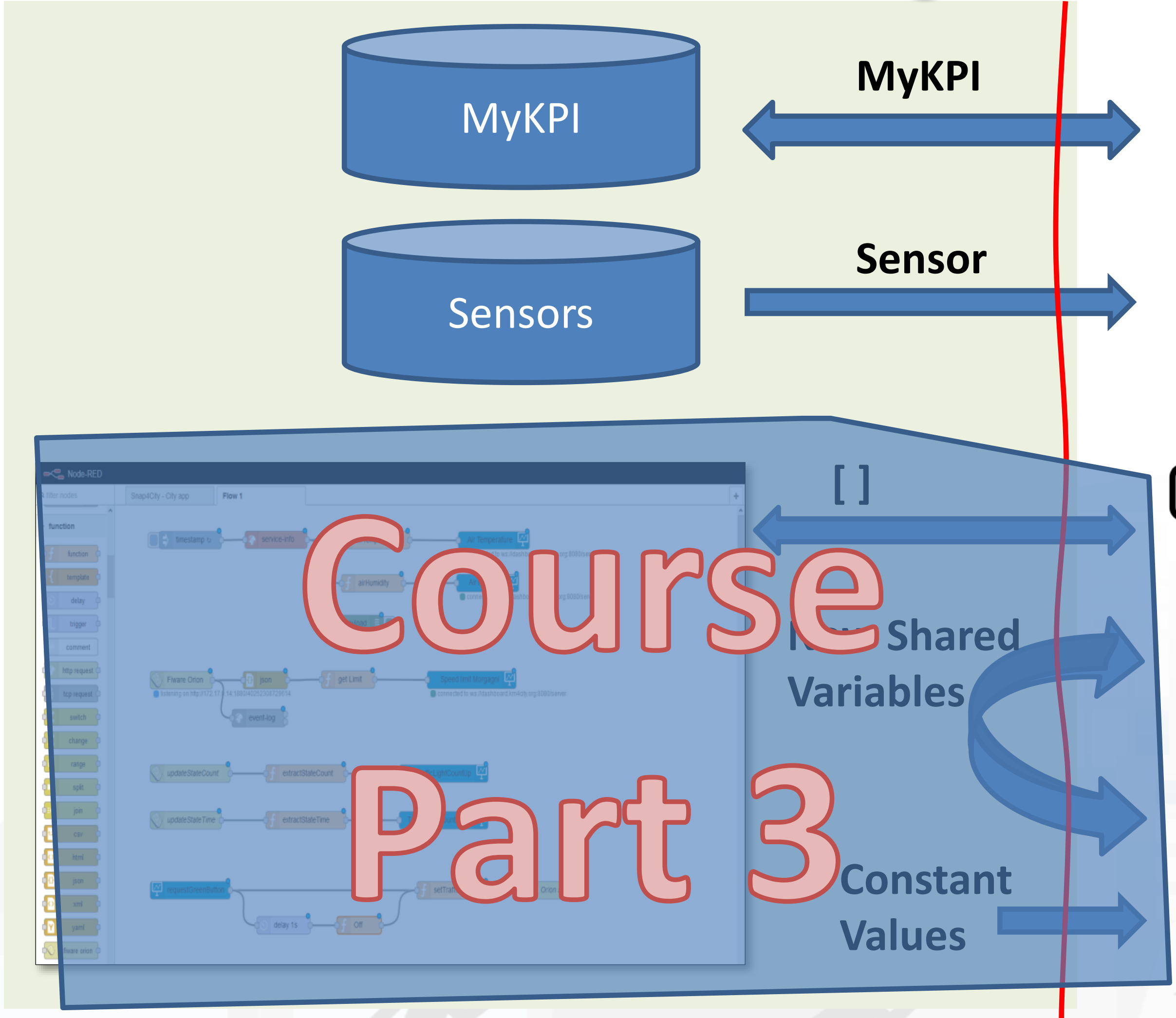

My Data Selection for Synoptics
15.9

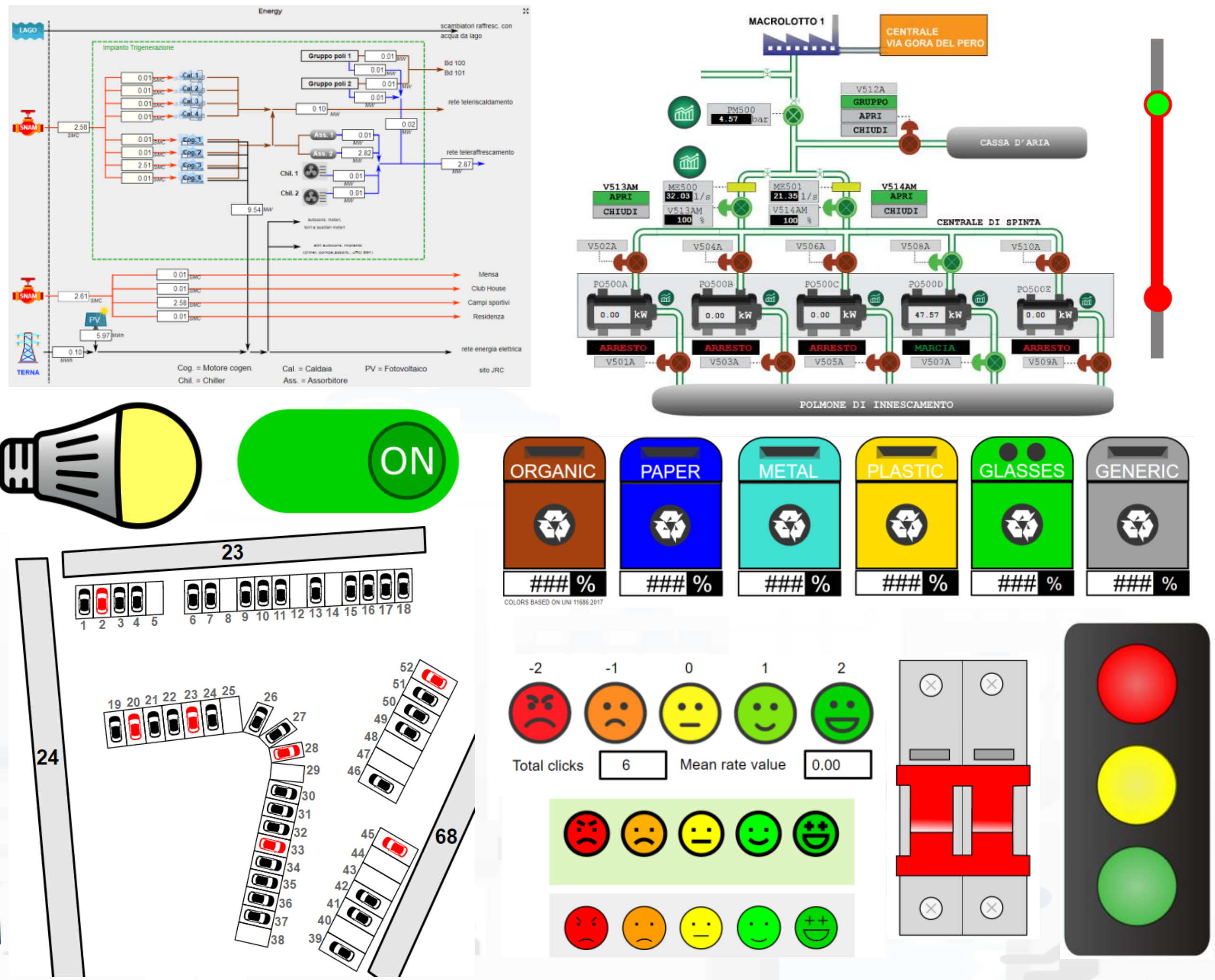
Select MyKPI and Sensor Data for Synoptics cases

Help on Custom Widgets

Custom Widget name and image	*Explanation*	*Variable(s)*	*Accepted values*
Activate in Time new SVG 	Set the begin and the end hours by using the small + and – buttons. Click SET to send the defined hours to the server.	s4csvg_begin (read and write variable) Default value: ##:##	starting hour in the form HH:mm to be set by clicking the + and – button
		s4csvg_finish (read and write variable) Default value: ##:##	ending hour in the form HH:mm to be set by clicking the + and – button
Air Conditioner SVG 	Change the image according to the value received.	s4csvg_airconditioner_status (read variable) Default value: undefined state, the SVG shows the overlapped cold and hot images.	0 = OFF, 1 = cold, 2 = hot
Blinking Alarm SVG 	The image blink or stop to blink according to the value received. Example: https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=Mjc4NQ==	s4csvg_blinking_alarm (read variable) Default value: 1, blinking	0 = OFF (fixed image), 1 = blinking
Double Pole Isolator SVG 	By clicking the SVG, the status of the switch changes accordingly and the corresponding value is sent to the server. Example: https://main.snap4city.org/view/index.php?iddasboard=Mjk4Ng==	s4csvg_isolator_onoff (read and write variable) Default value: undefined state, the SVG shows the overlapped position up and position down images.	0 = OFF (position down), 1 = ON (position up)
Faces Widget 	By clicking a coloured face the corresponding value is sent to the server. Examples: https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjU0NA==	s4csvg_userFeedback: value sent to the server by clicking the corresponding face (write variable). Default value: no value sent. The SVG shows the five	-2 = very bad, -1 = bad, 0 = so-and-so, 1 = quite-good, 2=good

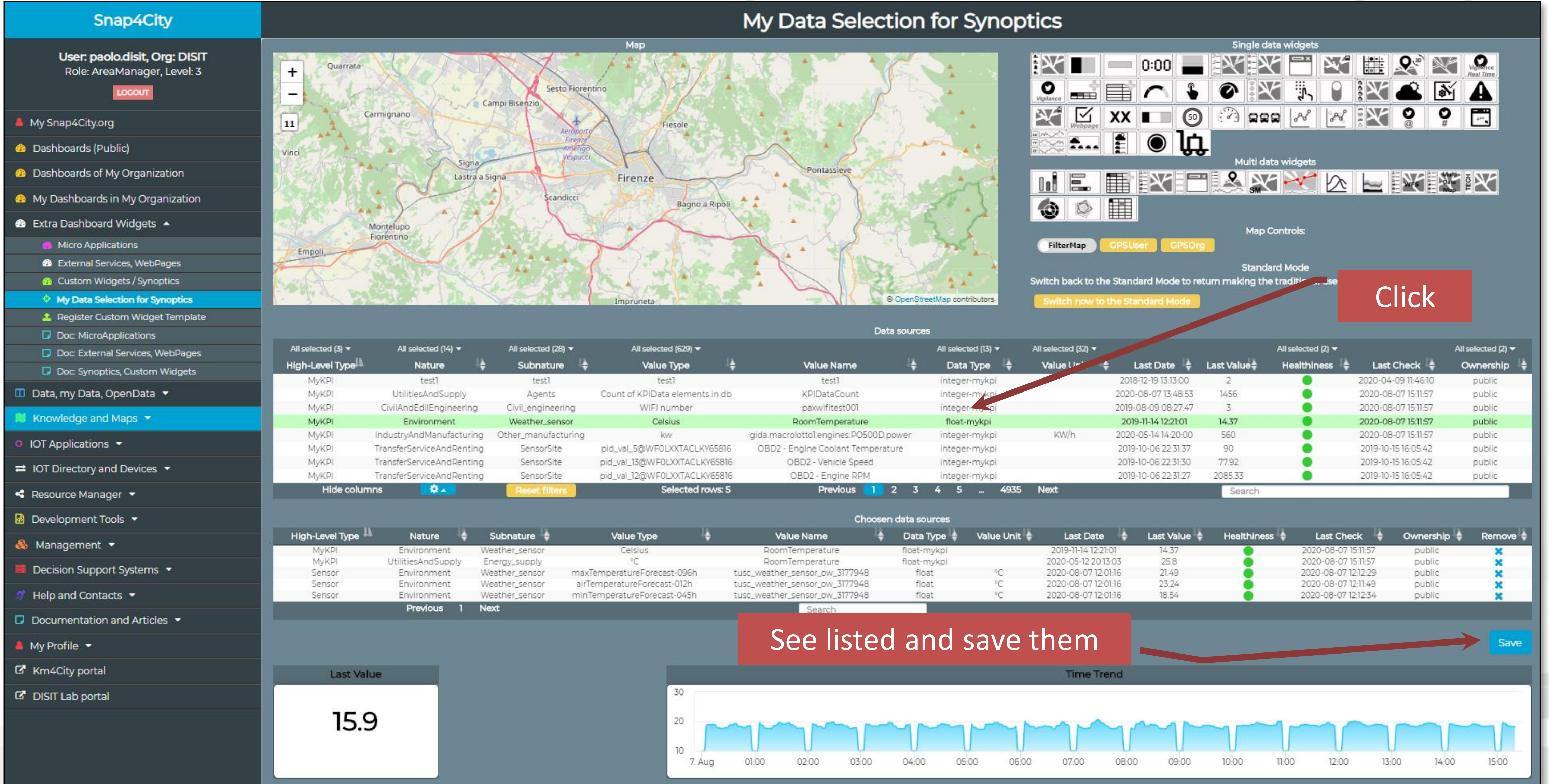
From-To Custom Widgets / Synoptics to Storage in WS


MyKPI
Sensors
MyKPI
Sensor
[ ]
Shared
Variables
Constant
Values
Course
Part 3


Energy
MACROLOTTO 1
CENTRALE VIA GORA DEL PERO
CASSA D'ARIA
CENTRALE DI SPINTA
POLMONE DI INNESCAMENTO
ON
23
24
68
ORGANIC
PAPER
METAL
PLASTIC
GLASSES
GENERIC
### %
-2
-1
0
1
2
Total clicks
6
Mean rate value
0.00

Web Socket Secure

Select the Sensors and MyKPI to be used on Synoptics


Snap4City
My Data Selection for Synoptics
User: paolo.disit, Org: DISIT
Role: AreaManager, Level: 3
LOGOUT
My Snap4City.org
Dashboards (Public)
Dashboards of My Organization
My Dashboards in My Organization
Extra Dashboard Widgets
Micro Applications
External Services, WebPages
Custom Widgets / Synoptics
My Data Selection for Synoptics
Register Custom Widget Template
Doc: MicroApplications
Doc: External Services, WebPages
Doc: Synoptics, Custom Widgets
Data, my Data, OpenData
Knowledge and Maps
IOT Applications
IOT Directory and Devices
Resource Manager
Development Tools
Management
Decision Support Systems
Help and Contacts
Documentation and Articles
My Profile
Km4City portal
DISIT Lab portal
Map
Quarrata
Sesto Fiorentino
Campi Bisenzio
Carmignano
Fiesole
Vinci
Signa
Lastra a Signa
Firenze
Pontassieve
Scandicci
Bagno a Ripoli
Montelupo Fiorentino
Empoli
Impruneta
© OpenStreetMap contributors
Single data widgets
Multi data widgets
Map Controls:
FilterMap
GPSUser
GPSOrg
Standard Mode
Switch back to the Standard Mode to return making the tradit... use
Switch now to the Standard Mode
Last Value
15.9
Time Trend
30
20
10
7. Aug
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00

Click

Data sources

High-Level Type	Nature	Subnature	Value Type	Value Name	Data Type	Value Unit	Last Date	Last Value	Healthiness	Last Check	Ownership
All selected (3)	All selected (14)	All selected (28)	All selected (629)		All selected (13)	All selected (32)			All selected (2)		All selected (2)
MyKPI	test1	test1	test1	test1	integer-mykpi		2018-12-19 13:13:00	2	●	2020-04-09 11:46:10	public
MyKPI	UtilitiesAndSupply	Agents	Count of KPIData elements in db	KPIDataCount	integer-mykpi		2020-08-07 13:48:53	1456	●	2020-08-07 15:11:57	public
MyKPI	CivilAndEdilEngineering	Civil_engineering	WIFI number	paxwifitest001	integer-mykpi		2019-08-09 08:27:47	3	●	2020-08-07 15:11:57	public
MyKPI	Environment	Weather_sensor	Celsius	RoomTemperature	float-mykpi		2019-11-14 12:21:01	14.37	●	2020-08-07 15:11:57	public
MyKPI	IndustryAndManufacturing	Other_manufacturing	kw	gida.macrolotto1.engines.PO500D.power	integer-mykpi	KW/h	2020-05-14 14:20:00	560	●	2020-08-07 15:11:57	public
MyKPI	TransferServiceAndRenting	SensorSite	pid_val_5@WF0LXXTACLKY65816	OBD2 - Engine Coolant Temperature	integer-mykpi		2019-10-06 22:31:37	90	●	2019-10-15 16:05:42	public
MyKPI	TransferServiceAndRenting	SensorSite	pid_val_13@WF0LXXTACLKY65816	OBD2 - Vehicle Speed	integer-mykpi		2019-10-06 22:31:30	77.92	●	2019-10-15 16:05:42	public
MyKPI	TransferServiceAndRenting	SensorSite	pid_val_12@WF0LXXTACLKY65816	OBD2 - Engine RPM	integer-mykpi		2019-10-06 22:31:27	2085.33	●	2019-10-15 16:05:42	public

Hide columns Reset filters Selected rows: 5 Previous 1 2 3 4 5 ... 4935 Next Search

Choosen data sources

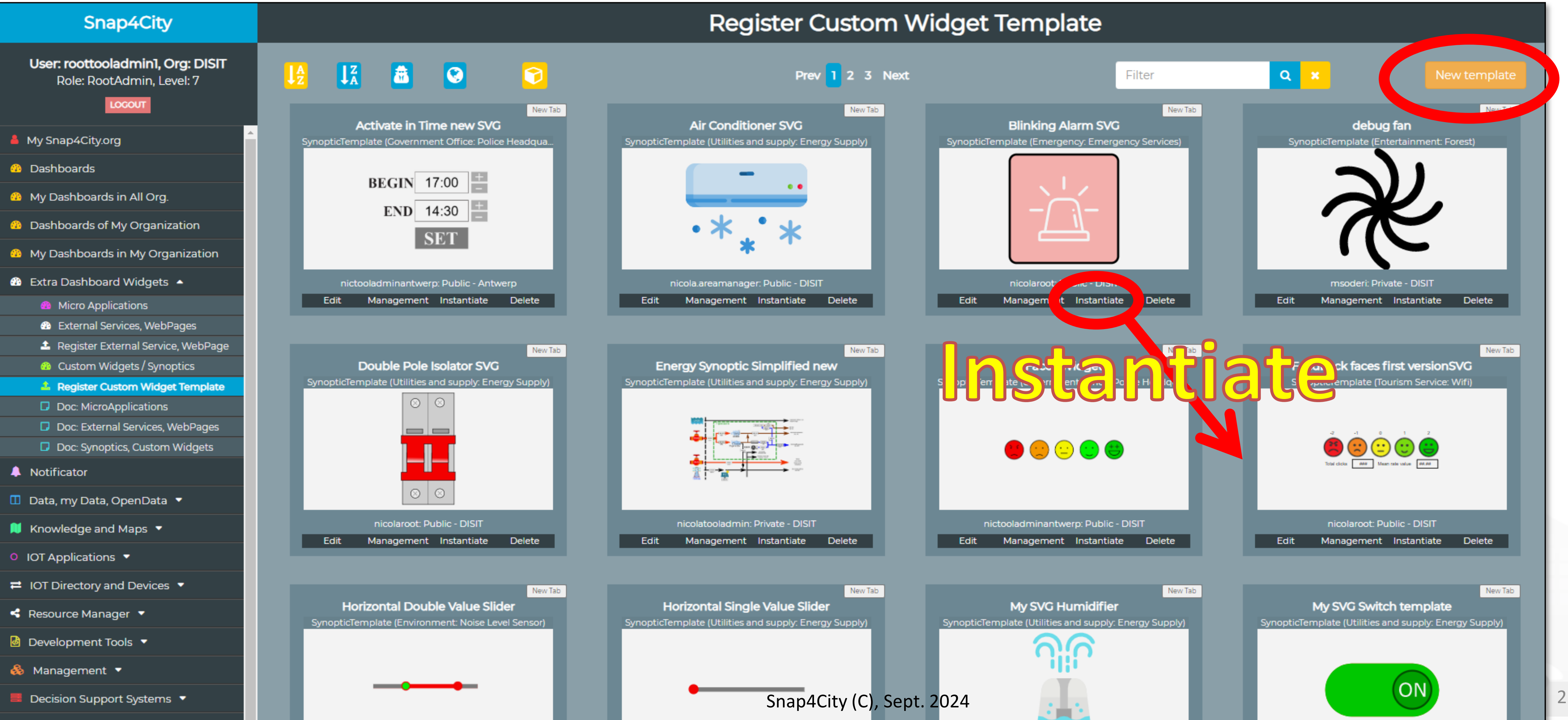
High-Level Type	Nature	Subnature	Value Type	Value Name	Data Type	Value Unit	Last Date	Last Value	Healthiness	Last Check	Ownership	Remove
MyKPI	Environment	Weather_sensor	Celsius	RoomTemperature	float-mykpi		2019-11-14 12:21:01	14.37	●	2020-08-07 15:11:57	public	✖
MyKPI	UtilitiesAndSupply	Energy_supply	°C	RoomTemperature	float-mykpi		2020-05-12 20:13:03	25.8	●	2020-08-07 15:11:57	public	✖
Sensor	Environment	Weather_sensor	maxTemperatureForecast-096h	tusc_weather_sensor_ow_3177948	float	°C	2020-08-07 12:01:16	21.49	●	2020-08-07 12:12:29	public	✖
Sensor	Environment	Weather_sensor	airTemperatureForecast-012h	tusc_weather_sensor_ow_3177948	float	°C	2020-08-07 12:01:16	23.24	●	2020-08-07 12:11:49	public	✖
Sensor	Environment	Weather_sensor	minTemperatureForecast-045h	tusc_weather_sensor_ow_3177948	float	°C	2020-08-07 12:01:16	18.54	●	2020-08-07 12:12:34	public	✖

Previous 1 Next Search

See listed and save them

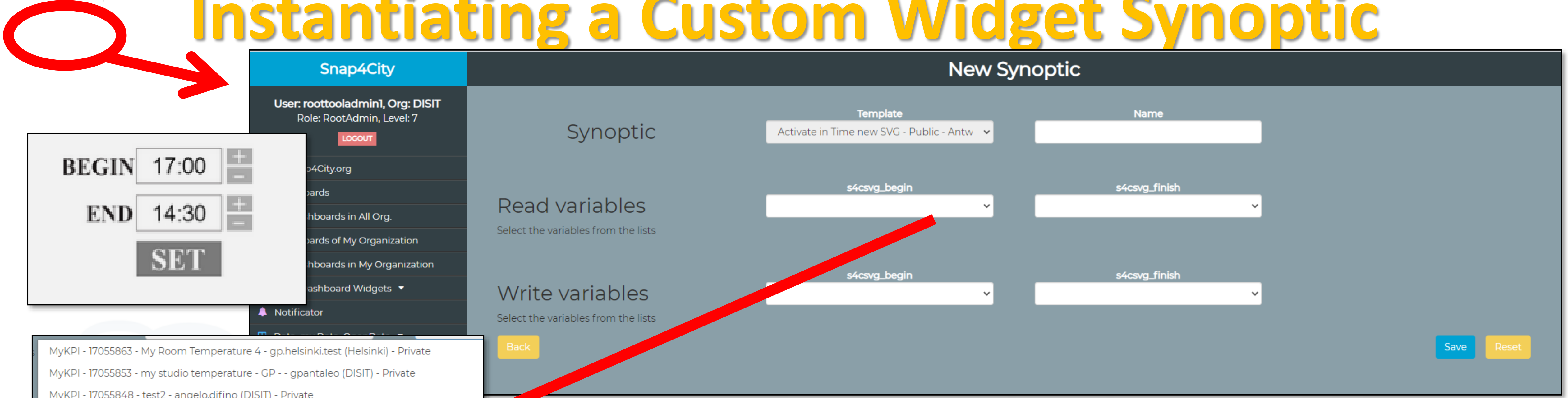
Save

Custom Widgets Templates


Snap4City
Register Custom Widget Template
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
Extra Dashboard Widgets
Micro Applications
External Services, WebPages
Register External Service, WebPage
Custom Widgets / Synoptics
Register Custom Widget Template
Doc: MicroApplications
Doc: External Services, WebPages
Doc: Synoptics, Custom Widgets
Notificator
Data, my Data, OpenData
Knowledge and Maps
IOT Applications
IOT Directory and Devices
Resource Manager
Development Tools
Management
Decision Support Systems
Prev 1 2 3 Next
Filter
New template
Activate in Time new SVG
SynopticTemplate (Government Office: Police Headqua...
BEGIN 17:00
END 14:30
SET
nictooladminantwerp: Public - Antwerp
Air Conditioner SVG
SynopticTemplate (Utilities and supply: Energy Supply)
nicola.areamanager: Public - DISIT
Blinking Alarm SVG
SynopticTemplate (Emergency: Emergency Services)
debug fan
SynopticTemplate (Entertainment: Forest)
msoderi: Private - DISIT
Double Pole Isolator SVG
SynopticTemplate (Utilities and supply: Energy Supply)
nicolaroot: Public - DISIT
Energy Synoptic Simplified new
SynopticTemplate (Utilities and supply: Energy Supply)
nicolatooladmin: Private - DISIT
nictooladminantwerp: Public - DISIT
SynopticTemplate (Tourism Service: Wifi)
nicolaroot: Public - DISIT
Horizontal Double Value Slider
SynopticTemplate (Environment: Noise Level Sensor)
Horizontal Single Value Slider
SynopticTemplate (Utilities and supply: Energy Supply)
My SVG Humidifier
SynopticTemplate (Utilities and supply: Energy Supply)
My SVG Switch template
SynopticTemplate (Utilities and supply: Energy Supply)
ON
New Tab
Edit
Management
Instantiate
Delete

Instantiate

Instantiating a Custom Widget Synoptic



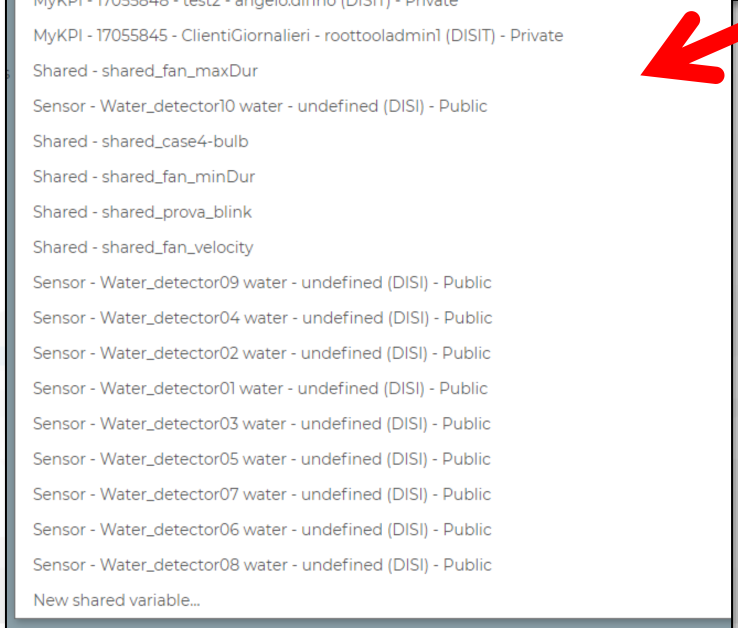
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7

New Synoptic

Synoptic
Template: Activate in Time new SVG - Public - Antw
Name:

Read variables
Select the variables from the lists
s4csvg_begin
s4csvg_finish

Write variables
Select the variables from the lists
s4csvg_begin
s4csvg_finish

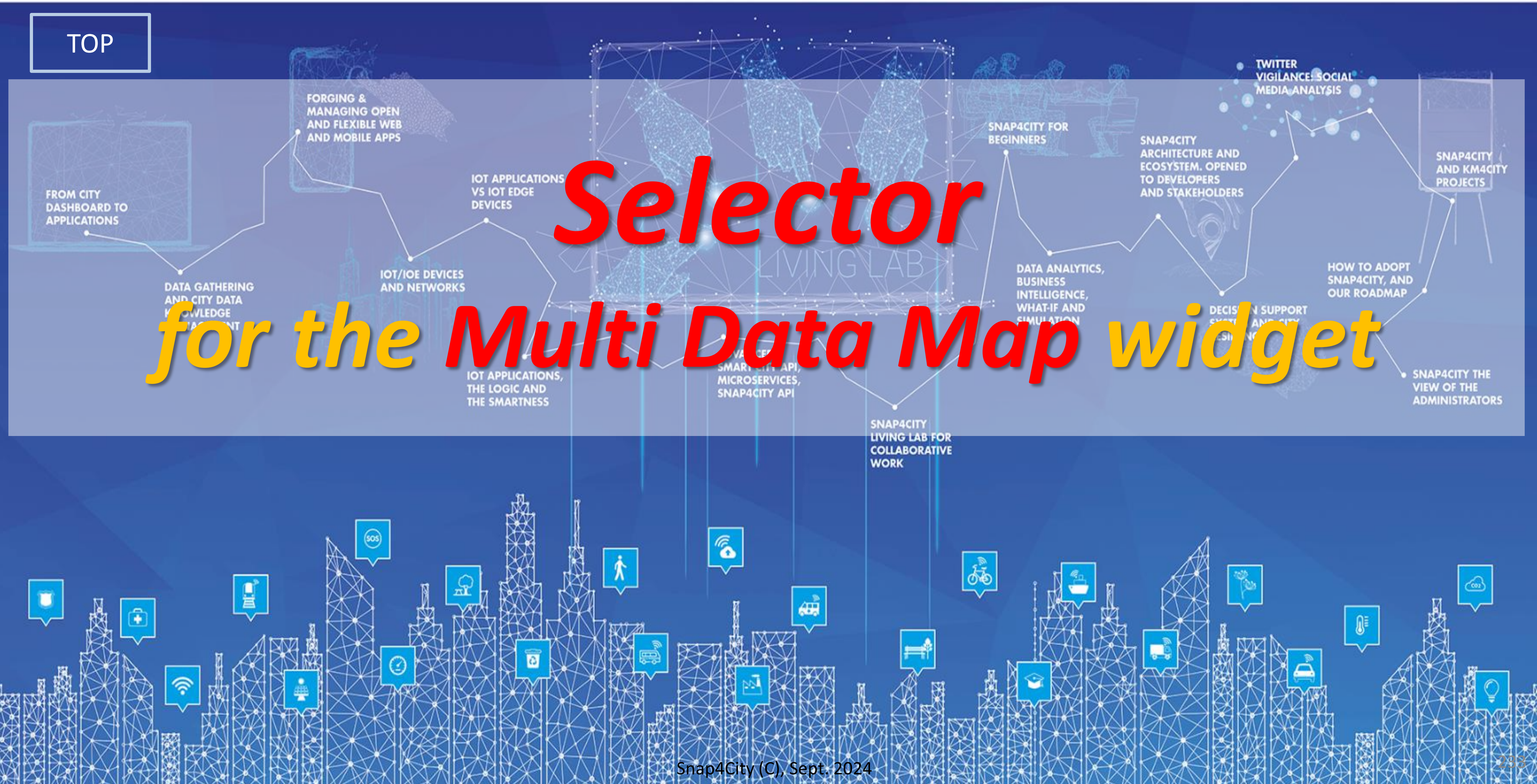


MyKPI - 17055863 - My Room Temperature 4 - gp.helsinki.test (Helsinki) - Private
MyKPI - 17055853 - my studio temperature - GP - - gpantaleo (DISIT) - Private
MyKPI - 17055848 - test2 - angelo.difino (DISIT) - Private
MyKPI - 17055845 - ClientiGiornalieri - roottooladmin1 (DISIT) - Private
Shared - shared_fan_maxDur
Sensor - Water_detector10 water - undefined (DISI) - Public
Shared - shared_case4-bulb
Shared - shared_fan_minDur
Shared - shared_prova_blink
Shared - shared_fan_velocity
Sensor - Water_detector09 water - undefined (DISI) - Public
Sensor - Water_detector04 water - undefined (DISI) - Public
Sensor - Water_detector02 water - undefined (DISI) - Public
Sensor - Water_detector01 water - undefined (DISI) - Public
Sensor - Water_detector03 water - undefined (DISI) - Public
Sensor - Water_detector05 water - undefined (DISI) - Public
Sensor - Water_detector07 water - undefined (DISI) - Public
Sensor - Water_detector06 water - undefined (DISI) - Public
Sensor - Water_detector08 water - undefined (DISI) - Public
New shared variable...

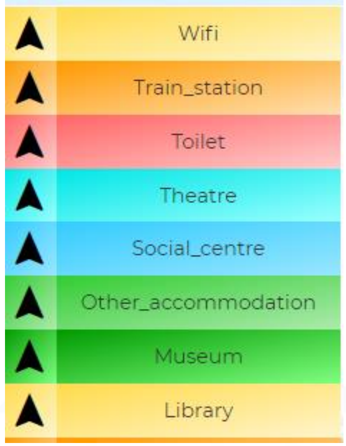
- **[ ]**
  - **leave it empty to connect later direcly from/to IOT APP**
- **MyKPI**
  - Read/write data, your KPI, and real time values
- **Sensors**
  - Your data collected as sensors only rendering data
- **New Shared Variables**
  - ….. Only for Case 3: Synoptic vs Synoptic Communications
  - No protection of data value

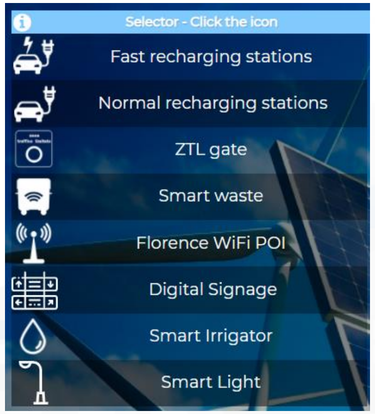
TOP

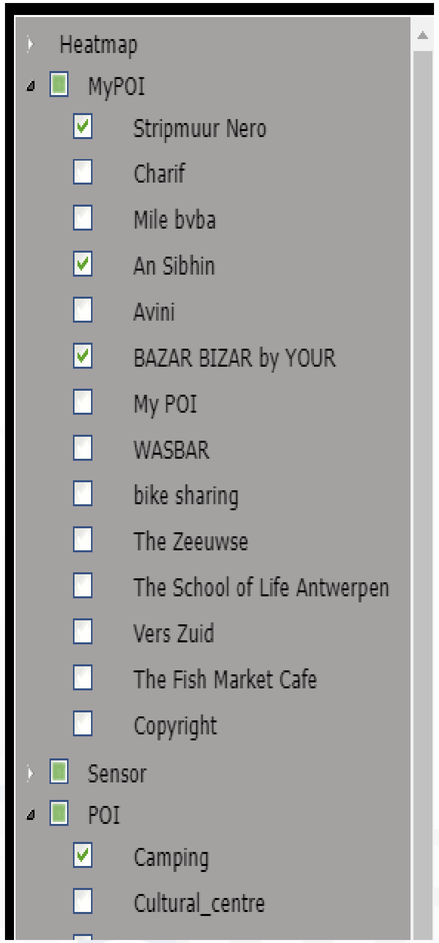
Selector for the Multi Data Map widget

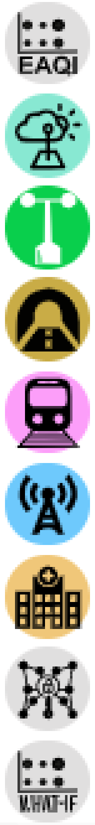

FROM CITY DASHBOARD TO APPLICATIONS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
IOT/IOE DEVICES AND NETWORKS
IOT APPLICATIONS VS IOT EDGE DEVICES
IOT APPLICATIONS, THE LOGIC AND THE SMARTNESS
SMART CITY API, MICROSERVICES, SNAP4CITY API
LIVING LAB
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
SNAP4CITY FOR BEGINNERS
DATA ANALYTICS, BUSINESS INTELLIGENCE, WHAT-IF AND SIMULATION
SNAP4CITY ARCHITECTURE AND ECOSYSTEM. OPENED TO DEVELOPERS AND STAKEHOLDERS
DECISION SUPPORT SYSTEMS AND CITY
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY AND KM4CITY PROJECTS
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

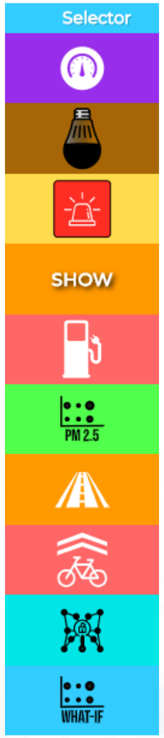
The Selector for Multi Data Maps

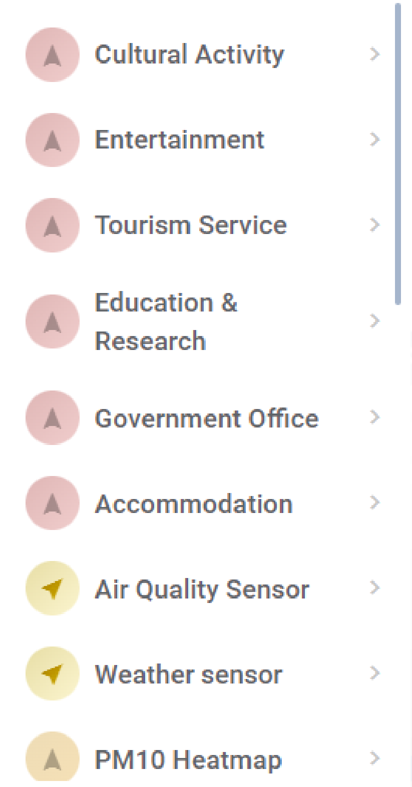

Wifi
Train_station
Toilet
Theatre
Social_centre
Other_accommodation
Museum
Library


Selector - Click the icon
Fast recharging stations
Normal recharging stations
ZTL gate
Smart waste
Florence WiFi POI
Digital Signage
Smart Irrigator
Smart Light


Heatmap
MyPOI
☑ Stripmuur Nero
☐ Charif
☐ Mile bvba
☑ An Sibhin
☐ Avini
☑ BAZAR BIZAR by YOUR
☐ My POI
☐ WASBAR
☐ bike sharing
☐ The Zeeuwse
☐ The School of Life Antwerpen
☐ Vers Zuid
☐ The Fish Market Cafe
☐ Copyright
Sensor
POI
☑ Camping
☐ Cultural_centre


EAQI
WHAT-IF


Selector
SHOW
PM 2.5
WHAT-IF

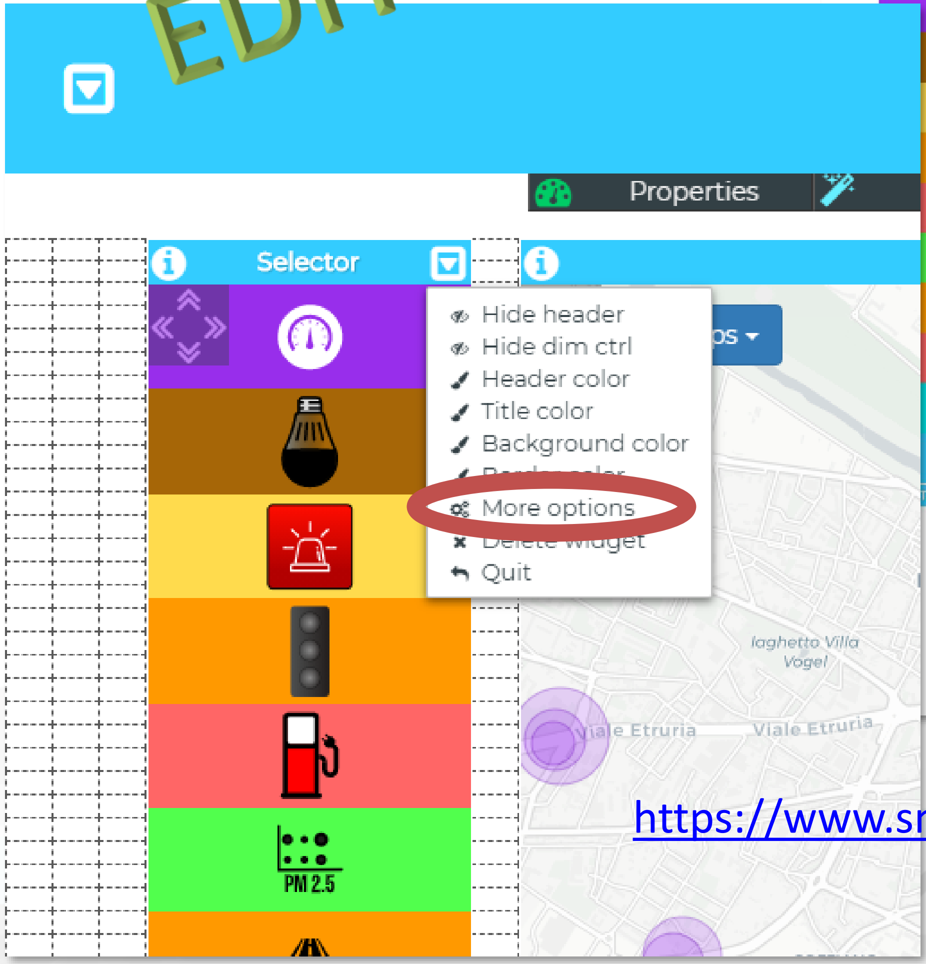

Cultural Activity
Entertainment
Tourism Service
Education & Research
Government Office
Accommodation
Air Quality Sensor
Weather sensor
PM10 Heatmap

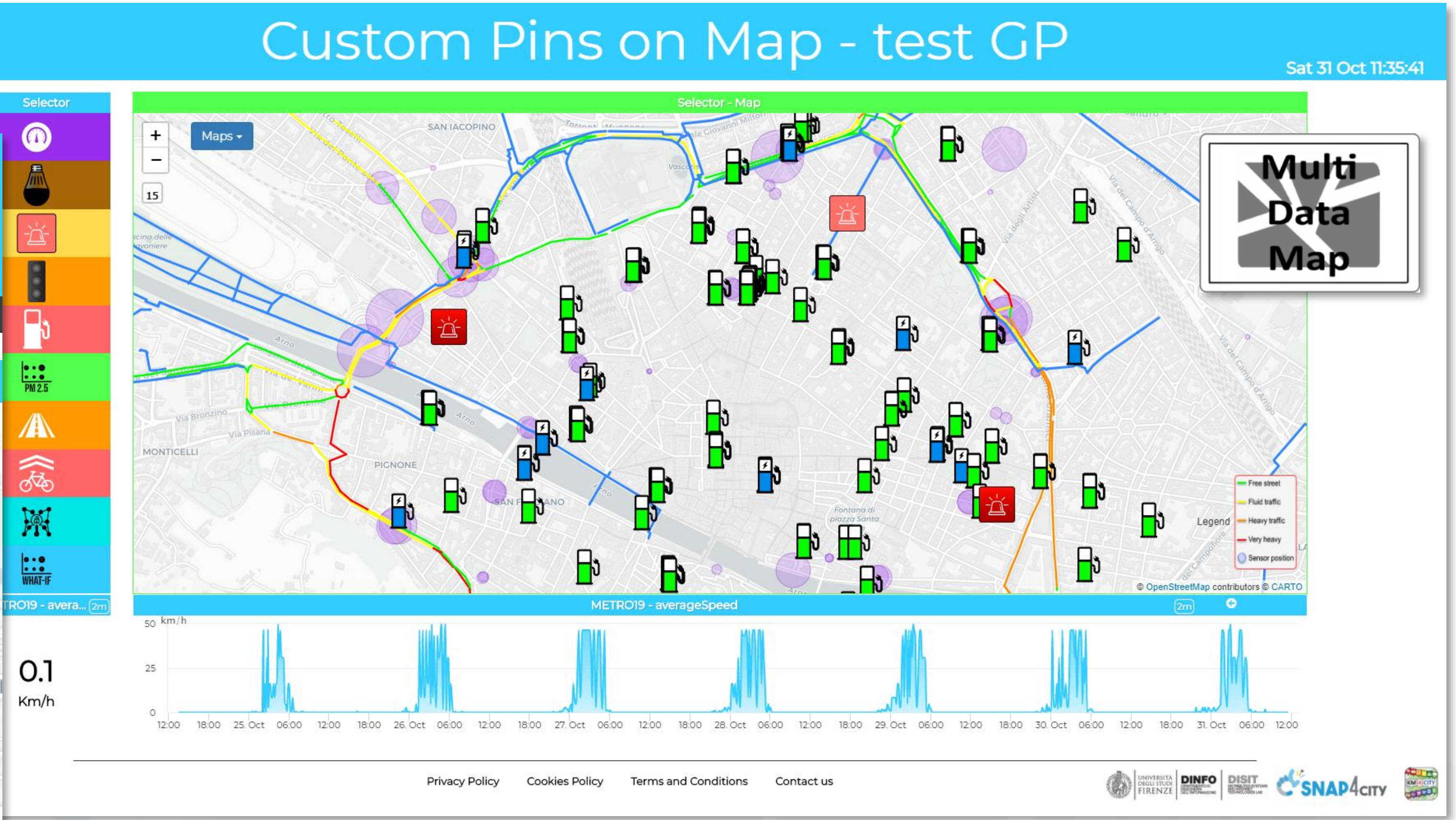
- **Different styles**
  - Icon and Text menu
  - Custom Menu Icon
  - Icon Menu buttons
  - Etc.
- **Features**
  - Removable header
  - Colours custom
  - Transparencies
  - Mixed modalities
- **Note:**
  - Manus can be realized also with a set of Buttons

The Selector is the Map Controller

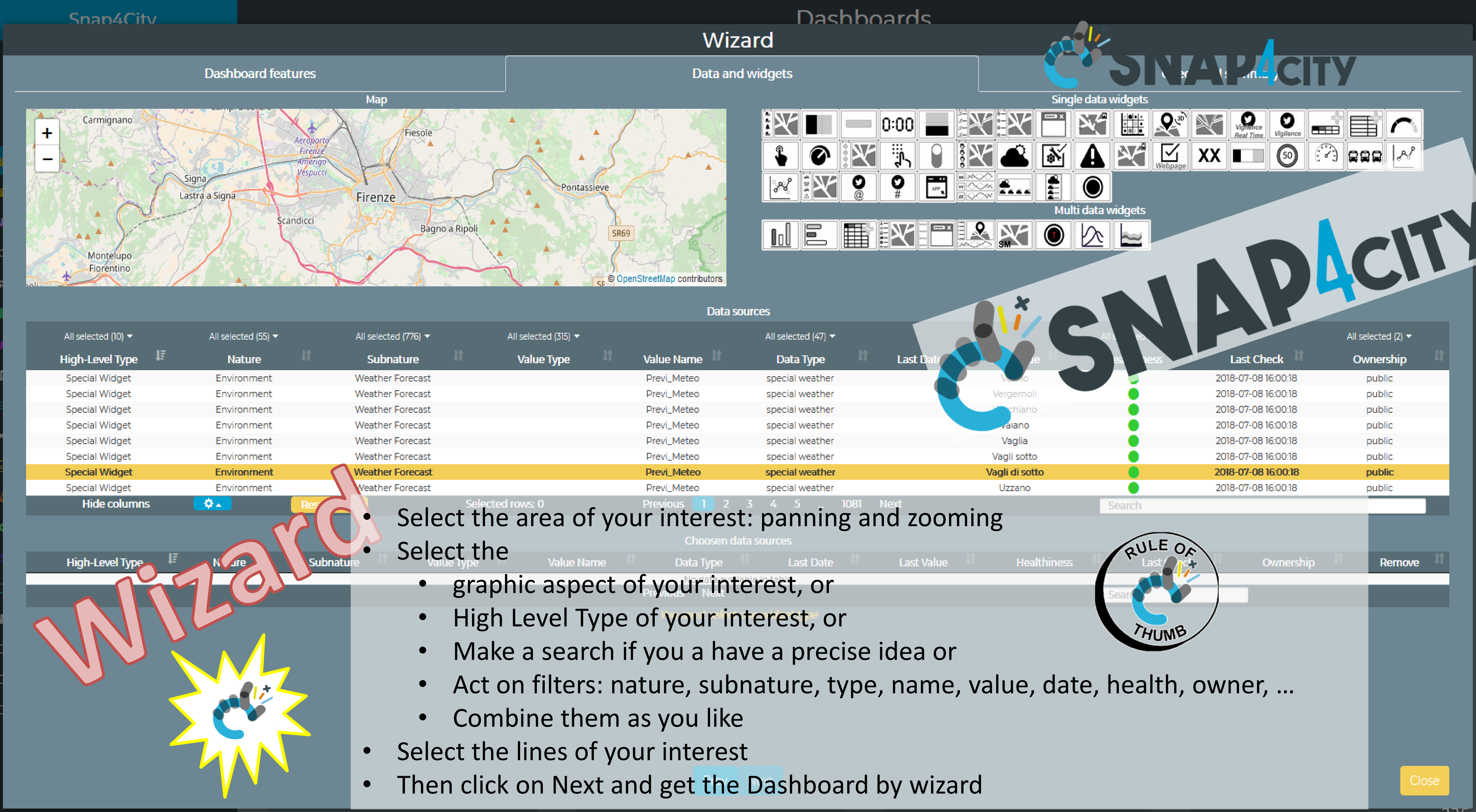
Custom Dynamic Pins

EDITING


Properties
Selector
Hide header
Hide dim ctrl
Header color
Title color
Background color
More options
Delete widget
Quit
PM 2.5
laghetto Villa Vogel
Viale Etruria


Custom Pins on Map - test GP
Sat 31 Oct 11:35:41
Selector
Selector - Map
Maps
Multi Data Map
PM 2.5
WHAT-IF
Legend
Free street
Fluid traffic
Heavy traffic
Very heavy
Sensor position
METRO19 - averageSpeed
0.1
Km/h
km/h
Privacy Policy
Cookies Policy
Terms and Conditions
Contact us

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=Mjk5MA==



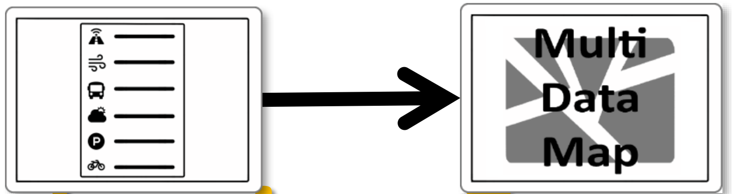
Snap4City
Dashboards
Wizard
Dashboard features
Data and widgets
Map
Carmignano
Fiesole
Aeroporto Firenze Amerigo Vespucci
Signa
Lastra a Signa
Firenze
Pontassieve
Scandicci
Bagno a Ripoli
SR69
Montelupo Fiorentino
© OpenStreetMap contributors
Single data widgets
Multi data widgets
Data sources
Hide columns
Selected rows: 0
Previous 1 2 3 4 5 … 1081 Next
Search
Choosen data sources
Close

High-Level Type	Nature	Subnature	Value Type	Value Name	Data Type	Last Date	Last Value	Healthiness	Last Check	Ownership
All selected (10)	All selected (55)	All selected (776)	All selected (315)		All selected (47)					All selected (2)
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		[illegible]	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vergemoli	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		[illegible]	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vaiano	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vaglia	●	2018-07-08 16:00:18	public
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Vagli sotto	●	2018-07-08 16:00:18	public
Special Widget	**Environment**	**Weather Forecast**		**Previ_Meteo**	**special weather**		**Vagli di sotto**	●	**2018-07-08 16:00:18**	**public**
Special Widget	Environment	Weather Forecast		Previ_Meteo	special weather		Uzzano	●	2018-07-08 16:00:18	public

Wizard

- Select the area of your interest: panning and zooming
- Select the
  - graphic aspect of your interest, or
  - High Level Type of your interest, or
  - Make a search if you a have a precise idea or
  - Act on filters: nature, subnature, type, name, value, date, health, owner, …
  - Combine them as you like
- Select the lines of your interest
- Then click on Next and get the Dashboard by wizard

RULE OF THUMB

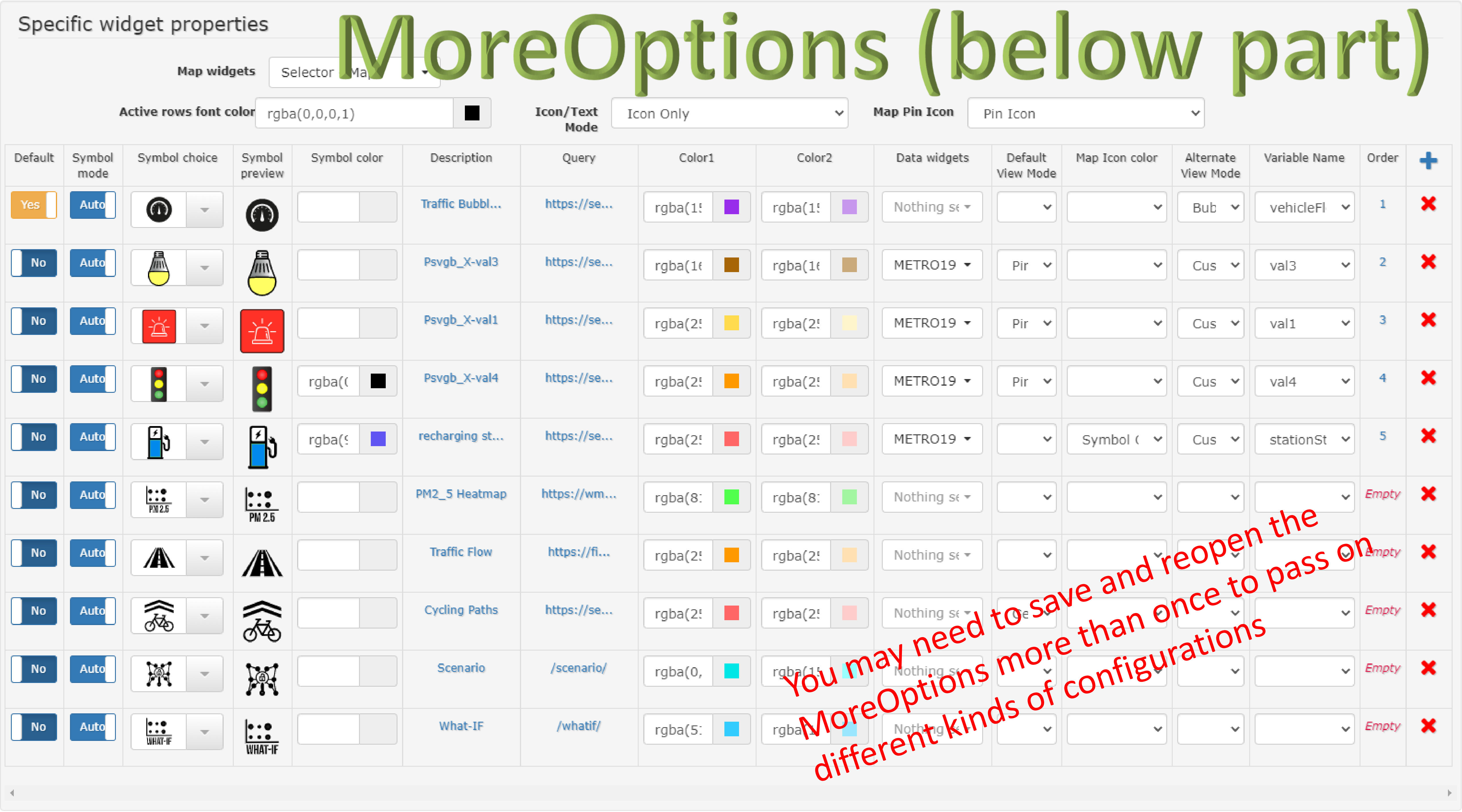


Dashboard Usage and recipe: Event map target

- **Selector to Show on Map a**
  - **category of Map positioned elements**
    - https://servicemap.disit.org/WebAppGrafo/api/v1/?selection=43.08694333811321;8.791809082031252;44.93758500391093;14.065246582031252&categories=Traffic_sensor&maxResults=0&maxDists=0.1&text=&model=&value_type=&format=json
    - https://servicemap.disit.org/WebAppGrafo/api/v1/?queryId=e5f39066cd68ffe259ed8877bcee222b&format=json
  - **Entity by Model**
    - https://www.disit.org/superservicemap/api/v1?selection=59.36535064975547;13.457822799682619;59.39031474260852;13.566999435424806&model=SmartLightCapelon&format=json
  - **Single Entity**
    - https://servicemap.disit.org/WebAppGrafo/api/v1/?serviceUri=http://www.disit.org/km4city/resource/iot/orionFirenze2/Firenze/SHT20lab_new&format=json&fromTime=3-day
  - **Heatmap among many**
    - https://wmsserver.snap4city.org/geoserver/Snap4City/wms?service=WMS&layers=Florence_PM10
  - **Traffic flow**
    - https://wmsserver.snap4city.org/geoserver/Snap4City/wms?service=WMS&layers=FirenzeFIPILITrafficRealtime&trafficflowmanager=true
    - https://firenzetraffic.km4city.org/trafficRTDetails/roads/read.php
  - **Origin Destination Map**
    - https://odmm.snap4city.org/api/get?precision=communes&from_date=&organization=Toscana&inflow=True&longitude=11.255751&latitude=43.769710&od_id=mobile_Toscana_1000&perc=True
- **Events which are also PIN on map**

- **Il Service URI as the unique identifier of the Entity**
  - **http://www.disit.org/km4city/resource/iot/orionUNIFI/DISIT/METRO632**

MoreOptions (below part)



Specific widget properties

Map widgets Selector Ma

Active rows font color rgba(0,0,0,1) ■

Icon/Text Mode Icon Only

Map Pin Icon Pin Icon

Default	Symbol mode	Symbol choice	Symbol preview	Symbol color	Description	Query	Color1	Color2	Data widgets	Default View Mode	Map Icon color	Alternate View Mode	Variable Name	Order	✚
Yes	Auto				Traffic Bubbl...	https://se...	rgba(1 🟪	rgba(1 🟪	Nothing se			Bub	vehicleFl	1	✖
No	Auto				Psvgb_X-val3	https://se...	rgba(1 🟫	rgba(1 🟫	METRO19	Pir		Cus	val3	2	✖
No	Auto				Psvgb_X-val1	https://se...	rgba(2 🟨	rgba(2 🟨	METRO19	Pir		Cus	val1	3	✖
No	Auto			rgba((■	Psvgb_X-val4	https://se...	rgba(2 🟧	rgba(2 🟧	METRO19	Pir		Cus	val4	4	✖
No	Auto			rgba(🟦	recharging st...	https://se...	rgba(2 🟥	rgba(2 🟥	METRO19		Symbol (	Cus	stationSt	5	✖
No	Auto				PM2_5 Heatmap	https://wm...	rgba(8 🟩	rgba(8 🟩	Nothing se					*Empty*	✖
No	Auto				Traffic Flow	https://fi...	rgba(2 🟧	rgba(2 🟧	Nothing se					*Empty*	✖
No	Auto				Cycling Paths	https://se...	rgba(2 🟥	rgba(2 🟥	Nothing se					*Empty*	✖
No	Auto				Scenario	/scenario/	rgba(0, 🟦	rgba(1 🟦	Nothing se					*Empty*	✖
No	Auto				What-IF	/whatif/	rgba(5 🟦	rgba 🟦	Nothing					*Empty*	✖

You may need to save and reopen the MoreOptions more than once to pass on different kinds of configurations

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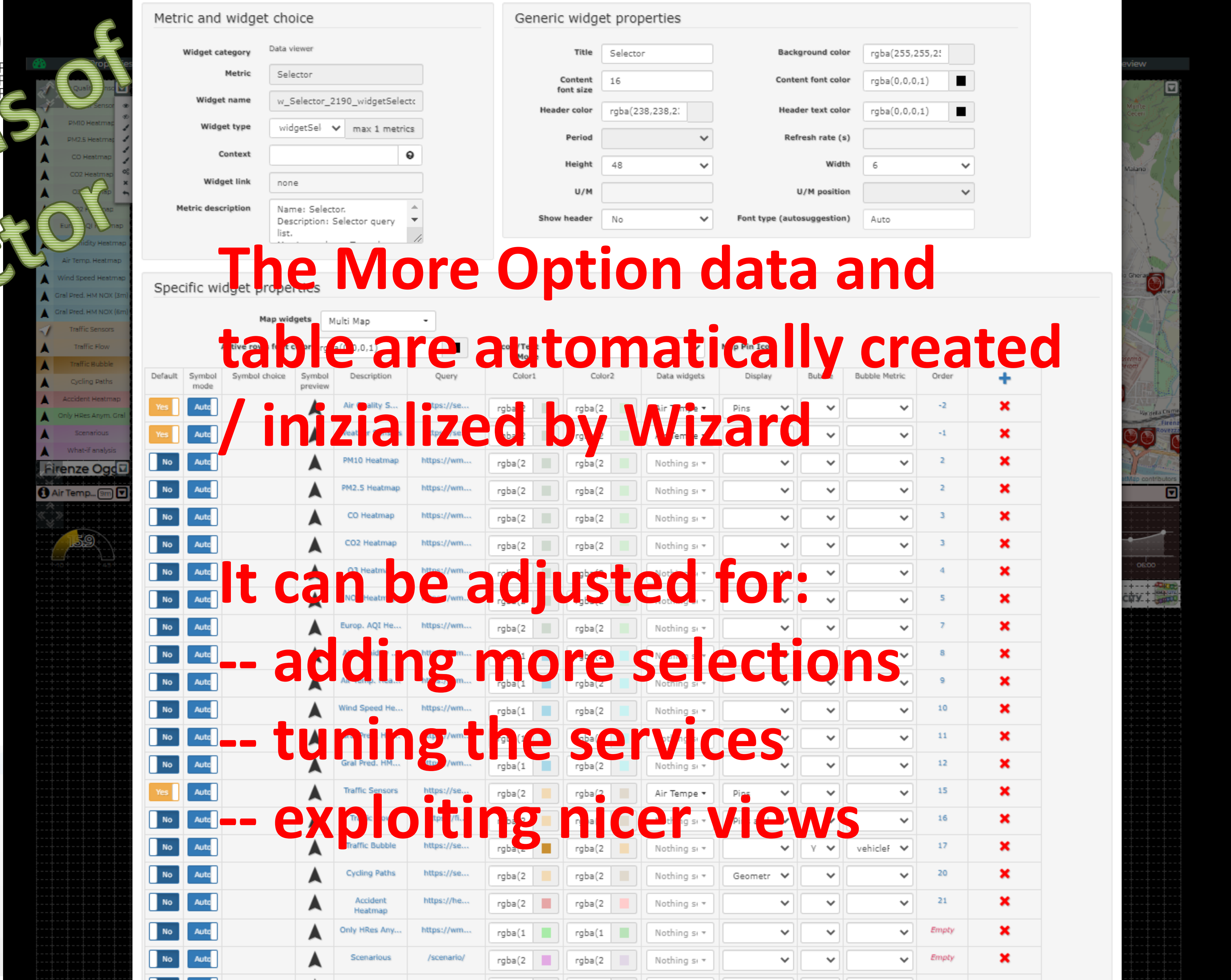
FIRENZE

DINFO
DIPARTIMENTO DI
INGEGNERIA
DELL'INFORMAZIONE

More Options of the Selector

- Setting:
  - Heatmaps
  - Bubbles
  - Icons
  - Custom
  - Traffic flow
  - Cycling path
  - What-if
  - Etc. etc.



Metric and widget choice

Widget category: Data viewer
Metric: Selector
Widget name: w_Selector_2190_widgetSelect
Widget type: widgetSel — max 1 metrics
Context:
Widget link: none
Metric description: Name: Selector. Description: Selector query list.

Generic widget properties

Title: Selector
Background color: rgba(255,255,2
Content font size: 16
Content font color: rgba(0,0,0,1)
Header color: rgba(238,238,2
Header text color: rgba(0,0,0,1)
Period:
Refresh rate (s):
Height: 48
Width: 6
U/M:
U/M position:
Show header: No
Font type (autosuggestion): Auto

Specific widget properties

Map widgets: Multi Map

Default	Symbol mode	Description	Query	Color1	Color2	Data widgets	Display	Bubble Metric	Order
Yes	Auto	Air Quality S...	https://se...	rgba(2	rgba(2	Air Tempe	Pins		-2
Yes	Auto	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			-1
No	Auto	PM10 Heatmap	https://wm...	rgba(2	rgba(2	Nothing s			2
No	Auto	PM2.5 Heatmap	https://wm...	rgba(2	rgba(2	Nothing s			2
No	Auto	CO Heatmap	https://wm...	rgba(2	rgba(2	Nothing s			3
No	Auto	CO2 Heatmap	https://wm...	rgba(2	rgba(2	Nothing s			3
No	Auto	O3 Heatm...	https://wm...	[illegible]	[illegible]	[illegible]			4
No	Auto	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			5
No	Auto	Europ. AQI He...	https://wm...	rgba(2	rgba(2	Nothing s			7
No	Auto	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			8
No	Auto	[illegible]	[illegible]	rgba(1	rgba(2	Nothing s			9
No	Auto	Wind Speed He...	https://wm...	rgba(1	rgba(2	Nothing s			10
No	Auto	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			11
No	Auto	Gral Pred. HM...	[illegible]	rgba(1	rgba(2	Nothing s			12
Yes	Auto	Traffic Sensors	https://se...	rgba(2	rgba(2	Air Tempe	Pins		15
No	Auto	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		16
No	Auto	Traffic Bubble	https://se...	[illegible]	rgba(2	Nothing s		vehicleF	17
No	Auto	Cycling Paths	https://se...	rgba(2	rgba(2	Nothing s	Geometr		20
No	Auto	Accident Heatmap	https://he...	rgba(2	rgba(2	Nothing s			21
No	Auto	Only HRes Any...	https://wm...	rgba(1	rgba(1	Nothing s			Empty
No	Auto	Scenarious	/scenario/	rgba(2	rgba(2	Nothing s			Empty

The More Option data and table are automatically created / inizialized by Wizard

It can be adjusted for:

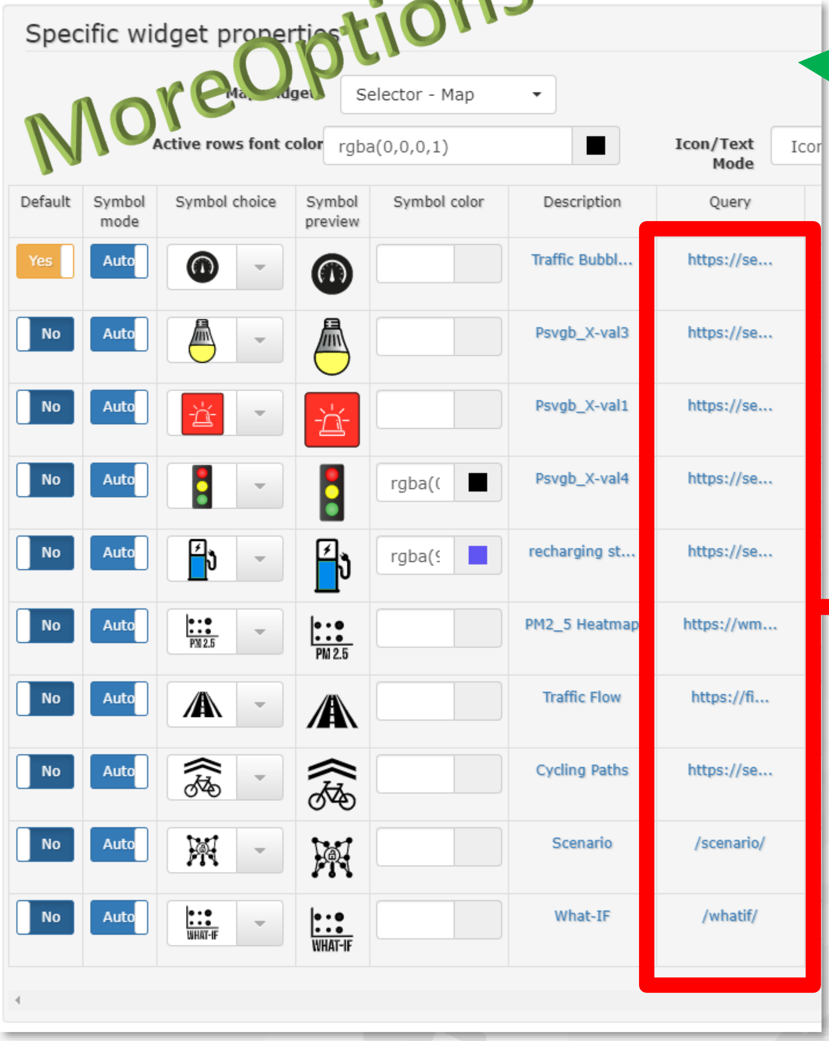
-- adding more selections

-- tuning the services

-- exploiting nicer views

The Selector is the Map Controller

MoreOptions



Specific widget properties

Map widget: Selector - Map

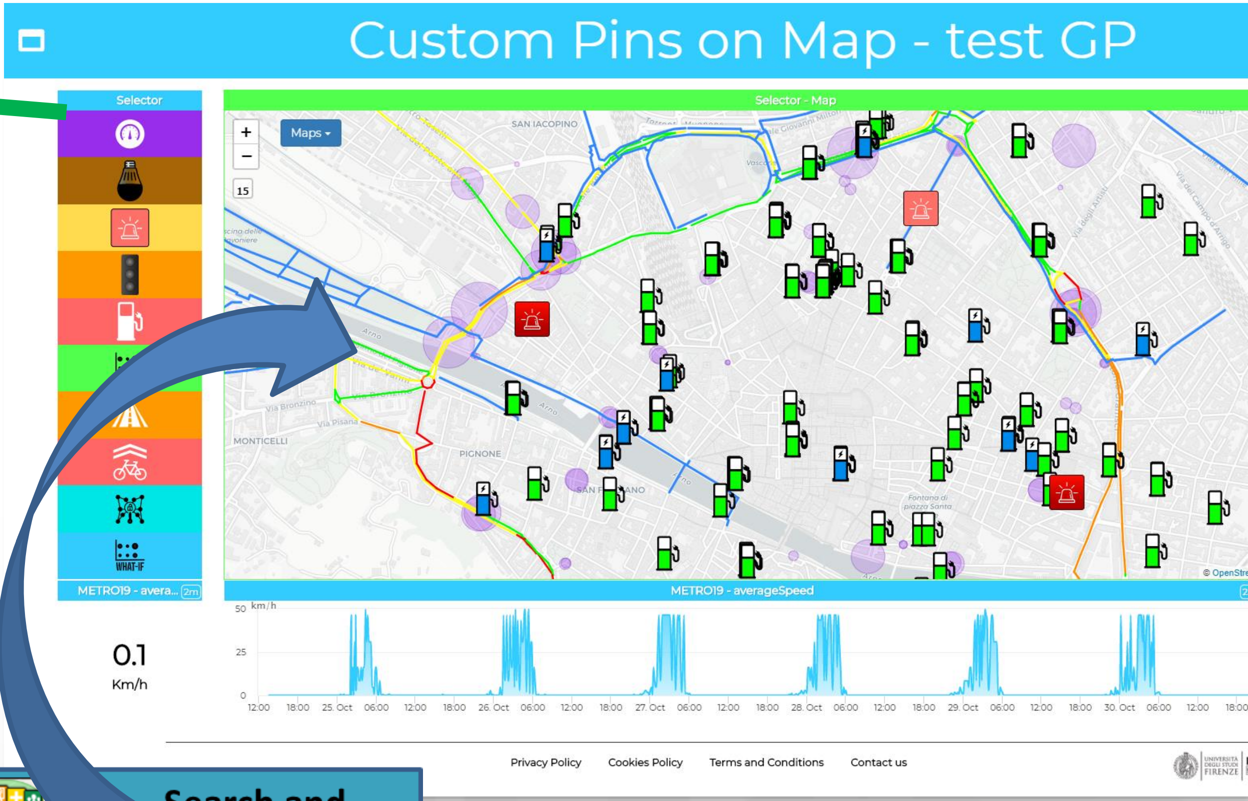
Active rows font color: rgba(0,0,0,1) ■

Icon/Text Mode: Icon

Default	Symbol mode	Symbol choice	Symbol preview	Symbol color	Description	Query
Yes	Auto				Traffic Bubbl...	https://se...
No	Auto				Psvgb_X-val3	https://se...
No	Auto				Psvgb_X-val1	https://se...
No	Auto			rgba((■	Psvgb_X-val4	https://se...
No	Auto			rgba((■	recharging st...	https://se...
No	Auto	PM 2.5	PM 2.5		PM2_5 Heatmap	https://wm...
No	Auto				Traffic Flow	https://fi...
No	Auto				Cycling Paths	https://se...
No	Auto				Scenario	/scenario/
No	Auto	WHAT-IF	WHAT-IF		What-IF	/whatif/

More Options Edit

- Query ID
- REST CALL
- Command
- Heatmap


Custom Pins on Map - test GP
Selector
Selector - Map
Maps
15
METRO19 - avera...
METRO19 - averageSpeed
0.1
Km/h
Privacy Policy
Cookies Policy
Terms and Conditions
Contact us

Knowledge base
Semantic reasoners

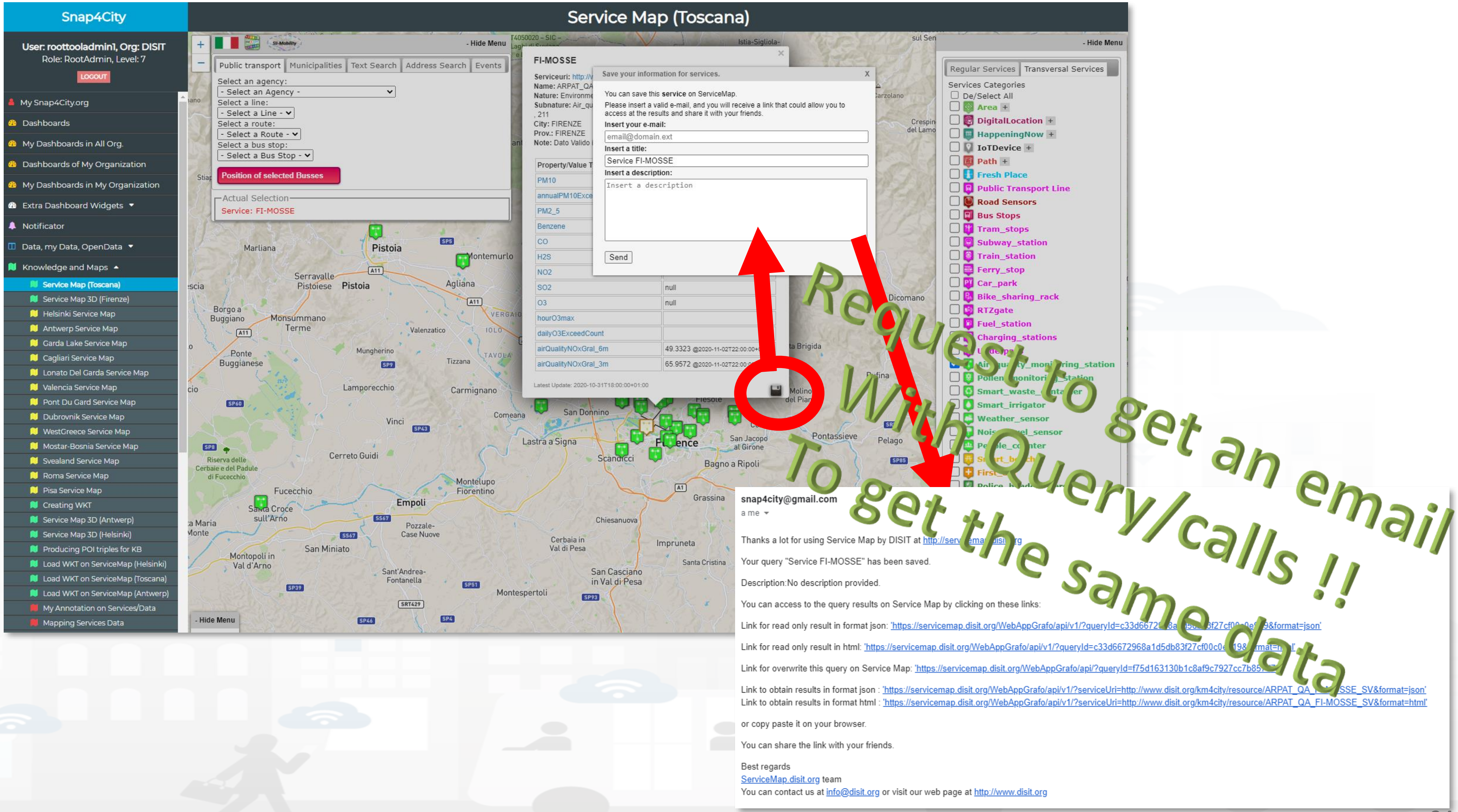
Indexing and aggregating
Elastic search

Search and Query, Smart City API
Facet, semantic search

- *The Query is produced by Wizard but can be manually changed*

How to Get the «Query» used in More Options (1)

- **Query ID**
  - **only Read and Read/Write of the query**
- **REST CALL of the Smart City APIs**
  - **JSON**
  - **HTML (do not use into MoreOptions)**


Snap4City
Service Map (Toscana)
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
Extra Dashboard Widgets
Notificator
Data, my Data, OpenData
Knowledge and Maps
Service Map (Toscana)
Service Map 3D (Firenze)
Helsinki Service Map
Antwerp Service Map
Garda Lake Service Map
Cagliari Service Map
Lonato Del Garda Service Map
Valencia Service Map
Pont Du Gard Service Map
Dubrovnik Service Map
WestGreece Service Map
Mostar-Bosnia Service Map
Svealand Service Map
Roma Service Map
Pisa Service Map
Creating WKT
Service Map 3D (Antwerp)
Service Map 3D (Helsinki)
Producing POI triples for KB
Load WKT on ServiceMap (Helsinki)
Load WKT on ServiceMap (Toscana)
Load WKT on ServiceMap (Antwerp)
My Annotation on Services/Data
Mapping Services Data
Public transport
Municipalities
Text Search
Address Search
Events
- Hide Menu
Position of selected Busses
Regular Services
Transversal Services
Services Categories
De/Select All
Area
DigitalLocation
HappeningNow
IoTDevice
Path
Fresh Place
Public Transport Line
Road Sensors
Bus Stops
Tram_stops
Subway_station
Train_station
Ferry_stop
Car_park
Bike_sharing_rack
RTZgate
Fuel_station
Charging_stations
Air_quality_monitoring_station
Smart_irrigator
Weather_sensor
Pistoia
Empoli
Firenze
Request to get an email With Query/calls !!
To get the same data

Select an agency:
- Select an Agency -
Select a line:
- Select a Line -
Select a route:
- Select a Route -
Select a bus stop:
- Select a Bus Stop -

Actual Selection
Service: FI-MOSSE

FI-MOSSE

Serviceuri: http://v
Name: ARPAT_QA
Nature: Environme
Subnature: Air_qu
, 211
City: FIRENZE
Prov.: FIRENZE
Note: Dato Valido i

Property/Value T	
PM10	
annualPM10Exce	
PM2_5	
Benzene	
CO	
H2S	
NO2	
SO2	null
O3	null
hourO3max	
dailyO3ExceedCount	
airQualityNOxGral_6m	49.3323 @2020-11-02T22:00:00+0
airQualityNOxGral_3m	65.9572 @2020-11-02T22:00:0

Latest Update: 2020-10-31T18:00:00+01:00

Save your information for services.

You can save this **service** on ServiceMap.
Please insert a valid e-mail, and you will receive a link that could allow you to access at the results and share it with your friends.
Insert your e-mail:
email@domain.ext
Insert a title:
Service FI-MOSSE
Insert a description:
Insert a description
Send

snap4city@gmail.com
a me

Thanks a lot for using Service Map by DISIT at http://serv ema disi rg

Your query "Service FI-MOSSE" has been saved.

Description:No description provided.

You can access to the query results on Service Map by clicking on these links:

Link for read only result in format json: 'https://servicemap.disit.org/WebAppGrafo/api/v1/?queryId=c33d6672 8a 5d 3f27cf0 0e 9&format=json'

Link for read only result in html: 'https://servicemap.disit.org/WebAppGrafo/api/v1/?queryId=c33d6672968a1d5db83f27cf00c0e 198 rmat=h l'

Link for overwrite this query on Service Map: 'https://servicemap.disit.org/WebAppGrafo/api/?queryId=f75d163130b1c8af9c7927cc7b85

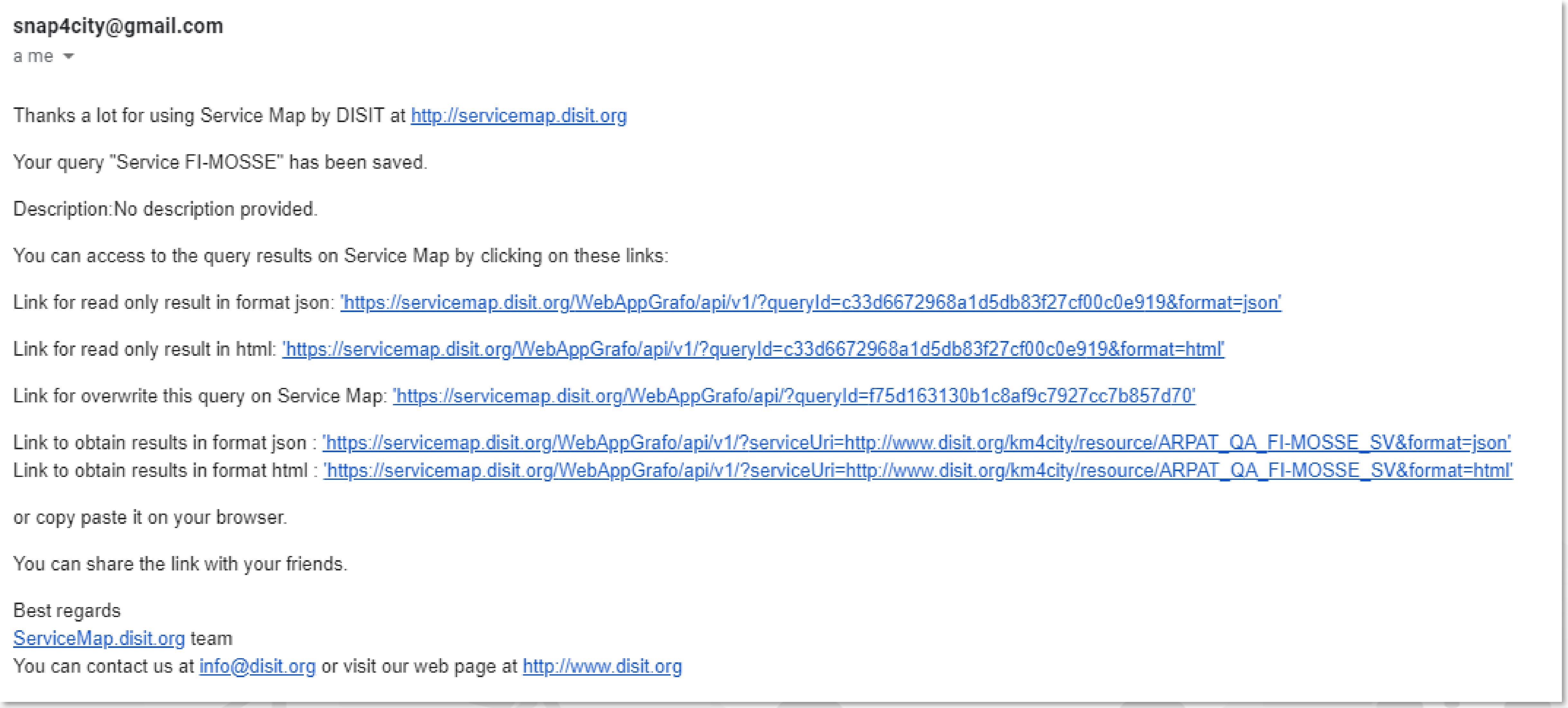
Link to obtain results in format json : 'https://servicemap.disit.org/WebAppGrafo/api/v1/?serviceUri=http://www.disit.org/km4city/resource/ARPAT_QA_ SSE_SV&format=json'
Link to obtain results in format html : 'https://servicemap.disit.org/WebAppGrafo/api/v1/?serviceUri=http://www.disit.org/km4city/resource/ARPAT_QA_FI-MOSSE_SV&format=html'

or copy paste it on your browser.

You can share the link with your friends.

Best regards
ServiceMap.disit.org team
You can contact us at info@disit.org or visit our web page at http://www.disit.org

The example of email from ServiceMap



snap4city@gmail.com

Thanks a lot for using Service Map by DISIT at http://servicemap.disit.org

Your query "Service FI-MOSSE" has been saved.

Description:No description provided.

You can access to the query results on Service Map by clicking on these links:

Link for read only result in format json: 'https://servicemap.disit.org/WebAppGrafo/api/v1/?queryId=c33d6672968a1d5db83f27cf00c0e919&format=json'

Link for read only result in html: 'https://servicemap.disit.org/WebAppGrafo/api/v1/?queryId=c33d6672968a1d5db83f27cf00c0e919&format=html'

Link for overwrite this query on Service Map: 'https://servicemap.disit.org/WebAppGrafo/api/?queryId=f75d163130b1c8af9c7927cc7b857d70'

Link to obtain results in format json : 'https://servicemap.disit.org/WebAppGrafo/api/v1/?serviceUri=http://www.disit.org/km4city/resource/ARPAT_QA_FI-MOSSE_SV&format=json'
Link to obtain results in format html : 'https://servicemap.disit.org/WebAppGrafo/api/v1/?serviceUri=http://www.disit.org/km4city/resource/ARPAT_QA_FI-MOSSE_SV&format=html'

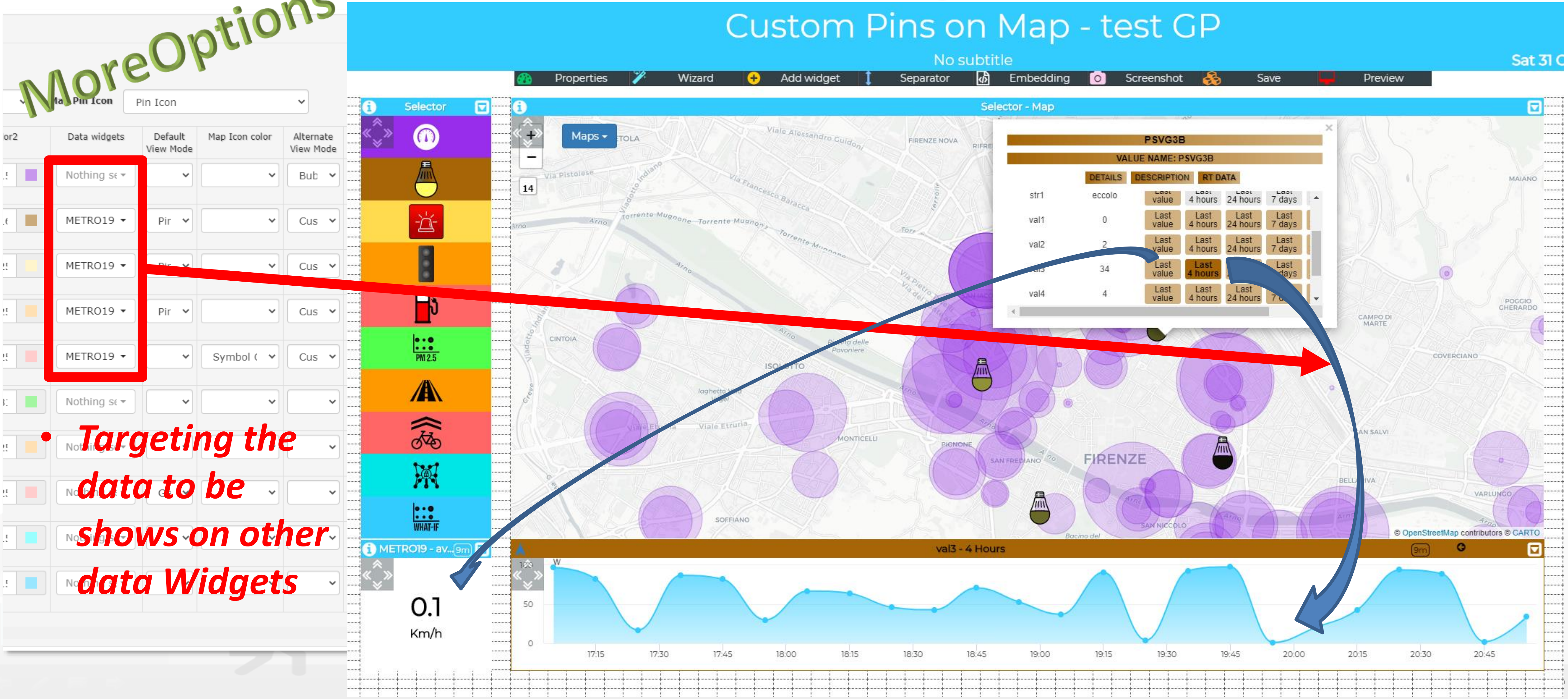
or copy paste it on your browser.

You can share the link with your friends.

Best regards
ServiceMap.disit.org team
You can contact us at info@disit.org or visit our web page at http://www.disit.org

The Selector is the Map Controller

MoreOptions



Ma Pin Icon: Pin Icon

or2	Data widgets	Default View Mode	Map Icon color	Alternate View Mode
	Nothing se			Bub
	METRO19	Pir		Cus
	METRO19	Pir		Cus
	METRO19	Pir		Cus
	METRO19		Symbol (	Cus
	Nothing se			
	Nothing se			
	No			
	Nothing se			
	No			

Custom Pins on Map - test GP
No subtitle
Sat 31 C
Properties
Wizard
Add widget
Separator
Embedding
Screenshot
Save
Preview
Selector
PM 2.5
WHAT-IF
Selector - Map
Maps
14
FIRENZE
© OpenStreetMap contributors © CARTO
METRO19 - av...
9m
val3 - 4 Hours
100
50
0
17:15
17:30
17:45
18:00
18:15
18:30
18:45
19:00
19:15
19:30
19:45
20:00
20:15
20:30
20:45

0.1
Km/h

PSVG3B

VALUE NAME: PSVG3B

DETAILS DESCRIPTION RT DATA

str1	eccolo	Last value	Last 4 hours	Last 24 hours	Last 7 days
val1	0	Last value	Last 4 hours	Last 24 hours	Last 7 days
val2	2	Last value	Last 4 hours	Last 24 hours	Last 7 days
val3	34	Last value	Last 4 hours		Last 7 days
val4	4	Last value	Last 4 hours	Last 24 hours	7

- *Targeting the data to be shows on other data Widgets*

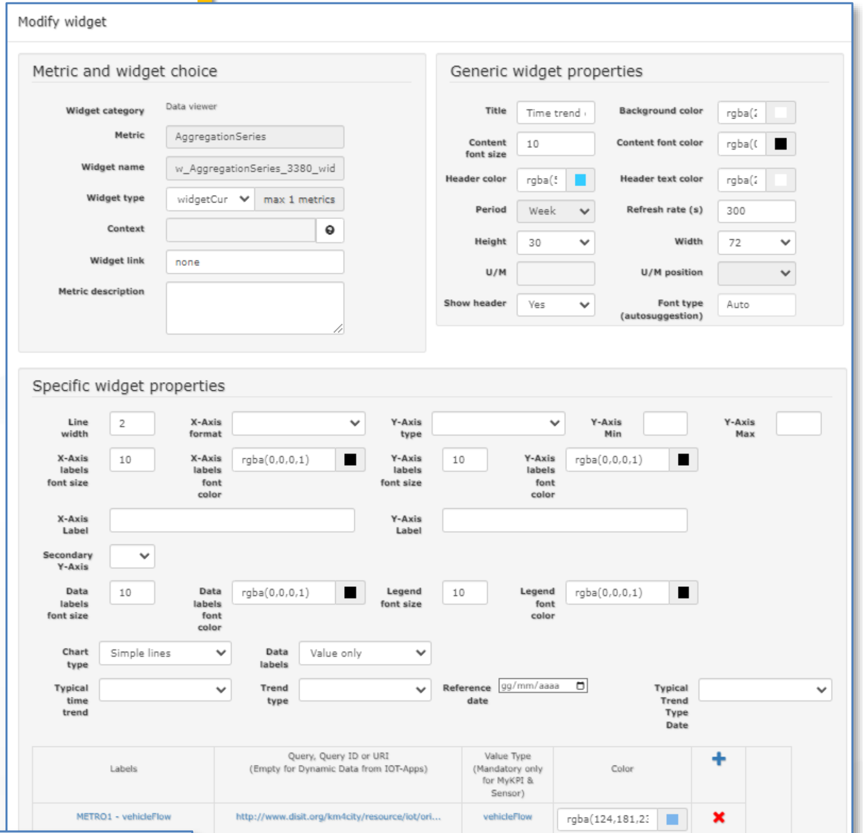
TOP

Setting More Options
for the Multi Series widget

FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
FROM CITY DASHBOARD TO APPLICATIONS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
IOT/IOE DEVICES AND NETWORKS
IOT APPLICATIONS, THE LOGIC AND THE SMARTNESS
MICROSERVICES, SNAP4CITY API
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
LIVING LAB
SNAP4CITY FOR BEGINNERS
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
SNAP4CITY AND KM4CITY PROJECTS
DATA ANALYTICS, BUSINESS INTELLIGENCE, WHAT-IF AND SIMULATION
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

Setting Multiseries More Options

- Stacked/non stacked, shaded
- Linear / Log
- Typical time trend
- ServiceURI: http://www.disit.org/km4city/resource/iot/orionUNIFI/DISIT/METRO1
- Query: https://servicemap.disit.org/WebAppGrafo/api/v1/?serviceUri=http://www.disit.org/km4city/resource/iot/orionUNIFI/DISIT/METRO1&fromTime=7-day&valueName=vehicleFlow&aggregation=60-minute
- Query ID, MyKPI ID etc.



Modify widget

Metric and widget choice

Widget category: Data viewer
Metric: AggregationSeries
Widget name: w_AggregationSeries_3380_wid
Widget type: widgetCur | max 1 metrics
Context:
Widget link: none
Metric description:

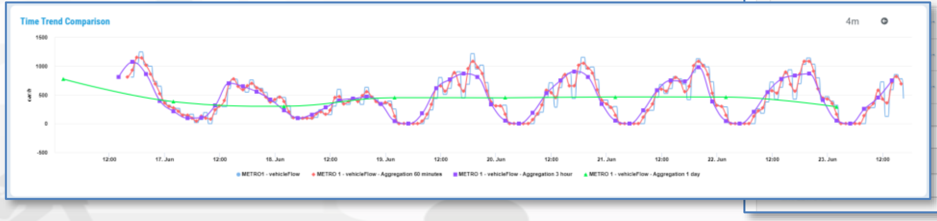
Generic widget properties

Title: Time trend
Background color: rgba(2
Content font size: 10
Content font color: rgba(0
Header color: rgba(5
Header text color: rgba(2
Period: Week
Refresh rate (s): 300
Height: 30
Width: 72
U/M:
U/M position:
Show header: Yes
Font type (autosuggestion): Auto

Specific widget properties

Line width: 2
X-Axis format:
Y-Axis type:
Y-Axis Min:
Y-Axis Max:
X-Axis labels font size: 10
X-Axis labels font color: rgba(0,0,0,1)
Y-Axis labels font size: 10
Y-Axis labels font color: rgba(0,0,0,1)
X-Axis Label:
Y-Axis Label:
Secondary Y-Axis:
Data labels font size: 10
Data labels font color: rgba(0,0,0,1)
Legend font size: 10
Legend font color: rgba(0,0,0,1)
Chart type: Simple lines
Data labels: Value only
Typical time trend:
Trend type:
Reference date: gg/mm/aaaa
Typical Trend Type Date:

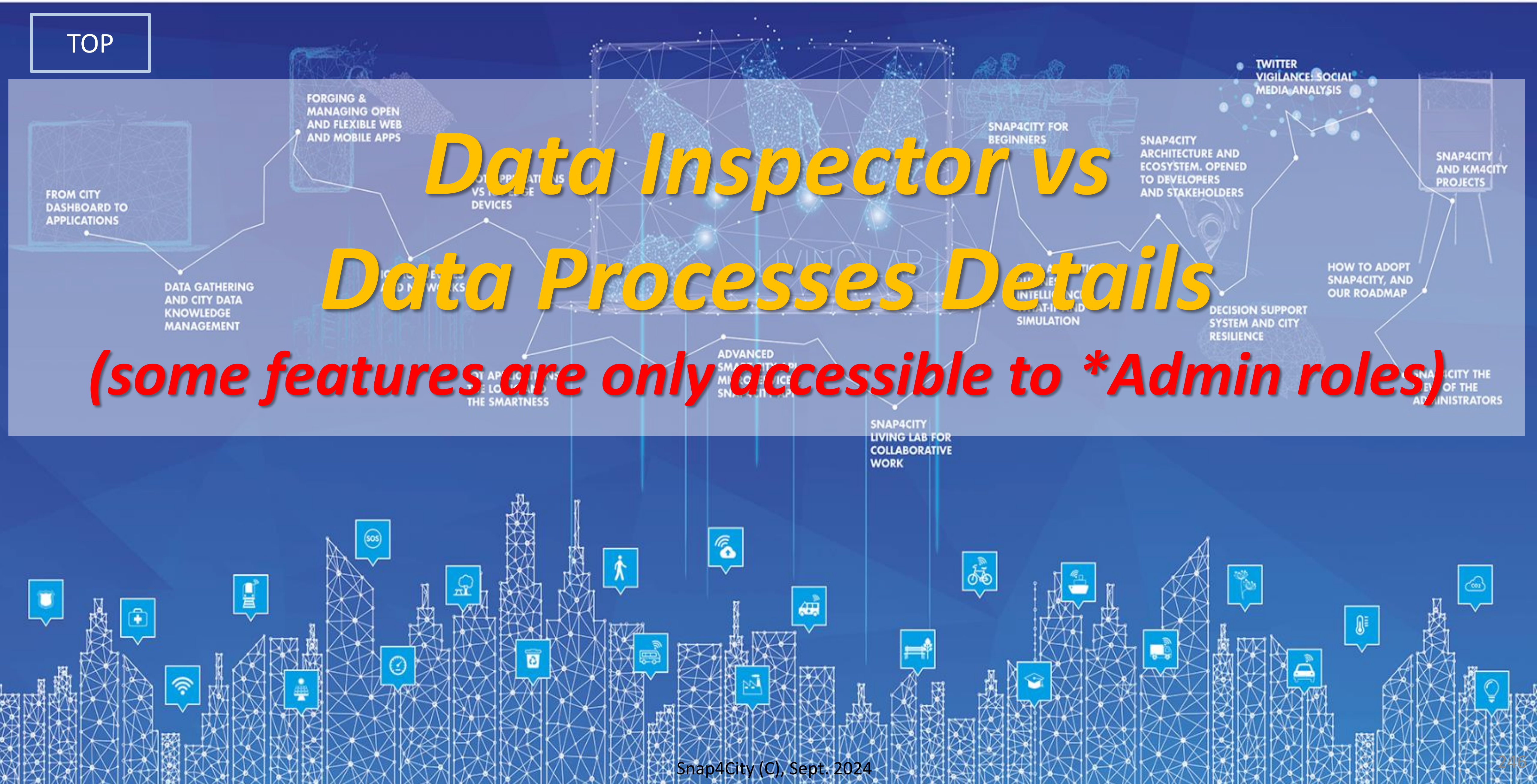
Labels	Query, Query ID or URI (Empty for Dynamic Data from IOT-Apps)	Value Type (Mandatory only for MyKPI & Sensor)	Color	+
METRO1 - vehicleFlow	http://www.disit.org/km4city/resource/iot/ori...	vehicleFlow	rgba(124,181,2:	✕
	https://servicemap.disit.org/WebAppGrafo/api/...	vehicleFlow	rgba(255,102,1(	✕
	https://servicemap.disit.org/WebAppGrafo/api/...	vehicleFlow	rgba(150,79,25:	✕
	https://servicemap.disit.org/WebAppGrafo/api/...	vehicleFlow	rgba(0,244,76,1	✕



TOP

Data Inspector vs Data Processes Details

(some features are only accessible to *Admin roles)


FROM CITY DASHBOARD TO APPLICATIONS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
ADVANCED SMART CITY API
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
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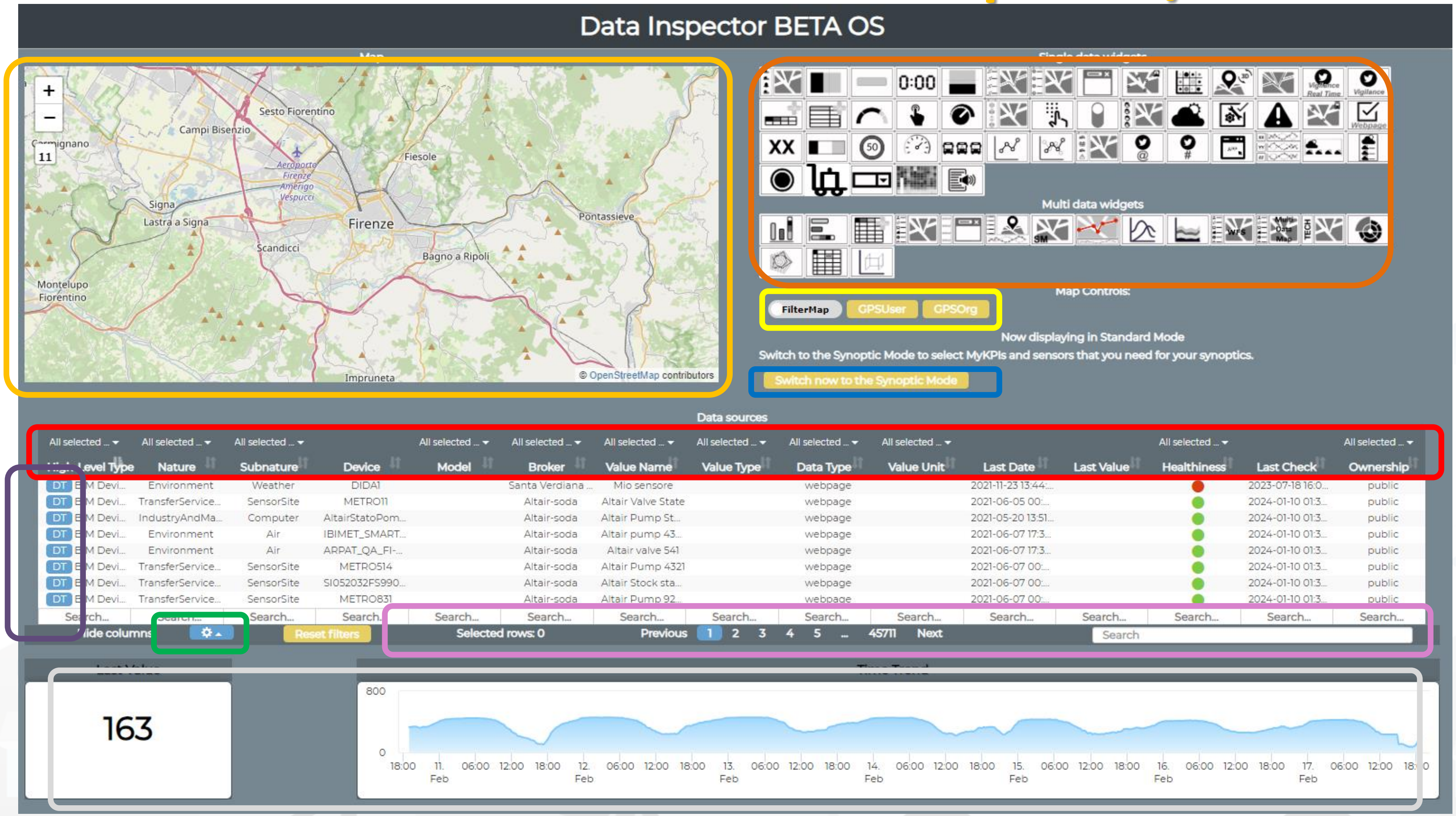
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
DECISION SUPPORT SYSTEM AND CITY RESILIENCE
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY AND KM4CITY PROJECTS
THE SMARTNESS

New Data Inspector/Wizard


Data Inspector BETA OS
Map
Sesto Fiorentino
Campi Bisenzio
Carmignano
Aeroporto Firenze Amerigo Vespucci
Fiesole
Signa
Lastra a Signa
Firenze
Pontassieve
Scandicci
Bagno a Ripoli
Montelupo Fiorentino
Impruneta
© OpenStreetMap contributors
Single data widgets
0:00
XX
50
Multi data widgets
Map Controls:
FilterMap
GPSUser
GPSOrg

Now displaying in Standard Mode

Switch to the Synoptic Mode to select MyKPIs and sensors that you need for your synoptics.

Switch now to the Synoptic Mode
Data sources

High Level Type	Nature	Subnature	Device	Model	Broker	Value Name	Value Type	Data Type	Value Unit	Last Date	Last Value	Healthiness	Last Check	Ownership
All selected ...	All selected ...	All selected ...		All selected ...	All selected ...	All selected ...	All selected ...	All selected ...	All selected ...			All selected ...		All selected ...
DT EM Devi...	Environment	Weather	DIDA1		Santa Verdiana ...	Mio sensore		webpage		2021-11-23 13:44:...		🔴	2023-07-18 16:0...	public
DT EM Devi...	TransferService...	SensorSite	METRO11		Altair-soda	Altair Valve State		webpage		2021-06-05 00:...		🟢	2024-01-10 01:3...	public
DT EM Devi...	IndustryAndMa...	Computer	AltairStatoPom...		Altair-soda	Altair Pump St...		webpage		2021-05-20 13:51...		🟢	2024-01-10 01:3...	public
DT EM Devi...	Environment	Air	IBIMET_SMART...		Altair-soda	Altair pump 43...		webpage		2021-06-07 17:3...		🟢	2024-01-10 01:3...	public
DT EM Devi...	Environment	Air	ARPAT_QA_FI-...		Altair-soda	Altair valve 541		webpage		2021-06-07 17:3...		🟢	2024-01-10 01:3...	public
DT EM Devi...	TransferService...	SensorSite	METRO514		Altair-soda	Altair Pump 4321		webpage		2021-06-07 00:...		🟢	2024-01-10 01:3...	public
DT EM Devi...	TransferService...	SensorSite	SI052032FS990...		Altair-soda	Altair Stock sta...		webpage		2021-06-07 00:...		🟢	2024-01-10 01:3...	public
DT EM Devi...	TransferService...	SensorSite	METRO831		Altair-soda	Altair Pump 92...		webpage		2021-06-07 00:...		🟢	2024-01-10 01:3...	public
Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...	Search...

Hide columns
Reset filters

Selected rows: 0

Previous 1 2 3 4 5 ... 45711 Next
Search
Last Value
163
Time Trend
800
0
18:00
11. Feb
06:00
12:00
18:00
12. Feb
06:00
12:00
18:00
13. Feb
06:00
12:00
18:00
14. Feb
06:00
12:00
18:00
15. Feb
06:00
12:00
18:00
16. Feb
06:00
12:00
18:00
17. Feb
06:00
12:00
18:00

🟥 Filtering/Searching for individual fields (even for some fields not displayed as geographic coordinates)

🟨 Geographic Filtering

🟪 Text Search on all fields

🟩 Menu for choosing the fields to display in the table

🟨 View on Map(via PREVIEW)

⬜ Data and Trend visualization

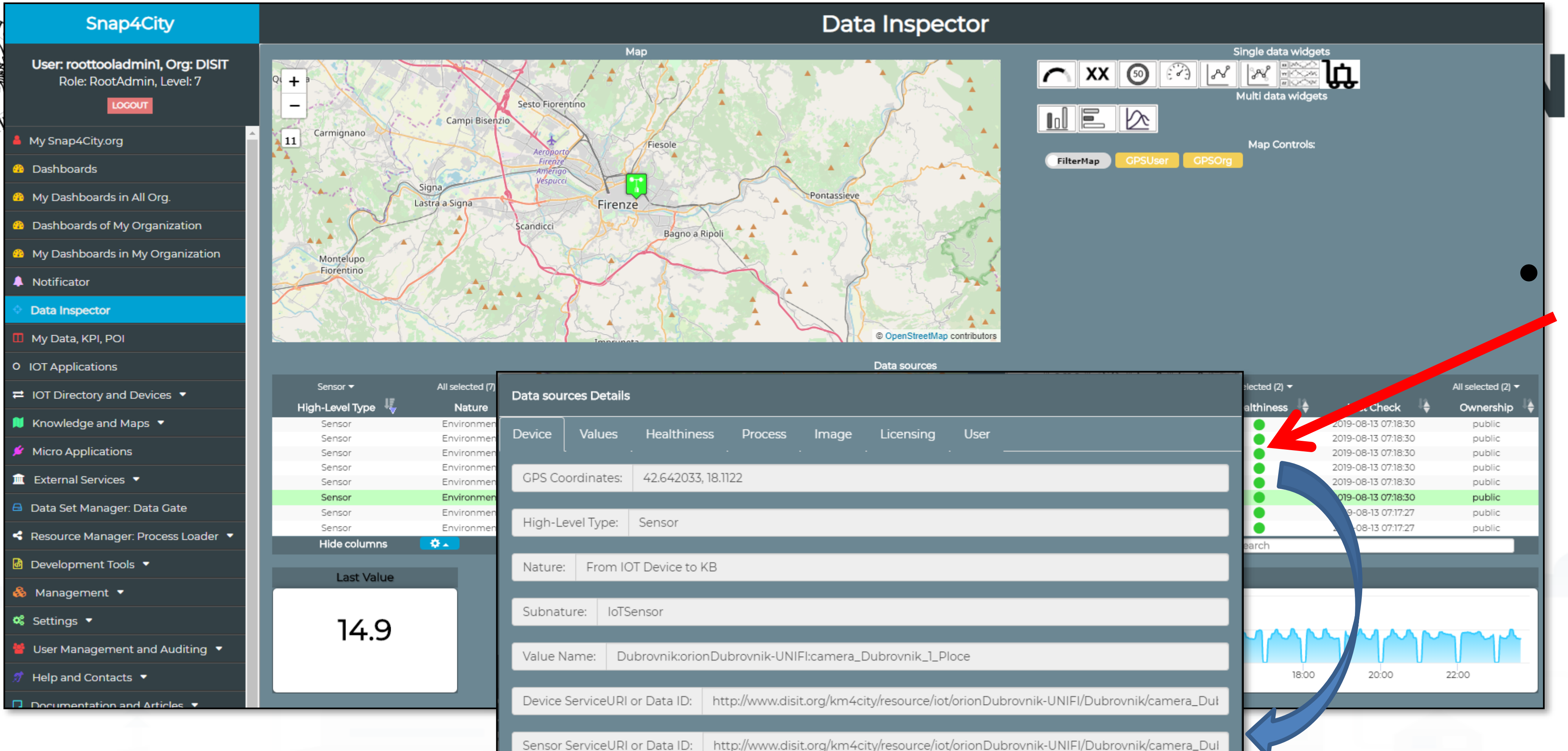
🟪 Opening Digital Twin

🟦 Pass to Synoptic mode

🟧 Select the graph representation

Advanced Features of the Data Inspector

- Some features accessible only for the Owner and *Admin, such as:
  - Specific information on the basis of the High Level Type
  - Values connected to the data (structure of the single data)
  - Details regarding the ingestion process
  - Eventual image representing the City Entity, for example the sensor
  - Ownership (licensing) details regarding the data owner
- So that you can access on all of them in the Snap4City version if you install on premise.
- A part of these features can be activated for the Organization Managers, namely: «ToolAdmin» roles.


Snap4City
Data Inspector
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
Notificator
Data Inspector
My Data, KPI, POI
IOT Applications
IOT Directory and Devices
Knowledge and Maps
Micro Applications
External Services
Data Set Manager: Data Gate
Resource Manager: Process Loader
Development Tools
Management
Settings
User Management and Auditing
Help and Contacts
Documentation and Articles
Map
Sesto Fiorentino
Campi Bisenzio
Carmignano
Fiesole
Signa
Lastra a Signa
Firenze
Pontassieve
Scandicci
Bagno a Ripoli
Montelupo Fiorentino
© OpenStreetMap contributors
Single data widgets
Multi data widgets
Map Controls:
FilterMap
GPSUser
GPSOrg
Data sources
Sensor
All selected (7)
High-Level Type
Nature
Sensor
Environment
Hide columns
Last Value
14.9
Healthiness
Check
Ownership
All selected (2)
2019-08-13 07:18:30
2019-08-13 07:17:27
public
18:00
20:00
22:00

Data sources Details

Device | Values | Healthiness | Process | Image | Licensing | User

GPS Coordinates: 42.642033, 18.1122

High-Level Type: Sensor

Nature: From IOT Device to KB

Subnature: IoTSensor

Value Name: Dubrovnik:orionDubrovnik-UNIFI:camera_Dubrovnik_1_Ploce

Device ServiceURI or Data ID: http://www.disit.org/km4city/resource/iot/orionDubrovnik-UNIFI/Dubrovnik/camera_Dul

Sensor ServiceURI or Data ID: http://www.disit.org/km4city/resource/iot/orionDubrovnik-UNIFI/Dubrovnik/camera_Dul

Datasource: IoT

Ownership: private

Organizations: Dubrovnik

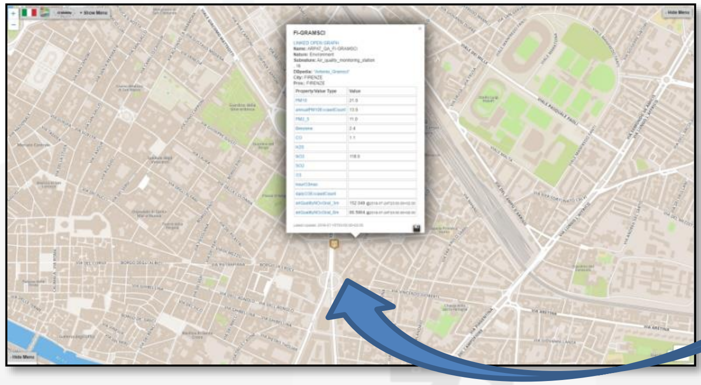
Link to Service Map | Link to IoT Device

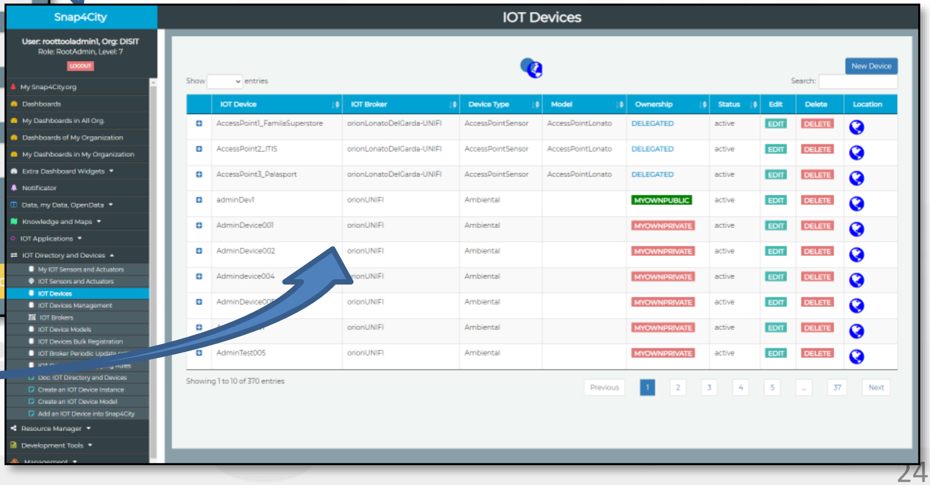
Canc

- Click with the mouse on it

HLT: Sensor

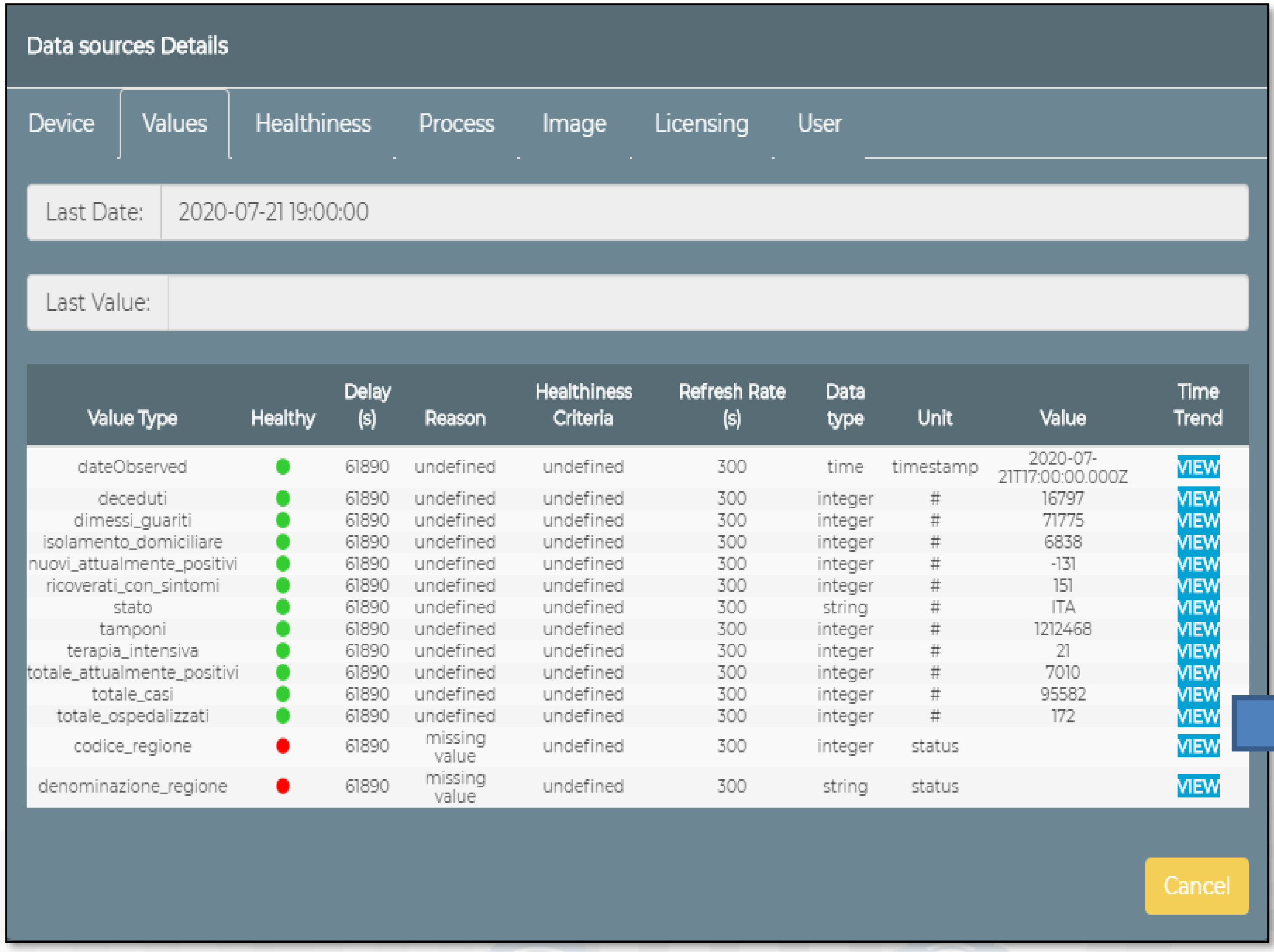
Knowledge Base view




Snap4City
IOT Devices

HLT: Sensor

- Specific values of selected
- Information of the values of the other sensors on the same device
- View Trends, marking problems, healthiness by point according to a Fuzzy model
- Marking problems for future machine learning processes (separate tool)

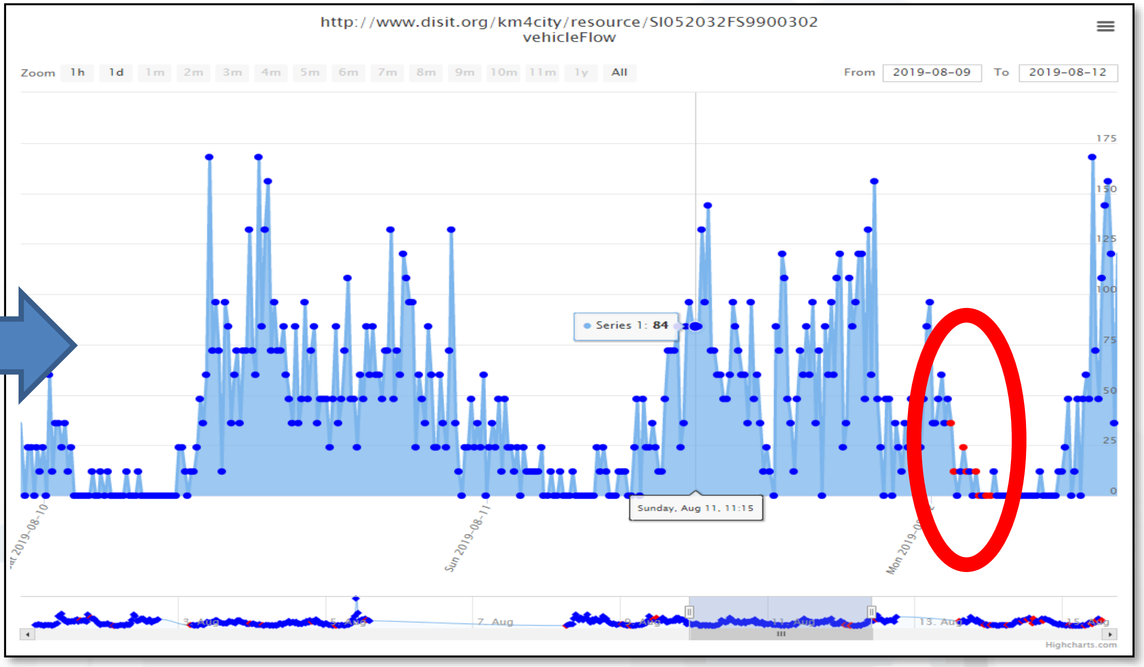


Data sources Details

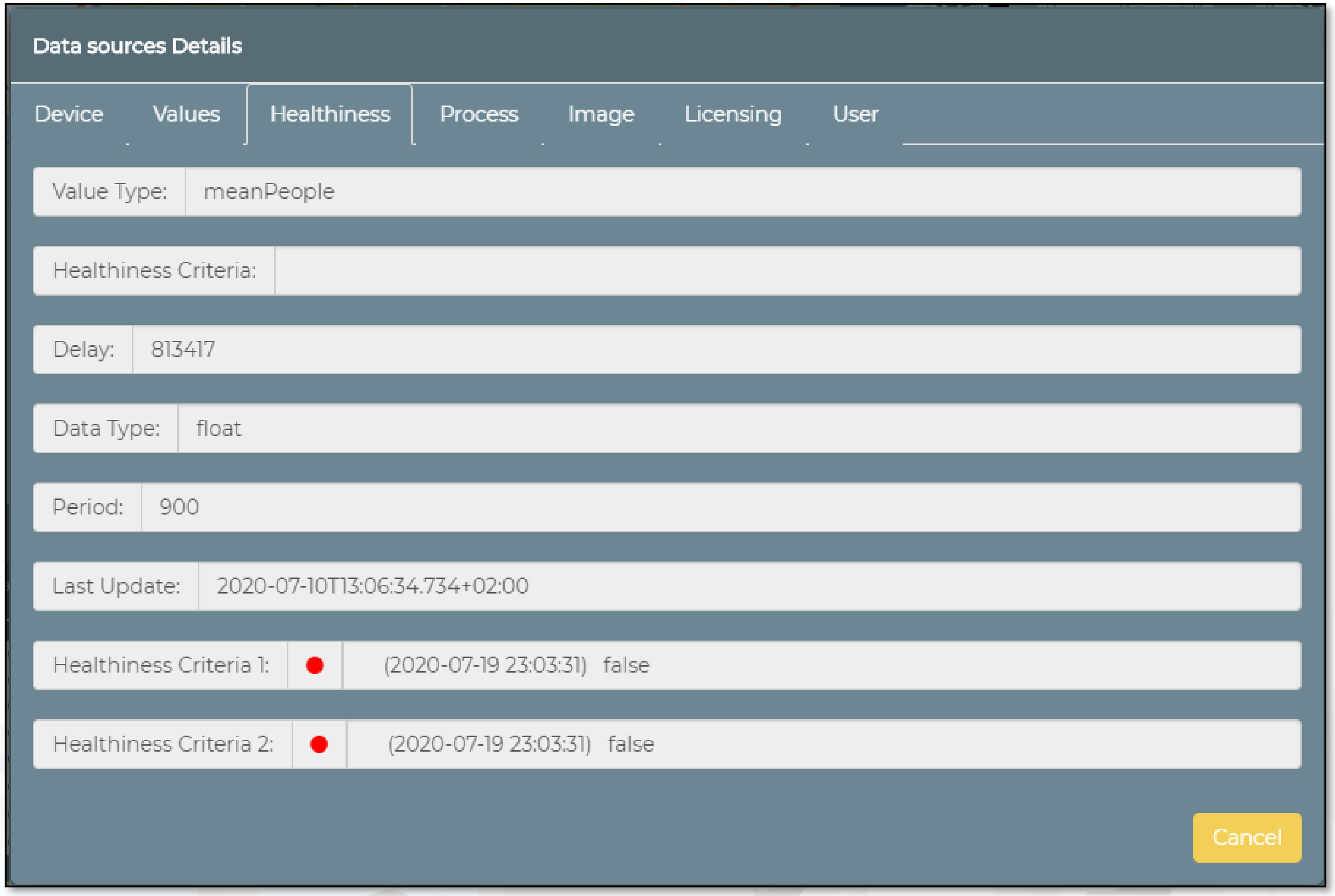
Last Date: 2020-07-21 19:00:00

Last Value:

Value Type	Healthy	Delay (s)	Reason	Healthiness Criteria	Refresh Rate (s)	Data type	Unit	Value	Time Trend
dateObserved	●	61890	undefined	undefined	300	time	timestamp	2020-07-21T17:00:00.000Z	VIEW
deceduti	●	61890	undefined	undefined	300	integer	#	16797	VIEW
dimessi_guariti	●	61890	undefined	undefined	300	integer	#	71775	VIEW
isolamento_domiciliare	●	61890	undefined	undefined	300	integer	#	6838	VIEW
nuovi_attualmente_positivi	●	61890	undefined	undefined	300	integer	#	-131	VIEW
ricoverati_con_sintomi	●	61890	undefined	undefined	300	integer	#	151	VIEW
stato	●	61890	undefined	undefined	300	string	#	ITA	VIEW
tamponi	●	61890	undefined	undefined	300	integer	#	1212468	VIEW
terapia_intensiva	●	61890	undefined	undefined	300	integer	#	21	VIEW
totale_attualmente_positivi	●	61890	undefined	undefined	300	integer	#	7010	VIEW
totale_casi	●	61890	undefined	undefined	300	integer	#	95582	VIEW
totale_ospedalizzati	●	61890	undefined	undefined	300	integer	#	172	VIEW
codice_regione	●	61890	missing value	undefined	300	integer	status		VIEW
denominazione_regione	●	61890	missing value	undefined	300	string	status		VIEW



HLT: Sensor Healthiness


Data sources Details
Device
Values
Healthiness
Process
Image
Licensing
User
Cancel

Value Type:	meanPeople	
Healthiness Criteria:		
Delay:	813417	
Data Type:	float	
Period:	900	
Last Update:	2020-07-10T13:06:34.734+02:00	
Healthiness Criteria 1:	●	(2020-07-19 23:03:31) false
Healthiness Criteria 2:	●	(2020-07-19 23:03:31) false

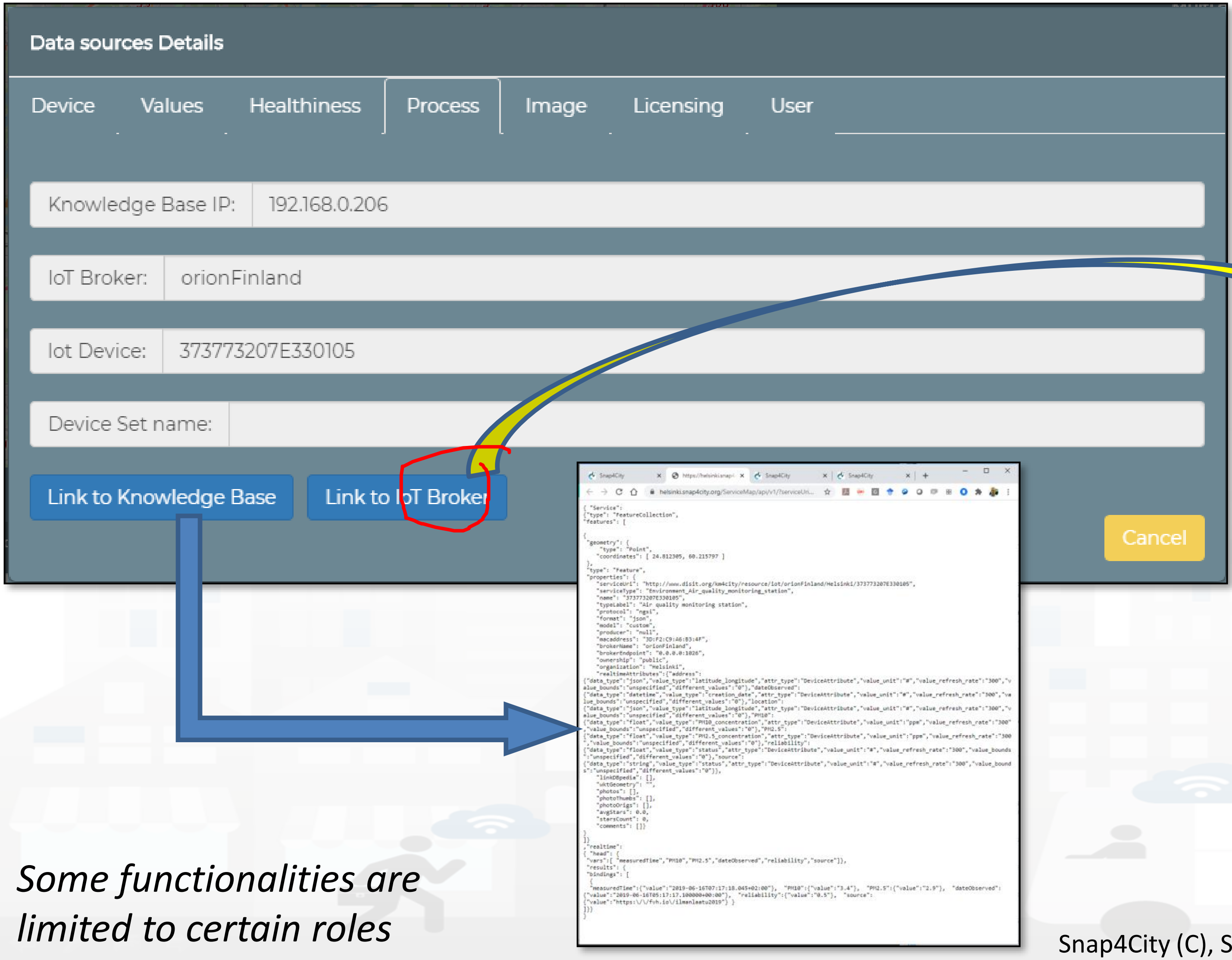
- Two different criteria
  - **H1**: at least an event i nthe last 24 hours
  - **H2**: machine learning for most of Sensors devices

Some functionalities are limited to certain roles

HLT: Sensor

Details regarding the IOT Ingestion process

- For IOT Device data
- IOT Broker details



Data sources Details

Device
Values
Healthiness
Process
Image
Licensing
User

Knowledge Base IP: 192.168.0.206

IoT Broker: orionFinland

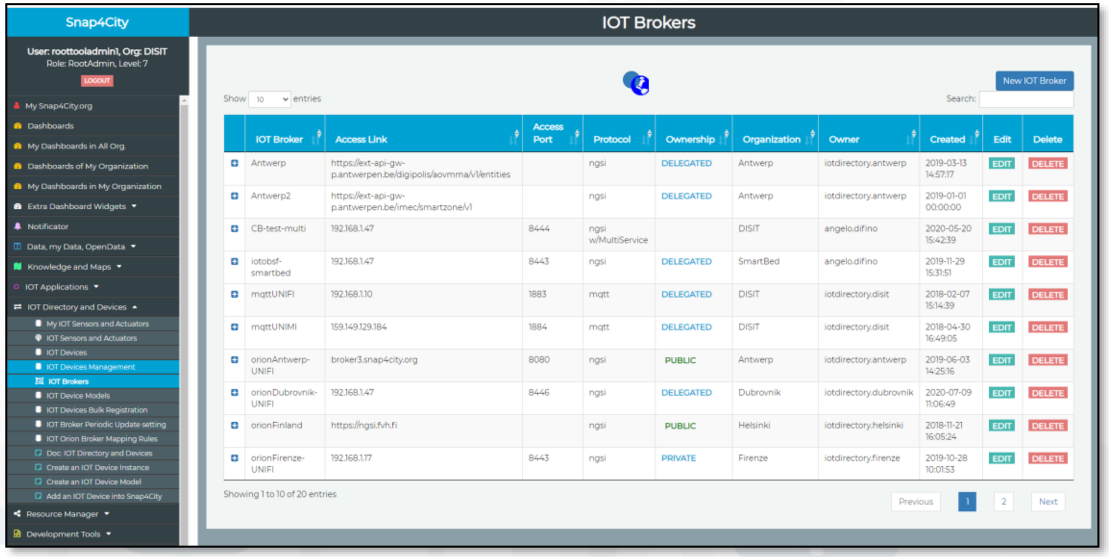
Iot Device: 373773207E330105

Device Set name:

Link to Knowledge Base
Link to IoT Broker
Cancel
Snap4City
https://helsinki.snap4
Snap4City
Snap4City
helsinki.snap4city.org/ServiceMap/api/v1/?serviceUri...

```
{ "Service":
{"type": "FeatureCollection",
"features": [

{
 "geometry": {
    "type": "Point",
   "coordinates": [ 24.812305, 60.215797 ]
 },
 "type": "Feature",
 "properties": {
   "serviceUri": "http://www.disit.org/km4city/resource/iot/orionFinland/Helsinki/373773207E330105",
   "serviceType": "Environment_Air_quality_monitoring_station",
   "name": "373773207E330105",
   "typeLabel": "Air quality monitoring station",
   "protocol": "ngsi",
   "format": "json",
   "model": "custom",
   "producer": "null",
   "macaddress": "3D:F2:C9:A6:B3:4F",
   "brokerName": "orionFinland",
   "brokerEndpoint": "0.0.0.0:1026",
   "ownership": "public",
   "organization": "Helsinki",
   "realtimeAttributes":{"address":
{"data_type":"json","value_type":"latitude_longitude","attr_type":"DeviceAttribute","value_unit":"#","value_refresh_rate":"300","v
alue_bounds":"unspecified","different_values":"0"},"dateObserved":
{"data_type":"datetime","value_type":"creation_date","attr_type":"DeviceAttribute","value_unit":"#","value_refresh_rate":"300","va
lue_bounds":"unspecified","different_values":"0"},"location":
{"data_type":"json","value_type":"latitude_longitude","attr_type":"DeviceAttribute","value_unit":"#","value_refresh_rate":"300","v
alue_bounds":"unspecified","different_values":"0"},"PM10":
{"data_type":"float","value_type":"PM10_concentration","attr_type":"DeviceAttribute","value_unit":"ppm","value_refresh_rate":"300"
,"value_bounds":"unspecified","different_values":"0"},"PM2.5":
{"data_type":"float","value_type":"PM2.5_concentration","attr_type":"DeviceAttribute","value_unit":"ppm","value_refresh_rate":"300
","value_bounds":"unspecified","different_values":"0"},"reliability":
{"data_type":"float","value_type":"status","attr_type":"DeviceAttribute","value_unit":"#","value_refresh_rate":"300","value_bounds
":"unspecified","different_values":"0"},"source":
{"data_type":"string","value_type":"status","attr_type":"DeviceAttribute","value_unit":"#","value_refresh_rate":"300","value_bound
s":"unspecified","different_values":"0"}},
   "linkDBpedia": [],
   "wktGeometry": "",
   "photos": [],
   "photoThumbs": [],
   "photoOrigs": [],
   "avgStars": 0.0,
   "starsCount": 0,
   "comments": []}
}
]}
,"realtime":
{ "head": {
 "vars":[ "measuredTime","PM10","PM2.5","dateObserved","reliability","source"]},
 "results": {
 "bindings": [
  {
  "measuredTime":{"value":"2019-06-16T07:17:18.045+02:00"},  "PM10":{"value":"3.4"},  "PM2.5":{"value":"2.9"},  "dateObserved":
{"value":"2019-06-16T05:17:17.100000+00:00"},  "reliability":{"value":"0.5"},  "source":
{"value":"https:\/\/fvh.io\/ilmanlaatu2019"} }
]}}
}
```



Snap4City
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
Extra Dashboard Widgets
Notificator
Data, my Data, OpenData
Knowledge and Maps
IOT Applications
IOT Directory and Devices
My IOT Sensors and Actuators
IOT Sensors and Actuators
IOT Devices
IOT Devices Management
IOT Brokers
IOT Device Models
IOT Devices Bulk Registration
IOT Broker Periodic Update setting
IOT Orion Broker Mapping Rules
Doc: IOT Directory and Devices
Create an IOT Device Instance
Create an IOT Device Model
Add an IOT Device into Snap4City
Resource Manager
Development Tools
New IOT Broker
Search:

IOT Brokers

Show 10 entries

	IOT Broker	Access Link	Access Port	Protocol	Ownership	Organization	Owner	Created	Edit	Delete
⊞	Antwerp	https://ext-api-gw-p.antwerpen.be/digipolis/aovmma/v1/entities		ngsi	DELEGATED	Antwerp	iotdirectory.antwerp	2019-03-13 14:57:17	EDIT	DELETE
⊞	Antwerp2	https://ext-api-gw-p.antwerpen.be/imec/smartzone/v1		ngsi	DELEGATED	Antwerp	iotdirectory.antwerp	2019-01-01 00:00:00	EDIT	DELETE
⊞	CB-test-multi	192.168.1.47	8444	ngsi w/MultiService		DISIT	angelo.difino	2020-05-20 15:42:39	EDIT	DELETE
⊞	iotobsf-smartbed	192.168.1.47	8443	ngsi	DELEGATED	SmartBed	angelo.difino	2019-11-29 15:31:51	EDIT	DELETE
⊞	mqttUNIFI	192.168.1.10	1883	mqtt	DELEGATED	DISIT	iotdirectory.disit	2018-02-07 15:14:39	EDIT	DELETE
⊞	mqttUNIMI	159.149.129.184	1884	mqtt	DELEGATED	DISIT	iotdirectory.disit	2018-04-30 16:49:05	EDIT	DELETE
⊞	orionAntwerp-UNIFI	broker3.snap4city.org	8080	ngsi	PUBLIC	Antwerp	iotdirectory.antwerp	2019-06-03 14:25:16	EDIT	DELETE
⊞	orionDubrovnik-UNIFI	192.168.1.47	8446	ngsi	DELEGATED	Dubrovnik	iotdirectory.dubrovnik	2020-07-09 11:06:49	EDIT	DELETE
⊞	orionFinland	https://ngsi.fvh.fi		ngsi	PUBLIC	Helsinki	iotdirectory.helsinki	2018-11-21 16:05:24	EDIT	DELETE
⊞	orionFirenze-UNIFI	192.168.1.17	8443	ngsi	PRIVATE	Firenze	iotdirectory.firenze	2019-10-28 10:01:53	EDIT	DELETE

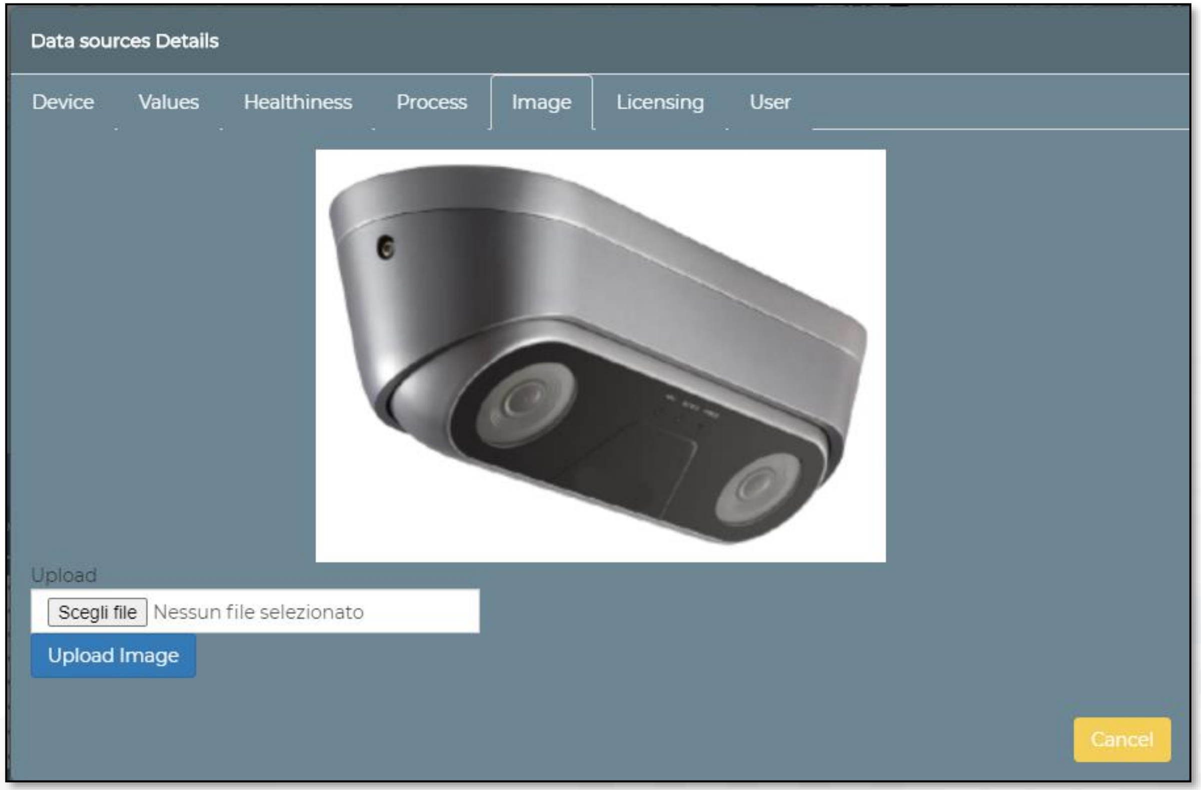
Showing 1 to 10 of 20 entries

Previous
1
2
Next

Some functionalities are limited to certain roles

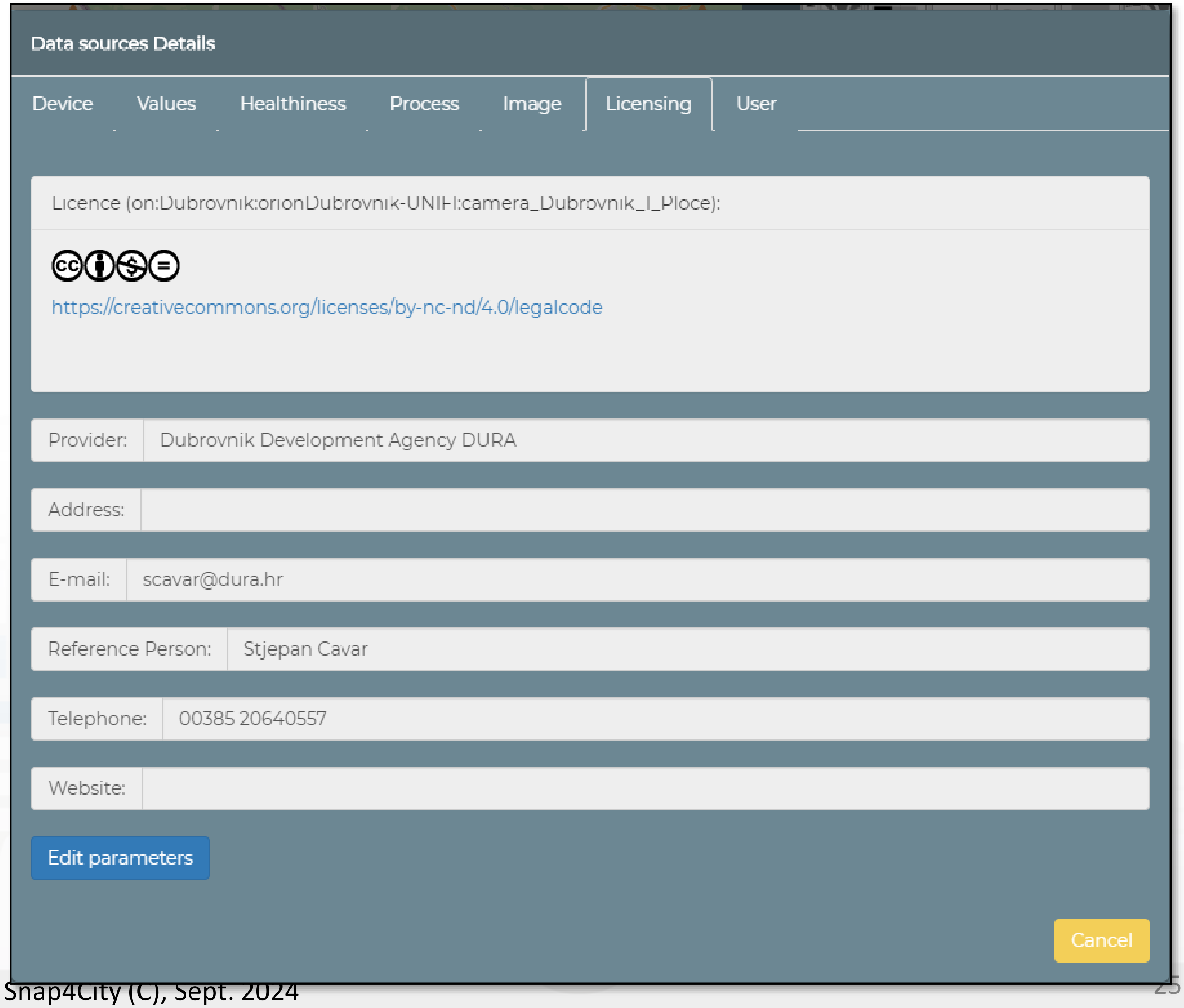
HLT: Sensor

Image of the Devices and Licensing


Data sources Details
Device
Values
Healthiness
Process
Image
Licensing
User
Scegli file
Upload Image
Cancel

Upload

Nessun file selezionato


Data sources Details
Device
Values
Healthiness
Process
Image
Licensing
User
Edit parameters
Cancel

Licence (on:Dubrovnik:orionDubrovnik-UNIFI:camera_Dubrovnik_1_Ploce):

🅭🅯🄏⊜

https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode

Provider: Dubrovnik Development Agency DURA

Address:

E-mail: scavar@dura.hr

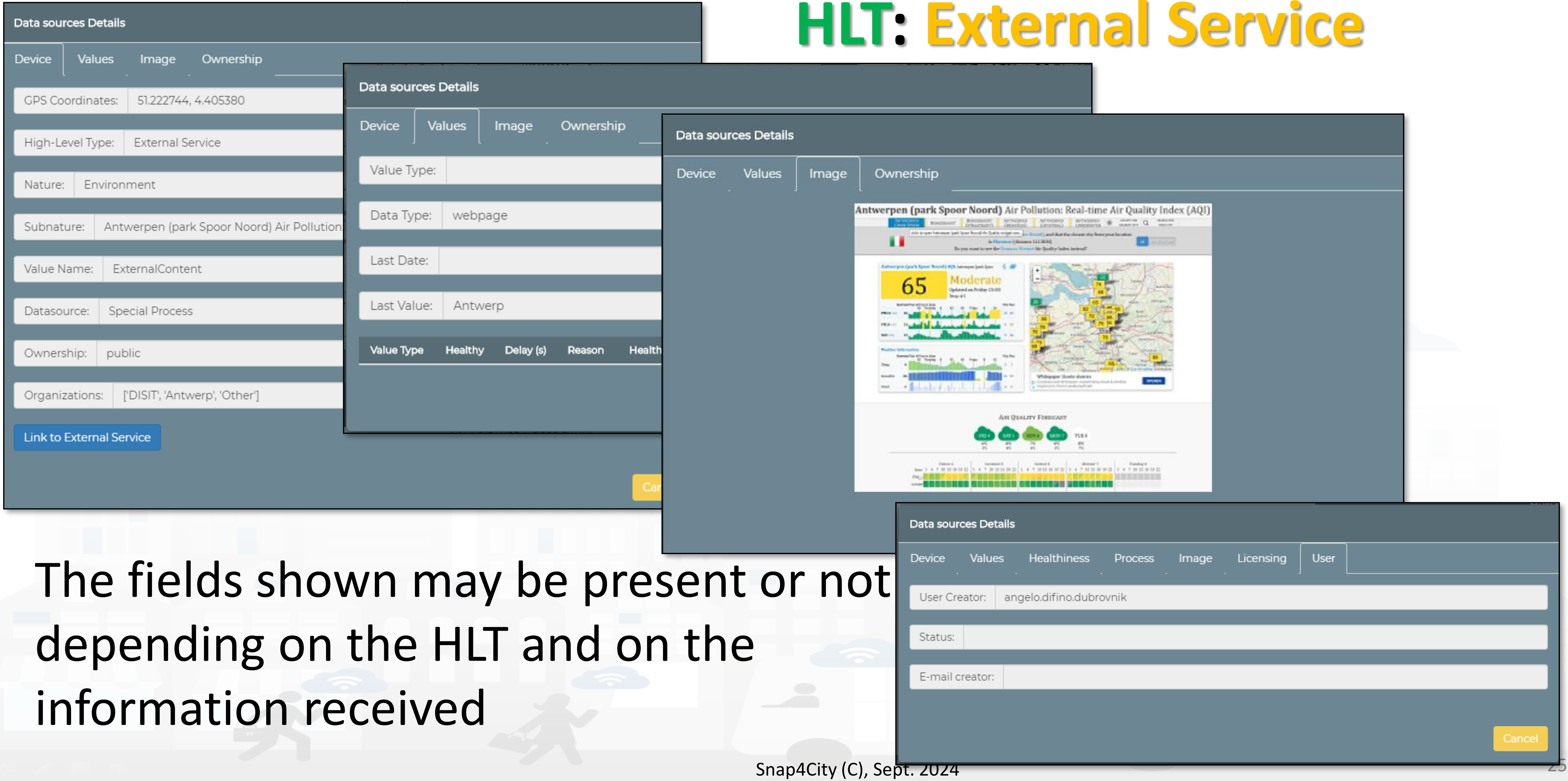
Reference Person: Stjepan Cavar

Telephone: 00385 20640557

Website:

Some functionalities are limited to certain roles

HLT: External Service



Data sources Details

Device | Values | Image | Ownership

GPS Coordinates:	51.222744, 4.405380
High-Level Type:	External Service
Nature:	Environment
Subnature:	Antwerpen (park Spoor Noord) Air Pollution
Value Name:	ExternalContent
Datasource:	Special Process
Ownership:	public
Organizations:	['DISIT', 'Antwerp', 'Other']

Data sources Details

Device | Values | Image | Ownership

Value Type:	
Data Type:	webpage
Last Date:	
Last Value:	Antwerp

Value Type	Healthy	Delay (s)	Reason	Health

Data sources Details

Device | Values | Image | Ownership

Antwerpen (park Spoor Noord) Air Pollution: Real-time Air Quality Index (AQI)

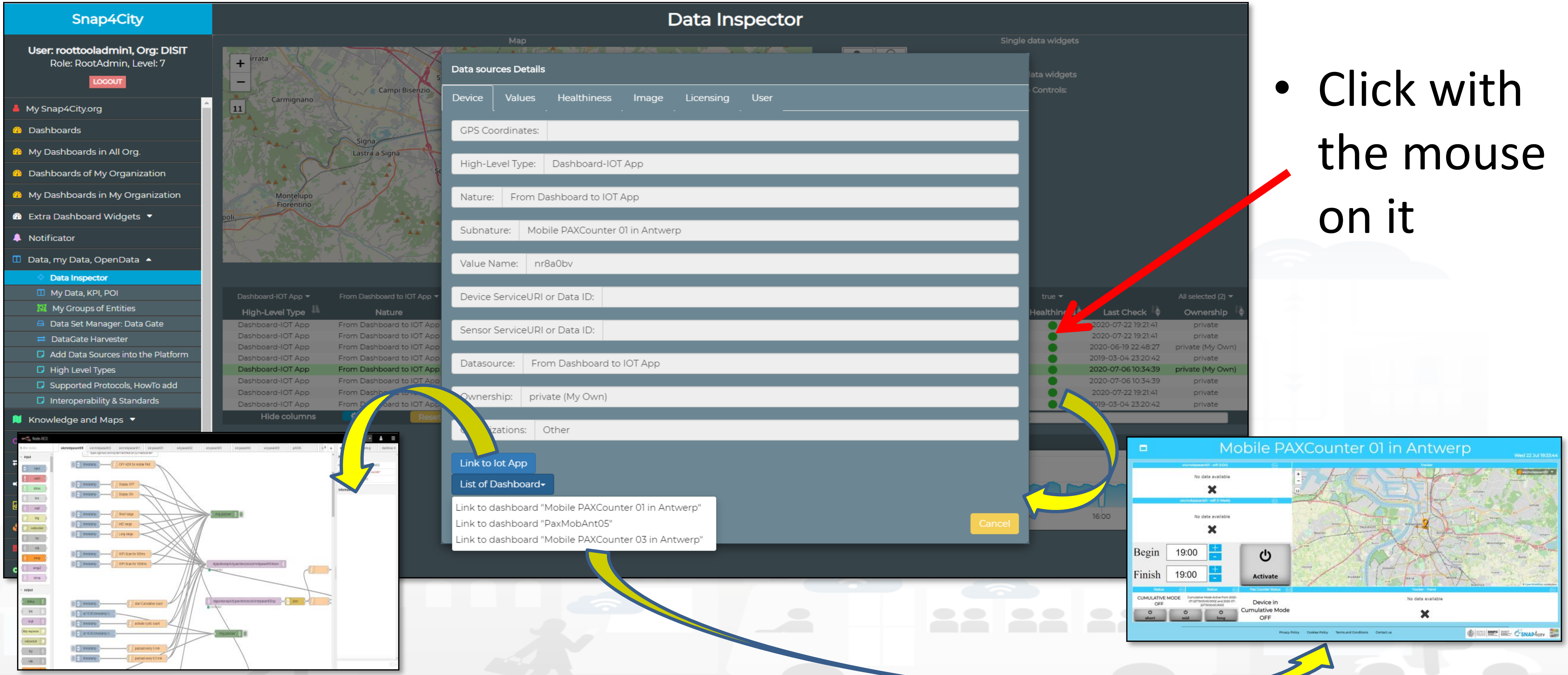
Data sources Details

Device | Values | Healthiness | Process | Image | Licensing | User

User Creator:	angelo.difino.dubrovnik
Status:	
E-mail creator:	

The fields shown may be present or not depending on the HLT and on the information received

HLT: From Dashboard to IOT APP


Snap4City
Data Inspector
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
Extra Dashboard Widgets
Notificator
Data, my Data, OpenData
Data Inspector
My Data, KPI, POI
My Groups of Entities
Data Set Manager: Data Gate
DataGate Harvester
Add Data Sources into the Platform
High Level Types
Supported Protocols, HowTo add
Interoperability & Standards
Knowledge and Maps
Map
Single data widgets
High-Level Type
Nature
Healthiness
Last Check
Ownership
Hide columns
Reset
Device
Values
Healthiness
Image
Licensing
User
Link to Iot App
List of Dashboard
Cancel
Mobile PAXCounter 01 in Antwerp
Begin
Finish
Activate

Data sources Details

GPS Coordinates:

High-Level Type: Dashboard-IOT App

Nature: From Dashboard to IOT App

Subnature: Mobile PAXCounter 01 in Antwerp

Value Name: nr8a0bv

Device ServiceURI or Data ID:

Sensor ServiceURI or Data ID:

Datasource: From Dashboard to IOT App

Ownership: private (My Own)

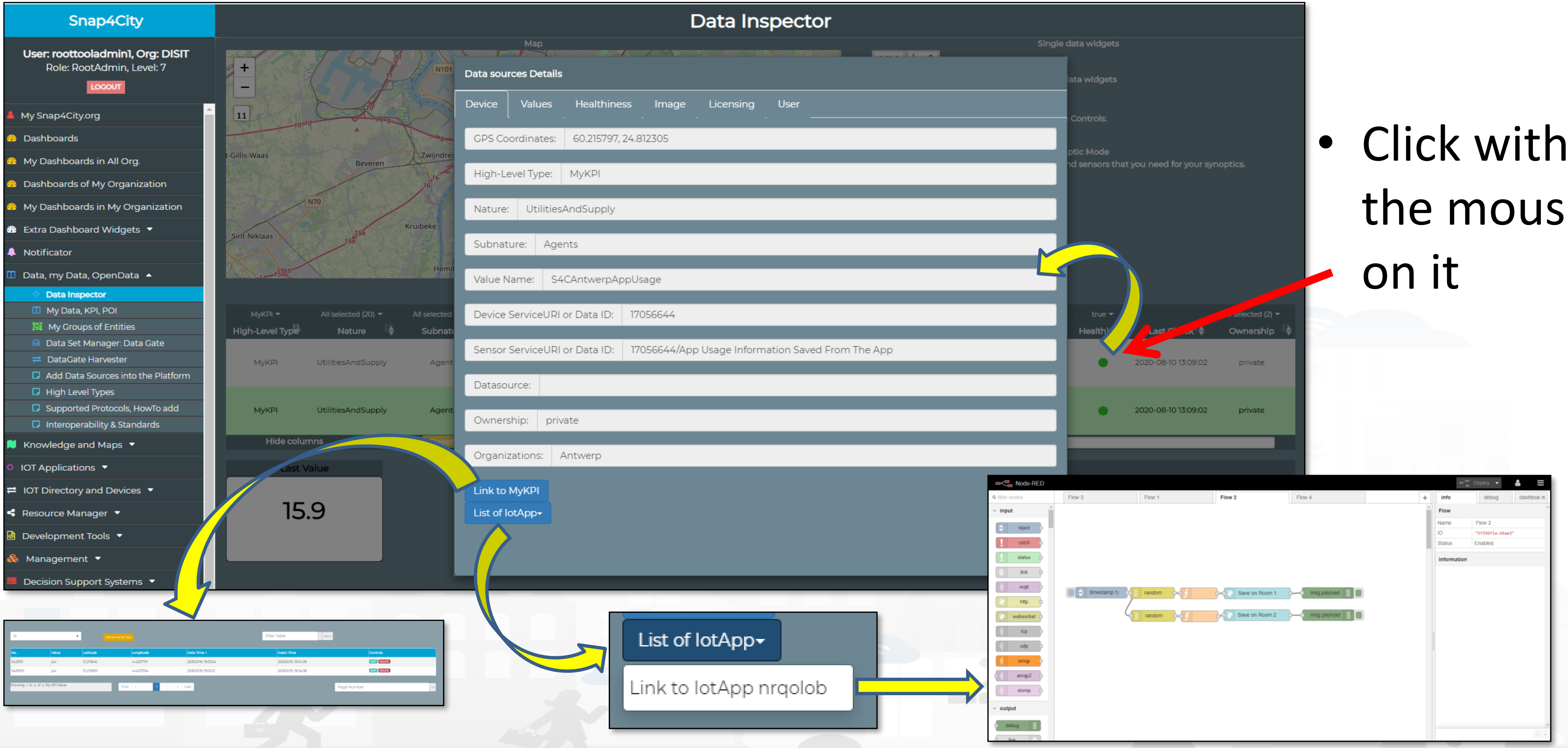
Organizations: Other

Link to dashboard "Mobile PAXCounter 01 in Antwerp"
Link to dashboard "PaxMobAnt05"
Link to dashboard "Mobile PAXCounter 03 in Antwerp"

- Click with the mouse on it

HLT: MyKPI

- Click with the mouse on it


Snap4City
Data Inspector
User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
LOGOUT
My Snap4City.org
Dashboards
My Dashboards in All Org.
Dashboards of My Organization
My Dashboards in My Organization
Extra Dashboard Widgets
Notificator
Data, my Data, OpenData
Data Inspector
My Data, KPI, POI
My Groups of Entities
Data Set Manager: Data Gate
DataGate Harvester
Add Data Sources into the Platform
High Level Types
Supported Protocols, HowTo add
Interoperability & Standards
Knowledge and Maps
IOT Applications
IOT Directory and Devices
Resource Manager
Development Tools
Management
Decision Support Systems
Map
Single data widgets
Last Value
15.9
Hide columns
Data sources Details
Device
Values
Healthiness
Image
Licensing
User
Link to MyKPI
List of IotApp
Link to IotApp nrqolob
Node-RED
Deploy
Flow 3
Flow 1
Flow 2
Flow 4
info
debug
input
inject
catch
status
link
mqtt
http
websocket
tcp
udp
amqp
amqp2
stomp
output
debug
timestamp
random
Save on Room 1
Save on Room 2
msg.payload
Flow
Name
Flow 2
Status
Enabled
Information

GPS Coordinates: 60.215797, 24.812305

High-Level Type: MyKPI

Nature: UtilitiesAndSupply

Subnature: Agents

Value Name: S4CAntwerpAppUsage

Device ServiceURI or Data ID: 17056644

Sensor ServiceURI or Data ID: 17056644/App Usage Information Saved From The App

Datasource:

Ownership: private

Organizations: Antwerp

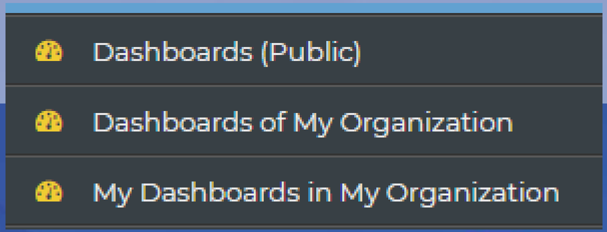
High-Level Type	Nature	Subnature	Health	Last Check	Ownership
MyKPI	UtilitiesAndSupply	Agent	●	2020-08-10 13:09:02	private
MyKPI	UtilitiesAndSupply	Agent	●	2020-08-10 13:09:02	private

Some functionalities are limited to certain roles

TOP

Dashboard Management

FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
FROM CITY DASHBOARD TO APPLICATIONS
IOT APPLICATIONS VS IOT EDGE DEVICES
SNAP4CITY FOR BEGINNERS
SNAP4CITY ARCHITECTURE AND ECOSYSTEM. OPENED TO DEVELOPERS AND STAKEHOLDERS
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
SNAP4CITY AND KM4CITY PROJECTS
AND CITY DATA KNOWLEDGE MANAGEMENT
WHAT-IF AND SIMULATION
DECISION SUPPORT SYSTEM AND CITY RESILIENCE
IOT APPLICATIONS, THE LOGIC AND THE SMARTNESS
ADVANCED SMART CITY API, MICROSERVICES, SNAP4CITY API
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
SNAP4CITY THE VIEW OF THE ADMINISTRATORS


Dashboards (Public)
Dashboards of My Organization
My Dashboards in My Organization

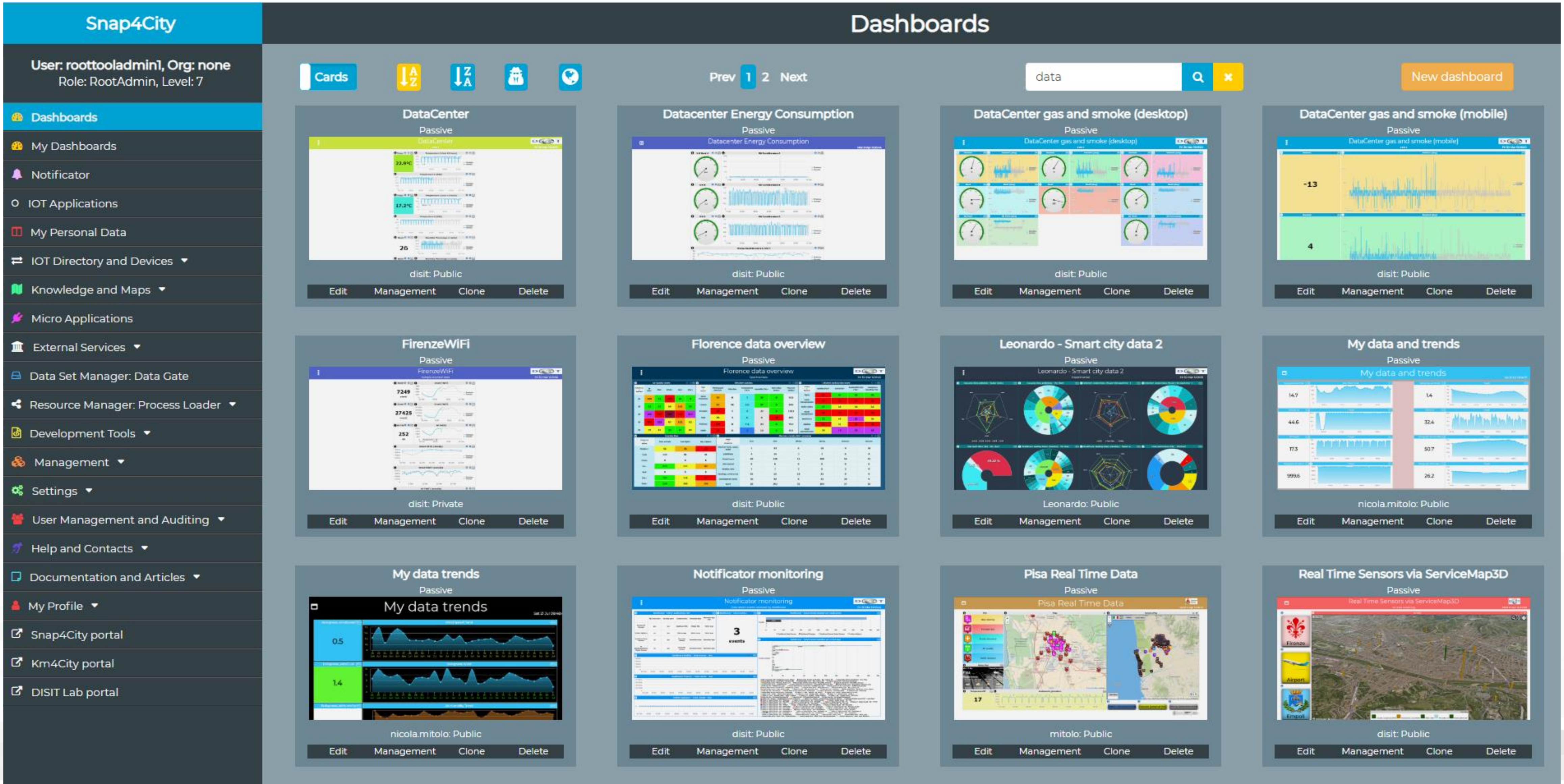
In addition

- Dashboards may:
  - have a grid with variable size
  - be resposible or not
  - provide transparent background
  - have a theme amog the coded one or full custom
  - adopt your custom theme
  - allow data export from specific widgets (admin feature)
  - Etc.

TOP

Dashboards List, Manage, Share, Delegate, Clone, …

Dashboard List and Editor



Snap4City

Dashboards

User: roottooladmin1, Org: none
Role: RootAdmin, Level: 7

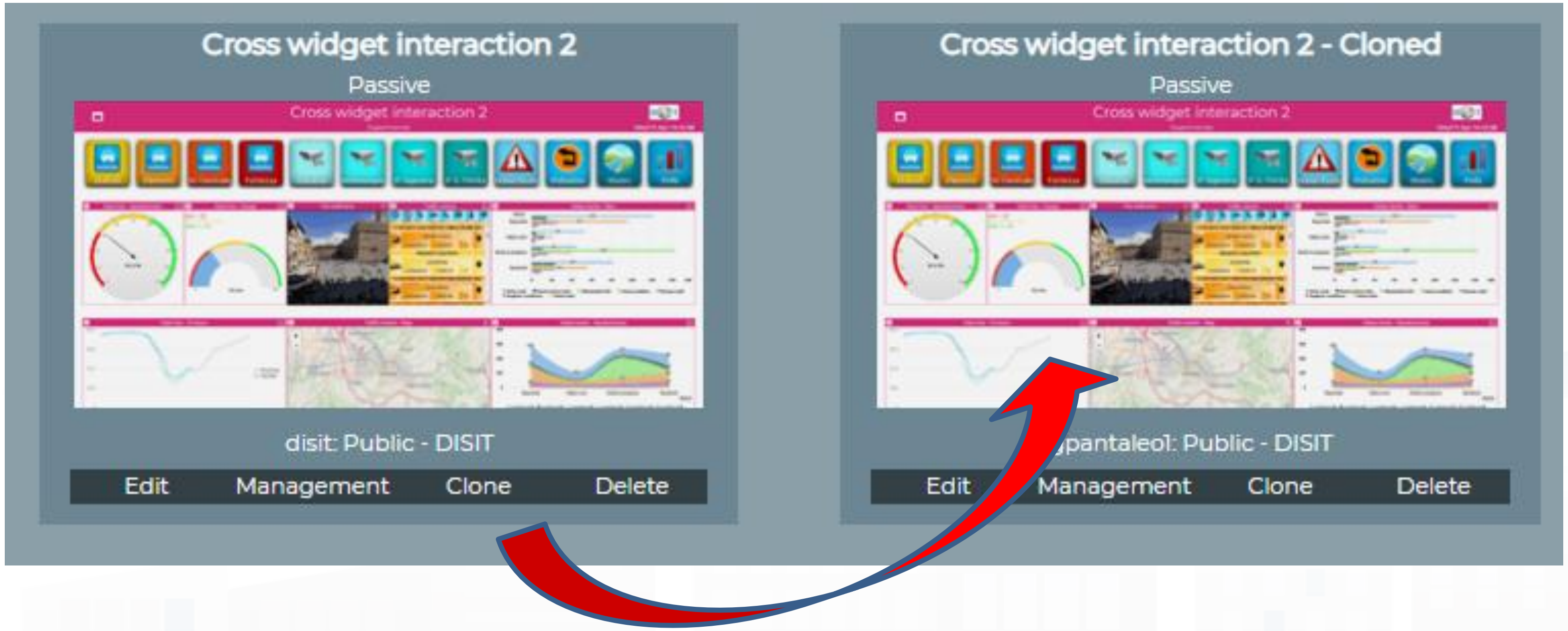
- Dashboards
- My Dashboards
- Notificator
- IOT Applications
- My Personal Data
- IOT Directory and Devices ▾
- Knowledge and Maps ▾
- Micro Applications
- External Services ▾
- Data Set Manager: Data Gate
- Resource Manager: Process Loader ▾
- Development Tools ▾
- Management ▾
- Settings ▾
- User Management and Auditing ▾
- Help and Contacts ▾
- Documentation and Articles ▾
- My Profile ▾
- Snap4City portal
- Km4City portal
- DISIT Lab portal

Cards | Prev 1 2 Next | data | New dashboard

Dashboard	Type	Owner: visibility
DataCenter	Passive	disit: Public
Datacenter Energy Consumption	Passive	disit: Public
DataCenter gas and smoke (desktop)	Passive	disit: Public
DataCenter gas and smoke (mobile)	Passive	disit: Public
FirenzeWiFi	Passive	disit: Private
Florence data overview	Passive	disit: Public
Leonardo - Smart city data 2	Passive	Leonardo: Public
My data and trends	Passive	nicola.mitolo: Public
My data trends	Passive	nicola.mitolo: Public
Notificator monitoring	Passive	disit: Public
Pisa Real Time Data	Passive	mitolo: Public
Real Time Sensors via ServiceMap3D	Passive	disit: Public

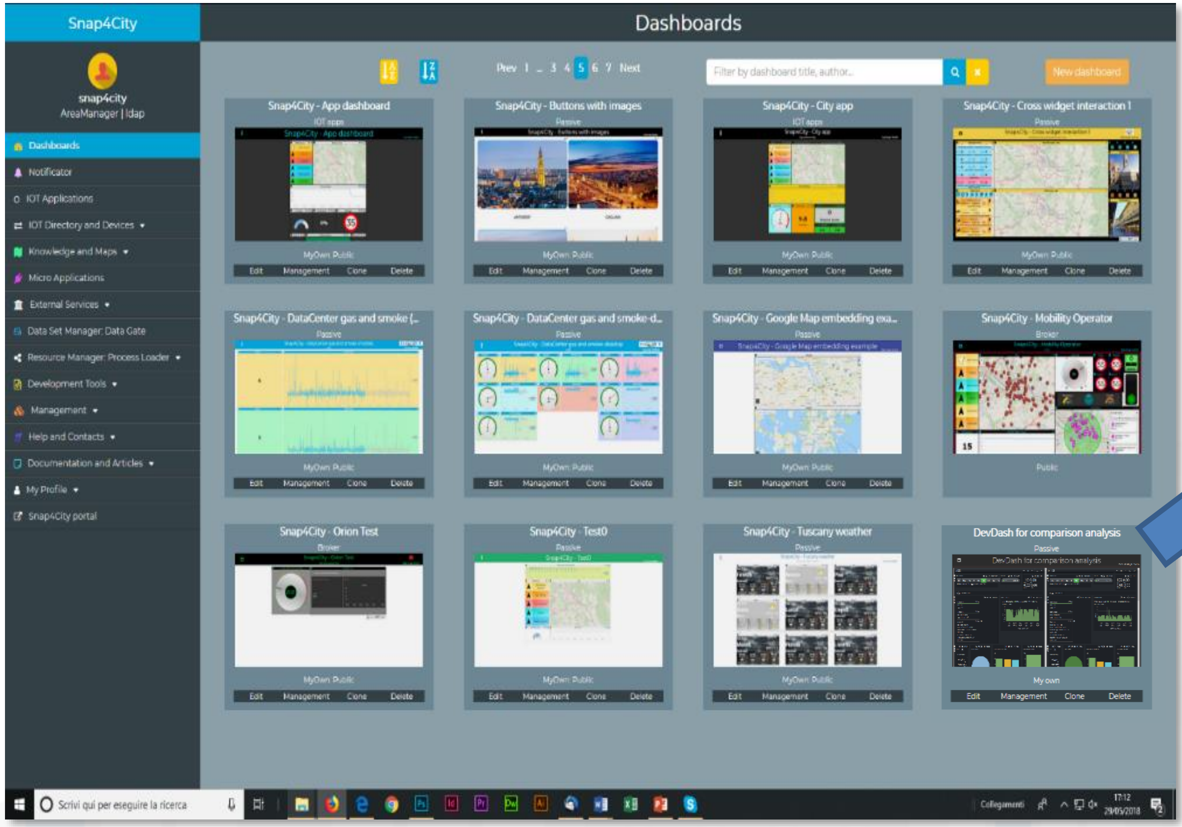
Each card: Edit | Management | Clone | Delete

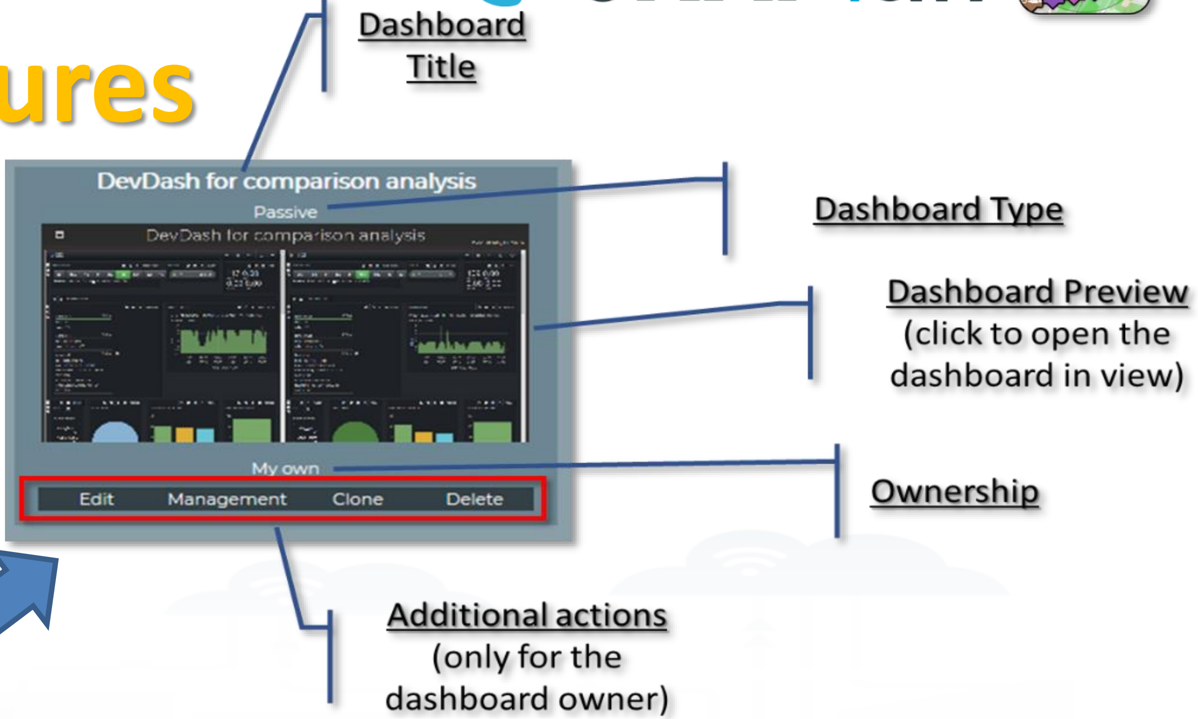
Clone Dashboard


Cross widget interaction 2
Passive
Cross widget interaction 2
disit: Public - DISIT
Edit
Management
Clone
Delete
Cross widget interaction 2 - Cloned
Passive
Cross widget interaction 2
pantaleo1: Public - DISIT
Edit
Management
Clone
Delete

- Cloned: Same dash with title having «- Cloned» at the end
  - You can: Clone, change name, pass to your colleague, edit, etc.
- Be carefull that exploited resources are not cloned

Dashboard Listing and Features


Snap4City
Dashboards
snap4city
AreaManager | ldap
Dashboards
Notificator
IOT Applications
IOT Directory and Devices
Knowledge and Maps
Micro Applications
External Services
Data Set Manager: Data Gate
Resource Manager: Process Loader
Development Tools
Management
Help and Contacts
Documentation and Articles
My Profile
Snap4City portal
Prev 1 .. 3 4 5 6 7 Next
New dashboard
Snap4City - App dashboard
Snap4City - Buttons with images
Snap4City - City app
Snap4City - Cross widget interaction 1
Snap4City - DataCenter gas and smoke (...
Snap4City - DataCenter gas and smoke d...
Snap4City - Google Map embedding exa...
Snap4City - Mobility Operator
Snap4City - Orion Test
Snap4City - Test0
Snap4City - Tuscany weather
DevDash for comparison analysis
Edit Management Clone Delete


DevDash for comparison analysis
Passive
DevDash for comparison analysis
My own
Edit
Management
Clone
Delete

Dashboard Title

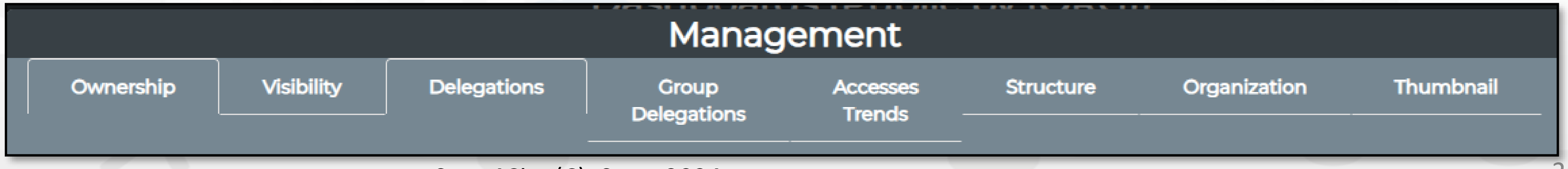
Dashboard Type

Dashboard Preview (click to open the dashboard in view)

Ownership

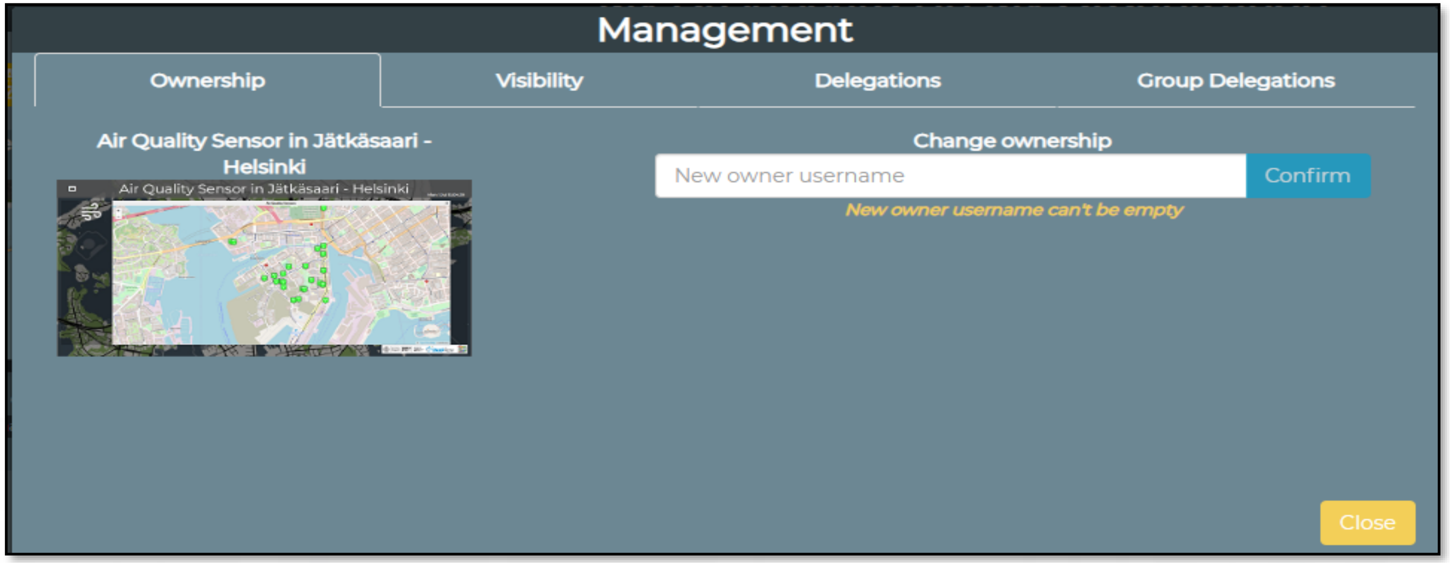
Additional actions (only for the dashboard owner)

- Edit (open Dashboard Builder)
- Management
- Clone (clone the Dashboard)
- Delete (delete the Dashboard)


Management
Ownership
Visibility
Delegations
Group Delegations
Accesses Trends
Structure
Organization
Thumbnail

Dashboard Management

- **Change Ownership**
  - Towards any user
  - Knowing the nickname


Management
Ownership
Visibility
Delegations
Group Delegations
Confirm
Close

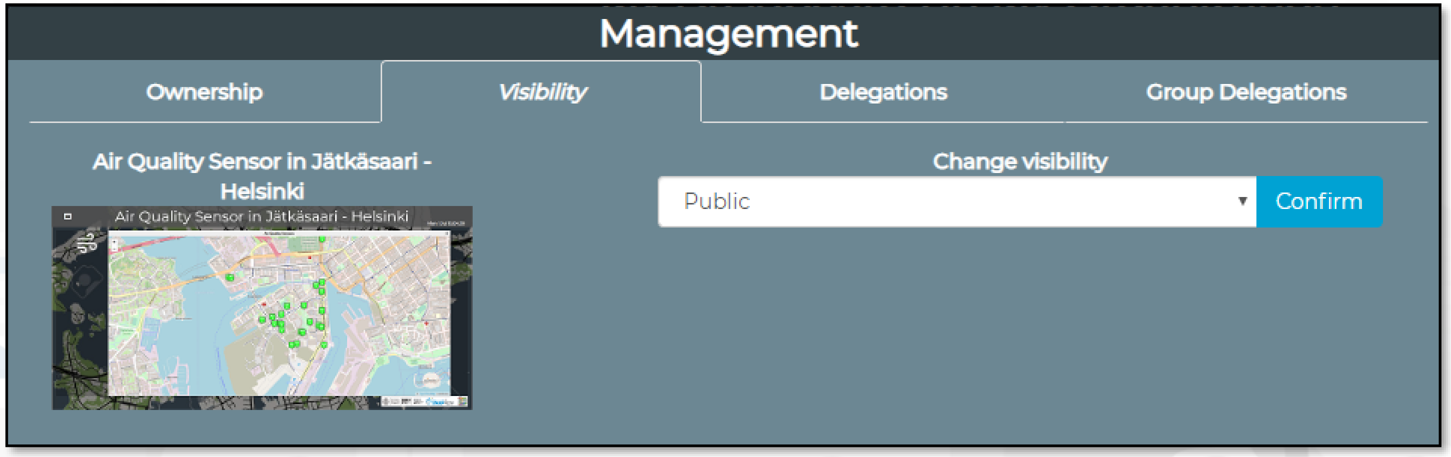
Air Quality Sensor in Jätkäsaari - Helsinki

Change ownership

New owner username

New owner username can't be empty

- Visibility
  - **Public or Private**
  - please note that data has to be published as well to make them accessible


Management
Ownership
Visibility
Delegations
Group Delegations
Confirm

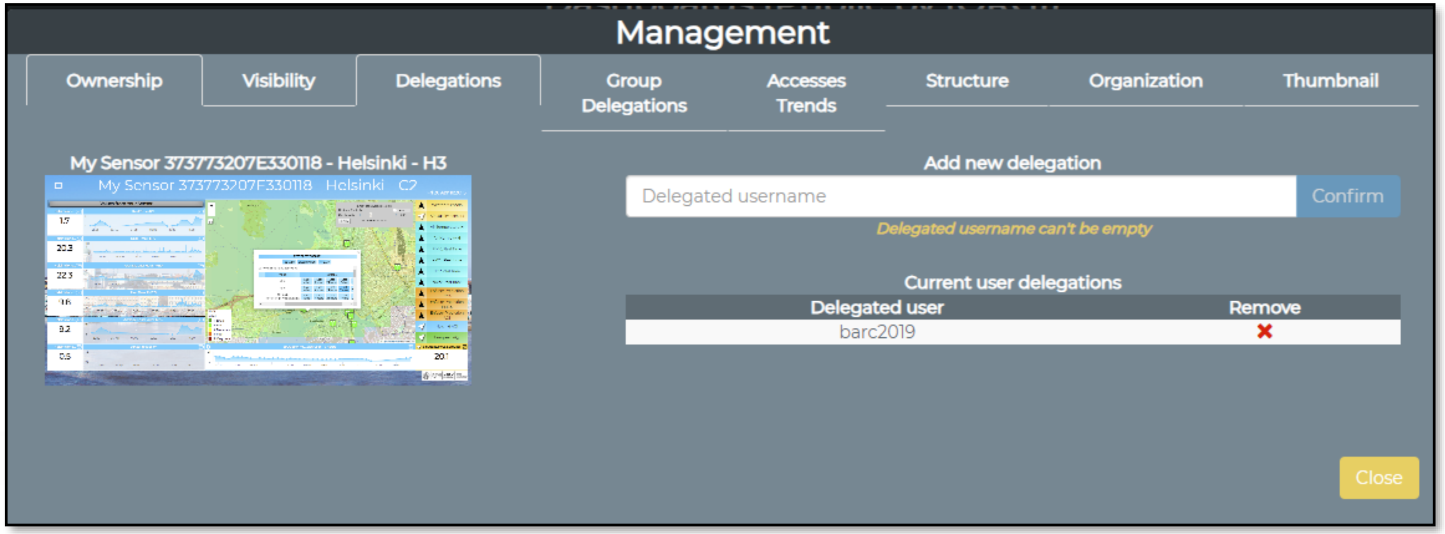
Air Quality Sensor in Jätkäsaari - Helsinki

Change visibility

Public

Dashboard Management

- **Delegation** access to other **users**
  - See next example


Management
Ownership
Visibility
Delegations
Group Delegations
Accesses Trends
Structure
Organization
Thumbnail
Confirm
Close

My Sensor 373773207E330118 - Helsinki - H3

Add new delegation

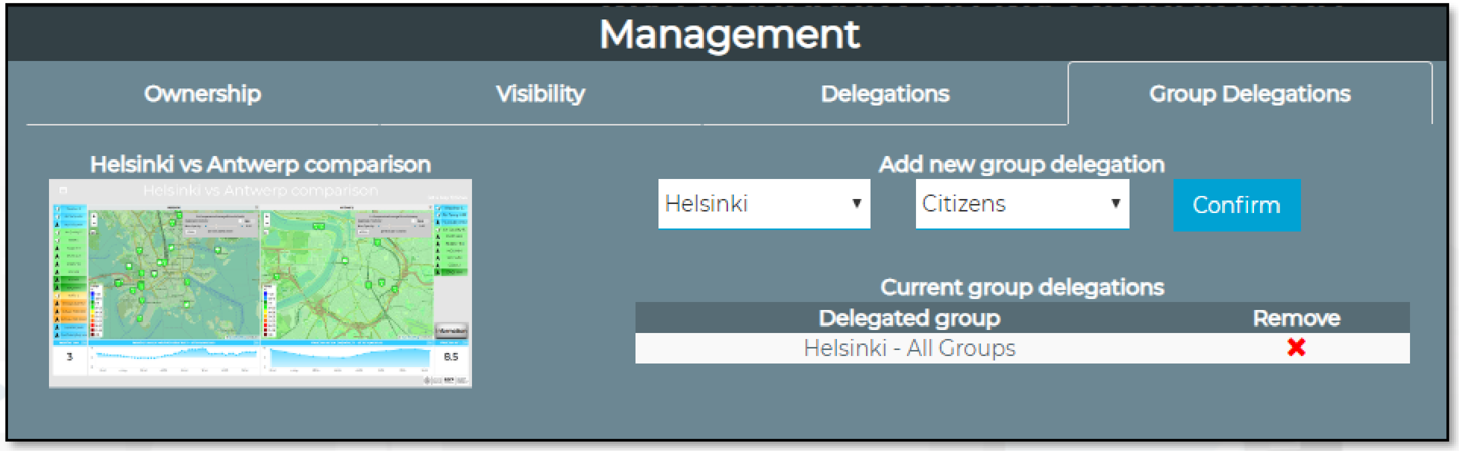
Delegated username

Delegated username can't be empty

Current user delegations

Delegated user	Remove
barc2019	✖

- **Delegation** Access to other **Groups** [Higher roles cross **Organization**]
  - See next example


Management
Ownership
Visibility
Delegations
Group Delegations
Confirm

Helsinki vs Antwerp comparison

Add new group delegation

Helsinki ▾ Citizens ▾

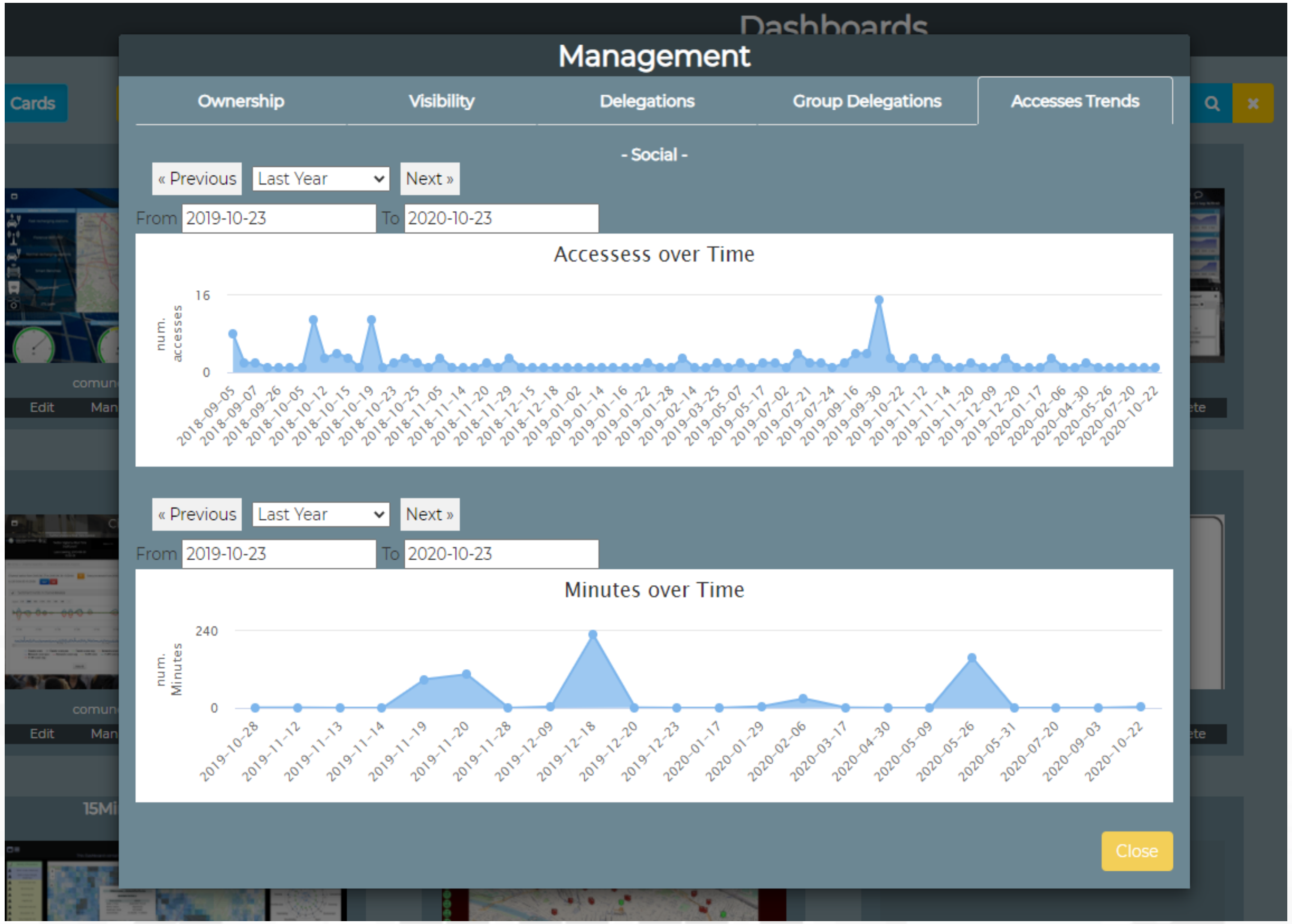
Current group delegations

Delegated group	Remove
Helsinki - All Groups	✖

Monitoring Dashboard Usage

- **Key Performance Indicators**
  - Number of Accesses
  - Minutes of exposition

- **Time Periods:**
  - Day by Day
  - Week by Week
  - Month by Month
  - 6 months by 6 months
  - Year by Year


Management

- Social -

From 2019-10-23 To 2020-10-23

Accessess over Time

From 2019-10-23 To 2020-10-23

Minutes over Time

Dashboards
Cards
Ownership
Visibility
Delegations
Group Delegations
Accesses Trends
« Previous
Last Year
Next »
num. accesses
16
0
2018-09-05
2018-09-07
2018-09-26
2018-10-05
2018-10-12
2018-10-15
2018-10-19
2018-10-23
2018-10-25
2018-11-05
2018-11-14
2018-11-20
2018-11-29
2018-12-15
2018-12-18
2019-01-02
2019-01-14
2019-01-16
2019-01-22
2019-01-28
2019-02-14
2019-03-25
2019-05-07
2019-05-17
2019-07-02
2019-07-21
2019-07-24
2019-09-16
2019-09-30
2019-10-22
2019-11-12
2019-11-14
2019-11-20
2019-12-09
2019-12-20
2020-01-17
2020-02-06
2020-04-30
2020-05-26
2020-07-20
2020-10-22
« Previous
Last Year
Next »
num. Minutes
240
0
2019-10-28
2019-11-12
2019-11-13
2019-11-14
2019-11-19
2019-11-20
2019-11-28
2019-12-09
2019-12-18
2019-12-20
2019-12-23
2020-01-17
2020-01-29
2020-02-06
2020-03-17
2020-04-30
2020-05-09
2020-05-26
2020-05-31
2020-07-20
2020-09-03
2020-10-22
Close
Edit
Man
comun
15Mi

TOP

Dashboards: Export/Import
Widgets: Export/Import

Sharing Features for Widgets

- Widgets can be Exported and Imported from the Dashboard editor.
  - The export creates a JSON on file, which can be used by the import to reload the widget on a dashboard in editing, in one or more.
  - Some of the Imported widgets may need to be edited to reestablish the links with other widget of the new landing dashboard. For example when you export/import:
    - IoTApp based widgets
    - Selectors which refer to the maps
    - Etc.

Sharing Features for Dashboards

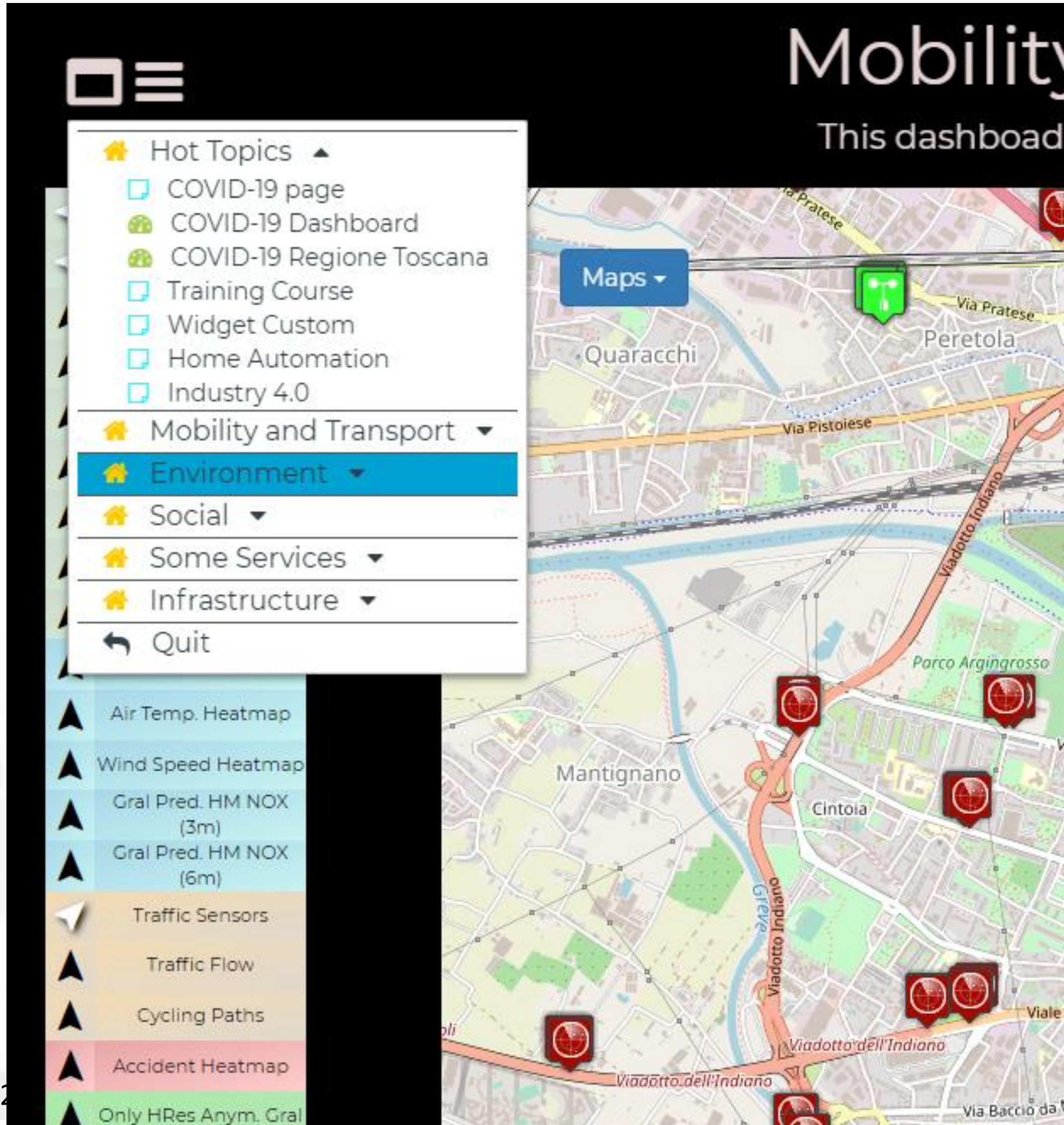
- Dashboards can be Exported and Imported from the Dashboard Manager:
  - This feature is only accessible for RootAdmin roles
  - The imported Dashboards may present some links to be reestablished if the dashboard presents:
    - references to IoT Apps
    - JavaScript code, for example CSBL code for business intelligence.

TOP

The Organization and its Dashboard menu

Dashboard Menu a Short Cut for other…..

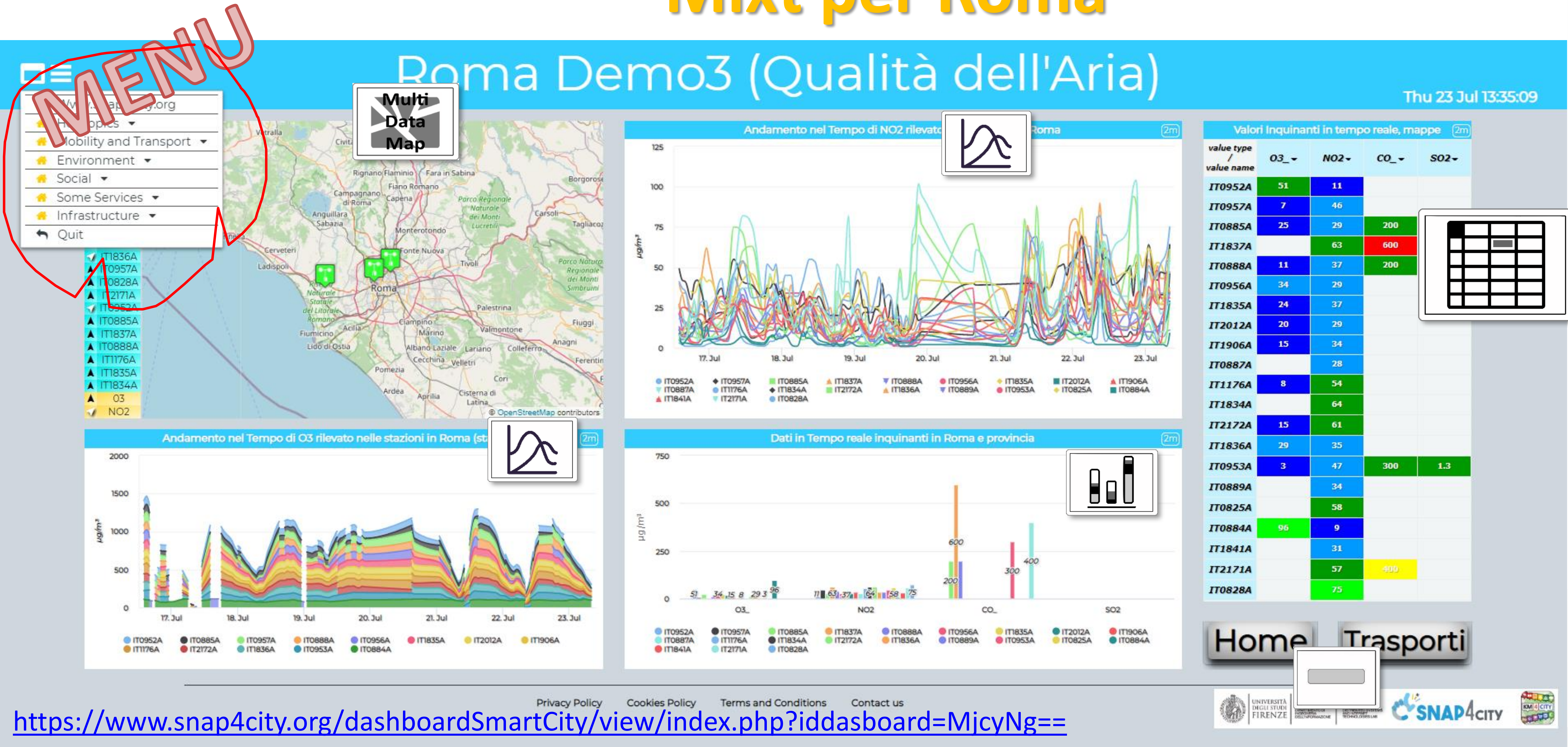
- **Each Organization** on Snap4City may define its own Menu on Dashboards
  - The Menu can be activated or not in each single Dashboard of the ORG
- **Definition includes a** list of Items and Subitems, each of which with
  - colors & icons
  - Links to web pages/dashboards to be activated and modality
  - User Roles at which it has to be proposed
  - Etc.


Mobility
This dashboad
Hot Topics
COVID-19 page
COVID-19 Dashboard
COVID-19 Regione Toscana
Training Course
Widget Custom
Home Automation
Industry 4.0
Mobility and Transport
Environment
Social
Some Services
Infrastructure
Quit
Air Temp. Heatmap
Wind Speed Heatmap
Gral Pred. HM NOX (3m)
Gral Pred. HM NOX (6m)
Traffic Sensors
Traffic Flow
Cycling Paths
Accident Heatmap
Only HRes Anym. Gral
Maps
Quaracchi
Peretola
Via Pratese
Via Pistoiese
Viadotto Indiano
Parco Argingrosso
Mantignano
Cintoia
Greve
Viadotto dell'Indiano
Via Baccio da

TC 1.23 – Dashboard Menu management per Organization

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjE5MA==

Mixt per Roma


MENU
Multi Data Map
www.snap4city.org
Hot Topics
Mobility and Transport
Environment
Social
Some Services
Infrastructure
Quit
IT1836A
IT0957A
IT0828A
IT2171A
IT0952A
IT0885A
IT1837A
IT0888A
IT1176A
IT1835A
IT1834A
O3
NO2
Andamento nel Tempo di NO2 rilevato ... Roma
µg/m³
17. Jul
18. Jul
19. Jul
20. Jul
21. Jul
22. Jul
23. Jul
Andamento nel Tempo di O3 rilevato nelle stazioni in Roma (st
Dati in Tempo reale inquinanti in Roma e provincia
O3_
NO2
CO_
SO2
Home
Trasporti
Privacy Policy
Cookies Policy
Terms and Conditions
Contact us

Roma Demo3 (Qualità dell'Aria)

Thu 23 Jul 13:35:09

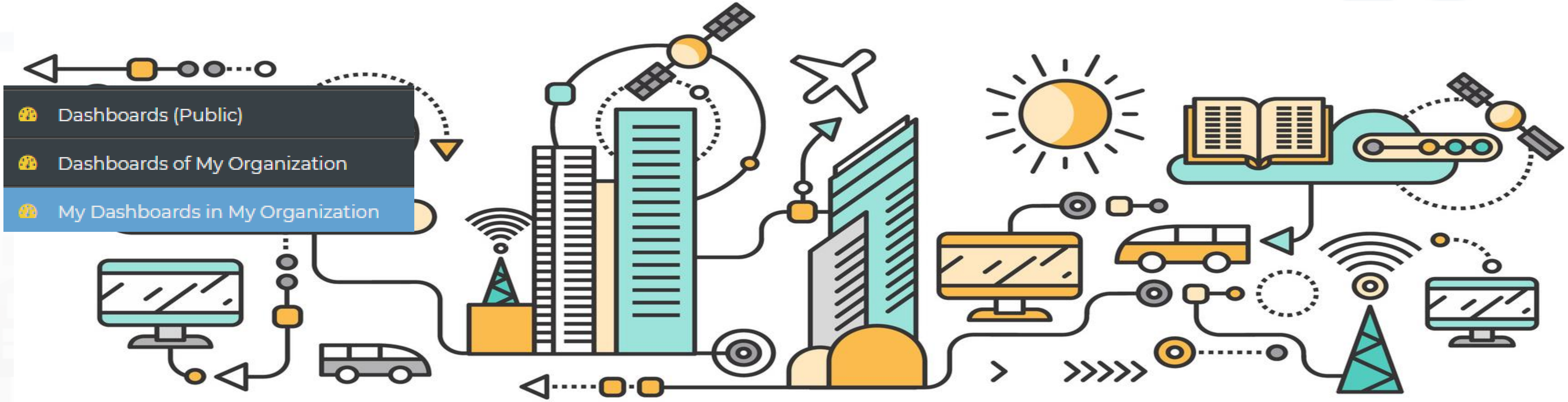
Valori Inquinanti in tempo reale, mappe

value type / value name	O3_	NO2	CO_	SO2
IT0952A	51	11		
IT0957A	7	46		
IT0885A	25	29	200	
IT1837A		63	600	
IT0888A	11	37	200	
IT0956A	34	29		
IT1835A	24	37		
IT2012A	20	29		
IT1906A	15	34		
IT0887A		28		
IT1176A	8	54		
IT1834A		64		
IT2172A	15	61		
IT1836A	29	35		
IT0953A	3	47	300	1.3
IT0889A		34		
IT0825A		58		
IT0884A	96	9		
IT1841A		31		
IT2171A		57	400	
IT0828A		75		

https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjcyNg==

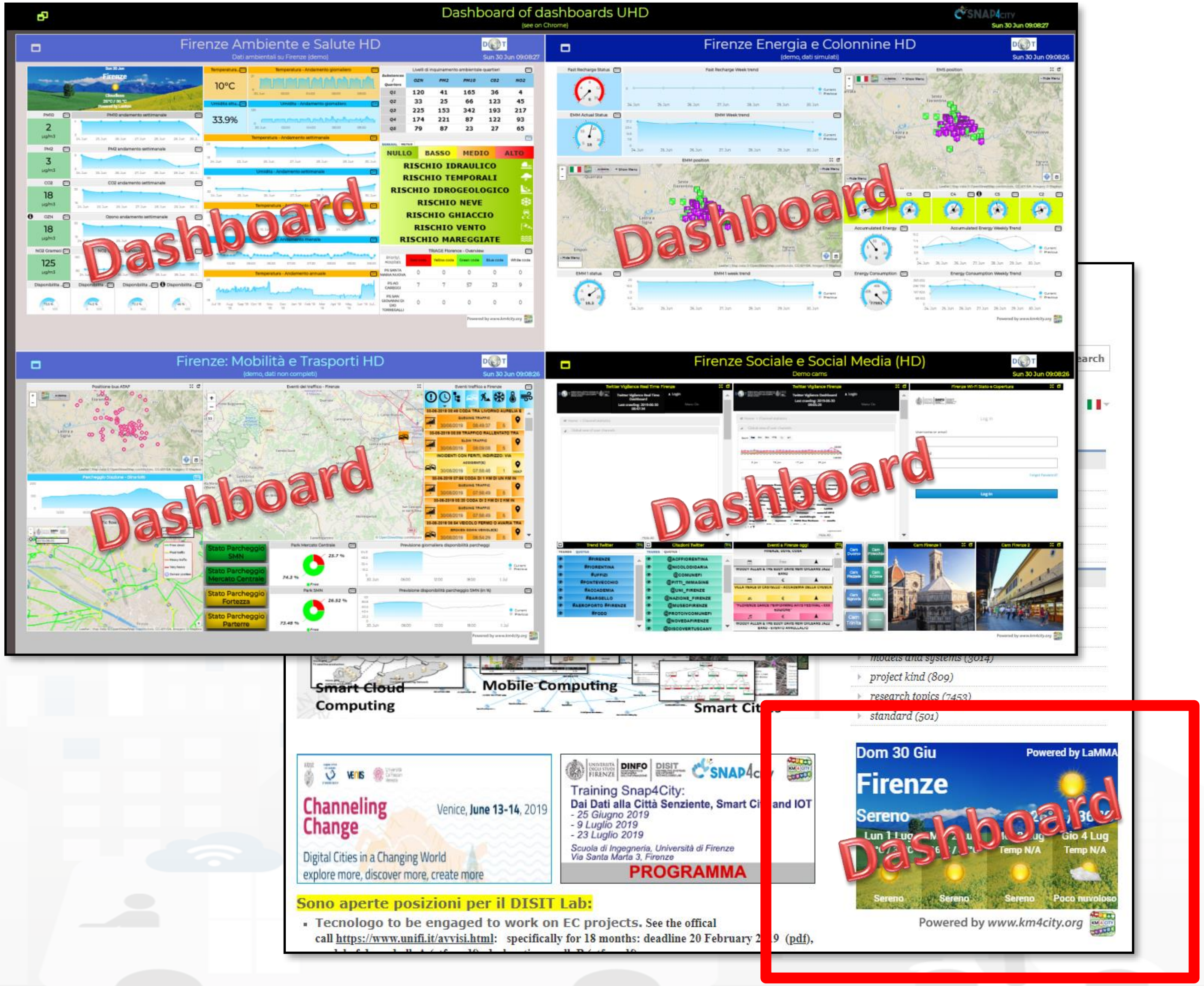
TOP

Dashboard Embedding into third party Web Sites/pages


Dashboards (Public)
Dashboards of My Organization
My Dashboards in My Organization

Additional Properties from Edit Dashboard

- **Embedding Dashboards into**
  - a Dashboard
  - third Party Web Page
- **Header** or not
- **Footer** or not
- **Responsive** or not
- **Size**: any
- **Background** Image: any
- Add / change Screenshot (**Thumbnails**)
- **Menu** on left upper corner or not

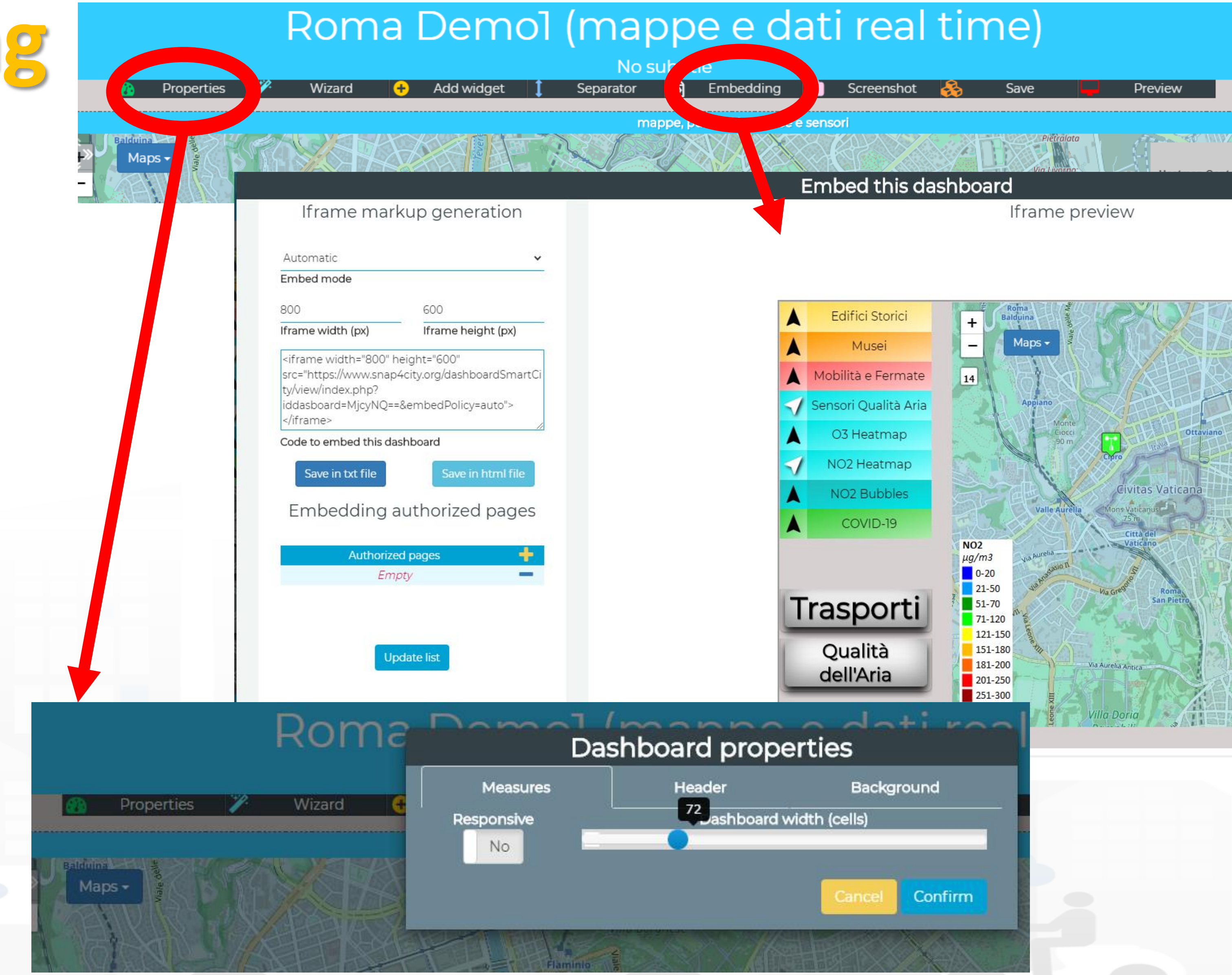

Dashboard of dashboards UHD
Firenze Ambiente e Salute HD
Firenze Energia e Colonnine HD
Firenze: Mobilità e Trasporti HD
Firenze Sociale e Social Media (HD)
Dashboard
Dashboard
Dashboard
Dashboard
Smart Cloud Computing
Mobile Computing
Channeling Change
Training Snap4City:
PROGRAMMA
Sono aperte posizioni per il DISIT Lab:
Dom 30 Giu
Firenze
Sereno
Powered by www.km4city.org
Dashboard

Exmaple of Dashboard without header

- To embed a dashboard without the header you can use the command
  - https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MzMxNw==&embedPolicy=auto
  - embedPolicy can be: auto | manual
- Then:
  - header will be hiddend
  - footer will be reduced to the logo only, centered in the view

Dashboard Embedding

- go in Dashboard Edit
  - Get code for embedding
  - Providing domain on which you embed
  - See Iframe preview
- **Dashboard properties**
  - we suggest set Responsive
  - deciding on header On Off
  - Adjust size of Iframe and dashboard for tuning


Roma Demo1 (mappe e dati real time)
No subtitle
Properties
Wizard
Add widget
Separator
Embedding
Screenshot
Save
Preview
mappe, ... e sensori
Maps
Embed this dashboard
Iframe preview
Edifici Storici
Musei
Mobilità e Fermate
Sensori Qualità Aria
O3 Heatmap
NO2 Heatmap
NO2 Bubbles
COVID-19
Trasporti
Qualità dell'Aria
NO2 µg/m3
0-20
21-50
51-70
71-120
121-150
151-180
181-200
201-250
251-300

Iframe markup generation

Embed mode: Automatic

Iframe width (px): 800

Iframe height (px): 600

Code to embed this dashboard:

```
<iframe width="800" height="600" src="https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MjcyNQ==&embedPolicy=auto"></iframe>
```

Save in txt file
Save in html file

Embedding authorized pages

Authorized pages: Empty

Update list

Dashboard properties

Measures
Header
Background

Responsive: No

Dashboard width (cells): 72

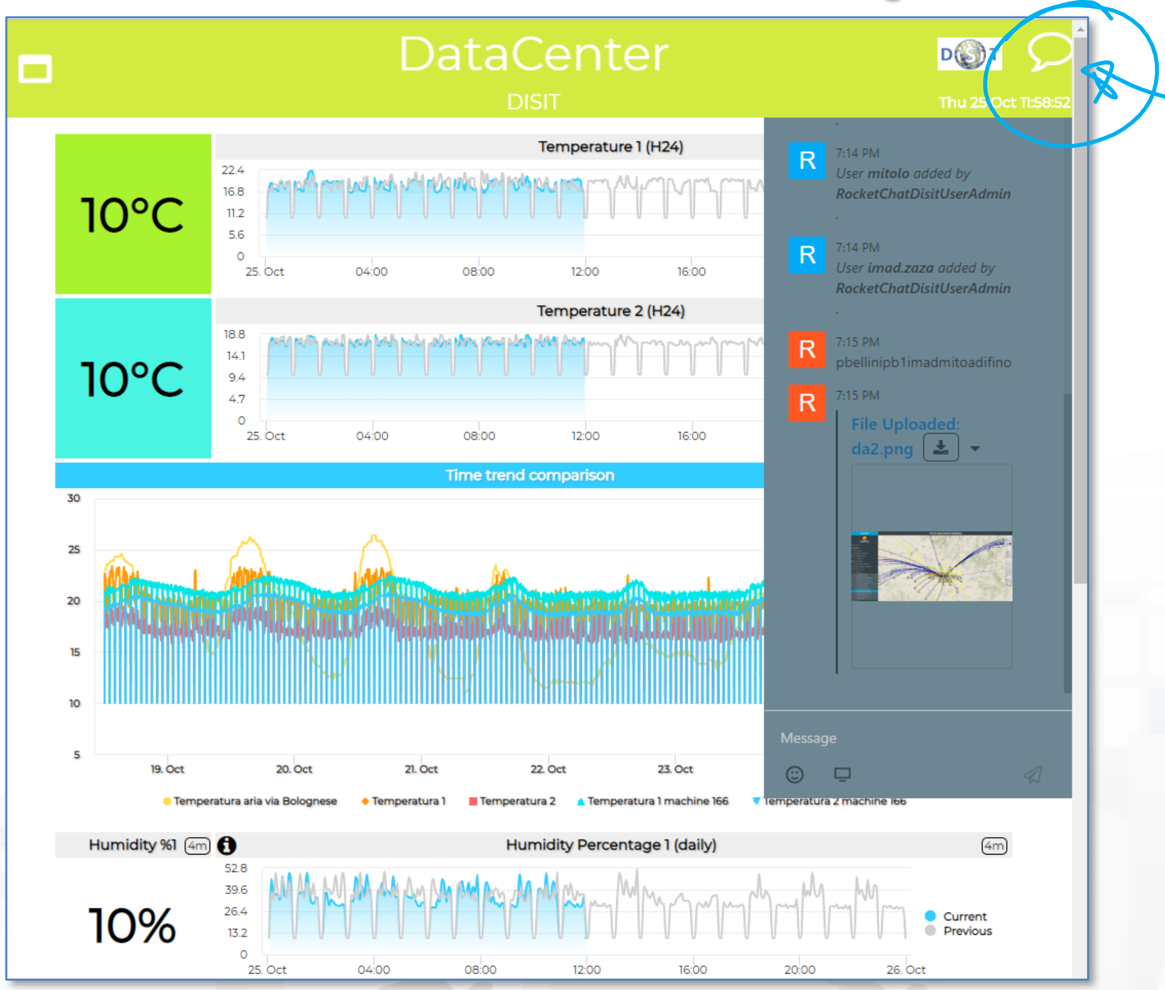
Cancel
Confirm

TOP

Private Dashboard ChatRoom

Dashboards (Public)
Dashboards of My Organization
My Dashboards in My Organization

Private ChatRoom per Dashboard


DataCenter
DISIT
Thu 25 Oct 11:58:52
10°C
Temperature 1 (H24)
22.4
16.8
11.2
5.6
0
25. Oct
04:00
08:00
12:00
16:00
10°C
Temperature 2 (H24)
18.8
14.1
9.4
4.7
0
25. Oct
04:00
08:00
12:00
16:00
Time trend comparison
30
25
20
15
10
5
19. Oct
20. Oct
21. Oct
22. Oct
23. Oct
Temperatura aria via Bolognese
Temperatura 1
Temperatura 2
Temperatura 1 machine 166
Temperatura 2 machine 166
Humidity %1
4m
Humidity Percentage 1 (daily)
4m
10%
52.8
39.6
26.4
13.2
0
25. Oct
04:00
08:00
12:00
16:00
20:00
26. Oct
Current
Previous
Message

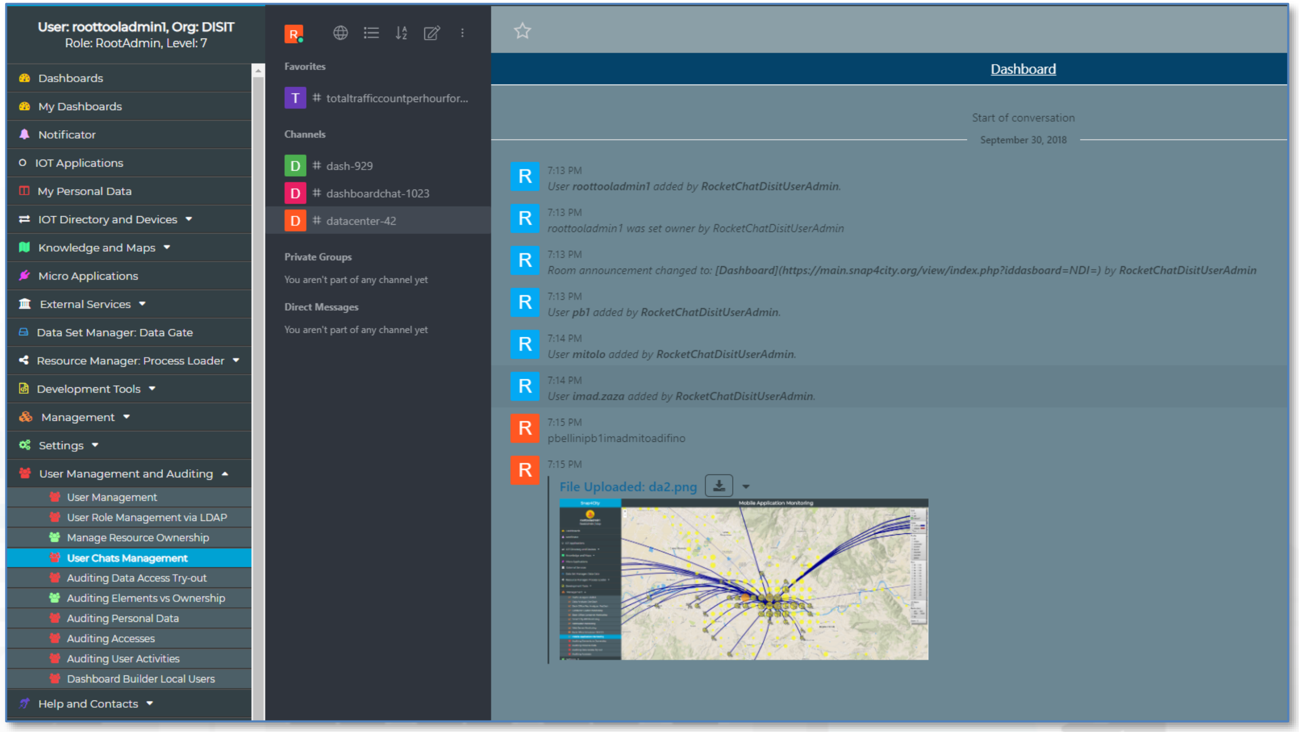
7:14 PM
*User **mitolo** added by **RocketChatDisitUserAdmin***

7:14 PM
*User **imad.zaza** added by **RocketChatDisitUserAdmin***

7:15 PM
pbellinipb1imadmitoadifino

7:15 PM
File Uploaded: da2.png

Chat Management


User: roottooladmin1, Org: DISIT
Role: RootAdmin, Level: 7
Dashboards
My Dashboards
Notificator
IOT Applications
My Personal Data
IOT Directory and Devices
Knowledge and Maps
Micro Applications
External Services
Data Set Manager: Data Gate
Resource Manager: Process Loader
Development Tools
Management
Settings
User Management and Auditing
User Management
User Role Management via LDAP
Manage Resource Ownership
User Chats Management
Auditing Data Access Try-out
Auditing Elements vs Ownership
Auditing Personal Data
Auditing Accesses
Auditing User Activities
Dashboard Builder Local Users
Help and Contacts
Favorites
# totaltrafficcountperhourfor...
Channels
# dash-929
# dashboardchat-1023
# datacenter-42
Private Groups
You aren't part of any channel yet
Direct Messages
You aren't part of any channel yet
Dashboard

Start of conversation

September 30, 2018

7:13 PM
*User **roottooladmin1** added by **RocketChatDisitUserAdmin**.*

7:13 PM
roottooladmin1 was set owner by RocketChatDisitUserAdmin

7:13 PM
*Room announcement changed to: **[Dashboard](https://main.snap4city.org/view/index.php?iddasboard=NDI=)** by **RocketChatDisitUserAdmin***

7:13 PM
*User **pb1** added by **RocketChatDisitUserAdmin**.*

7:14 PM
*User **mitolo** added by **RocketChatDisitUserAdmin**.*

7:14 PM
*User **imad.zaza** added by **RocketChatDisitUserAdmin**.*

7:15 PM
pbellinipb1imadmitoadifino

7:15 PM
File Uploaded: da2.png

Chat Rooms

- **Activated** by the Dashboard creator which can invite a number of users of the platform to
  - Exchange Comments and Pictures
  - access on web and mobile
  - provoke notifications
- Accessible only under authentication
- The administrator can access to the log for review and log of the discussions.
- Chat Room capability is available as an additional appliance

Dashboard Chat Rooms

- Each Dashboard may have only **one separate ChatRoom**
- The Dashboard Owner can
  - Activate the Chat Room on Dashboard header in Edit
  - Add users of the platform to the chat room
- The **Chat** Room
  - Allows to Exchange Comments and Pictures
  - Can be Accessed on web and mobile
  - May Provoke notifications on the header of the Dashboard
  - Is accessible only under authentication
- The Administrators can access to the Log for review of the discussions

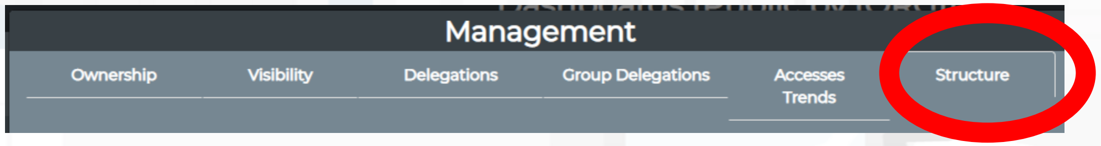
TOP

Dashboard Structure

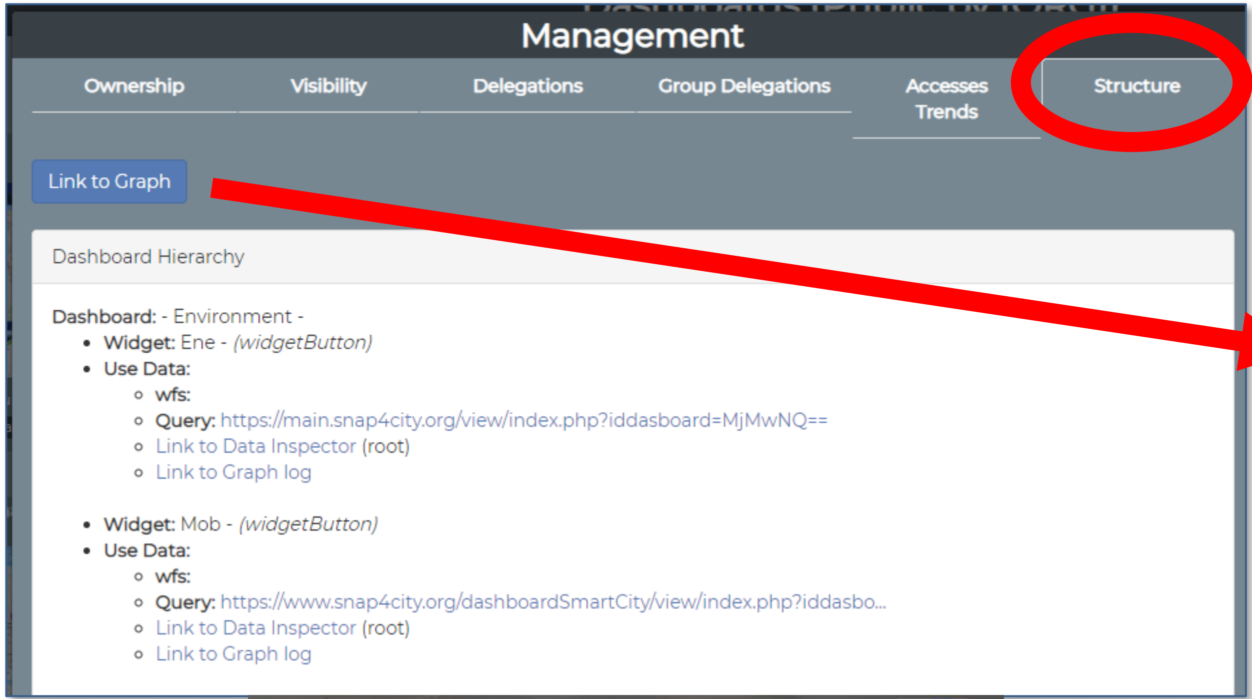
- Dashboards (Public)
- Dashboards of My Organization
- My Dashboards in My Organization

Dashboard Structure

- **For each Dashboard** (Nane, ID, ORG, Users, etc..) you can have
  - W number of widgets
    - For each Widget
      - Name,
      - A data (1 …N)
  - I number of IoT Applications
    - ….
- **Thus:**
  - Different Dashboards may share the same data
  - Different Widgets in different Dashboards may share the same data…
  - Critical courses,….. More relevant data….
- **Access from Dashboard Management**


Management
Ownership
Visibility
Delegations
Group Delegations
Accesses Trends
Structure

Dashboard Management: Graph of Smart Application



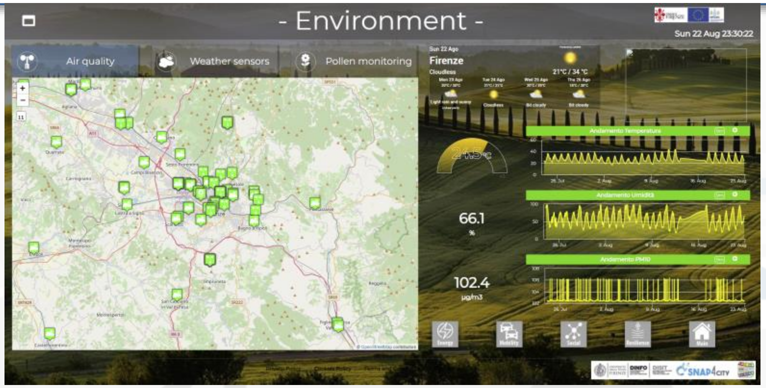
Management
Ownership
Visibility
Delegations
Group Delegations
Accesses Trends
Structure
Link to Graph

Dashboard Hierarchy

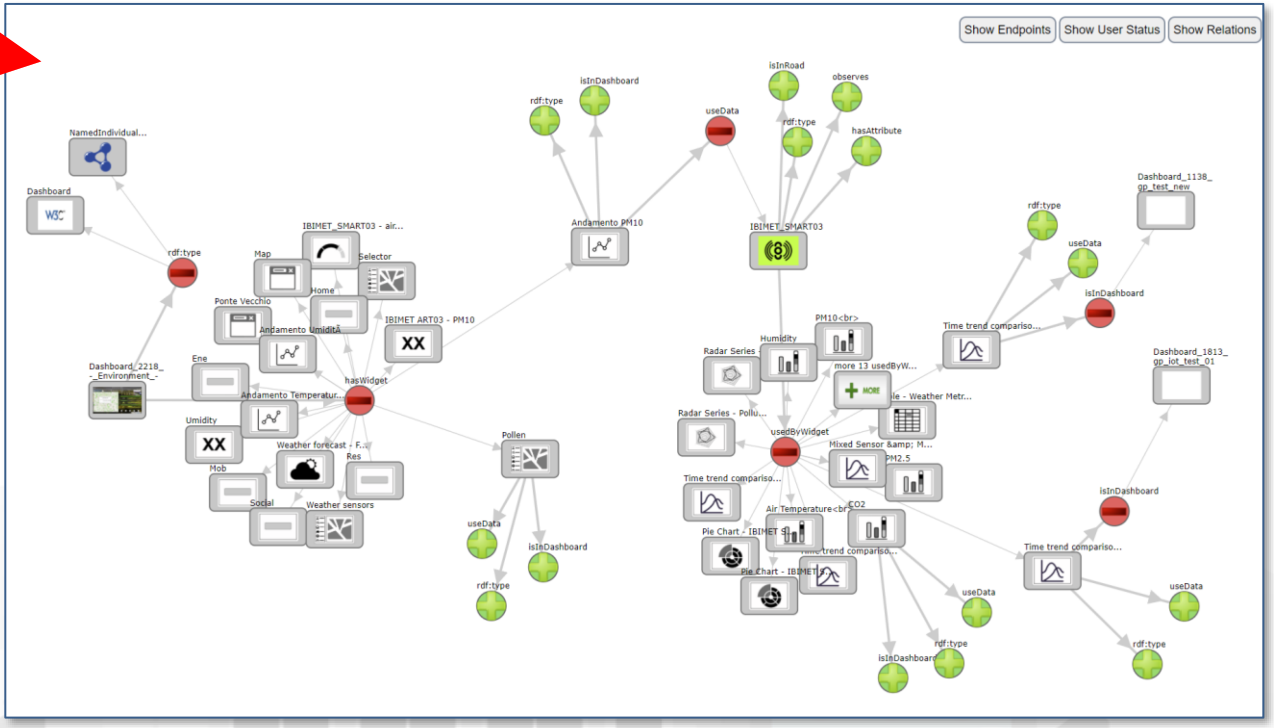
Dashboard: - Environment -

- **Widget:** Ene - *(widgetButton)*
- **Use Data:**
  - **wfs:**
  - **Query:** https://main.snap4city.org/view/index.php?iddasboard=MjMwNQ==
  - Link to Data Inspector (root)
  - Link to Graph log

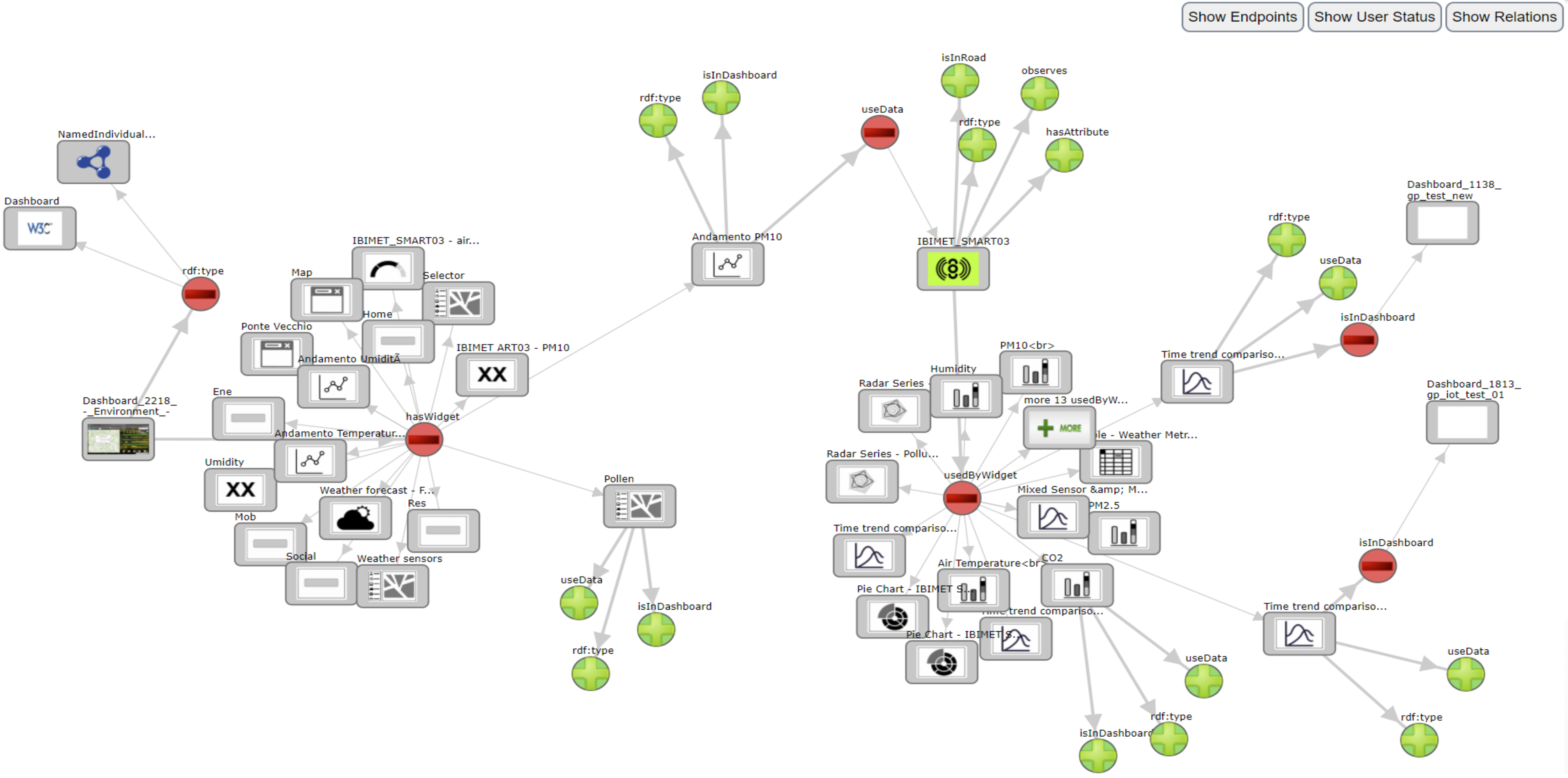
- **Widget:** Mob - *(widgetButton)*
- **Use Data:**
  - **wfs:**
  - **Query:** https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasbo...
  - Link to Data Inspector (root)
  - Link to Graph log



- Environment -
Air quality
Weather sensors
Pollen monitoring
Firenze
66.1
102.4



Show Endpoints
Show User Status
Show Relations
NamedIndividual...
Dashboard
rdf:type
Dashboard_2218_
-_Environment_-
IBIMET_SMART03 - air...
Map
Selector
Home
Ponte Vecchio
Andamento UmiditÃ
IBIMET ART03 - PM10
Ene
hasWidget
Andamento Temperatur...
Umidity
Weather forecast - F...
Res
Mob
Social
Weather sensors
Pollen
useData
isInDashboard
rdf:type
Andamento PM10
isInDashboard
rdf:type
useData
isInRoad
observes
rdf:type
hasAttribute
IBIMET_SMART03
PM10
Humidity
Radar Series
more 13 usedByW...
le - Weather Metr...
Radar Series - Pollu...
usedByWidget
Mixed Sensor &amp; M...
PM2.5
Time trend compariso...
Air Temperature
CO2
Pie Chart - IBIMET S...
Time trend compariso...
Pie Chart - IBIMET S...
useData
isInDashboard
rdf:type
Time trend compariso...
rdf:type
useData
isInDashboard
Dashboard_1138_
gp_test_new
Dashboard_1813_
gp_iot_test_01
isInDashboard
Time trend compariso...
useData
rdf:type


Show Endpoints
Show User Status
Show Relations
NamedIndividual...
Dashboard
rdf:type
Dashboard_2218_-_Environment_-
IBIMET_SMART03 - air...
Map
Selector
Home
Ponte Vecchio
Andamento UmiditÃ
IBIMET ART03 - PM10
Ene
Andamento Temperatur...
hasWidget
Umidity
Weather forecast - F...
Res
Mob
Social
Weather sensors
Pollen
useData
isInDashboard
rdf:type
rdf:type
isInDashboard
Andamento PM10
useData
isInRoad
observes
rdf:type
hasAttribute
IBIMET_SMART03
Humidity
PM10
Radar Series
more 13 usedByW...
MORE
...le - Weather Metr...
Radar Series - Pollu...
usedByWidget
Mixed Sensor &amp; M...
PM2.5
Time trend compariso...
Air Temperature
CO2
Pie Chart - IBIMET S...
...trend compariso...
Pie Chart - IBIMET S...
useData
rdf:type
isInDashboard
Time trend compariso...
rdf:type
useData
isInDashboard
Dashboard_1138_gp_test_new
Dashboard_1813_gp_iot_test_01
isInDashboard
Time trend compariso...
useData
rdf:type

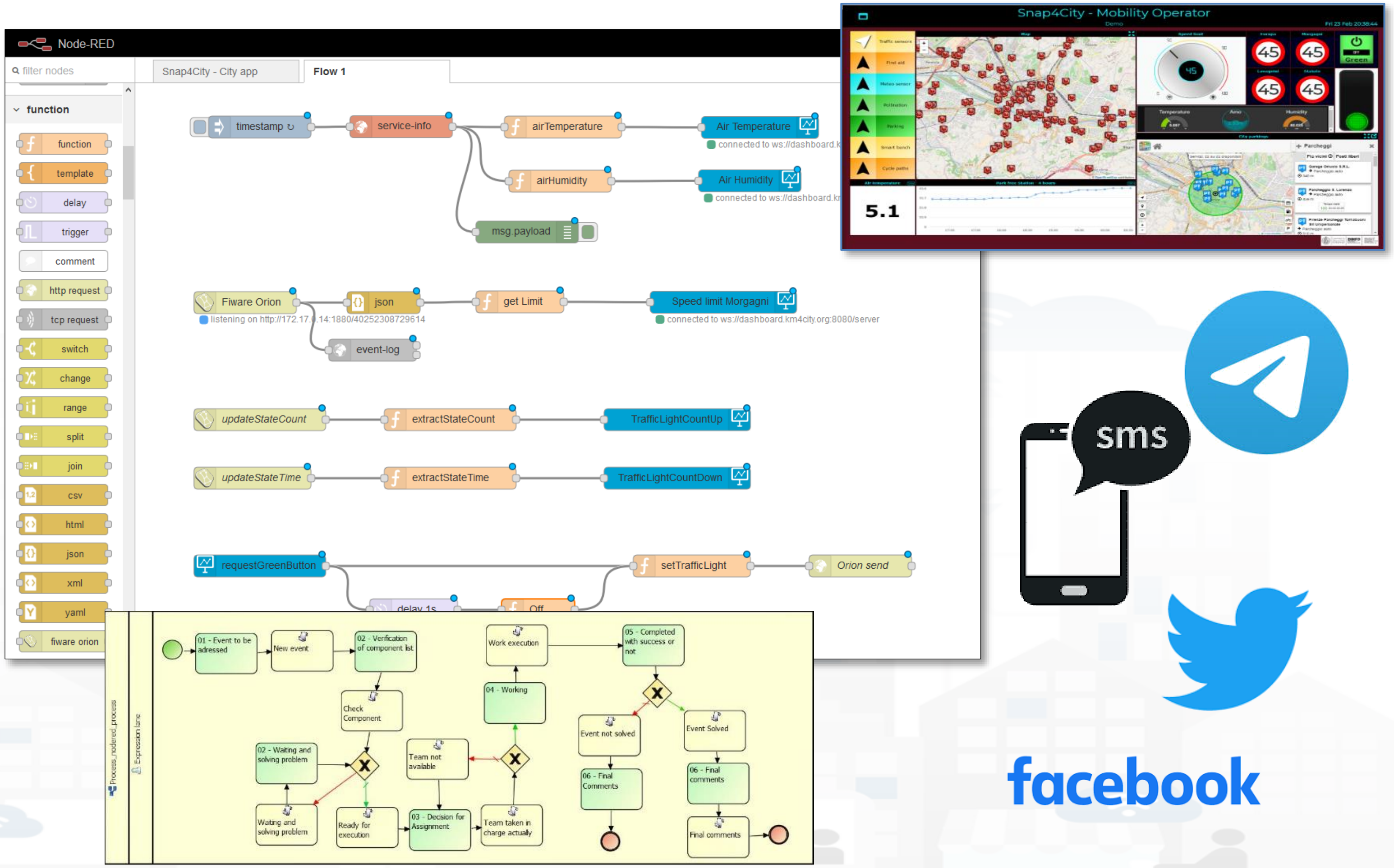
TOP

Notifications from Dashboard and from any Data Condition

Smart City Monitoring: notifications, alerting

Notification with IOT App may

- Fire on any kind of condition exploiting on IOT App logic
- produce messages/events on
    - **Facebook, Telegram,**
    - **SMS, MMS, IOT Devices, ..**
    - **email, LOGS, FTP, ..**
    - **dashboards**, mobiles, …
    - **Workflow/incident** management system for **ticketing**
    - **video wall** management,
    - **Video Management System** Milestone
    - etc. etc.


Node-RED
filter nodes
Snap4City - City app
Flow 1
function
function
template
delay
trigger
comment
http request
tcp request
switch
change
range
split
join
csv
html
json
xml
yaml
fiware orion
timestamp
service-info
airTemperature
Air Temperature
connected to ws://dashboard
airHumidity
Air Humidity
msg.payload
Fiware Orion
json
get Limit
Speed limit Morgagni
event-log
updateStateCount
extractStateCount
TrafficLightCountUp
updateStateTime
extractStateTime
TrafficLightCountDown
requestGreenButton
setTrafficLight
Orion send
Snap4City - Mobility Operator
5.1
01 - Event to be adressed
New event
02 - Verification of component list
Work execution
05 - Completed with success or not
04 - Working
Check Component
Event not solved
Event Solved
02 - Waiting and solving problem
Team not available
06 - Final Comments
06 - Final comments
Waiting and solving problem
Ready for execution
03 - Decision for Assignment
Team taken in charge actually
Final comments
sms
facebook

Training Material

FROM CITY DASHBOARD TO APPLICATIONS
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
IOT APPLICATIONS VS IOT EDGE DEVICES
/IOE …VICES …D NE…ORKS
IOT APPLICATIONS, THE LOGIC AND
ADVANCED SMART CITY API, MICROSERVICES, SNAP4CITY API
SNAP4CITY FOR BEGINNERS
…TA ANALYTICS, BUSINESS …TELLIGENCE, WHAT-IF AND SIMULATION
SNAP4CITY ARCHITECTURE AND ECOSYSTEM. OPENED TO DEVELOPERS AND STAKEHOLDERS
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
DECISION SUPPORT SYSTEM AND CITY RESILIENCE
SNAP4CITY AND KM4CITY PROJECTS
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

	1st part	2nd part	3rd part	4th part	5th part	6th part	7th part	8th
what	Overview	Dashboards	IOT App, IOT Network	Data Analytics	Data Ingestion processes	System and Deploy Install	Smart City API: Web & Mob. App	Design and Develop Smart Solutions
PDF 2022								
Interactive (2022) with video and animations								

https://www.snap4city.org/944

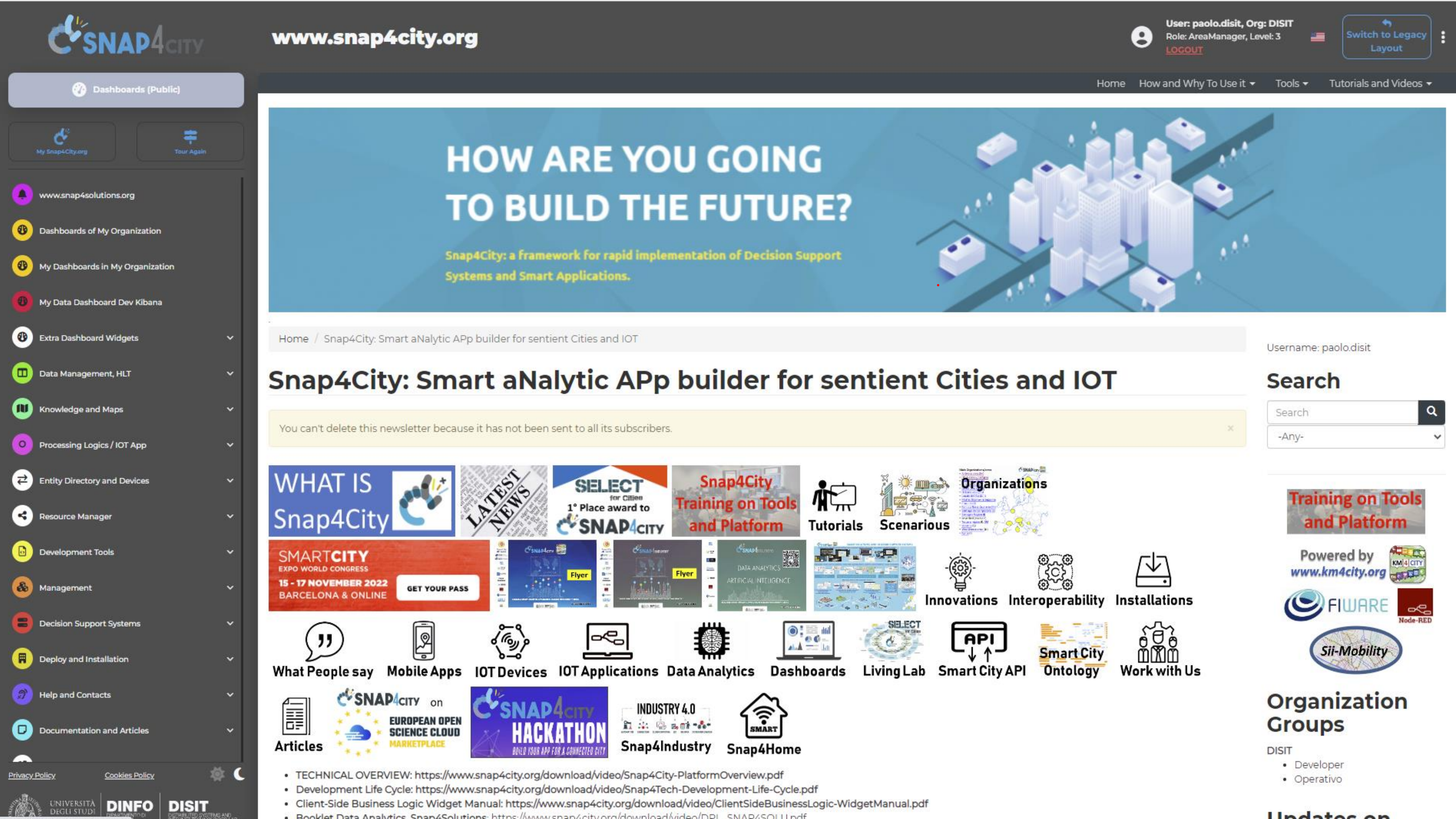
On Line Training Material (free of charge)

1st part	2nd part	3rd part	4th part	5th part	6th part	7th part	8th
Overview	Dashboards	IOT App, IOT Network	Data Analytics	Data Ingestion processes	System and Deploy Install	Smart City API: Web & Mob. App	Design and Develop Smart Solutions

▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube
▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube
▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube	▶ You Tube

Note on Training Material

- **Course 2023**: https://www.snap4city.org/944
  - Introductionary course to Snap4City technology
- **Course** https://www.snap4city.org/577
  - Full training course with much more details on mechanisms and a wider set of cases/solutions of the Snap4City Technology
- **Documentation** includes a deeper round of details
  - Snap4City Platform Overview:
    - https://www.snap4city.org/drupal/sites/default/files/files/Snap4City-PlatformOverview.pdf
  - Development Life Cycle:
    - https://www.snap4city.org/download/video/Snap4Tech-Development-Life-Cycle.pdf
  - Client Side Business Logic:
    - https://www.snap4city.org/download/video/ClientSideBusinessLogic-WidgetManual.pdf
- **On line cases and documentation**:
  - https://www.snap4city.org/108
  - https://www.snap4city.org/78
  - https://www.snap4city.org/426


www.snap4city.org
User: paolo.disit, Org: DISIT
Role: AreaManager, Level: 3
LOGOUT
Switch to Legacy Layout
Dashboards (Public)
My Snap4City.org
Tour Again
www.snap4solutions.org
Dashboards of My Organization
My Dashboards in My Organization
My Data Dashboard Dev Kibana
Extra Dashboard Widgets
Data Management, HLT
Knowledge and Maps
Processing Logics / IOT App
Entity Directory and Devices
Resource Manager
Development Tools
Management
Decision Support Systems
Deploy and Installation
Help and Contacts
Documentation and Articles
Privacy Policy
Cookies Policy
Home
How and Why To Use it
Tools
Tutorials and Videos
HOW ARE YOU GOING TO BUILD THE FUTURE?
Snap4City: a framework for rapid implementation of Decision Support Systems and Smart Applications.
Home / Snap4City: Smart aNalytic APp builder for sentient Cities and IOT
WHAT IS Snap4City
LATEST NEWS
SELECT for Cities 1° Place award to SNAP4CITY
Snap4City Training on Tools and Platform
Tutorials
Scenarious
Organizations
SMARTCITY EXPO WORLD CONGRESS 15 - 17 NOVEMBER 2022 BARCELONA & ONLINE GET YOUR PASS
Flyer
Flyer
Innovations
Interoperability
Installations
What People say
Mobile Apps
IOT Devices
IOT Applications
Data Analytics
Dashboards
Living Lab
Smart City API
Smart City Ontology
Work with Us
Articles
SNAP4CITY on EUROPEAN OPEN SCIENCE CLOUD MARKETPLACE
SNAP4CITY HACKATHON BUILD YOUR APP FOR A CONNECTED CITY
INDUSTRY 4.0 Snap4Industry
Snap4Home
Username: paolo.disit
Search
-Any-
Training on Tools and Platform
Powered by www.km4city.org
FIWARE
Node-RED
Sii-Mobility
Organization Groups
DISIT
Developer
Operativo
Updates on

Snap4City: Smart aNalytic APp builder for sentient Cities and IOT

You can't delete this newsletter because it has not been sent to all its subscribers.

- TECHNICAL OVERVIEW: https://www.snap4city.org/download/video/Snap4City-PlatformOverview.pdf
- Development Life Cycle: https://www.snap4city.org/download/video/Snap4Tech-Development-Life-Cycle.pdf
- Client-Side Business Logic Widget Manual: https://www.snap4city.org/download/video/ClientSideBusinessLogic-WidgetManual.pdf
- Booklet Data Analytics, Snap4Solutions: https://www.snap4city.org/download/video/DPL_SNAP4SOLU.pdf

2023 booklets

- Smart City

SNAP4CITY
www.snap4city.org
www.snap4solutions.org
www.km4city.org
DIGITAL TWIN SOLUTIONS TO SETUP SUSTAINABLE DECISION SUPPORT SYSTEMS AND BUSINESS INTELLIGENCE

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

- Industry

SNAP4INDUSTRY
www.snap4industry.org
SMART DATA HUBS, BUSINESS INTELLIGENCE APPLICATIONS AND SERVICES

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

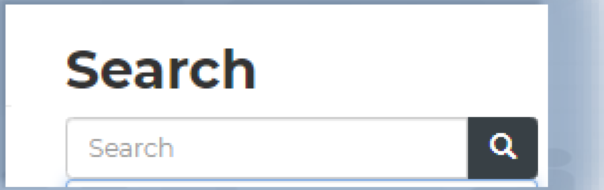
- Artificial Intelligence

SNAP4SOLUTIONS
ARTIFICIAL INTELLIGENCE
SCALABLE SMART ANALYTIC APPLICATION BUILDER FOR SENTIENT CITIES

https://www.snap4city.org/download/video/DPL_SNAP4SOLU.pdf

The Platform

- **Free Registration on Snap4City.org**
  - Please select DISIT ORG to be sure to access at the examples
  - Most of the cities / tenant are private and they do not left much visible
- **What you get** is probably the 10% of what is on the platform ☺
- **Training**: https://www.snap4city.org/577
- **Scenarious**: https://www.snap4city.org/4
- **Publications**: https://www.snap4city.org/426
- **WEB pages**: https://www.snap4city.org/78
- ***SEARCH on the right side***

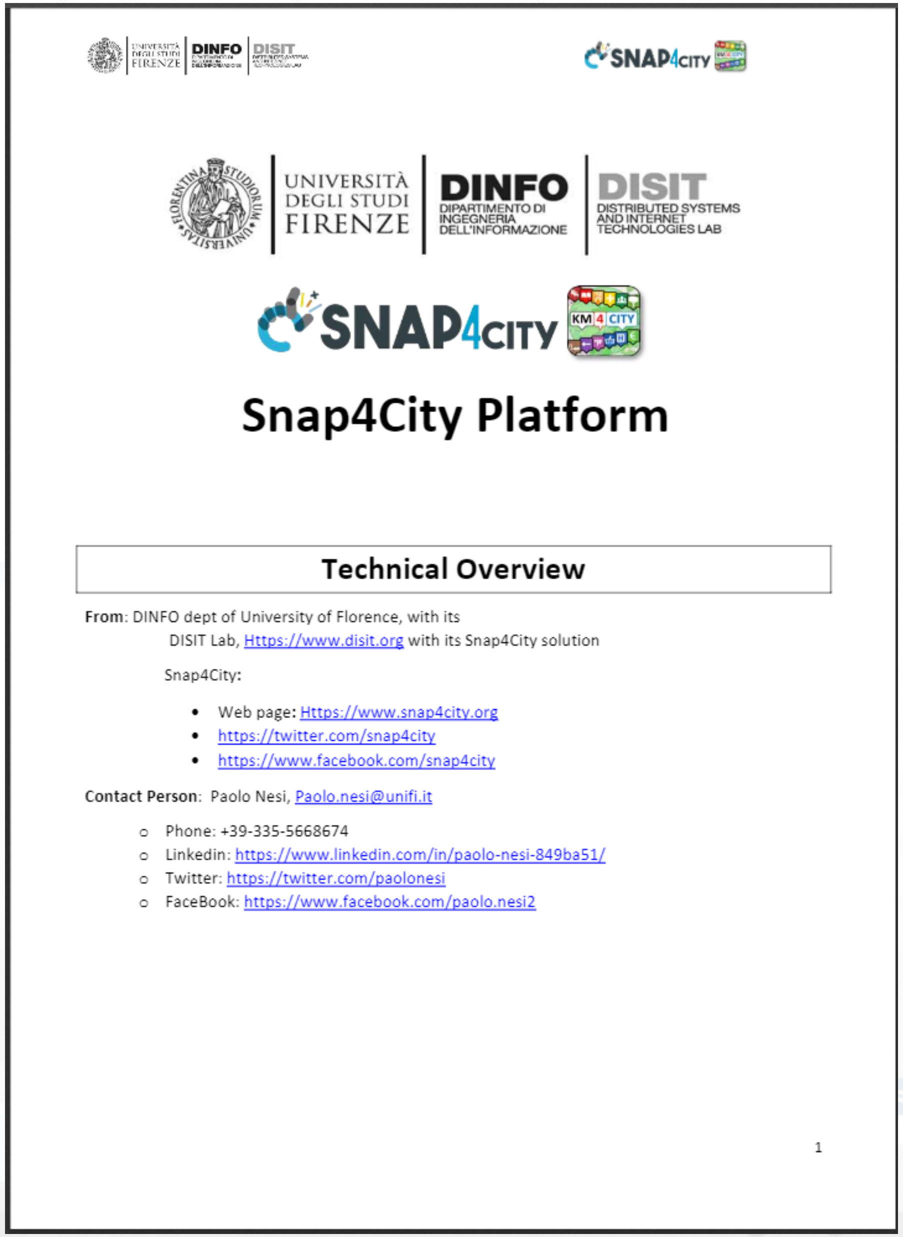


Search

Search

Tech Overview

- https://www.snap4city.org/drupal/sites/default/files/files/Snap4City-PlatformOverview.pdf



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

SNAP4CITY KM4CITY

Snap4City Platform

Technical Overview

From: DINFO dept of University of Florence, with its
DISIT Lab, Https://www.disit.org with its Snap4City solution

Snap4City:

- Web page: Https://www.snap4city.org
- https://twitter.com/snap4city
- https://www.facebook.com/snap4city

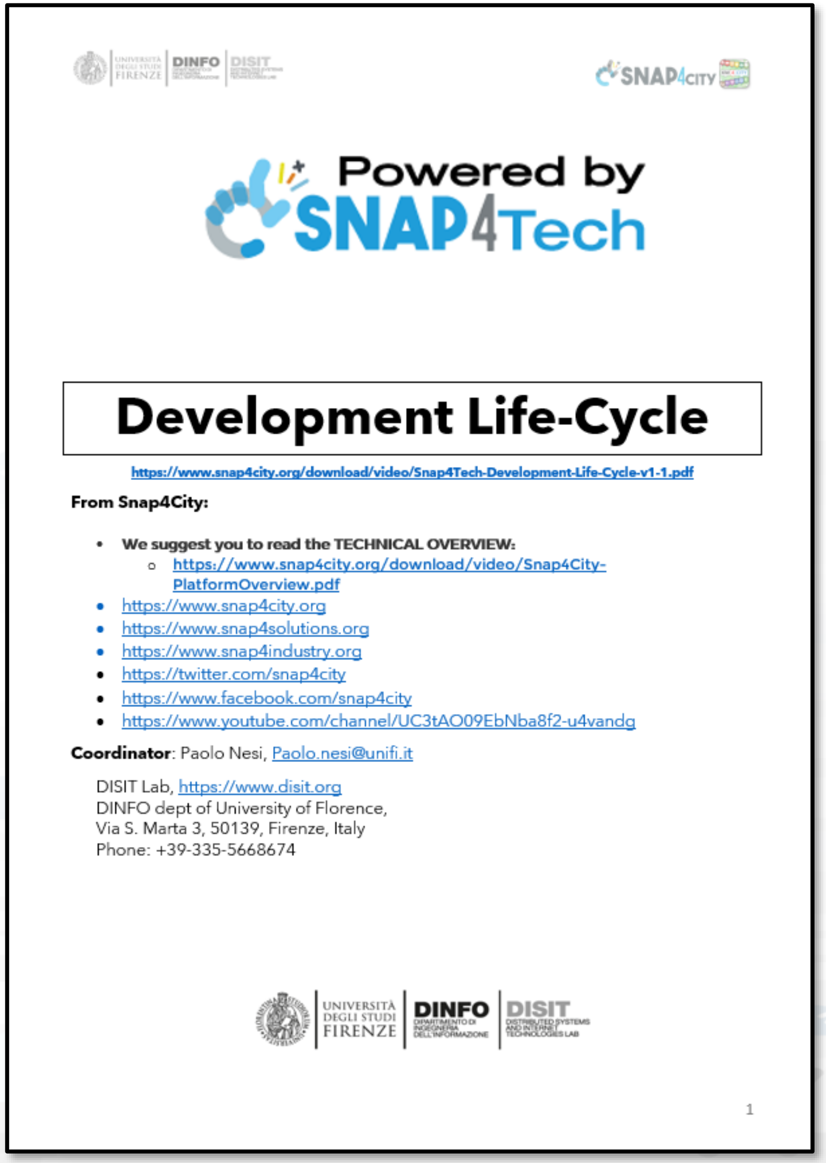
Contact Person: Paolo Nesi, Paolo.nesi@unifi.it

- Phone: +39-335-5668674
- Linkedin: https://www.linkedin.com/in/paolo-nesi-849ba51/
- Twitter: https://twitter.com/paolonesi
- FaceBook: https://www.facebook.com/paolo.nesi2

1

Development

https://www.snap4city.org/download/video/Snap4Tech-Development-Life-Cycle.pdf



Powered by SNAP4Tech

Development Life-Cycle

https://www.snap4city.org/download/video/Snap4Tech-Development-Life-Cycle-v1-1.pdf

From Snap4City:

- **We suggest you to read the TECHNICAL OVERVIEW:**
    - https://www.snap4city.org/download/video/Snap4City-PlatformOverview.pdf
- https://www.snap4city.org
- https://www.snap4solutions.org
- https://www.snap4industry.org
- https://twitter.com/snap4city
- https://www.facebook.com/snap4city
- https://www.youtube.com/channel/UC3tAO09EbNba8f2-u4vandg

Coordinator: Paolo Nesi, Paolo.nesi@unifi.it

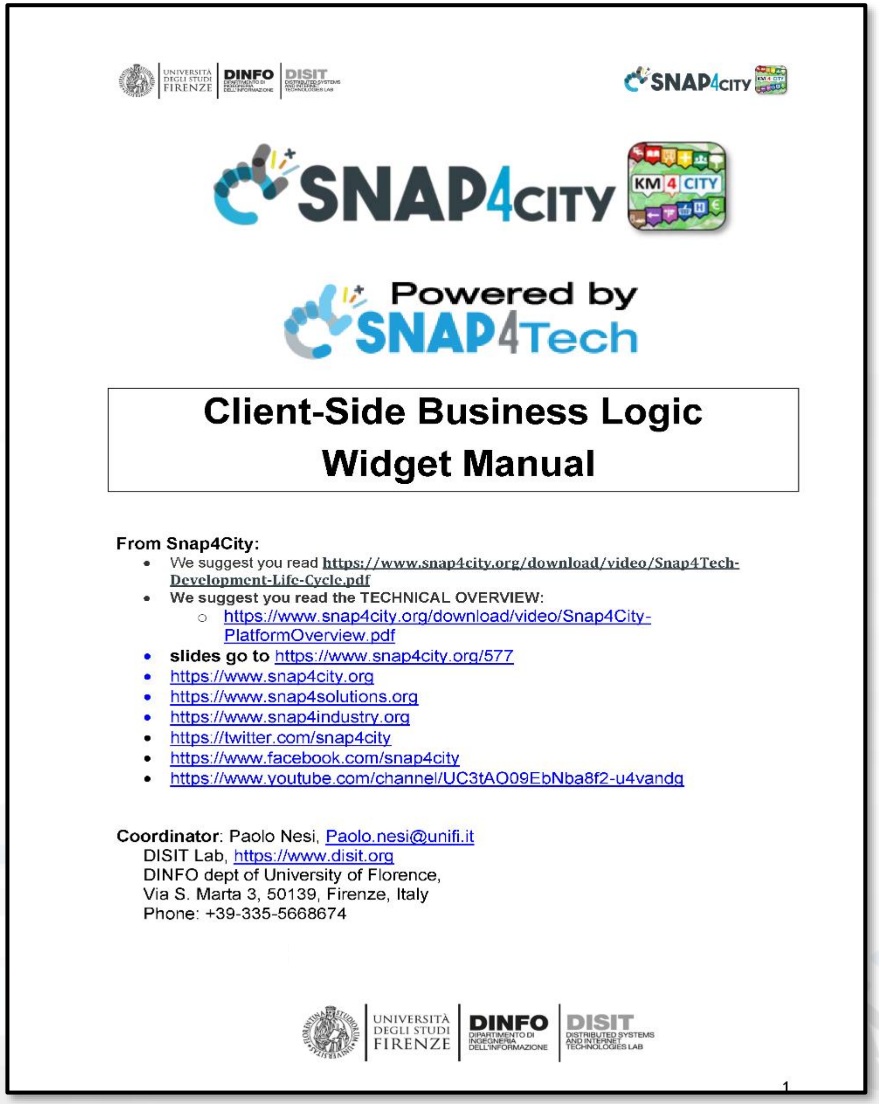
DISIT Lab, https://www.disit.org
DINFO dept of University of Florence,
Via S. Marta 3, 50139, Firenze, Italy
Phone: +39-335-5668674

UNIVERSITÀ DEGLI STUDI FIRENZE | DINFO | DISIT

1

CSBL

Client Side Business Logic



Powered by SNAP4Tech

Client-Side Business Logic Widget Manual

From Snap4City:

- We suggest you read **https://www.snap4city.org/download/video/Snap4Tech-Development-Life-Cycle.pdf**
- **We suggest you read the TECHNICAL OVERVIEW:**
  - https://www.snap4city.org/download/video/Snap4City-PlatformOverview.pdf
- **slides go to** https://www.snap4city.org/577
- https://www.snap4city.org
- https://www.snap4solutions.org
- https://www.snap4industry.org
- https://twitter.com/snap4city
- https://www.facebook.com/snap4city
- https://www.youtube.com/channel/UC3tAO09EbNba8f2-u4vandg

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DINFO dept of University of Florence,
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Phone: +39-335-5668674

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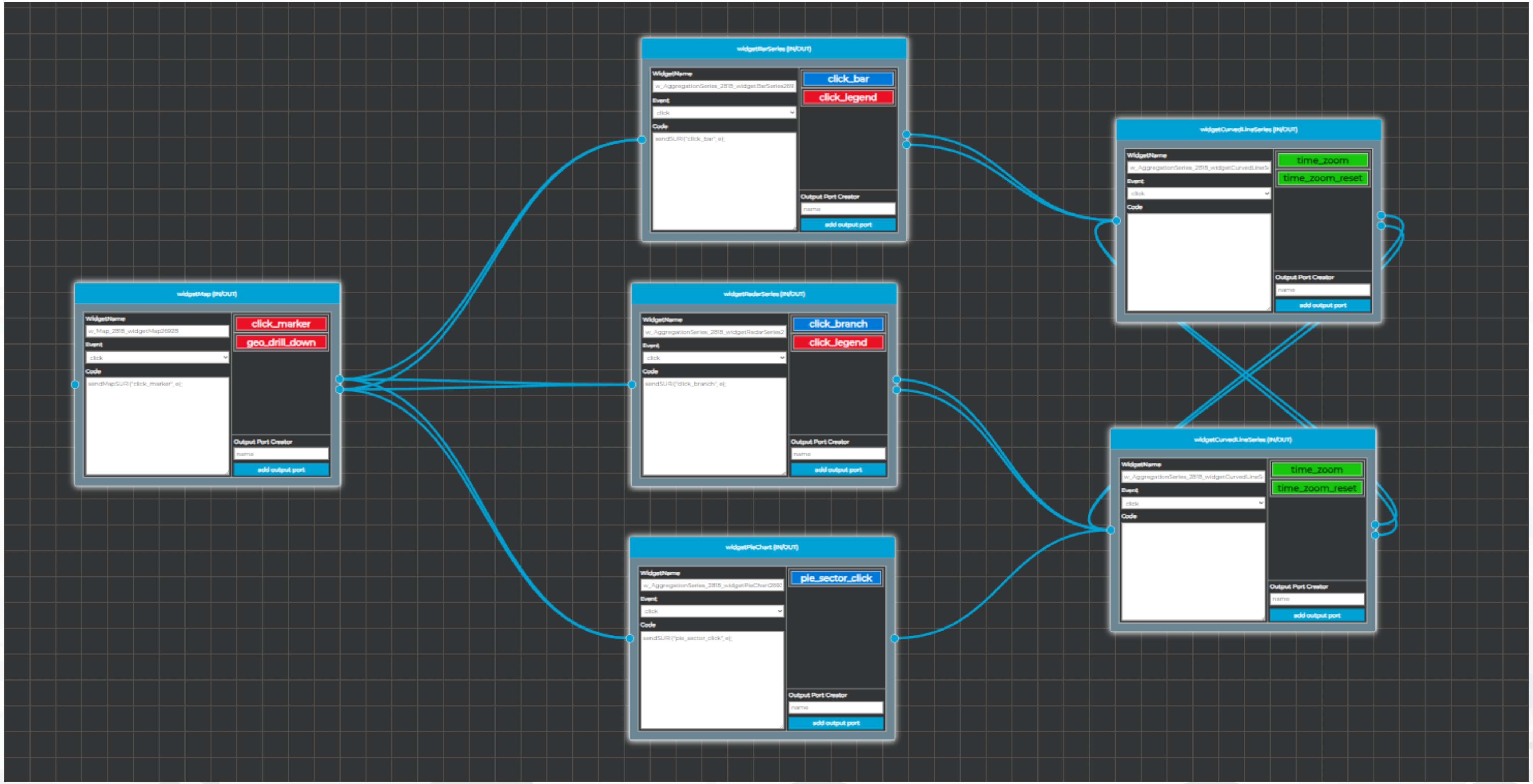
https://www.snap4city.org/download/video/ClientSideBusinessLogic-WidgetManual.pdf

Visual programming for CSBL is coming soon



widgetBarSeries (IN/OUT)
WidgetName
Event
Code
click_bar
click_legend
Output Port Creator
name
add output port
widgetCurvedLineSeries (IN/OUT)
time_zoom
time_zoom_reset
widgetMap (IN/OUT)
click_marker
geo_drill_down
widgetRadarSeries (IN/OUT)
click_branch
click_legend
widgetCurvedLineSeries (IN/OUT)
time_zoom
time_zoom_reset
widgetPieChart (IN/OUT)
pie_sector_click

widgetMap: WidgetName w_Map_2818_widgetMap26928; Event click; Code:

```
sendMapSURI("click_marker", e);
```

widgetBarSeries: WidgetName w_AggregationSeries_2818_widgetBarSeries269; Event click; Code:

```
sendSURI("click_bar", e);
```

widgetRadarSeries: WidgetName w_AggregationSeries_2818_widgetRadarSeries2; Event click; Code:

```
sendSURI("click_branch", e);
```

widgetPieChart: WidgetName w_AggregationSeries_2818_widgetPieChart269; Event click; Code:

```
sendSURI("pie_sector_click", e);
```

widgetCurvedLineSeries: WidgetName w_AggregationSeries_2818_widgetCurvedLineS; Event click

widgetCurvedLineSeries: WidgetName w_AggregationSeries_2818_widgetCurvedLineS; Event click

Overview

FIWARE
Open APIs for Open Minds

FIWARE IMPACT STORIES

SMART CITIES AND SMART INDUSTRY

Snap4City:
FIWARE powered smart app builder for sentient cities

With the contribution of
UNIVERSITÀ DEGLI STUDI FIRENZE | DINFO | DISIT

- https://fiware-foundation.medium.com/snap4city-fiware-powered-smart-app-builder-for-sentient-cities-acfe24df49d5
- https://www.snap4city.org/drupal/sites/default/files/files/FF_ImpactStories_Snap4City.pdf

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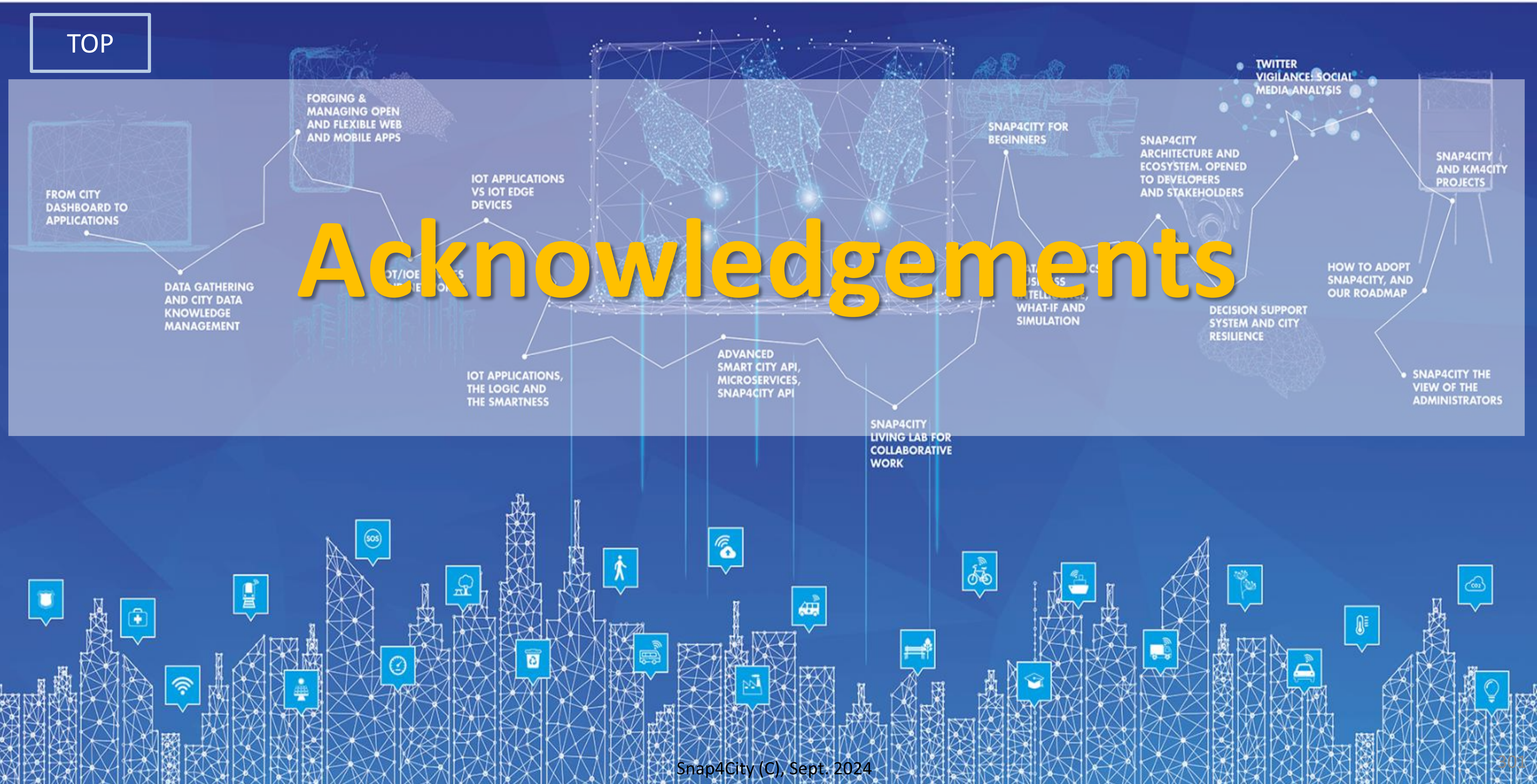
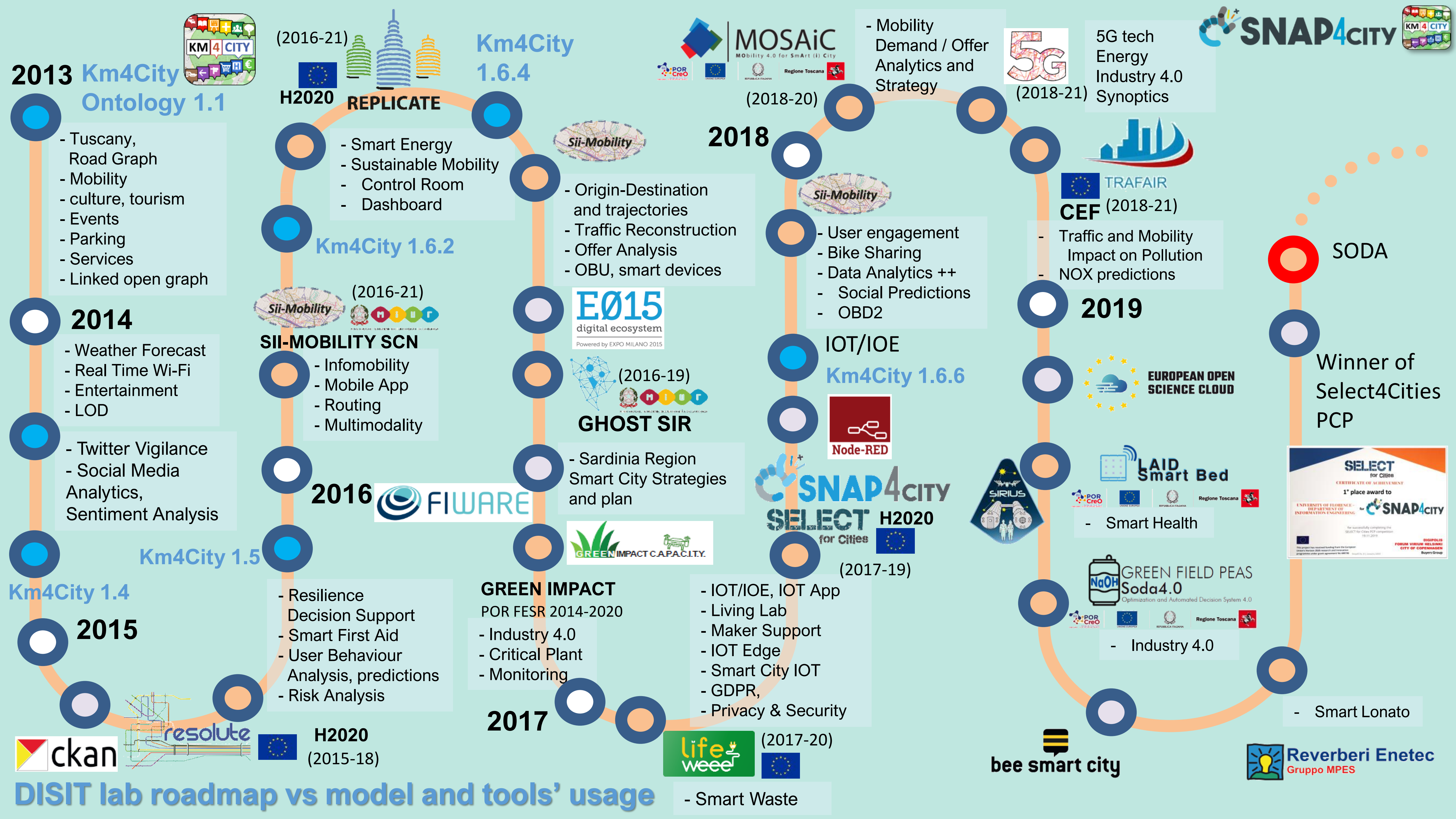
Acknowledgements


FROM CITY DASHBOARD TO APPLICATIONS
FORGING & MANAGING OPEN AND FLEXIBLE WEB AND MOBILE APPS
DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT
IOT APPLICATIONS VS IOT EDGE DEVICES
IOT APPLICATIONS, THE LOGIC AND THE SMARTNESS
ADVANCED SMART CITY API, MICROSERVICES, SNAP4CITY API
SNAP4CITY LIVING LAB FOR COLLABORATIVE WORK
SNAP4CITY FOR BEGINNERS
WHAT-IF AND SIMULATION
SNAP4CITY ARCHITECTURE AND ECOSYSTEM. OPENED TO DEVELOPERS AND STAKEHOLDERS
TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS
DECISION SUPPORT SYSTEM AND CITY RESILIENCE
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP
SNAP4CITY AND KM4CITY PROJECTS
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

DISIT lab roadmap vs model and tools' usage



2013 Km4City Ontology 1.1

- Tuscany, Road Graph
- Mobility
- culture, tourism
- Events
- Parking
- Services
- Linked open graph

2014

- Weather Forecast
- Real Time Wi-Fi
- Entertainment
- LOD

- Twitter Vigilance
- Social Media Analytics, Sentiment Analysis

Km4City 1.4

2015

ckan

resolute H2020 (2015-18)

Km4City 1.5

- Resilience Decision Support
- Smart First Aid
- User Behaviour Analysis, predictions
- Risk Analysis

Km4City 1.6.2

Sii-Mobility (2016-21)

SII-MOBILITY SCN

- Infomobility
- Mobile App
- Routing
- Multimodality

2016 FIWARE

(2016-21) H2020 **REPLICATE**

- Smart Energy
- Sustainable Mobility
- Control Room
- Dashboard

Km4City 1.6.4

Sii-Mobility

- Origin-Destination and trajectories
- Traffic Reconstruction
- Offer Analysis
- OBU, smart devices

E015 digital ecosystem Powered by EXPO MILANO 2015

(2016-19)

GHOST SIR

- Sardinia Region Smart City Strategies and plan

GREEN IMPACT C.A.P.A.C.I.T.Y.

GREEN IMPACT

POR FESR 2014-2020

- Industry 4.0
- Critical Plant
- Monitoring

2017

life weee (2017-20)

- Smart Waste

- IOT/IOE, IOT App
- Living Lab
- Maker Support
- IOT Edge
- Smart City IOT
- GDPR,
- Privacy & Security

SELECT for Cities H2020 (2017-19)

SNAP4CITY

Node-RED

Km4City 1.6.6

IOT/IOE

Sii-Mobility

- User engagement
- Bike Sharing
- Data Analytics ++
- Social Predictions
- OBD2

2018

MOSAiC MObility 4.0 for SmArt (i) City

POR CreO · Regione Toscana

(2018-20)

- Mobility Demand / Offer Analytics and Strategy

5G (2018-21)

- 5G tech
- Energy
- Industry 4.0
- Synoptics

TRAFAIR

CEF (2018-21)

- Traffic and Mobility Impact on Pollution
- NOX predictions

2019

EUROPEAN OPEN SCIENCE CLOUD

SIRIUS

LAID Smart Bed

POR CreO · Regione Toscana

- Smart Health

GREEN FIELD PEAS Soda4.0 Optimization and Automated Decision System 4.0

POR CreO · Regione Toscana

- Industry 4.0

bee smart city

- Smart Lonato

Reverberi Enetec Gruppo MPES

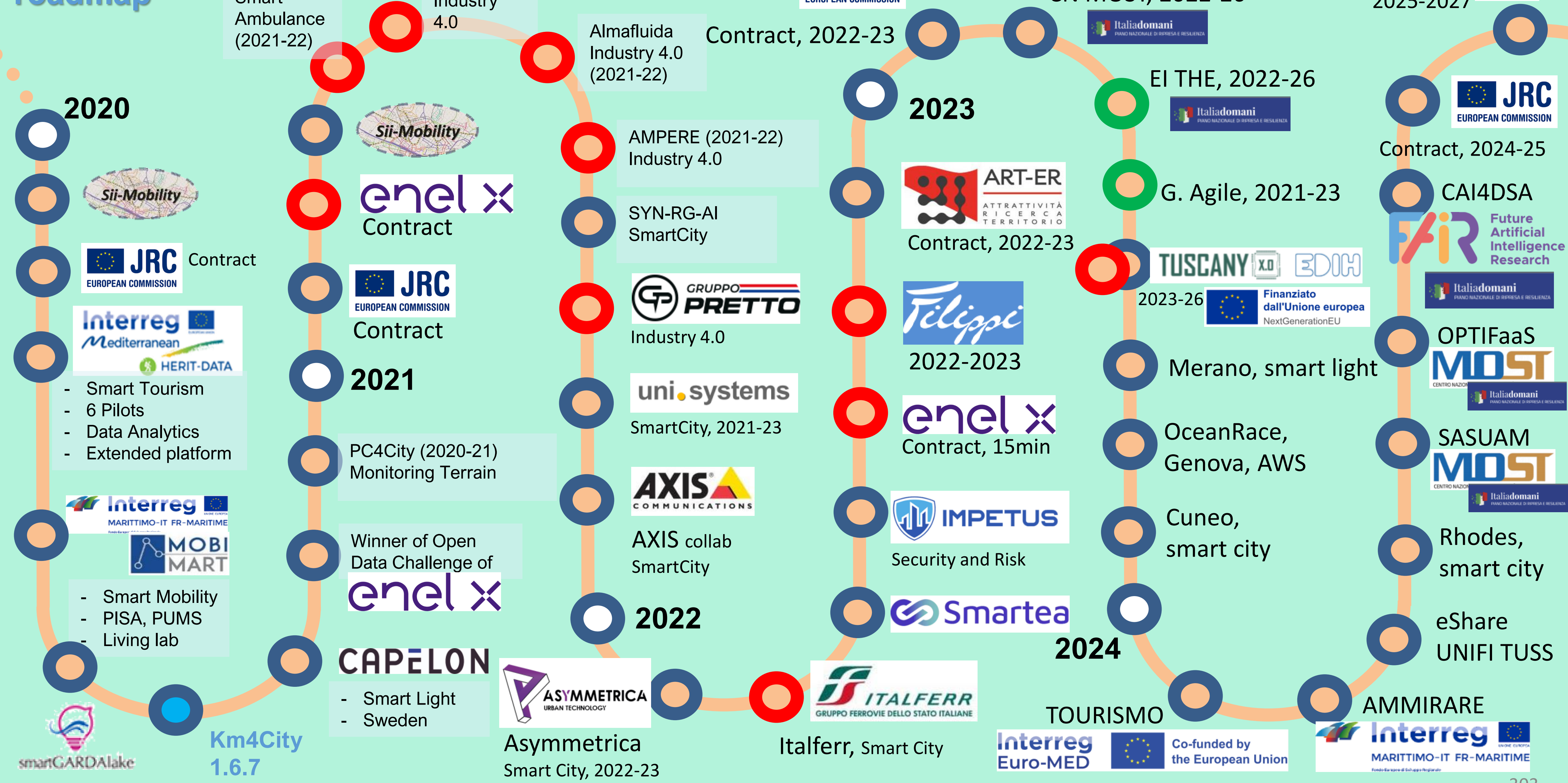
Winner of Select4Cities PCP

SELECT for Cities CERTIFICATE OF ACHIEVEMENT 1st place award to UNIVERSITY OF FLORENCE – DEPARTMENT OF INFORMATION ENGINEERING for SNAP4CITY

SODA

SNAP4CITY

SNAP4CITY roadmap



2020

Sii-Mobility

JRC EUROPEAN COMMISSION Contract

Interreg Mediterranean HERIT-DATA

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

Interreg MARITTIMO-IT FR-MARITIME

MOBIMART

- Smart Mobility
- PISA, PUMS
- Living lab

smartGARDAlake

Km4City 1.6.7

CAPELON

- Smart Light
- Sweden

Winner of Open Data Challenge of enel x

PC4City (2020-21) Monitoring Terrain

2021

JRC EUROPEAN COMMISSION Contract

enel x Contract

Sii-Mobility

Smart Ambulance (2021-22)

Enterprise (2021-22) Industry 4.0

Almafluida Industry 4.0 (2021-22)

AMPERE (2021-22) Industry 4.0

SYN-RG-AI SmartCity

GRUPPO PRETTO Industry 4.0

uni.systems SmartCity, 2021-23

AXIS COMMUNICATIONS AXIS collab SmartCity

2022

ASYMMETRICA URBAN TECHNOLOGY Asymmetrica Smart City, 2022-23

ITALFERR GRUPPO FERROVIE DELLO STATO ITALIANE Italferr, Smart City

Smartea

IMPETUS Security and Risk

enel x Contract, 15min

Filippi 2022-2023

ART-ER ATTRATTIVITÀ RICERCA TERRITORIO Contract, 2022-23

2023

JRC EUROPEAN COMMISSION Contract, 2022-23

MOST CN MOST, 2022-26 Italiadomani

EI THE, 2022-26 Italiadomani

G. Agile, 2021-23

TUSCANY X.0 EDIH 2023-26 Finanziato dall'Unione europea NextGenerationEU

Merano, smart light

OceanRace, Genova, AWS

Cuneo, smart city

2024

TOURISMO Interreg Euro-MED Co-funded by the European Union

AMMIRARE Interreg MARITTIMO-IT FR-MARITIME

eShare UNIFI TUSS

Rhodes, smart city

SASUAM MOST Italiadomani

OPTIFaaS MOST Italiadomani

CAI4DSA FAIR Future Artificial Intelligence Research Italiadomani

JRC EUROPEAN COMMISSION Contract, 2024-25

ELLIE IA 2025-2027

https://www.Snap4City.org

100% OPEN SOURCE

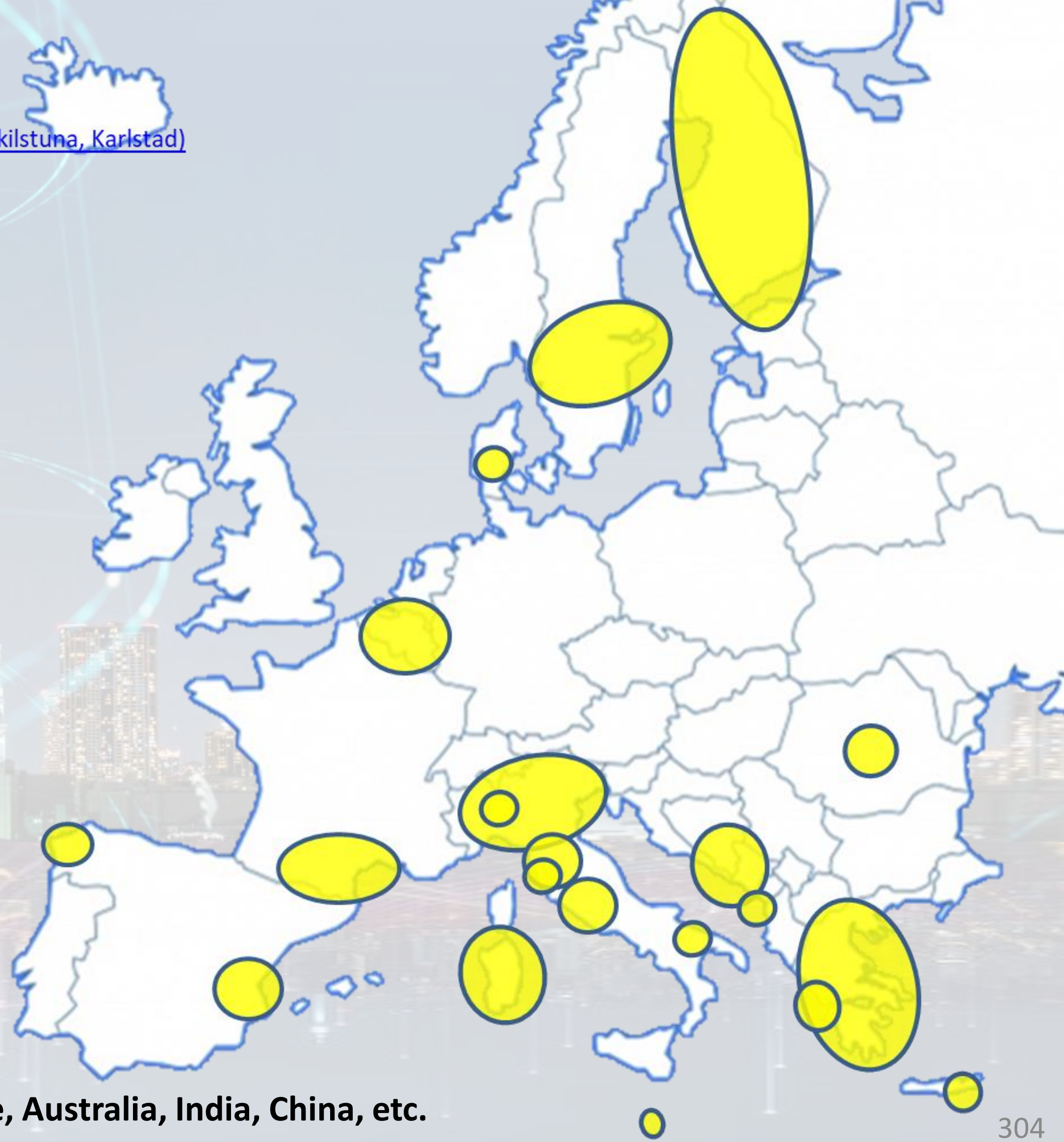
PEN Test Passed

EU GDPR COMPLIANT

- 11 running installations in Europe
  - Snap4.city.org, Greece, Merano, Cuneo, …
  - Toscana, Pisa, Sweden, ISPRA, Snap4.eu,
  - Altair, Italmatic, Romania, ….
- 16 projects, 12 pilots on 10 Countries
  - >40 cities/area
- **Widest MULTI-tenant deploy has**
  - 24 Organizations / tenant
  - > 8850 users on
  - > 1800 Dashboards
  - > 17 mobile Apps
  - **> 2.2 Million of structured data per day**
  - > 580 IoT Applications/node-RED
  - > 750 web pages with training
  - > 75 videos, training videos

Main Organizations/areas

- Antwerp area (Be)
- Bari (I)
- Bisevo, Croatia
- Bologna (I)
- Brasov (Ro)
- Capelon (Sweden: Västerås, Eskilstuna, Karlstad)
- Cuneo (I)
- DISIT demo (multiple)
- Dubrovnik, Croatia
- Firenze area (I)
- Garda Lake area (I)
- Greece (Gr)
- Helsinki area (Fin)
- Limassol (Cy)
- Livorno area (I)
- Lonato del Garda (I)
- Malta (Malta)
- Merano (I)
- Modena (I)
- Mostar, Bosnia-Herzegovina
- Oslo & Padova (Impetus)
- Pisa area (I)
- Pistoia (I)
- Pont du Gard, Occitanie (Fr)
- Prato (I)
- Rhodes (Gr)
- Roma (I)
- Santiago de Compostela (S)
- Sardegna Region (I)
- Siena (I)
- SmartBed (multiple)
- Toscana Region (I), SM
- Valencia (S)
- Venezia area (I)
- WestGreece area (Gr)



- **+ Israel, Colombia, Brasile, Australia, India, China, etc.**

TOP

SNAP4CITY

KM4CITY

100% OPEN SOURCE

Be smart in a SNAP!

SMARTCITY
EXPO WORLD CONGRESS
7-9 November 2023, Barcelona, Spain
Visit Snap4City in Hall 1

SNAP4
Appliances and Dockers
Installations

CONTACT

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