



**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>

**DISIT lab and research group** is one of the most active ICT labs of the University of Florence, metropolitan Tuscany area. DISIT successfully developed a relevant number of International and National research, development and innovation projects. DISIT has coordinated a number of large EC projects and national, in others has covered the role of partner performing research, development and innovation. DISIT has received a relevant number of awards and it is directly involved in top level international conferences. DISIT provides an infrastructure for cloud and distributed computing.



**DISIT lab** develops original solutions in RIA project as well as solutions grounded on available DISIT tools for specified TRL for IA, innovation action projects.

**DISIT research areas:** big data, semantic models and computing, knowledge and data mining and representation, artificial intelligence, natural language processing, distributed systems, high performance, content and data licensing and protection, ontology modelling, formal models, metrics definition and assessment, digital rights management and conditional access.

**DISIT Techniques:** data analytic, clustering, machine learning, indexing and search, prediction, inference, deduction, recognition, disambiguation, prediction, routing, trajectories, user behaviour analysis, simulation.

**DISIT solutions for:** smart city, user behaviour analysis, smart cloud, recommendation, multilingual and cross media indexing, user and collective profiling, indoor/outdoor navigation, media synchronisation, matchmaking, decision support, sentient and autonomous agents and tools, open data, linked open data, audio transcoding, linked open data, .

See DISIT: ontologies and models <http://log.disit.org>, Publications: <http://www.disit.org/5487>

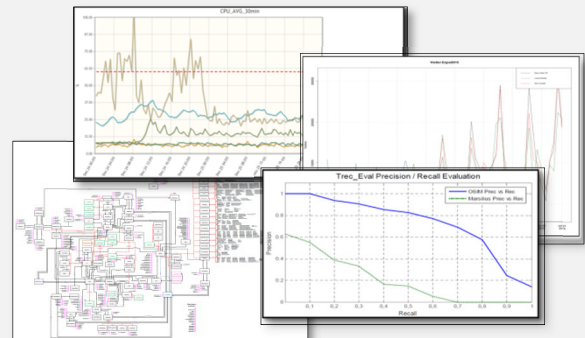
Tools: <http://www.disit.org/5489>, open source on GitHub and on DISIT portal.

**DISIT commitment** for the next **European Commission Calls** are reported below.

Please visit DISIT web site for additional info, reports and publications.

### Big Data, data analytics:

- massive and parallel computing for big data: models and tools
- noSQL distributed RDF stores for big data deduction, multiple custom indexes for RDF stores
- data analytics, causality vs correlation, data mining, data fusion and reconciliation
- big data structure and tools for smart city
- learning algorithms and methods for data analytics, pattern recognition, prediction, condition detection
- reasoners for: temporal, spatial, natural language, space, etc.



### Smart City models and applications:

<http://www.km4city.org>

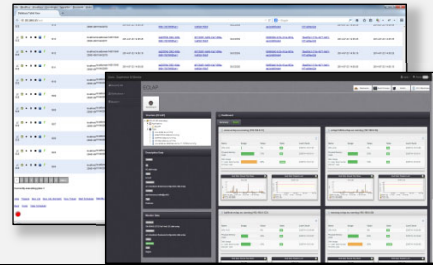
- Smart City models, tools, engine and reasoners
- Data aggregation, IOT, OD, LOD; data crawling, rendering, algorithms, reasoners
- data mining, data fusion and reconciliation, data harvesting scheduling
- data protection and property management and licensing
- deducting and learning methods for data analytics
- sensors networks, internet of things
- indoor/outdoor navigation systems: Mobile Emergency <http://www.disit.org/5501>
- Florence data set: see <http://LOG.disit.org> and <http://servicemap.km4city.org>



<http://www.km4city.org>

### Smart cloud:

- Smart cloud engine, <http://www.disit.org/5604>
- Cloud simulation, verification and validation of resources, configuration, scaling, migration, etc.
- Dynamic Service Level Agreements for cloud
- Cloud optimization tools for resources, cloud monitoring
- Cloud applications for: education, business, cultural heritage, knowledge management
- Cloud and big data computing integration
- Cloud interoperability and federation



**Smart Cloud Engine & monitoring**

### Collective Awareness and Social Innovation Platforms:

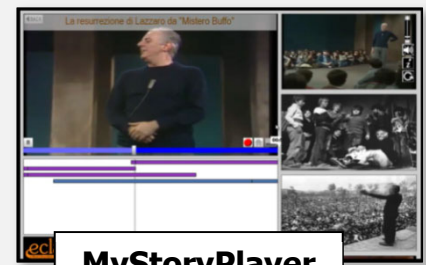
- Social media tools and platforms, Collective profiling computing, suggestions and recommendations
- Scalable social media platforms, LOD for cultural heritage <http://www.disit.org/5699>
- Open data and linked open data: tools (<http://LOG.disit.org> , <http://Servicemap.disit.org> ), algorithm and reasoners
- Ontologies for collective communities, knowledge and competences,
- matchmaking (see APREToscana), crowd sourcing
- applications on: mobile, smart TV, tables, etc.
- natural language processing algorithms and tools for profile processing, comments understanding, affective analysis, social media analysis.
- intellectual property right models and tools: see IPR wizard and model, <http://www.disit.org/5509>



**www.eclap.eu**

### Creative industry, creativity, eLearning:

- media computing, non-linear story player, MyStoryPlayer tool <http://www.disit.org/5502>
- recording experiences: navigation, collaboration, etc.
- cross media aggregation, play lists and courses
- cross media multilingual indexing and retrieval <http://www.disit.org/5636>
- intelligent cross media content <http://www.disit.org/5667>
- collaborative work models and tools: mobile, smart TV, etc.
- mobile and tablet tools for learning and impaired people
- natural language processing tools, for social media, blog, and human discussion analysis and understanding



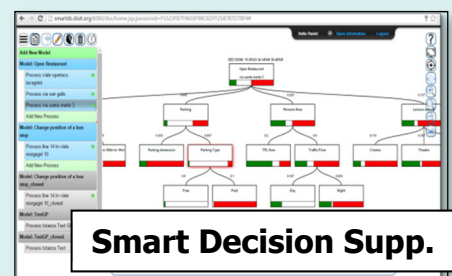
**MyStoryPlayer**

### Examples of DISIT tools, see <http://www.disit.org/5489> for more and TRL

- **Service Map:** smart city development tools for web and mobile app. Georeasoning of knowledge in the city: mobility, point of interest, forecast, parking status, bus status, etc. <http://servicemap.km4city.org>
- **Smart Decision support system:** integrating subjective and objective views on decision support trees, Bayesian support, dashboards, system thinking (<http://smartds.km4city.org> )
- **Georesolution** and navigation: geo location, LOD, etc. see Sii-Mobility: <http://www.disit.org/5478> , <http://servicemap.disit.org>
- **Dates disambiguation and Time Line Navigator** tool for identifying, mining and disambiguating dates contained in textual documents, navigation in temporal line (see <http://www.eclap.eu/177596>)
- **CoSKOSAM:** Collaborative tool for SKOS and ontology management, automated production of ontologies (see <http://openmind.disit.org>), Natural Language processing languages: English, Italian, German, Spanish, Francoise

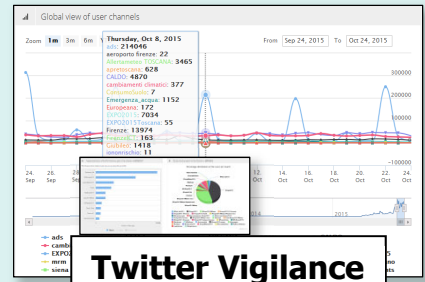


**Service Map**

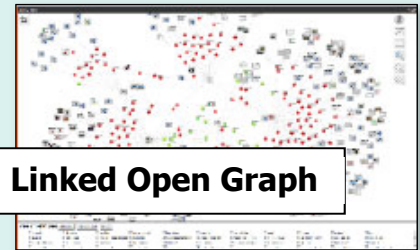


**Smart Decision Supp.**

- **Twitter Vigilance:** Social media Vigilance, blog and twitter vigilance, sentiment analysis, predictions, detection of critical situation, participatory assessment, opinion leaders, influences, competitive analysis, etc. (<http://www.disit.org/tv> )
- **Data Ingestion Manager, DIM:** data ingestion parallel processing management tool, open and private data, static and real time data, reconciliation, integration and update, scalability. (<http://www.disit.org/6732> )
- **RDF Indexing Manager, RIM:** RDF store versioning, RDF verification and validation (<http://www.disit.org/6708> )
- **Multimedia Crawler** to search and mining media content from social media portals as VIMEO and aggregators connected to Europeana, a tool for the creative industry, for teachers, and cultural institutions. (see <http://www.eclap.eu/177627>)
- **VIP Name Extractor, recognition, link discovering,** Resolver and Manager to cope with names recognition and identification, synonymous management, creating links with dbpedia, geonames, vip names, user names, etc. (see <http://www.eclap.eu/177605>)
- **Linked Open Graph, LOG,** connecting LOD/LD, mining & browsing, and aggregation. Applied on data of dbPedia, Europeana, geonames, Sii-Mobility, etc. <http://log.disit.org>
- **Origin Destination Matrix:** estimation of OD math via WiFi and GPS, specific mobile application for OD estimation, people and traffic flow assessment (<http://www.disit.org/6694> )
- **XMediaCBIR** Content Based Information Retrieval for producing search and recommendation algorithms integrating both textual and content descriptors for similarities and retrieval algorithms (<http://www.disit.org/5484> )
- **MatchMaking** to support the match from offers and demands <http://www.apretoscana.org/5221>
- **IPR Wizard** assistive tools for IPR data and content licensing and permission setting according to rights ontologies and relationships (see <http://www.eclap.eu/4021>)
- **Mobile Emergency:** indoor and outdoor navigation tools for moving on maintenance and emergency conditions automated intervention management, Apple Store. (<http://www.disit.org/5501>)
- **Smart City App:** <http://www.disit.org/km4city>
- **Smart Cloud Engine, SCE:** <http://www.disit.org/6715>
- **Dashboard:** <http://www.km4city.org>



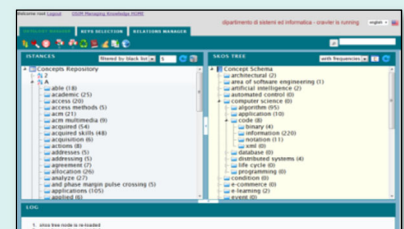
**Twitter Vigilance**



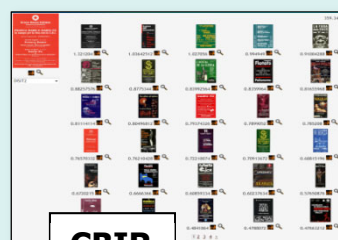
**Linked Open Graph**



**Origin Destination Mat**



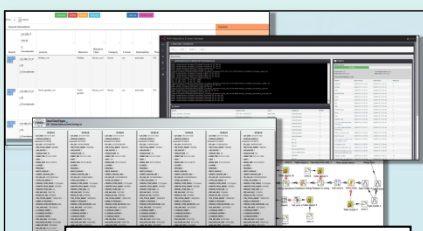
**Openmind.disit.org**



**CBIR**



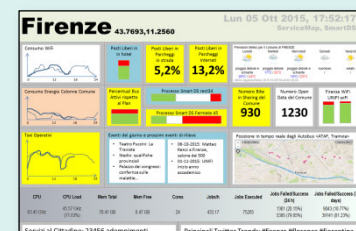
**Mobile Emergency**



**SCE, DIM and RIM**

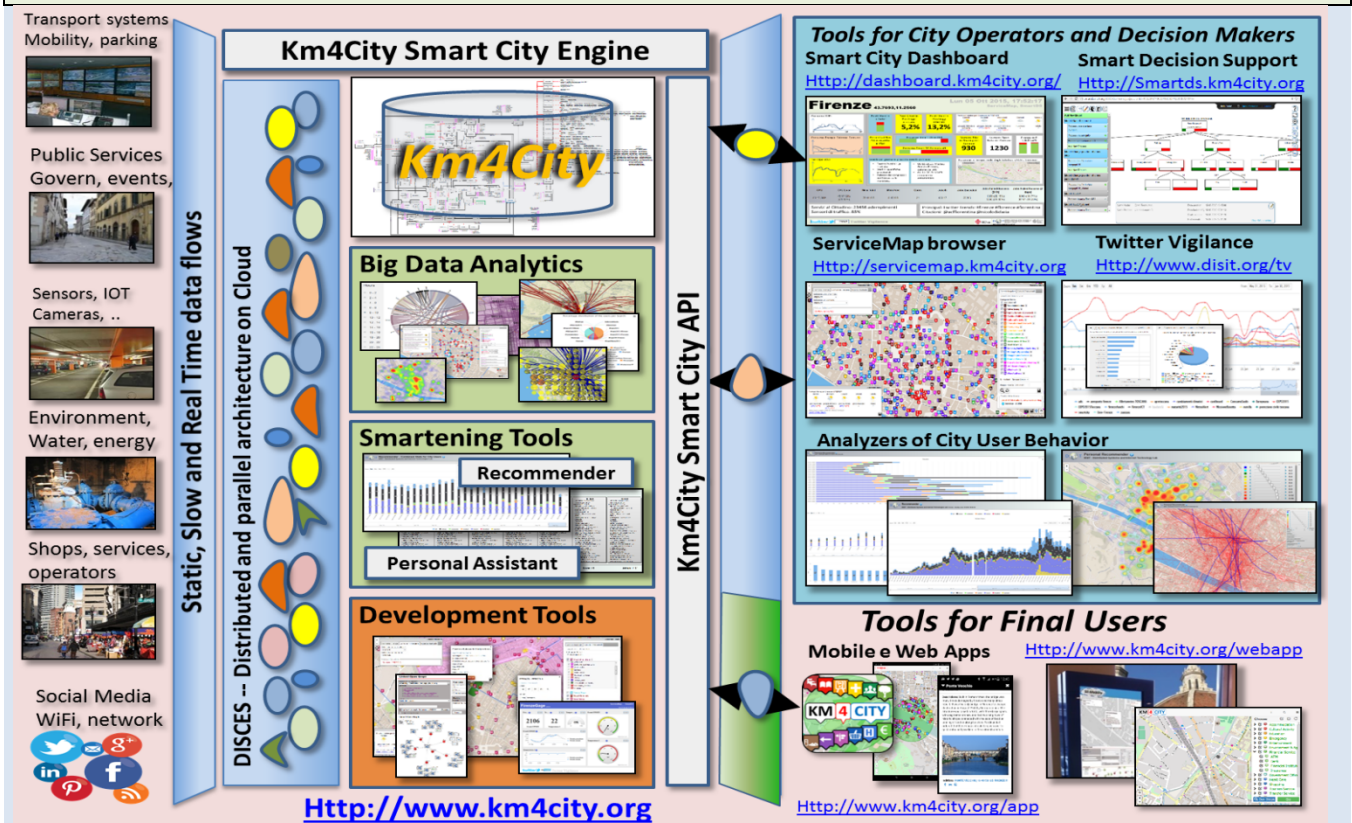


**Smart City App**



**Dashboards**

## Km4City framework for smart city, <http://www.km4city.org>



## Other references of DISIT projects, <http://www.disit.org/5501>

### Smart City, resilience, data and tools

- **REPLICATE SCC1:** (<http://www.disit.org/6778> ) smart city project: ICT, mobility, energy
- **RESOLUTE DRS7:** (<http://www.resolute-eu.org>) resilience for transport systems in the city
- **Sii-Mobility** (<http://www.sii-mobility.org>) on transport systems services, open data, smart city engine
- **Coll@bora** (<http://www.disit.org/5479>) on support for family with disables and data protection.

**Knowledge mining and semantic reasoners**, semantic computing; natural language processing in Italian, English, German, France; indexing, querying, similarity, matchmaking, reasoning in time and space.

- **OSIM** (<http://openmind.disit.org>), community knowledge mining and understanding
- **SACVAR** (<http://www.disit.org/5483>), massive big data crawling and competence matchmaking

**Smart Cloud computing**, cloud automation and intelligence, monitoring and reasoning about cloud behaviour, verification of configuration consistencies, prediction of critical cases, etc.

- **ICARO Smart Cloud** project (<http://www.disit.org/5482> )

**Social media, social semantic tools**, cultural heritage open data and LOD, social network, social media, semantic computing, cross media recommendations, data mining, technology advanced learning, e-learning:

- **ECLAP** social network and tools for performing arts (<http://www.eclap.eu> ) ;

**Train Control Systems** projects on formal methods ERTMS, CBTC:

- **TRACE-IT** autonomous drivers for high speed trains and metro (<http://www.disit.org/5485>),
- **RAISSS** interlocking, verification and validation, logic reasoners (<http://www.disit.org/5481>),
- **TESYSRAIL** train signal control system, high speed train (<http://www.disit.org/5530>)

## DISIT Infrastructures and Facilities

DISIT Lab, DISIT Cloud and data center

DISIT has generated **Effective Knowledge start up** spinoff of the University of Florence, <http://www.effective-knowledge.com>

## Contact

Paolo Nesi, @paolonesi  
 DISIT Lab, DINFO: Dipartimento di Ingegneria dell'Informazione  
 Università degli Studi di Firenze - School of Engineering  
 Via S. Marta, 3 - 50139 Firenze, ITALY  
<http://www.disit.dinfo.unifi.it>, <http://www.disit.org>

E-mail: [paolo.nesi@unifi.it](mailto:paolo.nesi@unifi.it)  
 Office: +39-055-2758515  
 Cell: +39-335-566-86-74  
 DISIT Lab: +39-055-2758517 / 516  
 Fax.: +39-055-2758570