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DEGLI STUDI
FIRENZE

DINFO
DIPARTIMENTO DI
INGEGNERIA
DELL'INFORMAZIONE

DISIT
DISTRIBUTED SYSTEMS
AND INTERNET
TECHNOLOGIES LAB



DISIT Lab

a Servizio delle Imprese:

Smart City, Smart Cloud, Smart Factory

Distributed [Systems and internet | Data Intelligence and]
Technologies Lab

Dipartimento di Ingegneria dell'Informazione (DINFO),
Università degli di Studi di Firenze

Fax: 0039-055-2758570, tel: 0039-3355668674

<http://www.disit.dinfo.unifi.it> , <http://www.km4city.org>



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<http://www.disit.org>

Linee primarie di: Ricerca, Innovazione e Trasferimento

Smart Cities

Smart Factory

**Data Warehouse, Data Analytics, Big Data,
IOT, Natural Language Processing,
Semantic Computing, Reasoners,
Distributed Systems, Parallel Architecture**

Smart Cloud

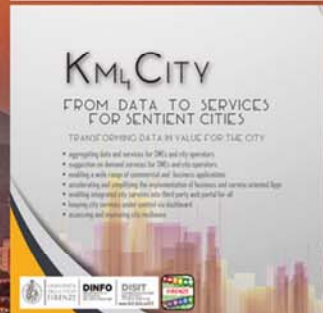
www.Km4City.org



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- | | | | | | | | |
|-------------------|-----------------------------|--------------------------|------------------------------|-----------------------------|---------------------------|-------------------|------------------------|
| Service Map | Bus Stops | Real Time Busses (Embed) | Traffic Sensors | Services in Tuscany | Services in Florence | Km4City App Video | Km4City Video 2015 |
| Services in Pisa | Green Areas | Bus Lines | Hotels | Florence Downtown | Events in Florence | DISIT Lab | Km4City Slides |
| Dashboard | Dashboard Mugnone2016 | Linked Open Graph, LOD | SPARQL & Data Licenses | Resilience Decision Support | Smart Decision Support | Km4City Info Page | Km4City Projects |
| Recommendations | Monitoring City Users | City Users Heat Map | Tourists Heat Map | Monitoring Wi-Fi Users | Monitoring Wi-Fi Coverage | Km4City Ontology | Km4City Smart City API |
| Twitter Vigilance | Real Time Twitter Vigilance | Twitter Search | Interactive People Flow Maps | OD Matrix for People Flow | | Km4City WebApp | PUBLIC |

Technical info on: <http://www.disit.org/km4city>

Km4City in Toscana

- Nascondi Menu

Fermate Firenze Comuni in Toscana Ricerca Testuale

Seleziona una provincia:
FIRENZE

Seleziona un comune:
FIRENZE

Actual Selection
COMUNE di FIRENZE

Previsioni Mete per il comune di FIRENZE:

Martedì	Mercoledì	Giovedì	Venerdì	Sabato
poco nuvoloso 23°C / 27°C	pioggia debole e schiarite 20°C / 30°C	poco nuvoloso 20°C / 33°C	poco nuvoloso /	velato /

Ultimi LINK -15T09:07:00+02:00

KM 4 CITY

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

more than 2000 IOT sensors

Info on: points, paths, areas, etc.

Dynamic/real-time

- bus lines: 144 updates X day X line
- parking status: 76 updates X day X sensor
- traffic Sensors: 288 updates X day X sensor
- weather: 2 updates X day for 285 areas
- 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

- 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 +

Nessun Limit

100 metri

Risultati della ricerca

più di 4000 risultati, attivato clustering

Services 16858

StreetMap contributors, CC-BY-SA, Imagery © Mapbox

Transport systems
Mobility, parking



Public Services
Govern, events,



Sensors, IOT
Cameras, ..



Environment,
Water, energy



Shops, services,
operators



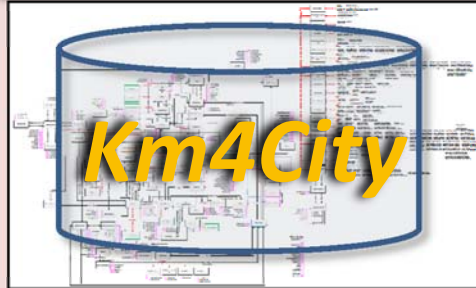
Social Media
WiFi, network



Static, Slow and Real Time data flows

DISCES -- Distributed and parallel architecture on Cloud

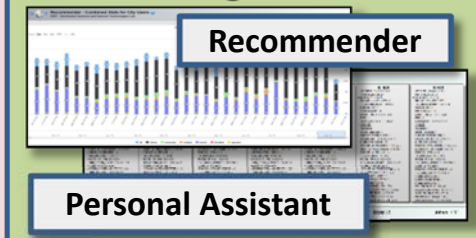
Km4City Smart City Engine



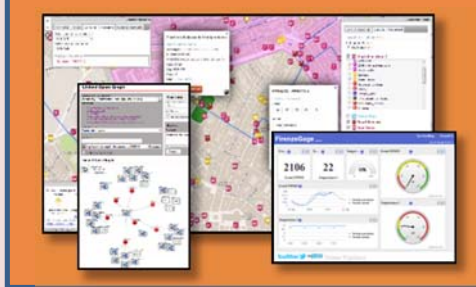
Big Data Analytics



Smartening Tools



Development Tools



Km4City Smart City API

Tools for City Operators and Decision Makers

Smart City Dashboard

[Http://dashboard.km4city.org/](http://dashboard.km4city.org/)

Smart Decision Support

[Http://Smartds.km4city.org](http://Smartds.km4city.org)

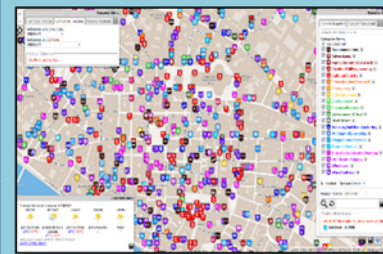


ServiceMap browser

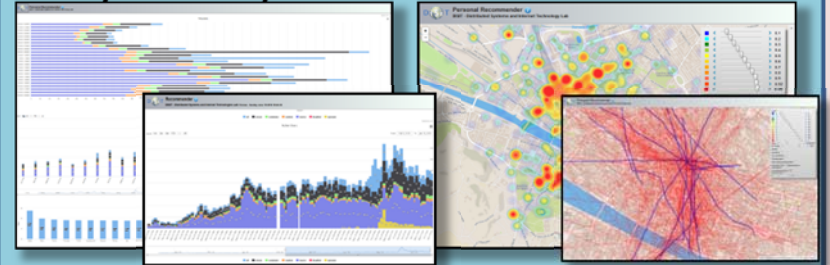
[Http://servicemap.km4city.org](http://servicemap.km4city.org)

Twitter Vigilance

[Http://www.disit.org/tv](http://www.disit.org/tv)



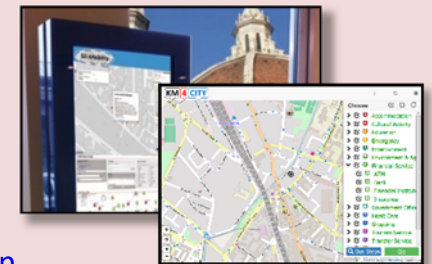
Analyzers of City User Behavior



Tools for Final Users

Mobile e Web Apps

[Http://www.km4city.org/webapp](http://www.km4city.org/webapp)



[Http://www.km4city.org](http://www.km4city.org)

[Http://www.km4city.org/app](http://www.km4city.org/app)

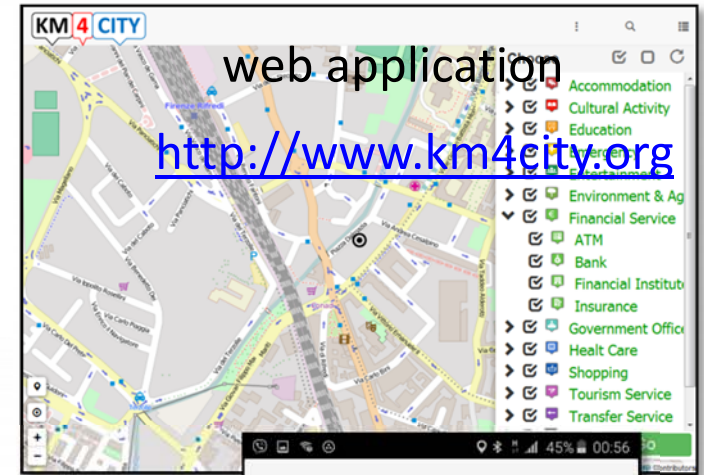


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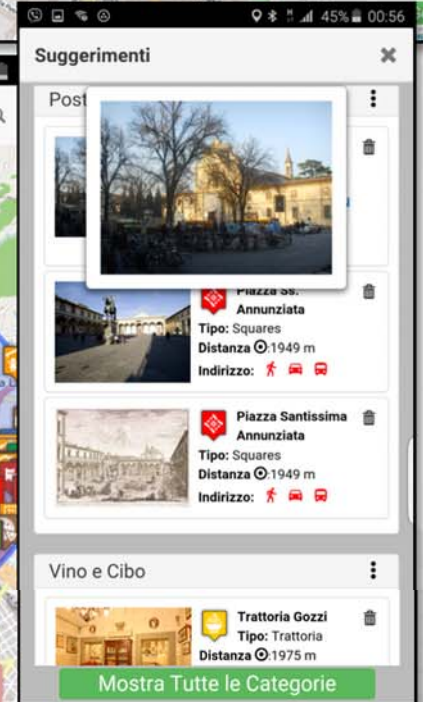
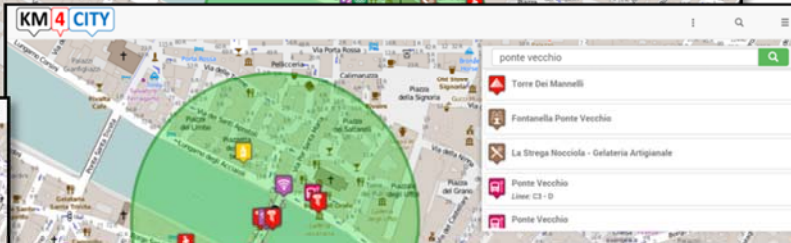
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Km4CityMobile App



web application

<http://www.km4city.org>





km4City Roadmap



2013

Km4City 1.1

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



RESilience management guidelines
and Operationalization appLied to
Urban Transport Environment



Horizon 2020
European Union Funding
for Research & Innovation

Km4City 1.5

- SmartDS
- Km4City App

RESOLUTE H2020
2015-2018 - Started

Km4City 1.4

- Embed
- More API
- iBeacon



Sii-Mobility SCN
2016-2018 - Started
Km4City 1.6.2

2017

Today

- Risk analysis
- Territorial areas and paths
- Environmental, water, health
- Statistics, Energy, ICT, ...
- Data Licensing models

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

2016



Horizon 2020
European Union Funding
for Research & Innovation



REPLICATE
Renaissance of Places with Innovative Citizenship
And Technology

REPLICATE

REnaissance of Places
with Innovative Citizenship
And Technology

REPLICATE H2020
2016-2021- Started

GHOST SIR
2016-2019 - Started

- Suggestions on demand
- User Behaviour Analysis

2021



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Smart City API



- **Piattaforma Km4City** ed analytics, Strumenti:
 - di Sviluppo, Smart City API per le PMI e PA
 - di Data Aggregation e Analytic per le PA e PMI
- **Progetti Europei:** RESOLUTE H2020 RIA, REPLICATE H2020 Flagship SCC1,
- **Progetti nazionali:** Sii-Mobility SCN, SIR GHOST
- 60 Partner a livello internazionale
- + Progetti di trasferimento tecnologico con le imprese



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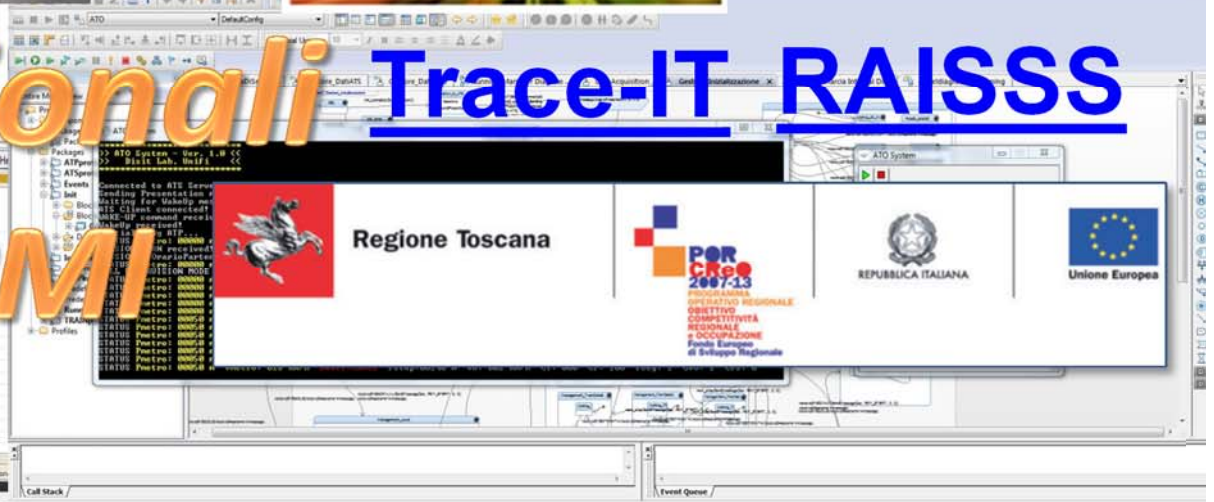


Sistemi a Guida Autonoma Segnalamento Ferroviario

Cluster Trasporti

Progetti Regionali Trace-IT RAISSS

TT verso GI e PMI



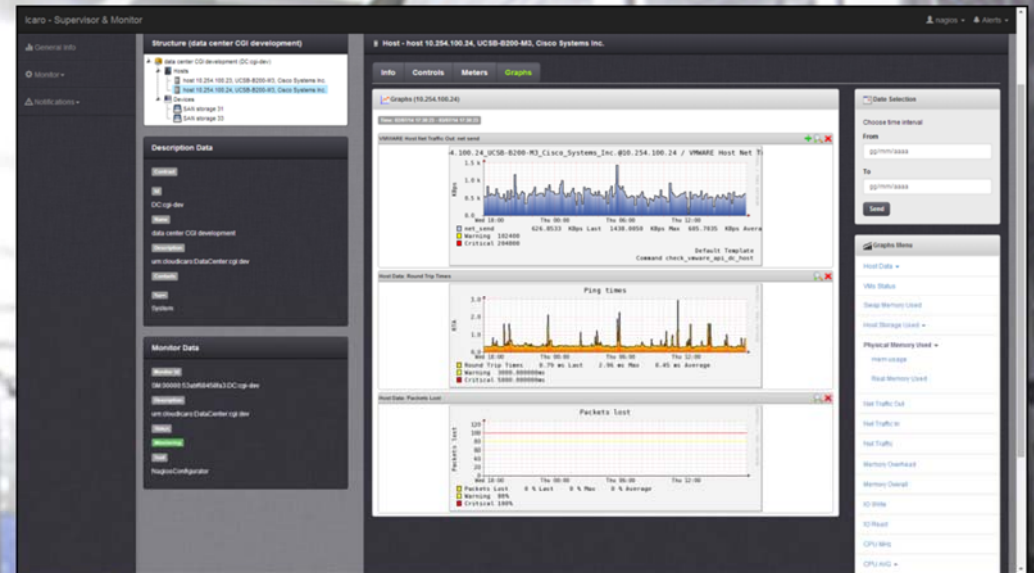
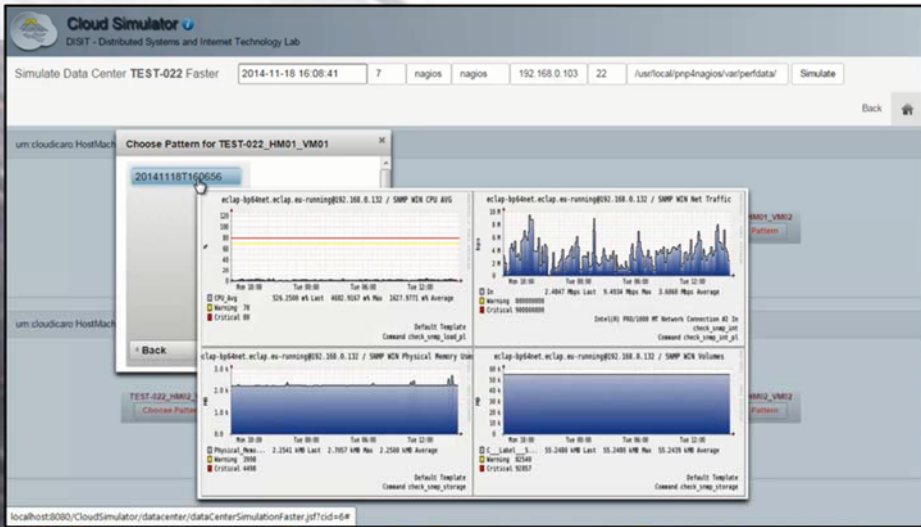
Smart Cloud



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Cloud Simulator
Cloud Monitoring
Cloud Management
Progetti Regionali: ICARO



TT verso PMI e GI

- **Riduzione costi e incremento efficienza**
 - Automazione della manutenzione e della produzione
 - Navigazione indoor – Outdoor integrata
 - Ottimizzazione flussi per utensili, pezzi e materiali
- **Progetti Regionali con PMI e GI**





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

DISIT Lab: info@disit.org

- **Laboratorio Ricerca Applicata e Dimostratore, Reg. Toscana**
https://sviluppo.toscana.it/repertorio_laboratori/laboratorio/41
- **Azioni di:**
 - Trasferimento Tecnologico & Ricerca ed Innovazione
- **Ambito:** regionale, nazionale e internazionale
- **Circa 20-25 addetti**
- **Committenti:** PMI, GI, Pubblica Amministrazione
- **Infrastruttura:** DISIT Data Center e Cloud
- **Gestione Infrastrutture di Innovazione:**
 - Km4City Smart City Aggregator
 - ECLAP social network
 - ApreToscana

