

smart cloud knowledge modeling, and reasoning



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DISIT Lab

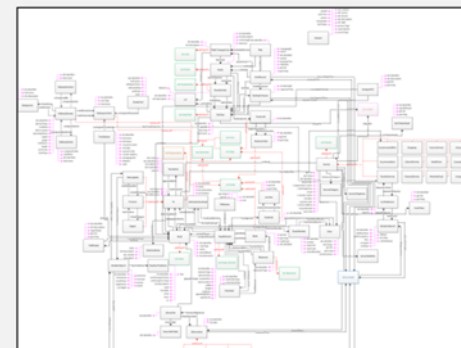
<http://www.disit.dinfo.unifi.it> *alias* <http://www.disit.org> , paolo.nesi@unifi.it

DISIT Lab Competences

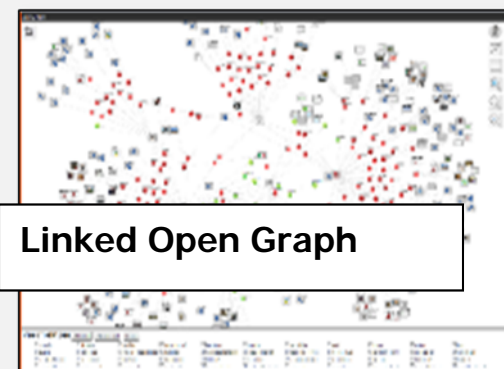
- **DISIT Lab**
 - one of the most active ICT labs of the University of Florence
 - successfully developed a number of International RnD/RIA/IA projects as well as solutions grounded on available DISIT tools for specified TRL
 - Publications: <http://www.disit.org/5487> Tools: <http://www.disit.org/5489>
- **Research areas:** big data, semantic models and computing, knowledge mining and representation, artificial intelligence, natural language processing, high performance distributed systems, ontology modelling, metrics definition and assessment, data mining and understanding, content and data licensing and protection,
- **Techniques:** data analytic, clustering, indexing and search, link discovering, regression, holistic regression, machine learning, prediction, inference, deduction, recognition, disambiguation.
- **DISIT solutions for:** user behaviour analysis, recommendation, multilingual and cross media indexing, user and collective profiling, indoor/outdoor navigation, media synchronisation, matchmaking, audio transcoding, decision support, sentient and autonomous agents and tools, open data, linked open data.

Recent Track Record on cloud

- **iCaro Cloud** a *smart cloud project* on the verification of consistency and on smart strategies on cloud (6.4 Meuro):
 - <http://www.disit.org/5604>
 - **Cloud Monitoring**
 - **Cloud Interoperability**
 - **Cloud verification and validation**
- **Linked Open Graph** service:
SPARQL/ Linked Data navigator open service and reasoner engine
 - <http://LOG.disit.org>



Smart Cloud Model



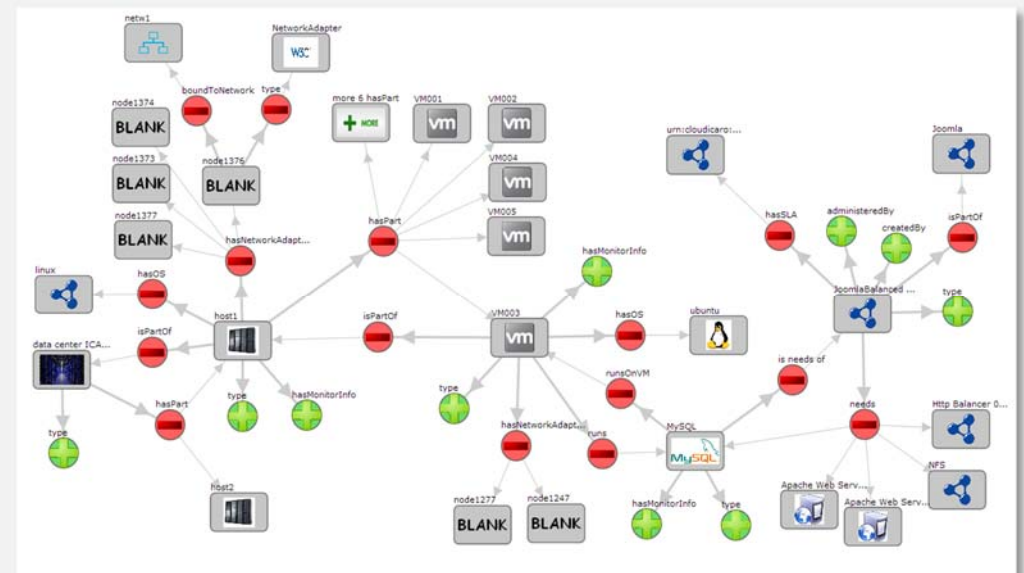
Linked Open Graph

Smart Cloud Model & Engine

- **Cloud for business acceleration of SMEs (developed in ICARO project)**
- **Cloud Ontology and Knowledge base**
 - ontology modeling cloud resources at level of IaaS, PaaS, and SaaS, SLA of multitier applications and deployments, monitoring data, supporting reselling, brokerage, etc.
- **Smart Cloud Engine**
 - for automated provisioning and verification of service composition and deploy: a set of tools for reasoning about cloud status taking into account the cloud status and evolution via the *Knowledge Base*.
 - The intelligence on smart cloud is enforced by means of a set of algorithms to perform:
 - detection and prediction of critical conditions,
 - verification and validation of configurations (feasibility in terms of consistency and completeness and taking into account present and possibly available resources),
 - unexpected correlations about facts on cloud evolution, estimation of slack, automated verification of completeness and consistencies, etc.
- **Monitoring and Reporting tools**
 - Estimation and production of high level metrics based on low level metrics,
 - generation of graphic and data results via services for reselling portals and cloud customers.

Smart Cloud Ontology

- Model different aspects of Cloud:
 - The **infrastructure** (Host Machines, Virtual Machines, Network, Storage, etc.)
 - The **services** available (database, filesystems, application servers, balancers, mail server, etc.) mapped to VMs, with monitoring aspects
 - The **applications** (built using services) with specific metrics and SLAs
 - The **business configurations** (the bought applications)
 - The **SLAs** and **high/low level metric** definitions



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