From Data to Knowledge: a crucial issue, and will be even more in the future, the capability of transforming the avalanche of data produced by the digital convergence of the ICTs into a strategic lever for the social and economic growth.

Social and economical pressure towards better mechanisms for access to information is strong and growing, due to the continuing expansion of digital content. The new scenario is that data, information and services accumulate at a rate and a form that makes them no longer fit for direct human inspection and usage: the bottleneck is not only represented by the channel but also by the limited perceptual bandwidth of user. More and more often, the time and resources that need to be invested in order to gain access to information and services happens to be disproportionate to fruition time and value, and defies the very purpose of accessing and using them. Information overload has now become a commonly used term and concern. This is the explanation of the increasing demand of knowledge technologies, both by web users that need to access contents more easily and more precisely, and by the contents producers that need to make their digital manufactures findable by interested public - while the Web progressively turns people into spectators, and the barriers between consumers and producers vanish.

The CNR "Data Mining, Ontologies and Semantic Web" is situated in this scenario: its three keywords denote three complementary and intertwined basic breaks of the science and engineering of knowledge discovery and delivery which is developing to meet the goal of handling not only the semantic retrieval of information and services, but also their contexts and functionalities, with reasonable performance, thus supporting the automated discovery of patterns and their associations and relationships in disparate contexts and media, summarizing information as a form of abstraction, and providing a knowledge-based support to combine and produce new knowledge and services.

The research activities carried on within the project concern several relevant intertwined areas:

- **knowledge discovery and data mining:** methods to learn new knowledge from data and make knowledge usable, and enable the construction of systems capable of adapting their behavior.
- **semantic integration of data and services:** ontology-based methods for the integration of data and services in complex organizations;
- **persuasive digital libraries and social networking:** methods for enhanced access and delivery of digital contents, underlying the next generation of intelligent search engines;
- **autonomous cognitive agents:** methods to create pro-active and pervasive systems capable of communicating and sharing knowledge, acting individually and collectively;
- **multimodal ubiquitous and adaptive user interfaces:** methods to enhance the experience of the ubiquitous user interacting with knowledge-rich services.

**Research Units**

- **Towards this ambitious aim, the "Data Mining, Ontologies and Semantic Web" project** integrates the research activities carried out by 12 CNR research groups that are international leaders in the area of knowledge technologies. The Research Units of the project employ a total of 210 permanent researchers and 121 training researchers in 15 permanent positions.

**Contact Person:**

Fosca Giannotti, fosca.giannotti@isti.cnr.it

**Project coordinator:**

Fosca Giannotti
http://www.ict.cnr.it/

---

"In a world that changes knowledge is more valuable than money".

by Jean de La Fontaine, from his fablea

**RESEARCH UNITS**

- **Methods and tools for service and knowledge interchangeability** (Michele Missikoff, http://www.athena.eu/)
- **Managing, Mining and Retrieval on Data** (Piero Giaretta, filippo@farim.it)
- **FACiLE — Cognitive agents-based framework for management and intelligent retrieval on digital libraries and advanced services** (Ignazio Guarino, infoinfantino@pa.icar.cnr.it)
- **Distributed Information Systems for Semantic Web** (Mario Margh Parmenter, mmp@cs.rhon.ac.uk)
- **Intelligent Interfaces** (Francois Mele, f.mele@cib.na.cnr.it)
- **Advanced Interaction Technologies: Multi-Agent Systems, Learning and Social Simulation** (Rino Falucca, rino.falucca@enpi.eui.it)
- **A reference ontology for the integration of services and organizations in public administrations and enterprises** (Michele Missikoff, http://www.athena.eu/)
- **Knowledge Discovery and Semantics** (Chiara Benso, Chiara.retrofit@isti.cnr.it)
- **Digital Libraries** (Enrico Ruberti, enrico.ruberti@isti.cnr.it)
- **Spatial Information in the Knowledge Society** (Gagliilo Croci, Gagliolo.Croci@isti.cnr.it)
- **Semantic technologies and information management in complex organisations** (Aldo Gangemi, aldo.gangemi@isti.cnr.it)

**Contact Person:**

Ignazio Infantino, ignazio.infantino@pa.icar.cnr.it

**IKS: Interactive Knowledge Stack**

- **Driver** (Donatella Castelli, www.driver-repository.eu)
- **Knowledge is potential power, Knowledge is real power**

**Silvano Girardi**