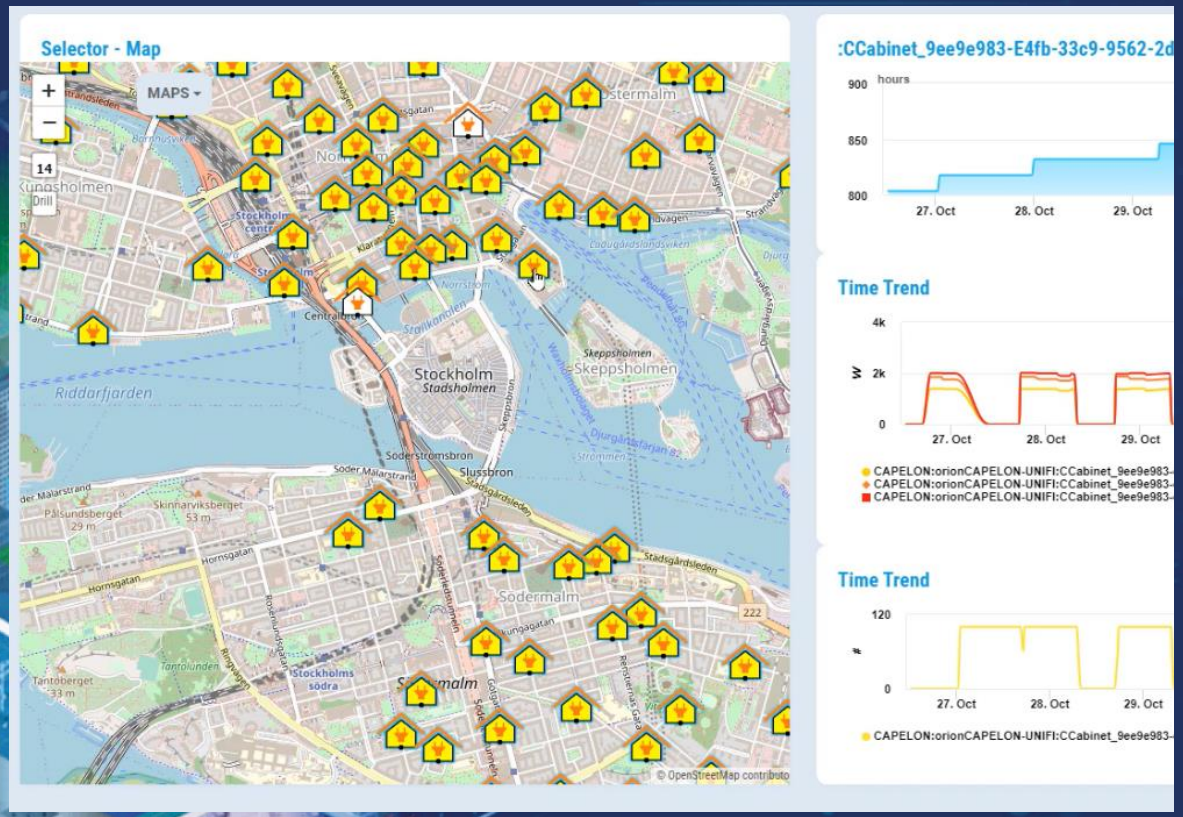
SNAP4CITY

www.snap4city.org
www.snap4solutions.org



#snap4city
#km4city
#disitlab
@snap4city

Light and Energy overview

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

Smart Energy

FROM CITY DASHBOARD TO APPLICATIONS

100% OPEN SOURCE

Key Performance Indicators, KPI

Air Quality Directive				WHO guidelines	
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	

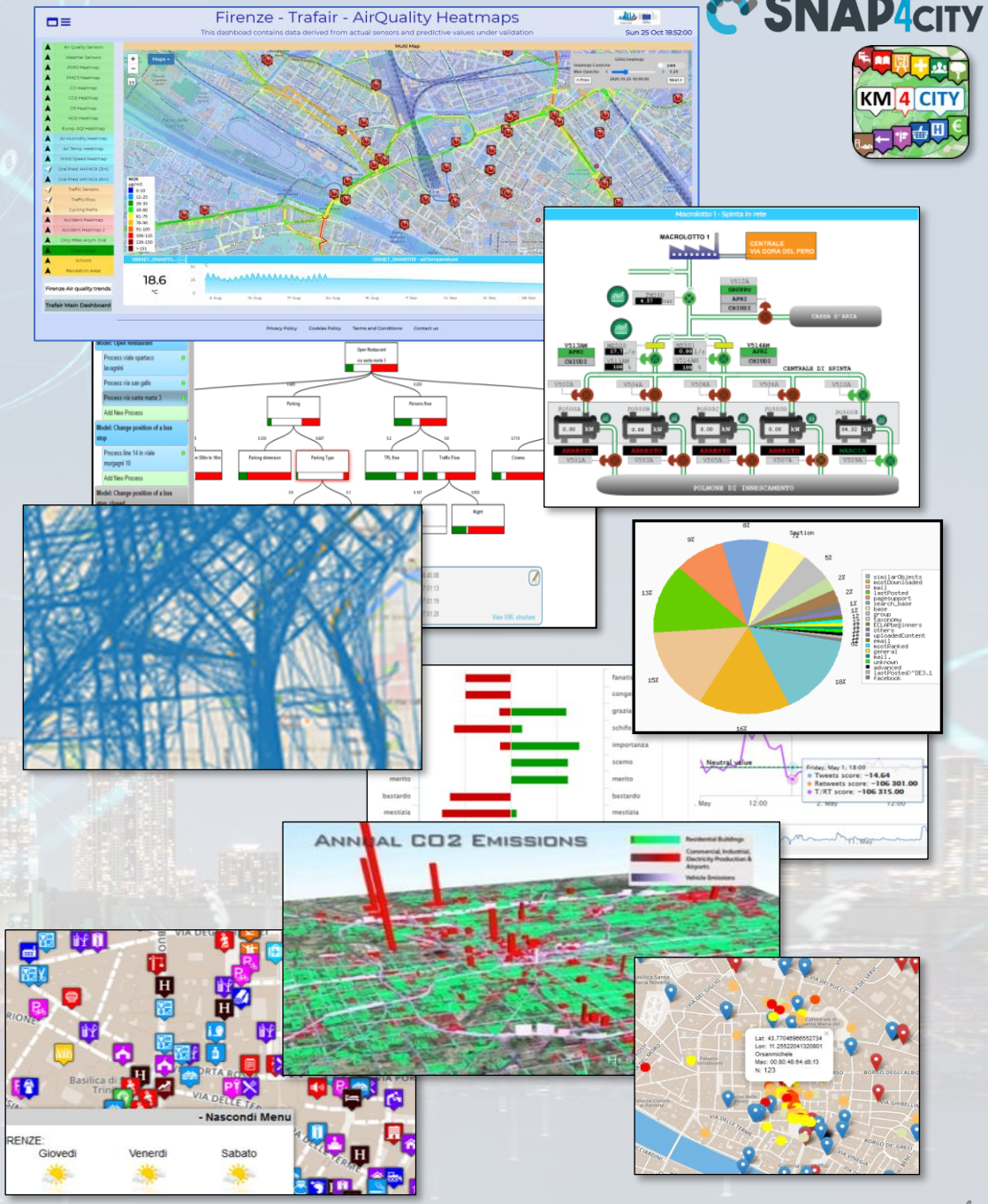
- **United Nations Sustainable Development Goals, SDGs** (for which cities can do more to achieve some of the 17 SDGs, https://sdgs.un.org/goals);
- **15 minutes cities** (where primary services must be accessible within 15 minutes on foot);
- **objectives of the European Commission** in terms of pollutant 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**
- **SUMP/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

Data Driven Decision Support

- Decision Support system
- Assessment / Strategies
- Data Rendering,
  - visual analytics, business intel..
- Data Analytics, ML, AI
- Data aggregation, Storage, indexing
- Data Ingestion



Smart Solutions and Decision Support Systems

100% OPEN SOURCE

Powered by FIWARE

FREE TRIAL

PEN Test Passed

EU GDPR COMPLIANT

SNAP4 Appliances and Dockers Installations

EUROPEAN OPEN SCIENCE CLOUD

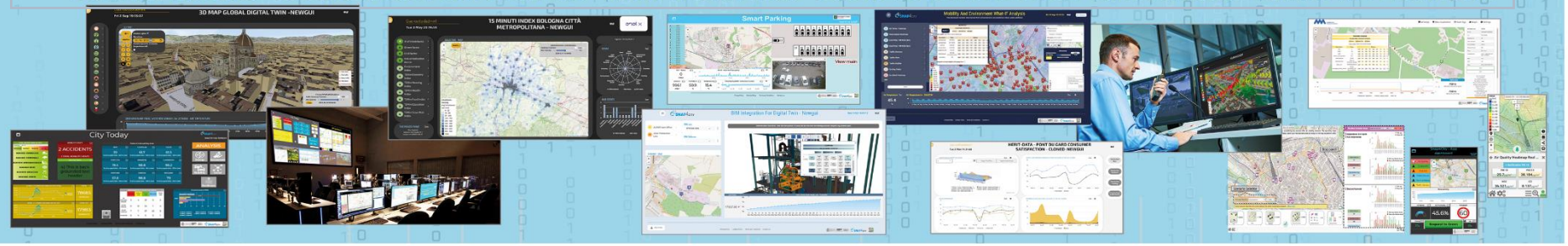
Node-RED

JS Foundation

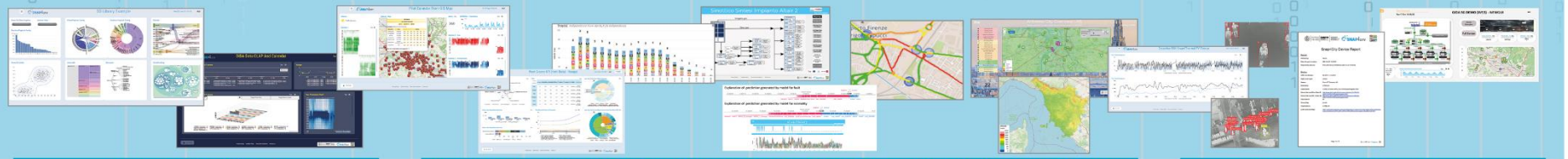
E015 digital ecosystem

NVIDIA

CONTROL ROOMS - DECISION SUPPORT SYSTEMS - WHAT-IF ANALYSIS - BUSINESS INTELLIGENCE - SIMULATIONS - SMART APPLICATIONS



DASHBOARDS - VISUAL ANALYTICS - SYNOPTICS - DIGITAL TWIN - GRAPHICAL WIDGETS - ANALYTICS - GUI CUSTOM STYLES - VISUAL PROGRAMMING

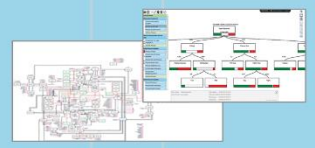


DASHBOARDS, WIDGETS
TEMPLATES

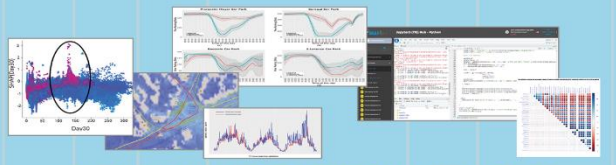
PREDICTION - ANOMALY DETECTION - CLUSTERING - ROUTING - SENTIMENT NLP - TRAFFIC FLOW
PEOPLE FLOWS - SDG - 15 MIN CITY INDEX - KPI - HEATMAPS - ORIGIN DESTINATION - ETC...

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

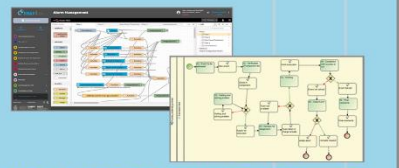
ANY: DATA, BROKER, NETWORK AND VERTICAL



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



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



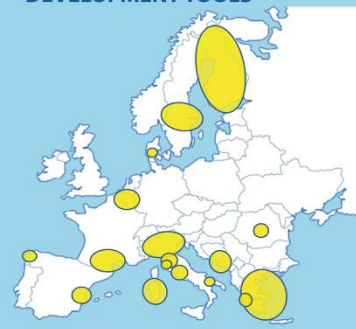
VISUAL PROGRAMMING, ADAPTERS
DATA FLOWS, WORKFLOWS
PARALLEL DISTRIBUTED PROCESSING
EVENT DRIVEN

Native and External Smart Applications

- Mobility & Transport
- Light & Energy
- Waste
- Environment
- Building
- Tourism
- Asset Management
- Security and Safety
- Social Media

...

METHODOLOGIES
LIVING LABS
COURSES AND COMMUNITY
DEVELOPMENT TOOLS



Standards and Interoperability (6/2023)

Compliant with:

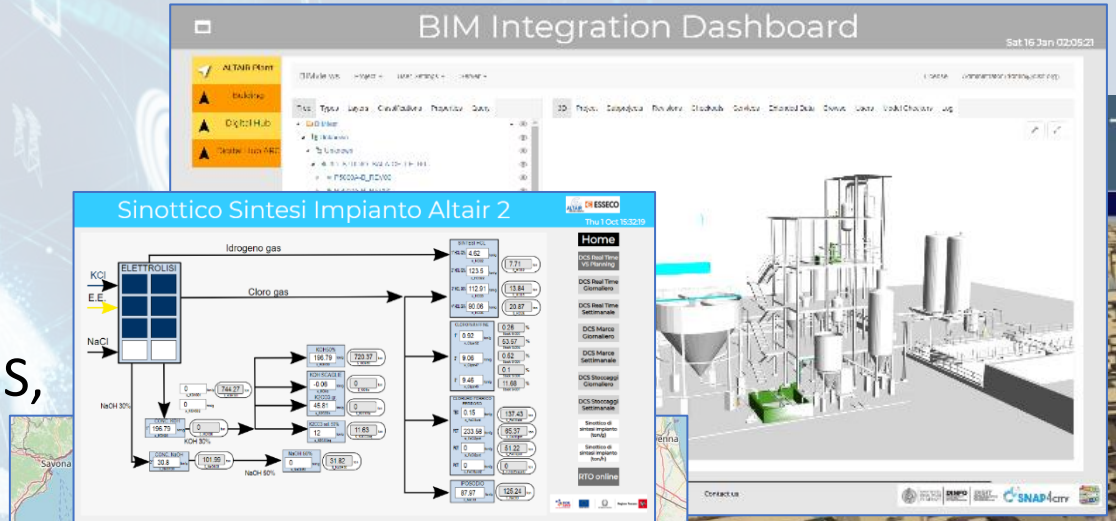
- **IoT:** NGSI V2/LD, LoRa, LoRaWan, MQTT, AMQP, COAP, OneM2M, TheThingsNetwork, SigFOX, Libelium, IBIMET/IBE, Enocean, Zigbee, DALI, ISEMC, Alexa, Sonoff, HUE Philips, Tplink, BACnet, TALQ, Protocol Buffer, KNX, OBD2, Proximus, ..
- **IoT model:** FIWARE Smart Data Model, Snap4City IoT Device Models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

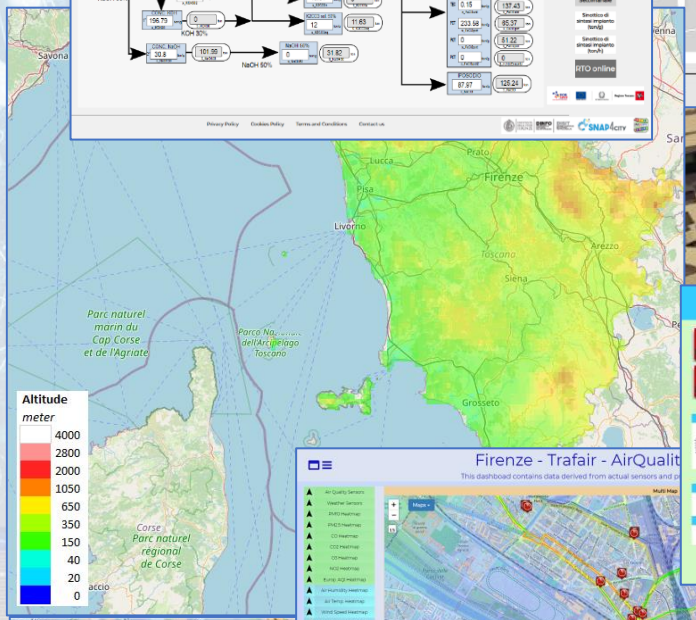
https://www.snap4city.org/65

High Level Types

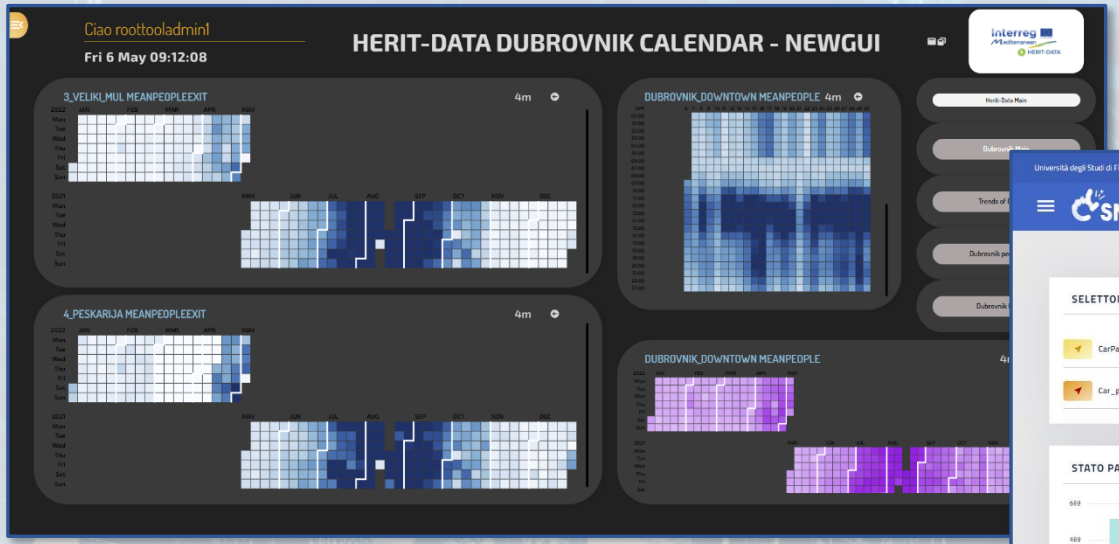
Snap4City (C), January 2024

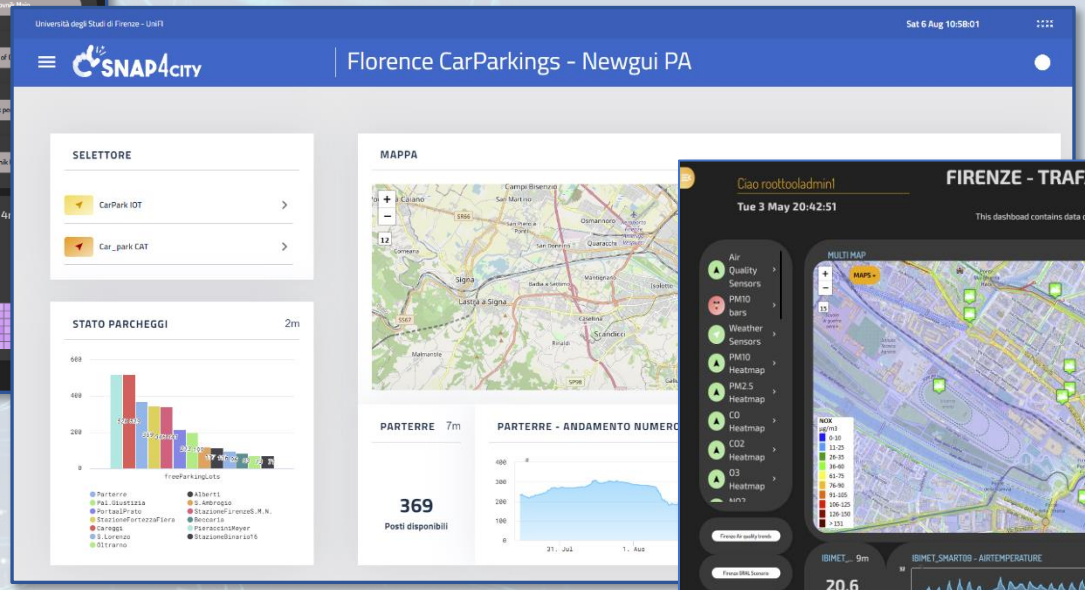
- POI, IOT Devices, shapes,..
  - FIWARE Smart Data Models,
  - IoT Device Models
- GIS, maps, orthomaps, WFS/WMS, GeoTiff, calibrated heatmaps, ..
- Satellite data, ..
- traffic flow, typical trends, ..
- trajectories, events, Workflow, ..
- 3D Models, BIM, Digital Twins, ..
- OD Matrices of several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

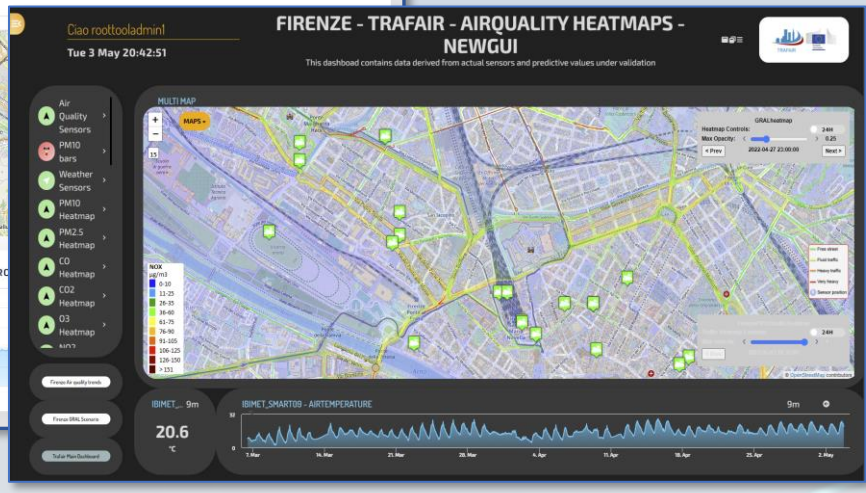


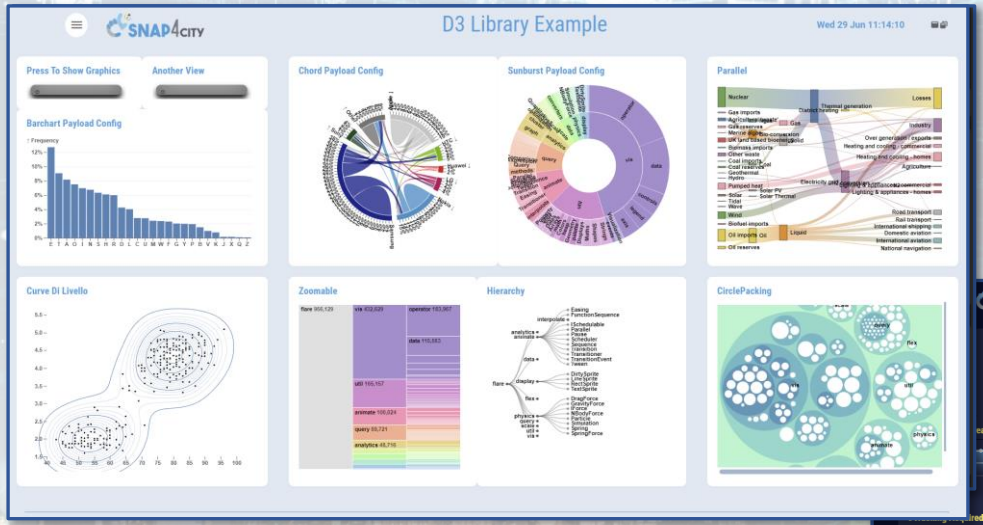


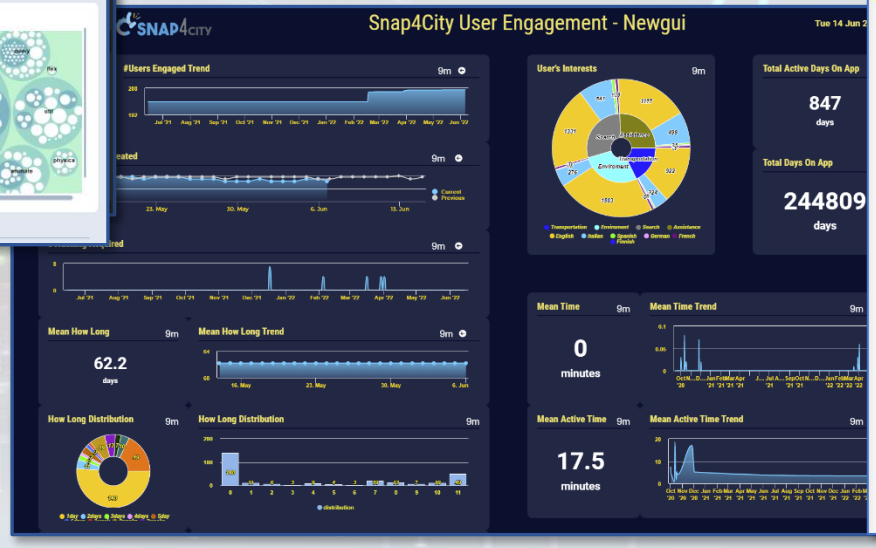
Different Themes

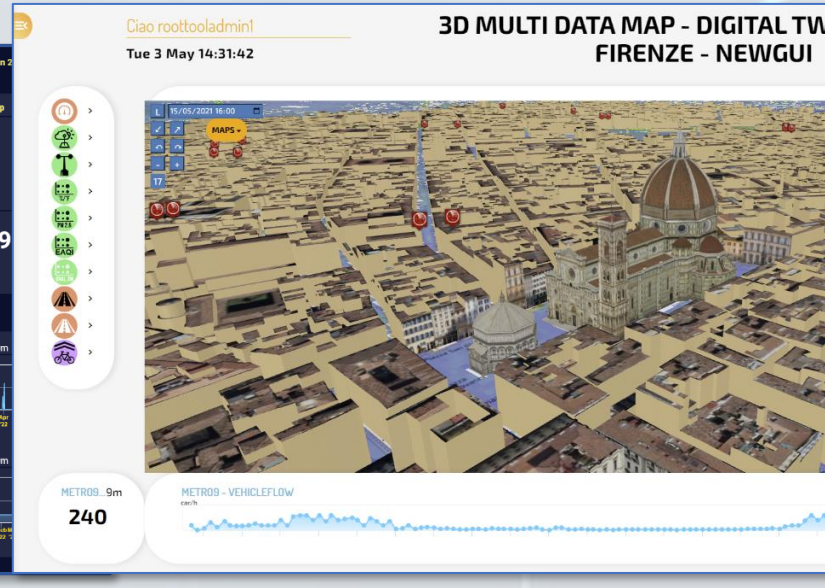












New styles/themes can be developed by specializing a few files from open source

https://www.snap4city.org/793

UNIVERSITÀ DEGLI STUDI FIRENZE
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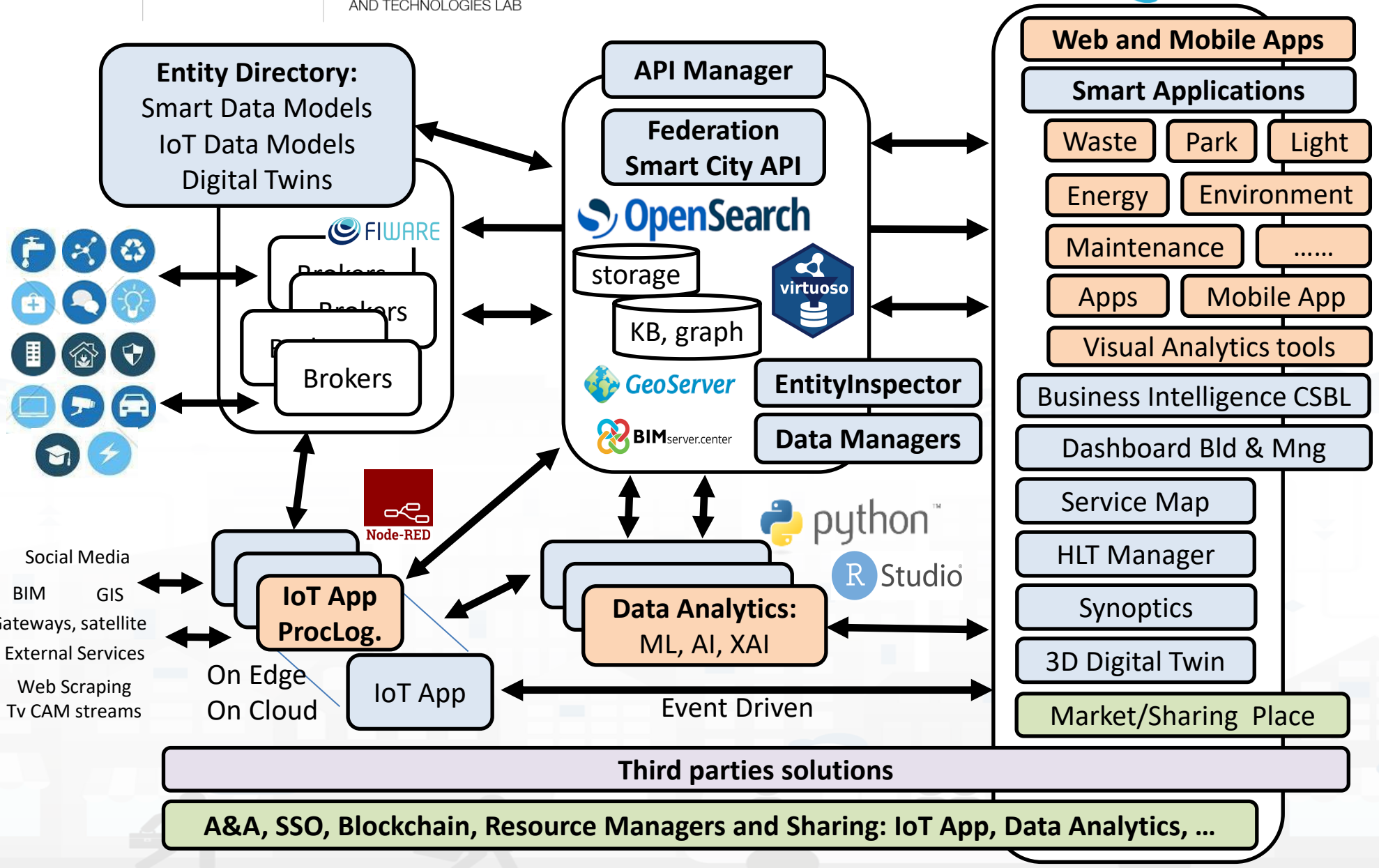
DISIT DISTRIBUTED SYSTEMS AND INTERNET TECHNOLOGIES LAB DISTRIBUTED DATA INTELLIGENCE AND TECHNOLOGIES LAB

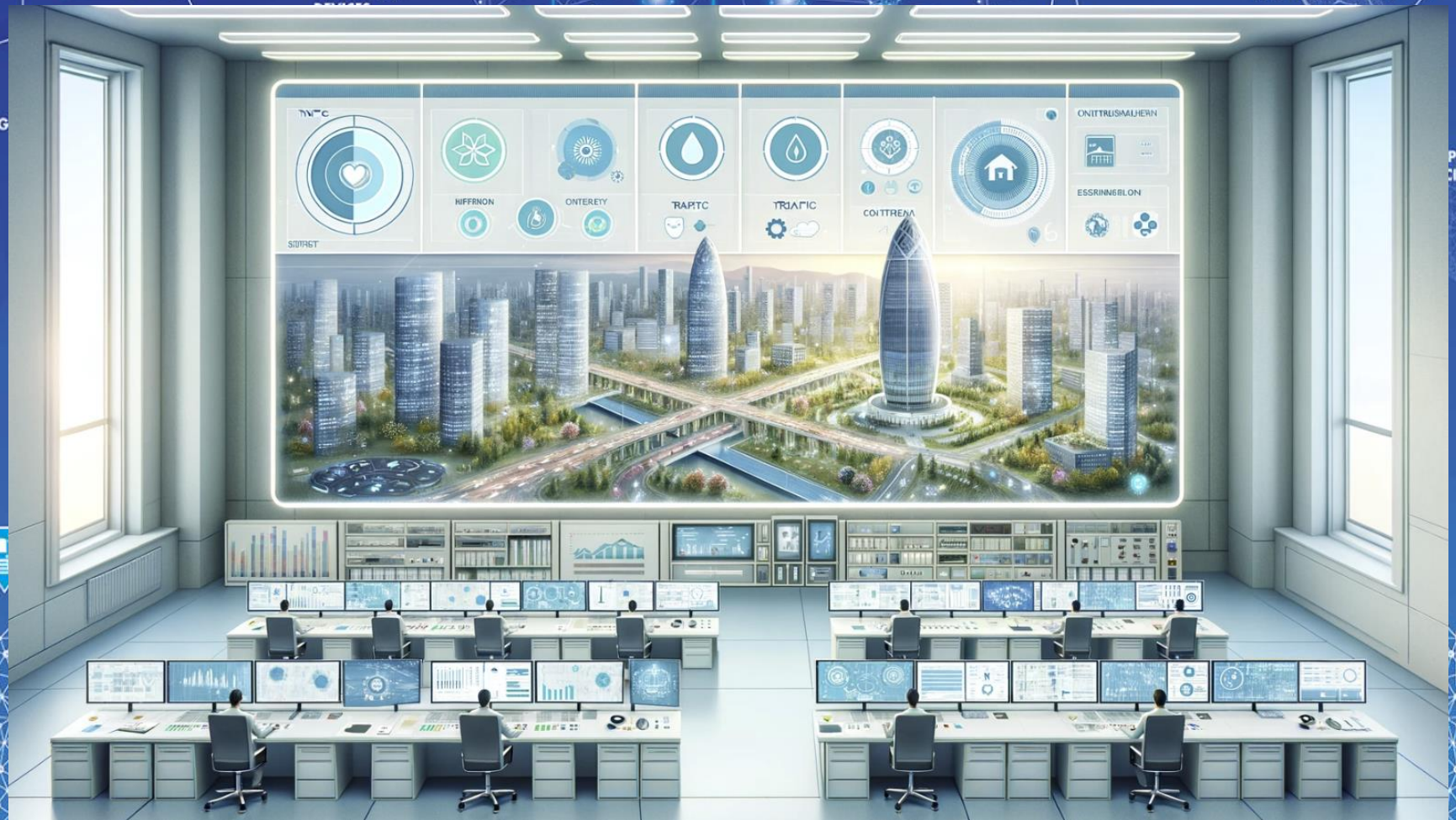
Tech Arch

SNAP4CITY KM4CITY



TOP

Monitoring and control



FROM CITY DASHBOARD TO APPLICATIONS

DATA GATHERING AND CITY DATA KNOWLEDGE MANAGEMENT

IOT APPLICATIONS VS IOT EDGE

TWITTER VIGILANCE: SOCIAL MEDIA ANALYSIS

TO DEVELOPERS AND STAKEHOLDERS

SNAP4CITY AND KM4CITY PROJECTS

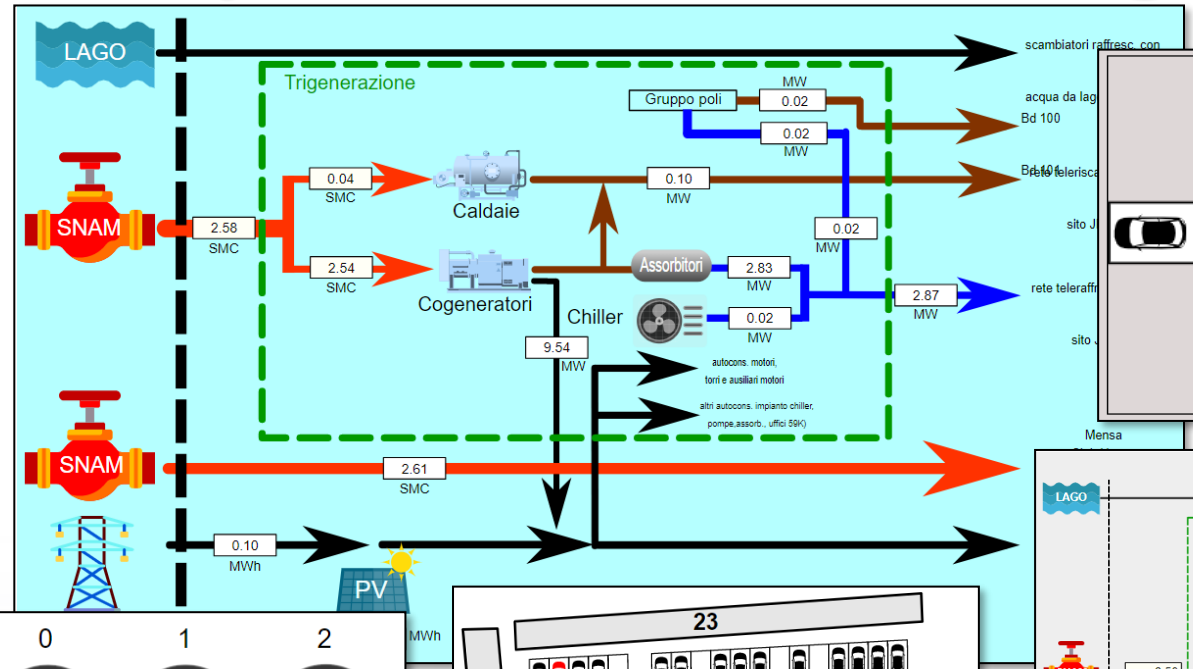
HOW TO ADOPT SNAP4CITY, AND OUR ROADMAP

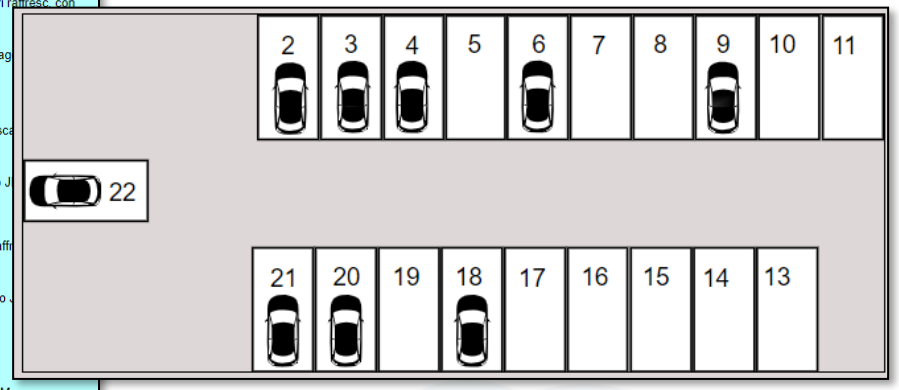
SNAP4CITY THE VIEW OF THE ADMINISTRATORS

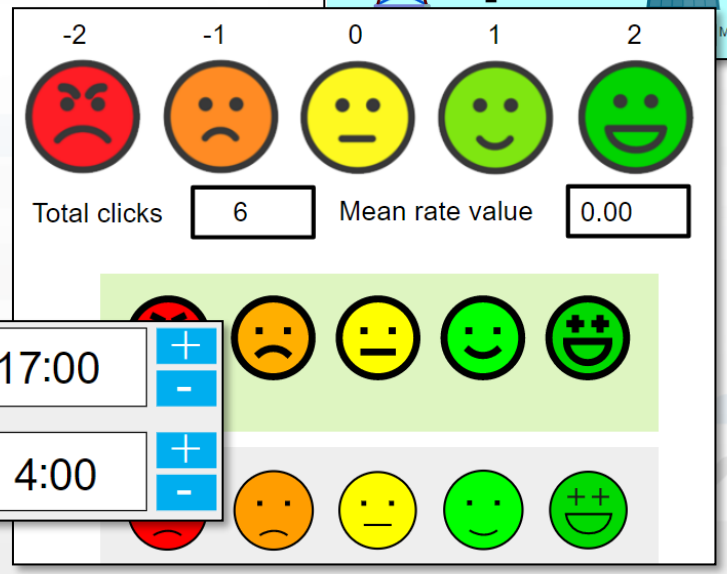
100% OPEN SOURCE

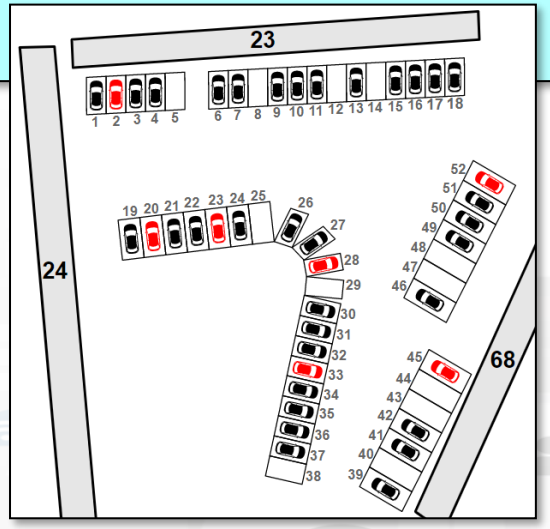
Special Custom Widgets

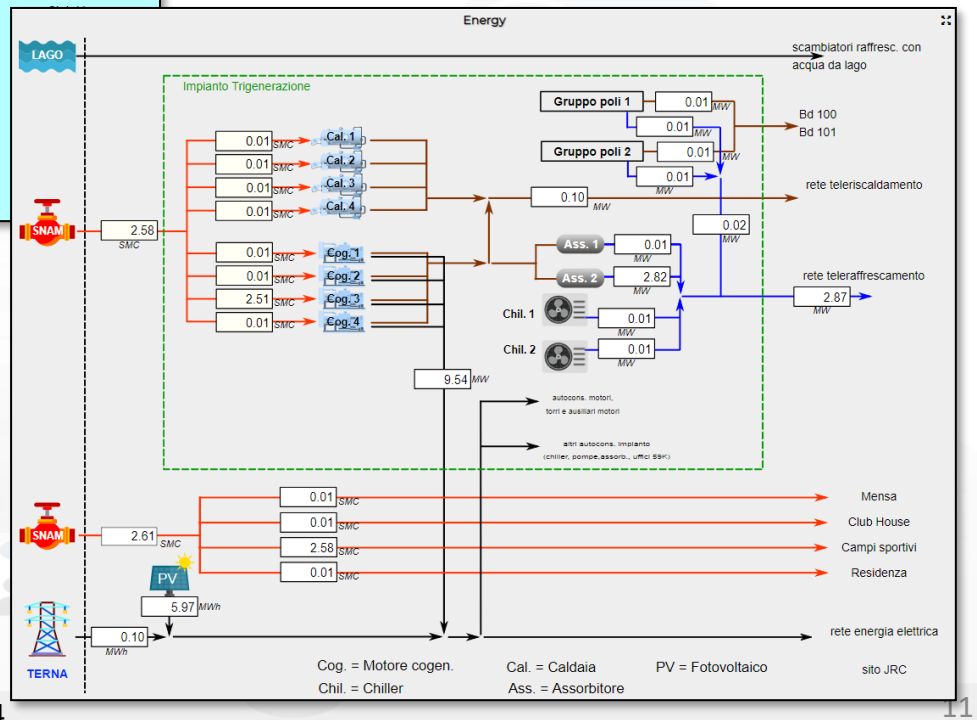
- Smart parking
- Smart Energy
- Smart Light
- Smart ….
- Energy View
- Custom Controls

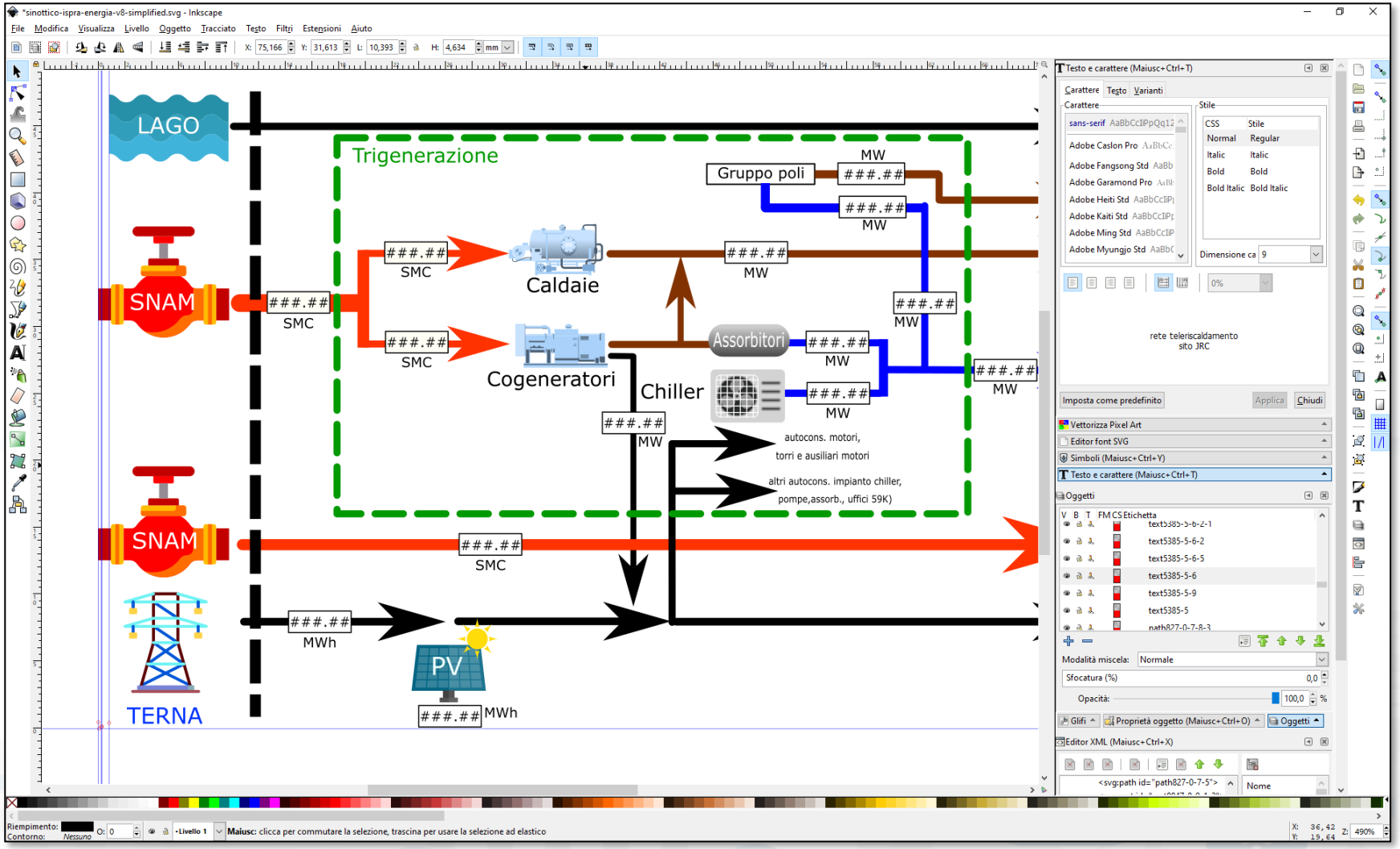








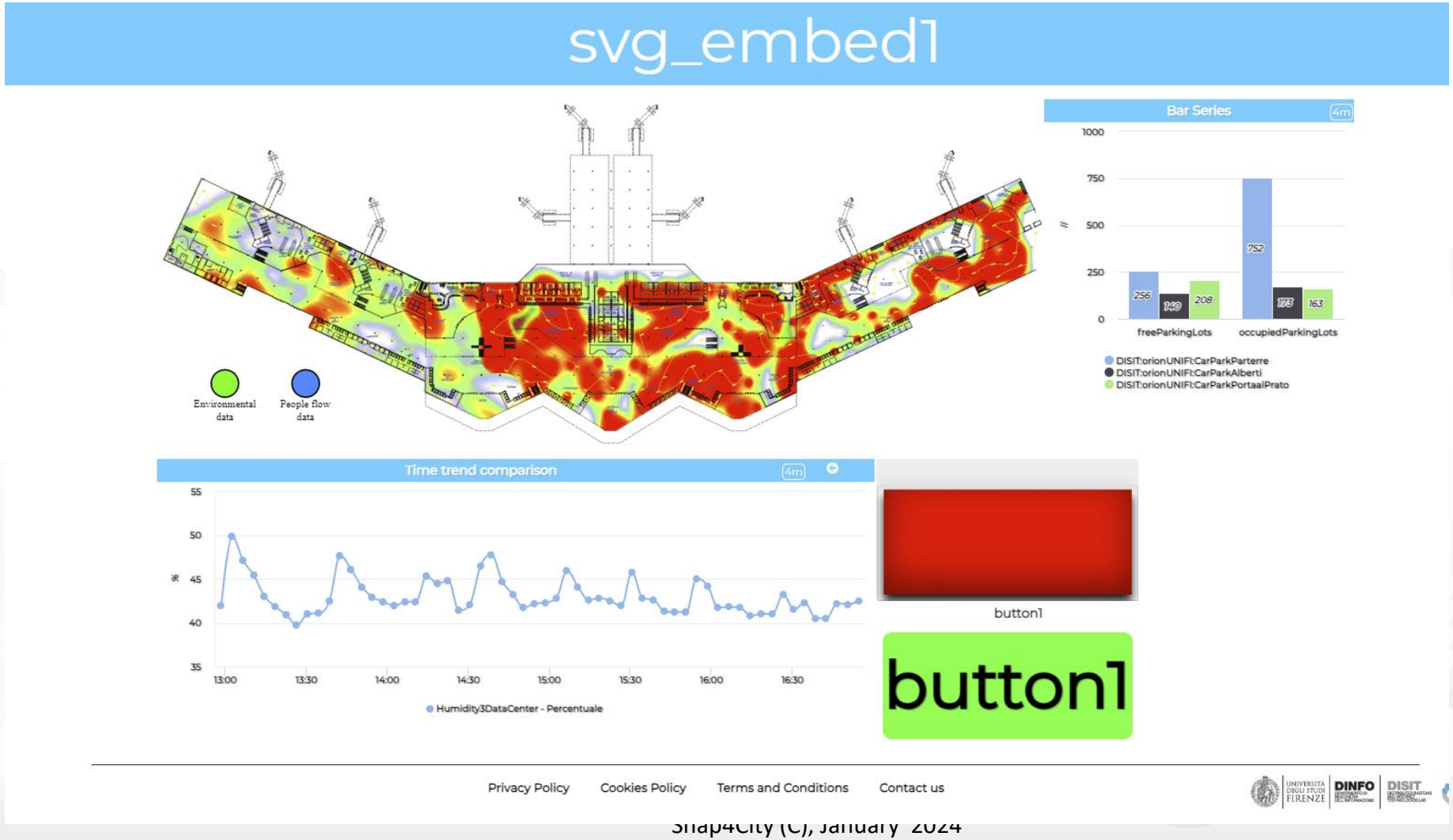




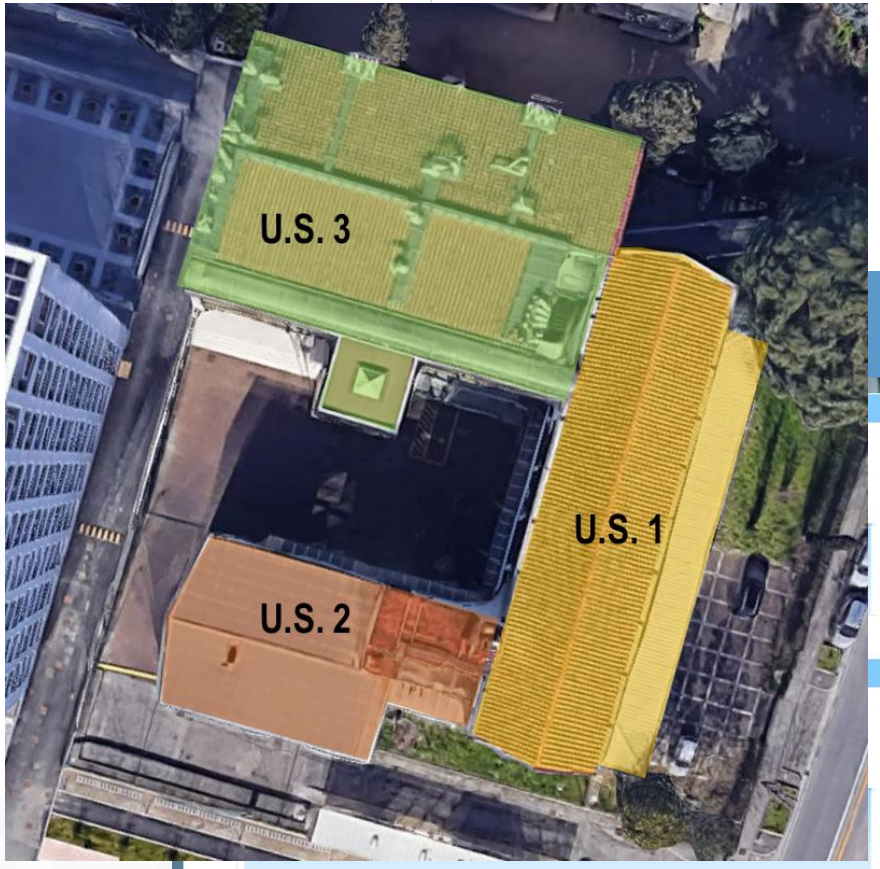
How to create a custom Widget

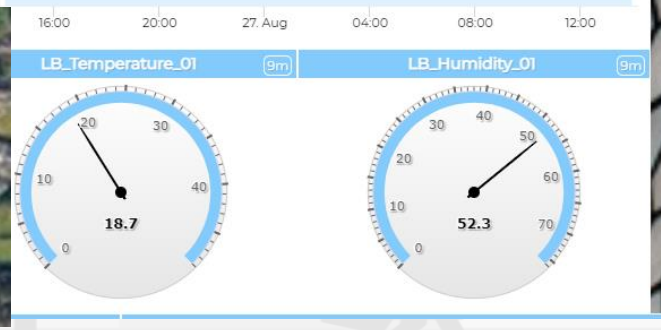
- User manual on: https://www.snap4city.org/595

Floor status monitoring with heatmaps



Digital Twin Local





TOP

Decision Support Tactic and Strategic Plans What-if Analysis

100% OPEN SOURCE

SNAP4 Appliances and Dockers **Installations**

Available AI Solutions on Snap4City

- Mobility and Transport
- Environment, Weather, Waste, Water
- City Users Behaviour and Social analysis
- Energy and Control, Security, …..
- Tourism and People
- Security and Safety
- High Level Decision Support Solutions
  - Asset management
  - Resilience and Risks Analysis
- Low level Techniques

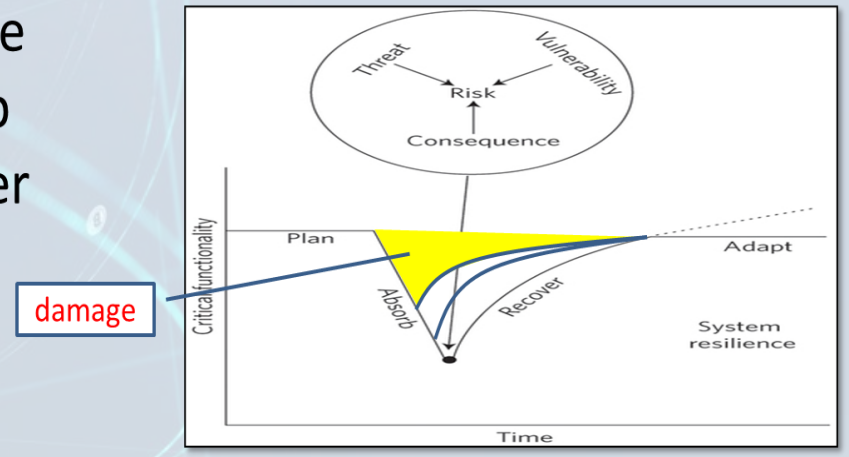
https://www.snap4city.org/download/video/DPL_SNAP4SOLU.pdf

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

Snap4City What-If

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

Prepare
Absorb
Recover
Adapt



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,…

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

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

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

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

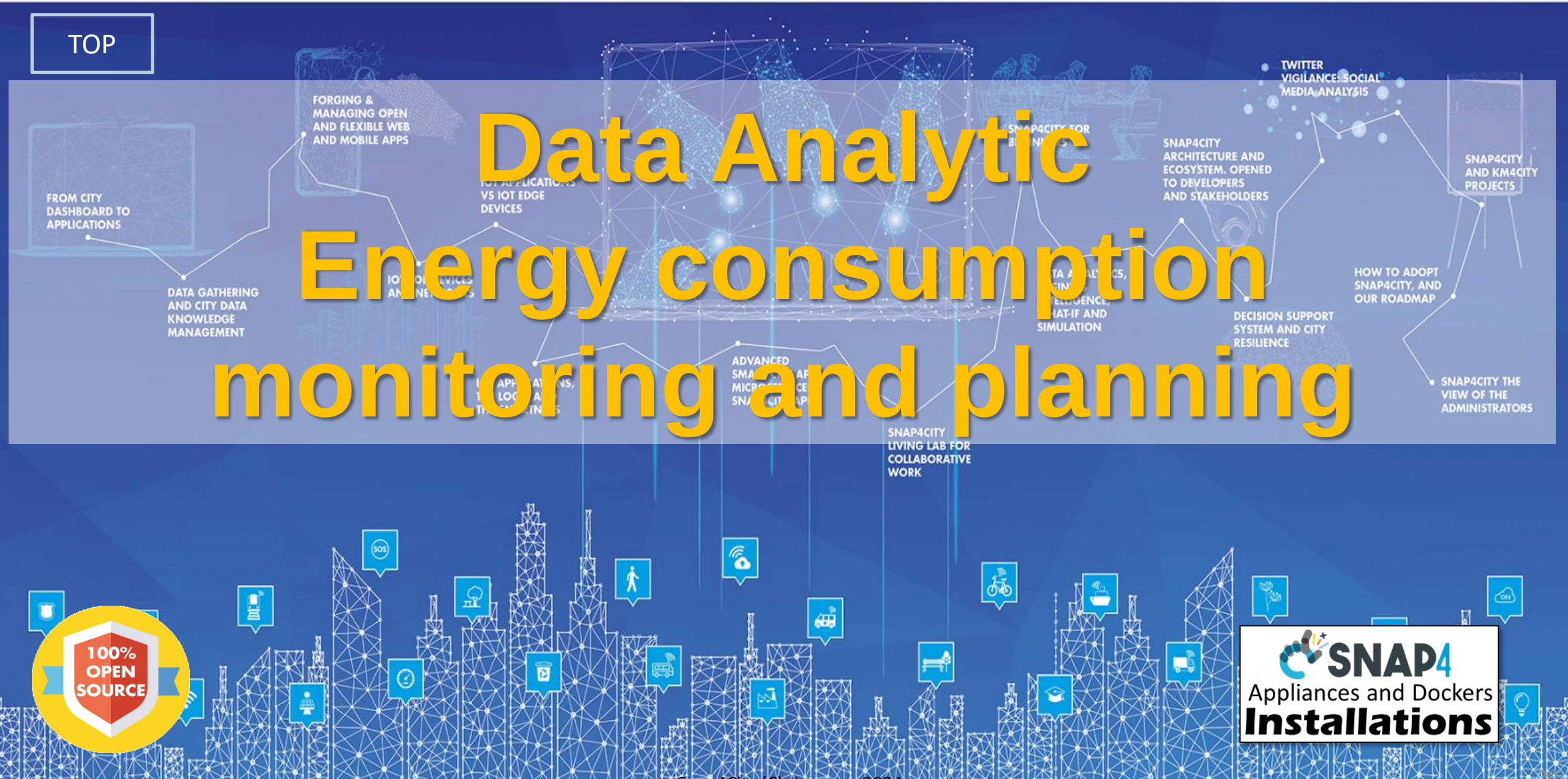
- Industry 4.0 integrated solutions
- Decisions Support Systems
- Process optimization, control
- Predictive maintenance

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

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

TOP

Data Analytic Energy consumption monitoring and planning

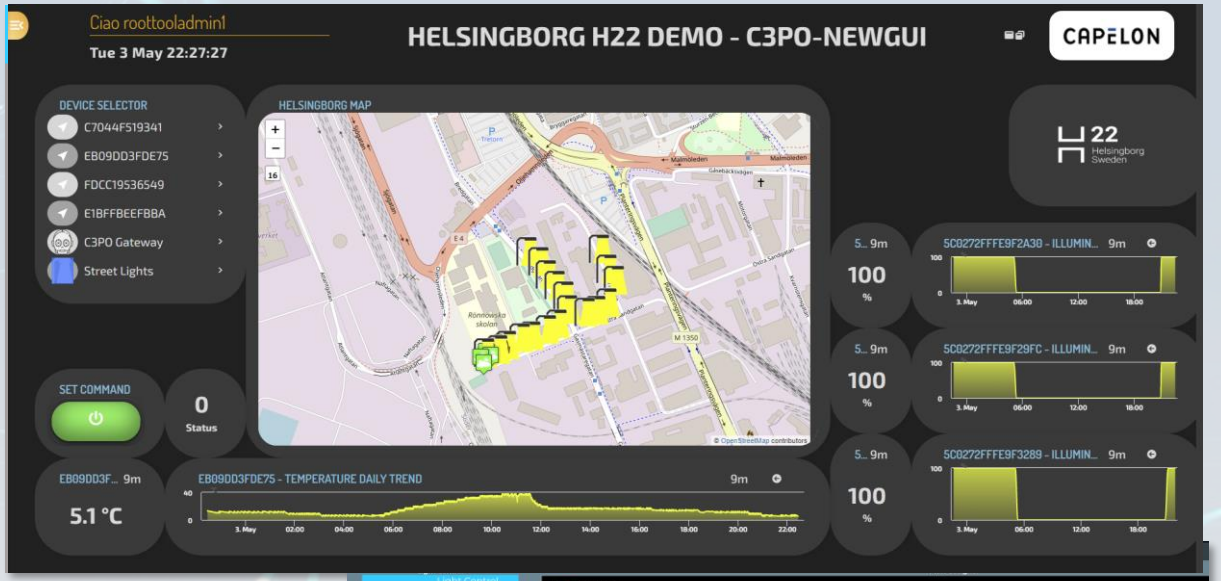


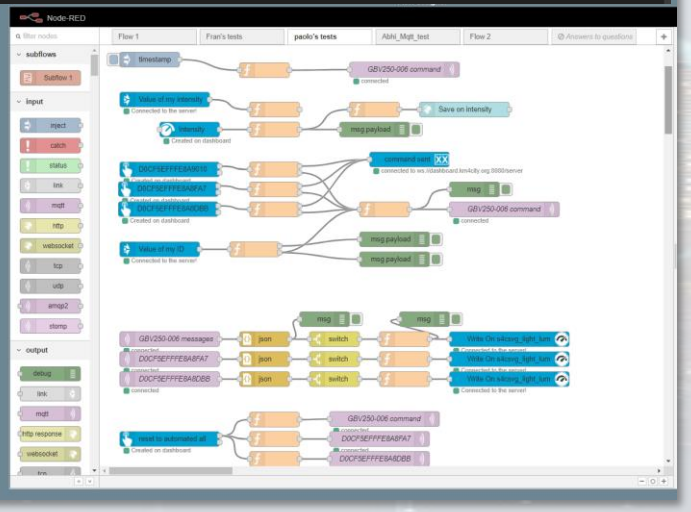
Energy

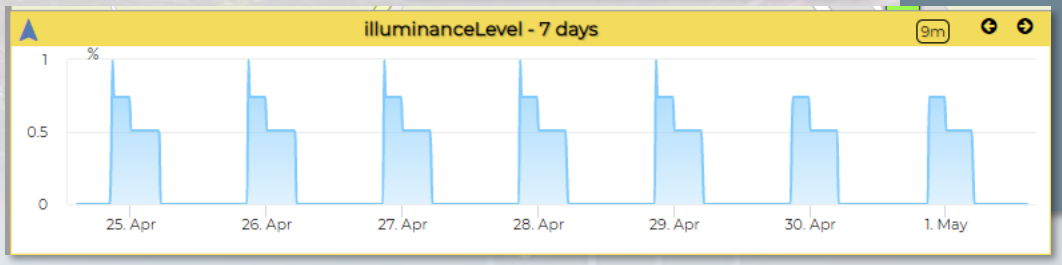
- Monitoring Energy Consumption in single building, area and per zone
- Matching Energy consumption with respect to the actual usage
- Computing Roof orientation for Photovoltaic installations
- Simulation of Photovoltaicc installations to identify the best parameters of size and storage
- Smart Light management, unicast and multi cast management, smart light controlled by traffic flow data
- Collecting and managing Communities of Energy
- Monitoring Energy provisioning on recharging station, Cabinets, etc.
- Monitoring energy consumption wrt to temperatures on Data Centers
- Optimization of battery life
- Computing KPI
- Etc.

Smart Light Control of CAPELON *reference*

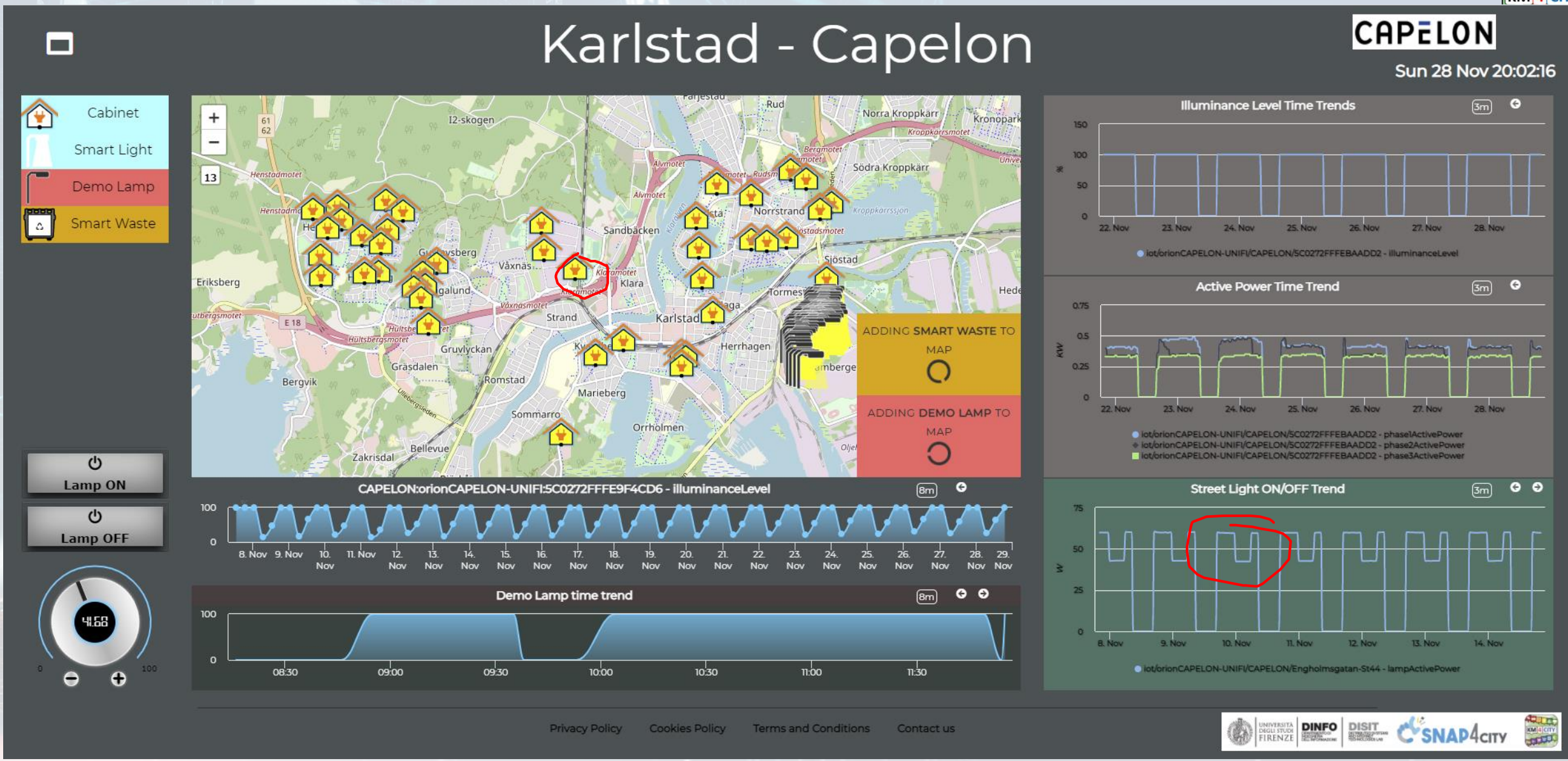
- **Energy Domain**
  - Smart Light, MQTT, ….
  - IoT Orion Broker FIWARE
- **Dashboards**
  - Map coverage on Sweden
  - Monitoring and real time control
  - Energy control, analytics
  - Direct control
- **Historical and Real Time data**
- **Services Exploited on:**
  - Multiple Levels, API
  - Dashboards
- **Since 2020**





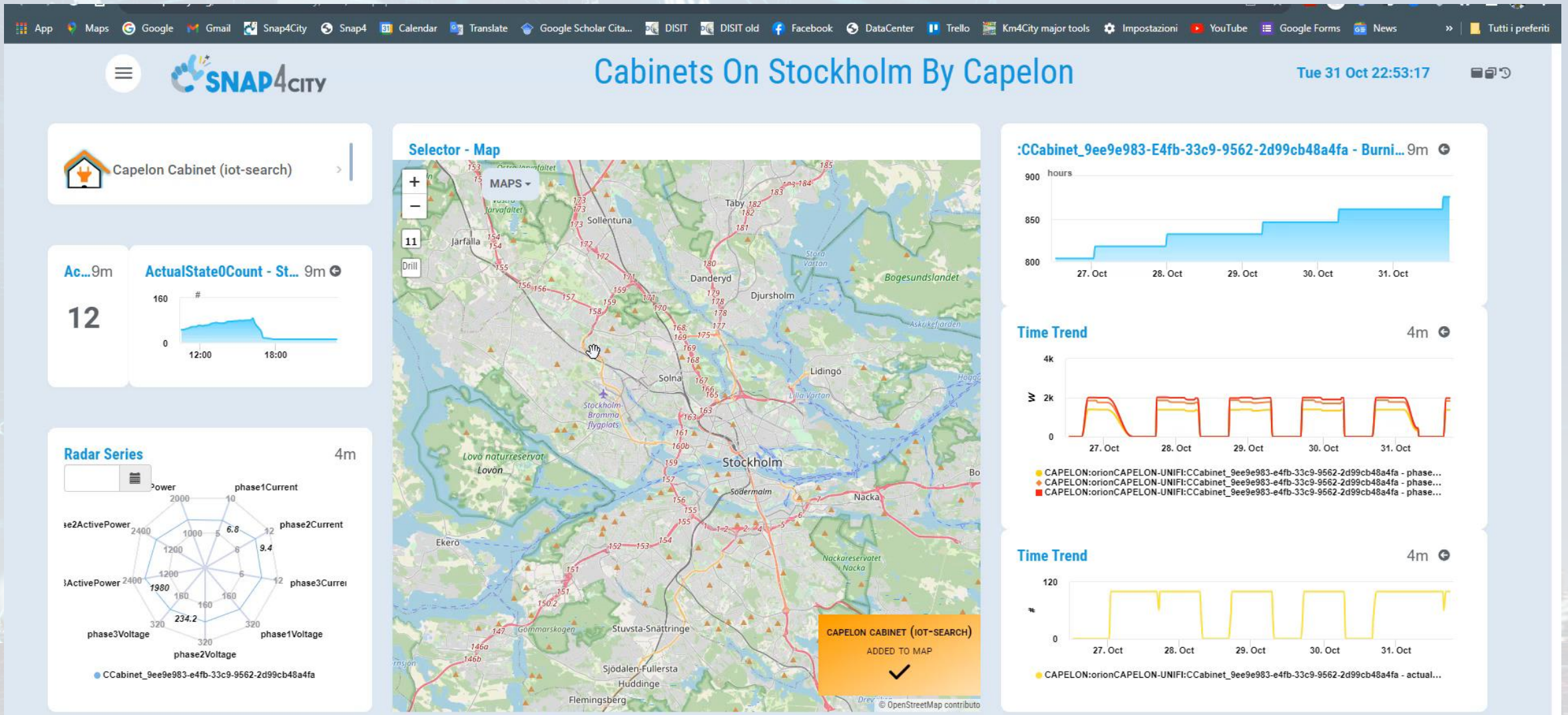


Karlstad Street Lights

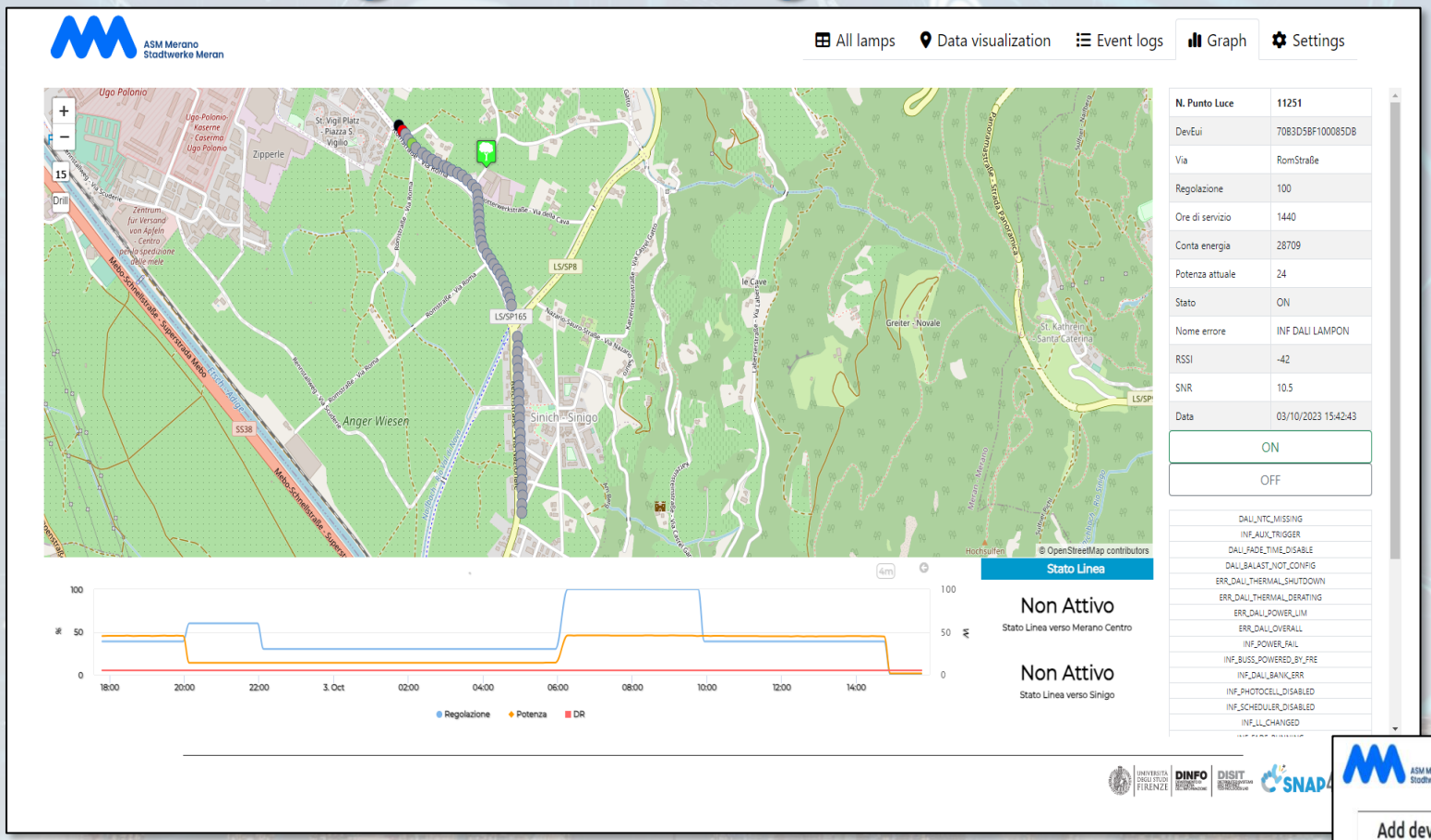


https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MzI5NQ==

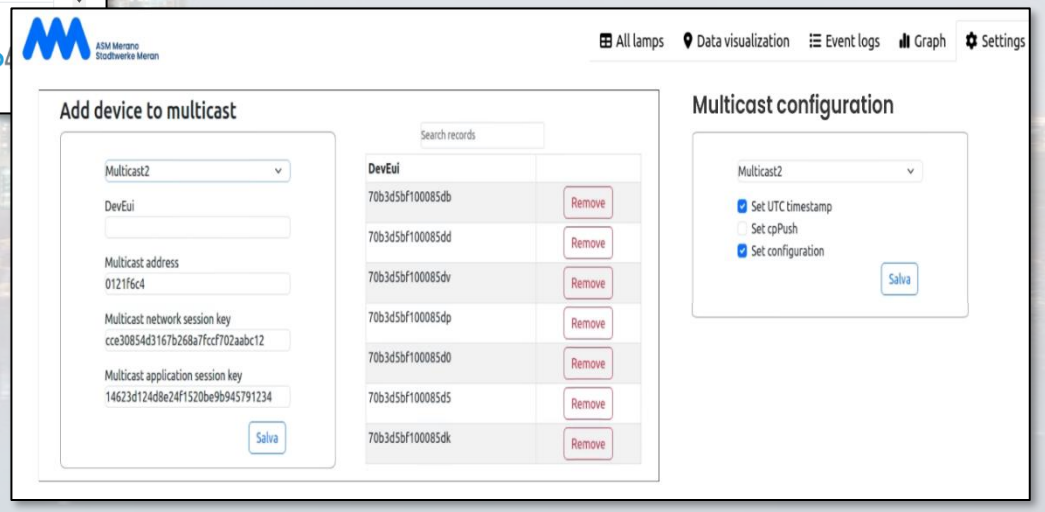
Cabinets' Monitoring in Stockholm



Smart Light Management in Merano, Italy

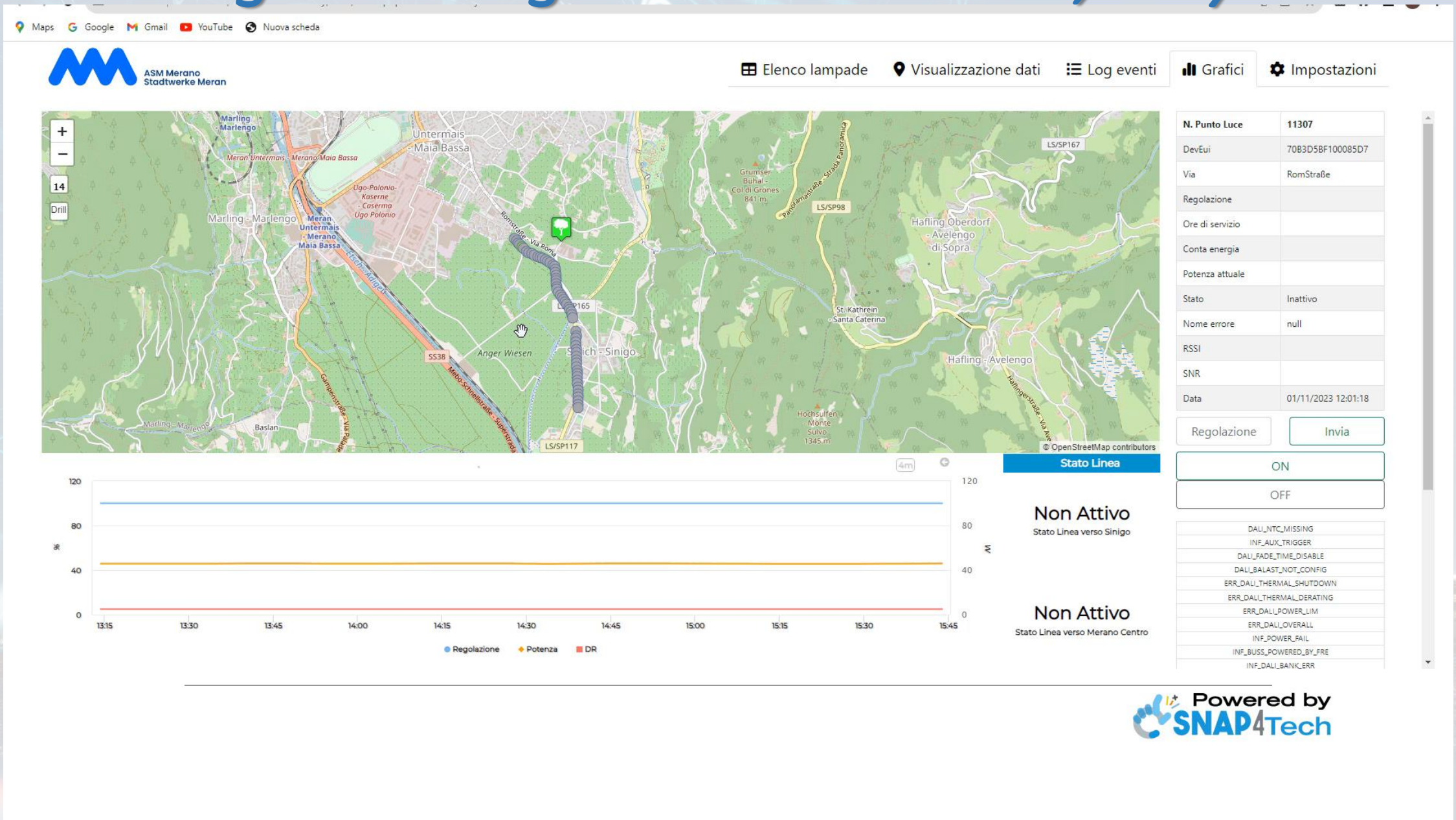


- Managing DALI 2 devices FlashNet via LoraWan
- programming SmartLight via UniCast and MultiCast
- Controlling devices
- Automation of Smart Luminaries on the basis of Traffic Flow
- Usage of Chirpstack as net server



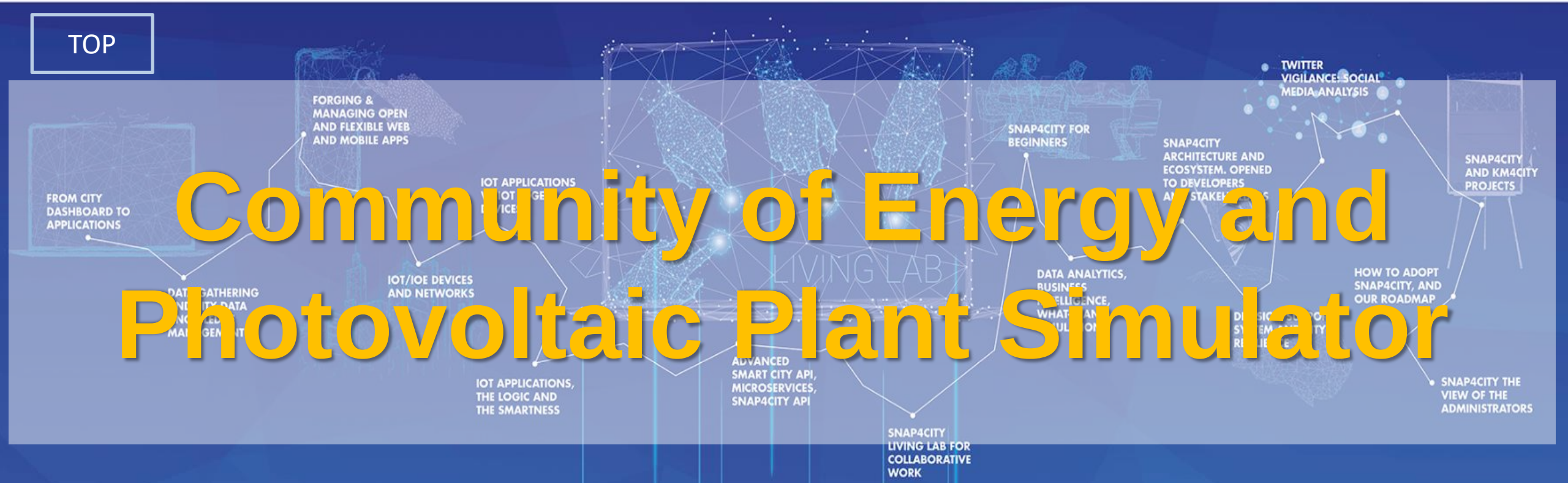
https://www.snap4city.org/968

Smart Light Management in Merano, Italy



TOP

Community of Energy and Photovoltaic Plant Simulator



100% OPEN SOURCE

SNAP4 Appliances and Dockers **Installations**

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

Ciao roottooladmin1

Sat 11 Nov 17:26:28

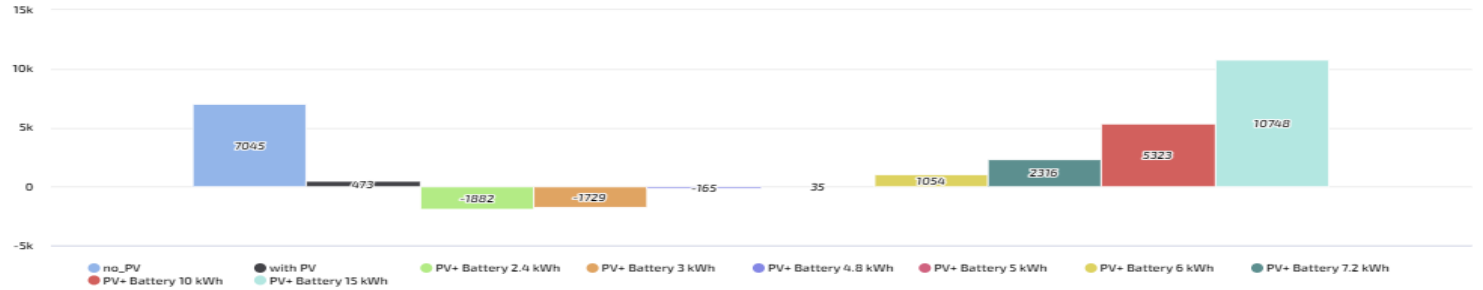
ONLINE PHOTOVOLTAIC SYSTEM SIMULATOR

User Manual

Italian Version

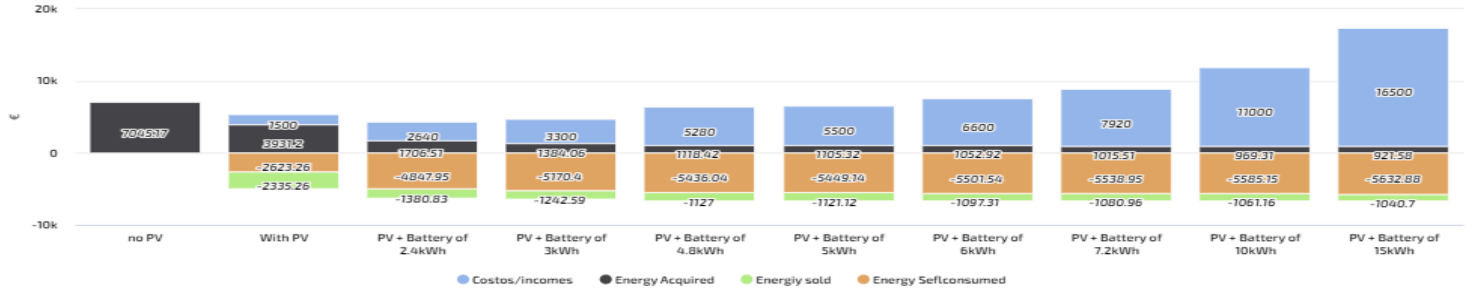
TOTAL COSTS OVER THE INVESTMENT YEARS

599m



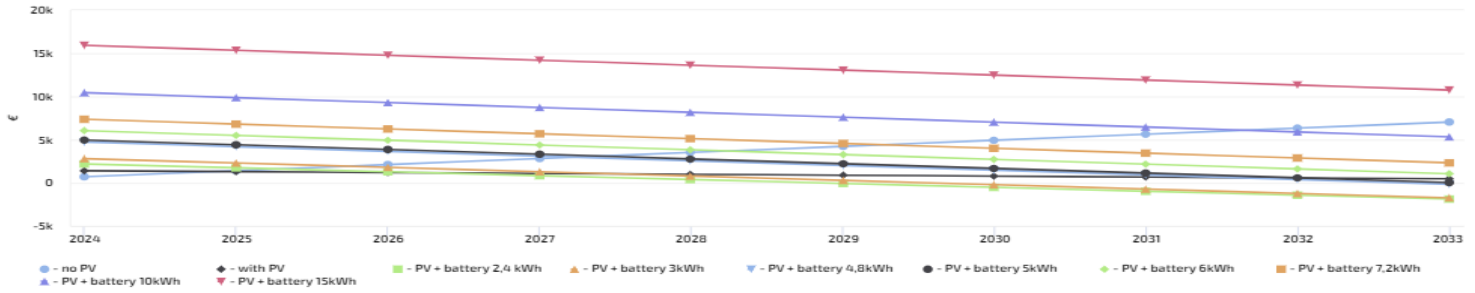
TOTAL COSTS OVER YEARS DECOMPOSED IN COSTS AND INCOMES

599m



BREAK EVEN TREND FOR THE DIFFERENT KIND OF PLANTS

599m



PARAMETERS OF YOUR PV PLANT

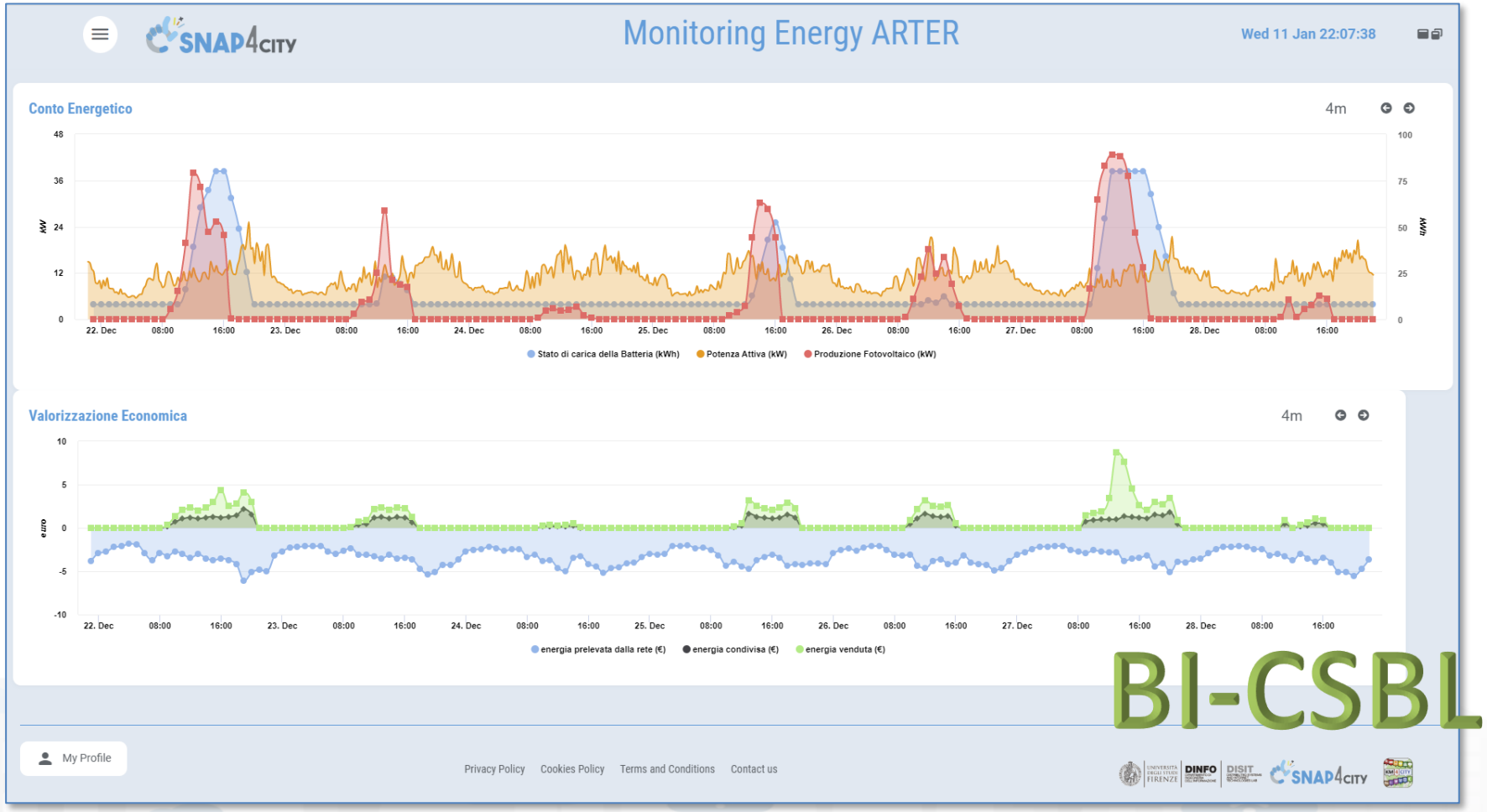
We suggest you PV plus battery of 2.4 kWh

Annual Consumption	2000 kWh
Price of energy sold (€/kWh)	0,15
Price of Energy Acquired (€/kWh)	0,35
Years of Investiment	10
Months for typical trends	Gennaio

Compute

7 AFFORDABLE AND CLEAN ENERGY

- **Field-tested energy community: the self-consumer condominium**
- The Self User project creates in the pilot condominium, through the collection and analysis of data, a model for calculating and enhancing the impact of an energy community on a community of people, with a view to actions to combat energy poverty



https://www.selfuser.it

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SNAP4CITY | KM4CITY

SELF USER

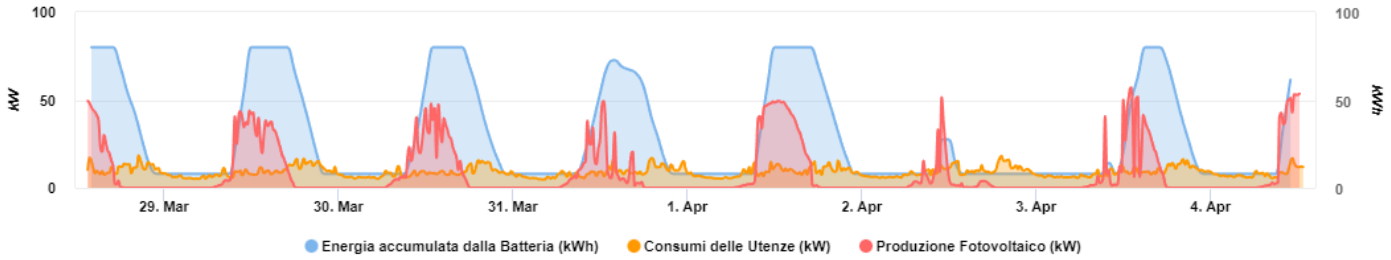
Monitoraggio in tempo reale della comunità energetica condominiale

Tue 4 Apr 13:20:04

SELF USER

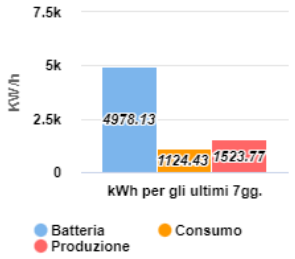
Conto Energetico

4m



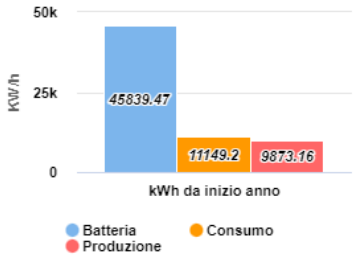
KWh Ultimi 7 Gg.

4m



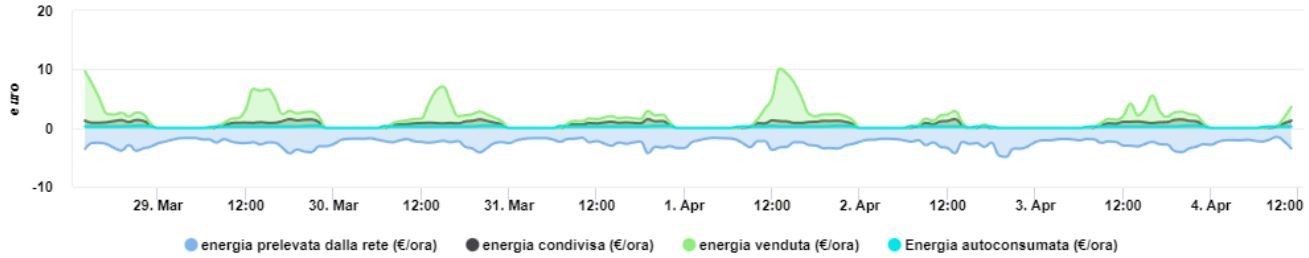
KWh Da Inizio Anno

4m



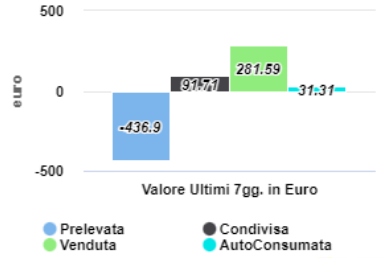
Valorizzazione Economica

4m



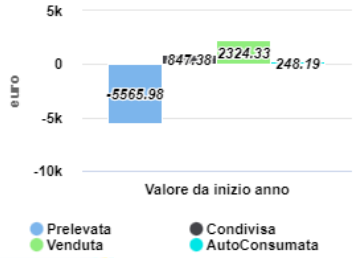
Valore Ultimi 7gg.

4m



Valore Da Inizio Anno

4m



Regione Emilia-Romagna | ART-ER | ACER | ENEA | enel x

7 AFFORDABLE AND CLEAN ENERGY

TOP

Monitoring Energy Consumption

100% OPEN SOURCE

SNAP4 Appliances and Dockers **Installations**

Energy monitoring and business intelligence

Green and Data Driven District

Aggregated KPI | JuicePark | SmartPole | CityAnalytics

Energy produced to date		CityAnalytics insight		Videoanalysis – KPI to date	
JuicePark	0 kWh	Average daily people	9845.3	People counted	0
SmartPole	27.341 kWh	Average Milan resident over tourist ratio	1.57	Vehicle counted	520
				People aggregation	0
WiFi sessions daily peak		**SOS events to date**		**Vehicle charging sessions to date**	
Max connected devices	0	SmartPole requests	0	EV car	0
		JuicePark requests	0		
		AED requests	0		

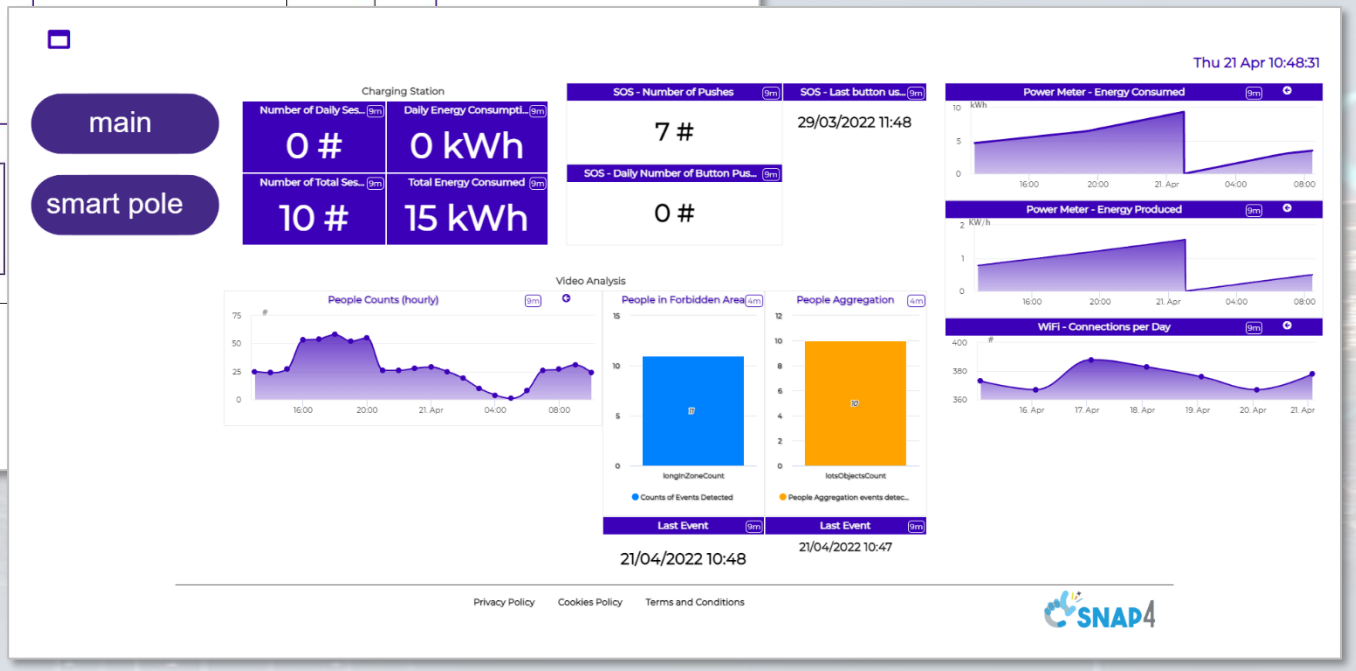
Juice Park
Detailed KPIs

Smart Pole
Detailed KPIs

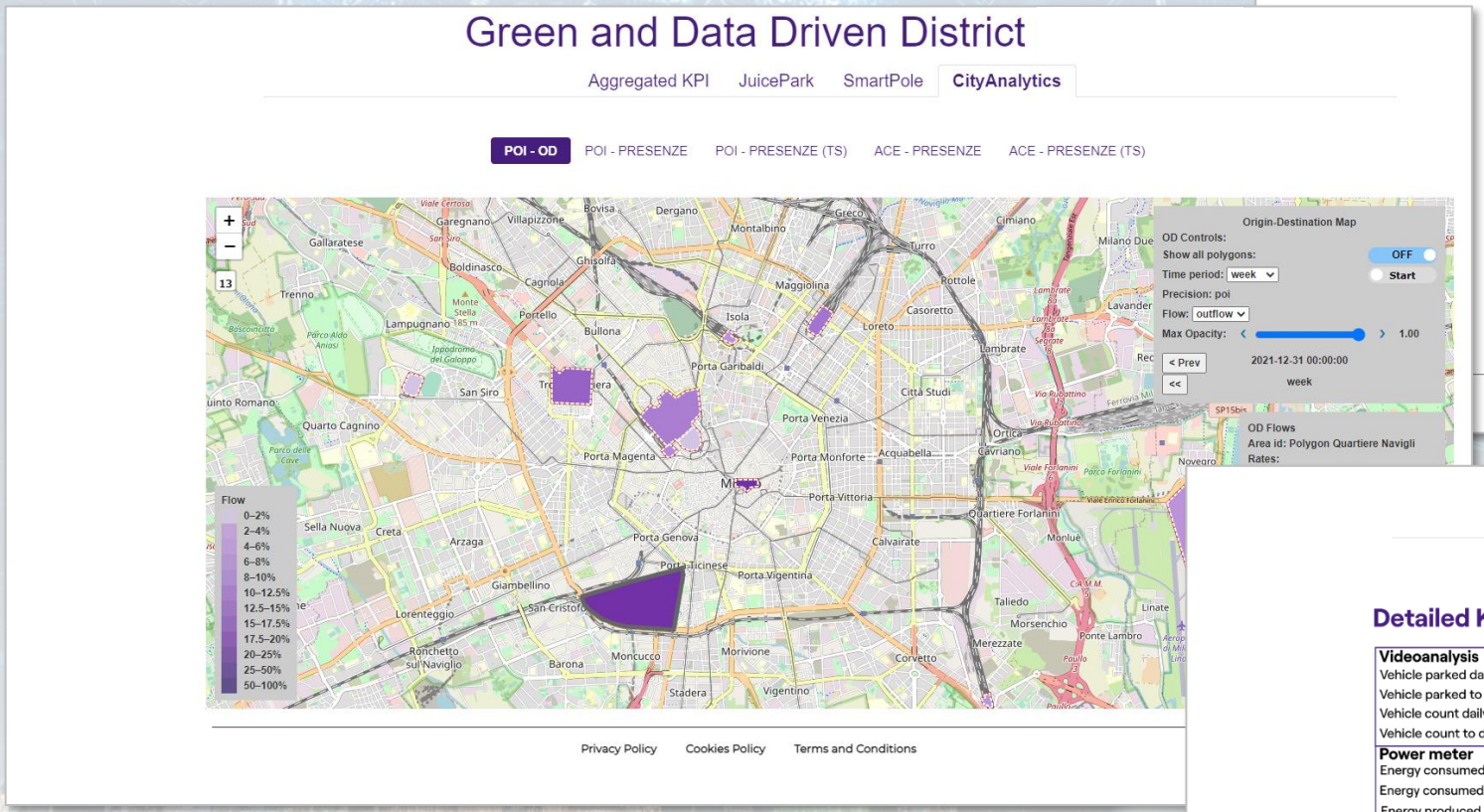
Privacy Policy Cookies Policy Terms and Conditions

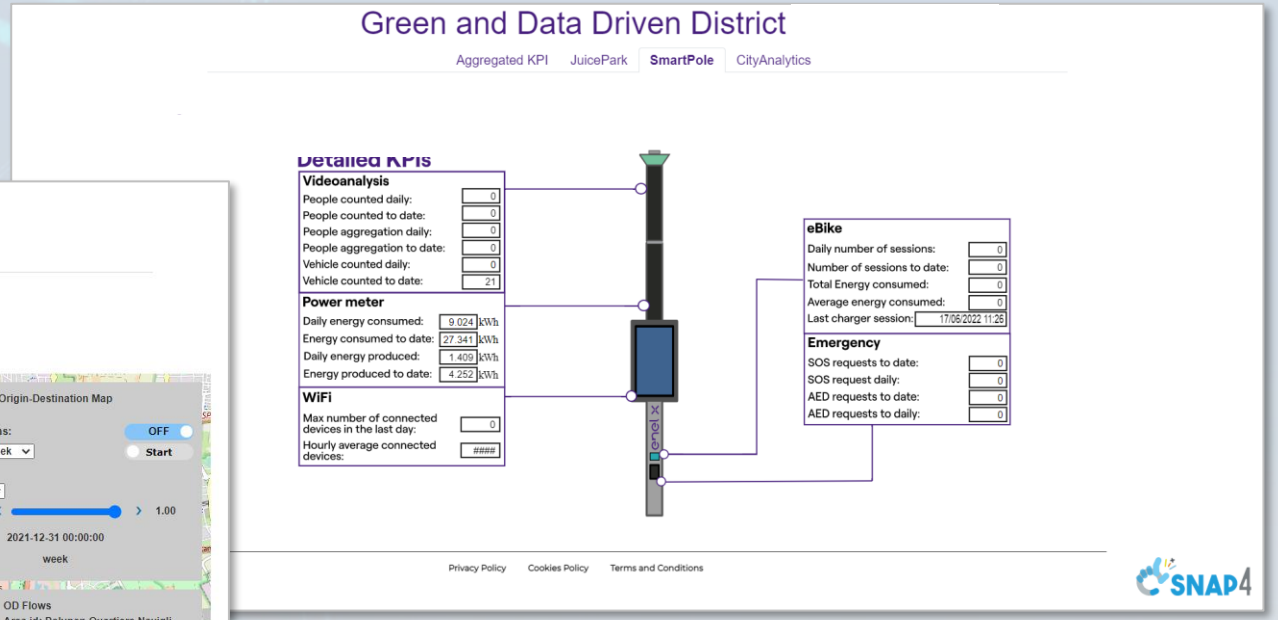
7 AFFORDABLE AND CLEAN ENERGY

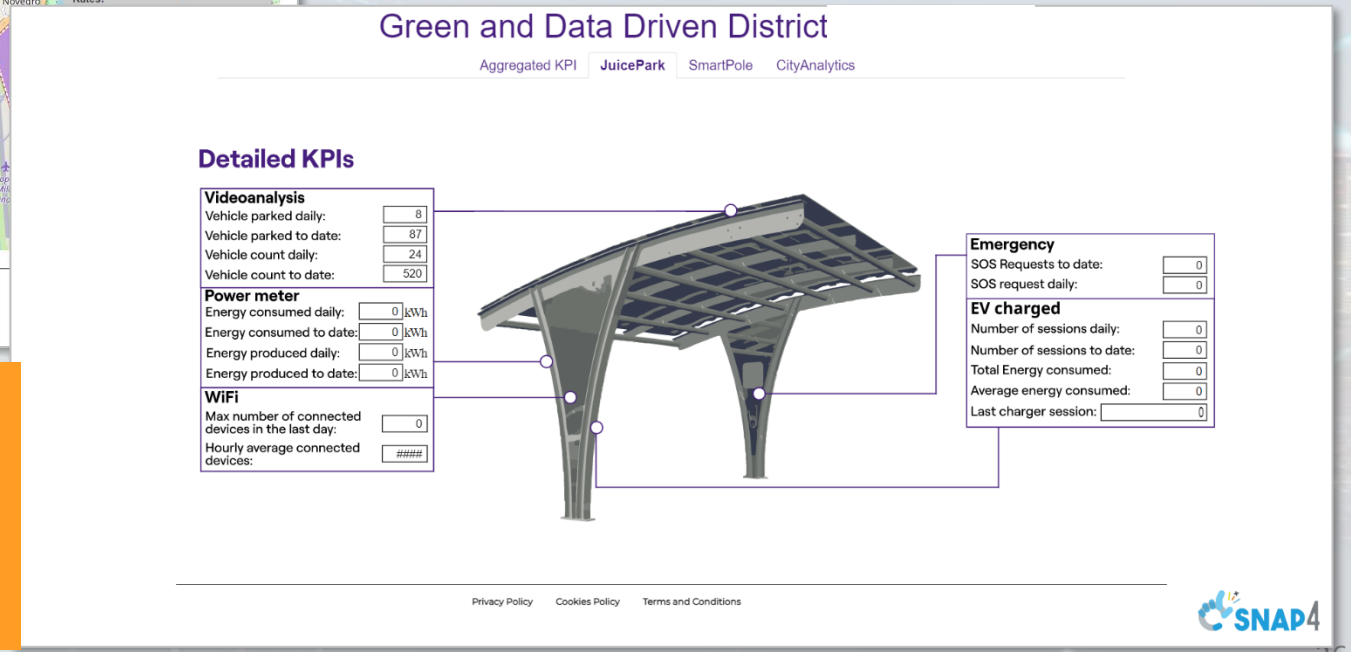
11 SUSTAINABLE CITIES AND COMMUNITIES



Energy monitoring and business intelligence



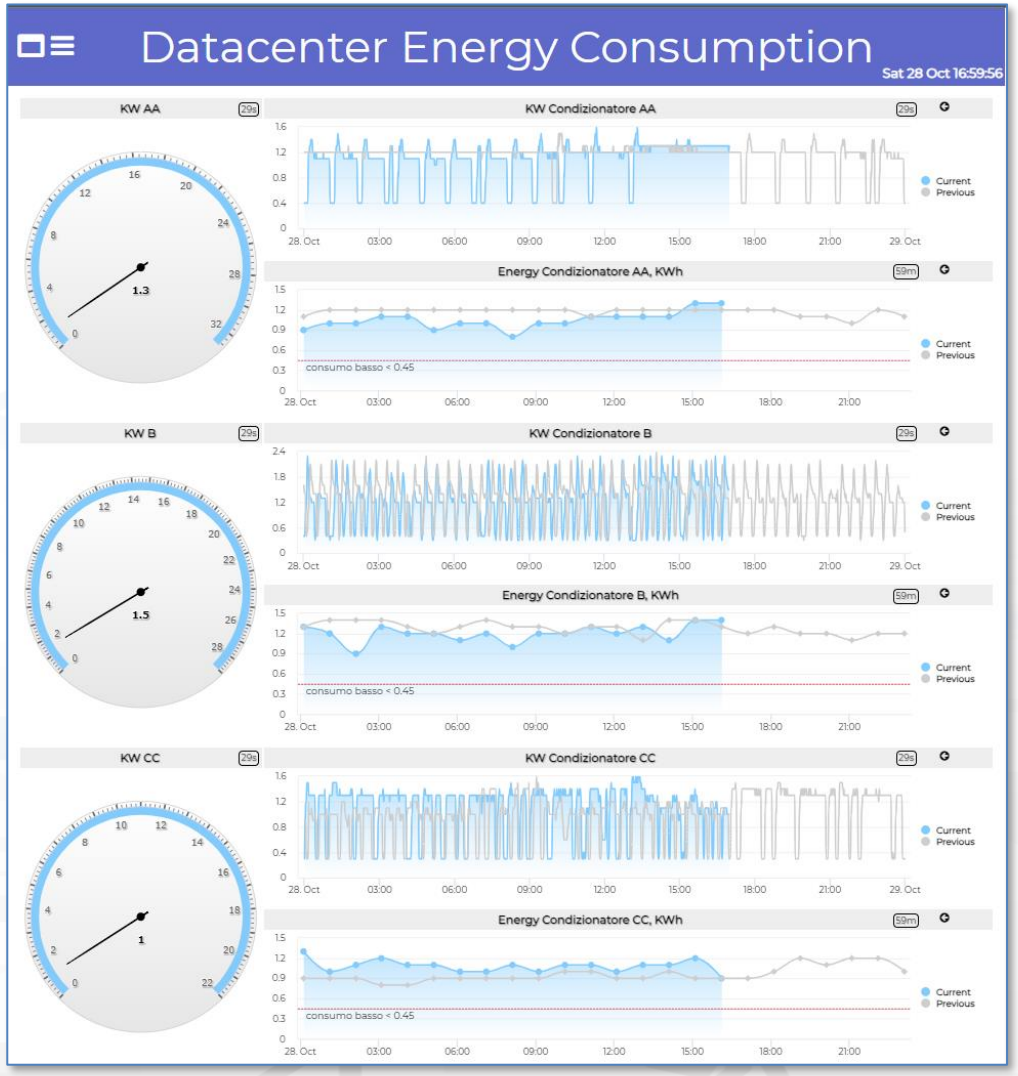


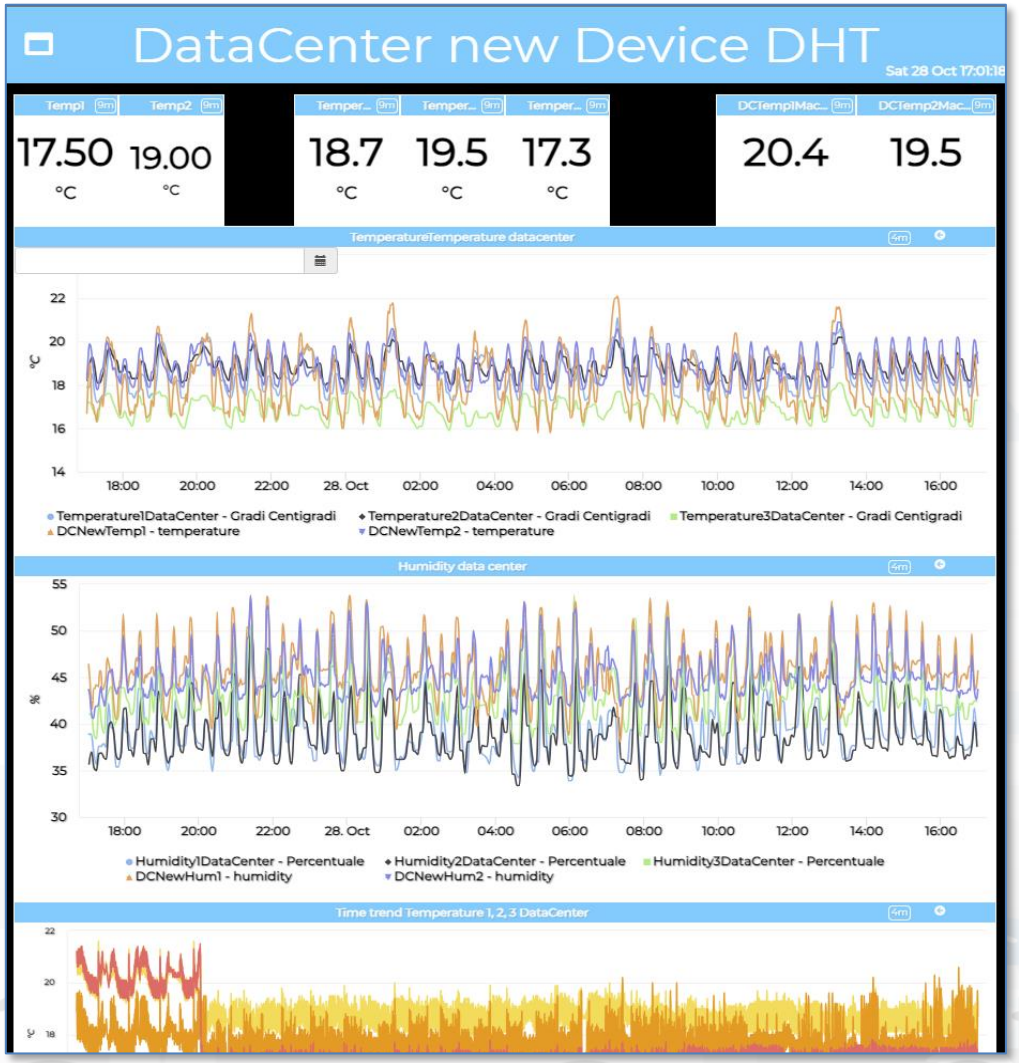


7 AFFORDABLE AND CLEAN ENERGY

11 SUSTAINABLE CITIES AND COMMUNITIES

Data Center monitoring





TOP

Industry Domain predictive maintenance

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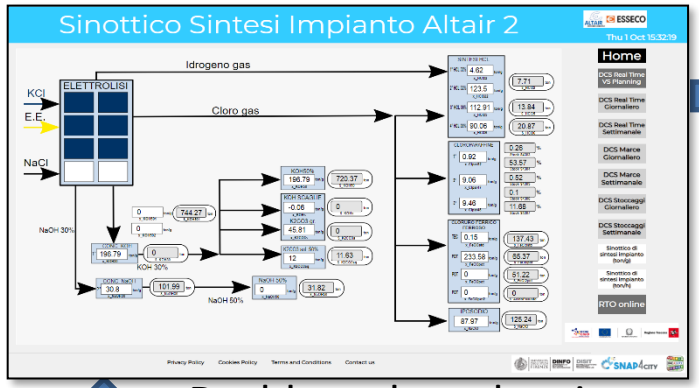
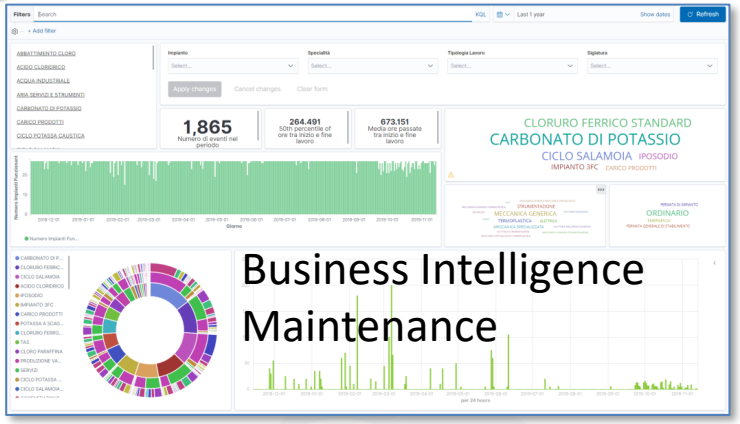
SNAP4CITY KM4CITY

Workflow for Ticket management



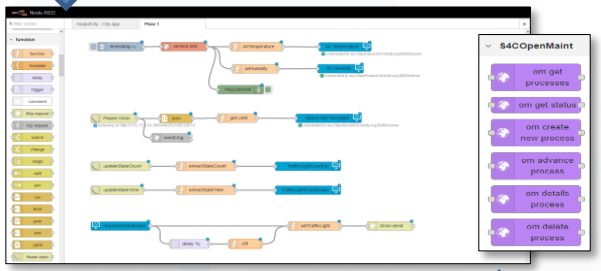
Consumptions/productions

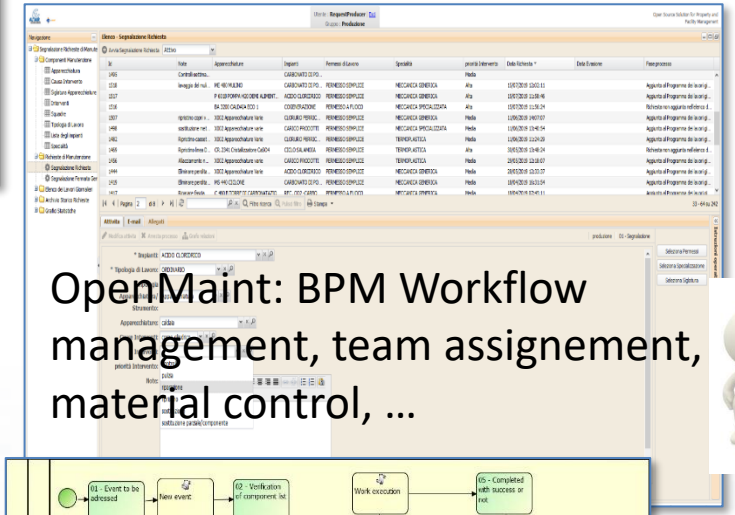


Dashboards and actions

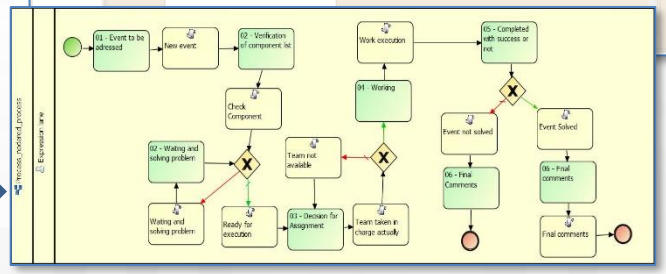
Events/actions

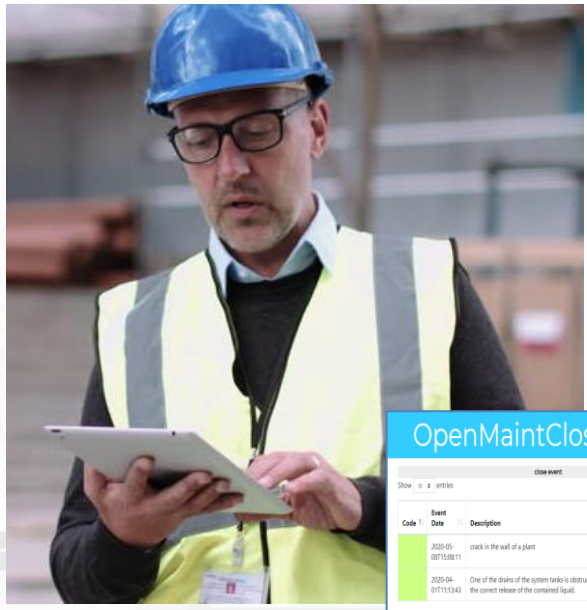
Business Intelligence Maintenance





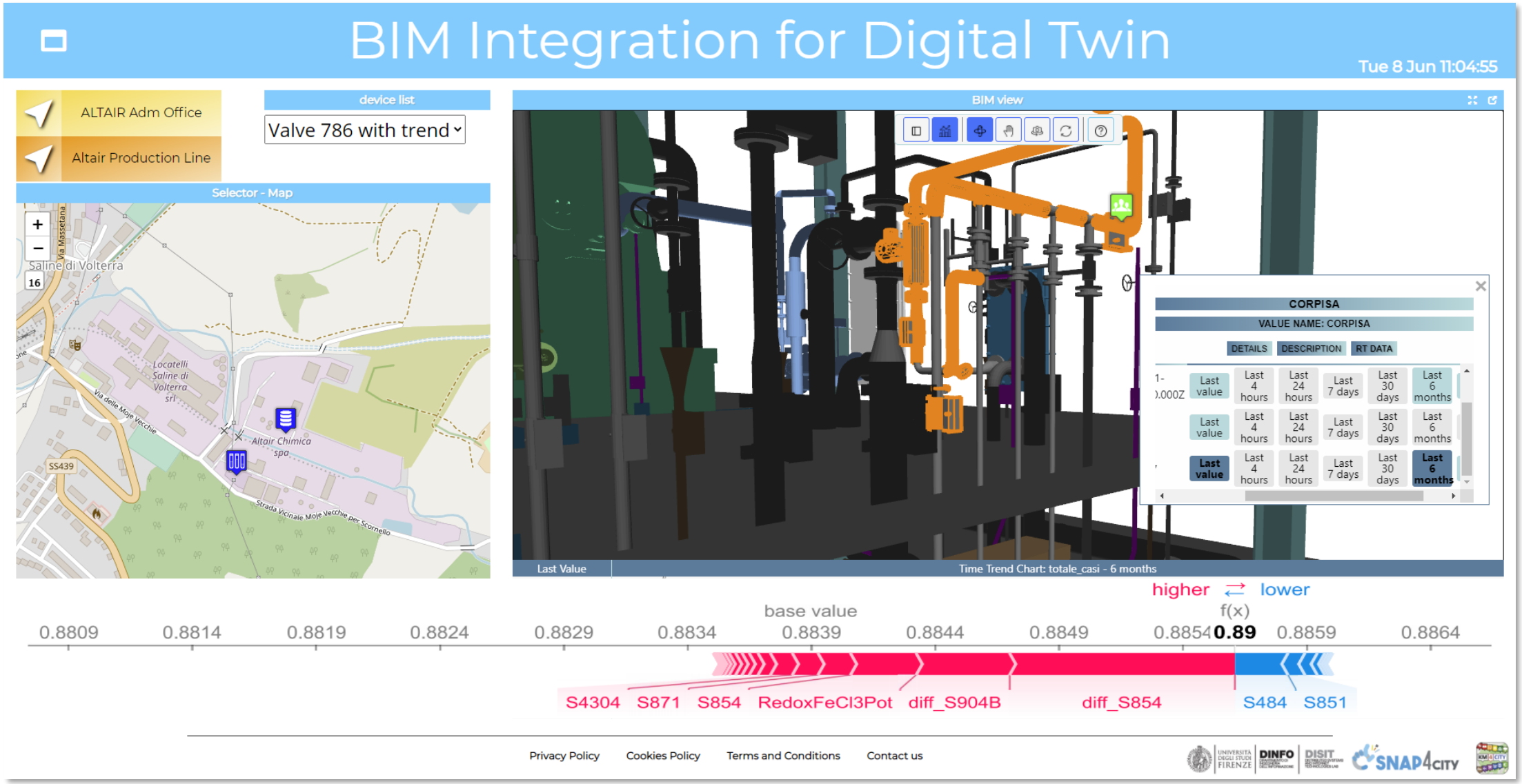
OpenMaint: BPM Workflow management, team assignement, material control, …



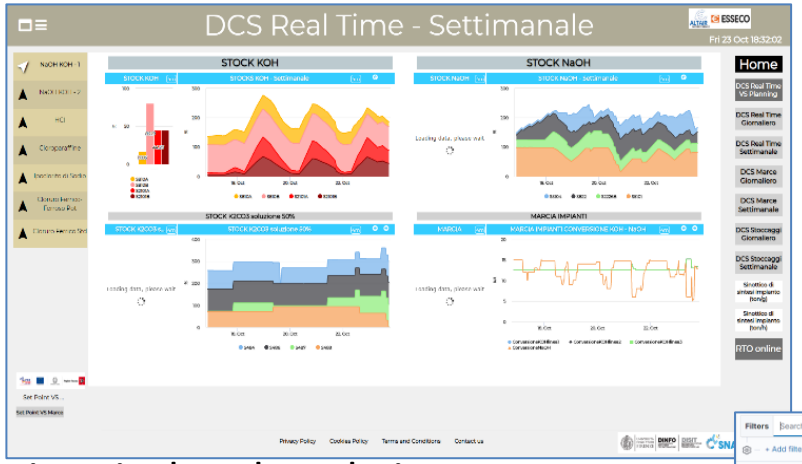


IOT App, Data event firing, event detection and firing Critical event management

Digital Twin Local, 3D vs Real Time Data

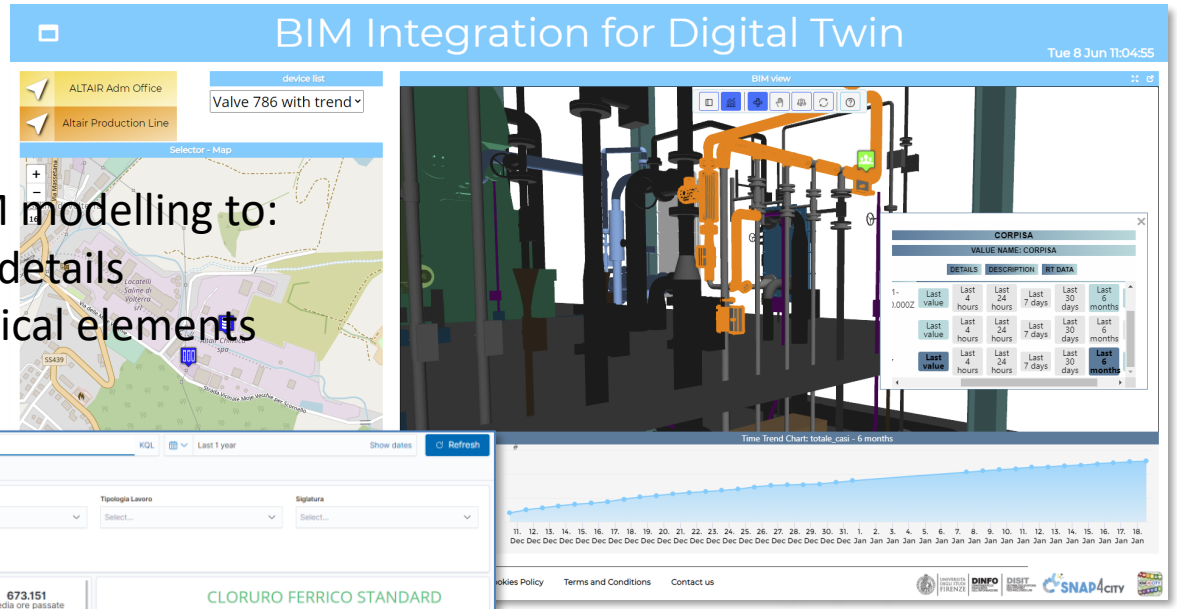


Closing the loop

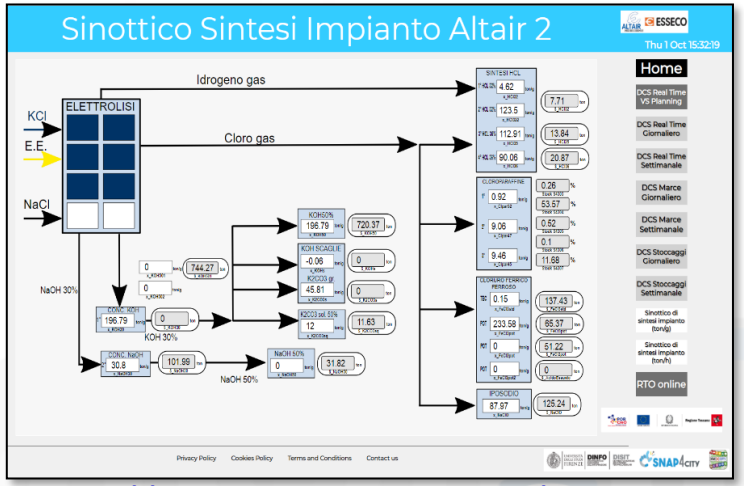


Historical and Real Time Data

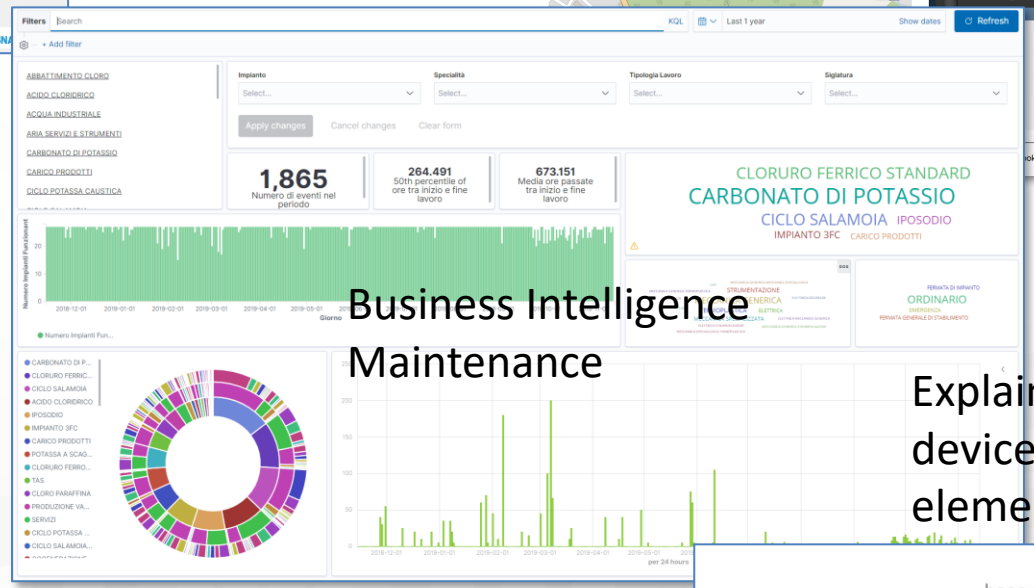
Map and 3D BIM modelling to:
-- represent the details
-- associate physical elements with data



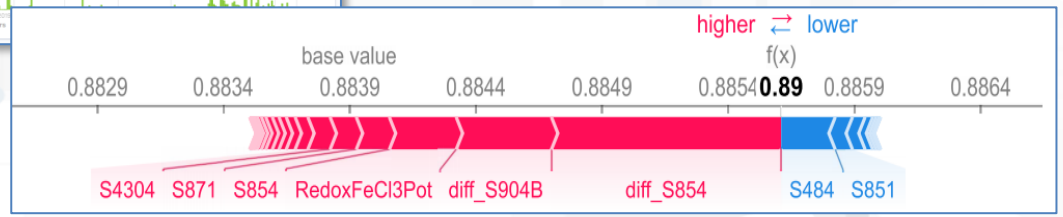
Synoptics for real time monitoring



Business Intelligence Maintenance



Explainable AI to map critical values of devices and detection to physical elements in the plant



https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MzA1NA==

Sinottico Impianto

Sinottico Impianto Presse - Autoclave

italmatic

Mon 4 Oct 15:34:59

Stato Presse

OFF 1	OFF 2	OFF 3	OFF 4	OFF 5	ON 6
OFF 7	OFF 8	OFF 9	OFF 10	ON 11	OFF 12
OFF 13	ON 14	OFF 15	OFF 16	OFF 17	OFF 18
OFF 19	OFF 20	OFF 21	OFF 22	OFF 23	

Select Pressa

PRESSA 6

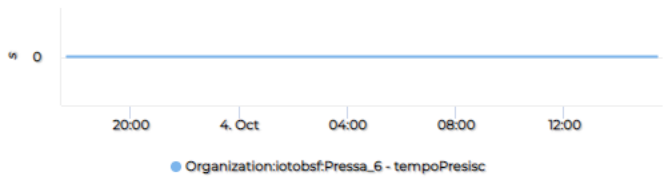
Press to update the list

Status 9m

NO STATUS

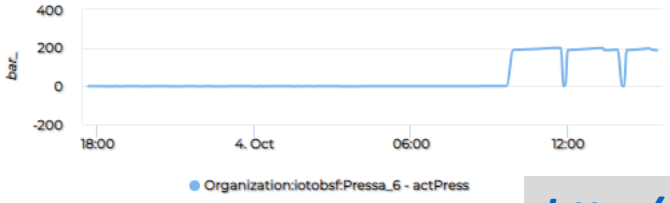
Tempo Vulcanizzione Pressa 4m

Tempo Preriscaldo Pressa 4m



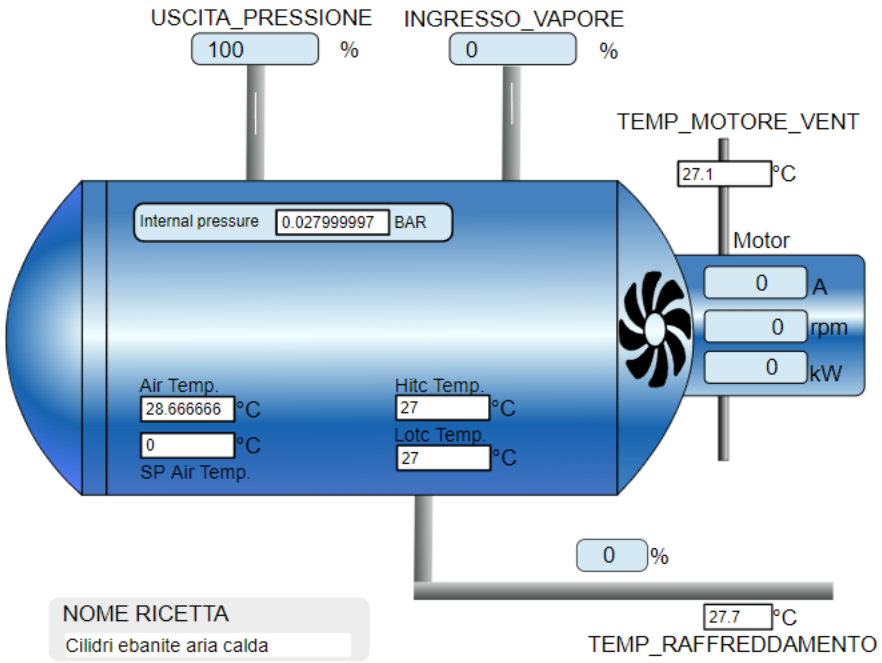
Temperatura Settore Pressa 4m

Pressione Pressa 4m



Temperatura Piani Pressa 4m

Stato autoclave



NOME RICETTA

Cilidri ebanite aria calda

- Main Dashbaord
- Autoclave db - Weekly
- Autoclave KPI - Weekly
- Impianto Presse - Weekly
- OpcUaValues - Weekly
- OpcUaValues ... rison

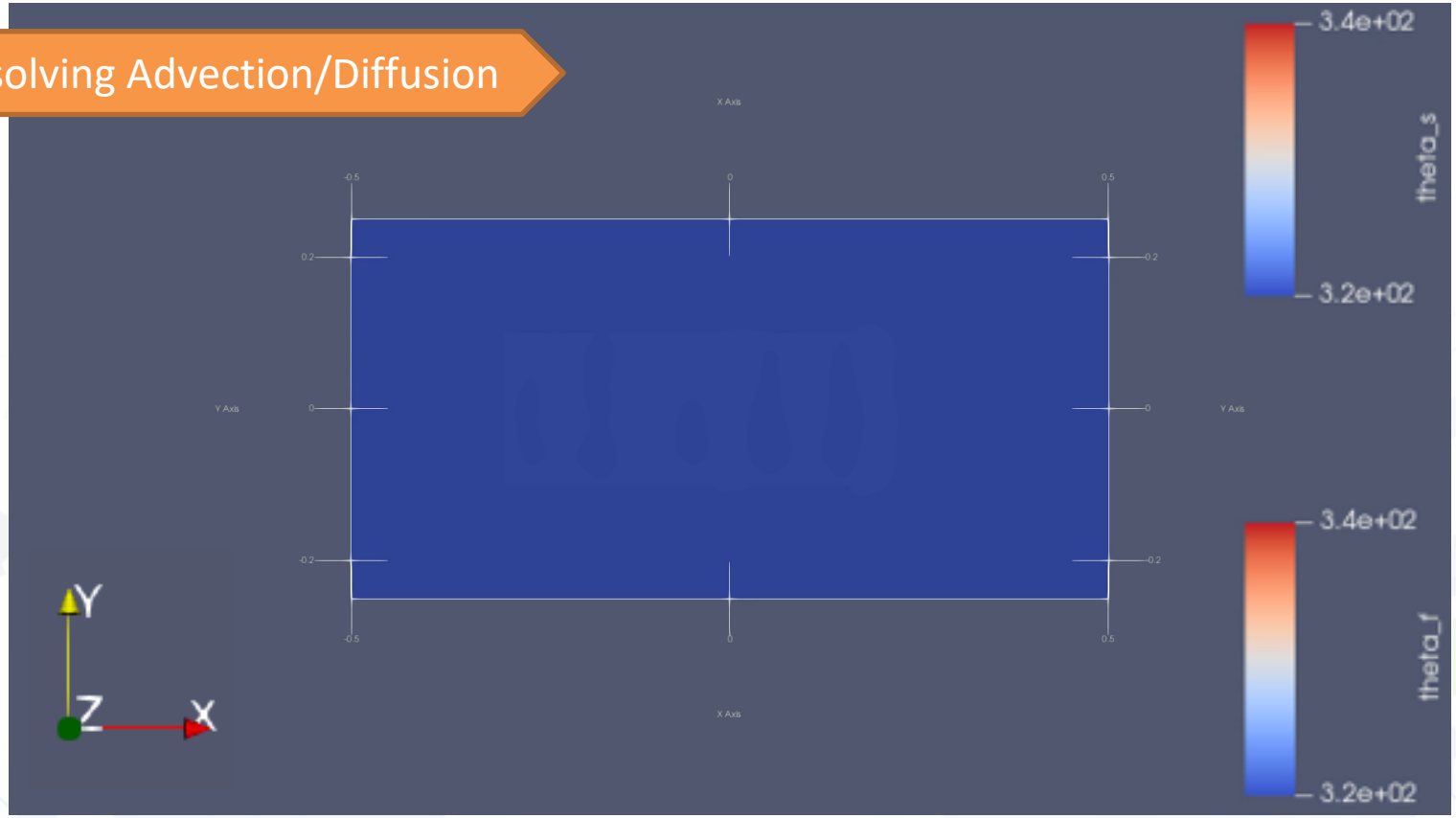
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

http://dashboard/dashboardSmartCity/view/index.php?iddasboard=MTk=

Physics-informed neural networks (PINN)

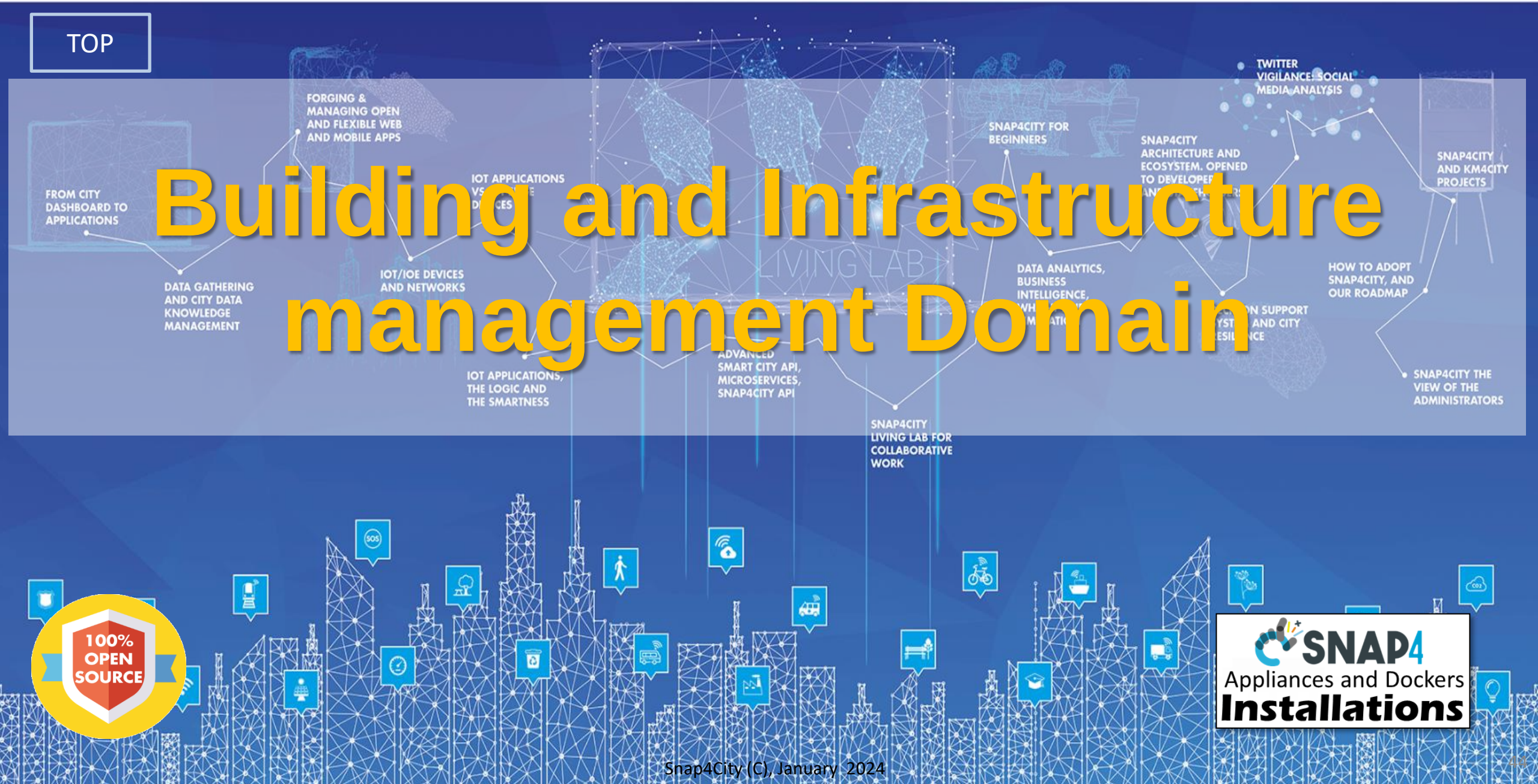
Solve complex fluid-dynamic problems based on **partial differential equation (PDE)** using neural networks

Thermal transfer solving Advection/Diffusion



TOP

Building and Infrastructure management Domain



SCALABLE SMART ANALYTIC APPLICATION BUILDER FOR SENTIENT CITIES

SNAP4CITY

KM4CITY

Smart Building

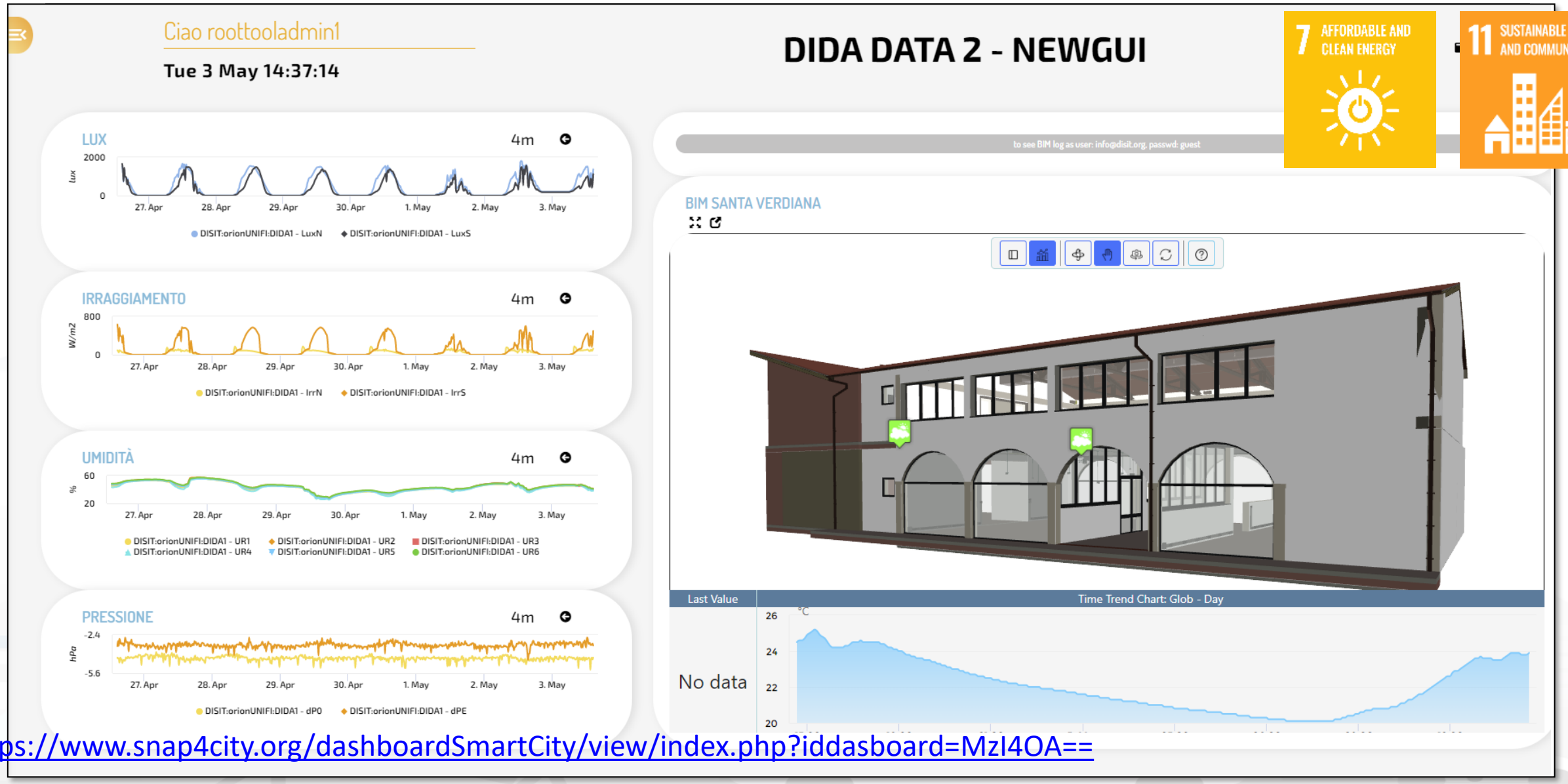
FROM CITY DASHBOARD TO APPLICATIONS

100% OPEN SOURCE

Smart Buildings, Snap4Building

- **Digital Twin for monitor, control and manage distributed infrastructures**
  - 2D/3D representations of the whole set of buildings, BIM modeling
  - Entities (building, floors, rooms, parking, charging stations, gates, etc.) with their shapes and descriptors, and data monitoring the allocation to office, meeting, cafeteria, storage, stairs, elevator, etc.
- **Monitoring and computing KPI on real time for**
  - **energy** consumed or produced (hot/cold)**, parking, logistic, presences, cleaning, air quality, departments, subareas, maintenance, etc.**
  - **allocation/designation**, dispositions, heating, cooling, temperature, equipment, etc.
  - **grouped in Zones**

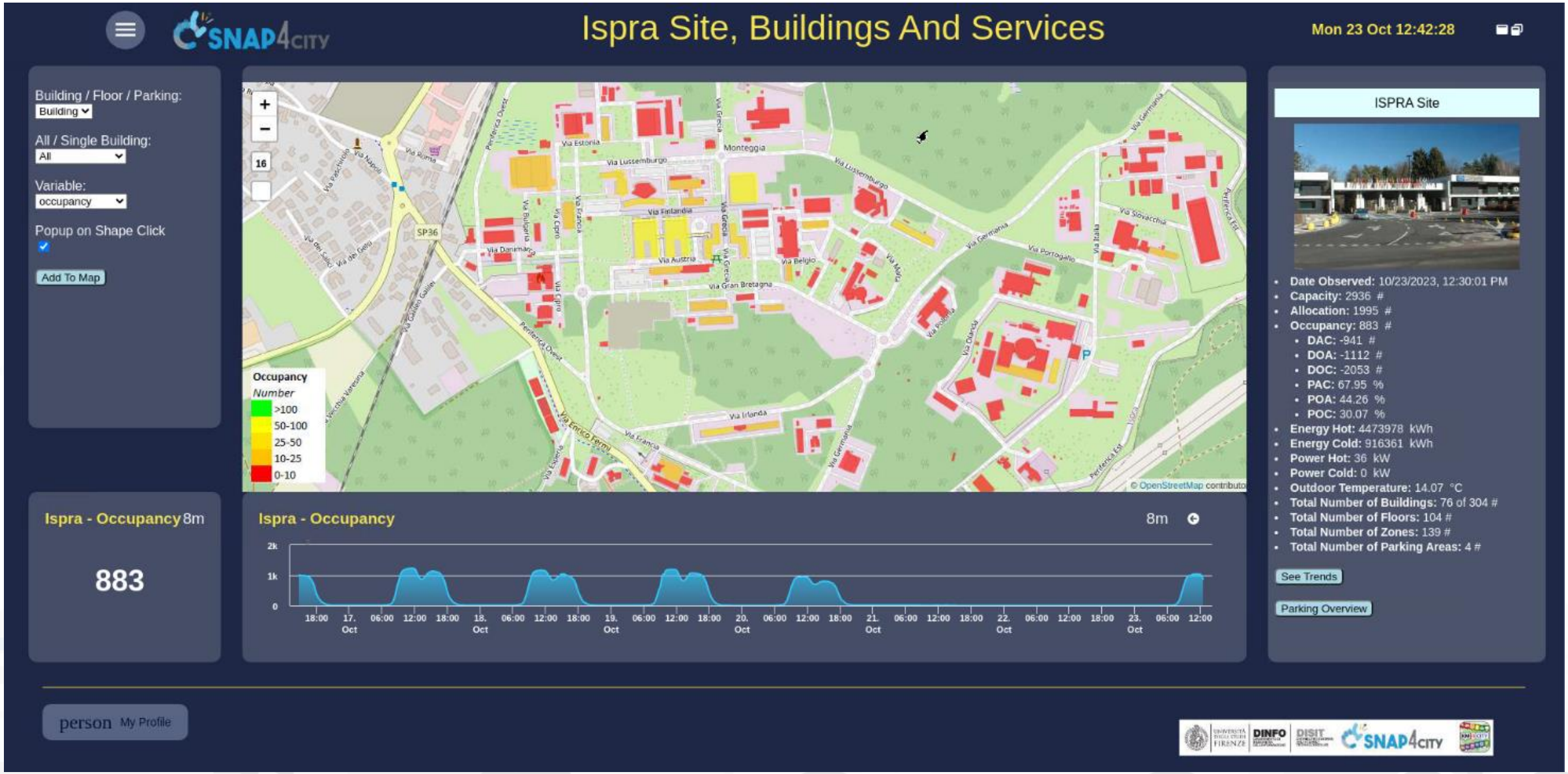
Smart Building

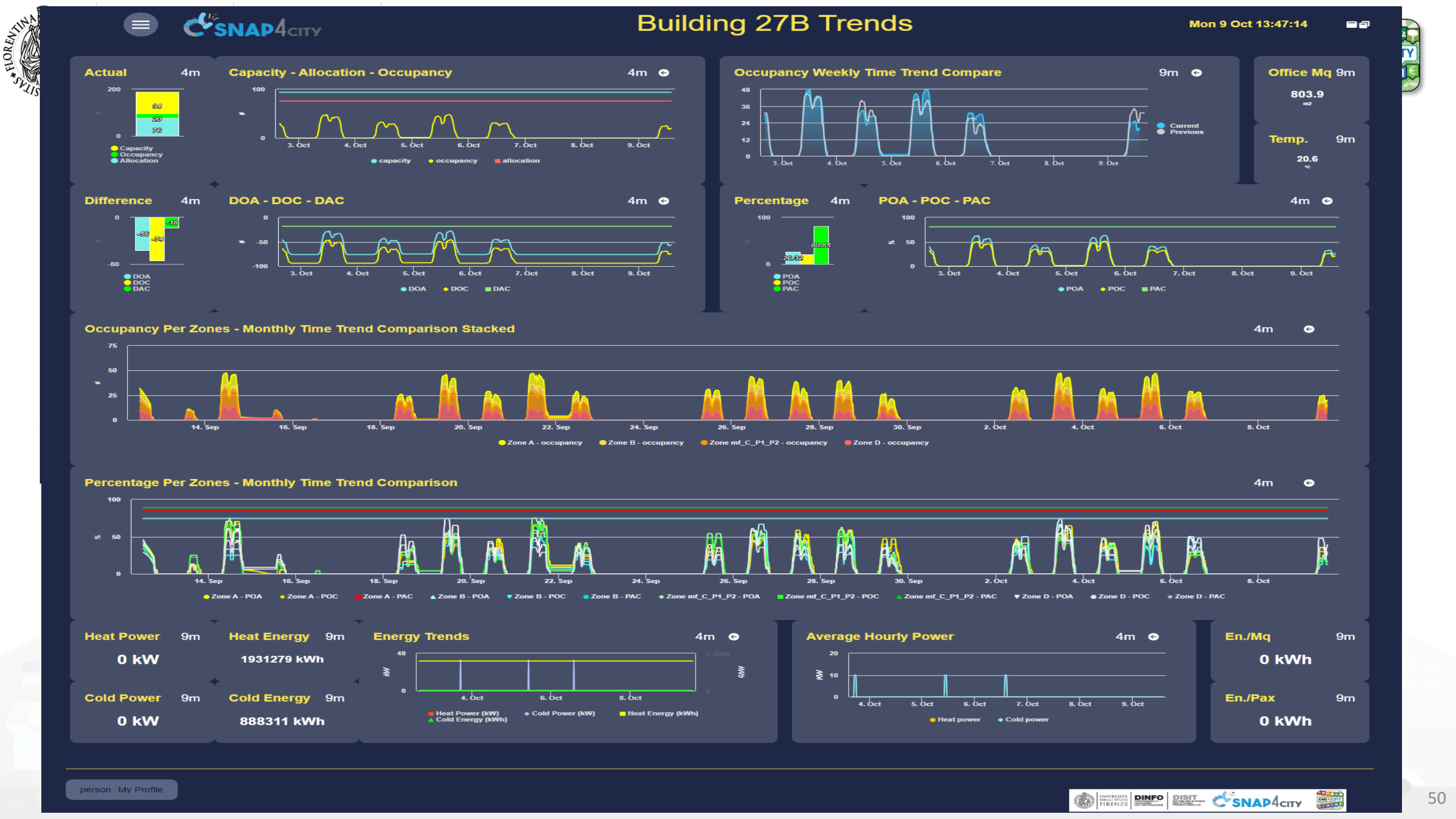


https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MzI4OA==

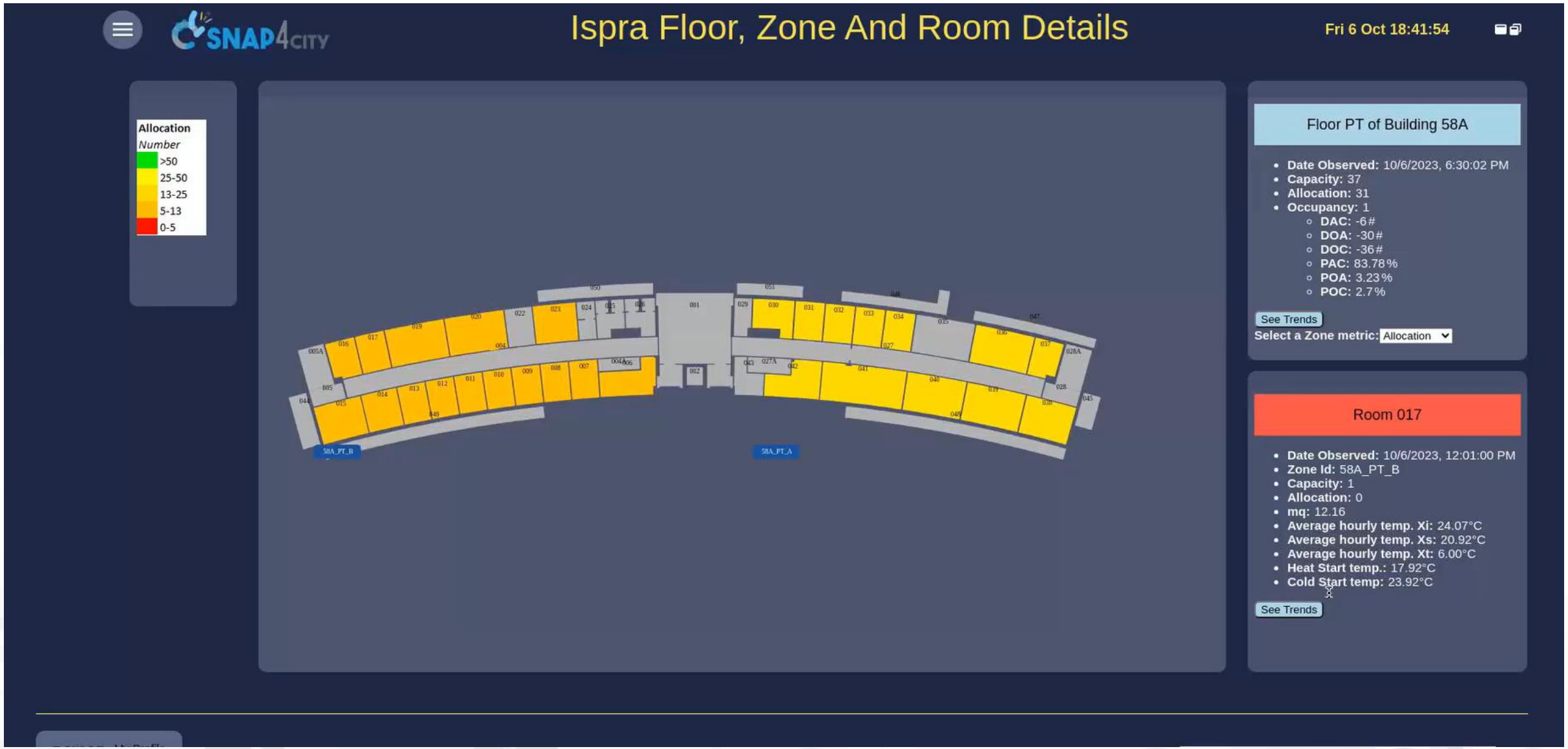
Snap4ISPRA POC

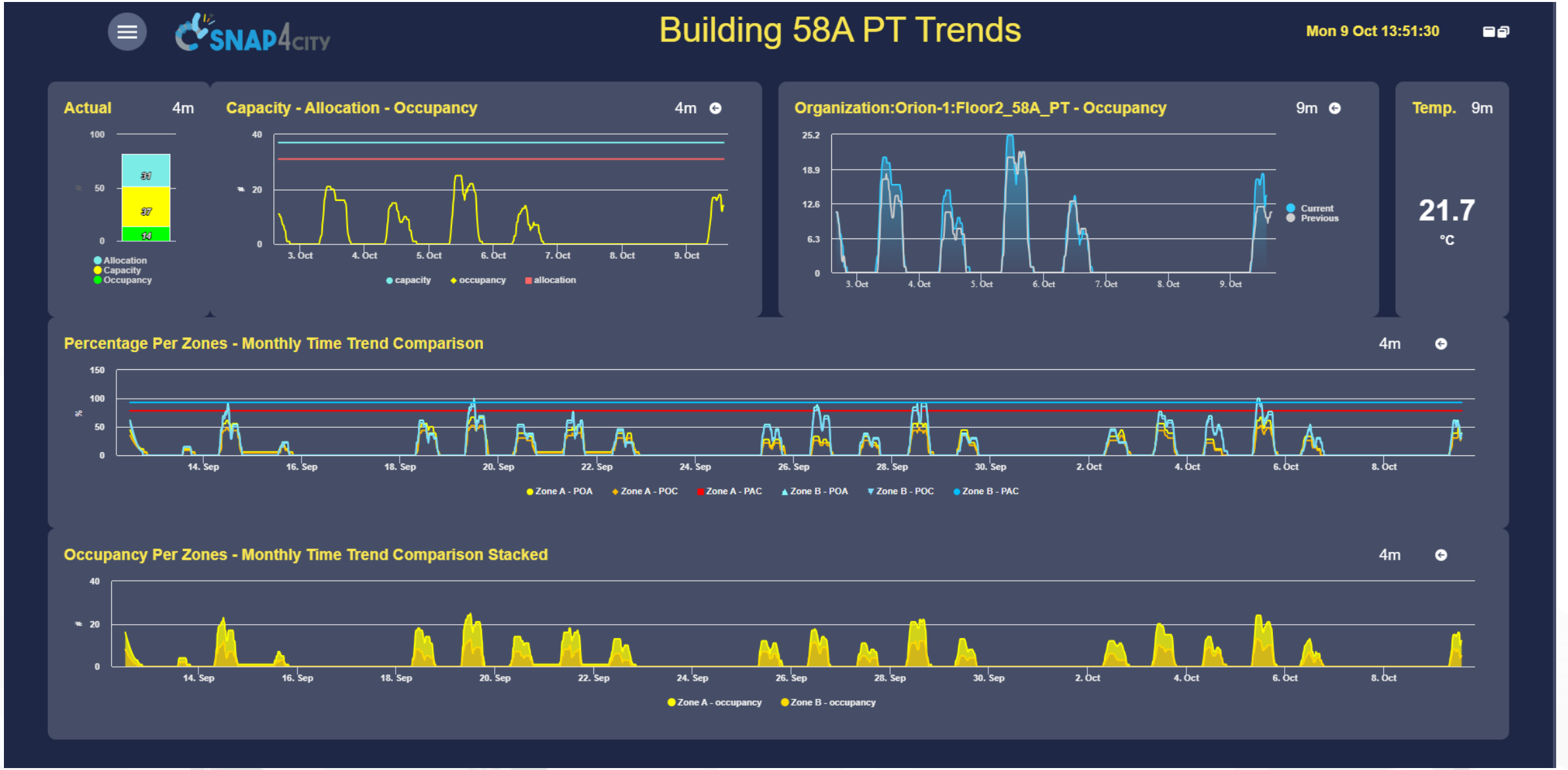
- **Set up a Snap4Ispra demonstration** to:
  - Enable the analysis at level of building, floors/zones for Zones' Occupancy vs Energy consumption
  - Enable the analysis of parking areas
  - Conformance with EU Login
  - Exploiting heterogenous data coming from multiple sources


Ispra Site, Buildings And Services
Mon 23 Oct 12:42:28
Building / Floor / Parking:
Building
All / Single Building:
All
Variable:
occupancy
Popup on Shape Click
Add To Map
Occupancy
Number
>100
50-100
25-50
10-25
0-10
ISPRA Site
Date Observed: 10/23/2023, 12:30:01 PM
Capacity: 2936 #
Allocation: 1995 #
Occupancy: 883 #
DAC: -941 #
DOA: -1112 #
DOC: -2053 #
PAC: 67.95 %
POA: 44.26 %
POC: 30.07 %
Energy Hot: 4473978 kWh
Energy Cold: 916361 kWh
Power Hot: 36 kW
Power Cold: 0 kW
Outdoor Temperature: 14.07 °C
Total Number of Buildings: 76 of 304 #
Total Number of Floors: 104 #
Total Number of Zones: 139 #
Total Number of Parking Areas: 4 #
See Trends
Parking Overview
Ispra - Occupancy 8m
883
Ispra - Occupancy
8m
person My Profile

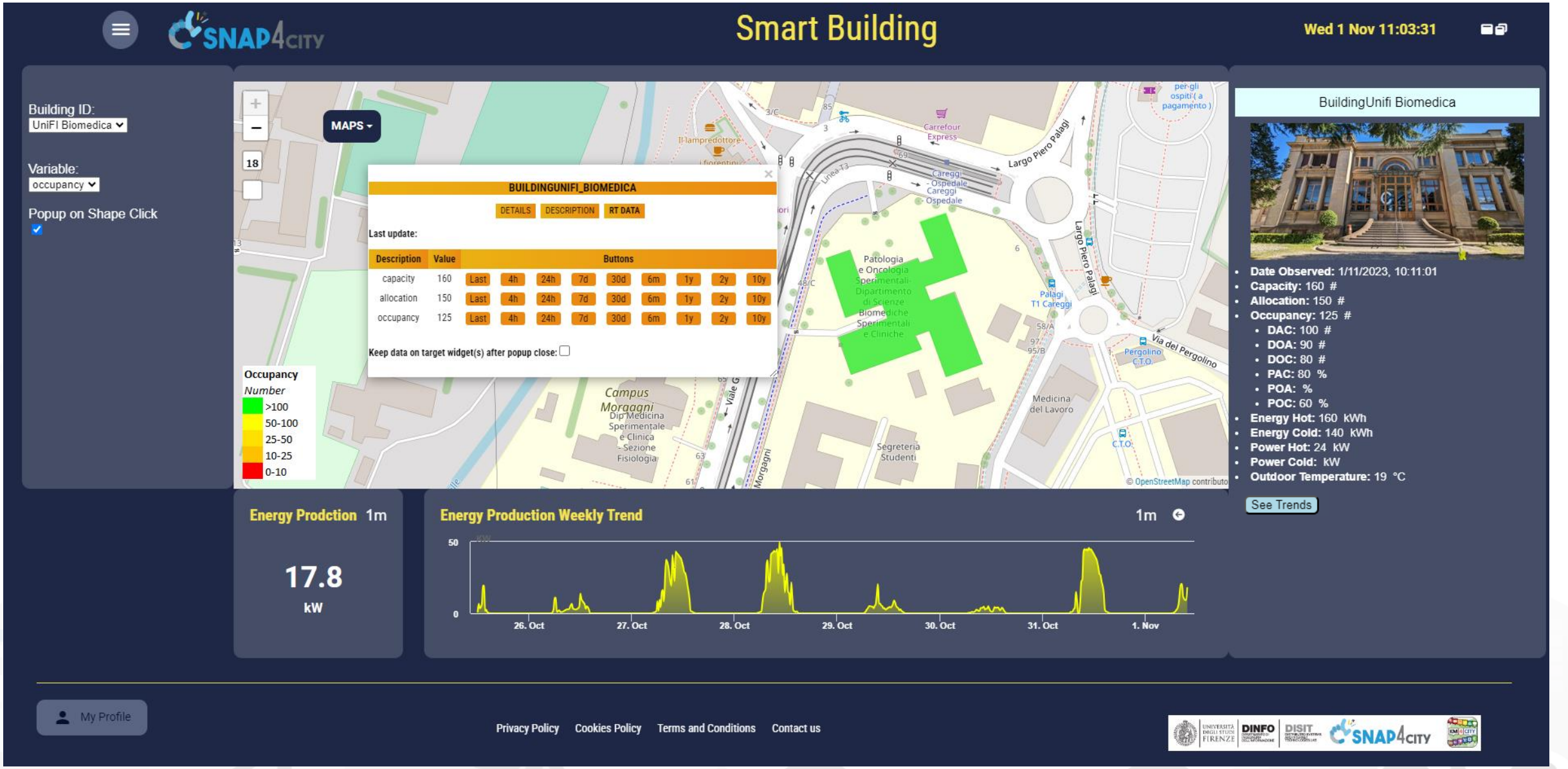

Building 27B Trends
Mon 9 Oct 13:47:14
Actual 4m
Capacity - Allocation - Occupancy 4m
Occupancy Weekly Time Trend Compare 9m
Office Mq 9m
803.9
Temp. 9m
20.6
Difference 4m
DOA - DOC - DAC 4m
Percentage 4m
POA - POC - PAC 4m
Occupancy Per Zones - Monthly Time Trend Comparison Stacked 4m
Percentage Per Zones - Monthly Time Trend Comparison 4m
Heat Power 9m
0 kW
Heat Energy 9m
1931279 kWh
Energy Trends 4m
Average Hourly Power 4m
En./Mq 9m
0 kWh
Cold Power 9m
0 kW
Cold Energy 9m
888311 kWh
En./Pax 9m
0 kWh
person My Profile

Floor Details




Building 58A PT Trends
Mon 9 Oct 13:51:30
Actual 4m
Allocation
Capacity
Occupancy
Capacity - Allocation - Occupancy 4m
capacity
occupancy
allocation
Organization:Orion-1:Floor2_58A_PT - Occupancy 9m
Current
Previous
Temp. 9m
21.7
°C
Percentage Per Zones - Monthly Time Trend Comparison 4m
Zone A - POA
Zone A - POC
Zone A - PAC
Zone B - POA
Zone B - POC
Zone B - PAC
Occupancy Per Zones - Monthly Time Trend Comparison Stacked 4m
Zone A - occupancy
Zone B - occupancy

Smart Building



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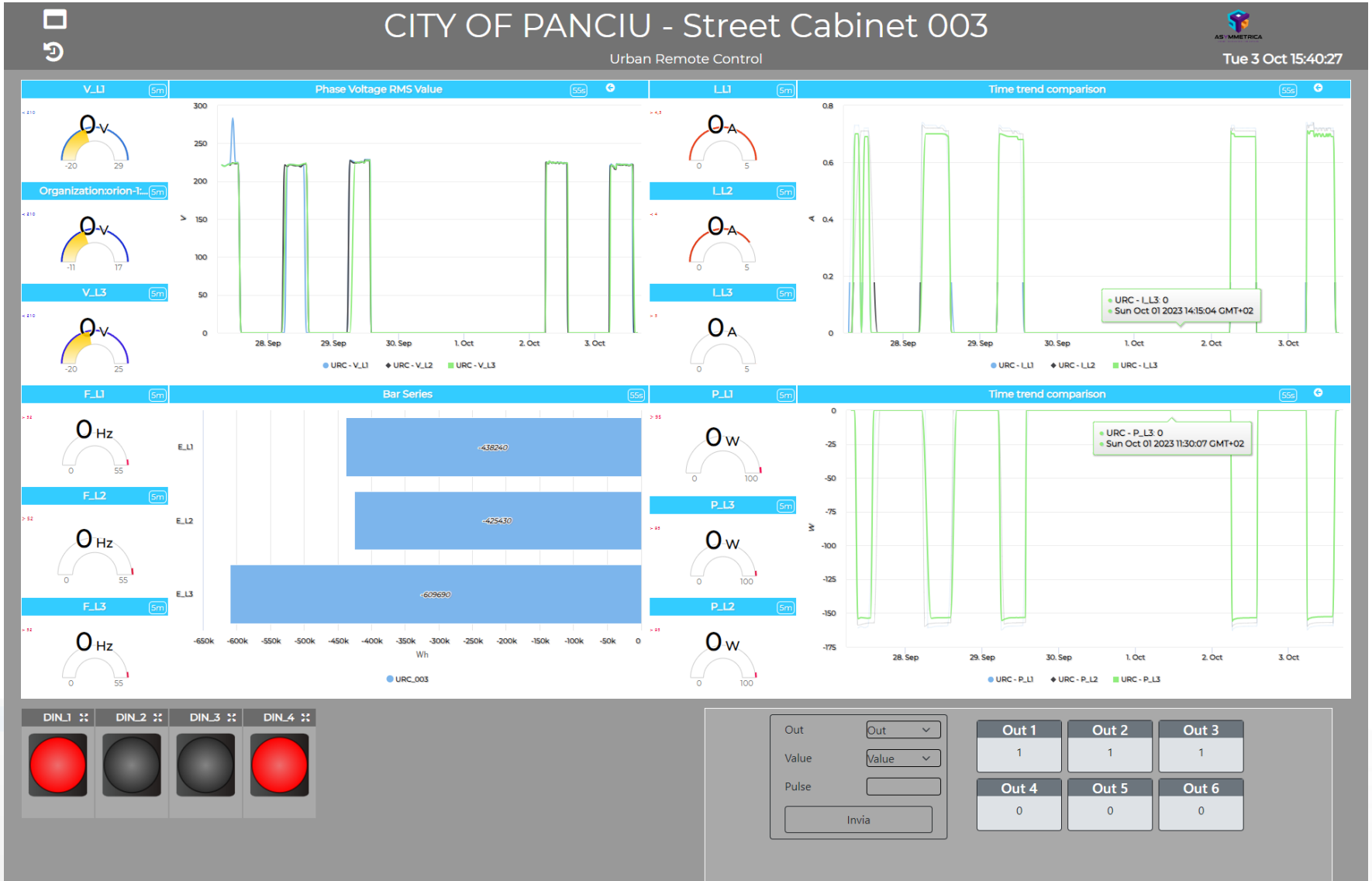
City of Panciu in Romania

By Asymmetrica and Snap4



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References

100% OPEN SOURCE

SNAP4 Appliances and Dockers **Installations**

2023 booklets

- Smart City

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

- Industry

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

- Artificial Intelligence

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

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
Km4City 1.5

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

ckan, resolute

H2020 (2015-18)

2016
(2016-21) H2020 REPLICATE

Km4City 1.6.4

- Smart Energy
- Sustainable Mobility
- Control Room
- Dashboard

Km4City 1.6.2

Sii-Mobility (2016-21) MIUR

SII-MOBILITY SCN

- Infomobility
- Mobile App
- Routing
- Multimodality

FIWARE

Km4City 1.5

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

2017
Sii-Mobility

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

E0l5 digital ecosystem (Powered by EXPO MILANO 2015)

(2016-19) MIUR 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

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

life weee (2017-20)

- Smart Waste

2018
MOSAiC Mobility 4.0 for SmArt (i) City (2018-20)

- Mobility Demand / Offer Analytics and Strategy

Sii-Mobility

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

IOT/IOE

Km4City 1.6.6

Node-RED

SNAP4CITY SELECT for Cities H2020 (2017-19)

2019
5G (2018-21)

- 5G tech
- Energy
- Industry 4.0
- Synoptics

TRAFAIR CEF (2018-21)

- Traffic and Mobility Impact on Pollution
- NOX predictions

EUROPEAN OPEN SCIENCE CLOUD

SIRIUS

LAID Smart Bed

- Smart Health

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

- Industry 4.0

bee smart city

- Smart Lonato

Reverberi Enetec Gruppo MPES

SNAP4CITY

Winner of Select4Cities PCP

SNAP4CITY roadmap

SODA

2020

Sii-Mobility

JRC EUROPEAN COMMISSION Contract

Interreg Mediterranean HERIT-DATA

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

Interreg MARITTIMO-IT FR-MARITIME MOBI MART

- Smart Mobility
- PISA, PUMS
- Living lab

smartGARDAlake

Km4City 1.6.7

Smart Ambulance (2021-22)

Enterprise (2021-22) Industry 4.0

Sii-Mobility

enel x Contract

JRC EUROPEAN COMMISSION Contract

2021

PC4City (2020-21) Monitoring Terrain

Winner of Open Data Challenge of enel x

CAPELON

- Smart Light
- Sweden

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

JRC EUROPEAN COMMISSION Contract, 2022-23

2023

ART-ER ATTRATTIVITÀ RICERCA TERRITORIO Contract, 2022-23

Filippi 2022-2023

enel x Contract, 15min

IMPETUS Security and Risk

Smartea

CN MOST, 2022-26

EI THE, 2022-26

G. Agile, 2021-23

TUSCANY XD EDIH 2023-26

Finanziato dall'Unione europea NextGenerationEU

Merano, smart light

OceanRace, Genova, AWS

Cuneo, smart city

AMMIRARE

Interreg MARITTIMO-IT FR-MARITIME

2024

Rhodes, smart city

TOURISMO

Interreg Euro-MED Co-funded by the European Union

TOP

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KM4CITY

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7-9 November 2023, Barcelona, Spain

Visit Snap4City in Hall 1

SNAP4 Appliances and Dockers **Installations**

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