



## Cloud solution for Business Acceleration of SMEs

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

Most of the small and medium-sized enterprises are based on old architectures hosted on their local servers. A clear advantage offered by Cloud for SMEs' is the cost reduction, increment of flexibility, enhance and accelerate the renewal. Housing and hosting solutions available are rigid, have inertia adaptation to new requirements, in increments of market, require huge investments in infrastructure and/or re-engineering of processes and management software. For SMEs' need to go towards the concept of *business as a service*.



**ICARO aims** (with an action of industrial research, innovation and experimental development) to produce prototypes of innovative technology solutions to solve these difficulties, providing an integrated and gradual access to cloud services as a service, with customized cost models and consumption, accessible to the business owner.

**ICARO partners** cover the research activities in the field of distributed systems (cloud middleware, automatic, reliability), artificial intelligence (semantic computing and intelligence tools for the generation and verification of configuration issues and automated combination of services), operational research for the optimization of cost models and management of the cloud. This means to create a smooth transition to the cloud with solutions that can handle the new requirements with basic facilities and complexities that can be easily integrated with existing solutions, with attention to the increases / decreases in business. The solutions of ICARO are validated against actual cases of companies using ERP, CRM, e-learning, workflow, CMS, marketing, etc.

**DISIT Lab of the University of Florence** (<http://www.disit.dinfo.unifi.it>, Distributed Systems and Internet Technology Lab) in *ICARO cloud project* has competence and is working on:

- ✓ **ICARO Cloud Ontology and Knowledge base:** which consists in an innovative ontology which has been used as model for a big data RDF store including cloud resources configurations and conditions at level of IaaS, PaaS, and SaaS, SLA of multitier applications and deployments, monitoring data, supporting reselling, brokerage, etc.

- ✓ **ICARO 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 *ICARO 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.
- ✓ **ICARO Monitoring and Reporting tools**: which includes a data collection tool based on Nagios Monitoring tools and VCenter monitoring tools, plus a set of plugins to support multiple vendors and standards at levels of IaaS, PaaS, and SaaS. Estimation and production of high level metrics, generation of graphic and data results via services for reselling portals and cloud customers.

**Project coordinator:** Paolo Nesi, UNIFI, paolo.nesi@unifi.it

**Main Partners:** Computer Gross, LiberoLogico, AltroLavoro, University of Florence

