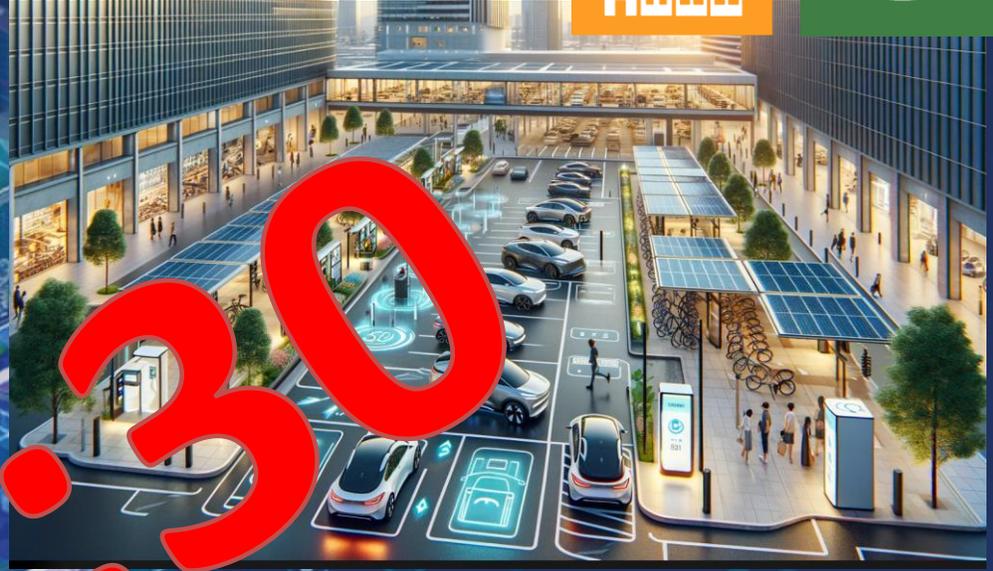




www.snap4city.org
www.snap4solutions.org



at
14:30

Snap4Parking
Smart Parking

#snap4city
#km4city
#disitlab
@snap4city

0 1 0 0 1 0 0 1 1 0 1 1
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DIGITAL TWIN SOLUTIONS TO SETUP SUSTAINABLE DECISION SUPPORT SYSTEMS AND BUSINESS INTELLIGENCE





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

HORIZONTAL AI PLATFORM

MOBILITY AND TRANSPORT

SMART ENERGY AND SMART BUILDING

ENVIRONMENT AND WASTE MANAGEMENT

CITY USER'S SERVICES AND TOURISM MANAGEMENT

SNAPADVISOR

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



DASHBOARDS, WIDGETS
TEMPLATES



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



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

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

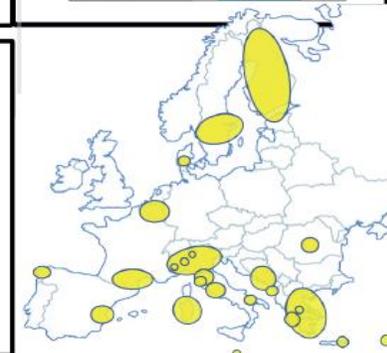
**BIG DATA ANALYTICS, ARTIFICIAL INTELLIGENCE
EXPLAINABLE AI, MACHINE LEARNING, GENERATIVE AI
OPERATIVE RESEARCH, STATISTICS**

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

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



- NATIVE AND EXTERNAL APPLICATIONS**
- Smart Parking
 - Smart Light
 - Smart Waste
 - Smart Energy
 - Smart Building
 - Smart Tourism
 - ...



Powered by
FIWARE

FREE
TRIAL

PEN Test
Passed

EU GDPR
COMPLIANT

SNAP4
Appliances and Dockers
Installations

EUROPEAN OPEN
SCIENCE CLOUD

Node-RED

JS Foundation

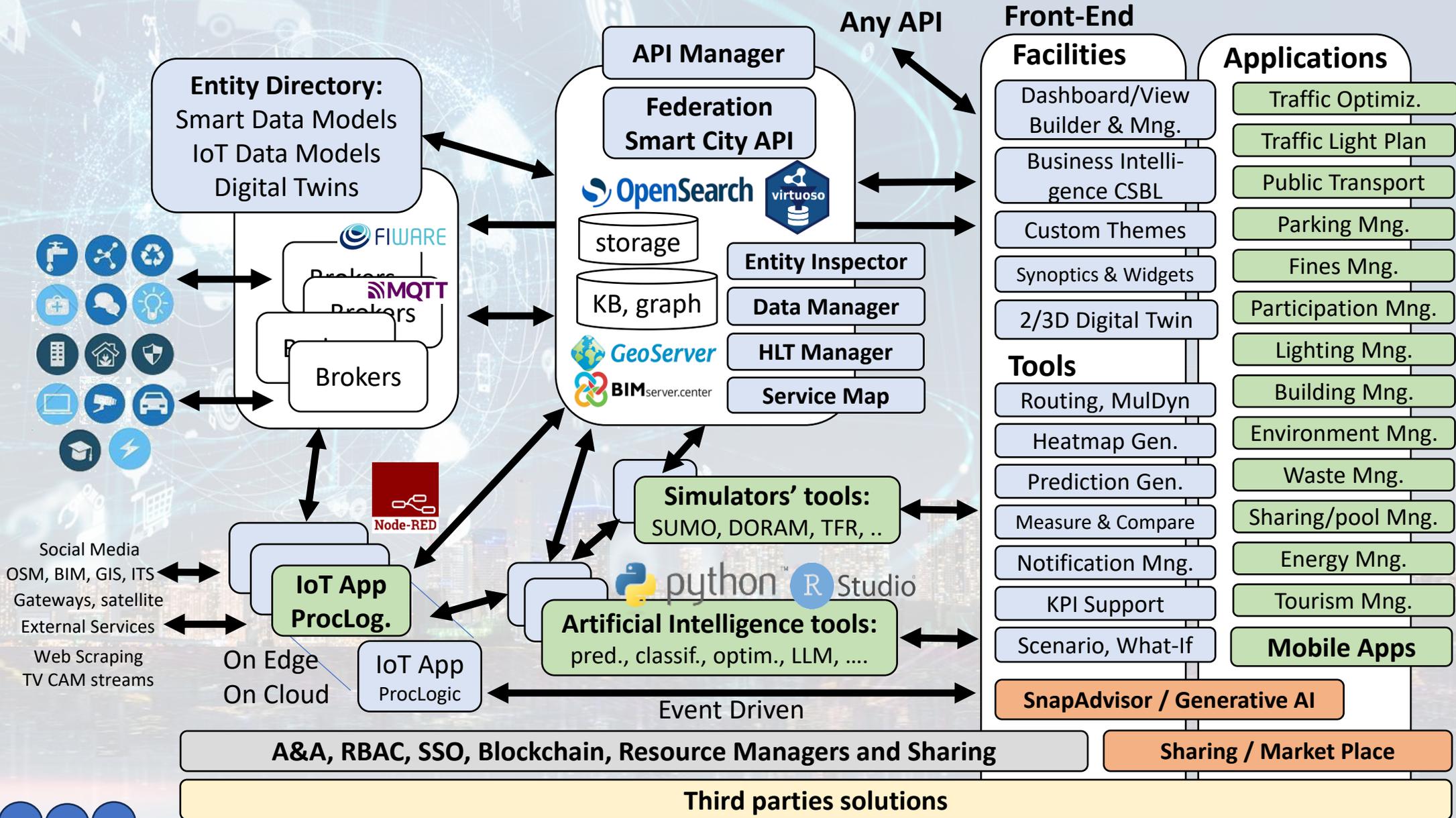
E015
digital ecosystem

NVIDIA

- DEVELOPMENT ENVIRONMENT AND METHODOLOGY
- VISUAL PROGRAMMING, ML, AI, HPC
- TRAINING COURSES



Technical Architecture



Main Apects

- **Main Features:**

- reduce emissions by guiding drivers to free spaces;
- support on/off-road parking;
- Support any kind of parking slots/sensors' kinds;
- multiple payment models for each area and couple: User-Parking Kinds;
- Specific rules for residents, disabled users and operators;
- Predictions for parking.

- **Architecture:**

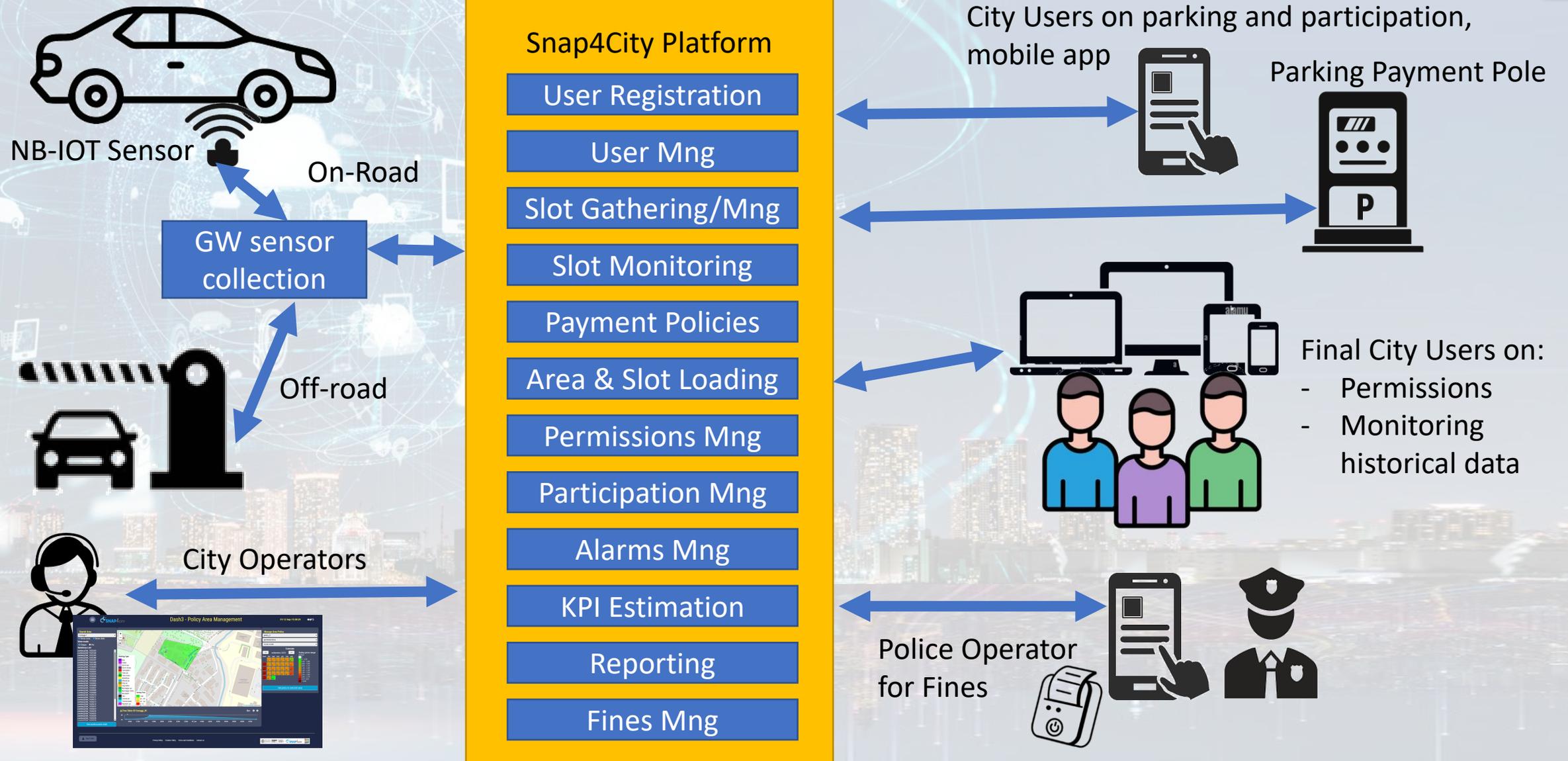
- events from: on-street sensors (e.g., NB-IoT), mobile apps and parking poles;
- Smart Parking Manager with dashboards for operators;
- Custom business logic for each municipality
 - Central solution for payments,
- Mobile app for city users and for police operators

- **Based on Snap4City:**

- multitenant, GDPR, Scalable, modular, interoperable, etc....

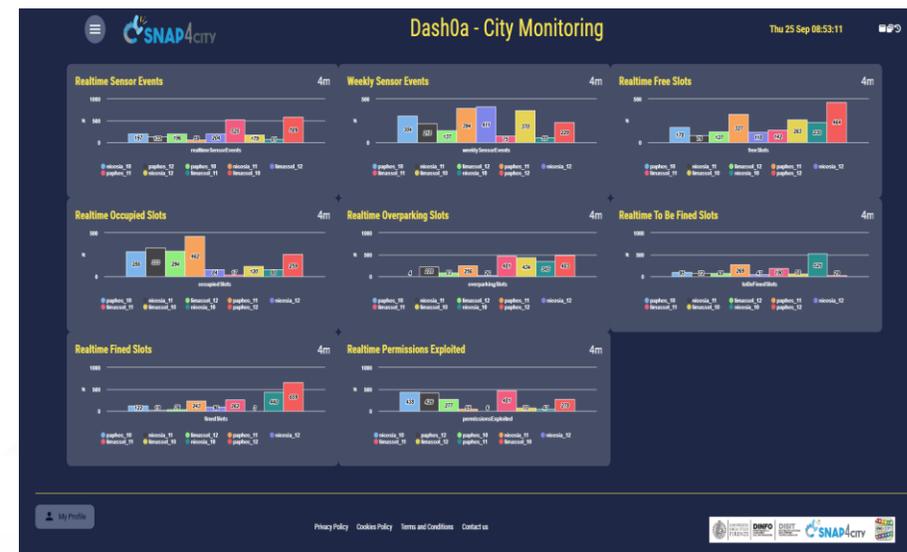


Snap4Parking Conceptual Architecture



Operations Dashboards (Back Office)

- **City & Area KPIs**
 - Free, occupied, overparked, to-be-fined, fined, permissions in real time, recharging, ..
 - Counts of sensors active today / this week
- **Monitoring Parking Status**
 - Time-series KPIs (daily/weekly/monthly),
 - drill-down by area & parking kind, ...
- **Management of Sensors**
 - Search by slot or sensor ID; view health & timelines; manage replacements;
 - Bluetooth associations when applicable
- **Price Policy Area Management**
 - Assign price policies by areas



Pricing: DPP & PPP

- **Daily Price Profiles**
 - 24 values (€/min per hour) describing a day's pricing
 - Different for User-parking kind couples
- **Price Policy Profiles**
 - Rules per area per (User-Parking Kind) with validity periods and weekday/ weekend/ holiday toggles
 - Management of exceptions



Users, Permissions & Mobile App

- **Users & Roles**

- **External:** Visitor, Resident, Disable,
- **Internal:** Operator, Policeman/Aux, Fine Operator, Participation Operator, etc.

- **Permissions workflow**

- User requests parking/waste permission → operator approves/rejects → payment link sent → printable card issued
- Parking, Gates, delivering, disables, etc.

- **Mobile app**

- Search parking & Just Parking
- Pay-per-minute for registered users;
- prepayment for everyone
- Pay parking and fines;
- view permissions & notifications

DASH5: Buy A Permission Mon 6 Oct 10:05:01

device	areaID	city	dateObserved	days	EMissionID	motivation	Actions
Livadia_2025-10-03T14-43-11_parking	alberti_06	Livadia	2025-10-06T08:00:47.295Z	[Monday, Tuesday, Wednesday, Thursday, Friday]	[wasteBin845]	restructuring	
Ferregueta_2025-10-03T14-39-46_waste		Ferregueta	2025-10-03T13:21:01.120Z	[Wednesday, Thursday, Friday]	[wasteBin845]	moving	
Ferregueta_2025-10-02T16-40-23_parking	corropi_04	Ferregueta	2025-10-02T15:01:57.866Z	[Monday, Tuesday]		food_delivering	
Livadia_2025-10-02T11-03-03_waste		Livadia	2025-10-02T09:18:23.492Z	[Monday, Tuesday, Wednesday]	[wasteBin845]	food_delivering	
Ferregueta_2025-10-02T09-43-02_parking	alberti_03	Ferregueta	2025-10-02T08:02:43.051Z	[Monday, Tuesday, Wednesday, Thursday, Friday, Saturday]		disabled	

Select a kind of permission

Parking Waste

City: Aglandjia

Waste BIN ID: wasteBin1201, wasteBin5563, wasteBin8457, wasteBin8458, wasteBin8460

From: [input type="text"]

Motivation: Select...

Starting date: gg/mm/yyyy N: [input type="text"] Times: [input type="text"]

Select Days: Mon Tue Wed Thu Fri Sat Sun

Time conditions: Full Day Time Windows

Parking Permission

Livadia_2025-10-03T14-43-11_parking

Position: Municipality: Livadia, Parking Area: alberti_06, Parking Slot id: parkingSlot_15191, Motivation: restructuring

Qr Code: [QR Code]

Period of Validity: From 2025-10-01 to 2026-04-28, Days [Monday, Tuesday, Wednesday, Thursday, Friday], Times 30

Vehicle Data: Kind of vehicle: truck, Carplate number: 5679

Managing customer interaction

- **Complains providing**
 - Media, Text
 - Tracking evolution
- **AI based Complain Analysis (optional)**
- **Contestation of Fines**
- **Mobile App for road operators**
- **Payments**

Participation - INITtoACK

Tue 23 Sep 11:32:45

INIT Complaints List

device	dateObserved	description	motivation	Actions
complain_2	2025-09-12T07:45:04.746Z	I came across an issue and flagged it right away	fallen tree	
complain_1	2025-09-12T07:43:57.621Z	I came across an issue and flagged it right away	graffiti	
complain_0	2025-09-12T07:35:00.487Z	I identified something that needed attention and submitted a report	dead animal	

Complaint Location

Update Complaint

Complain data

Complain ID: complain_1

Motivation: graffiti

Description: I came across an issue and flagged it right away

Operator section

Operator: We have taken charge of your complaint

Comment

Update Hide

SnapAdvisor

Current chat: debug0

Visualize references

Come creo una dashboard?

Per creare una dashboard, puoi utilizzare la piattaforma Snap4City. La dashboard si compone di un insieme di widget grafici che possono essere impostati separatamente assegnando una serie di parametri, come origine dati, dimensioni, colori, forma, font, allarmi, relazioni con altri, ecc. (SOURCE: Snap4 City per la creazione di Smart City Control Room, SCCR). Inoltre, la piattaforma offre la possibilità di creare vere e proprie applicazioni interattive, multipagina/multidashboard, e non semplici storie monopagina da scorrere. Puoi anche condividere la dashboard con altri utenti anche fuori dalla Smart City Control Room tramite canali autenticati e protetti in HTTPS, in accordo al GDPR (SOURCE: Snap4 City per la creazione di Smart City Control Room, SCCR). Per vedere alcuni esempi di dashboard, puoi visitare il sito https://www.snap4city.org/dashboardSmartCity/view/index.php?iddashboard=MjU0Mg= (SOURCE: Snap4 City 1st Overview v4 8 annot). Tuttavia, non ho trovato informazioni dettagliate sulla procedura di creazione di una dashboard. Se hai bisogno di ulteriore assistenza, ti consiglio di contattare direttamente il team di supporto di Snap4City. Non so dirti altro in merito.

Write a message...

Other Snap4Parking Solutions



Road Parking

Parking Conditions Monitoring

Wed 23 Oct 16:24:41

- Status of Slots
- Types of Slots
- As Pins
- Geolocation
- Types of Parking Zones
- Fines on Parking Zones
- Parking Meters
- Recharge Stations
- Parking Structures

Parking Slots

+
-
19

Parking Status

- Free
- Busy
- Busy bluetooth
- Busy authorized
- Busy paid user
- Busy paid anon
- Busy paid anon over
- To be fined
- Fined
- Forbidden
- Do not care

Parking KPIs

Select Group: Alberti 11

Group capacity : 26

Grouped by slot type

Event Car

- Free Slots: 4/22
- Busy Slots: 2/22
- Busy Bluetooth Slots: 3/22
- Busy Authorized Slots: 5/22
- To Be Fined Slots: 5/22
- Fined Slots: 1/22
- Do Not Care Slots: 2/22

Event Moto

- Free Slots: 0/4
- Busy Slots: 1/4
- Busy Authorized Slots: 0/4
- To Be Fined Slots: 1/4
- Fined Slots: 1/4

Management

DISIT:OrionUNIFI:METRO1095 - VehicleFlow

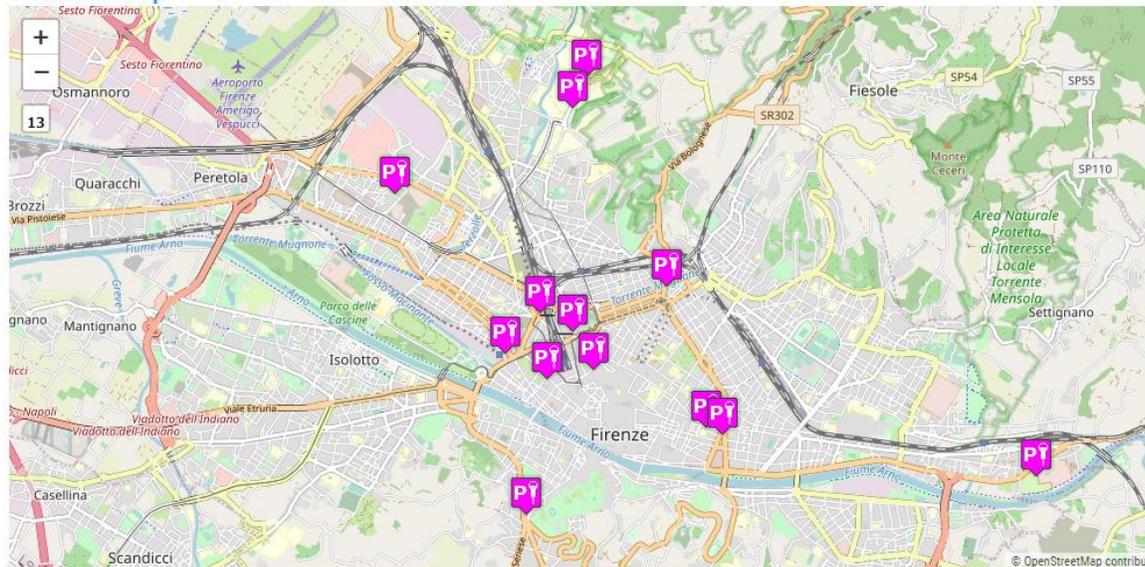
8m



Selector

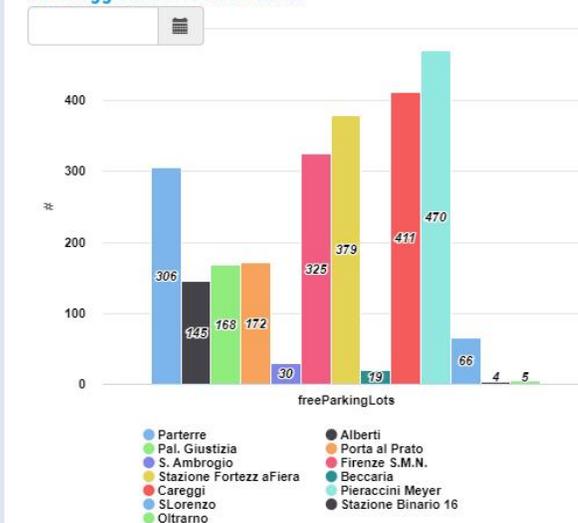
- Parterre >
- Piazza Alberti >
- Palazzo di Giustizia >
- Porta al Prato >
- S. Ambrogio >
- Stazione Firenze S.M.N. >
- Stazione Fortezza Fiera >
- Piazza Beccaria >

Selector - Map



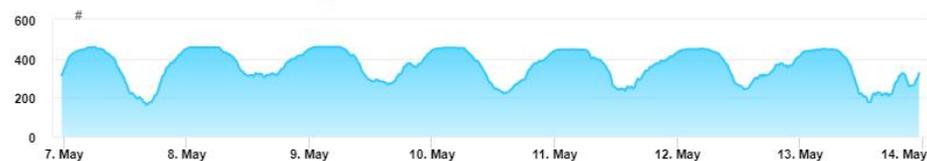
Parcheggi: Numero Posti Liberi

4m



Stazione Firenze S.M.N. - Free Parking Lots

9m



Andamento Posti Occupati

4m



Snap4ISPRA Parking

Parking 58C

Fri 6 Oct 18:33:41

A1_1	A1_2	A1_3	A1_4	A1_5	A1_6	A1_7	A1_8	A1_9	A1_10	A1_11	A1_12	A1_13	A1_14	A1_15	A1_16	A1_17	A1_18	A1_19	A1_20	A1_21	A1_22	A1_23	A1_24	A1_25	A1_26	A1_27	A1_28	A1_29	A1_30	A1_31	A1_32	A1_33	A1_34	A1_35	A1_36	A1_37	A1_38	A1_39	A1_40	A1_41	A1_42	A1_43	A1_44	A1_45	A1_46	A1_47	A1_48	A1_49	A1_50	A1_51	A1_52	A1_53	A1_54	A1_55	A1_56	A1_57	A1_58	A1_59	A1_60	A1_61	A1_62	A1_63	A1_64	A1_65	A1_66	A1_76	A1_77	A1_78	A1_79	A1_80	A1_81	A1_82	A1_83	A1_84	A1_85	A1_67	A1_68	A1_69	A1_70	A1_71	A1_72	A1_73	A1_74	A1_75
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Capacity 9m **Free Slots** 9m **Occupanc...** 9m

85# 74# 12.9%

OverparkingSlots 9m **Unknown State Slots** 9m

0# 3#

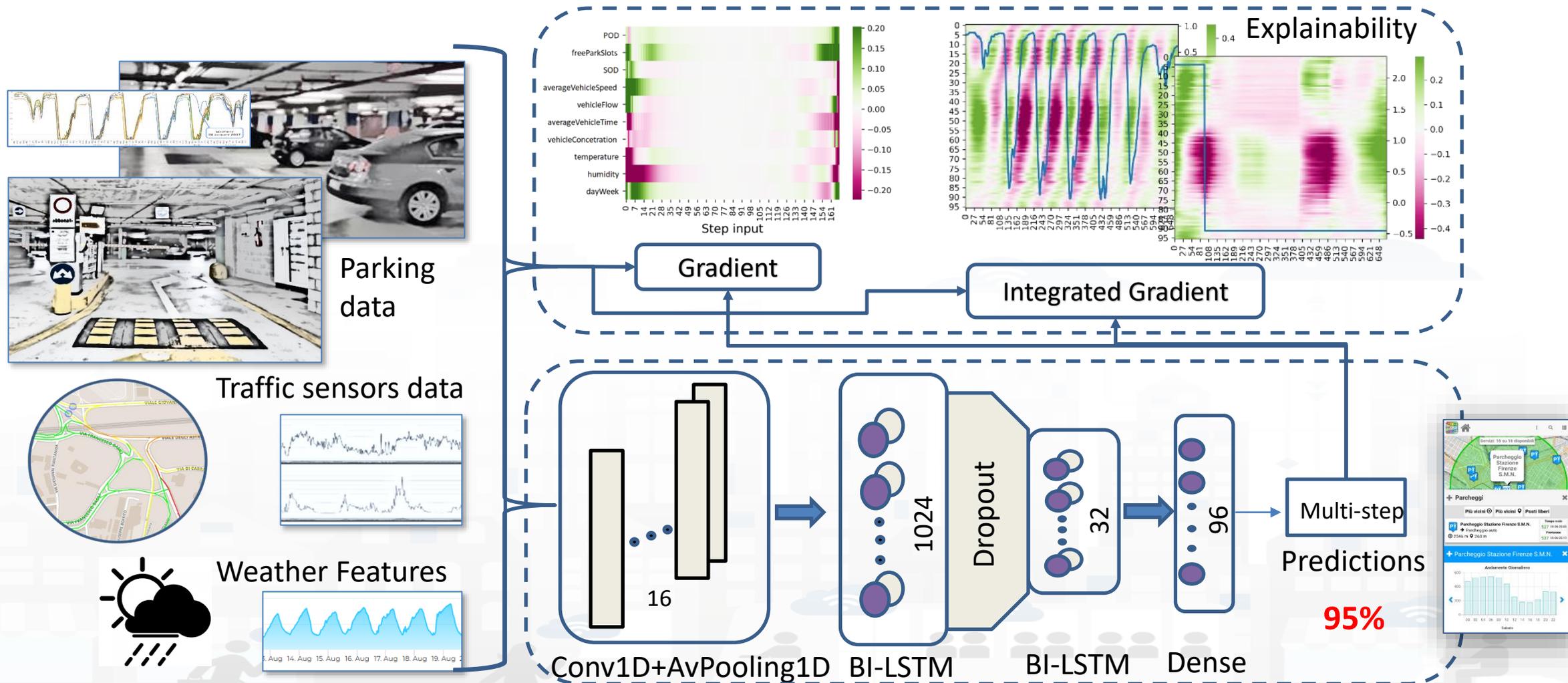
Free Slots Weekly Time Trend Compare 9m

Percentage Of Occupancy Daily Time Trend Com... 9m

Overparking Weekly Time Trend Compare 9m

Time Trend Comparison 4m

Predictions: Deep Learning AI to surely Park!



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



Be smart in a SNAP!



CONTACT

DISIT Lab, DINFO: Department of Information Engineering
Università degli Studi di Firenze - School of Engineering

Via S. Marta, 3 - 50139 Firenze, ITALY
<https://www.disit.org>

www.snap4city.org

Email: snap4city@disit.org

Office: +39-055-2758-515 / 517
Cell: +39-335-566-86-74
Fax.: +39-055-2758570



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