Km4City: Smart City Tools, 2015

http://www.disit.org/km4city

Distributed Systems and Internet Technologies Lab
Distributed Data Intelligence and Technologies Lab
Department of Information Engineering (DINFO)
University of Florence
http://www.disit.dinfo.unifi.it

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

Distributed and parallel architecture on Cloud

Smart City Engine

Data Ingestion Manager

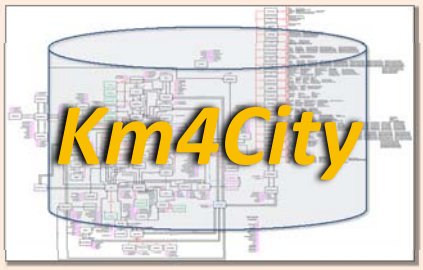
Data Enrichment Manager

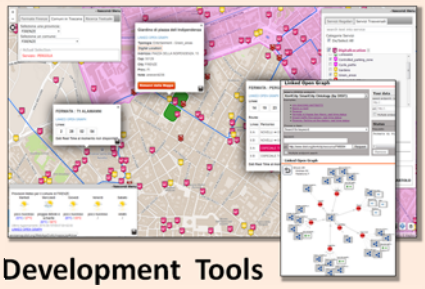
NoSQL DB Big Data

- RDF Store
- Hbase, Hadoop
- Cloud based
- Scheduling
- ETL, Java, Gate, MapReduce,

- Km4City RDF Store validation
- Data Quality improvement
- Data harvesting, aggregation, mapping, reconciliation
- Natural Language Processing
- Data Mining …

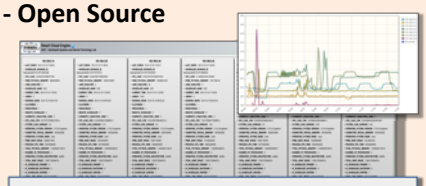
RDF Indexing Manager





Development Tools

- **Service Map Query Generator**
  Http://servicemap.disit.org
- **Linked Open Graph**
  Http://log.disit.org
- **Km4City Ontology & API**
  Documentation and Tutorial
- **Open Source**



User Profiling and Suggestions on Demand

Km4City Smart City API

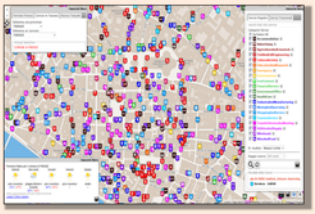
Tools for Administrators and Operators

End users

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

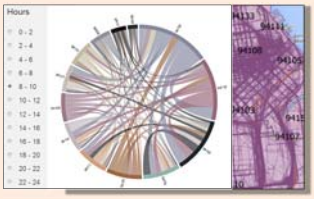
Smart Decision Support
Http://Smartds.disit.org

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



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

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



Mobile e Web Apps

Http://www.km4city.org

- 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
- Utilities And Supply
- Wholesale
- Wine And Food

Data:

Static/quasi-static

- **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.

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

Adopted By:

- ***Firenze as Smart City engine***
- ***Sii-Mobility,*** **Smart City National Project**
  - Http://www.sii-mobility.org
- ***RESOLUTE*** **H2020 EC Project**
  - Resilience of City Transport System, DRS14
  - http://www.resolute-eu.org
- ***REPLICATE*** **H2020 EC Project**
  - Smart City Lighthouse, SCC1

resolute

Sii-Mobility

Final Users tools:

–Km4City mobile applications

–Km4City web application: http://www.km4city.org

Public administrator tools:

–Smart City Dashboards http://www.disit.org/dash

–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:

–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

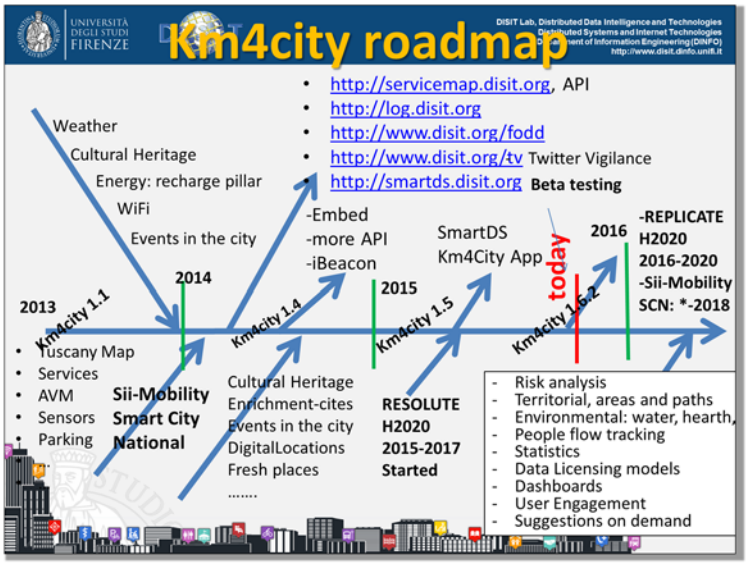
Back Office tools for Public Administrations

–Data Ingestion Manager, DIM, http://www.disit.org/6732

–Smart City Engine, SCE, the smart scheduled processes http://www.disit.org/6515

–RDF Indexer Manager, RIM, http://www.disit.org/6708

–RDF store enricher with dbPedia, etc.

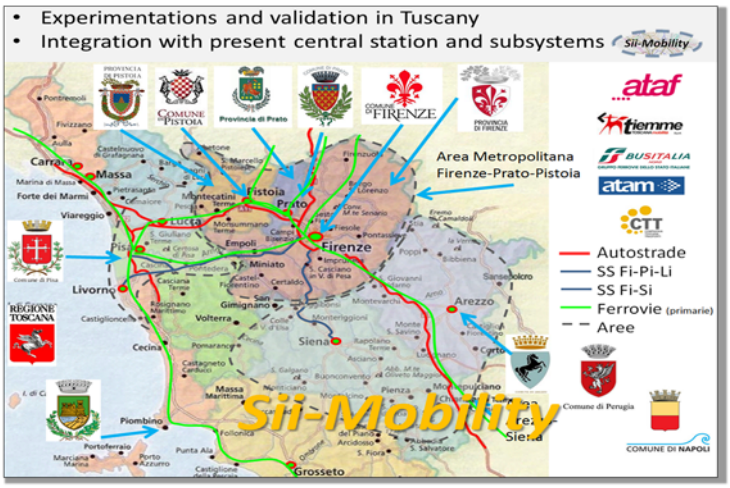


Km4City is adopted and running tool as

- Florence data aggregator, presented at FODD 2015, February
- http://servicemap.disit.org, see mobile Apps, etc.

Km4City is adopted as a starting point in large projects up to 2020

- RESOLUTE H2020 DRS7 project of the EC, http://www.resolute-eu.org
- REPLICATE H2020 SCC1 project of the EC
- Sii-Mobility Smart City National, MIUR, http://www.sii-mobility.org



Smart Florence Plan

REPLICATE
REnaissance of PLaces with Innovative Citizenship And TEchnology

- *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*

resolute

H2020 RIA project

- 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

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