



UNIVERSITÀ
DEGLI STUDI
FIRENZE

DINFO
DIPARTIMENTO DI
INGEGNERIA
DELL'INFORMAZIONE

DISIT
DISTRIBUTED SYSTEMS
AND INTERNET
TECHNOLOGIES LAB



MINISTERO DELL'ISTRUZIONE DELL'UNIVERSITÀ E DELLA RICERCA



Workshop App Development: Training Day

<http://www.sii-mobility.org>

Paolo Nesi, km4city@disit.org



<http://www.Km4City.org>

[Questions to be sent at km4city@disit.org](mailto:km4city@disit.org)



Agenda



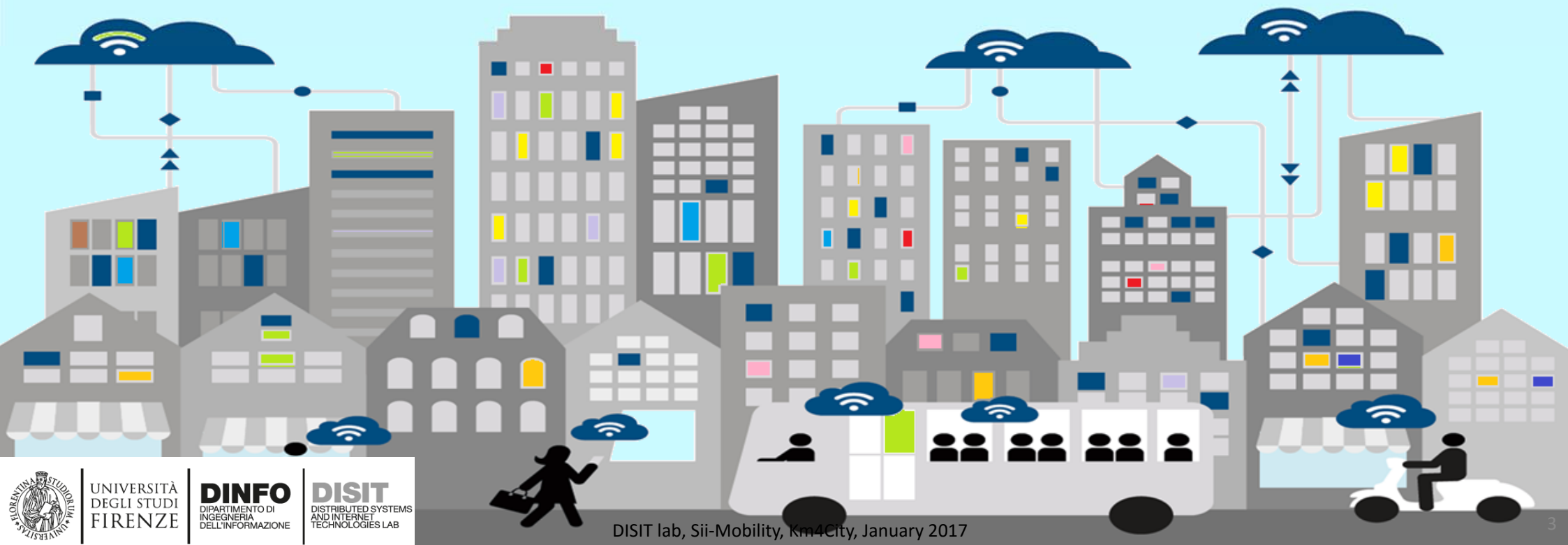
MINISTERO DELL'ISTRUZIONE DELL'UNIVERSITÀ E DELLA RICERCA



- 9:00-10:30 <http://www.disit.org/6993>
 - Sii-Mobility Overview
 - General Model
 - Engaging Users via Apps
 - Overview of development tools for Apps
 - How to Legally work with SDK
 - Planned Additional Modules for the Apps
 - Info and Documents
- 10:30-11:30
 - ServiceMap usage <http://www.disit.org/6994>
 - Smart City API <http://www.disit.org/6995>
- 11:00-12:30 <http://www.disit.org/6992>
 - Sii-Mobility Mobile App Kit on GitHub
 - How to develop new module
- 12:30-13:30: lunch
- 13:30-17:00:
 - Workshop on development: exercitations



Sii-Mobility Overview



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DISIT Lab, Sii-Mobility, Km4City, January 2017



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Sii-Mobility



Commenti dei cittadini,
Social Media



AVM trasporto
Pubblico



Sensori,
sistema monitoraggio

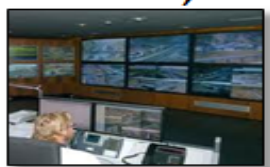
Merci
Sensori su
trasporto Privato



Sensori
Parcheggi

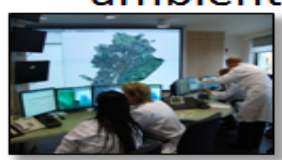


Monitoraggio
traffico, autostrade



Rete
Ferroviaria

Parametri
ambientali



Servizi ed
enti



Ordinanze: eventi,
lavori pubblici, .



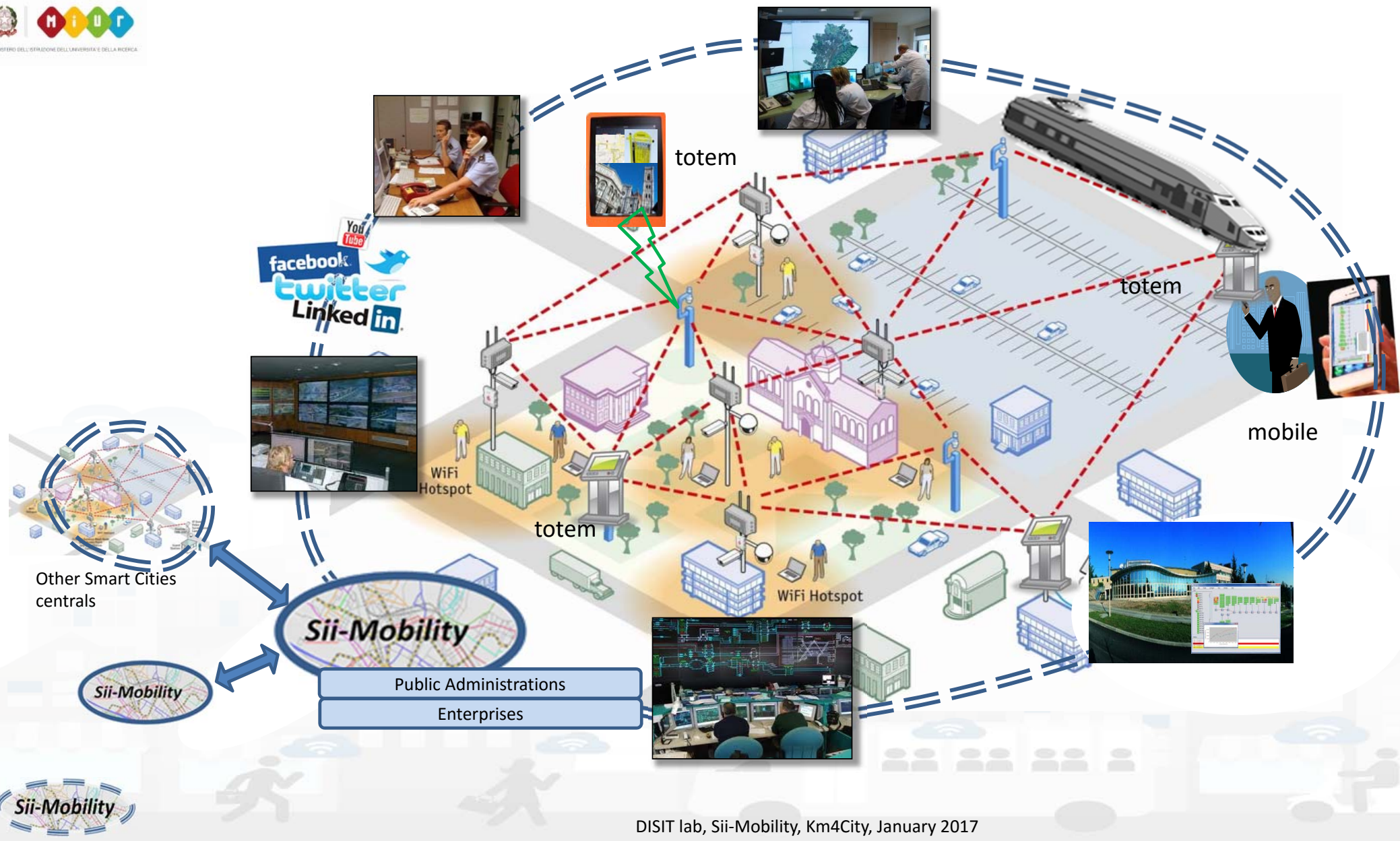
Emergenze,
polizia, 118



Infomobility



Varchi
Telematici, ZTL

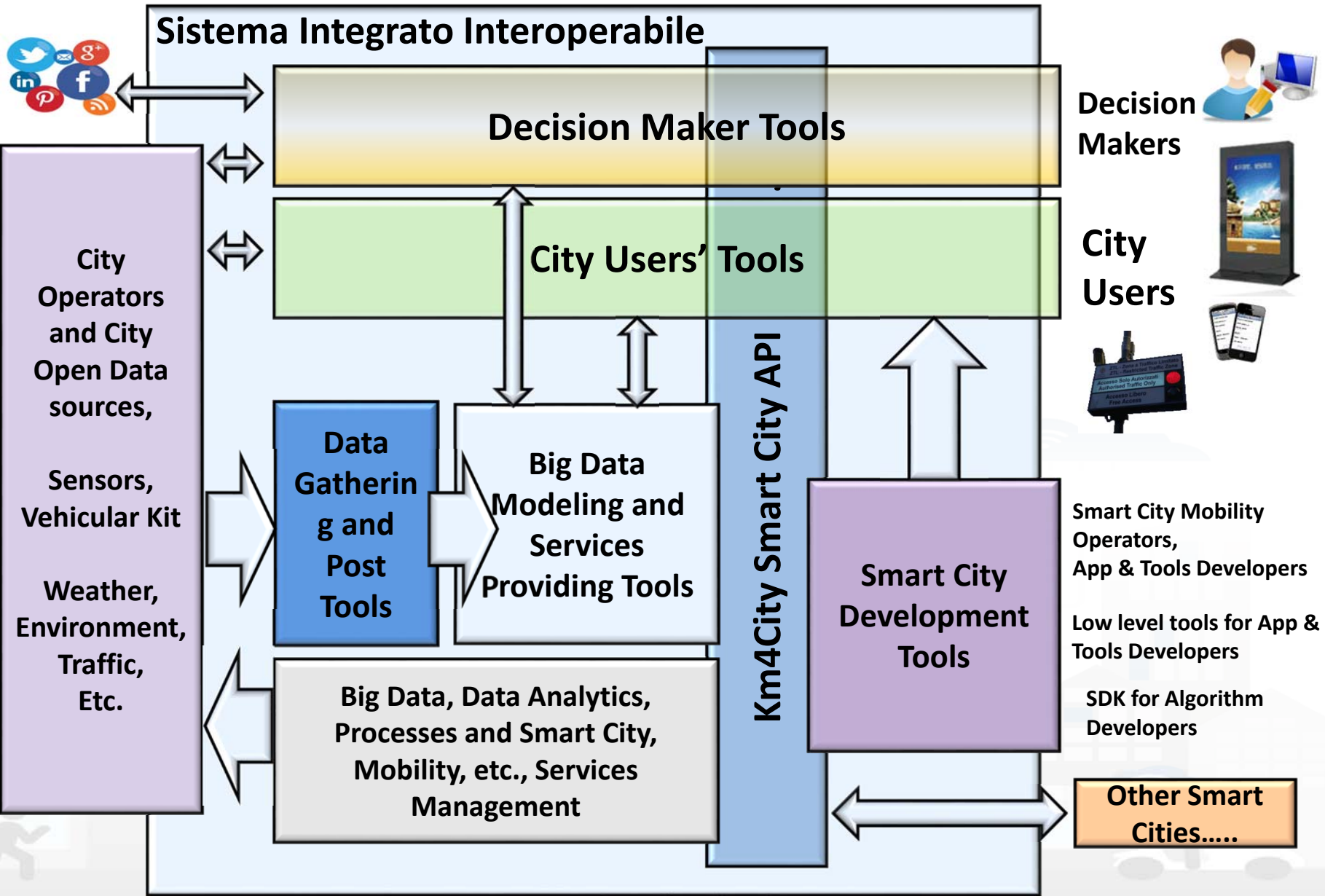




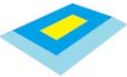
General Objectives



- Reduce the social costs of mobility
 - minor inconvenience,
 - greater efficiency,
 - greater sensitivity to the needs of the citizen,
 - lower emissions,
 - better environmental conditions;
 - info-training programs to help city user in getting virtuous habits;
 - reduce transportation costs and travel times for users, for operators and administrations,
 - optimization solutions.
- **Testing on municipalities and provinces of Tuscany**
- **Contribute to the improvement of national and international standards**
- **simplify the use of mobility systems**
 - innovative sensors for AVM and private transport on the territory
 - integrated systems for payment and identification
 - driving / offline routing solutions
 - connect the drive, smart drive or walk
 - Integration of data from operators and different type sources
 - advanced management of resources measurement of flows realization of sensors, actuators



Parking sensors





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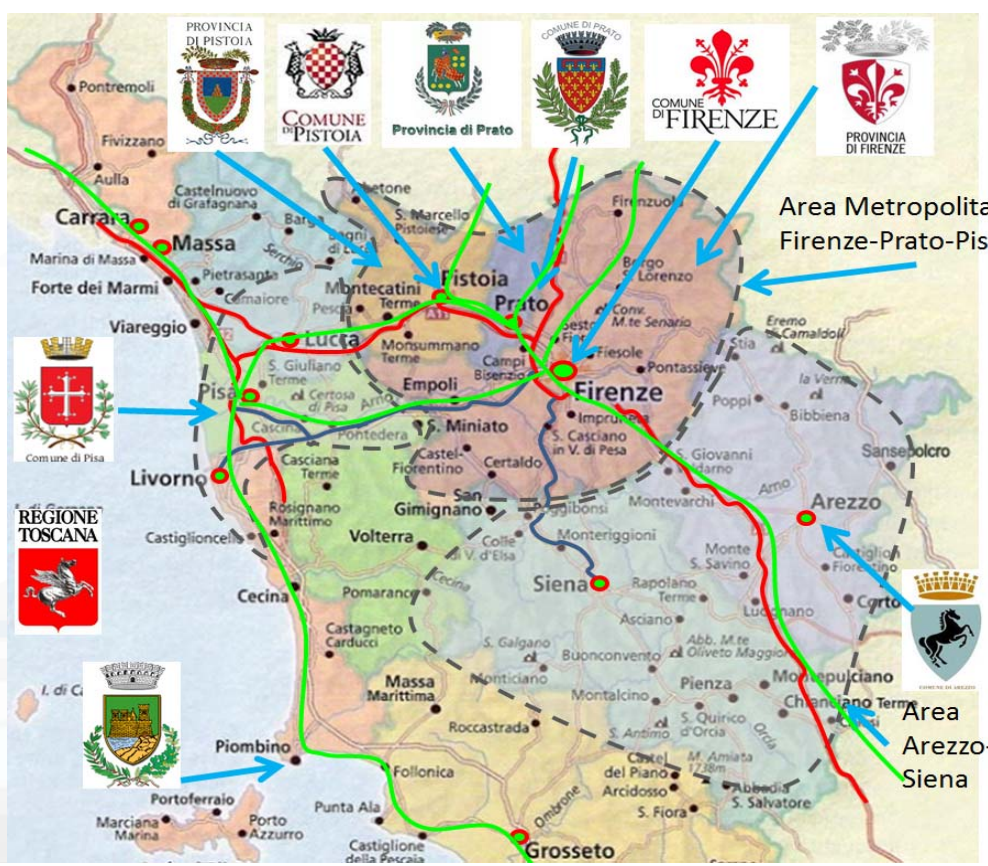
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Sii-Mobility



- Experimentations and validation in Tuscany
- Integration with present central station and subsystems
- DISIT lab, Università di Firenze, is the tech-scientific coordinator

<http://www.Sii-Mobility.org>



— Autostrade
 — SS Fi-Pi-Li
 — SS Fi-Si
 — Ferrovie (primarie)
 - - Aree

*ECM; Swarco Mizar;
 Inveni In20; Geoin;
 QuestIT; Softec; T.I.M.E.;
 LiberoLogico; MIDRA
 (autostrade, motorola);
 ATAF; Tiemme; CTT
 Nord; BUSITALIA;
 A.T.A.M.; Effective
 Knowledge; eWings;
 Argos Engineering; Elfi;
 Calamai & Agresti;
 Project; Negentis*

Principali Delibere su Sii-Mobility



PA	Tipo di atto
Provincia di Prato	Delibera di Giunta n.267 del 30.10.2012
Comune di Prato	Delibera di Giunta n.474 del 30.10.2012
Provincia di Firenze	Delibera di Giunta n.147 del 06.11.2012
Comune di Firenze	Delibera di Giunta n.403 del 06.11.2012
Provincia di Pistoia	Delibera di Giunta n.156 del 08.11.2012
Comune di Pistoia	Delibera di Giunta n.321 del 08.11.2012
Comune di Pisa	Delibera di Giunta n.203 del 06.11.2012
Comune di Arezzo	Delibera di Giunta n.498 del 07.11.2012
Regione Toscana	Delibera di Giunta n.249 del 15.04.2013



CITTÀ METROPOLITANA
DI FIRENZE



Provincia di
PRATO



COMUNE
DI PISTOIA



Provincia di
PISTOIA



Comune
di Pisa



Comune
di AREZZO

Regione Toscana



MINISTERO DELL'ISTRUZIONE, DELL'UNIVERSITÀ E DELLA RICERCA

Transport systems
Mobility, parking



Public Services
Govern, events, ...



Sensors, IOT
Cameras, ...



Environment,
Water, energy



Shops, services,
operators



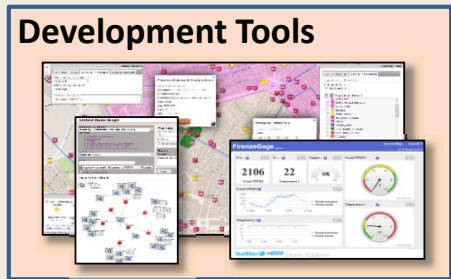
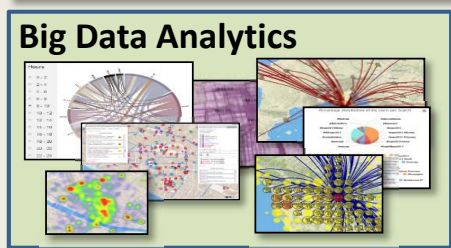
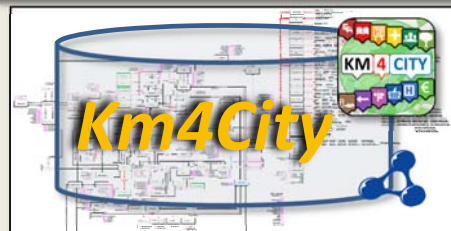
Social Media
WiFi, network



Static, Slow and Real Time data flows

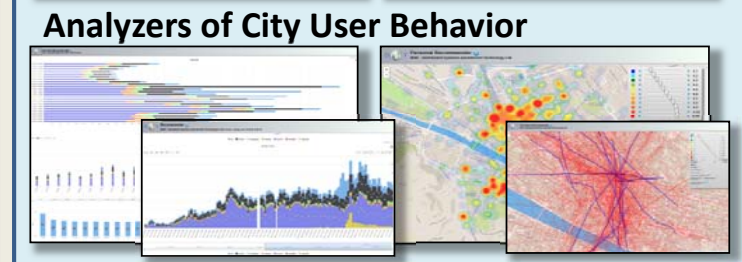
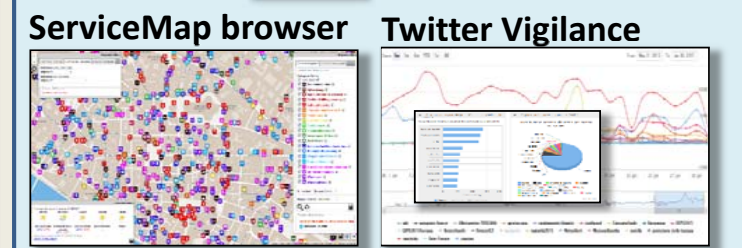
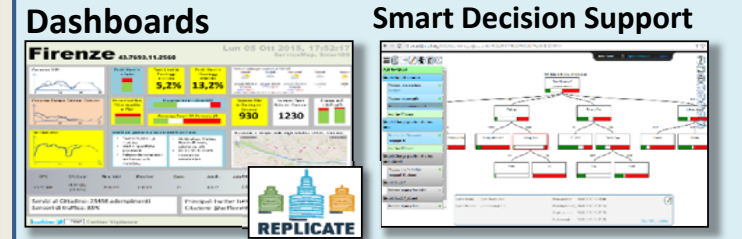
Sii: Smart City Engine

DISCES -- Distributed and parallel architecture on Cloud



Smart City API

City Operators and Decision Makers



General Model



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DISIT Lab, Sii-Mobility, Km4City, January 2017

Km4City Ontology - RDF Store



Ontology Documentation:

<http://www.disit.org/6506>

<http://www.disit.org/6507>

<http://www.disit.org/5606>

<http://www.disit.org/6461>

- Temporal reasoning
- Metadata on the data
- Statistics
- Risk and Resilience
- Licensing
- Open and Private Data
- Static and Real time
- ..

- Street-Guide
- Mobility and transport
- Points of interest
- Sensors, IOT, ..
- Energy
- Administration
- Citations from strings
- ..



Big Data Tools



LOD and reasoners



Present data Tuscany Region

Road Graph (Tuscany region)

- 132,923 Roads
- 389,711 Road Elements
- 318,160 Road Nodes
- 1,508,207 Street Numbers

- Services (20 cat, 512 cat.)
- 16 Pub. Transport Operators
- 21.280 Bus stops & 1081 bus lines
- 210 Parking areas
- 796 Traffic Sensors
- Info on: points, paths, areas, etc.

Dynamic/real-time

- bus lines: 144 updates X day X line
- **NEW:** Timeline PT: 1081 lines, 1-2 updates per day
- parking status: 76 updates X day X sensor
- traffic Sensors: 288 updates X day X sensor
- weather: 2 updates X day for 285 areas
- **NEW:** Triage status: 96 updates per day, per hospital
- **NEW:** Fuel stations: 1 update per day, 1600 stations
- events: about 60 new events X day
- Wi-Fi: > 350.000 measures X day
- mobiles: > 50.000 measures X day
- more than 35.000 distinct users X day
- From 600.000 to 4.5 M Tweets X day
-+ many IOT are coming

- Nascondi Menu

Fermate Firenze Comuni in Toscana Ricerca Testuale

Seleziona una provincia:
FIRENZE

Seleziona un comune:
FIRENZE

- Actual Selection
COMUNE di FIRENZE

- Nascondi Menu

Previsioni Meteo per il comune di FIRENZE:

Martedì	Mercoledì	Giovedì	Venerdì	Sabato
poco nuvoloso 23°C / 27°C	pioggia debole e schiarite 20°C / 20°C	poco nuvoloso 20°C / 33°C	poco nuvoloso	velato

- Nascondi Menu

Servizi Regolari Servizi Trasversali

search text into service

Categorie Servizi

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

N. risultati: Nessun Limite

Raggio ricerca 100 metri

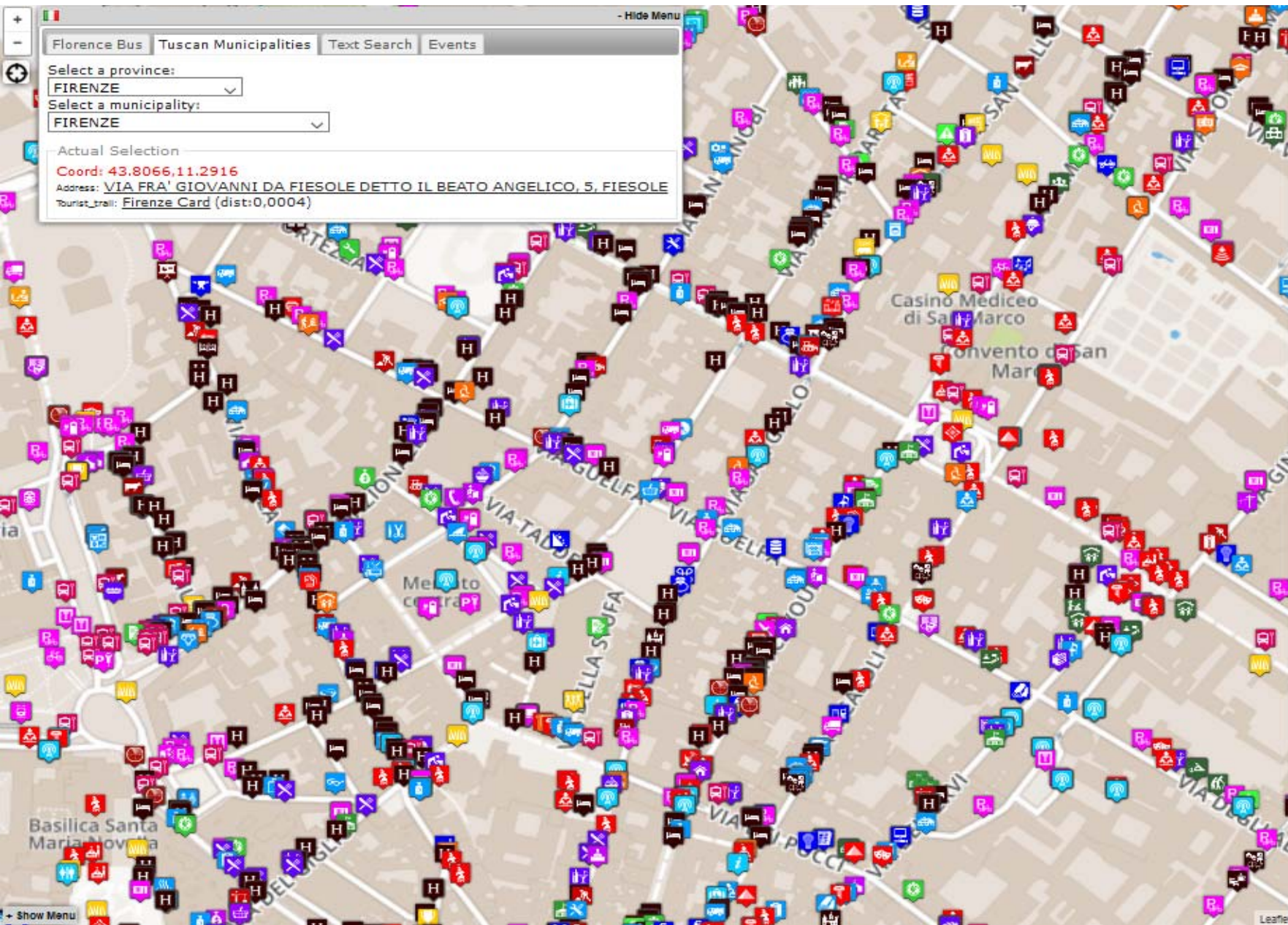
Risultati della ricerca

più di 4000 risultati, attivato clustering

Services 16858

<http://servicemap.km4city.org>

+ - Hide Menu
 Florence Bus Tuscan Municipalities Text Search Events
 Select a province:
 FIRENZE
 Select a municipality:
 FIRENZE
 Actual Selection
 Coord: 43.8066,11.2916
 Address: VIA FRA' GIOVANNI DA FIESOLE DETTO IL BEATO ANGELICO, 5, FIESOLE
 Tourist_trail: Firenze Card (dist:0,0004)



Regular Services Transversal Services
 Services Categories
 De/Select All
 Accommodation +
 Advertising +
 AgricultureAndLivestock +
 CivilAndEdilEngineering +
 CulturalActivity +
 EducationAndResearch +
 Emergency +
 Entertainment +
 Environment +
 FinancialService +
 GovernmentOffice +
 HealthCare +
 IndustryAndManufacturing +
 MiningAndQuarrying +
 ShoppingAndService +
 TourismService +
 TransferServiceAndRenting +
 UtilitiesAndSupply +
 Wholesale +
 WineAndFood +
 Filter:
 search text into service
 N. results: No Limit
 Search Range 5 km
 Search Area select...
 Search Results
 more than 4000 results, clustering enabled
 Services 21465 of 21465 available



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ServiceMap



Query results organized by category

Total number of results: 2231

Category	Count
Accommodation	118
Advertising	118
AgriUrbanAndRural	118
CulturalAndHeritage	118
EducationAndResearch	118
Environment	118
GovernmentOffice	118
HealthCare	118
IndustryAndManufacturing	118
MappingAndNavigation	118
ShoppingAndRetail	118
TransportService	118
TransferServiceAndRouting	118
UtilitiesAndSupply	118
Wholesale	118
WineAndFood	118

N. results: No LINE -
Search Range: visible area -
Services: 2231 of 2231 available

Actual Selection: Service: F9552TL81501

F9552TL81501
Location: STAZIONE PENSIANA
Type: TransferServiceAndRouting - Services
Address: VIA CILIEGI, 147/R
Date Time server: F9552TL81501

Vehicle Flow (cars/h)	Avg Speed (km/h)	Threshold Pass (%)	Speed Pass (%)
48.0	0.0	N.A.	N.A.

N. results for each: 200
Search Range: 500 mt
Bus Stops: 25 of 25 available
Road Sensors: 3 of 3 available

BUS STOP: STAZIONE PENSIANA

Line: VERGA TOZZI → BOITO
VERGA TOZZI → VIA CASSONE

Line	Direction
11	VERGA TOZZI → BOITO
17	VERGA TOZZI → BOITO
17 G	VERGA TOZZI → VIA CASSONE

N. results for each: 200
Search Range: 200 mt
Bus Stops: 31 - Bus Line: 17 B
Direction: VERGA TOZZI → BOITO

Actual Selection: Service: Biblioteca della Camera di commercio, industria, artigianato e agricoltura

BIBLIOTECA DELLA CAMERA DI COMMERCIO, INDUSTRIA, ARTIGIANATO E AGRICOLTURA
Type: Library
Address: VIA CILIEGI, 147/R
Date Time server: F9552TL81501

N. results: No LINE -
Search Range: 300 mt
Services: 557 of 557 available



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Cycling Paths



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

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
Services 228 of 228 available

Result 1:
Percorsi Ciclabili 309
Tipo: Ciclopercorsi
Distancia: 172 m
Distancia: 1329 m

Result 2:
Percorsi Ciclabili 305
Tipo: Ciclopercorsi
Distancia: 191 m
Distancia: 1594 m

Result 3:
Arena Esterno Notte Poggetto
Tipo: Cinema
Distancia: 351 m

Result 4:
Auditorium Flog
Tipo: Teatro
Distancia: 351 m

Firenze and beyond

The screenshot displays a web application interface for searching services in the Florence area. The main map shows numerous colored markers (red, orange, yellow, green) representing different services across the region. The interface includes several panels:

- Search and Filter Panel (Top Left):** Contains dropdown menus for "Fermate Firenze", "Comuni in Toscana", and "Ricerca Testuale". It also has dropdowns for "Seleziona una provincia:" (set to FIRENZE) and "Seleziona un comune:" (set to FIRENZE). Below these, it shows "Actual Selection" with coordinates "Coord: 43.7760,11.2609" and an approximate address "Indirizzo Approssimativo: PIAZZA DELLA SANTISSIMA ANNUNZIATA, 13, FIRENZE".
- Service Category List (Right Panel):** Titled "Servizi Regolari" and "Servizi Trasversali", it lists various service categories with checkboxes and expand/collapse icons. Categories include: Accommodation, Advertising, AgricultureAndLivestock, CivilAndEdilEngineering, CulturalActivity, EducationAndResearch, Emergency, Entertainment, Environment, FinancialService, GovernmentOffice, HealthCare, IndustryAndManufacturing, MiningAndQuarrying, ShoppingAndService, TourismService, TransferServiceAndRenting, UtilitiesAndSupply, Wholesale, and WineAndFood.
- Search Results (Bottom Right):** Shows "N. risultati: Nessun Limite" and "Raggio ricerca: area visibile". It displays "più di 4000 risultati, attivato clustering" and "Services 50581".
- Weather Forecast (Bottom Left):** Titled "Previsioni Meteo per il comune di FIRENZE:", it shows forecasts for Tuesday (poco nuvoloso, 23°C / 27°C), Wednesday (pioggia debole e schiarite, 20°C / 33°C), Thursday (poco nuvoloso, 20°C / 33°C), Friday (poco nuvoloso), and Saturday (velato).

- **Search all services in the area**

The screenshot displays the Sii-Mobility application interface for Florence. The main map shows various urban features and bus lines. Several data panels are overlaid on the map:

- Left Panel (Search and Selection):**
 - Search: FERMATE FIRENZE, Comuni in Toscana, Ricerca Testuale
 - Seleziona una provincia: FIRENZE
 - Seleziona un comune: FIRENZE
 - Actual Selection: Servizio: PERGOLA
- Top Center Panel (Giardino di piazza dell'Indipendenza):**
 - LINKED OPEN GRAPH
 - Tipologia: Entertainment - Green_areas
 - Digital Location
 - Indirizzo: PIAZZA DELLA INDIPENDENZA, 15
 - Cap: 50129
 - City: FIRENZE
 - Prov.: FI
 - Note: areeverdi238
 - Button: Rimuovi dalla Mappa
- Bottom Center Panel (FERMATI : T1 ALAMANNI):**
 - LINKED OPEN GRAPH
 - Linee: 2, 28, 52, 54
 - Dati Real Time al momento non disponibili
- Right Panel (FERMATI : PERGOLA):**
 - LINKED OPEN GRAPH
 - Linee: 14, 19, 23, 31, 6
 - Route Table:

Linea	Percorso
6 A	NOVELLI → OSPEDALE TORRE GALLI
6 B	NOVELLI → OSPEDALE TORRE GALLI
6 A	OSPEDALE TORRE GALLI → NOVELLI
6 B	OSPEDALE TORRE GALLI → NOVELLI

 - Dati Real Time al momento non disponibili
- Bottom Left Panel (Previsioni Meteo):**
 - Previsioni Meteo per il comune di FIRENZE:
 - Martedì: poco nuvoloso, 23°C / 27°C
 - Mercoledì: pioggia debole e schiarite, 20°C / 30°C
 - Giovedì: poco nuvoloso, 20°C / 33°C
 - Venerdì: poco nuvoloso, /
 - Sabato: velato, /
 - Ultimo Aggiornamento: 2015-09-15T09:07:00+02:00
 - LINKED OPEN GRAPH
- Right Panel (Services and Search):**
 - Servizi Regolari | Servizi Trasversali
 - search text into service
 - Categorie Servizi: De/Select All
 - DigitalLocation: Consuete, Controlled_parking_zone, Cycle_paths, Gardens, Green_areas, Historical_buildings, Library, Literary_cafe, Local_health_authority, Monument_location, Museum
 - Fresh Place: Road Sensors, Bus Stops
 - N. risultati for each: Nessun Limite
 - Raggio ricerca: area visibile
 - Risultati della ricerca: **Bus Stops: 21 - Linea Bus: 25**, Direction: LA PIRA → PIAN DI SAN BARTOLO
- Bottom Left Panel (Weather):**
 - Previsioni Meteo per il comune di FIRENZE:
 - Martedì: poco nuvoloso, 23°C / 27°C
 - Mercoledì: pioggia debole e schiarite, 20°C / 30°C
 - Giovedì: poco nuvoloso, 20°C / 33°C
 - Venerdì: poco nuvoloso, /
 - Sabato: velato, /
 - Ultimo Aggiornamento: 2015-09-15T09:07:00+02:00
 - LINKED OPEN GRAPH

• **Areas, Bus lines, bike lanes, tram, RTZ, etc.**



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Pisa only POI

File Modifica Visualizza Cronologia Segnalibri Tile Strumenti Aiuto

Km4City Development an... ServiceMap

servicemap.disit.org/WebAppGrafo/mappa.jsp

Cerca

Hide Menu

Florence Bus Tuscan Municipalities Text Search Events

Select a province:
PISA

Select a municipality:
PISA

Actual Selection
Service: Osteria Il Fantasma dell'Opera

Regular Services Transversal Services

Services Categories

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

Filter:
search text into service

N. results: No Limit

Search Range 100 mt

Search Area select...

Search Results
Services 1058

Weather Forecast for Municipality of: PISA

Saturday	Sunday	Monday	Tuesday	Wednesday
cloudless 4°C / 11°C	cloudy -2°C / 10°C	overcast 6°C / 10°C	light rain /	bit cloudy /

Latest Update: 2016-12-17T08:51:00+01:00
[LINKED OPEN GRAPH](#)

Leaflet | Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox

ENG 19:20

Hide Menu

Florence Bus Tuscan Municipalities Text Search Events

Select an agency:
Ataf&Linea

Select a line:
- Select a Line -

Select a route:
- Select a Route -

Select a bus stop:
- Select a Bus Stop -

Position of selected Busses

Actual Selection
Bus Stop: Sorgane Piazza Rodolico

TPS STOP : Sorgane Piazza Rodolico

Ataf&Linea

LINKED OPEN GRAPH

Lines:
24

Display 10 Bus per page

Search:

Time	Line	Direction
06:00:00 2016-11-10	24	Grassina
06:10:00 2016-11-10	24	Sorgane Piazza Rodolico
06:15:00 2016-11-10	24	Osteria Nuova
06:20:00 2016-11-10	24	Grassina
06:42:00 2016-11-10	24	Sorgane Piazza Rodolico

Showing page 1 of 7

Real-time data currently not available

Hide Menu

Regular Services Transversal Services

Services Categories

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

Filter:
search text into service

N. results: 10

Search Range 100 mt

Search Area select...

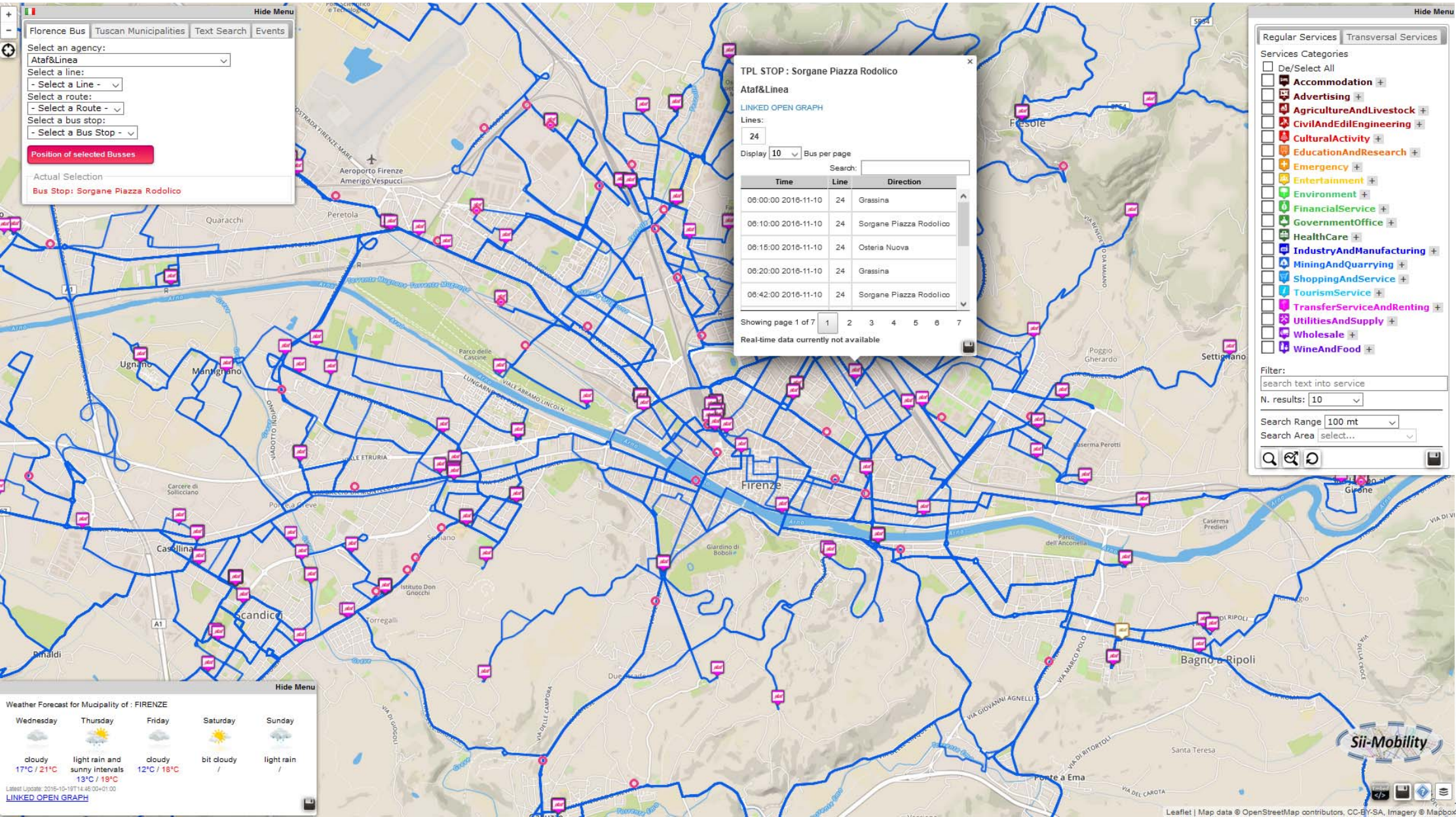
Hide Menu

Weather Forecast for Municipality of : FIRENZE

Wednesday	Thursday	Friday	Saturday	Sunday
cloudy 17°C / 21°C	light rain and sunny intervals 13°C / 19°C	cloudy 12°C / 18°C	bit cloudy	light rain

Latest Update: 2016-10-19T14:45:00+01:00

[LINKED OPEN GRAPH](#)



Other Sensors and Actuators, IOT

- Restricted Traffic Zone Gates
 - Passages, payment, alerts,
 - Wi-Fi control, RFI control, etc.
- Road Direction manager: panel, red-light, etc.
 - Status and action
- Environmental Sensors:
 - Air quality, pollution, rain, allergens, temperature,
 - humidity,...
- Public Light Pillar
 - Traffic flows, environment,
 - Wi-Fi, Tv-Camera, BT servers, on/off, percentage of light, ..
- Waste Manager
 - Level, kind, status, on/off
- Recharge station, column
 - Free slots, consumption, next time slot, ...



- **Environmental Sensors:**
 - Air, temperature, humidity,
 - water level in rivers
 - Status of underpass and bridges
- **Risk assessment**
 - Value of the buildings,
 - hydrogeological risk map,
 - earthquake risk map, ...
 - people distribution and location
 - Position of recover places,
- **Traffic Zone Gates**
 - Passages, alerts,
 - etc.



Engaging Users via Apps



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DISIT Lab, Sii-Mobility, Km4City, January 2017



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<http://www.disit.org>

Mobile App



What do you want to do?

- Discover the City
- Points Of Interest
- Search
- Public transport
- Bus Ticket
- Car Park
- Events
- Suggestions Near You
- We Recommend
- Weather
- Assistant
- Navigator
- Favourites
- Chronology
- Latest Reviews
- Alert Civil Prot.
- Settings
- Vote APP!
- Information
- About Us

KM4 CITY

Choose Services

- Accommodation
- Advertising
- Agriculture And Livestock
- Civil And Edil Engineering
- Cultural Activity
- Education And Research
- Emergency
- Entertainment
- Environment
- Financial Service
- Government Office
- Health Care
- Industry And Manufacturing
- Mining And Quarrying
- Shopping And Service
- Tourism Service
- Transfer Service And Renting

Giardino Di Boboli

Tipo: Digital Location

Descrizione: The Prince s Way ends in the Giardino di Boboli, near the Grotta del Buontalenti, that is a very masterpiece of the Mannerist architecture and sculpture

Descrizione: Il Percorso del Principe termina nel Giardino di Boboli, nei pressi della Grotta del Buontalenti, vero e proprio capolavoro dell'architettura e della scultura manierista

KM4 CITY

Map view showing various location icons and a search bar.

KM4 CITY

Suggerimenti

Post

ESERCITAZIONE MUGNONE 2016

Disinfezione Mugnone 2016

Regione Toscana

prevede: Firenze (FI) (ZONA: A3)		
RISCHIO	TEMPI	ALLERTA
IDROGEOLOGICO IDRAULICO RETICOLO MINORE	Dalle ore 13.00 di Venerdì 27 maggio 2016 alle ore 18.00 di Venerdì 27 maggio 2016	GIALLO
IDROGEOLOGICO IDRAULICO RETICOLO MINORE	Dalle ore 18.00 di Venerdì 27 maggio 2016 alle ore 12.00 di Venerdì 27 maggio 2016	ARANCIONE

Piazza SS. Annunziata
Tipo: Squares
Distanza: 1949 m
Indirizzo: 🚶 🚗 🚚

Piazza Santissima Annunziata
Tipo: Squares
Distanza: 1949 m
Indirizzo: 🚶 🚗 🚚

Trattoria Gozzi
Tipo: Trattoria
Distanza: 1975 m

Mostra Tutte le Categorie

web application
<http://www.km4city.org>

Windows Phone interface with tiles for Calendar, Posta, Netflix, Microsoft Edge, Roma, FIRENZE, Xbox, Anteprima Sk..., Tuneln Radio, Twitter, and SODA.

DISPONIBILE SU Google play

Scarica da App Store

Scarica da Windows Store



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Get it on
Google play

Download on the
App Store

Download from
Windows Store

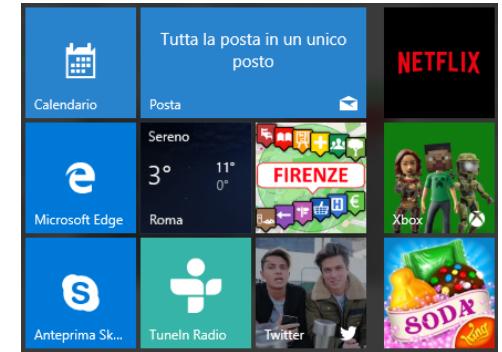
Available on the
App Store

ANDROID APP ON
Google play

Download from
Windows Phone Store

Mobile and Web App

Windows 10



- <https://www.microsoft.com/en-us/store/p/firenze-dove-cosa-km4city/9nblggh5xx4v>
- <https://www.microsoft.com/en-us/store/p/toscana-dove-cosa-km4city/9nblggh6jdnd>

HTML



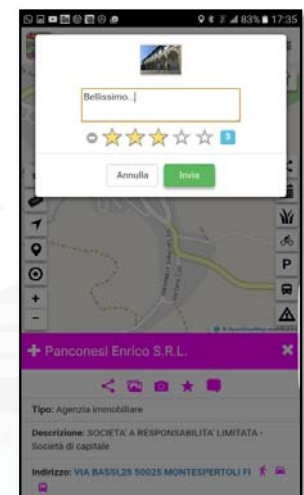
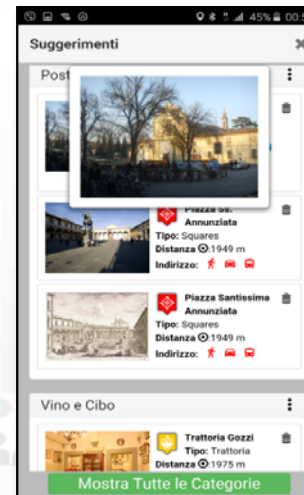
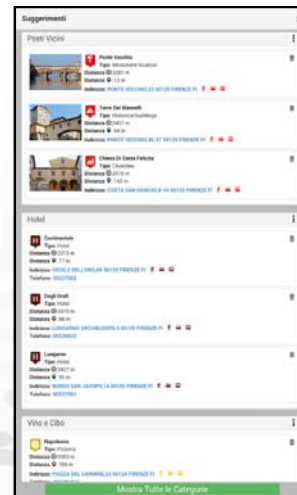
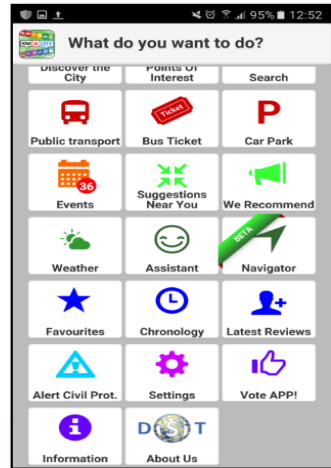
HTML5 version

- <http://www.km4city.org/webapp/>

Mobile APP, features 1/3



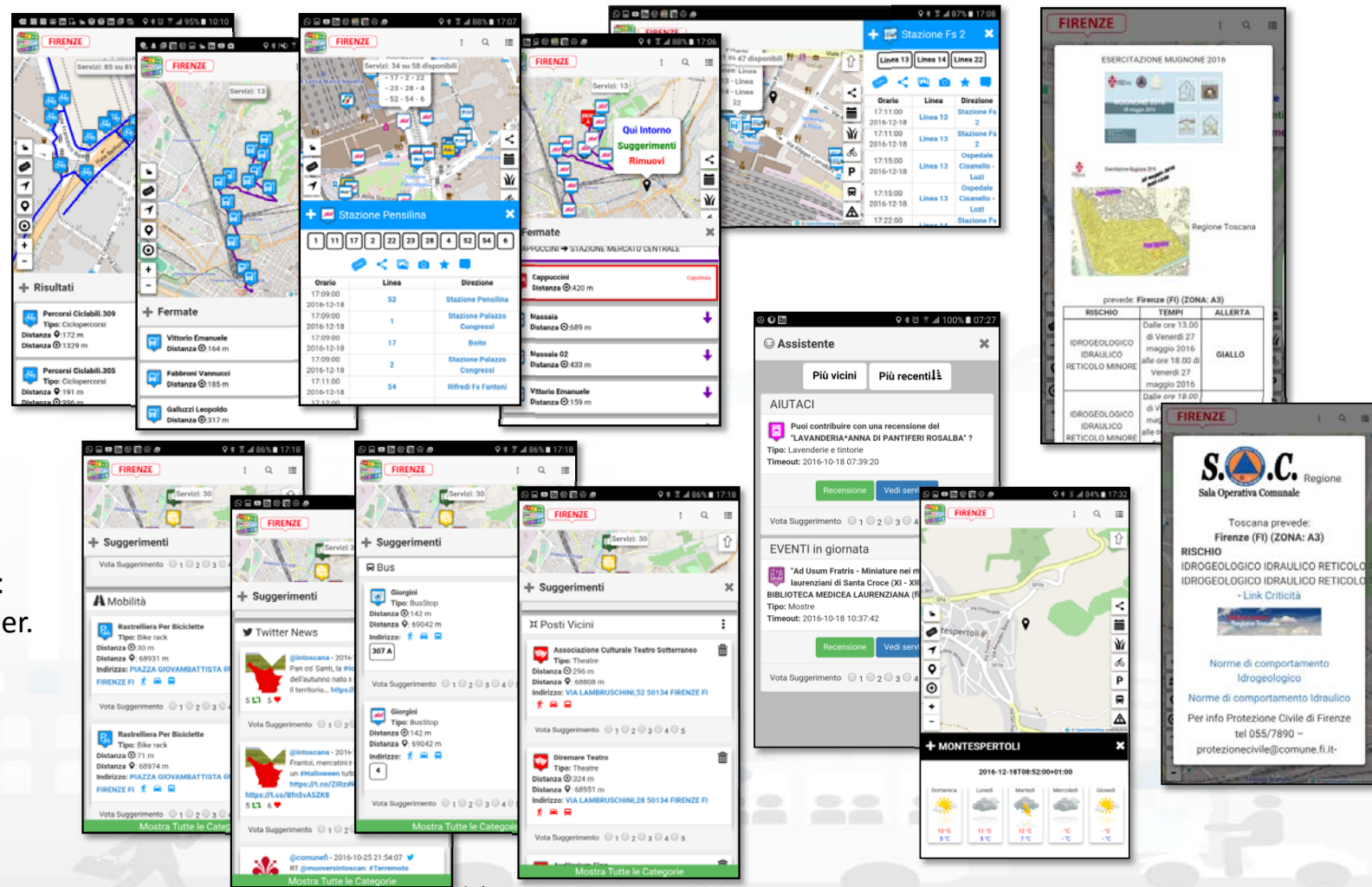
- **5 languages:** IT, EN, SP, DE, FR
- **Profiles city users:** Citizens, commuter, student, tourist, operator, etc..
- **Profiled Menu per POI**
 - adaptive
- **Main Menu: dynamic, and personalized**
- **Search Text**
- Search per POI
 - Near to you, near to a point, line...
- Other search
 - Close to you, events green areas, public transport, tickets, Cycling, parking,
 - Etc.
- POI
 - Preferred, Social icon
 - Ranking, Comments, images



Mobile APP, features 2/3



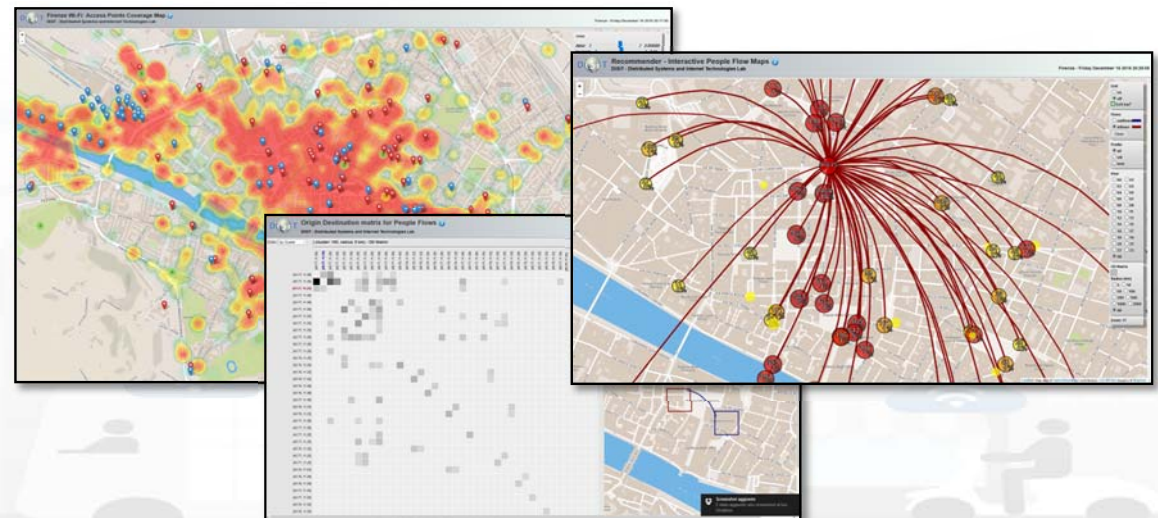
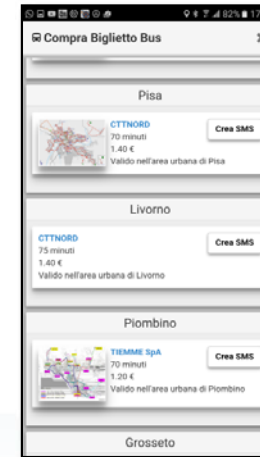
- **Mobility**
 - Paths and stops, time
 - Parking + prediction
 - Tickets
 - Flow + prediction
- **Personal Assistant**
 - Info
 - Engagement
 - Help
 - Civil protection
- **Suggestions:**
 - Personalized and adaptive: banned e typed per city user.
 - POI, Twitter, Events,
 - Weather forecast,
 - Civil Protection
 - ...



Mobile APP, features 3/3

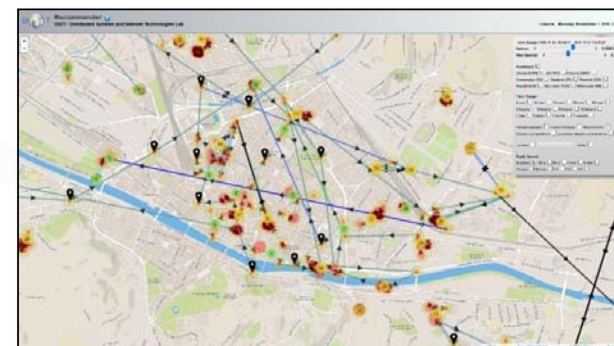
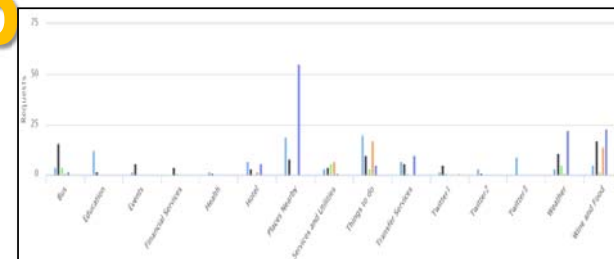


- Navigation 3D (BETA)
- Ticketing for busses
- App used are tool for city assessment
 - Wifi status
 - iBeacon status
 - User behavior analysis
 - GPS movements kinds
 - OD matrix
 - International flows



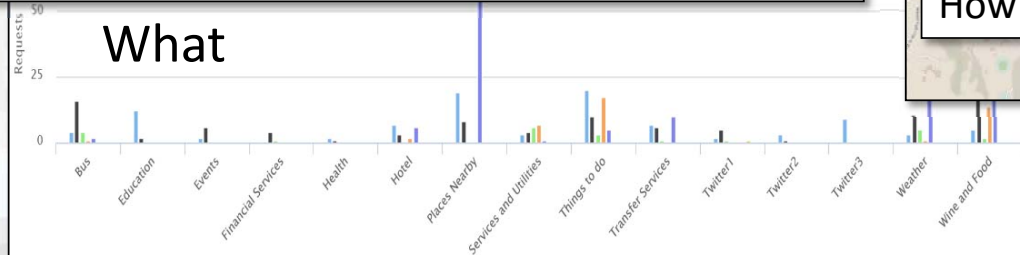
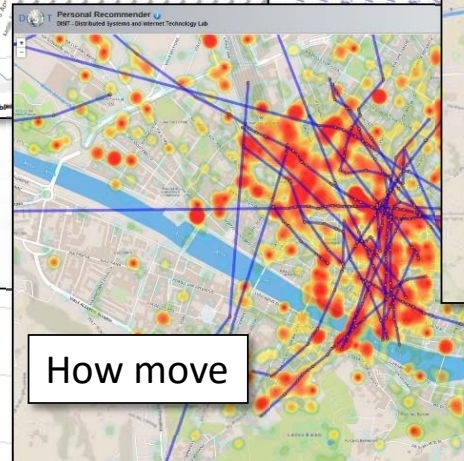
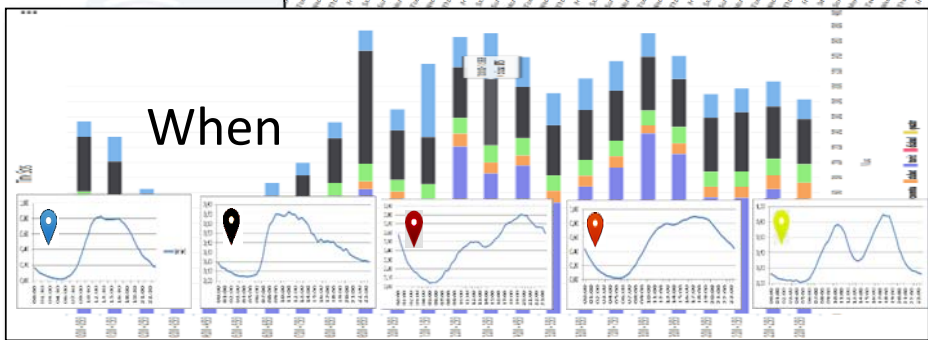
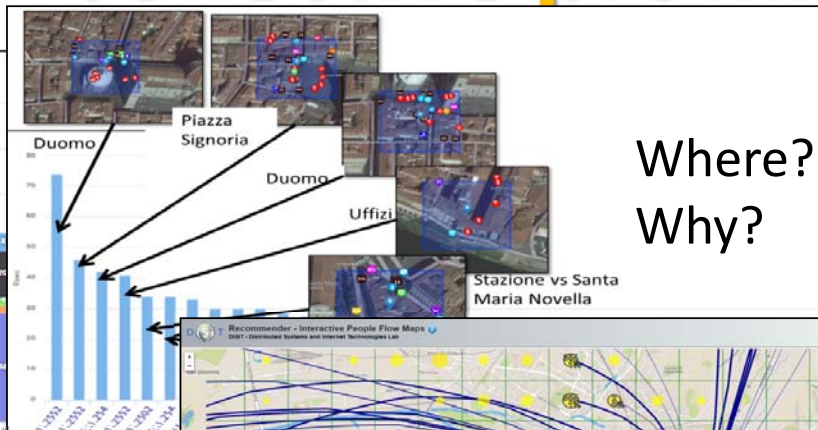
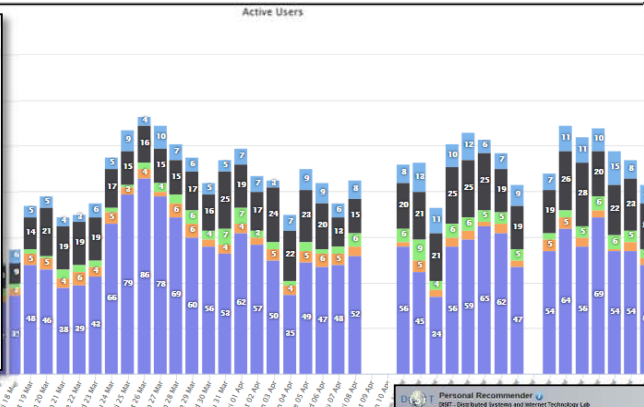
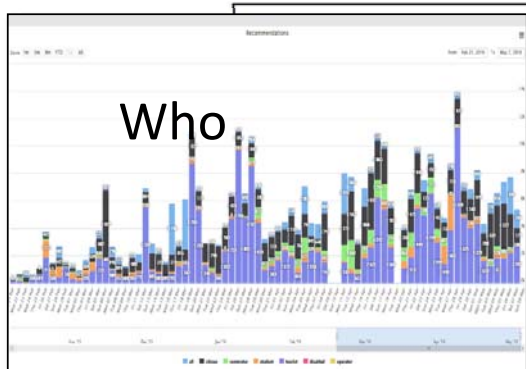
Reasoning on App Data and for App

- **User behavior analysis**
 - engagement on demand
 - Reconstruction of user behavior on the move and in the city in general
 - Pedestrian, TPL, Bike, private, etc.
- **Production of Engagements....**
- **Suggestions...**
- **Routing....**



Info name	Type	#user	#routed	#routed on #user	Description
daily_event_de	ENGAGEMENT	1 (0.0%)	0 (0%)	0%	Suggest (in german) an event currently on in Florence
daily_event_en	ENGAGEMENT	1720 (2.12%)	70 (1.1%)	4.07%	Suggest (in english) an event currently on in Florence
-commuter		0 (0.28%)	0 (0%)	0 (0%)	
-student		14 (0.81%)	0 (0%)	0 (0%)	
-tourist		1482 (88%)	25 (35.71%)	25 (1.71%)	
-urban		113 (6.37%)	39 (35.71%)	39 (34.51%)	
-operator		0 (0%)	0 (0%)	0 (0%)	
-disabled		0 (0%)	0 (0%)	0 (0%)	
-all		119 (6.92%)	0 (0.37%)	0 (0.04%)	
daily_event_es	ENGAGEMENT	6 (0.01%)	4 (0.41%)	66.67%	Suggest (in spanish) an event currently on in Florence
daily_event_fr	ENGAGEMENT	6 (0.01%)	0 (0%)	0%	Suggest (in french) an event currently on in Florence
daily_event_it	ENGAGEMENT	5439 (6.73%)	296 (33.02%)	5.42%	Suggest (in Italian) an event currently on in Florence
parking_en	ASSISTANCE	141 (0.17%)	120 (12.98%)	80.78%	Alert (in english) if the user parked in a residential parking zone
parking_es	ASSISTANCE	3 (0.0%)	3 (0.3%)	100%	Alert (in spanish) if the user parked in a residential parking zone
parking_fr	ASSISTANCE	187 (0.23%)	1 (0.1%)	0.53%	Alert (in Italian) if the user parked in a residential parking zone
parking_it_de	ENGAGEMENT	88 (0.08%)	1 (0.1%)	1.47%	Ask (in german) a contribution for a nearby point-of-interest

User Behavior Analyzer for Collective profiling



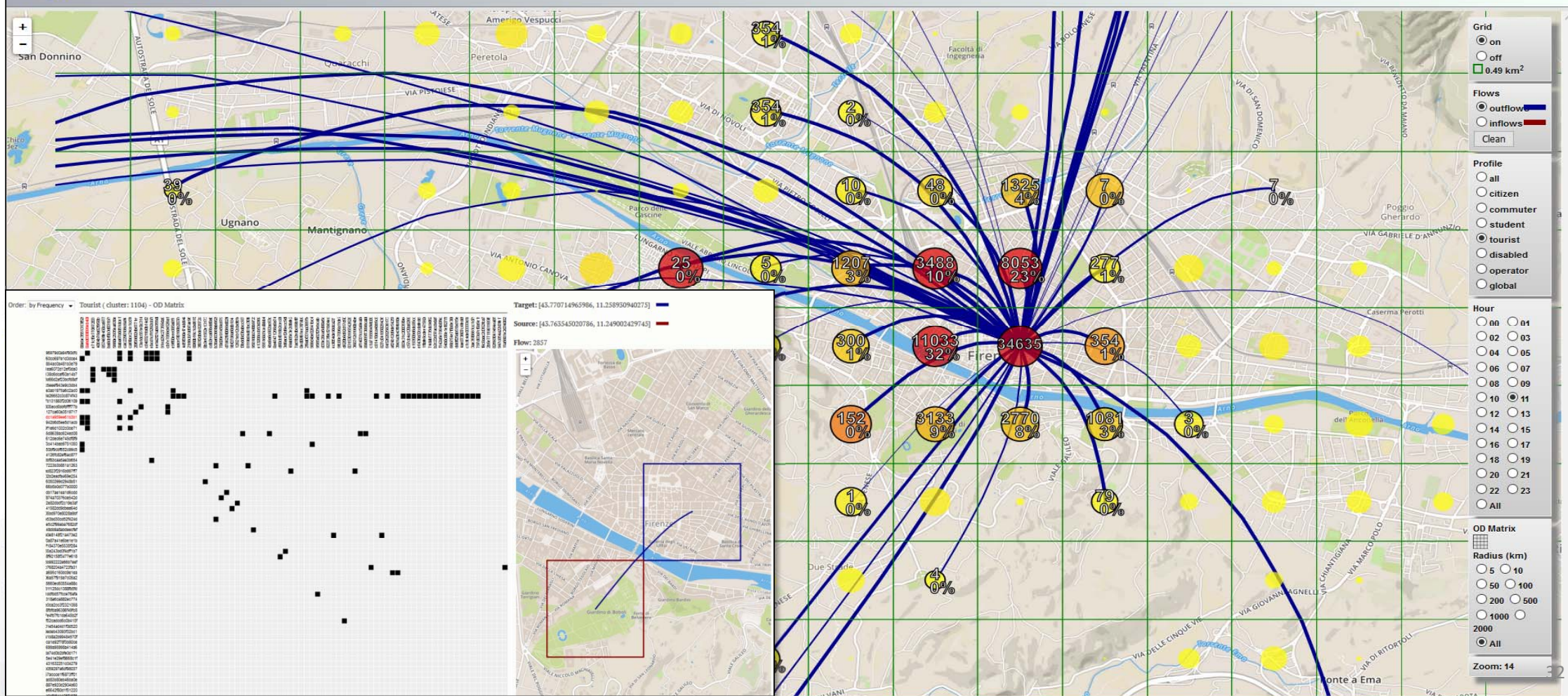


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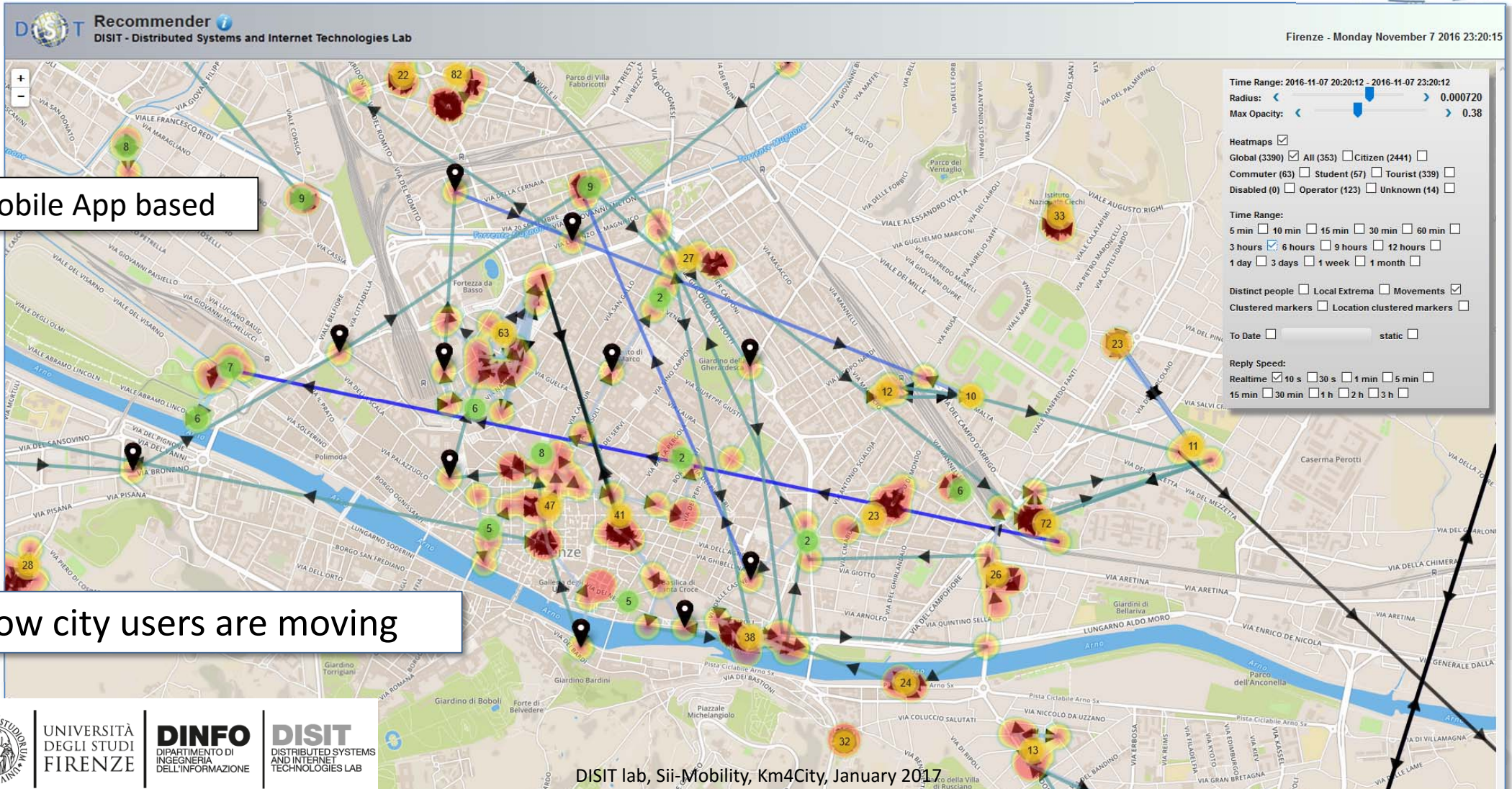
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OD Matrix scalabile



Anonymous User Behavior Analysis



Mobile App based

How city users are moving



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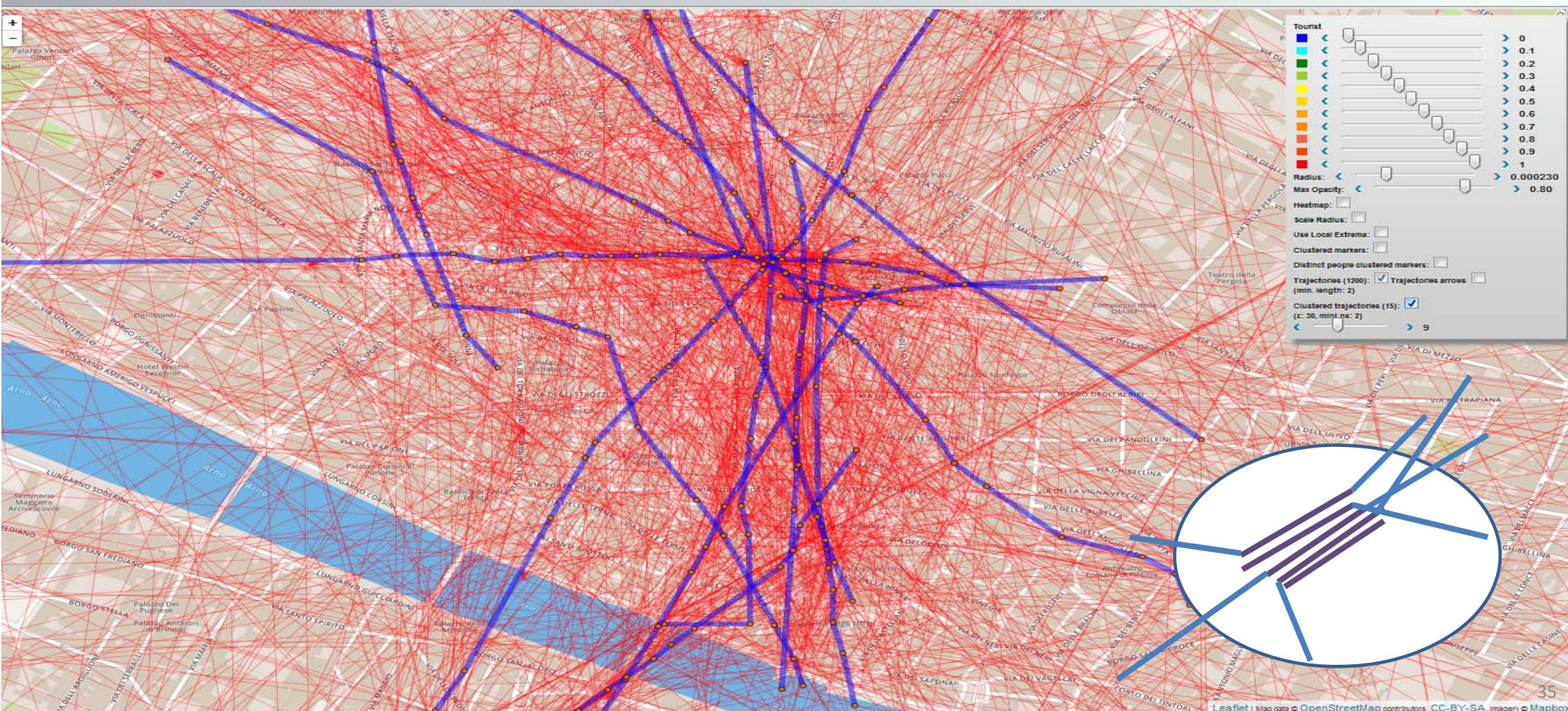
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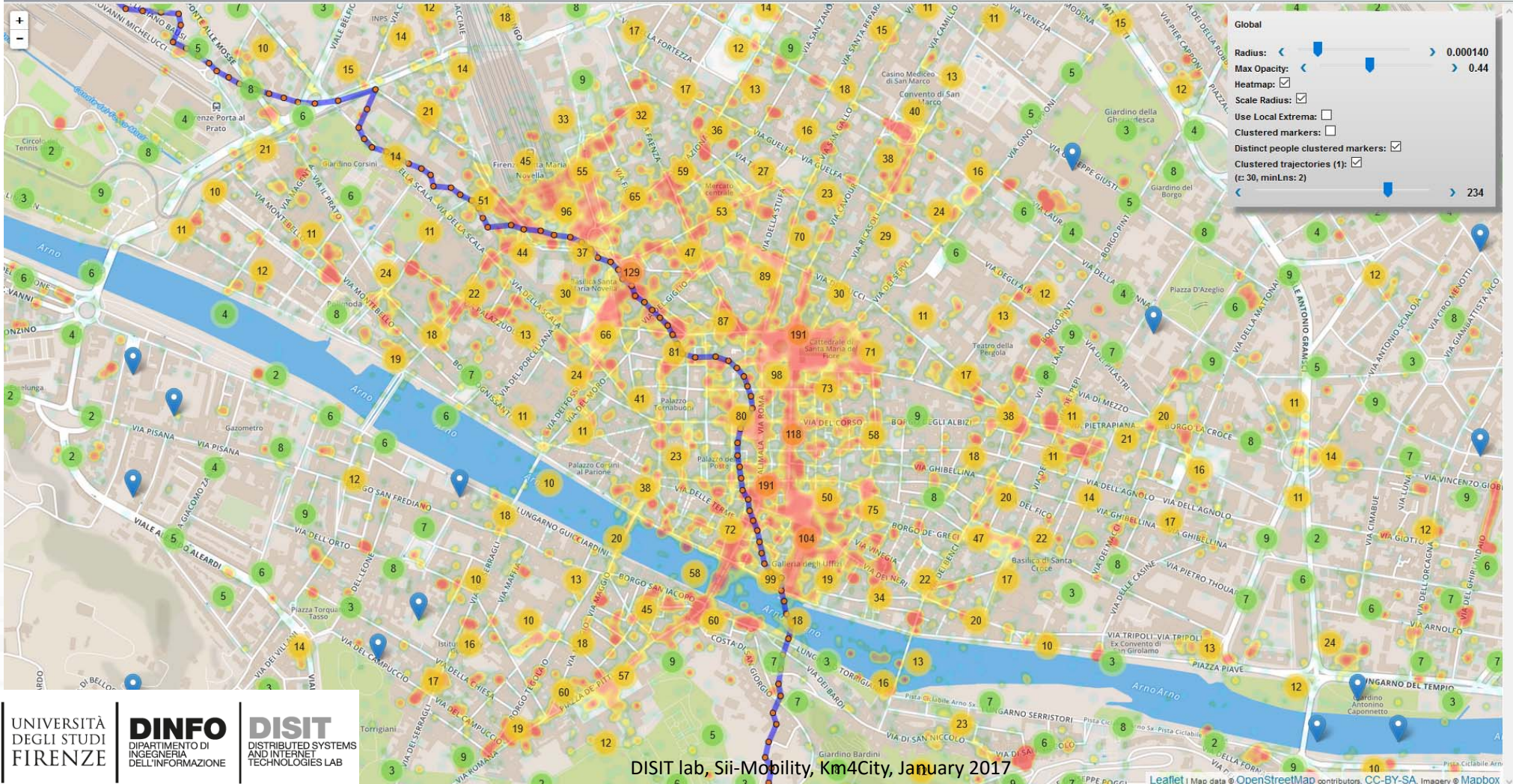
Cluster di Trajectories



Personal Recommender
DISIT - Distributed Systems and Internet Technology Lab



Heat Map from Mobile: users as sensors



DISIT lab, Sii-Mobility, Km4City, January 2017

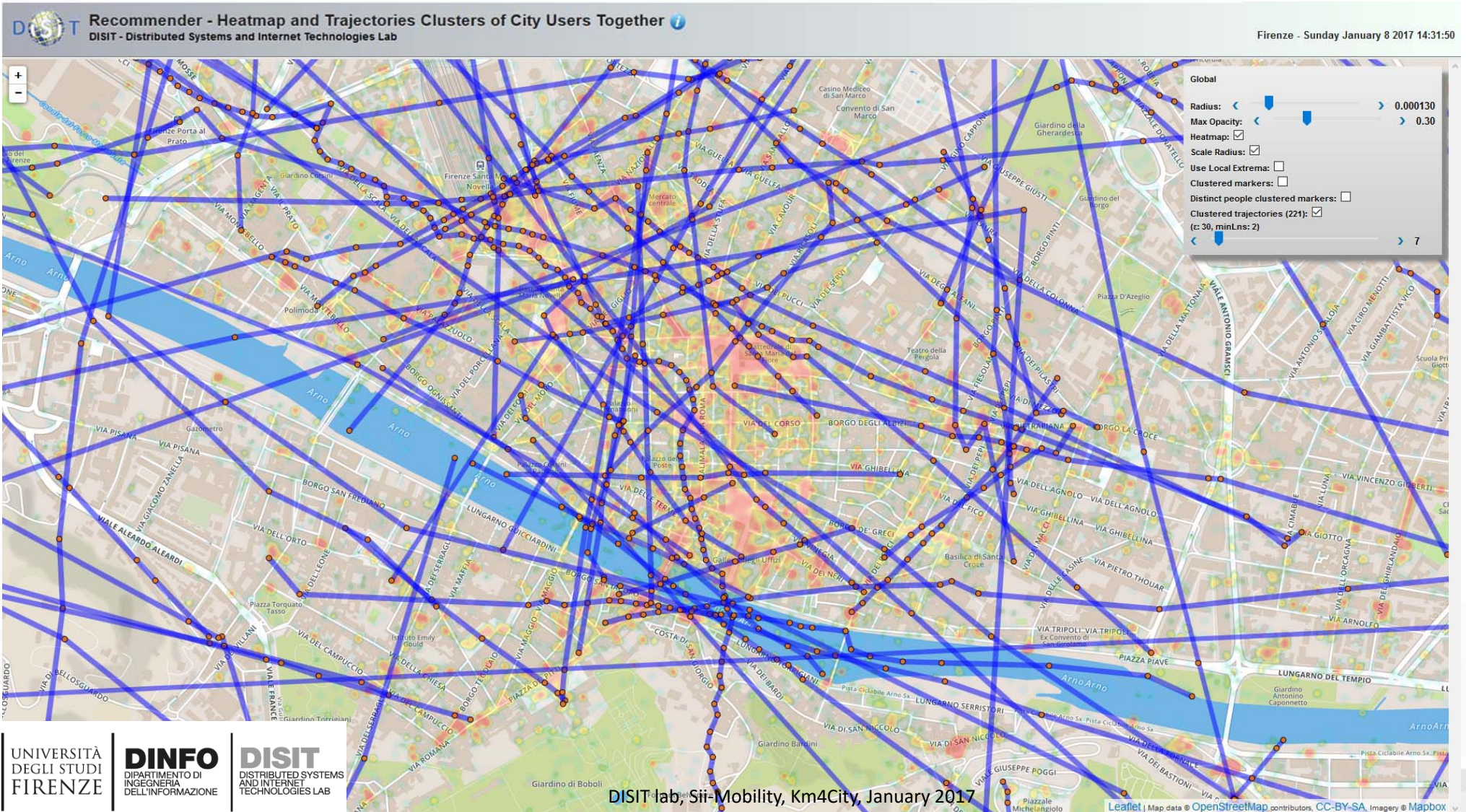


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Heat Map from Mobile: users as sensors



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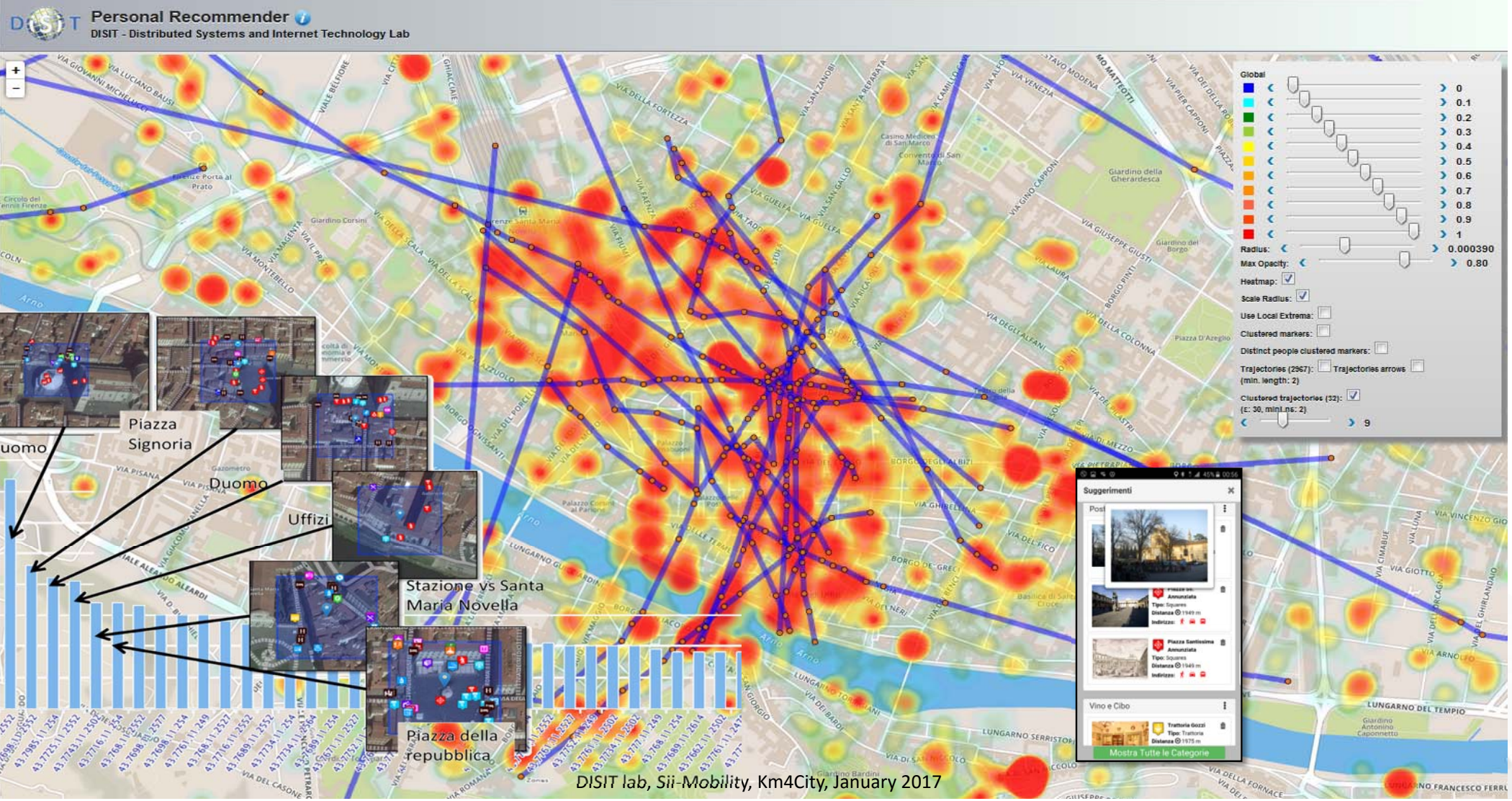


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<http://www.disit.org>

User Behavior Analyzer



DISIT lab, Sii-Mobility, Km4City, January 2017

Strategies Implementation via Engagement

- Produce value from data enabling to
 - *Stimulate virtuous behavior,*
 - *influence engage City Users!*
 - Increase efficiency in energy consumption
 - Reduce pollution and traffic congestion
 - Improve quality of service, quality of life
- Create an ecosystem for innovation and put in action any smart city solutions and services.



Suggestion on demand service

- Personalized menu on the basis of User Category
- **Automated Suggestions personalized:**
 - taking into account user profile and behavior, dislikes, requests, queries, etc.
- **Engagement**
 - Engine and Rule Editor
- **Advertising**
 - Engine and Rule Editor

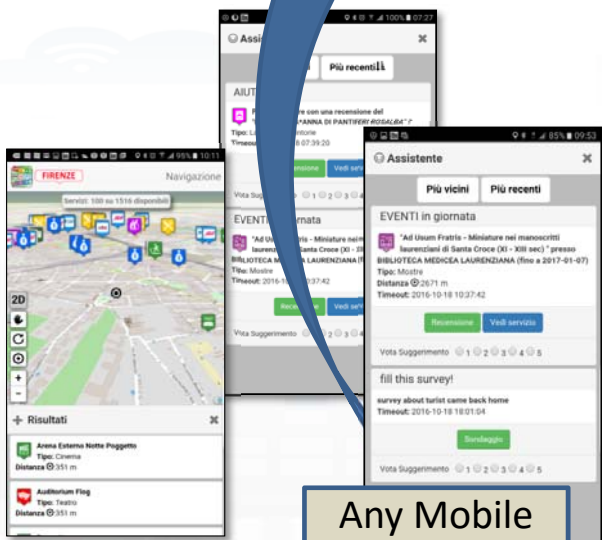
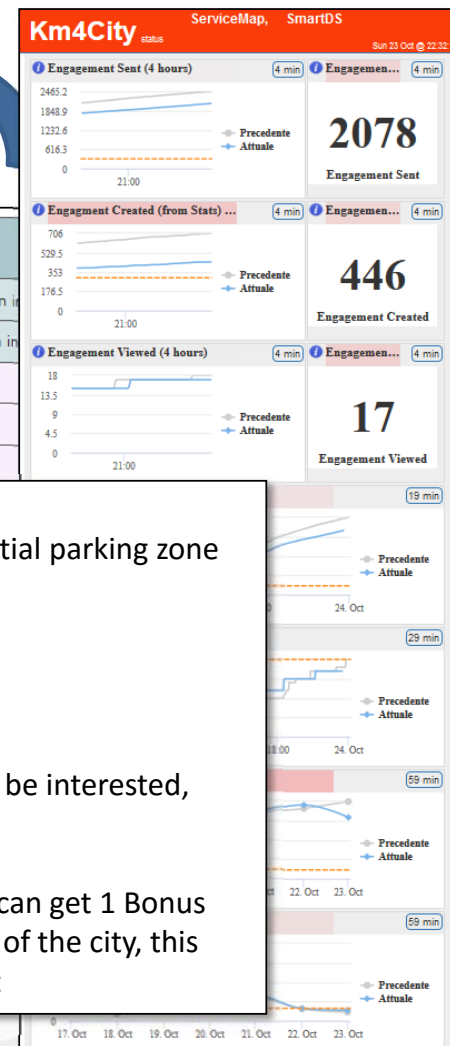


User influencing, engaging, monitoring & Follow Up

City & City Operators Strategy Editor



Rule name	Type	#sent	#viewed	#viewed on #sent	Description
daily_event_de	ENGAGEMENT	1 (0%)	0 (0%)	0%	Suggest (in german) an event currently on in
daily_event_en	ENGAGEMENT	1720 (2.12%)	70 (7.1%)	4.07%	Suggest (in english) an event currently on in
- commuter		5 (0.29%)	0 (0%)	0 (0%)	
- student		14 (0.81%)	0 (0%)	0 (0%)	
- tourist		1462 (85%)	25 (35.71%)	25 (1.71%)	
- citizen		113 (6.57%)			
- operator		0 (0%)			
- disabled		0 (0%)			
- all		119 (6.92%)			
daily_event_es	ENGAGEMENT	6 (0.01%)			
daily_event_fr	ENGAGEMENT	6 (0.01%)			
daily_event_it	ENGAGEMENT	5459 (6.73%)			
parking_en	ASSISTANCE	141 (0.17%)			
parking_es	ASSISTANCE	3 (0%)			
parking_it	ASSISTANCE	187 (0.23%)			
shoot_a_photo_de	ENGAGEMENT	68 (0.08%)			

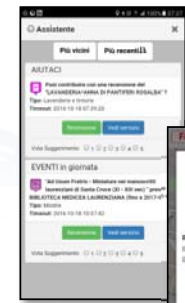


Any Mobile and Web App

- Inform**
You have parked out of your residential parking zone
The Road cleaning is this night
The waste in S.Andreas Road is full
- Engage**
Provide a comment, a score, etc..
- Stimulate / recommend**
Events in the city, services your may be interested, etc..
- Provide Bonus**
Since you have parked here you we can get 1 Bonus
We suggest you to leave the car out of the city, this bonus can be used to by a bus ticket

Engagement & Assistant Rules

- **Detecting** city users' habits about mobility
 - Private cars → **stimulating Bus Usage & Bikes**
 - Private cars parking → usage of **peripheral parking-lot + bus**
 - Leave the car and take the bus twice → by using **bonus, tickets..**
 - → different solutions for moving...
- **Assisting by notifying** when one is
 - parking out of the residential parking zone
 - parking in a zone subjected to cleaning in the next two days
 - entering in the restricted traffic zone
- **Suggesting** you about
 - Events, **Civil Protection Alerts**,
 - **Closer free parking** ...
- **Administering** questionnaires
 - Getting assessment about services, city experience
 -
- **Requesting** ranking, photo and/or comments



Overview of Development tools for Apps



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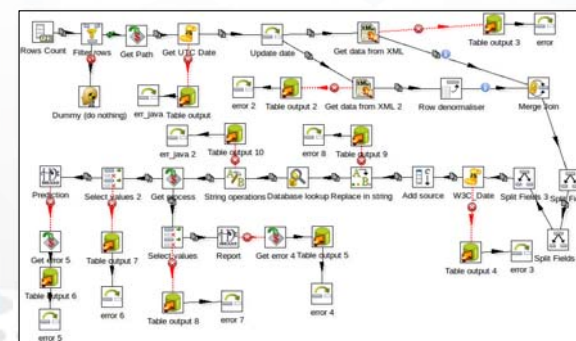
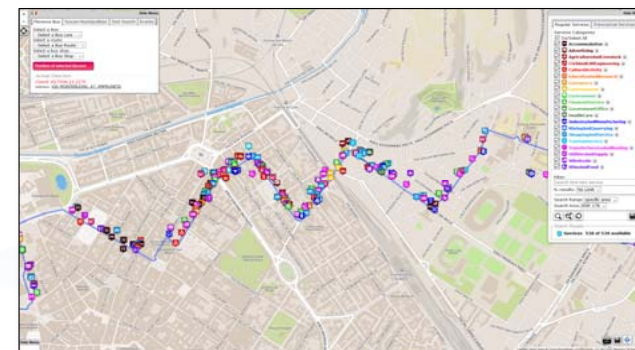
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Development Tools

- **Smart City API:**
 - Several kind of APIs
- **Generator “ServiceMap”,**
<http://servicemap.km4city.org>
 - Call per web and mobile App
 - Embedding in web pages
- **Load new data: manual and automatic**
 - POI, IOT, etc.
 - Load of Shape & Paths



- <http://www.disit.org/6597>
 - REST API: serviceURI or Selection or GPS
 - REST API: Query ID
 - Receive an email
 - Get a JSON, HTML, ...
 - Call SPARQL
- EMBED facility in third party web pages
- Developers may use the ServiceMap tool to:
 - compose geographical and textual queries
 - THEN request an e-mail containing the calls (same results in JSON and/or in HTML)

The screenshot shows the ServiceMap tool interface. It features two main windows overlaid on a satellite map of Florence.

Top Window: FERMATA : STATUTO 04

- LINKED OPEN GRAPH
- Linee: 20 28 4 54 8
- Prossimi transiti: (empty list)

Bottom Window: FERMATA : STAZIONE PENSILINA

- LINKED OPEN GRAPH
- Linee: 11 17 22 23 36 4 52 54 6
- Prossimi transiti: (table below)

Orario	Linea	Stato	Ride
13:01:40	4	In orario	5084813
13:05:04	17	Ritardo	4933186
13:07:24	6	In orario	4829621
13:09:02	17	In orario	4848688
13:12:02	6	Anticipo	4867907
13:12:20	6	In orario	4829654

Save your information for services. (Top Dialog)

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:

Insert a title:

Insert a description:

Save your information for services. (Bottom Dialog)

You can save this query 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:

Insert a title:

Insert a description:



ServiceMap Development Tool

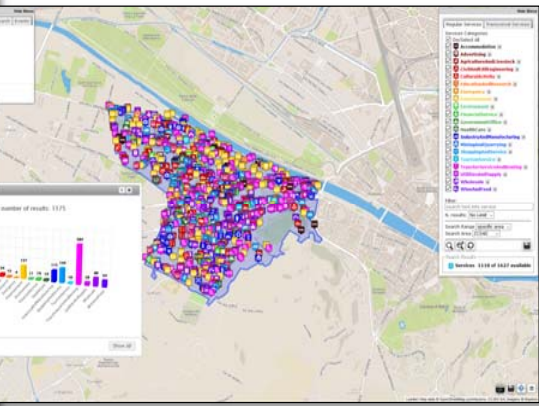


Search around a GPS point

Search along a line

Search for Geo Located Services

Get Events in the city



Search in an area

Get weather forecast

Get Real Time data (public busses, car par sensors, traffic flows)



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<http://www.disit.org>

ServiceMap Dev Tool



Search around a GPS point

Search along a line

Regular Services | Transversal Services

Search from this service

Service Categories

Di>Select All

- Area
- Digital Location
- Emergency
- Fresh Place
- Food - Restaurant & Bar
- Road Sensors
- Bus Stops

N. results for each: 200

Search Range: 500 mt

Services: 35 of 35 available

Bus Stops: 13 of 13 available

Road Sensors: 2 of 2 available

72 Bus Lines Found

Search Results organized by category

Total number of results: 2231

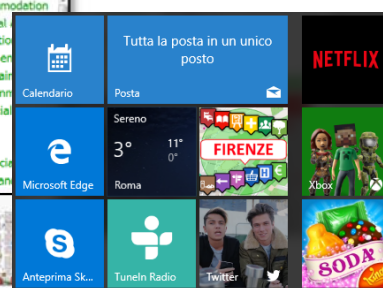
Category	Number of Results
Accommodation	100
Cultural	100
Education	100
Emergency	100
Entertainment	100
Environment	100
Financial	100
ATM	100
Bank	100
Finance	100
Insurance	100
IndustryAndManufacturing	100
InformationAndCommunication	100
HealthCare	100
PublicAdministration	100
RealEstate	100
Transportation	100
Utilities	100
Wholesale	100
WholesaleAndRetail	100

Smart City API call generation

Web App HTML5

Mobile Apps

Embed into Web pages





Linked Open Graph

log.disit.org/service/?graph=df5b4f67f01b7d96071475d62068e0fe

Linked Open Graph

SiiMobility (by DISIT)

Examples:

- VIA GIACOMO MATTEOTTI
- Bagno a ripoli
- Florence

Choose a class:

Search for keyword

keyword:

uri: Request

Your data

sparql endpoint: (optional)

uri: Request

Status

Requests:

Remove Clear

Type of relations

Select all Deselect all Invert Hide all inverse

<input checked="" type="checkbox"/> belongTo	<input checked="" type="checkbox"/> coincideWith
<input checked="" type="checkbox"/> contains	<input type="checkbox"/> depiction
<input type="checkbox"/> ends	<input checked="" type="checkbox"/> forming
<input type="checkbox"/> has	<input checked="" type="checkbox"/> hasAccess
<input checked="" type="checkbox"/> hasExternalAccess	<input checked="" type="checkbox"/> hasMunicipality
<input checked="" type="checkbox"/> hasProvince	<input checked="" type="checkbox"/> hasRule
<input checked="" type="checkbox"/> hasStreetNumber	<input checked="" type="checkbox"/> inMunicipalityOf
<input checked="" type="checkbox"/> isIn	<input checked="" type="checkbox"/> isPartOf
<input checked="" type="checkbox"/> isPartOfProvince	<input checked="" type="checkbox"/> isPartOfRegion
<input checked="" type="checkbox"/> managingAuthority	<input checked="" type="checkbox"/> ownerAuthority
<input checked="" type="checkbox"/> placedIn	<input type="checkbox"/> sameAs
<input checked="" type="checkbox"/> seeAlso	<input type="checkbox"/> starts

Linked Open Graph

museo ferragamo

DESCRIPTION

Relations of Museo Ferragamo with the road graph

Browsing the knowledge base
Linked Open Graph
<http://log.disit.org>



<http://log.disit.org/spqlquery/>

Flint SPARQL Editor 1.0.3

New Edit View Help

Dataset **KM4CITY** Mode **SPARQL 1.1 Query** Output **SPARQL-XML**

Query 1

```

1 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
2 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
3
4 SELECT * WHERE {
5   ?s ?p ?o
6 }
7 LIMIT 10

```

Samples SPARQL Properties Classes Prefixes

All municipalities

Select all municipalities names.

```

PREFIX km4cr: <http://www.disit.org/km4city/schema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
SELECT * WHERE {
  ?s a km4cr:Municipality;
  rdfs:label ?l.
} ORDER BY ?l

```

Bus stops near the Florence SMN train station

The bus stops within 100m of the Firenze SMN

```

PREFIX km4cr: <http://www.disit.org/km4city/schema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

```

Line 1 position: 1; Copy; Cancel; Query Results

#	s	p	o
1	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
2	http://www.w3.org/2000/01/rdf-schema#subPropertyOf	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
3	http://www.w3.org/2000/01/rdf-schema#subClassOf	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
4	http://www.w3.org/2000/01/rdf-schema#domain	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
5	http://www.w3.org/2000/01/rdf-schema#range	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
6	http://www.w3.org/2002/07/owl#equivalentProperty	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property

Querying the knowledge base in SPARQL

How to Legally work with App Kit



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Licenze of App KIT

- **Sii-Mobility is Open Source GPL on GitHub as DISIT lab:**
 - <https://github.com/disit>
- **Sii-Mobility App Kit**
 - Affero Open Source GPL, ver.3.0
 - has a limited coverage of features with respect to the whole «Toscana dove cosa ..» Apps
 - can be only used to develop additional App Modules that CAN be integrated to the main «xxxxx dove cosa ..» Apps family by DISIT Lab
- **Mobile App «Toscana dove cosa ..» is**
 - available for cities that would like to develop their version of «xxxxx dove cosa» App Family, published by DISIT Lab
- Smart City API can be used for developing proprietary Apps

Planned Additional Modules for the Mobile App

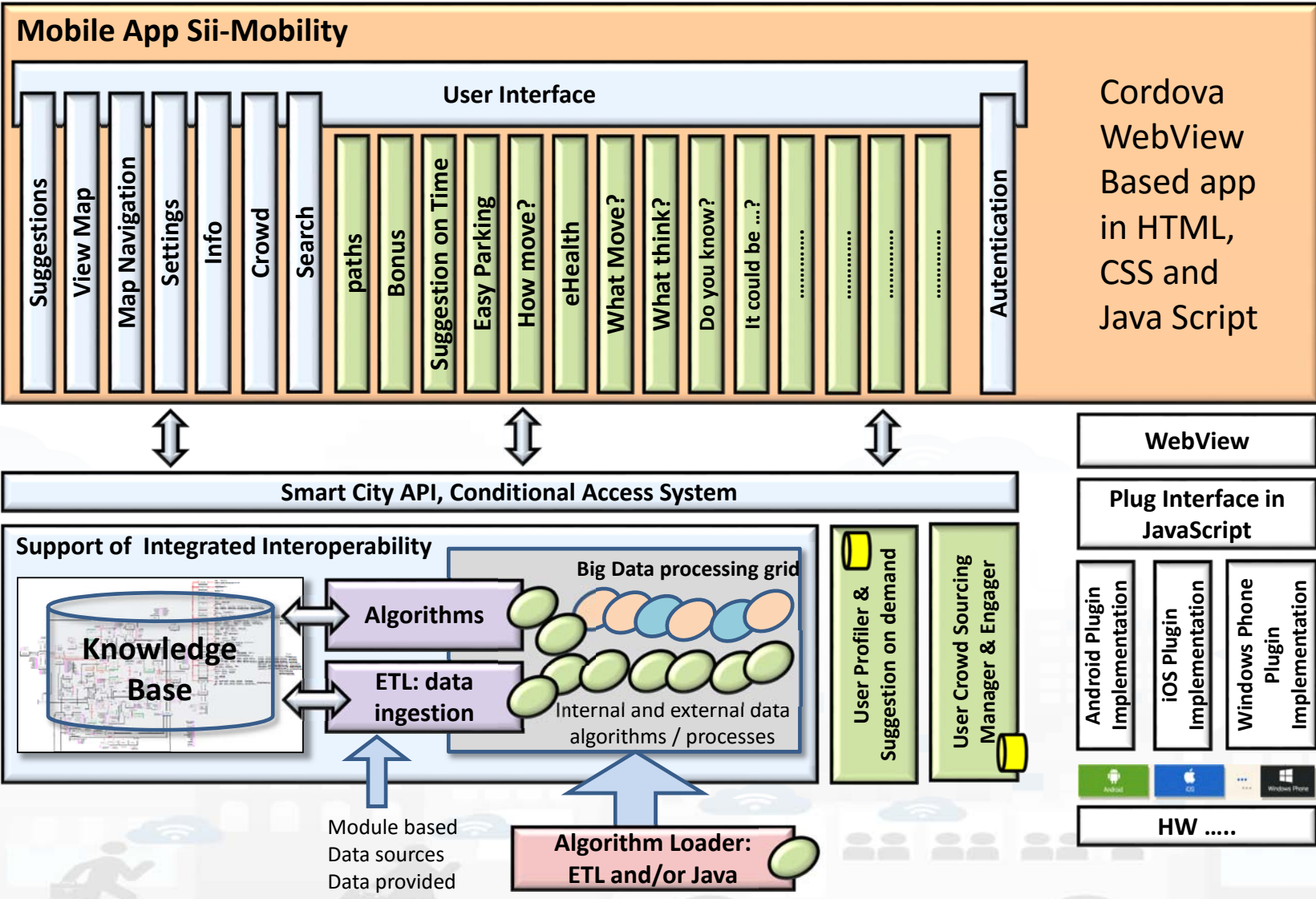


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Module based Data sources Data provided

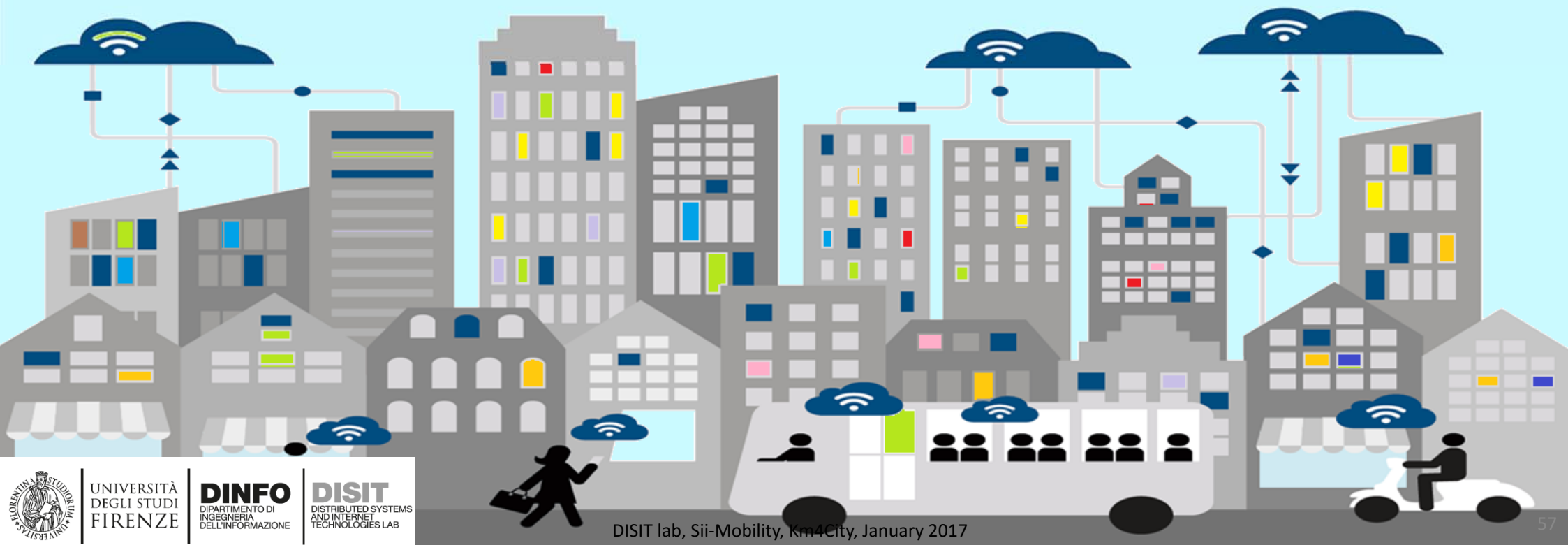
Algorithm Loader:
ETL and/or Java

modulo itinerario, percorso	(MAPP04)	Modulo per web app e mobile per la richiesta di informazioni riguardo alla pianificazione di un percorso che preveda eventuali tappe intermedie e la loro visualizzazione interattiva. Dovrà essere possibile imporre vincoli sui mezzi da utilizzare e su come indirizzare il calcolo (percorso più veloce più economico, più sostenibile), etc. si veda requisiti del pianificatore e delle API che permetteranno a questo modulo di funzionare.
modulo profiling, comportamento virtuoso	(MAPP05)	Modulo per web app e mobile per la richiesta di informazioni riguardo alle info personali e preferenze ed al suo comportamento passato (e.g., prevalenza bus, car, moto, bike, etc.). Suggerisce comportamenti virtuosi, come l'uso di mezzi a minor impatto ambientale, l'uso di scambiatori, anche arrivando ad offrire bonus se possibile, prendendoli da un carnet di Bonus della PA o delle TPL.
modulo suggestion del tempo e nello spazio	(MAPP06)	Modulo per web app e mobile che sfrutta gli algoritmi di pianificazione accessibili via API per fornire suggerimenti nel tempo e nello spazio. Per esempio: hai tempo passa da Mario, visto che sei qui visita XX, perché non parcheggi qui visto che hai ancora 20 minuti, oppure anche semplicemente dato un certo punto GPS impostando il tempo a disposizione, viene suggerito un percorso che suggerisce di visitare punti di interesse in base alle preferenze dell'utente.
modulo parcheggio easy	(MAPP07)	Modulo per web app e mobile che permette di monitorare lo stato dei parcheggi o di un parcheggio in particolare per evitare di arrivare al parcheggio senza sapere se vi sarà posto. Questo, avendo i dati, potrà essere usato in riferimento ai parcheggi coperti o lungo strada.
modulo ECOGUIDA	(MAPP08)	Modulo per web app e mobile che sfrutta gli algoritmi di profilazione e la valutazione del comportamento dell'utente per suggerire soluzioni di mobilità alternative. Utilizza le smart City API per accedere ai dati delle abitudini della persone, delle alternative, dei servizi presenti sul territorio, etc. ECOGUIDA
modulo tieniti in forma	(MAPP09)	Modulo per web app e mobile che sfrutta gli algoritmi di profilazione e la valutazione del comportamento dell'utente per suggerire soluzioni di mobilità che possono tenerlo in forma. Utilizza le smart City API per accedere ai dati delle abitudini della persone.....
modulo lascia un commento, "che ne pensi....."	(MAPP10)	Modulo per web app e mobile che sfrutta gli strumenti di geolocalizzazione dell'App per capire dove si trova l'utente e se è rimasto fermo per un certo periodo in qualche punto di interesse o che ci è stato, gli può chiedere conferma, ma anche richiedere un contributo: un commento, un score, una foto. Utilizza le smart City API per accedere ai dati delle abitudini della persone e capire i servizi geolocalizzati, etc.
modulo servizi commerciali, "ma lo sai che?"	(MAPP11)	Modulo per web app e mobile che sfrutta gli strumenti di geolocalizzazione dell'App per capire dove si trova l'utente e se è rimasto o sta passando a piedi o in auto per un certo punto di interesse. Che magari gli può interessare sulla base del suo profilo. Il sistema gli invia una notifica in push (il telefono chiede ed il server invia) dove si informa che riguardo a quel punto si possono promuovere commercialmente cose interessanti.
modulo partecipativo, "sarebbe opportuno che ..."	(MAPP12)	Se si trova in modalità navigazione la destinazione è nota e lo fa il navigatore. Ma se la sua destinazione non è nota si può dargli una mano con questo modulo. Modulo per web app e mobile che sfrutta gli strumenti di geolocalizzazione dell'App per capire dove si trova l'utente e fornirgli delle indicazioni sulle strade che potrebbe prendere per raggiungere le sue destinazioni abituali tenendo conto anche di eventuali incidenti e traffico, e per ridurre il carico su certe direttrici.
modulo "sapevi che nel...."	(MAPP13)	Modulo per web app e mobile che sfrutta gli strumenti di geolocalizzazione dell'App per capire dove si trova l'utente e se è rimasto o sta passando a piedi o in auto per un certo punto di interesse. Che magari gli può interessare sulla base del suo profilo. Il sistema gli invia una notifica in push (il telefono chiede ed il server invia) dove si informa che riguardo a quel punto si possono raccontare aspetti presi da Wikipedia o da altra sorgente. Possibile necessità di caricare un modulo computazionale aggiuntivo in piattaforma Sii-Mobility (per elaborare e fare cache delle info estratte da dbpedia o da altri) oppure una base di dati.
modulo merci logistica	(MAPP14)	Modulo per web app e mobile per la richiesta di informazioni riguardo alla pianificazione di un percorso di distribuzione merci che preveda eventuali tappe intermedie e la loro visualizzazione interattiva. Dovrà essere possibile imporre vincoli sui mezzi da utilizzare e su come indirizzare il calcolo (percorso più veloce più economico, più sostenibile), etc. si veda requisiti del pianificatore e delle API che permetteranno a questo modulo di funzionare.
altro	(MAPP15)	1) Soluzione per il tracking di flotte di veicoli di operatori ecologici e infomobilità al guidatore, basato su mobile app e applicazione web di backoffice interoperabile con la piattaforma Sii-Mobility. 2)



	ETL data o processo di analytic	DB storico	attivazione	View only	Immissione dati
modulo itinerario, percorso	Si per computo routing	Centrale, user profile, storico bonus e percorsi	Da-a, da-a-a-a, GPS	no	Si
modulo profiling, comportamento virtuoso	Si per computo bonus	Centrale, user profile, storico bonus	Stato del comportamento o posizione	no	Si
modulo suggestion del tempo e nello spazio	Si per calcolo suggerimenti	Centrale, user profile, storico bonus	Stato del comportamento o posizione	no	No
modulo parcheggio easy	Dati parcheggi RT	Centrale, user profile, storico bonus	Stato del comportamento o posizione	no	No
modulo ECOGUIDA	Si per computo comportamento e suggestion	Centrale, user profile, storico bonus	Stato del comportamento o posizione	Si	Si
modulo tieniti in forma	per computo comportamento e suggestion	Centrale, user profile, storico bonus	Stato del comportamento o posizione	Si	Si
modulo lascia un commento, "che ne pensi....."	per computo comportamento e suggestion	Centrale, user profile, storico bonus	Stato del comportamento o posizione	Si	Si
modulo servizi commerciali, "ma lo sai che ?"	per computo comportamento e suggestion	Centrale, user profile, storico bonus	Stato del comportamento o posizione	Si	Si
modulo partecipativo, "sarebbe opportuno che ..."	per computo comportamento e suggestion	Centrale, user profile, storico bonus	Stato del comportamento o posizione	Si	Si
modulo "sapevi che nel...."	per computo comportamento e suggestion	Centrale, user profile, storico bonus	Stato del comportamento o posizione	Si	Si
modulo merci logistica	Si per computo routing	Centrale, user profile, storico bonus e percorsi	Da-a, da-a-a-a, GPS	Si	Si
Modulo guida connessa	Si per computo routing	Centrale, user profile, storico bonus	Stato del comportamento o posizione	Si	Si
Modulo per connessione con ZTL via WIFI	per computo comportamento e suggestion	Centrale, user profile, storico bonus	Stato del comportamento o posizione	Si	Si

Info and Documents



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- **Documentation Smart City API, version 1, January 2017**
 - <http://www.disit.org/6991> (document from Sii-Mobility)
- **App Kit development page:**
 - <http://www.disit.org/6977> (slides ready, and video to appear)
- **Ontology and Km4City Tools:**
 - <Http://www.km4city.org>
 - <http://www.disit.org/6506> Ontology and documentation
- **Sii-Mobility is Open Source on GitHub as DISIT lab:**
 - <https://github.com/disit>
 - <https://github.com/disit/siiMobilityAppKit> (mobile App kit)
- **Data Ingestion processes and tools, tutorial:**
 - <http://www.sii-mobility.org/index.php/documentazione/slide-e-altro>
 - <http://www.disit.org/6690>
- **Deliverables of Sii-Mobility:**
 - <http://www.sii-mobility.org/index.php/documentazione/deliverable>
- **FAQ of Sii-Mobility:**
 - <http://www.sii-mobility.org/index.php/il-progetto/faq>
- **Promotional Kit for «Toscana dove cosa App»**
 - <http://www.sii-mobility.org/index.php/documentazione/kit-promozionale-app-toscana>



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Open Source



Km4City, Sii-Mobility, RESOLUTE, REPLICATE: smart city big data open source tools. Km4City is a knowledge base and a research line of DISIT lab mainly developed before the start of Sii-Mobility, RESOLUTE, REPLICATE projects. While it has been mainly improved by them. Those projects are complementar each other and almost all of them use and contribute the Km4City research line. **[ServiceMap smart city knowledge base tool](#)**: smart city service tool (mainly developed for Sii-Mobility project) for accessing to km4city knowledge base, for service browsing and query, for **[Smart City API](#)** for mobile and for mobile development tool, <http://www.disit.org/km4city>



• **[Km4City ontology model and files](#)** are accessible from <http://www.disit.org/km4city> improved with the support of projects as Sii-mobility, REPLICATE and RESOLUTE



• **[SCE, Smart City/Cloud Engine front end interface](#)**, SCE is part of **[DISCES](#)** a Distributed SCE Scheduler Tools (SCE: Smart City/Cloud Engine), a DISIT tool for smart environments. It is currently in use in **[Km4City](#)** tools, and in **[ICARO Cloud project and service, see CLOUD page. Developed for ICARO, and then improved for Sii-Mobility, and used in many other projects](#)**



• **[SCE, Smart City/Cloud Engine backend](#)**, SCE is part of **[DISCES](#)** a Distributed SCE Scheduler Tools (SCE: Smart City/Cloud Engine), a DISIT tool for smart environments. It is currently in use in **[Km4City](#)** tools, and in **[ICARO Cloud project and service, see CLOUD page. Developed for ICARO, and then improved for Sii-Mobility, and used in many other projects](#)**



• **[DIM-RIM](#)**: Data Ingestion Manager and RDF Indexing Manager, **[WEB page on DISIT lab with user manuals, DIM and RIM](#)** area used in **[Km4City](#)** and tools, **[Sii-Mobility](#)** smart city national SCN project, **[RESOLUTE H2020](#)**



• **[Dashboard Builder and executor](#)**: a tool for creating dashboard for smart city. See Km4City example of dashboard as reported in **<http://www.km4city.org/controlroomtools.html>** for the documentation see **<http://www.disit.org/6935>** which is manual with examples regarding widgets. Developed for REPLICATE Project, and used in others as Sii-Mobility, RESOLUTE.



• **[Sii-Mobility Dev Kit Mobile AppKm4city](#)**: Open Source version of the Sii-Mobility mobile and web app, open modular (the full version is operative and accessible on all stores as "Firenze dove cosa", or "Toscana dove cosa", you can install from <http://www.km4city.org/app>). Developed for Sii-Mobility, adopted for the training and development meeting of the 24 January 2017, and as a basis for the Hackathon of 7-8 April 2017 in Florence.



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Roadmap

2021

2013

Km4City 1.1

- Tuscany Map
- Services
- AVM
- Sensors
- Parking
- Cultural Heritage
- Enrichment cities
- Event in the city
- Digital Locations
- Fresh places

- <http://servicemap.km4city.org> API
- <http://log.disit.org>
- <http://www.disit.org/fodd>
- <http://www.disit.org/tv> Twitter Vigilance
- <http://smartds.km4city.org>

- Weather
- Cultural Heritage
- Energy recharge pillar
- Wi-Fi
- Events in the city

2014

2015

Km4City 1.4

- Embed
- More API
- iBeacon

Km4City 1.5

- SmartDS
- Km4City App

RESilience management guidelines
and Operationalization appLied to
Urban Transport Environment

RESOLUTE H2020
2015-2018 - Started



Sii-Mobility SCN
2016-2018 - Started
Km4City 1.6.2

2016

REPLICATE H2020
2016-2021- Started



REPLICATE
Renaissance of Places
with Innovative Citizenship
And Technology

- Suggestions on demand
- User Behaviour Analysis
- Trajectories and OD

12/2017

- Territorial areas and paths
- Health, Bike sharing
- Statistics, Energy, ICT, ...
- E-vehicles

6/2017

- Risk analysis
- Environmental, water
- Data Licensing models
- Energy Meters
- Fi-Ware compliant

Today

- More Sensors, IOE, IOT
- Dashboard Builder
- Territorial areas and paths
- User Engagement
- Mobility and transport
- Resilience Decision Support

GHOST SIR
2016-2019 - Started



Acknowledgement

- Thanks to the European Commission for founding. All slides reporting logo of **RESOLUTE H2020** are representing tools and research founded by European Commission for the RESOLUTE project. **RESOLUTE** has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement n° 653460).
- Thanks to the European Commission for founding. All slides reporting logo of **REPLICATE H2020** are representing tools and research founded by European Commission for the REPLICATE project. **REPLICATE** has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement n° 691735).
- Thanks to the MIUR for co-founding and to the University of Florence and companies involved. All slides reporting logo of **Sii-Mobility** are representing tools and research founded by MIUR for the Sii-Mobility SCN MIUR project.
- **Km4City** is an open technology exploited by those projects and line of research of DISIT Lab. Some of the innovative solutions and research issues developed into the above mentioned projects are also compliant and contributing to the Km4City approach and thus are contributing to the open Km4City model of DISIT lab.



For the next parts



- **10:30-11:30**

- **ServiceMap usage**

- <http://www.disit.org/6994>



- **Smart City API**

- <http://www.disit.org/6995>



- **11:00-12:30** <http://www.disit.org/6992>

- **Sii-Mobility Mobile App Kit on GitHub**
- **How to develop new module**

- **For the whole App Kit development consult page with slide and video:**

- <http://www.disit.org/6977> (slide ready, and video to appear)

