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OPEN DATA DAY
NUOVE OPPORTUNITÀ PER CITTADINI, STUDENTI, AZIENDE

L'universita' come aggregatore di Open Data del Territorio: L'esperienza Fiorentina

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Domini di intervento

- **Mobilità:** inter-modalità, bigliettazione integrata, sostenibile, scambiatori, sfruttamento stazioni, etc.,
- **Servizi:** gov ..SUAP, edu, turismo, beni culturali, salute, etc.,
- **Energia:** risparmio energetico, riduzione amissioni, inquinamento, etc.,
- **Ambiente**: qualità dell'aria, fiumi, meteo, rifiuti, etc.,
- … **commercio, industria**, etc.
- … Infrastrutture critiche.→ resilienza

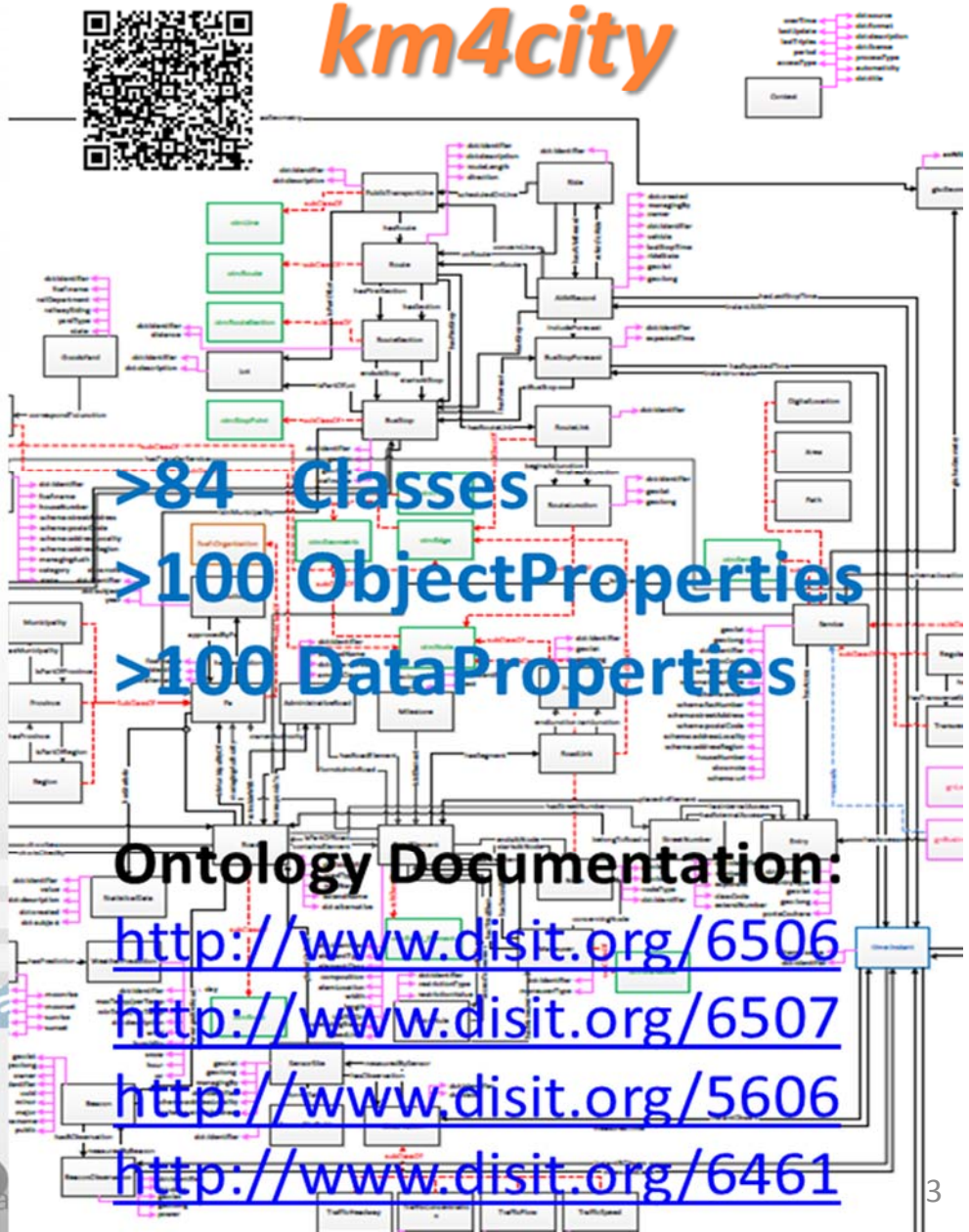
http://servicemap.disit.org

I Dati

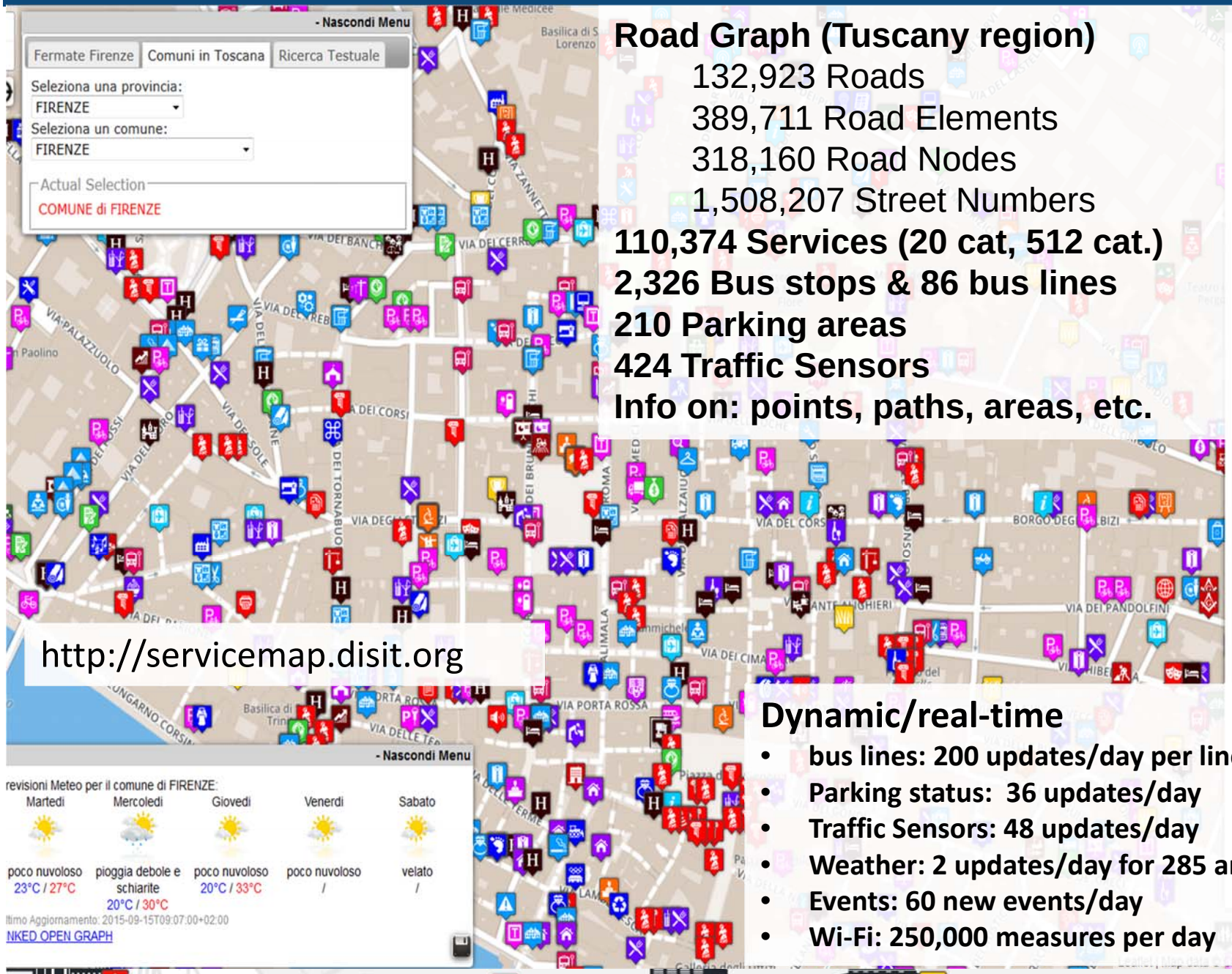
- **Collezionamento dati** statici, quasi statici e real time, stream
  - **Dati open**: geo localizzati, servizi, statistiche, censimenti, etc.
  - **Dati privati degli operatori**: con licenze limitate per non permettere di fare profitto ad altri operatori sulla base dei loro dati
  - **Dati personali delle persone**: profili, comportamenti tramite APP, IOT, sensori, web, etc.
- **Integrazione dati per renderli *semanticamente interoperabili***, ed operare deduzioni (time, space…)
  - I tradizionali ***collettori di open data*** danno visioni statistiche ma **non sono adatti a produrre servizi integrati**
  - ***Integrazione con modelli semantici unificanti come Km4City***

Smart-city Ontology

km4city



Su Firenze e Toscana



Road Graph (Tuscany region)

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

110,374 Services (20 cat, 512 cat.)
2,326 Bus stops & 86 bus lines
210 Parking areas
424 Traffic Sensors
Info on: points, paths, areas, etc.

http://servicemap.disit.org

Dynamic/real-time

- **bus lines: 200 updates/day per line**
- **Parking status: 36 updates/day**
- **Traffic Sensors: 48 updates/day**
- **Weather: 2 updates/day for 285 areas**
- **Events: 60 new events/day**
- **Wi-Fi: 250,000 measures per day**

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Distributed Systems and Internet Technologies
Department of Information Engineering (DINFO)
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Km4City

Transport systems
Mobility, parking

Public Services
Govern, events,

Sensors, IOT
Cameras, ..

Environment,
Water, energy

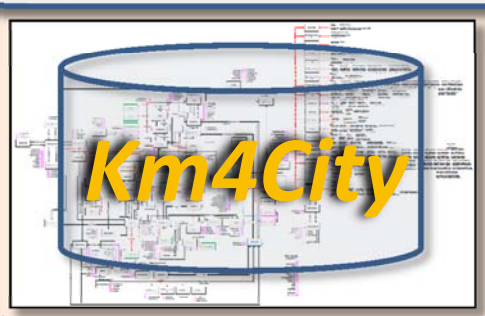
Shops, services,
operators

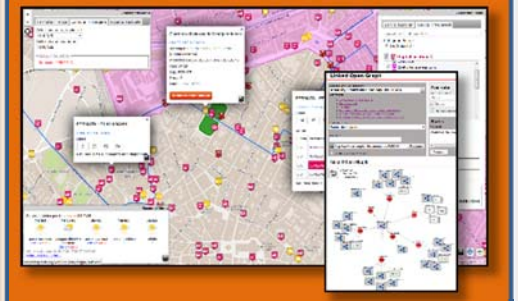
Social Media
WiFi, network

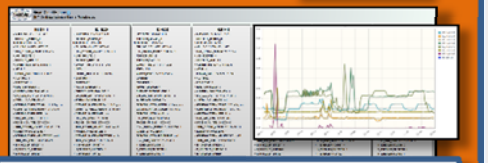
Static, Slow and Real Time data flows

DISCES -- Distributed and parallel architecture on Cloud

Km4City Smart City Engine

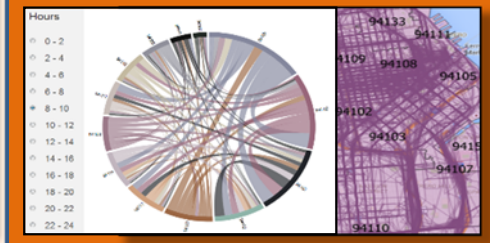






User Profiling and Suggestions on Demand

Flow and Origin Destination Matrix
Http://www.disit.org/odsf

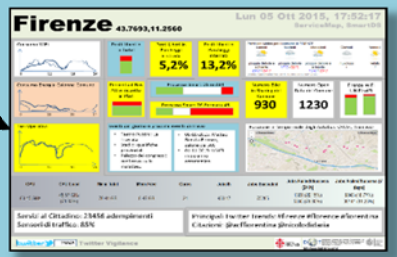


Km4City Tools for Developers

Km4City Smart City API

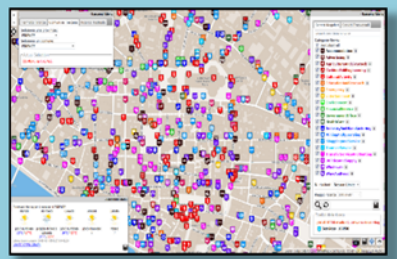
Tools for Operators

Smart City Dashboard
Http://www.disit.org/dash



Smart Decision Support
Http://Smartds.disit.org

Service map browser
Http://servicemap.disit.org

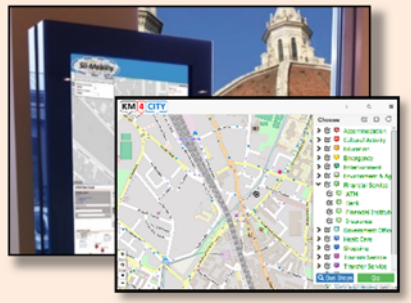


Twitter Vigilance
Http://www.disit.org/tv

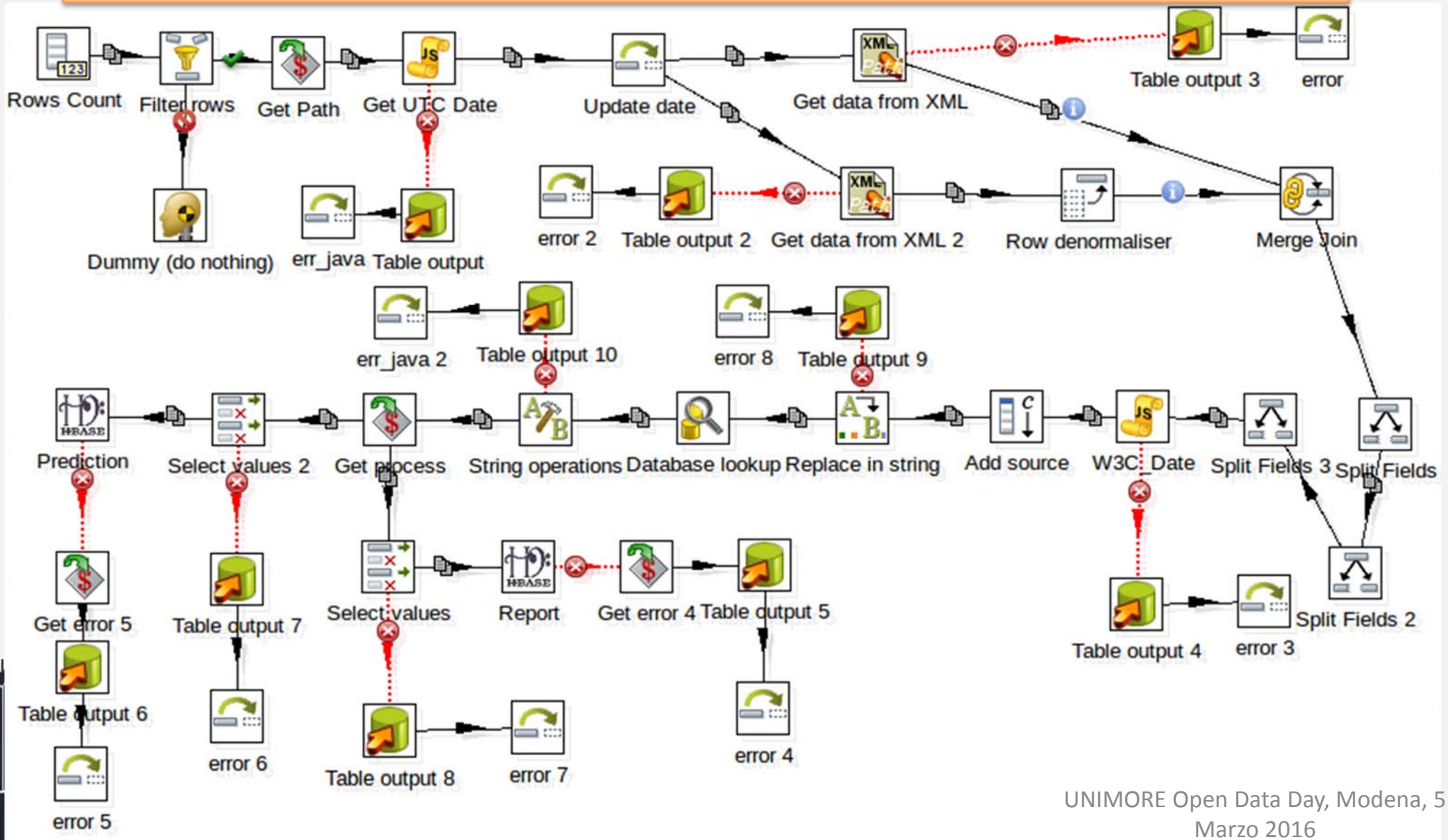
Tools for Final Users

Mobile e Web Apps

Http://www.km4city.org



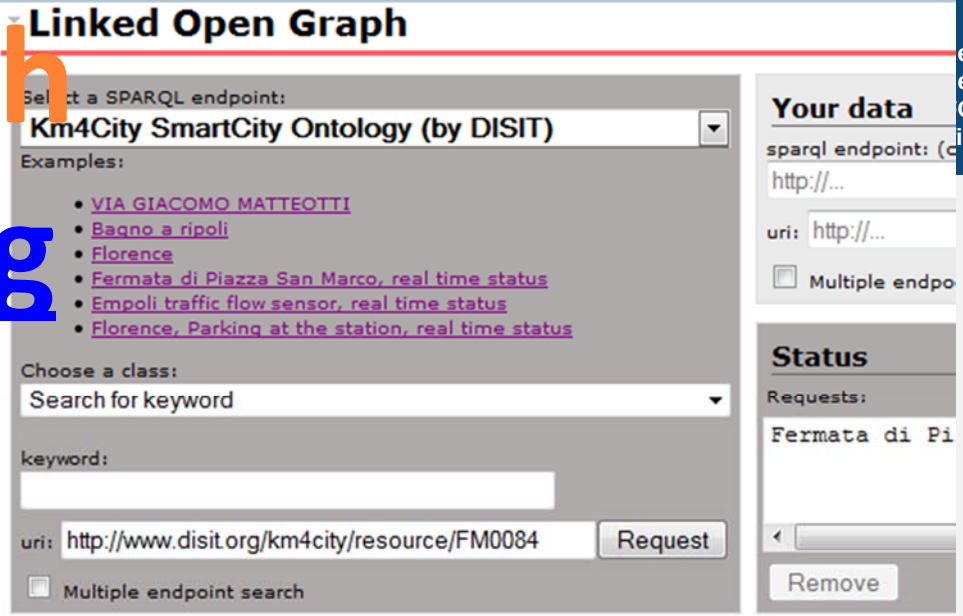
Example of Ingestion process

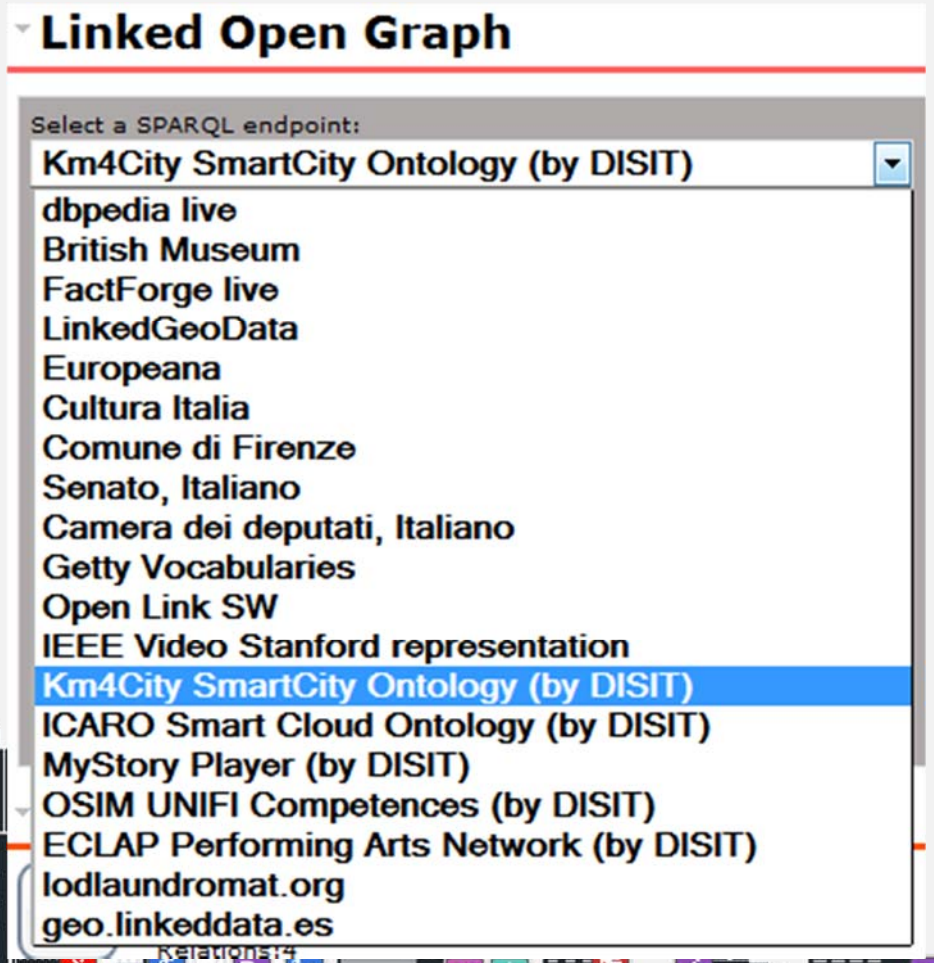


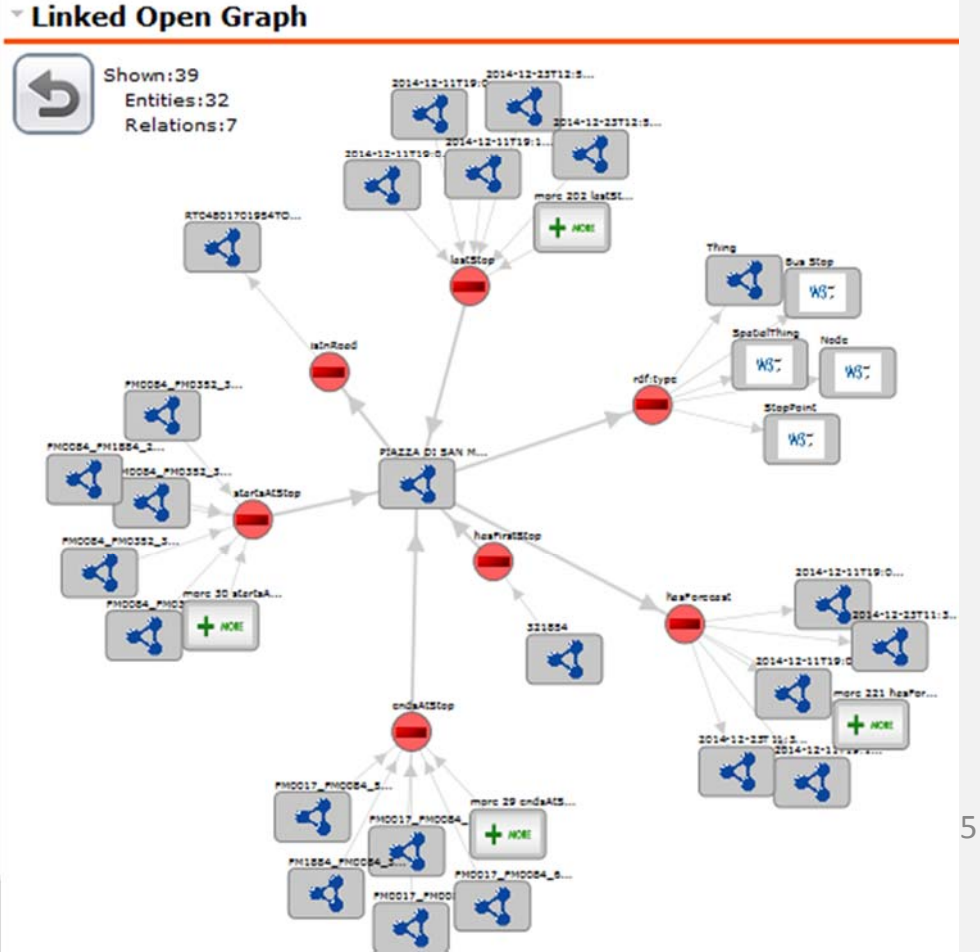
Linked Open Graph

http://log.disit.org

A bus stop info….







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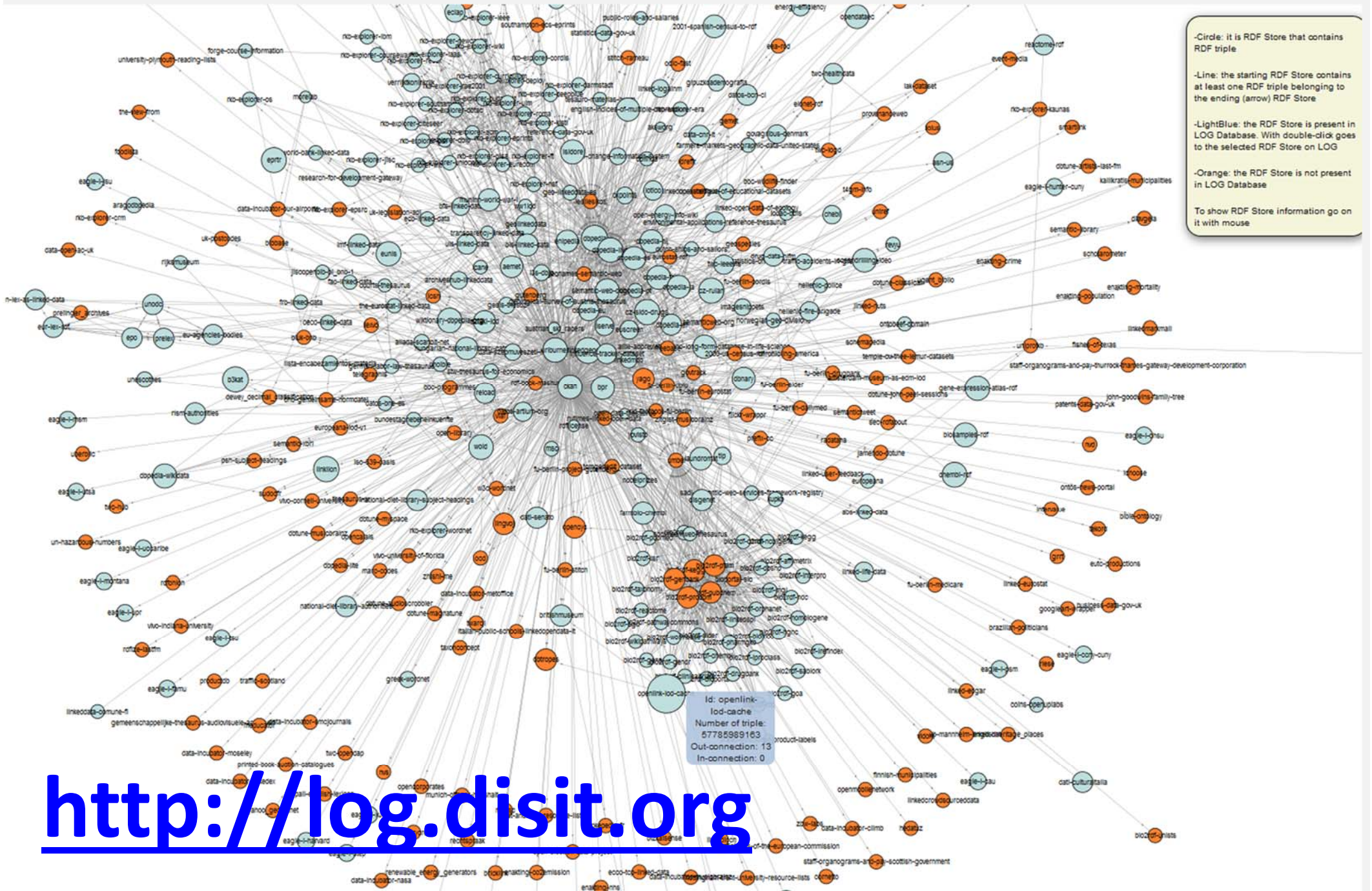
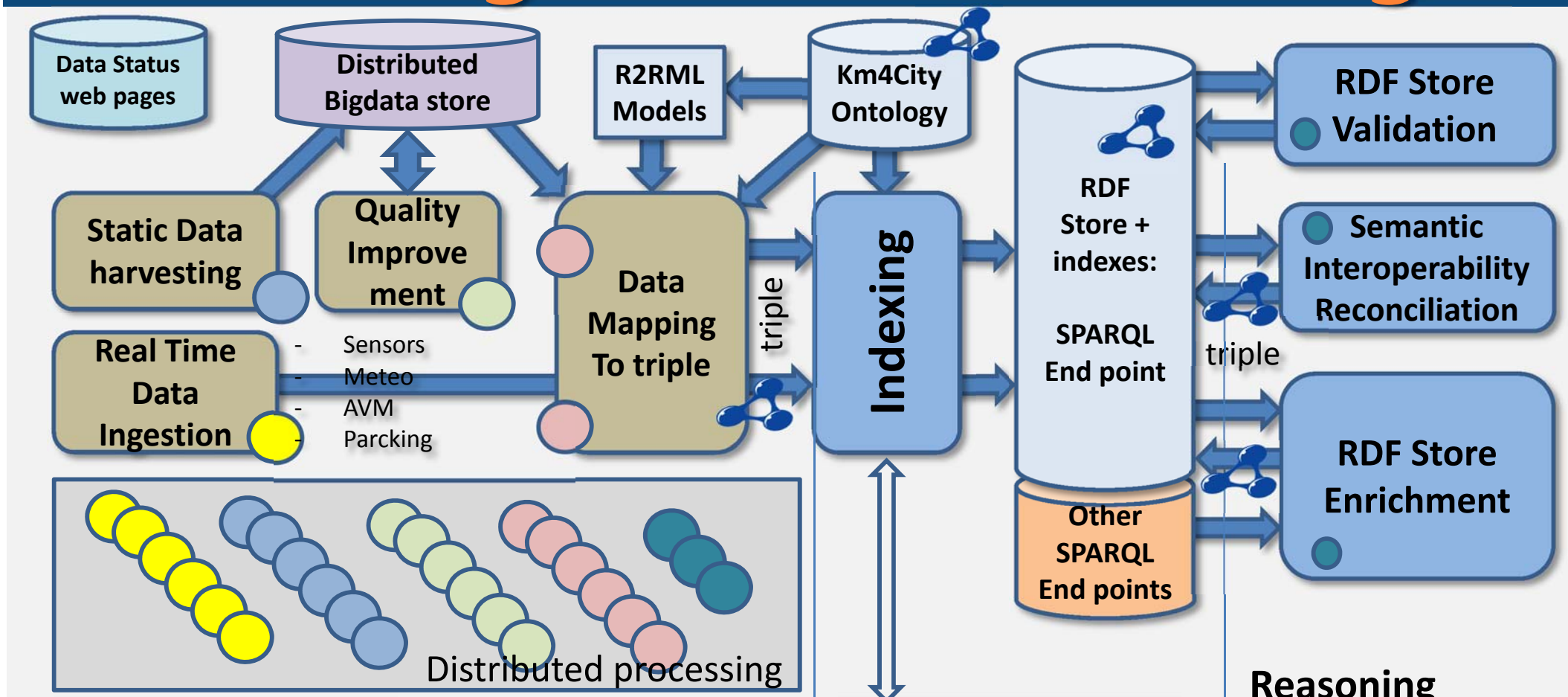
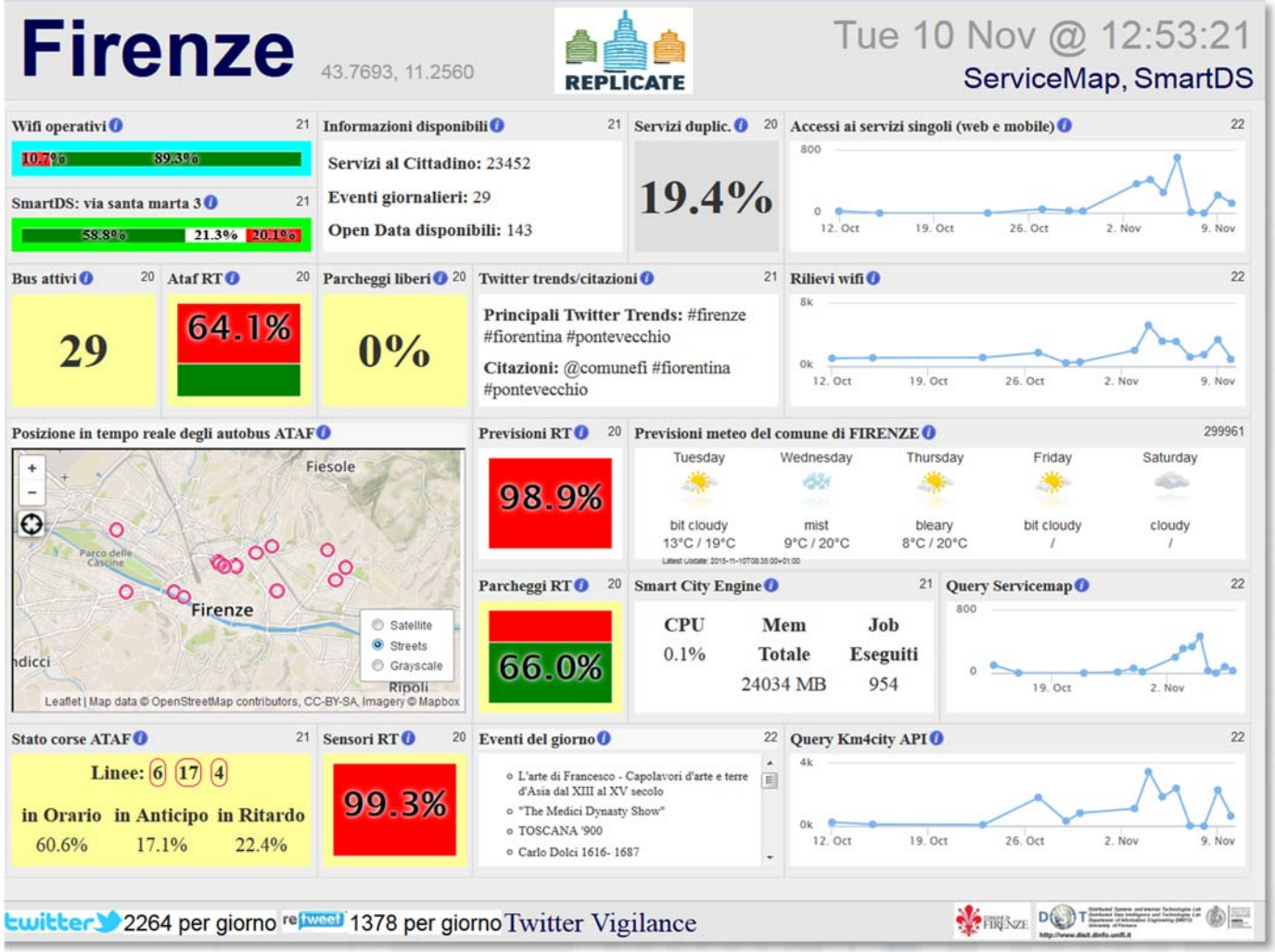


http://log.disit.org

Data Ingestion and Mining





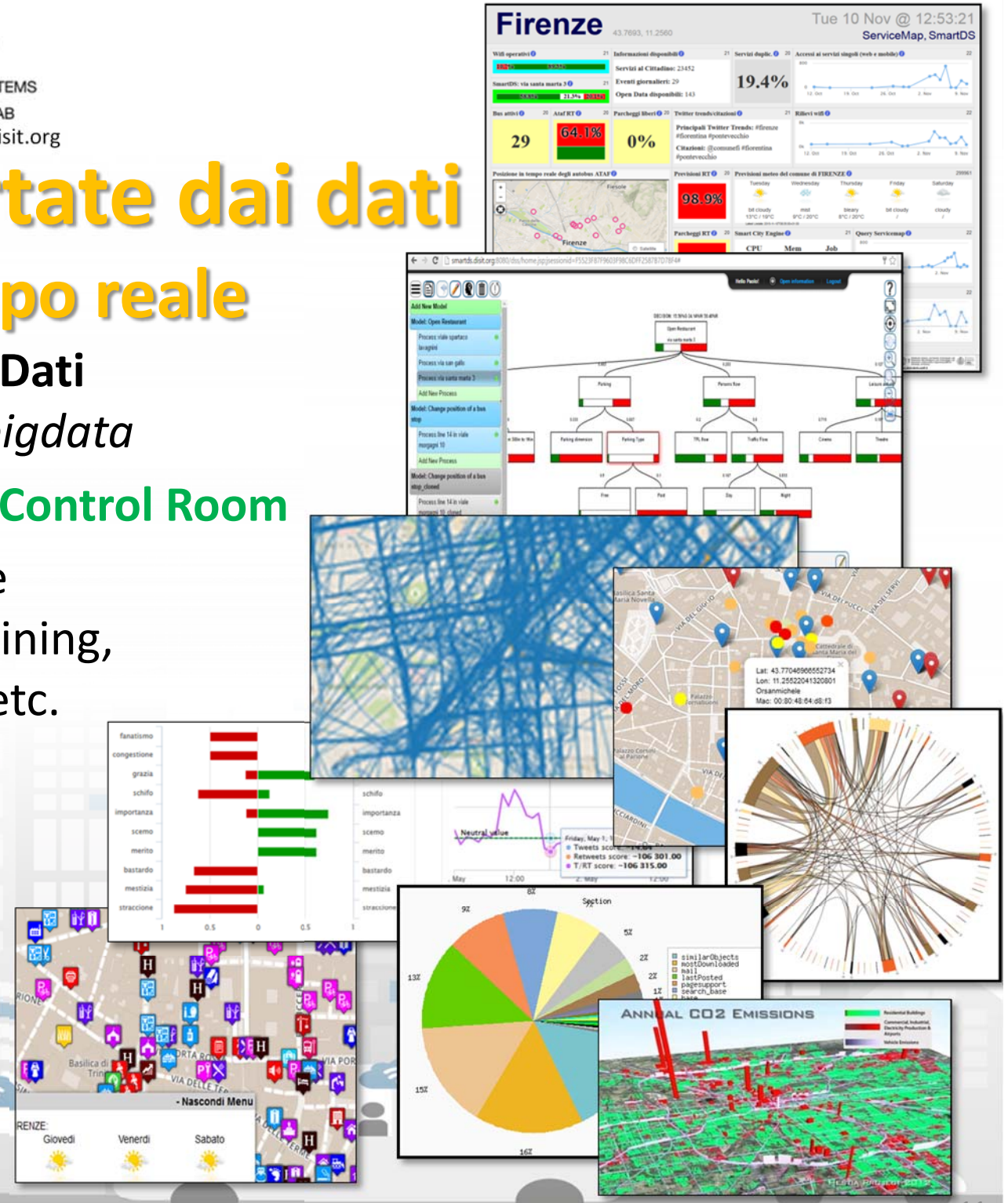
ICT e infrastrutture di comunicazione sono una chiave per tenere sotto controllo e gestire le infrastrutture ma …. non è sufficiente per migliorare la resilienza delle città:

Control Room delle Città Metropolitane devono:

- **arrivare a supervisionare domini multipli** e le interdipendenze fra mobilità, energia, comunicazione, servizi, flussi traffico, flussi pedonali, turismo, etc.
- **Migliorare la loro Resilienza**, capacità di reazione ed assorbimento.

Decisioni supportate dai dati periodiche ed in tempo reale

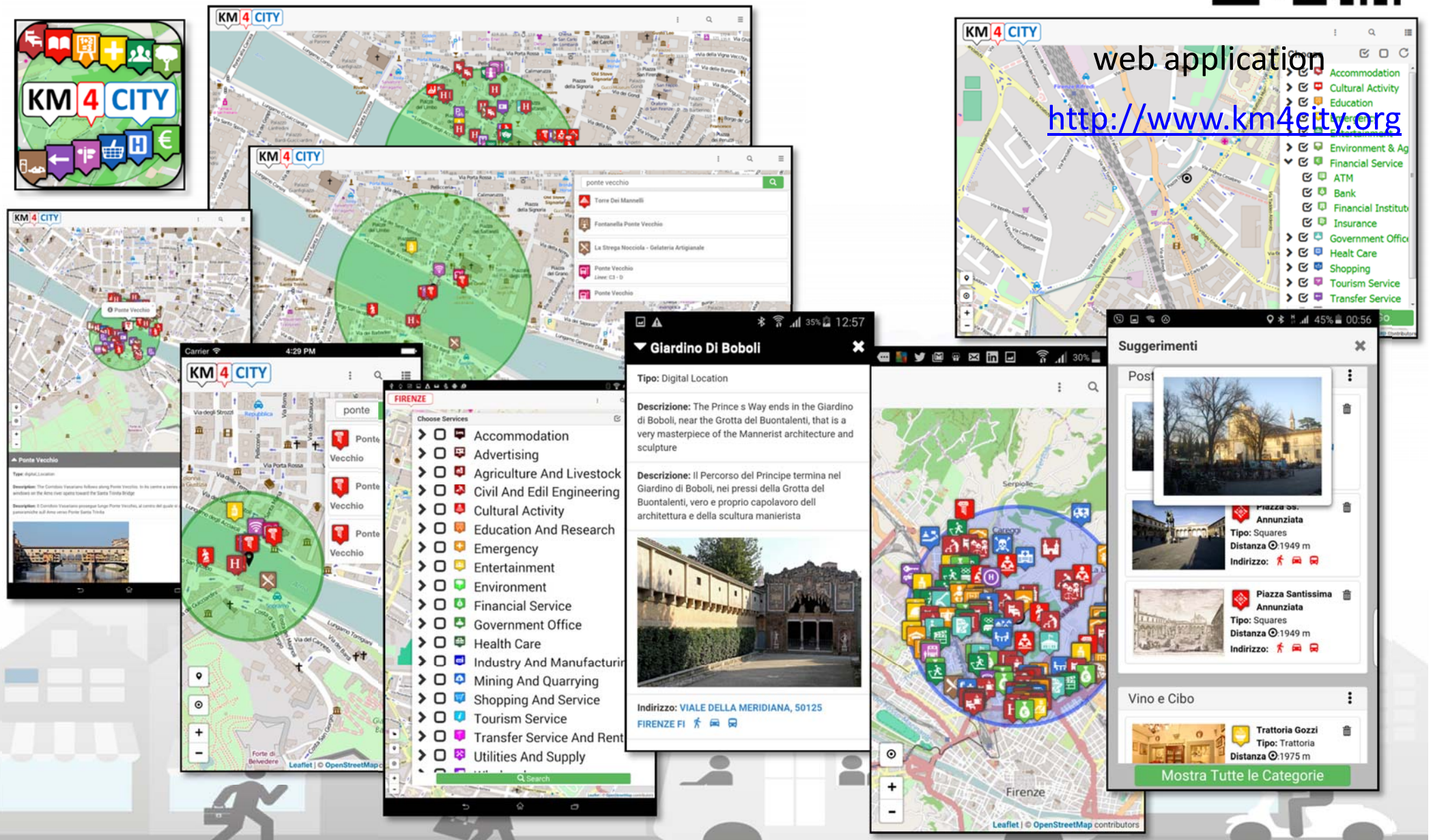
- **Condivisione e Integrazione Dati multidominio:** *semantica e bigdata*
- **Dati →Smart City Engine → Control Room**
- **analisi**: monitoraggio, flussi e comportamenti, sondaggi, mining, correlazioni, cause – effetti, etc.
  - Per il miglioramento di servizi correnti
  - Per reagire ad eventi, incremento della resilienza,
  - Per la creazione servizi innovativi
  - …



Km4CityMobile App: all stores

web application

http://www.km4city.org



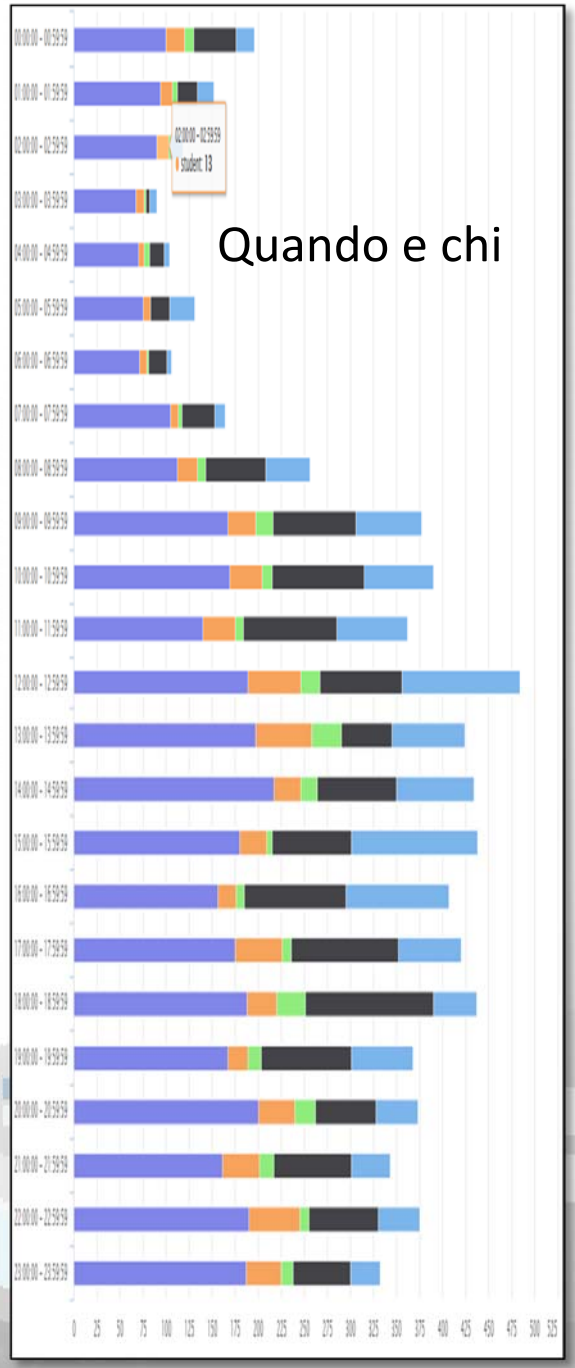
Firenze dove, cosa.. Km4City

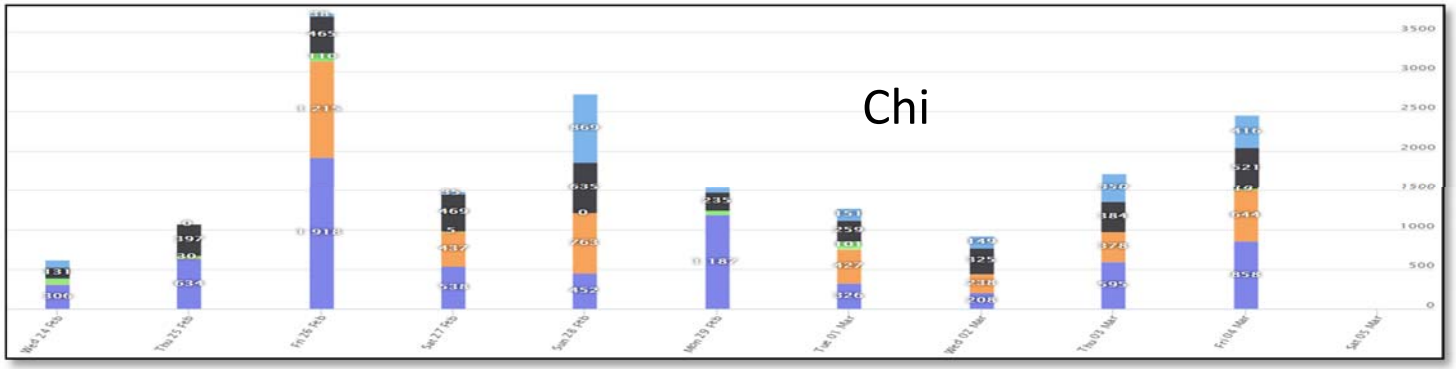
DISPONIBILE SU Google play

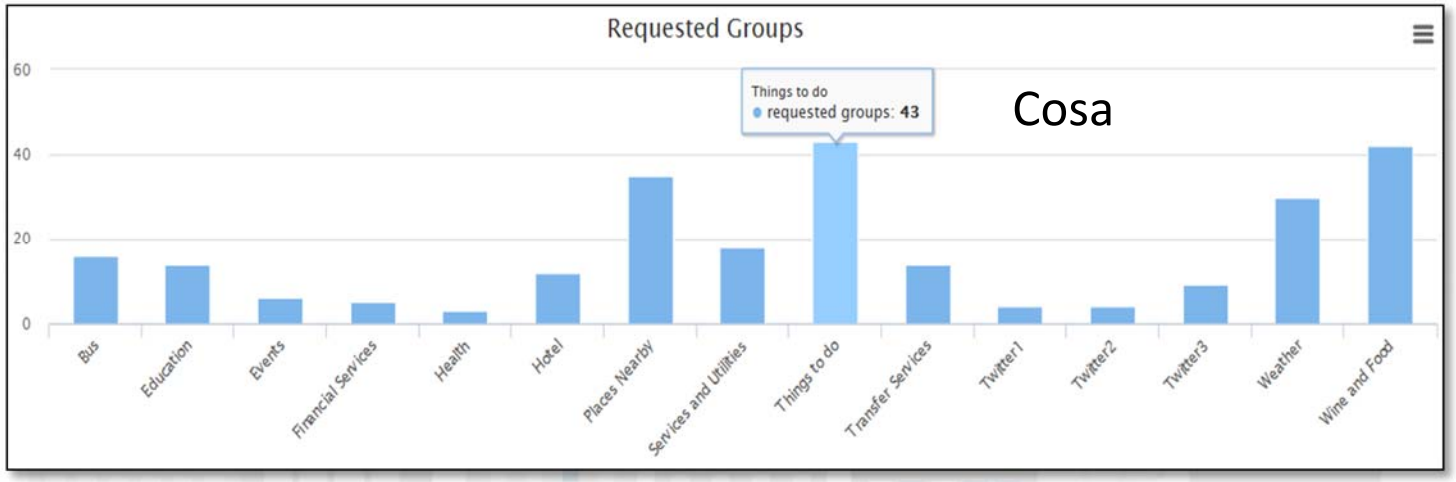
Scarica su App Store

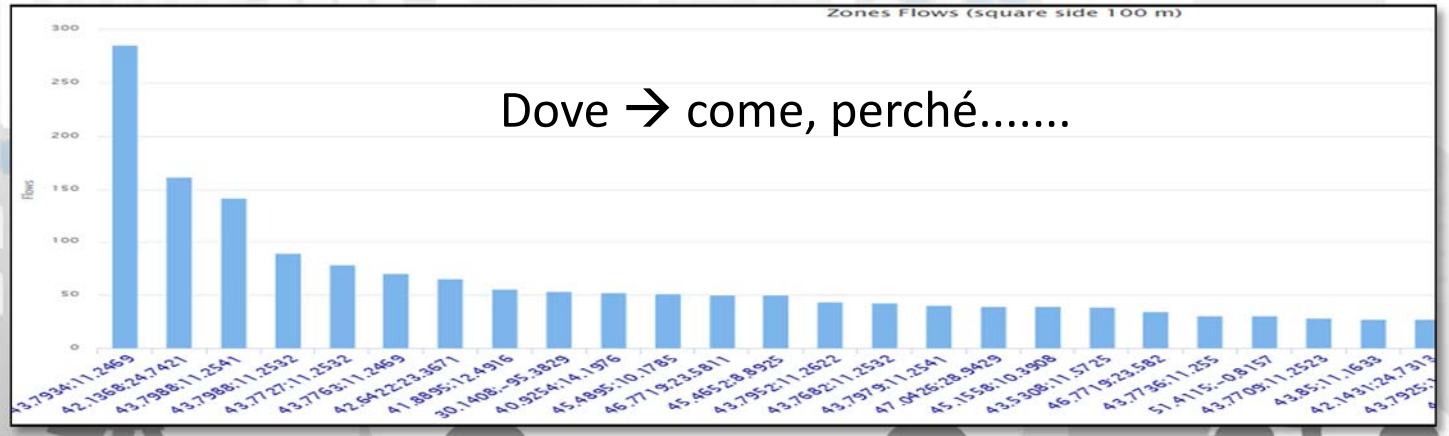
Scarica da Windows Store

Recommender









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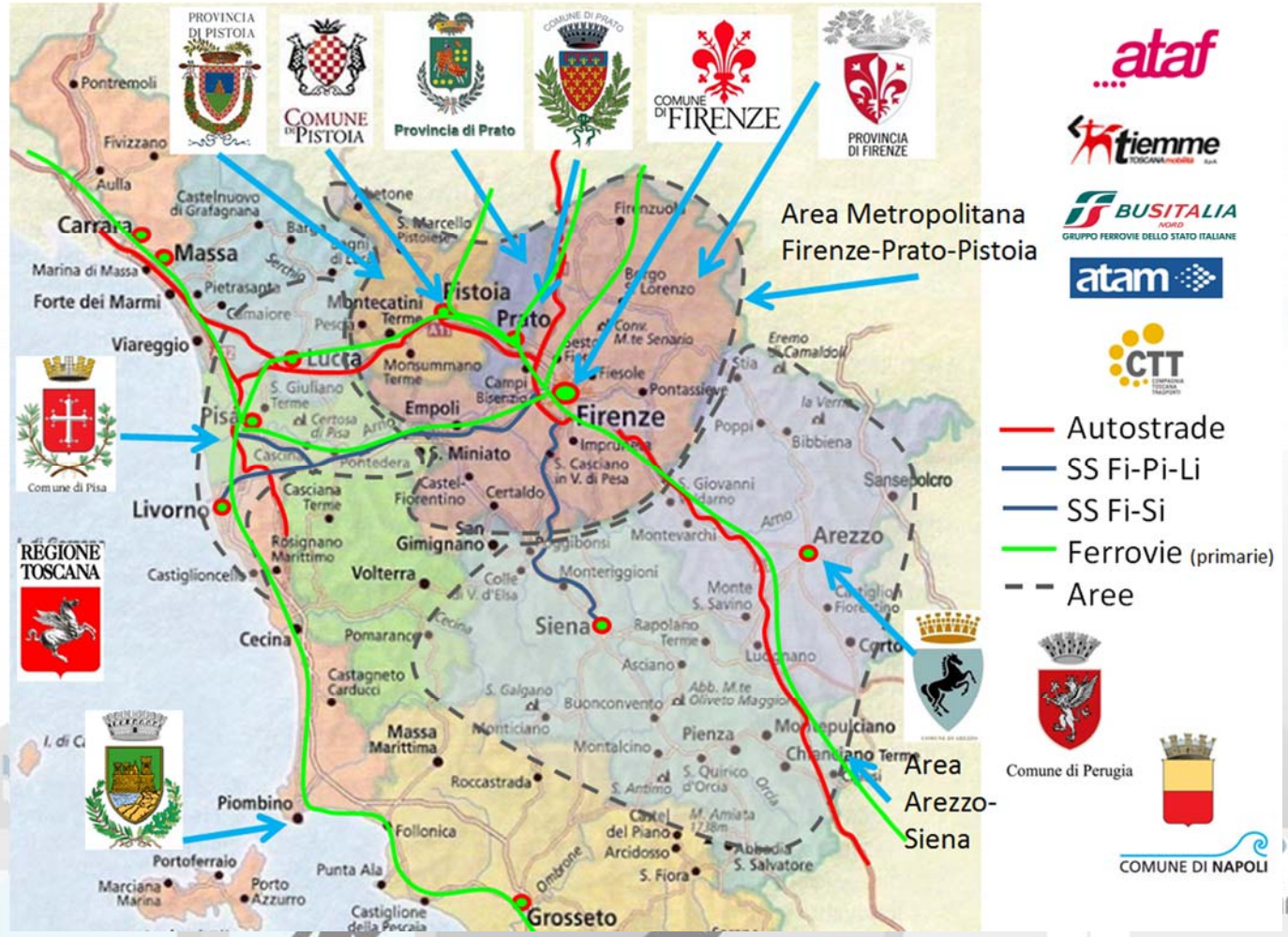
Sii-Mobility

MINISTERO DELL'ISTRUZIONE, DELL'UNIVERSITÀ E DELLA RICERCA

- *Sperimentazione e validazione in Toscana*
- *Integrazione con gli operatori esistenti*
- *DISIT lab, Università di Firenze, è il coordinatore*

■ **http://www.Sii-Mobility.org**



ECM; Swarco Mizar; Inventi 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

Progetto: Smart City Nazionale

Obiettivi Generali (sintesi)

- **ridurre i costi sociali della mobilità** per le persone
  - consentendo **minori disagi, maggiore efficienza,**
  - **maggiore sensibilità verso le necessità del cittadino**,
  - minori emissioni, migliori condizioni ambientali;
  - percorsi info-formativi in modo che il **cittadino cambi le abitudini non virtuose**;
  - **ridurre i costi di trasporto ed i tempi di percorrenza** per gli utenti, per i gestori e le amministrazioni, tramite soluzioni di ottimizzazione.
- **semplificare l'uso dei sistemi di mobilità**
  - **sensori innovativi per AVM** e mezzi privati sul territorio
  - **Sistemi integrati di pagamento** e di identificazione
  - **soluzioni di guida/percorso connesso** (connect drive, smart drive o walk)
  - **Integrazione di dati** provenienti da gestori e sorgenti di tipo diverso
  - **Gestione avanzata di mezzi**
  - **misurazione di flussi**
  - **realizzazione di sensori, attuatori**

- **Sperimentazione su comuni e province della Toscana**
- **Contribuire al miglioramento degli standard nazionali ed internazionali**

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Horizon 2020 European Union Funding for Research & Innovation

http://www.resolute-eu.org

- **Develop European Resilience Management Guidelines (ERMG)**
  - Develop a conceptual framework for creating/ maintaining Urban Transport Systems
- Enhance resilience through improved support of human decision making processes, particularly by training professionals and civil users on the ERMG and the RESOLUTE system
- **Operationalize and validate the ERMG by implementing the RESOLUTE Collaborative Resilience Assessment and Management Support Systems (CRAMSS) for Urban Transport Systems** addressing Road and Urban Rail Infrastructures
  - **Pilots in Florence and Athens**
- Adoption of the ERMG at EU and Associated Countries level

University of Florence: DISIT lab DINFO (Proj coordinator), DISIA and DST	UNIFI	IT
THALES	THALES	IT
ATTIKOMetro	ATTIKO	GR
Comune di Firenze	CDF	IT
Centre for Research and Technology Hellas	CERTH	GR
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.	FHG	DE
HUMANIST	HUMANIST	FR
SWARCO Mizar	SWMIZ	IT
Associação para o Desenvolvimento da Investigação no Instituto Superior de Gestão	ADI-ISG	PT
Consorzio Milano Ricerche	CMR	IT

REPLICATE

Horizon 2020
European Union Funding
for Research & Innovation

REnaissance of PLaces
with Innovative Citizenship
And TEchnology

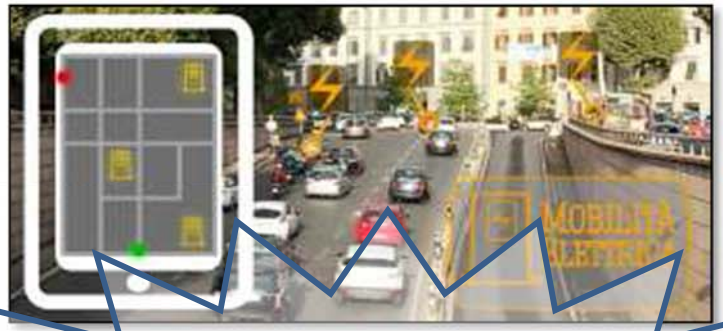
COMUNE DI FIRENZE

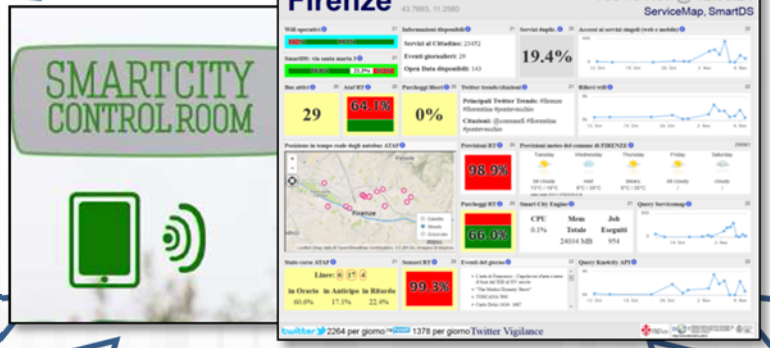
Smart Florence Plan

- ***demonstrate Smart City technologies in energy, transport and ICT in districts in:***
  - ***San Sebastian, Florence and Bristol,***
  - ***follower cities of Essen, Nilufer and Lausanne***
- *Cities are the customer: considering local specificities*
- *Solutions must be replicable, interoperable and scalable.*
  - *Integrated Infrastructure: deployment of ICT architecture, from internet of things to applications*
  - *Low energy districts*
  - *Urban mobility: sustainable and smart urban services*

- ***1 (coordinator) FOMENTO DE SAN SEBASTIAN FSS SPAIN***
- *2 AYUNTAMIENTO DE SAN SEBASTIAN SAN SEBASTIAN SPAIN*
- ***3 COMUNE DI FLORENCE FLORENCE ITALY***
- *4 BRISTOL COUNCIL BRISTOL UNITED KINGDOM*
- *5 STADT ESSEN ESSEN GERMANY*
- *6 NILUFER BELEDIYESI NILUFER TURKEY*
- *7 VILLE DE LAUSANNE LAUSANNE SWITZERLAND*
- *8 IKUSI ANGEL IGLESIAS, S.A. IKUSI SPAIN*
- *9 ENDESA ENERGÍA, S.A. ENDESA SPAIN*
- *10 EUROHELP CONSULTING, S.L. EUROHELP SPAIN*
- *11 ILUMINACION INTELIGENTE LUIX, S.L. LUIX SPAIN*
- *12 FUNDACION TECNALIA RESEARCH & INNOVATION TECNALIA SPAIN*
- *13 EUSKALTEL, S.A. EUSKALTEL SPAIN*
- *14 COMPAÑÍA DEL TRANVÍA DE SAN SEBASTIÁN DBUS SPAIN*
- ***15 CONSIGLIO NAZIONALE DELLE RICERCHE CNR ITALY***
- ***16 ENEL DISTRIBUZIONE, SPA ENEL ITALY***
- ***17 MATHEMA, SRL MATHEMA ITALY***
- ***18 SPES CONSULTING SPES ITALY***
- ***19 TELECOM ITALIA, SPA TELECOM ITALY***
- ***20 UNIVERSITA DEGLI STUDI DI FLORENCE UNIFI ITALY: DINFO.DISIT, DIEF***
- ***21 THALES ITALIA, SPA THALES ITALY***
- *22 ZABALA INNOVATION CONSULTING ZABALA SPAIN*
- *23 TECHNOMAR TECHNOMAR GERMANY*
- *24 UNIVERSITY OF BRISTOL UOB UNITED KINGDOM*
- *25 UNIVERSITY OF OXFORD UOXF UNITED KINGDOM*
- *26 BRISTOL IS OPEN, LTD BIO UNITED KINGDOM*
- *27 ZEETTA NETWORKS ZEETTA UNITED KINGDOM*
- *28 KNOWLE WEST MEDIA CENTRE, LGB KWMC UNITED KINGDOM*
- *29 TOSHIBA RESEARCH EUROPE, LTD TREL UNITED KINGDOM*
- *30 ROUTE MONKEY, LTD ROUTE MONKEY UNITED KINGDOM*
- *31 ESOTERIX SYSTMES, LTD ESOTERIX UNITED KINGDOM*
- *32 NEC LABORATORIES EUROPE, LTD NEC UNITED KINGDOM*
- *33 COMMONWHEELS CAR CLUB CIC CO-WHEELS UNITED KINGDOM*
- *34 UNIVERSITY OF THE WEST OF ENGLAND UWE UNITED KINGDOM*
- *35 ESADE BUSINESS SCHOOL ESADE SPAIN*
- *36 SISTELEC SOLUCIONES DE TELECOMUNICACION, S.L. SISTELEC SPAIN*

REPLICATE a Firenze: Energia, ICT e Mobilità

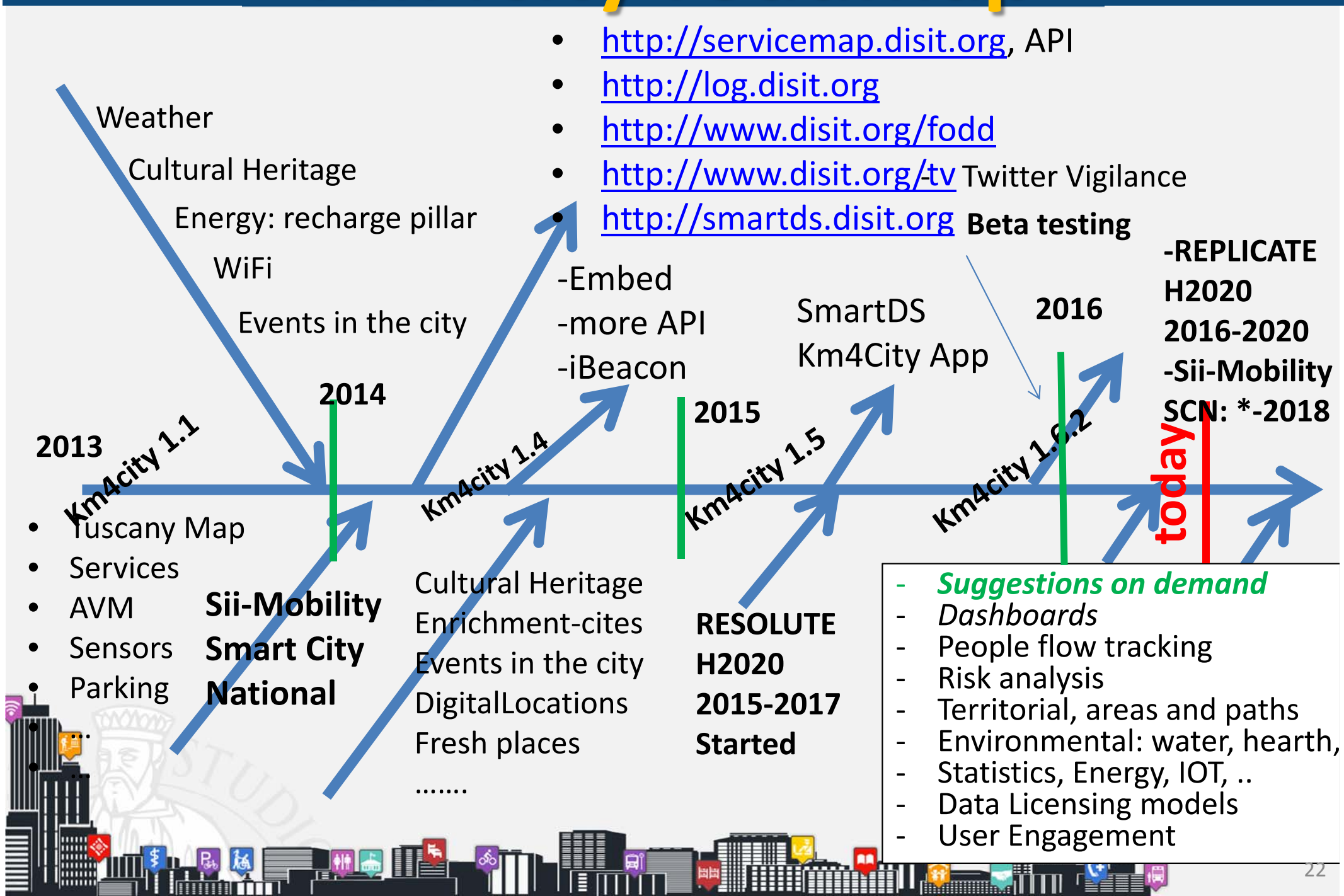




Km4City EcoSystem

- **Final Users Tools:** **http://www.disit.org/km4city**
  - Km4City mobile applications
  - Km4City web application: http://www.km4city.org
- **Public Administrator Tools:**
  - Smart City Dashboards, http://dashboard.km4city.org
  - ServiceMap Server, http://servicemap.disit.org
  - Smart decision support system, http://smartds.disit.org
  - Twitter Vigilance, http://www.disit.org/tv
  - Traffic and People Flow Assessment http://www.disit.org/6694
- **Developers Tools: http://www.disit.org/km4city**
  - ServiceMap Server, plus API, http://servicemap.disit.org
  - Ontology Documentation http://www.disit.org/km4city
  - LOG LOD browser http://log.disit.org
  - Open Source Mobile Application, FODD http://www.disit.org/6595
- **Back Office tools for Public Administrations**
  - Data Ingestion Manager, DIM, http://www.disit.org/6732
  - Distributed Smart City Engine Scheduler, DISCES http://www.disit.org/6515
  - RDF Indexer Manager, RIM, http://www.disit.org/6708
  - RDF store enricher with dbPedia
- **Adopted on projects and real scenarios**

Km4city roadmap



- http://servicemap.disit.org, API
- http://log.disit.org
- http://www.disit.org/fodd
- http://www.disit.org/tv Twitter Vigilance
- http://smartds.disit.org **Beta testing**

Ne volete sapere di più ?

http://www.disit.dinfo.unifi.it

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