



Be smart in a SNAP!



Co-financed by the Connecting Europe Facility of the European Union

Understanding traffic flows to improve air quality

III° evento di disseminazione in toscana del progetto TRAFAIR

TRAFAIR, RISULTATI RAGGIUNTI
Il traffico urbano e la qualità dell'aria
attraverso l'analisi dei dati

<https://www.disit.org>

<https://www.snap4city.org>



UNIVERSITÀ
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DINFO
DIPARTIMENTO DI
INGEGNERIA
DELL'INFORMAZIONE

DISIT
DISTRIBUTED SYSTEMS
AND INTERNET
TECHNOLOGIES LAB



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MODENA E REGGIO EMILIA



REGIONE
TOSCANA



Comune di Modena



CONCELLO DE
SANTIAGO

SCALABLE SMART ANALYTIC APPLICATION BUILDER FOR SENTIENT CITIES



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CUI2000

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Be smart in a SNAP!



Inquinamento e mobilità sostenibile: l'importanza dei dati per la gestione della città

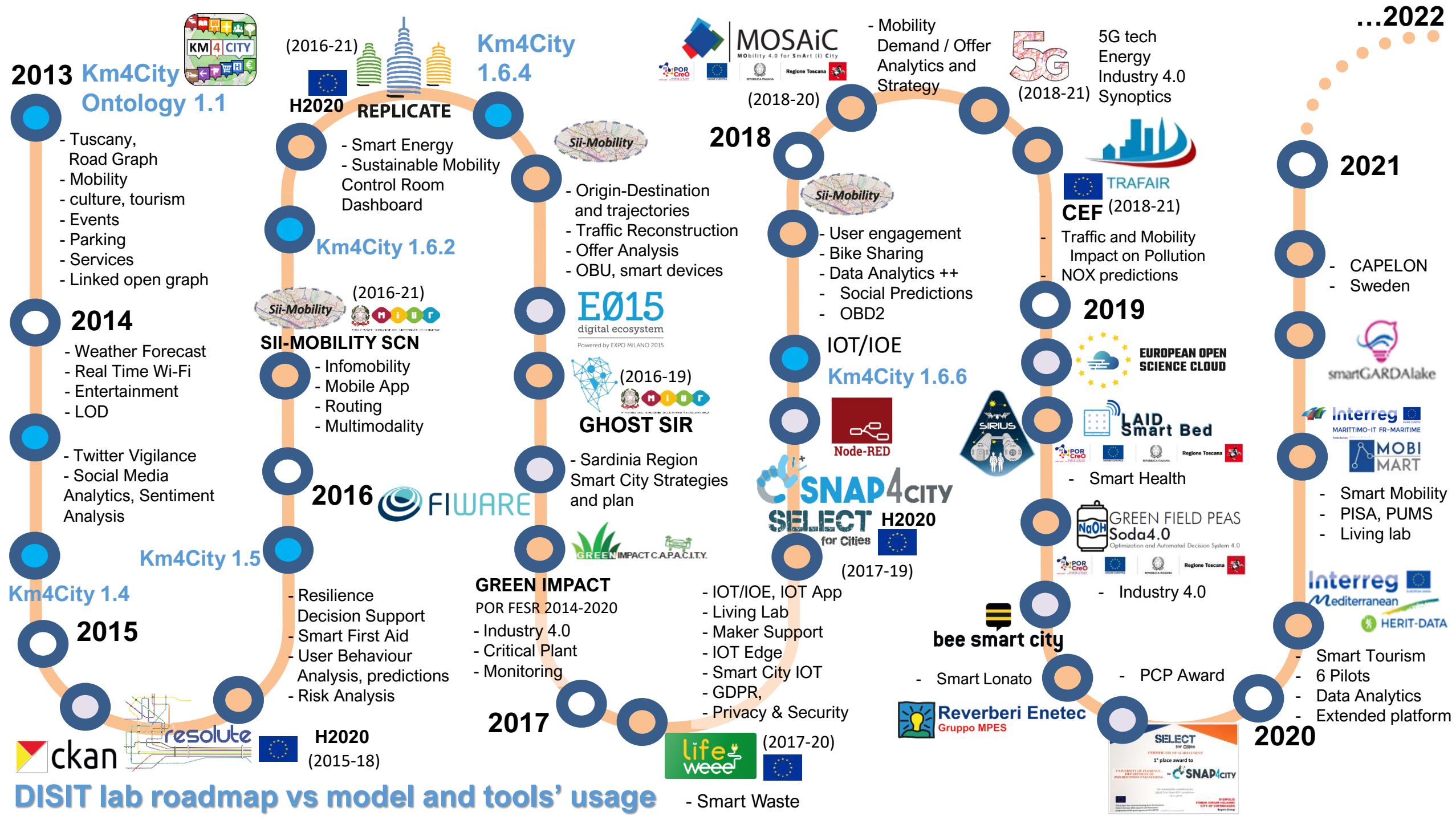
<https://www.disit.org>

<https://www.snap4city.org>



SCALABLE SMART ANALYTIC APPLICATION BUILDER FOR SENTIENT CITIES





TRAFAIR: Relazione tra Inquinamento e Qualità dell'Aria

- <http://trafair.eu/> INEA CEF, TELECOM PROJECT

- Obiettivo principale:

- Comprendere quanto l'inquinamento incide sulla qualità dell'aria che i cittadini respirano in modo da per regolare correttamente la mobilità urbana e dare a tutti la consapevolezza di vivere in una città sempre più tecnologica e orientata alla salute dei cittadini

- Metodologie / azioni adottate:

- Raccolta dati provenienti da sensori del traffico e dell'aria
 - Studio dell'inquinamento urbano, proveniente principalmente da eventi di traffico
 - Studio degli indici di qualità dell'aria, che in genere dipende dalle misure per l'inquinamento: NO, NO₂, CO, O₃
 - Utilizzo di metodi matematici per fare previsioni e deduzioni
 - Utilizzo delle risorse High Performance Computing (HPC) per gestire un problema di Big Data
 - Divulgazione delle informazioni e dei risultati raggiunti a cittadini e pubblica amministrazione tramite strumenti personalizzati



Snap4City

[LOGIN](#)

- Dashboards (Public)
- Knowledge and Maps ▾
- Micro Applications
- External Services
- Data Set Manager: Data Gate
- Resource Manager
- Development Tools ▾
- Management ▾
- Help and Contacts ▾
- Documentation and Articles ▾
- KM4City portal
- DISIT Lab portal

www.snap4city.org

Home Partners and Interoperability Tools ▾ Tutorials and Videos ▾ Blog ▾ Contributions ▾



Home / Snap4City - scalable Smart aNalytic APplication builder for sentient Cities

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Snap4City - scalable Smart aNalytic APplication builder for sentient Cities

 [CLICK FOR NEWS](#) Smart Cities need to set up a flexible Living Lab to cope with the city evolution in terms of services and city users' needs and sustainability. Snap4City solution (<https://www.snap4city.org>) provides a flexible method and solution to quickly create a large range of smart city applications exploiting heterogeneous data and enabling services for stakeholders by IOT/IOE, data analytics and big data technologies. Snap4City applications may exploit multiple paradigms as data driven, stream and batch processing, putting co-creation tools in the hands of: (i) Smart Living Lab users and developers a plethora of solutions to develop applications without vendor lock-in nor technology lock-in, (ii) final users customizable / flexible mobile Apps and tools, (iii) city operators and decision makers specialized / sophisticated city dashboards and IOT/IOE applications for city status monitoring, control and decision support. Snap4City satisfies all the expected requirements of Select4Cities challenge PCP and much more, and it is 100% open source, scalable, robust, respects user needs and privacy; provides MicroServices and easily replaceable tools; compliant with GDPR; provides a set of tools for knowledge and living lab management, and it is compliant with more than 60 protocols including end-to-end encrypted communication. Snap4City is an official platform of FI-WARE, an official library of JS Foundation Node-RED, registered on EO15, present on EOSC marketplace, and BeeSmartCity MarketPlace, etc.

 Training Snap4City:
Dal Dati alla Città Senziente, Smart City and IOT
- 25 Giugno 2019
- 9 Luglio 2019
- 23 Luglio 2019
Scuola di Ingegneria, Università di Firenze
Via Santa Maria 3, Firenze
[PROGRAMMA](#)

 **SNAP4APPLIANCE**
Virtual Machines ready to use for
Smart City and IOT Applications
[DOWNLOAD](#)

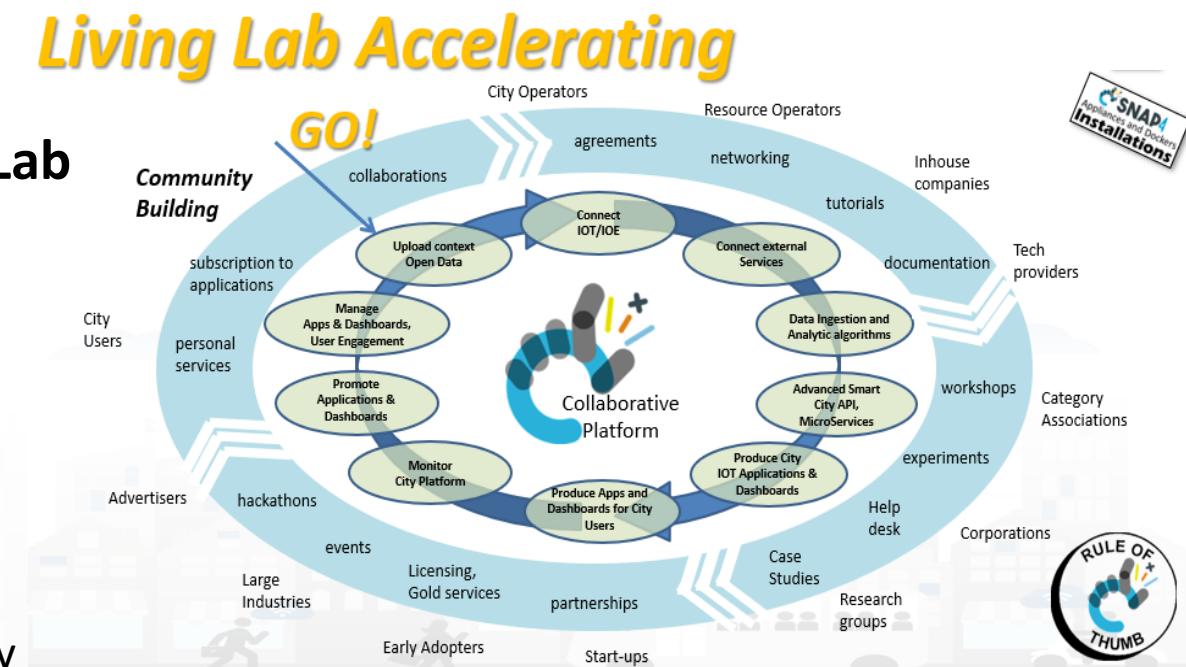
 We expect you at Stand 120,
Hall P2, Level 0, Street A
Smart City Expo World
Congress 2018
13-15 November 2018,
Barcelona, Gran Via Venue

 **SMARTCITY**
EXPO WORLD CONGRESS
**EUROPEAN OPEN
SCIENCE CLOUD
MARKETPLACE**

Snap4City improves city services, security and safety by offering a sustainable solution for smart city and **Living Lab**, thus attracting industries and stakeholders. Snap4City is capable to keep under control the real time city evolution, reading concurrent computing and controlling key performance indicators (KPI) detecting unexpected evolutions, performing

Smart City e Workflow

- Raccolta dei requisiti:
 - Quali sono i servizi che si vogliono ottenere?
 - Per quale tipologia di utenti finali?
 - Quali dati si hanno a disposizione?
- **Coinvolgimento delle persone: il concetto di Living Lab**
 - Pubblica Amministrazione, Regione, etc.
 - Aziende pubbliche e private che forniscono servizi alla città
 - Centri di ricerca
 - Cittadini
- Pianificazione del lavoro:
 - Costi, Tempi, nuove installazioni (se necessarie)
- **Raccolta e gestione Dati:**
 - Raccolta dati e relativa ingestione nella piattaforma Snap4City
 - Controllo dello stato dei dati in real time
- Analisi Dati per il raggiungimento dei servizi finali
- **Realizzazione dei Servizi finali:**
 - Mobile App, Totem, Dashboards, etc.





per TRAFAIR a Livorno, Firenze, Pisa: SNAP4City

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
- Notificator
- Data Inspector
- My Data, KPI, POI
- My Groups of Entities
- 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

www.snap4city.org

Dashboard Content Structure Appearance People Modules Configuration Reports Help

Add content Find content Add user Antwerp Edit view Top search phrases People

Home How and Why To Use it Tools Tutorials and Videos

- Snap4City (<https://www.snap4city.org>) è una piattaforma Big Data, è GDPR compliant, è piattaforma ufficiale **EOSC**, mette a disposizione strumenti e servizi cloud che permettono la creazione di: ambienti di lavoro collaborativi, Dashboards, processi di aggregazione (ETL, IoT Applications, etc.) e analisi dati (R, etc.), fornisce un numero elevato di dati storici e real time, su Toscana e altre aree
- Snap4City è **presente** in svariate regioni italiane ed europee e in vari progetti nazionali ed europei, aggrega semanticamente molti tipi differenti di dati provenienti da Smart Cities (e relative aree circostanti):
 - Livorno, Firenze, Pisa, Helsinki, Anversa, Cagliari, Lago di Garda, Venezia, Bologna, **Toscana**, etc.
- Snap4City aggrega semanticamente i dati in conformità con la multi-ontologia KM4City

Trafair, Snap4City (C), 9 ottobre 2020

7

Snap4City:

Strumenti di Ingestion

- Strumenti per la raccolta dati disponibili su Snap4City:
 - IoT Applications (integrazione del tool NODE-RED)
 - Gestione dati statici, periodici, real time (Protocolli PULL e PUSH)
 - ETL processes (integrazione del tool Pentaho Kettle nella Piattaforma):
 - Gestione di dati che cambiano periodicamente nel tempo (Protocolli di tipo PULL)

IoT Applications

ETL

Lamma previsioni weather

Node-RED

msg Object
 ↳ _msgid: "2430d6a1-2f7b-4", topic: "", payload: object, filename: "TRAFALIR_FIRENZE.csv", localfilename: "TRAFALIR_FIRENZE.csv" 4/19/2020, 12:43:48 node: 7ff0f8d7d04
msg Object
 ↳ _msgid: "429efcfa3-2f7b-4", topic: "", payload: object, serviceid: "http://127.0.0.1:8080/resource/iot/unionToscana-weather/forecast/weatherForecast_IOT", attributes: array[10]
 ↳ 0: object
 ↳ 1: object
 ↳ valueName: "airForecast-87%"
 ↳ value: 73.38
 ↳ valueUpdate: "2020-10-08T17:00:00Z"
 ↳ valueEndDate: "2020-10-08T17:00:00Z"
 ↳ 2: object
 ↳ 3: object
 ↳ 4: object
 ↳ 5: object
 ↳ 6: object
 ↳ 7: object
 ↳ 8: object
 ↳ 9: object
 ↳ filename: "TRAFALIR_FIRENZE.csv"
 ↳ localfilename: "TRAFALIR_FIRENZE.csv"
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 ↳ 2: object
 ↳ 3: object
 ↳ 4: object
 ↳ 5: object
 ↳ 6: object
 ↳ 7: object
 ↳ 8: object
 ↳ 9: object
 ↳ headers: object
 ↳ 0: object
 ↳ 1: object
 ↳ _msgid: "2430d6a1-2f7b-4", topic: "", payload: object, filename: "TRAFALIR_FIRENZE.csv", localfilename: "TRAFALIR_FIRENZE.csv" 4/19/2020, 12:43:48 node: 7ff0f8d7d04

TRAFAIR:

dati provenienti da sensori del traffico

- Sensori del traffico:
 - Dati provenienti dall’Osservatorio Regionale
<http://www501.regione.toscana.it/osservatoriotrasporti>
 - Tipologia di dato:
 - Posizione dei sensori (fissa)
 - Velocità veicoli equivalenti
 - Frequenza di osservazione:
 - 10 minuti

The screenshot shows a web page titled "Sito di Supporto ai Lavori di Gestione e Aggiornamento delle Banche Dati dell’Osservatorio Regionale per la Mobilità ed i Trasporti". The page features a logo for "MARITTIMO - IT FR - MARITIME TOSCANA - LIGURIA - SARDEGNA - CORSE" and the tagline "La Cooperazione al cuore del Mediterraneo". It includes sections for "Consultazione" (with links to "Dati, Metadati, Specifiche"), "Gestione certificati" (with links to "Richiesta certificato", "Rinnovo certificato", and browser instructions for "Internet Explorer" and "Firefox"), "Comunicazioni TPL" (with links to "Upload Orari TPL", "Download Orari TPL", "Validità Orari TPL", "Upload altri Dati TPL", "Storico invii altri Dati TPL", "Validità altri Dati TPL", "Ricavi e Sussidi", and "Atti d’obbligo"), and an "Area riservata" (with links to "Gestione Grafi", "Documentazione di progetto", "Reportistica", and "Amministrazione"). A photograph of a modern blue and white train is displayed next to the logo.

TRAFAIR: dati



provenienti da sensori dell'aria (low-cost) e previsioni del tempo

- Sensori dell'aria:
 - Dati provenienti da Sensori CNR-IBE (Open Data)
 - Tipologia di dato:
 - Posizione dei sensori (fissa)
 - Dati: **CO, NO, NO₂, O₃, PM_{2.5}, PM₁₀**, etc.
 - Frequenza di osservazione:
 - Circa 3 minuti
 - Dati relativi alle predizioni orarie Lamma:
 - Tipologia di dato:
 - Vento: velocità (m/s) e direzione
 - Radiazione solare (W/m²)
 - Temperatura (gradi Centigradi)
 - Predizioni per le prossime 84h, aggiornate con frequenza giornaliera

The collage illustrates the data sources used in TRAF AIR. It includes:

- CNR-Istituto di Biometeorologia - Sede di Firenze:** Shows a field of red poppies and the institute's website.
- CLIMA URBANO:** Shows a map of Florence with sensor locations (SMART1, SMART2, SMART3, SMART4) and various sensor images.
- LaMMA Meteo&Mare:** Shows a weather map of Italy with current alerts and a forecast for the next 84 hours.

TRAFAIR: Raccolta dati provenienti da sensori del traffico e previsioni del tempo

- ETL/IoTApp per le informazioni 'statiche' (frequenza di cambiamento Bassa)
 - *Triples creation (KM4City multi-ontology) starting from the json data source file*
- ETL/IoT App per le informazioni periodiche:
 - Ogni 10 minuti per i dati dei sensori traffico
 - Giornaliera per i dati Lamma (previsioni meteo)

The image displays several screenshots of the Snap4City platform interface:

- Top Right:** A screenshot of the Spoon - Main interface showing a workflow for "Triples creation (KM4City multi-ontology) starting from the json data source file". It includes a "Json Input" step, "Get variables", "Split pos", "HTTP Client 3", "Create Triples - IBIMET", and a "Final Triples" step.
- Middle Left:** Three overlapping windows for "Edit device - LammaPredMeteo_FI". The top window shows static attributes like Name (LammaPredMeteo_FI), Model (SDF3C9A6B35F), and Mac Address (0e). The middle window shows values for "weather_preview" (Locality: FIRENZE, Region: FI). The bottom window shows values for "dateObserved" (time: false, Data Type: Ok, Value Name: Ok, Refresh rate: 86400).
- Middle Center:** A screenshot of the Snap4City dashboard showing various IoT applications and their status.
- Bottom Right:** A screenshot of the Node-RED flow for "Lamma previsioni weather". It shows a complex flow involving multiple nodes like "timestamp", "http", "delay", and "http request" to process traffic and weather data.

Snap4City: Realizzare IoTApp

- Ogni utente registrato alla piattaforma può realizzare la Propria IoTApp facendo uso dei dati pubblici e disponibili nella piattaforma, inserendo dati personali
- Caso d'uso: Lamma weather predictions - registrazione su Broker

The screenshot shows the 'IOT Devices Management' section of the Snap4City platform. It displays a table with columns: IOT Device, IOT Broker, Device Type, Model, Ownership, Organization, Owner, Status, Edit, Delete, and Location. There are four tabs at the top: 1731 DEVICES (yellow), 1720 ACTIVE (teal), 489 PUBLIC (red), and 1210 PRIVATE (green). A search bar at the top right contains the text 'Lamma'. Below the table, there's a detailed view of a specific device entry:

IOT Broker URL: 192.168.1.47	
Device Type: weather_preview	
Protocol: mqtt	
Model: Lamma_prev_meteo	
Longitude: 10.31261444	
Latitude: 43.54952299	
Gateway/Edge Type:	
Device Uri: http://www.disit.org/km4city/resource/iot/orionToscana-UNIFI/Toscana/LammaPredMeteo_LI	
Created on: 2020-05-19 19:17:08	

Below this, a message box shows a Node-RED flow titled 'Lamma prevision weather'.

```

graph TD
    In[Input] --> Stream1[Streaming U1]
    Stream1 --> TrAFair_FIRENZE[TrAFair_FIRENZE.csv]
    TrAFair_FIRENZE --> IoT1[IoT Device adapting]
    IoT1 --> Http1[Http request]
    Http1 --> Out1[Output]
    In[Input] --> Stream2[Streaming U2]
    Stream2 --> TrAFair_PEA[TrAFair_PEA.csv]
    TrAFair_PEA --> IoT2[IoT Device adapting]
    IoT2 --> Http2[Http request]
    Http2 --> Out2[Output]
    In[Input] --> Stream3[Streaming U3]
    Stream3 --> TrAFair_UNINFORI[TrAFair_UNINFORI.csv]
    TrAFair_UNINFORI --> IoT3[IoT Device adapting]
    IoT3 --> Http3[Http request]
    Http3 --> Out3[Output]
  
```

The screenshot shows a Node-RED flow titled 'Lamma prevision weather'. The flow consists of several nodes: an 'input' node, three 'streaming' nodes (U1, U2, U3) connected to 'TrAFair' CSV files, three 'IoT Device adapting' nodes, and three 'Http request' nodes. Each 'Http request' node is connected to an 'output' node. The flow is designed to process streaming data from three different sources (TrAFair_FIRENZE, TrAFair_PEA, TrAFair_UNINFORI) and send requests to IoT brokers using Node-RED's built-in MQTT and HTTP components.

Snap4City: Gestione Dati

- Data Ingestion Tool:
 - Monitoraggio in tempo reale della qualità del dato
- Stanno arrivando correttamente i dati dai sensori del traffico?
- Nel caso di problemi chi posso avvertire?

Snap4City

User: michela_toscana, Org: Toscana
Role: ToolAdmin, Level: 3

Logout

My Snap4City.org

Dashboards (Public)

My Dashboards in All Org

My Dashboards of My Organization

My Dashboards in My Organization

Extra Dashboard Widgets

Notifier

Data, my Data, OpenData ▾

Data Inspector

My Data, KPI, POI

My Groups of Entities

Data Set Manager: Data Gate

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

Settings

User Management and Auditing

Help and Contacts

Documentation and Articles

My Profile

Last Value

15.9

Data Inspector

Map

Now displaying in Standard Mode
Switch to the Synoptic Mode to select MyKPIs and sensors that you need for your synoptic
[Switch from the Standard Mode](#)

Single data widgets

Multi data widgets

Map Controls:

FilterMap GPSUser GPSOn

Data sources

All selected (1)	All selected (38)	All selected (96)	All selected (1458)	All selected (42)	All selected (27)	All selected (2)			
High-Level type	Nature	Subnature	Value Type	Value Name	Data Type	Value Unit	Last Date	Last Value	Healthiness
Sensor	Mobility and Transport	SensorSite	concentration	METRO1	float	s	2020-10-04 09:20:00	20.23725	202
Sensor	Mobility and Transport	SensorSite	averageSpeed	METRO1	float	car/km	2020-10-04 09:20:00	2.083774	202
Sensor	Mobility and Transport	SensorSite	vehicleFlow	METRO1	float	km/h	2020-10-04 09:20:00	57.83732	202
Sensor	Mobility and Transport	SensorSite	avgTime	METRO1	float	s	2020-10-04 09:20:00	120.423164	202
Sensor	Mobility and Transport	SensorSite	concentration	METRO10	float	car/km	2020-10-04 09:20:00	8.900004	202
Sensor	Mobility and Transport	SensorSite	averageSpeed	METRO10	float	km/h	2020-10-04 09:20:00	0.9952625	202
Sensor	Mobility and Transport	SensorSite	vehicleFlow	METRO10	float	car/h	2020-10-04 09:20:00	60.26963	202
Sensor	Mobility and Transport	SensorSite	avgTime	METRO10	float	s	2020-10-04 09:20:00	60.0	202

Time Trend

Data sources Details

Device Values Healthiness Process Image Licensing

GPS Coordinates: 43.79534912, 11.15452357

High-Level Type: Sensor

Nature: Mobility and Transport

Subnature: SensorSite

Data sources Details

Device Values Healthiness Process Image Licensing

Last Date: 2020-10-04 09:20:00

Last Value: 120.423164

Value Type	Healthy	Delay (s)	Reason	Healthiness Criteria	Refresh Rate (s)	Data type	Unit	Value	Time Trend
thresholdPerc	green	564	undefined	refresh_rate	600	float	%	Not Available	VIEW
speedPercentile	green	564	undefined	refresh_rate	600	float	%	Not Available	VIEW
occupancy	green	564	undefined	refresh_rate	600	float	%	Not Available	VIEW
concentration	green	564	undefined	refresh_rate	600	float	%	Not Available	VIEW
avgTime	green	564	undefined	refresh_rate	600	float	%	Not Available	VIEW
averageSpeed	green	564	undefined	refresh_rate	600	float	%	Not Available	VIEW
avgDistance	green	564	undefined	refresh_rate	600	float	%	Not Available	VIEW
vehicleFlow	green	564	undefined	refresh_rate	600	float	%	Not Available	VIEW

Data sources Details

Device Values Healthiness Process Image Licensing

Value Type: vehicleFlow

Healthiness Criteria: refresh_rate

Delay: 661

Data Type: float

Period: 600

Last Update:

Healthiness Criteria 1: (2020-10-04 13:50:59) true

Healthiness Criteria 2: (2020-10-04 09:20:00) false

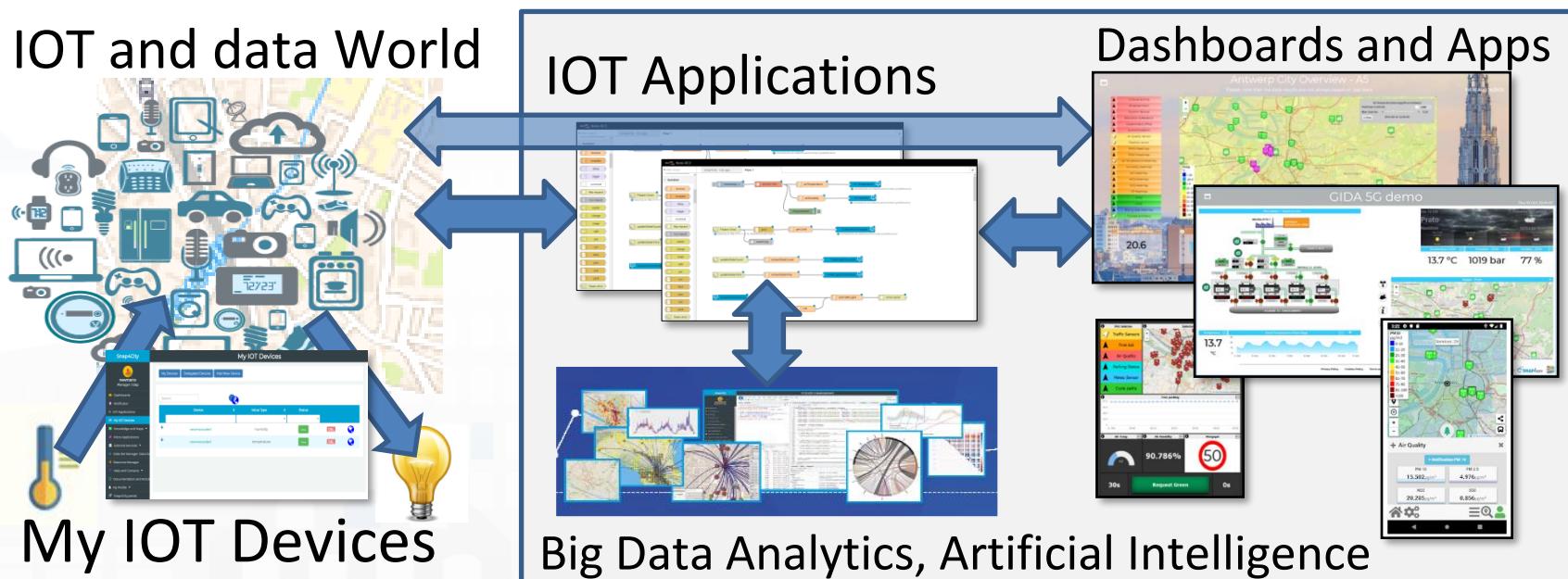
Cancel

Snap4City:

Builder of Sentient Cities Solutions



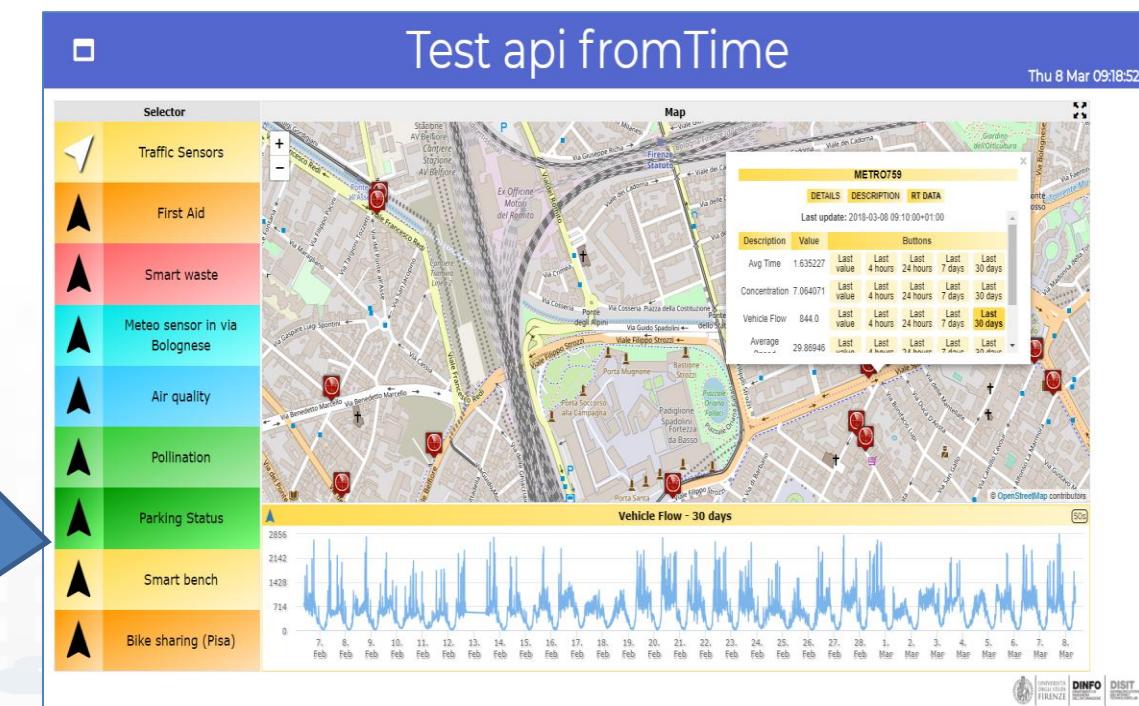
Dashboards with data driven IOT Applications enforcing intelligence



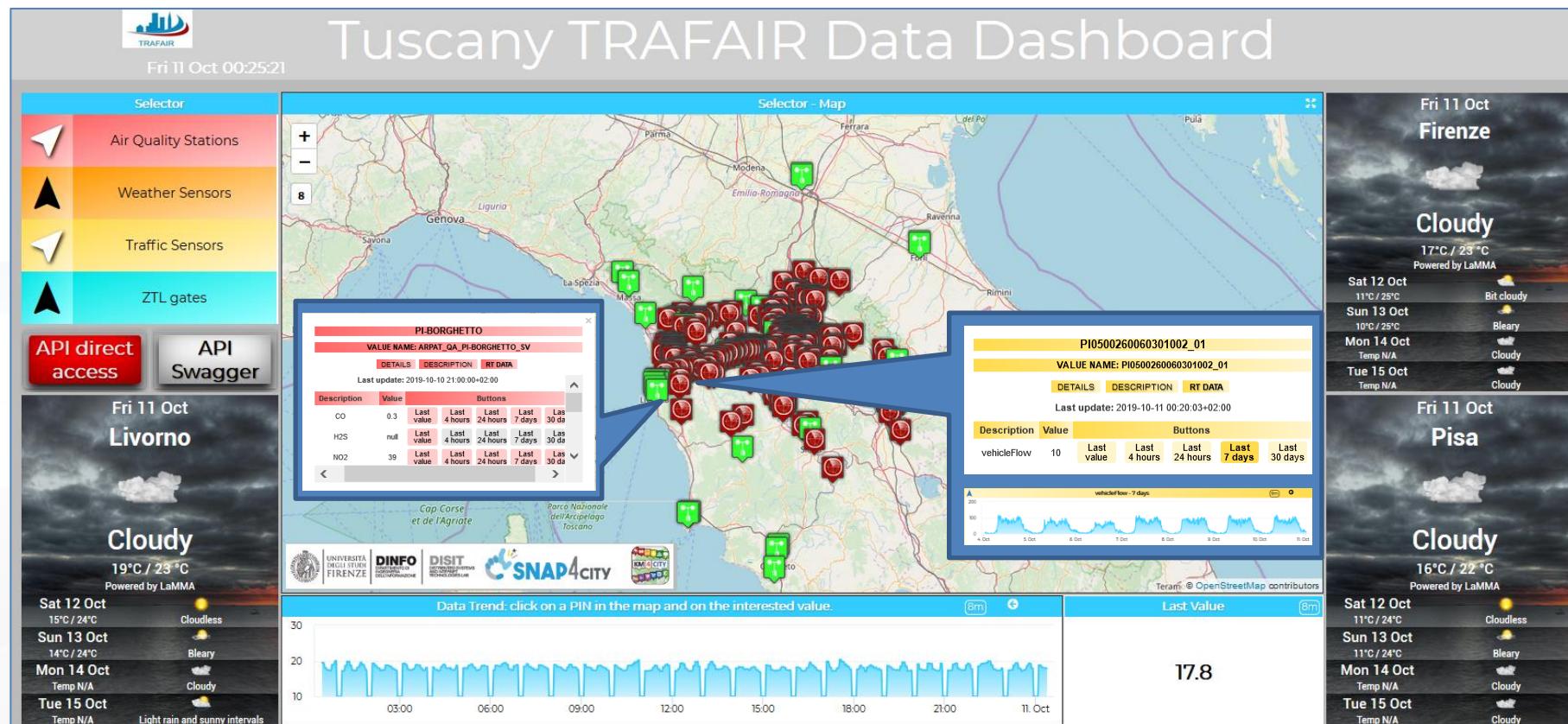
Snap4City: Realizzazione Dashboards

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

Dashboard Wizard



TRAFAIR Data Dashboard: Pisa, Firenze, Livorno



TRAFAIR Data Dashboard: Pisa, Firenze, Livorno

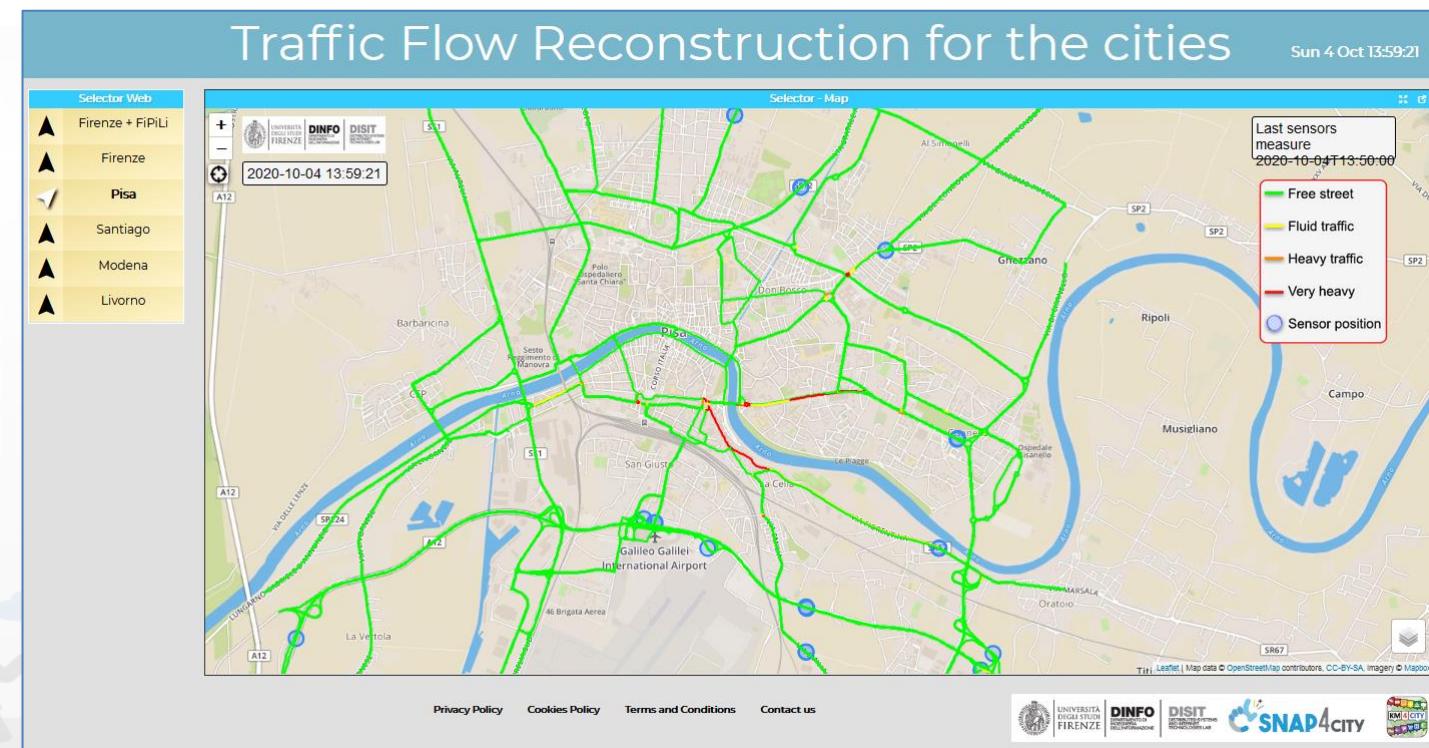
<https://www.snap4city.org/dashboardSmartCity/view/index.php?iddashboard=MjY4MQ==>



Disit Traffic Model Dashboard - Pisa

- Scopo del modello:
 - Migliorare la mobilità urbana attraverso un modello generale e auto-adattivo per una ricostruzione del traffico a basso costo in tempo reale in ogni posizione della città
- Il modello si basa su dati provenienti da:
 - Reti stradali per ottenere le infrastrutture stradali e le restrizioni al traffico (Open Street Map, Open Data delle città)
 - Sensori di traffico (Regione Toscana e Comuni)

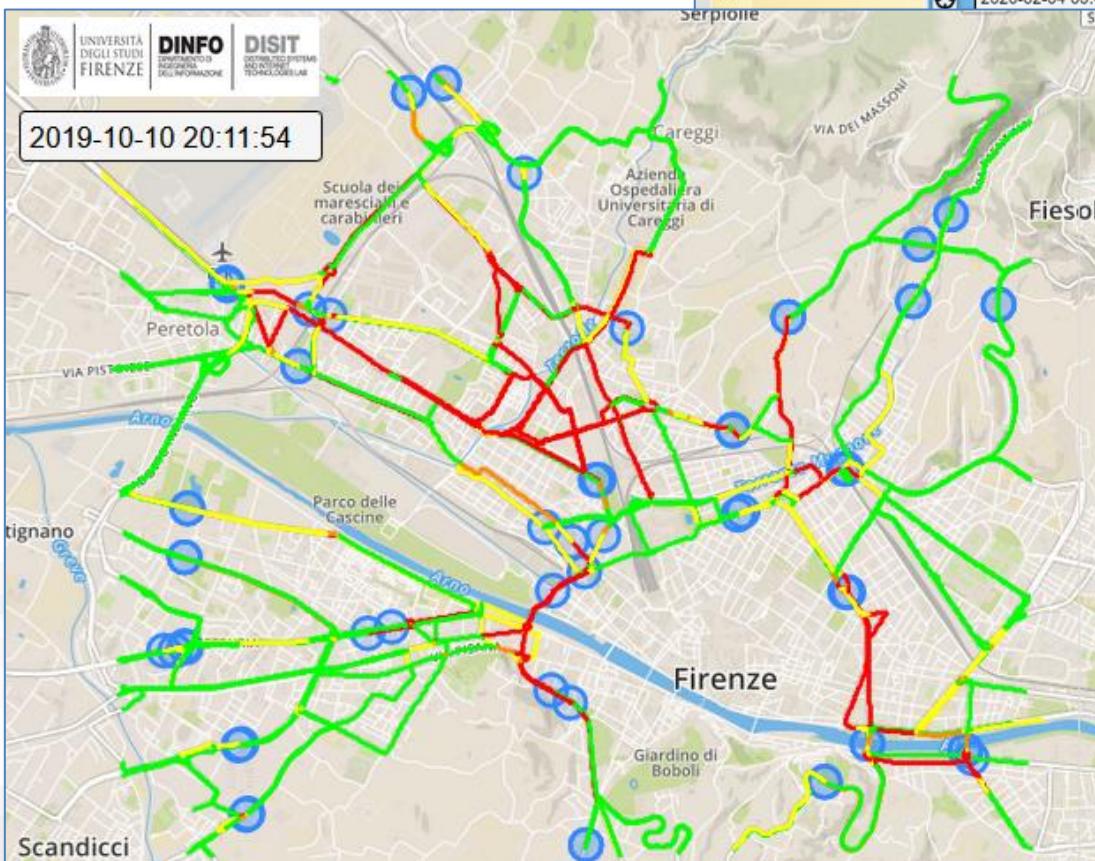
<https://www.snap4city.org/dashboardSmartCity/view/index.php?iddashboard=MTc5NQ==>



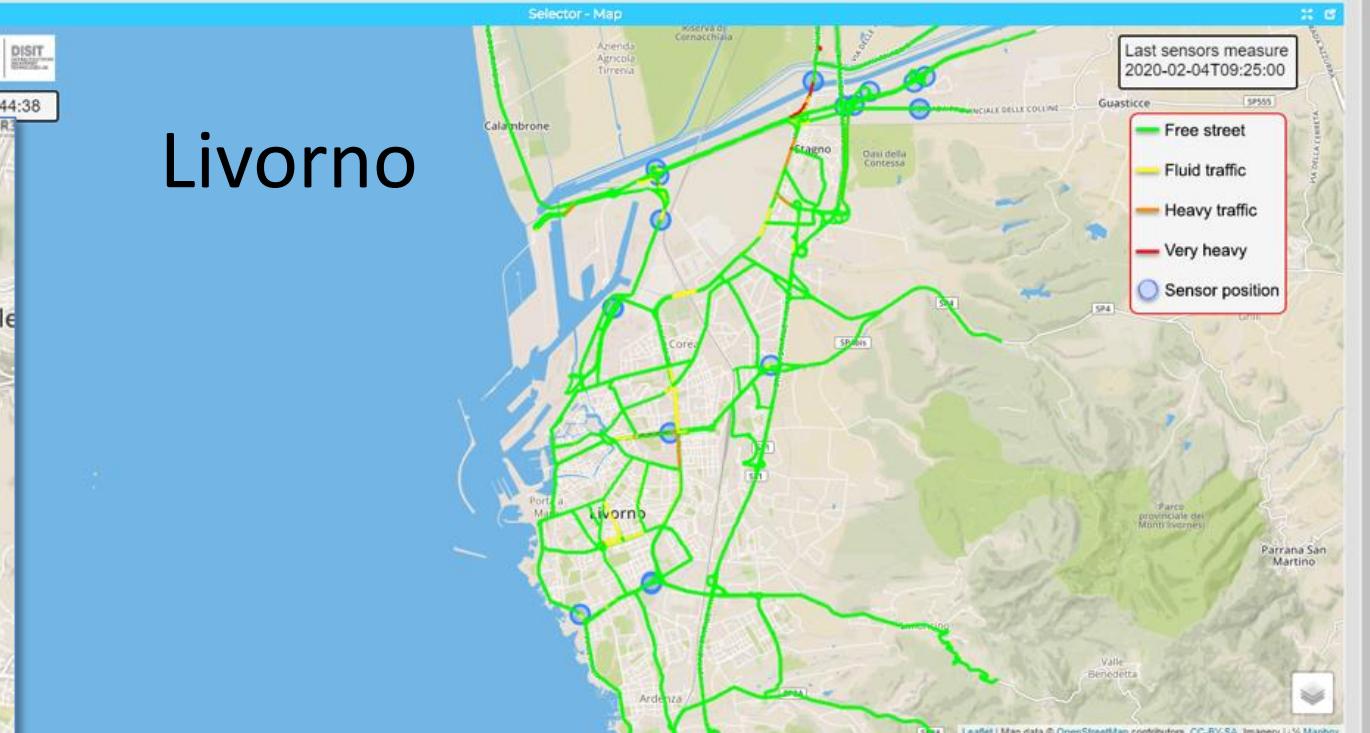
Dashboards: Firenze, Livorno

<https://www.snap4city.org/dashboardSmartCity/view/index.php?iddashboard=MTc5NQ==>

Firenze



Livorno



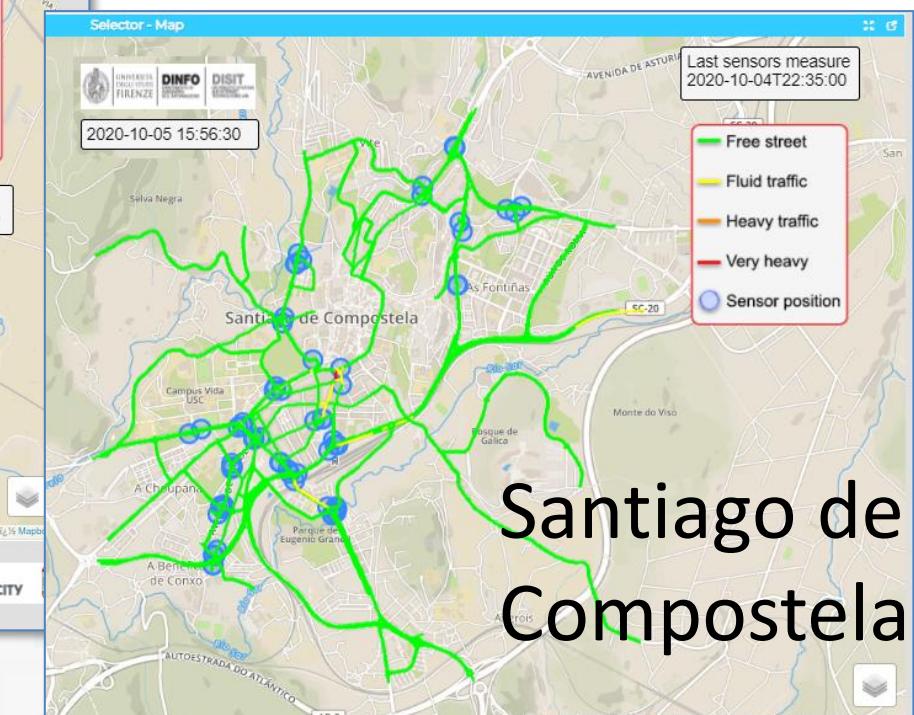
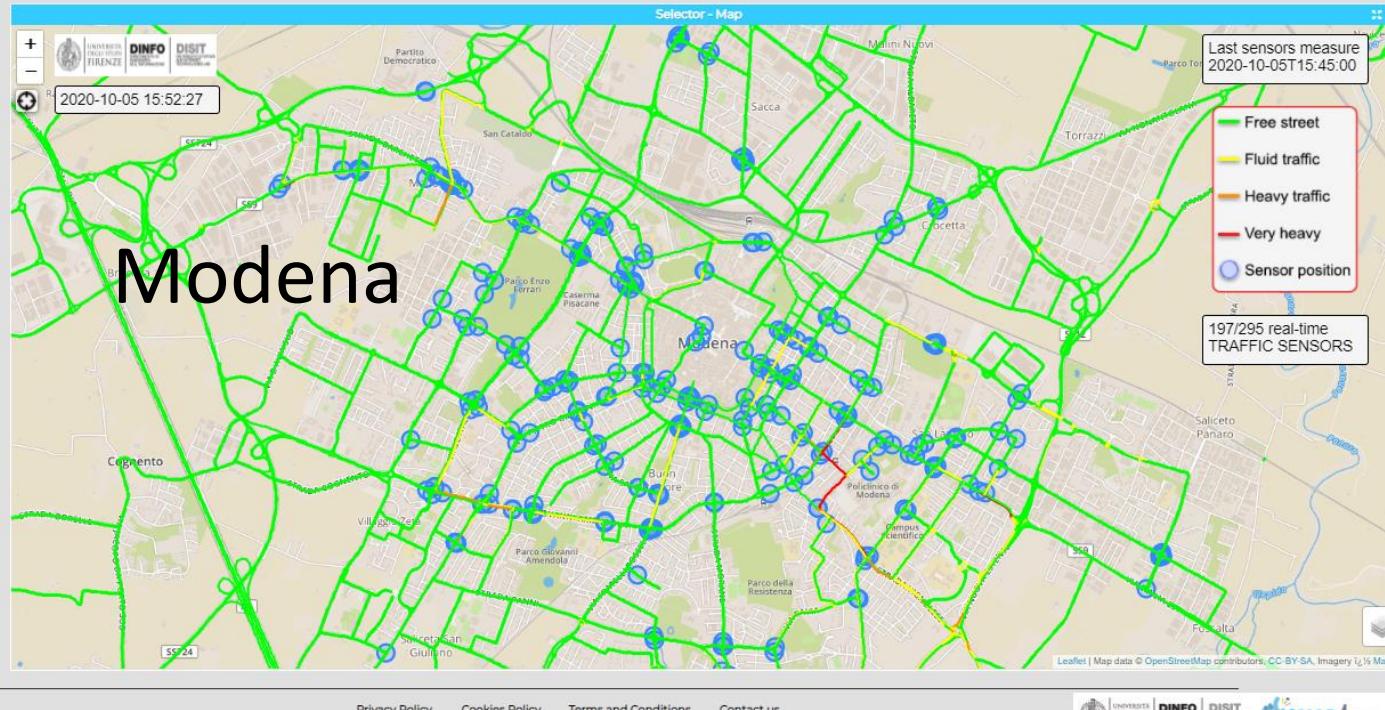
Dashboards: Firenze, Livorno

<https://www.snap4city.org/dashboardSmartCity/view/index.php?iddasboard=MTc5NQ==>



Traffic Flow Reconstruction for the cities

- Selector Web
- ▲ Firenze + FiPiLi
 - ▲ Firenze
 - ▲ Pisa
 - ▲ Santiago
 - ▲ Modena
 - ▲ Livorno



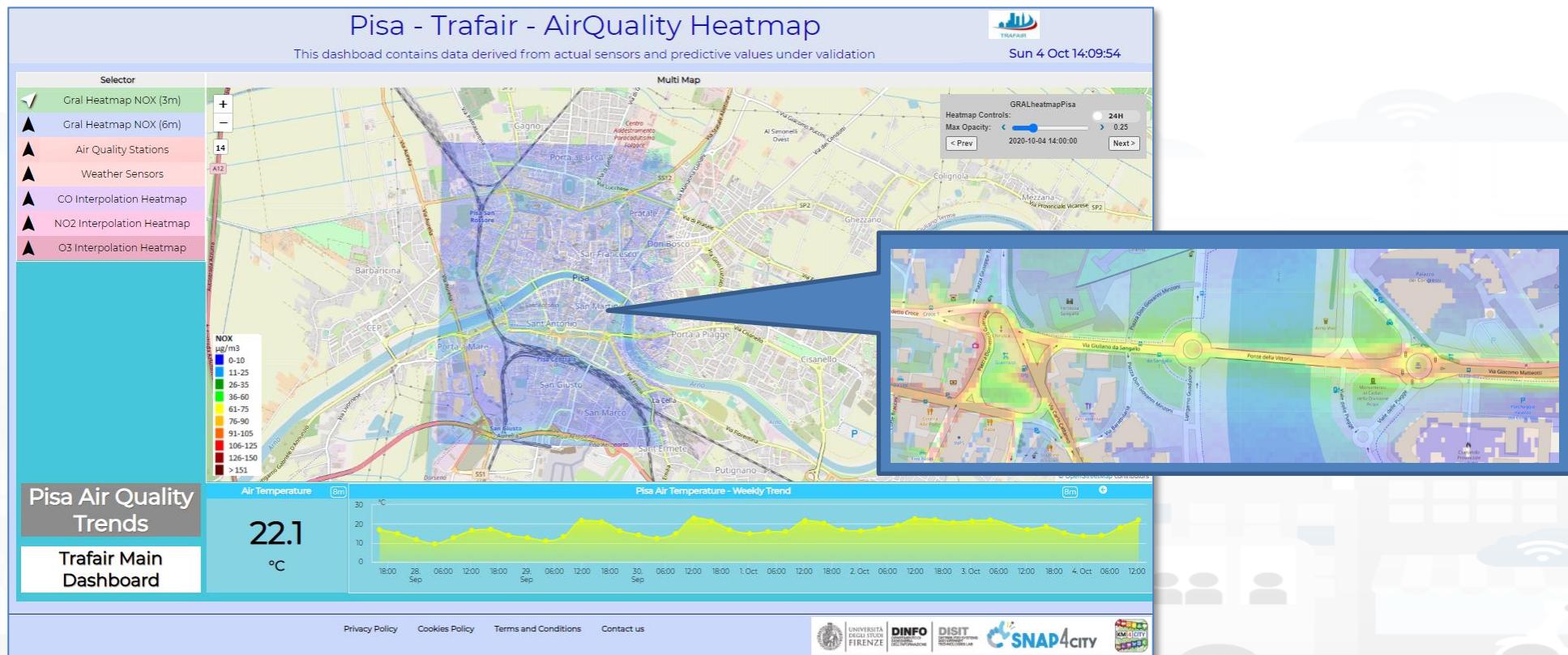
Modena

Santiago de Compostela

TRAFAIR GRAL pred. Dashboard: Pisa

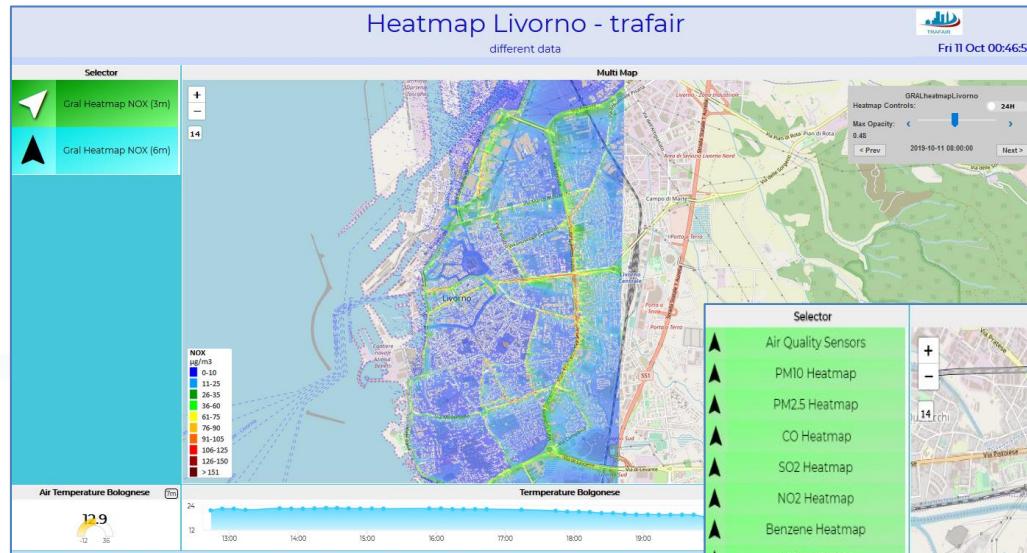
<https://www.snap4city.org/dashboardSmartCity/view/index.php?iddashboard=MTgzMw==>

- La Dashboard descrive la mappa della concentrazione di NOx previsto nella città di Firenze sia a 3 che a 6 metri (risoluzione 4x4 metri)
- Dalla dashboard è possibile vedere animazioni 24 ore su 24 e relative ai due giorni successivi (48 ore)

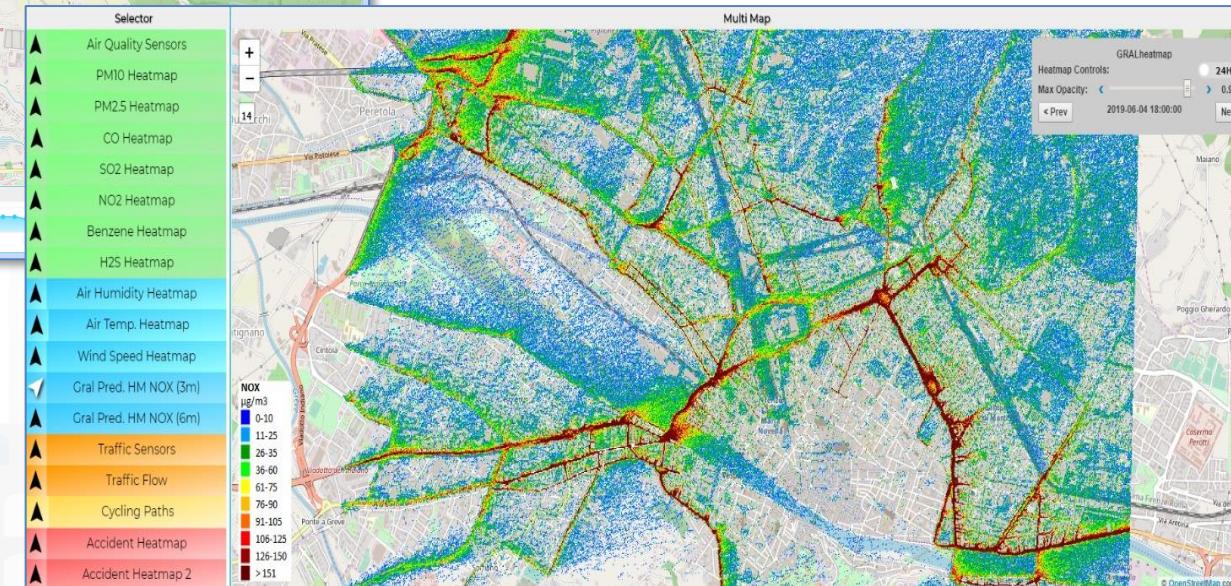


prediction Dashboards: Firenze e Livorno

<https://www.snap4city.org/dashboardSmartCity/view/index.php?idashboard=MTgzMw==>



Livorno

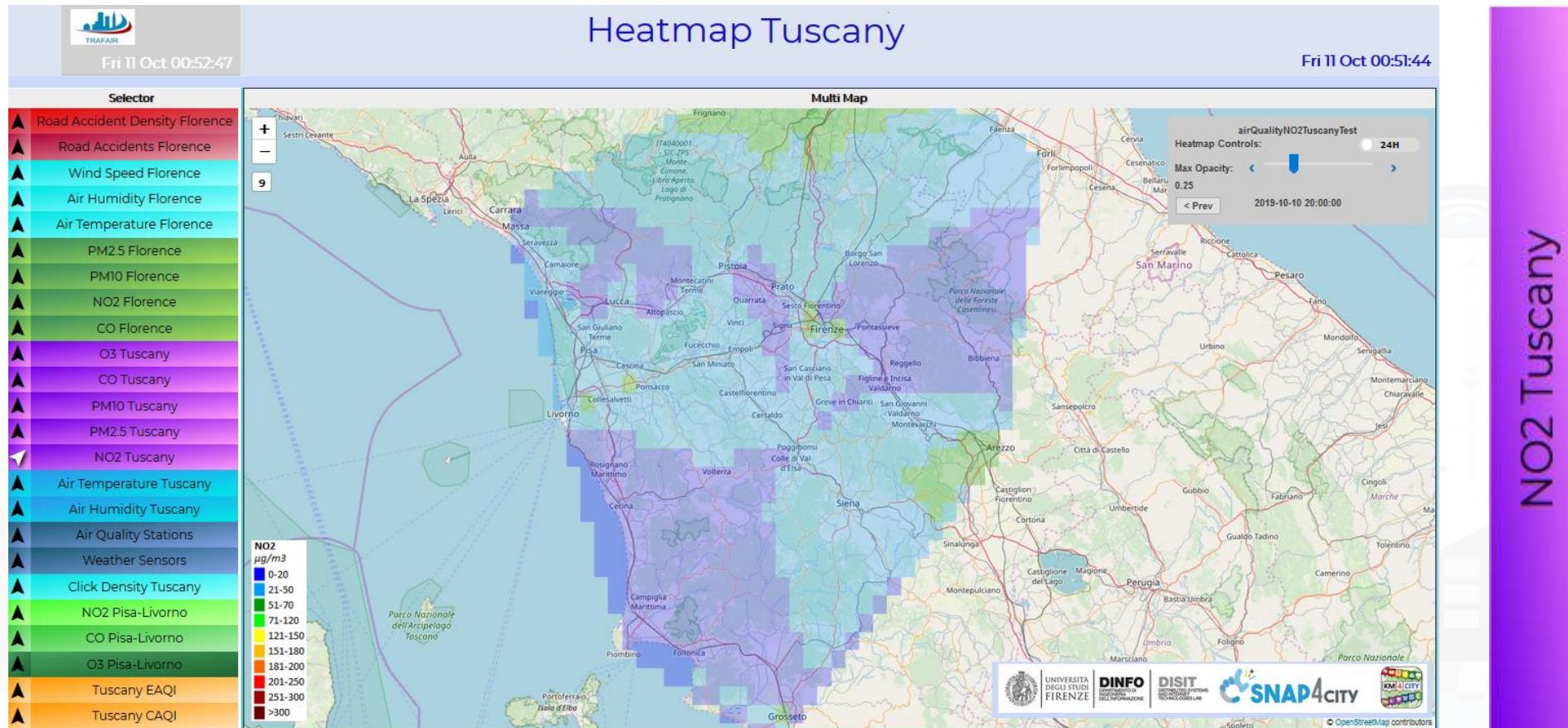


Firenze

<https://www.snap4city.org/dashboardSmartCity/view/index.php?idashboard=MTUzMg==>

Tuscany Air Quality Interpolation Maps

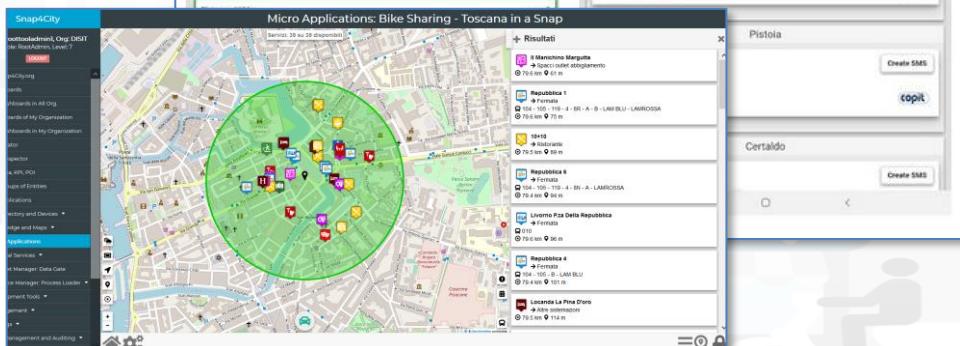
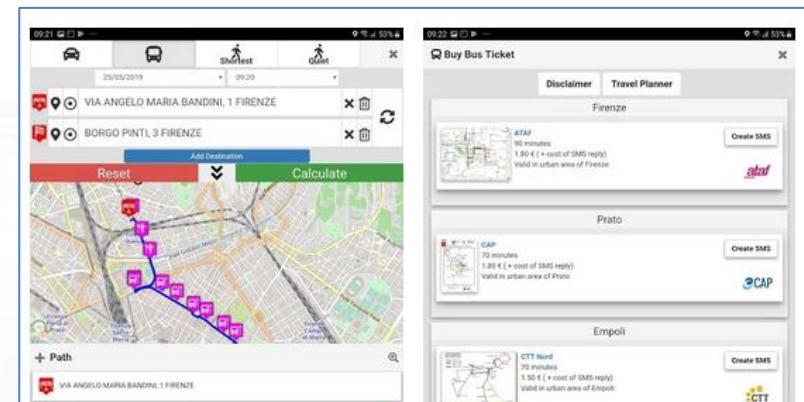
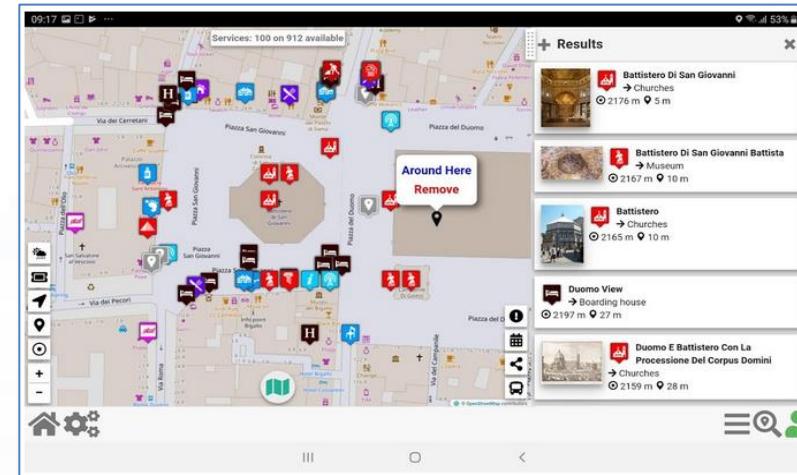
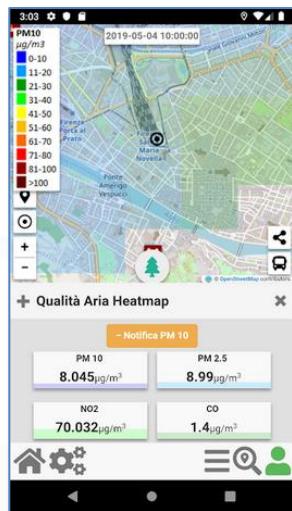
<https://www.snap4city.org/dashboardSmartCity/view/index.php?idashboard=MTUxNQ==>



Per cittadini/turisti/studenti e pendolari

Mobile App: *Toscana in a Snap*

<https://play.google.com/store/apps/details?id=org.disit.snap4city.mobileApp.tuscany&hl=it>



- Snap4City è un assistente personale su tutte le città e le aree della Toscana (Livorno, Firenze, Pisa, etc.):
 - ambiente, mobilità e trasporti, cultura e turismo, intrattenimento, ma anche ospedali, meteo, orari del trasporto pubblico (13 operatori Toscani), pianificazione viaggi, qualità dell'aria, previsioni del tempo, percorsi multimodali, parcheggi, predizione sui posti liberi in parcheggio, car sharing, piste ciclabili, notizie ed eventi, biglietterie, acquisto biglietti a tempo, stazioni di rifornimento, noleggio, stato della pollinazione, ecc.



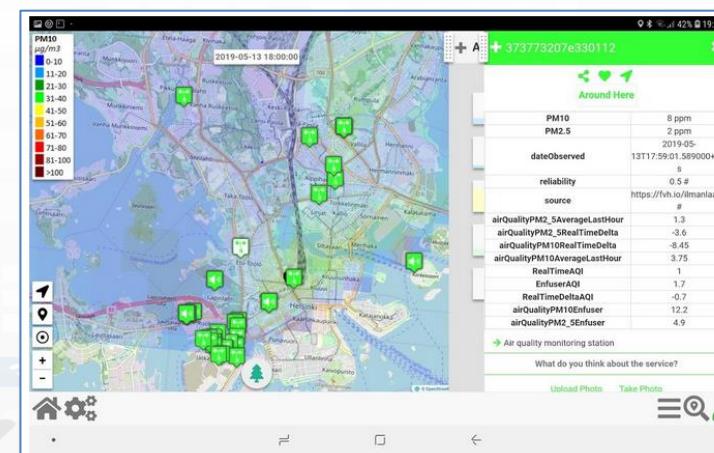
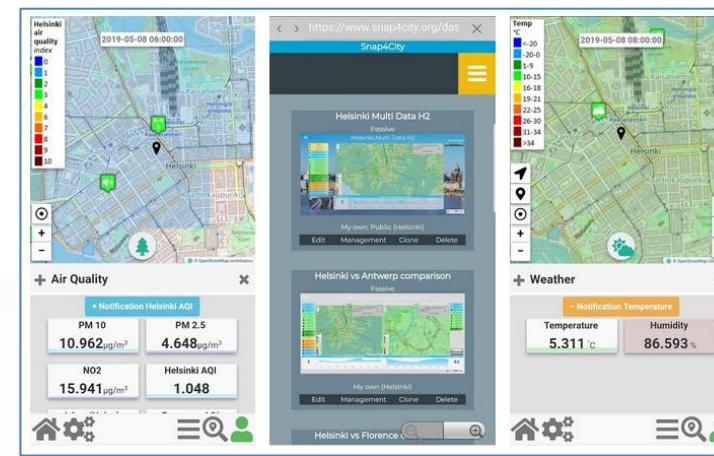
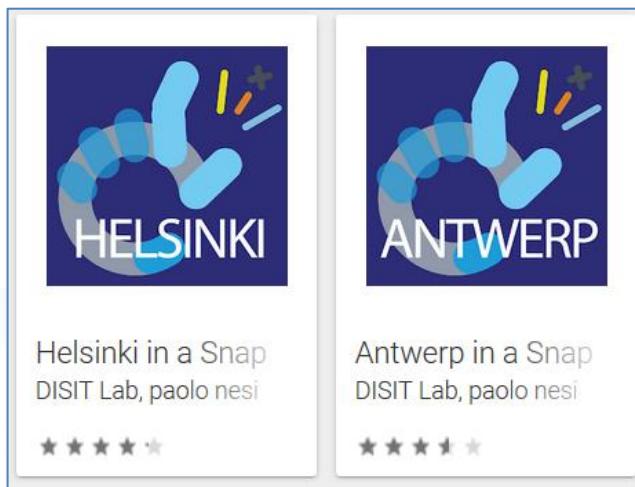
Mobile App: *Toscana in a Snap4*

<https://play.google.com/store/apps/details?id=org.disit.snap4city.mobileApp.tuscany&hl=it>

- I dati disponibili sono elencati sul portale Snap4city (<https://www.snap4city.org>)
- La maggior parte dei dati sono dati aperti, altri possono essere privati e accessibili solo per un periodo di tempo limitato in base alle sperimentazioni in atto
- La registrazione sulla Mobile App *Toscana in a Snap4*, è valida anche per il portale Snap4City, su cui è possibile:
 - Gestire il proprio profilo in base al regolamento GDPR della Commissione europea
 - Avere accesso a molti altri servizi dal tuo portatile e da altri dispositivi
 - Connettere i propri dispositivi (e.s. sensori qualità aria, temperature, etc.) e creare le proprie IoTApp o Dashboards

Mobile App: Non solo Toscana...

<https://play.google.com/store/apps/details?id=org.disit.snap4city.mobileApp.helsinki&hl=it>

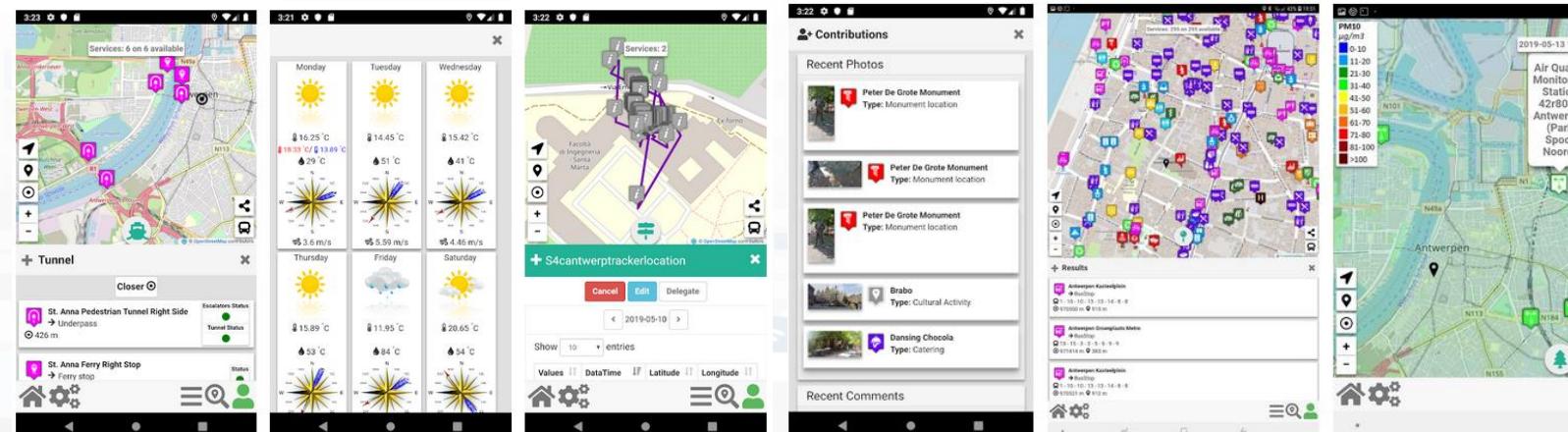
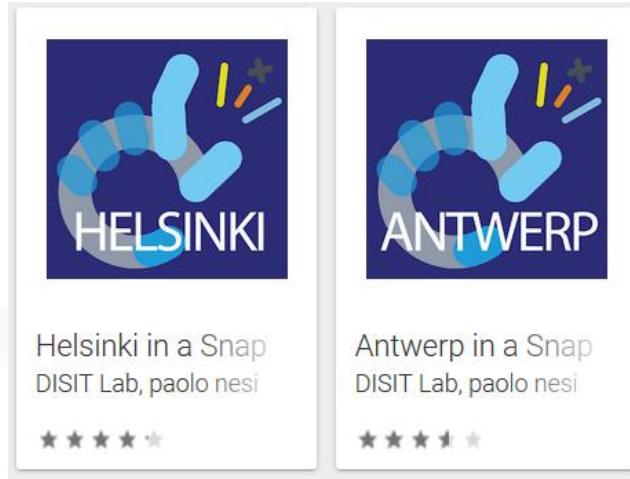




Mobile App: Non solo Toscana...

<https://play.google.com/store/apps/details?id=org.disit.snap4city.mobileApp.antwerp&hl=it>

- Mobile App simili sono state realizzate e sono accessibili anche in Anversa e Helsinki



On Line Training Material (free of charge)

	1st part (*)	2nd part (*)	3rd part (*)	4th part (*)	5th part (*)	6th part (*)	7th part (*)
what	General	Dashboards	IOT App, IOT Network	Data Analytics	Data Ingestion processes	System and Deploy Install	Smart City API: Web & Mob. App
PDF	              						
Interactive	              						
Video1	 	 	 	 	 	 	 
Video2	 	 	 	 	 	 	 
Video3	 	 	 	 	 	 	 
Video4	 	 	 	none	 	none	none
duration	2:55	3:16	3:41	2:00	2:48	2:35	1:47



Be smart in a SNAP!



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Understanding traffic flows to improve air quality

III° evento di disseminazione in toscana del progetto TRAFAIR

TRAFAIR, RISULTATI RAGGIUNTI

Il traffico urbano e la qualità dell'aria

attraverso l'analisi dei dati

<https://www.disit.org>

<https://www.snap4city.org>

SCALABLE SMART ANALYTIC APPLICATION BUILDER FOR SENTIENT CITIES



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