

# Regione Piemonte - Bando Converging technologies 2007 - Piedmont Region

## Converging technologies call 2007

### Title

ICT Converging on Law: Next Generation Services for Citizens, Enterprises, Public Administration and Policymakers.

### GENERAL INFORMATION

**ACRONYM:** ICT4LAW

**SECTOR:** Cognitive sciences - ICT

**ABSTRACT:** Law in contemporary society is becoming a complex variable: several actors within the national legal order have to cope with an increasingly more supranational complex jurisdiction, such as EU multi-level and multi-language law.

This situation requires more and more resources and expertise to be managed by:

1. Citizens and enterprises requiring services (e.g., how to get healthcare tax exemption from public offices or how to open credit lines with banks) need to know the details of procedures to be fulfilled in order to receive such services, who is accountable in case of criticalities and which norms regulate them. Thus, public administrations and credit institutions must offer trustable back office procedures and update them according to law changes along time.

2. Enterprises having to plan how to adapt their strategies to changes in law, in public financing programs and in unexpected events under the insurance profile. Nowadays no formal and adaptive instrument can support this process due to the complexity of the functioning of firms, especially considering the risk management issues.

3. During the legislative process, the Regulatory Impact Assessment has to be performed before enacting laws and consolidating provisions. This is rarely advantageous since it is a costly and uncertain task which cannot rely on information technology yet.

4. Policy makers have to evaluate the "popularity" of laws among citizens, to foresee their impact during drafting and to simplify and to make laws more understandable. Relying on explicit surveys is costly and collects biased information. This project will address these related issues by developing beyond state of the art ICT and applying them to the legal field to build the core of a new generation of services. These technologies will stem from the convergence of ICT methodologies developed in the area of cognitive science, in particular:

- Knowledge representation methodologies, like ontologies, used in knowledge management, e-commerce, in the semantic web and service oriented computing.
- Automated analysis of natural language, to access unstructured information daily put online by users by exploiting Web 2.0 technologies.
- Autonomous agents, programs which are built on the basis of a cognitive model of human reasoning.
- Agent-based simulation which adopts the simulative method of cognitive science and apply it to the complexity of social and economic reality.

- Neural networks and statistical techniques to analyse quantitative data.

This project will increase the correlation of interdisciplinary research in Piedmont, focusing on the strategic topic of dealing with social complexity, aiming at networking with national and international research centres. The goal is to develop a technology that can be reused in new domains of inherent similar complexity, e.g., corporate internal organisation, access to multilingual digital libraries, monitoring popularity of consumer products.

This project will apply the newly developed technologies in a synergic way to build a platform of services to support different kinds of users when dealing with legal aspects:

- 1) Formalization of procedures regulated by norms, to allow monitoring, logging, reasoning and compliance verification.
- 2) Norm consolidation process with automatic recognition of norm modifications and construction of temporal databases to reason about the validity of norms along time.
- 3) Automatic extraction of opinions about current norms from blogs, newsgroups and forums.
- 4) Multilingual legal ontologies for the semantic indexing and retrieval of legal documents at the regional, national or European level.
- 5) Agent-based simulation of enterprises to make predictions about the effects of new norms on the activity of enterprises in selected markets.
- 6) Adaptive tools for businesses in order to identify compliance related incidents, accelerate correct decisions, reduce risk.

**DURATION (months): 36**

**TECHNICAL SCIENTIFIC OBJECTIVES:** Law can be considered as a complex, distributed cognitive system. As such, it requires new technologies that can deal with its complexity and with the cognitive abilities of humans. These technologies are stemming from those areas of ICT that are closest to Cognitive Science and from the simulative approach used in Cognitive Science.

The objective of this project is to bring these technologies beyond the state of the art and create a new generation of services, oriented to different kinds of actors, all moving in scenarios regulated by the law: from citizens to public administration, and from enterprises to legislators.

The produced services will share a core of technologies, which are:

- a) Ontologies to represent the meaning of legal terms, to index documents and to reason about procedures.
- b) Automated natural language processing to retrieve legal documents, and to access unstructured spontaneous open information sources to extract opinions.
- c) Cognitive agents simulating human reasoning on norms, and for verifying the compliance of procedures to regulations.
- d) Agent based simulation, the only methodology to make prediction in complex systems like norm-regulated enterprises.
- e) Artificial neural networks for enterprise risk evaluation

The advancements of the project on the technological issues will be witnessed by deliverables (as reported in each Work Package), and the achievement of beyond state of the art objectives will be testified by the scientific production of the proponents in their different fields of competence and by the organization of scientific conferences.

These technologies will be used to create a platform delivering a new generation of services for different kinds of users:

1. Formalization of and automated reasoning on procedures (e.g. administrative practices and financial services), formalized using ontologies. The declarative representation offered by ontologies will allow the representation of several aspects -, like accountable office, validity conditions, referred norms. This service allows to track and log the evolution of the procedures, understand criticalities and verify compliance with current regulations.

2. Automatic support to normative consolidation. Consolidation means building a new normative document including all the modifications done along time on the original act. The automated Norma system will be extended with natural language processing and agent based reasoning to get in a quicker and more accurate way the consolidated normative text tagged using the Normeinrete standard of the Piedmont Arianna legislative portal. These texts will be organized on a temporal database to retrieve the legislation valid along time.

3. Automatic retrieval of opinions expressed by citizens by performing computational analysis of the language on open information sources (e.g. dedicated blogs, newsgroups, forums). Using Web 2.0 technologies the service will profit from the spontaneous social networking activity of citizens.

4. Multilingual legal ontologies for representing the meaning of legal terminology. This knowledge will be used for the semantic indexing of legal texts as well as for supporting Regulatory Impact Assessment, at European, national and regional level.

5. Automated support for predicting effects of norms on enterprises or industrial districts. Since complex systems like the normative and economic ones are difficult to model on a mathematical basis, to make predictions it is necessary to resort to agent-based simulation.

6. An articulated solution for risk analysis and management in compliance events by the means of new generation of Business Intelligence tools.

This project will develop an integrated platform for providing services and will implement prototypes of each service, for selected case studies relevant for the Piedmont area.

Moreover, services will be developed considering the feasibility of their future commercial exploitation during the project.

**STATE OF THE ART:** Projects on formalization of procedures:

P.A.eS.I.(Public Administration and Foreign Immigrants), portal on immigration procedures implemented for the Prefecture of Florence, enables the user to retrieve Italian legislation related to immigration and amendments made after the publication of the original text using a distributed, multi-user environment with special attention on interoperability among administrations and on multilingualism.

Tocai.it, Tecnologie orientate alla conoscenza per aggregazioni di imprese in internet, Italian Ministry of Research FIRB Project on using advance knowledge based technologies, like ontologies, to support internetworked enterprises.

Projects on legal document retrieval:

Pacto (Portal for the Drafting of and Access to Acts of the Municipalities and Other Local Authorities in Tuscany) introduces models for legislative drafting and assessing measures enacted by local authorities and assistance in searching of the acts; Logos project designs an environment that can be placed in a Portal to retrieve, classify, draft and assess the documents produced or to be produced by the public administration.

DALOS (Drafting Legislation with Ontology-Based Support ), financed by the European Commission within the eParticipation programme (2007-08), provides the Community legislator with terminology and ontology support to check the semantic coherence of new legislative texts indicating the contexts of the multilingual use of terms and their diachronic evolutions. LOIS (Lexical Ontologies for Legal Information Sharing) is a Demonstration Project co-financed by the European Commission under the e-Content Program (2003-06). Its methodology is based on WordNet and EuroWordNet resources and it produced a WordNet for the legal domain into six different European languages for the consumer protection in order to achieve cross lingual information.

Legal Taxonomy Syllabus (LTS), within the project "Uniform Terminology for European Private Law" funded by European Commission during the Fifth Framework Programme, is an ontology development application which provides a legal taxonomy repository implemented by the University of Turin about consumer law in several EU languages.

Projects on norm consolidation:

CIRSFID of University of Bologna supports researches as NormeinRete, National project by CNIPA, provides the national XML standard for making up the national law; ESTRELLA(CEC-FP6-IST-027655) provides a standard(Legal Knowledge Interchange Framework) for modelling the legal knowledge under ontological assertion and a mark up language to make able the interchange between different European and not European standards; PEOPLE represents a unique Italian experiences of business process reengineering in the e-services supported by the legal information.

**POTENTIAL IMPACT:** The project target is the improvement of the availability, for citizens, enterprises, and authorities, of services bound to the Law, simplifying the access to legal information, and improving the quality of the norms produced in the regional ambit. We act from two points of view,- service fruition and norms production. On the first hand, the potential of citizens and enterprises –especially small enterprises, without an internal legal office– is increased thanks to the new and simple services. On the other, the environment in which they operate is enriched thanks to the increased quality and intelligibility of regulations, following the possibility of improving the norm drafting, by anticipating norm impact on the society and by collecting and automatically process spontaneous feed-backs from the community of users.

The developed technologies will not be used only in the legal field, but they will be ready for use in other ambits. The law is chosen as starting domain, because of its relevance for enterprises and Regional Government, and of its complexity (given by the multilingual nature of EU environment, by the difficulty of management, etc.), which makes it an interesting research subject . Other domains that will benefit from the results of this research are business economics and microeconomics in terms of instruments for a better performance of firms and a better allocation of resources.

Impact on users

This project has four distinct types of receivers: citizens, enterprises, Public Authorities, and lawmakers, who will benefit of the following outcomes:

1) Advantages for citizens and enterprises, when they will enjoy services offered by a Public Authority or by enterprises which supply services:

- a) clearer description of the procedures to follow and easier information retrieval;
- b) better ways to clarify normative references that inspire the procedures;
- c) better warranties that procedures conform to the specifications of actual normatives;
- d) side effects deriving from the improvement of administrative files management (back office);
- e) easy identification of anomalies with explanation of the plausible causes (i.e., a responsible's error, times, etc.);
- f) log of the various steps of the procedure which have been executed.

2) Advantages for enterprises:

a. Concerning simulation services:

- i) possibility of making previsions about the impact of new regulations on the enterprise trend;
- ii) possibility of studying in advance the effect of company reorganizations, considering the regulations in force;
- iii) possibility of studying the effect of enterprises integration in circuits.

- b. Concerning opinion gathering services, rooting in open information sources beyond the legal domain, the enterprises will be able to collect information on the consumer products or services they sell without resorting to more costly customer surveys.
- c. For enterprises operating at European level, facilitation in understanding other countries legal terminology and to retrieve documents.
- d. Concerning risk management, an organization needs Business Intelligence instruments to be fully "compliant" with specific statutes and regulations and to manage the moving targets of "compliance" as new requirements emerge (many borrowed by one regulatory body from another) where many enterprises have several different governmental and industry regulations with which they must comply according to the various geographical regions that firms must operate in.

3) Concerning the policymaker issues, the result will be, in general, a better quality of Piedmont system regulation.

a) Projects for normative reinforcement and revision are part of the normative simplification area. An example is the Comune of Bologna, which reduced the number of documents in force from 250 to 70.

Moreover, the extended Norma system will work as a simulation instrument for legislative process tool, letting to lawmaker able to take more precise decisions.

b) If simulations acting on legislative text improve the regulations produced, then the effect of the agent-based simulation will strike again on norms content. The possibility for the evaluation of the impact that a norm has on enterprises will allow wider effective norms creation.

c) Opinion gathering of the popularity of norms will result in:

- More understandable laws: As a result of measuring what citizens really understand of the law/regulation
- More citizen-oriented laws: As a result of identifying the aspects of laws which have been less appreciated by the civil society, lawmakers may decide to review certain laws if that operation does not controvert crucial policies.
- More communicative laws: As a result of taking into account those aspects that have been misunderstood in the past or that received a strong negative judgement by the civil society and had little real (e.g. economic) impact.
- More coherent laws: As a result of the integration of "subjective" aspects of laws (how they are perceived by citizens) with "objective" aspects (their impact on the society, in particular the application of the law by the local administrative authorities).

The project will therefore increase the answering capability of legal services, improve the certainty of the norm meaning, and support the lawmakers.

d) A more reliable access to multilingual regulation and terminology will improve the possibility of implementing in a better way EU directives in the national and regional context, considering also the role of Piedmont in the EU institution Committee of Regions <http://www.cor.europa.eu/it/index.htm>

Improving the quality of legislation is one of the main objectives of EU Council, according to the "Better regulation — simply explained 06/12/2006" document following the Better Regulation initiative from June 2002 COM(2002) 278. Among the solutions of this problem is ICT: "developing more user friendly access to consult and use Community law", "The Community could offer the general public a much more accessible and user-friendly presentation of the most relevant body of Community law". This document realizes that the current instruments for accessing digital libraries of EU law are useful for

legal specialists, whilst they are not for other users with different needs. In the light of experience, and given the availability of modern computer technologies, improvements in their content, presentation and user-friendliness are now possible and desirable.

According to art. 5 of law n. 50 of 1999 Italy has introduced the preventive Regulatory Impact Assessment to improve the quality of norms. The Regulatory Impact Assessment is an ex-ante evaluation of regulations which can impact on the society and enterprises. Such norms can impact on the behavior of addressees on economic aspects (market, prices, competition) as well as on social aspects (healthcare, environment). The Regulatory Impact Assessment allows to improve the knowledge of effects of norms, the integration of regional and national legislation, the transparency and the accountability of legislator. The Directive of Presidente del Consiglio dei Ministri of March 27 2000 has detailed the modalities of the assesment but its implementation at the regional level needs further instruments like the ones proposed in this project.

### Impact on research

This project has a highly interdisciplinary nature, with strict connections with the research activities carried out in Piedmont reality. As such, the project will reinforce research in these ambits (which namely are Information Sciences, Cognitive Sciences, Economics and Law), producing at the same time innovative results in each of the involved research areas as well as interdisciplinary results. Indeed, the project foresees joint work between two Universities (Torino and Piemonte Orientale) and CNR and it will also foster the connection with other research centers which constitute the excellence in their sector, like the Institute of Cognitive Sciences and Technologies ISTC CNR (LOA), ITTIG and CIRSFID on ICT for what concerns law studies, Xerox research center on applied research on natural language processing.

Moreover, it will foster the cooperation of public research with 5 SMEs doing industrial research.

Concerning the relation with other institutions in Piedmont and the theme of complexity and of complex systems (which deeply characterize both the issue that we face and the solutions that we plan to develop), we find:

- 1) The ISI Foundation (Institute for Scientific Interchange) that promotes scientific high quality cooperation in the area of the theory of complexity.
- 2) The Lagrange Project, funded by the CRT Foundation of Turin that aims at promoting research on the organization of complex systems with possible applications in infinite productive fields, trying to release a new culture of innovation. Prof. Terna, who participates to this project, is a member of the technical committee of this initiative.
- 3) The Centro Interdipartimentale Sistemi Complessi in Biologia e Medicina Molecolare of the Università di Torino, to which the Dipartimento di Informatica belongs.
- 4) Finally, the LaSCo- Laboratori of Cognitive Science and Complexity (related to the Rosselli Fundation of Turin).

Concerning the theme of ontologies in Turin, we find Labont, the interdisciplinary laboratory of the Università di Torino associated with different Italian and French universities, and CTAO, the Interuniversity Centre for Theoretical and Applied Ontology, which the Departments of Scienze Giuridiche and of Informatica belong to.

Concerning instead the research on the automatic processing of natural language, besides the Dipartimento di Informatica and of Lingue of the University of Torino and the CELL, co-proponent of this project, Loquendo, a private research centre, is also active.

## Future perspectives

The objective of the project is not only to develop technologies that go further on the state of art to create a new generation of services but also an humus in the world of the Piedmont research that allows to continue the research further on the temporal terms of the project.

As to theoretical and applied instruments to cope with social complexity in studies on the law effects on economic environment, the expected results of the project represent a central issue for filling the gap in Europe as confronting with the same research field in the United States (from specific post-graduate research in academic institutions to industrial perspectives on business and law data tools in cooperation with US government). For this motive, part of the budget of the project will have a cascade effect to provide PhD scholarships on these themes (for instance, PhD courses in Law, "Cultura ed Impresa", Computer Science, also in cooperation with foreign universities) and for post PhD scholarships and research benefits for young researchers. We will try to define scholarships with skills according to European standards to attract candidates from foreign states.

With respect to EU research area, the achievement of the project will give to Piedmont environment the leadership in promoting and presenting proposals for European projects on complementary/developing themes as regards those treated by this project.

The expected results of project will constitute also the missing curricula about social complexity on law and economics within the deputy University structure, the "Alta Scuola in soluzione dei Sistemi Complessi" whose constitution is promoted by University of Turin.

Consequently, this project will augment the probabilities to ground even more this innovative but fundamental research line into the Regional academic field, combining the scientific research with the advanced didactics on the items of the research, through the expected stabilization in tenure position for the researchers involved in frontier project like this.

### **DESCRIPTION OF THE RESOURCES:** Participants

The consortium of this project – including subcontractors - is composed by 12 units:

- 1) Three Universities (of which two in Piedmont) - with the contribution of six departments (two for each area covered by the project: Computer Science, Law and Economics).
- 2) Three institutes of CNR (of which one in Piedmont), working respectively in Cognitive Science, Law and Economics.
- 3) Six enterprises: two private research centers (including an international one), 3 software houses and a provider of financial services.

Additionally an Observatory board not included in the budget will be set up to innervate the results with the Piedmont institutional and economical tissue.

Project's proponents and their respective unit coordinators are the following:

1. Università di Torino
  - a. Dipartimento di Scienze Giuridiche (Prof. Gianmaria Ajani),
  - b. Dipartimento di Scienze Economiche e Finanziarie "G. Prato" (Prof. Pietro Terna),
  - c. Dipartimento di Informatica dell'Università di Torino (Prof. Guido Boella).
2. Università del Piemonte Orientale
  - a. Dipartimento di Studi per l'Impresa ed il Territorio dell'Università del Piemonte Orientale (Dott. Piercarlo Rossi).
  - b. Dipartimento di Informatica (Prof.ssa Laura Giordano),
3. CERIS CNR of Torino (Dr. Giuseppe Calabrese)

Co-proponents are

1. CELI s.r.l., a private research center (Small size enterprise)
2. ComData, a software house (Medium size enterprise)
3. Convey, a software house (Small size enterprise)
4. Augeos, a provider of financial services (Small size enterprise)
5. SSB Progetti, a software house (Small size enterprise)

Essential part of the project are also institutions outside Piedmont, which will be involved via collaboration contracts constituting a substantial part of the overall budget:

1. The Institute of Cognitive Sciences and Technologies ISTC CNR, in particular the Laboratory of applied ontology (LOA) based in Trento of Dr. Nicola Guarino.
2. Xerox Research Center Europe of Grenoble, the French unit of the renowned international research center in Computer Science.
3. Istituto di Teoria e Tecniche dell'Informazione Giuridica - ITTIG CNR of Firenze. In particular the group of Dr. Daniela Tiscornia.
4. Centro di Ricerca in Storia del Diritto, Filosofia e Sociologia del Diritto e Informatica Giuridica, in particular the group of Professor Monica Palmirani.

The partners which participate financially to the project will resort also to the expertise of the members of the project's Observatory board, whose members will not be founded by the project but will add their expertise during the collection of requirements and dissemination of results in the Piedmont economical and social tissue:

1. Piedmont Regional Council.
2. Confindustria Piemonte, regional industrialists' association.
3. Fondazione Torino Wireless, promoting the growth of the ICT district in Piedmont.

The majority of researchers among the proponents collaborate since many years on the theme "Computer Science and Law" and on agents systems applied in the economical ambit too. They participated together to many projects financed by CNR, MIUR, and Fondazione CRT; they cooperate in the Centro di Scienze Cognitive of the Università di Torino.

Other cooperations exist among the CERIS CNR and the Dipartimento di Scienze Economiche e Finanziarie and Dipartimento di Studi per l'Impresa ed il Territorio on risk management issues and agent based simulation.

The Dipartimento di Scienze Giuridiche and Dipartimento di Informatica cooperated in the past years with LOA-CNR, ITTIG and CIRSIFID on the topic of legal ontologies.

Cooperation exists also among the industrial partners on the topic of opinion monitoring on the internet.

The main personalities belonging to the public research institutions involved in the project are:

Prof. Gianmaria Ajani, Former director of the Dipartimento di Scienze Giuridiche, deputy director of the interuniversity Centre for Theoretical and Applied Ontology, specialist in comparative law, advisor of several international institutions, such as the IMF, the EU Commission, The Council of Europe, UNDP, the ILO, one of the Italian pioneers in applying ontologies to European Multilanguage law.

Prof. Raffaele Caterina, director of the Dipartimento di Scienze Giuridiche, specialist in Italian private law and European legal cultures, has worked over the last four years at bridging the gap between juridical categorization and cognitive perception and representation through interdisciplinary conferences and seminal works published in national and international peer review journals.

Prof. Aldino Frignani is Professor of Comparative Law and of EC Law at the University of Turin, and was visiting Professor or lectured at the Universities of Ghent, Louvain, Warsaw, Cracow, Lublin, New York (Fordham University), Salzburg (McGeorge School of Law), Lyon, Dubrovnik, Istanbul, Harvard Law School, Konstanz, Kent College of Law (Chicago). Member of the International Academy of Comparative Law; International Bar Association (Committees "Antitrust" and "International Franchising"); International League of Competition Law; American-Italian Law Association; Licensing Executive Society; Associazione Italiana per l'Arbitrato (AIA); Association Henri Capitant des amis de la culture juridique française.

Prof. Pietro Terna: Pioneer in the field of agent based enterprise simulation. Former secretary of the regional industrialists' association Confindustria.

Prof. Guido Boella: Member of the Center of Cognitive Science of University of Torino, head of the Multiagent systems group at the Dipartimento di Informatica dell'Università di Torino and head of an international research group on normative multiagent systems.

Prof. Giovanni Fraquelli, Director of the Dipartimento di Studi per l'Impresa e il Territorio, director of HERMES, a research center for economics of public utilities (local public transport and other regulated services), in recent years has participated as a major expert in business economics at the "Autorità per l'energia elettrica e il gas" and in ministerial commissions regarding the steel sector and electricity sector.

Prof. Alberto Musy, member of several national and international think tanks about history of economic thought and law and economics insights, national correspondent in a European network on common core research on legal systems for what concerns the aspects of information duties, experienced lawyer in the international context, enhances the quality of the legislative and regulative analysis by a dual perspective, theoretical and empirical one.

Prof. Roberto Candioto, specialist in Business Administration, with his scientific activities represents an advanced frontier in the Italian high level converging research about Organization Theory and Information Technology and, consequently, fosters the technology advancement transfer for the several businesses for which he is consultant.

Prof. Laura Giordano: Head of the Automated reasoning group at the Dipartimento di Informatica of Alessandria.

Dr. Daniela Tiscornia: Research Director at ITTIG, involved in several Italian and European Projects in the field of Legal Information Accessing and of Legal Knowledge Management; among others: ePSInet CaseLex, and co-ordinator of the Lois project and of the Dalos project.

Prof. Enrico Pattaro: Director of CIRSFID, President of the Italian Association for LegalPhilosophy and the Association of Legal Informatics, founder and editor of Ratio Juris, the leading international journal of philosophy of law and general jurisprudence.

Dr. Nicola Guarino: Director of LOA-CNR, general chair of the Formal Ontology in Information Systems (FOIS) conference series, and associate editor of the International Journal of Human-Computer Studies, represents one of the greatest experts in the field of ontologies and applied cognitive science.

## Roles of partners in the project

### Proponents

Concerning the Law field, the main referent will be Professor Gianmaria Aiani, which will guarantee an international visibility to project results because of his leading role in the academic world as specialist in legal reforms, coordinator of several European networks on legal harmonization, member of prestigious world jurist organisations, consultant for United Nations, Chinese government, former socialist countries; for enterprises the main figure will be Professor Piero Terna, one of the promoters of the application of simulation agent-based at international level, which will guarantee the link with the entrepreneurial tissue of Piedmont (he is the former Secretary of Confindustria Piemonte). Concerning Computer Science, Professor Guido Boella and Professor Laura Giordano will guarantee the scientific expertise over all technological issues covered by the project.

The Dipartimento di Scienze Giuridiche of Università di Torino will lead the management of the project and will contribute to draw out the landscape of current issues of European multi-level and multi-language governance with the research development on topics relating to Regulation Impact Assessment relating to Italian jurisdiction (state-Piedmont).

The Dipartimento di Informatica dell'Università di Torino will bring its knowledge about ontologies both from the linguistic point of view to model the meaning of legal terms and to retrieve legal documents and from the point of view of the formalization of procedures.

The Dipartimento di Scienze Economiche e Finanziarie of Università di Torino will bring its expertise in the field of agent based simulation on enterprises to the domain of regulations.

The Dipartimento di Studi per l'Impresa ed il Territorio dell'Università del Piemonte Orientale will spread its multifaceted competences in several fields of this project, from business information systems to information law, from agent simulation in regulated market to business economics.

The Dipartimento di Informatica of Università del Piemonte Orientale will work on reasoning on formalizations of procedures using agent based systems.

The CERIS institute of CNR of Torino will bring in the project its expertise on tools for risk analysis.

#### Contracts with universities and research centers

The contracts will concern Universities and research agencies outside the Piedmont, which are the international excellence in the field of information technologies applied to the Law and of natural language processing. In particular:

1) LOA-CNR of Trento will provide its knowledge about ontologies, in particular as concerns the domain of e-government.

2) Xerox Research Center Europe

The main role of Xerox will be technical development of linguistic tools and algorithms to be plugged into the workpackage on Natural Language Processing. It will work in close collaboration with CELI.

3) ITTIG CNR of Firenze. In the project ITTIG will supply competences about ontological representation of processes and resources on ontological and terminological representation of the meaning of legal terms.

4) CIRSIFID of University of Bologna will supply its competences and tools about IT for support in normative consolidation.

This collaboration will allow the transfer to Piedmont research institutions of the state of art technologies concerning the ontological representation of processes, for the normative consolidation and for natural language processing, technologies that have been applied to a regional level in Emilia Romagna and to a civic level in Florence.

#### Co-proponents

a) CELI will provide its technologies for the semantic indexing of legal documents based on ontologies and it will develop the opinion monitoring automated systems on the popularity of norms.

b) Augeos will provide the know how on processes in the financial or banking sector which constitutes the test case for the services modelling processes with ontologies and will strictly connect the project with financial and banking institutions to collect requirements and to disseminate the results of the project.

c) COMDATA will be responsible in the configuration of cognitive grammars for opinion monitoring for bank and insurances in the services for opinion monitoring.

d) Convey will work on risk analysis based on the retrieval of information on the internet.

e) SSB Project will provide infrastructural support for specific legal services.

#### Complementary expertise among the partners:

##### About computer science:

1. Dipartimento di Informatica - Università di Torino:

Natural language processing: parsing. It lacks instead knowledge about how to apply natural language processing to data dispersed on internet and about semantic indexing technology.

Ontologies: legal ontologies. No knowledge on ontologies for e-government.

Agents: normative multiagent systems. No knowledge on agent based simulation.

2. Dipartimento di Informatica – Università del Piemonte Orientale:

Agents: cognitive agent reasoning on compliance of descriptions of processes. No knowledge on normative multiagent systems.

Ontologies: description logics. No knowledge on legal ontologies.

3. Dipartimento di Scienze Economiche e Finanziarie - Università di Torino: Agent based simulation. No knowledge on normative multiagent systems and cognitive agent reasoning.

4. CELI: Natural language processing: semantic indexing of documents for retrieval, information gathering from information sources on website.

5. CIRSIFID: Standards for tagging of norms, temporal databases. No knowledge on natural language processing.

6. ITTIG: Legal ontologies. No knowledge on natural language processing and reasoning about procedures.

7. LOA-CNR: Ontologies of processes for e-government.

8. Comdata: Knowledge about grammars for sentiment analysis.

9. Convey: Knowledge on crawlers for gathering information on the internet.

About Economics

1. Dipartimento di Studi per l'Impresa ed il Territorio - Università del Piemonte Orientale: organization theory applied to risk management and business intelligence, managerial economics applied to regulation

2. Augeos: Know how on financial services.

About Legal studies:

1. Dipartimento di Scienze Giuridiche - Università di Torino: knowledge base for multilingual legal dictionaries, conceptual analysis of legal drafting, analysis of the quality of regulation (from European to regional level) with the recourse to comparative law.

2. Dipartimento di Studi per l'Impresa ed il Territorio - Università del Piemonte Orientale: information law applied to market analysis, consumer and investor protection within the European environment compared to Piedmont setting policies and rules.

Human and financial resources

The project has an highly interdisciplinary character, involving advanced ICT technologies developed in the area of Cognitive Science, but also Law and Economics.

Thus, it involves resources of different types with the following proportion:  
65% on research on ICT. In particular, 4% for the ISTC Institute of CNR whose mission is Cognitive science.  
20% on research on Law.  
15% on research in Economics.

Concerning the proportion between proponents and co-proponents we have:

64% to proponents (37% Università di Torino, 22% Università del Piemonte Orientale, 6% CERIS CNR) and 36% to coproponents.

Of the budget of the proponents 20,4% will be devoted to contracts with universities and research centers which constitute the excellence in their respective field and will allow a technology transfer to Piedmont research.

The 4 biggest partners get 50% of the budget, assuring that it is not dispersed too much.

The project will involve 1100 person months, plus about 100 months from contracts with universities and reseach centers. About the 25% of the budget is devoted to contracts for young researchers, in particular research contracts and phd grants.

The budget includes contracts with institutions external to Piedmont, for the 16% of total budget:

In detail:

1. The Institute of Cognitive Sciences and Technologies ISTC CNR - Laboratory of applied ontology (LOA): 150.000 Euros
2. Xerox research center Europe of Grenoble: 100.000 Euros
3. Istituto di Teoria e Tecniche dell'Informazione Giuridica - ITTIG CNR of Firenze: 300.000 Euros
4. Centro di Ricerca in Storia del Diritto, Filosofia e Sociologia del Diritto e Informatica Giuridica CIRSFID of Università di Bologna: 300.000 Euros

Other contributions will be made via consultants, for example, relevant researchers in the field of Artificial Intelligence and Law, like Prof. Giovanni Sartor of European University Institute and Prof. Leendert van der Torre of University of Luxembourg.

## Material resources

Given the ambitious objectives of the project, a background of resources are necessary as a starting point. In particular, the partners of the project will provide software instruments:

1. Dipartimento di Informatica - Università di Torino: Robust natural language understanding system.
2. Dipartimento di Informatica – Università del Piemonte Orientale: Model checking for compliance verification.
3. Dipartimento di Scienze Economiche e Finanziarie - Università di Torino: Agent based

simulation framework.

4. CERIS of CNR: Risk analysis tools based on neural networks and statistical methods.
5. CELI: Semantic indexing tools for document retrieval. Sentiment analysis tools.
6. CIRSIFID: Norma system for normative consolidation
7. ITTIG: JurWordnet and LOIS multilingual legal ontology and terminology
8. Comdata: cognitive grammars for opinion monitoring.
9. Convey: Internet crawling technologies
10. SSB Progetti: document management infrastructure

## Description of partners

### Università degli Studi di Torino

The Università degli Studi di Torino was founded in 1404. It includes 14 Faculties and 55 Departments, covering all Humanities and scientific fields. It currently has about 3.700 employees and 60.000 students. The trend to internationalisation of the Università di Torino is shown not only by the large number of Projects in which it participates, but also in being the Italian Headquarter of the Italian-French University, founded in 2000. At the international level, the University of Torino pursues relations with major organizations as well as collaboration with developing countries. In the former field, relations with United Nations Agencies have intensified, primarily, with those already operating in Turin: the ILO International Training Centre, UNICRI and UNSSC.

### Dipartimento di Informatica

The Dipartimento di Informatica (<http://www.di.unito.it>) of Università degli Studi di Torino was established in 1970, so it is the second in Italy. It has a tradition of research in all fields of Computer Science. The area of Artificial Intelligence and Human-Computer Interaction is covered by the one of the largest academic group in Italy, with about 20 Faculty members and researchers. The Natural Language Processing Group (<http://www.di.unito.it/~gull/>) has carried out research (since 1978) on Syntax, Parsing, Development of linguistic resources, Psycholinguistics models, Semantics, Dialogue, Agent modelling, Ontological models of agents, plans and normative behaviour. The Natural Language Processing Group had an active role in several national projects and cooperated with Loquendo research centre on projects concerning dialogue systems and the fast development of domain knowledge for dialogue systems.

At Dipartimento di Informatica there is also a significant tradition in Knowledge-based systems, Knowledge representation and reasoning and, in the last few years, in the development of intelligent agents for the WEB.

In the FP6 it has been coordinator of the WS-DIAMOND Web Services - DIAGNOSABILITY, MONITORING and DIAGNOSIS EU Project, and it participated to TYPES Types for Proofs and Programs, REVERSE Reasoning on the Web with Rules and Semantics and INTEROP Interoperability Research for Networked Enterprises Applications and Software.

## Dipartimento di Scienze Giuridiche

The Dipartimento di Scienze Giuridiche (<http://www.dsg.unito.it>) (DSG) of Università degli Studi di Torino coordinates the research work of more than 130 law professors in the different areas of the law. The main research program currently concern the fields of: harmonization of EU law, Law & Economics, Intellectual Property law.

During the previous Framework Programmes, the DSG has been involved as coordinating team in several EC projects on multilingual European law, such as the "Uniform terminology for European Private Law" Fifth Framework Program. At present, the DSG is part of CoPECL Network of Excellence, founded in May 2005, which comprises more than 150 researchers operating in all EU Member States. Copecl will deliver a proposal for the "Common Frame of Reference" (CFR) for European contract law (COM [2003] 68 final), including not only common definitions, general concepts and legal rules, but multilingual common legal terminology.

## Dipartimento di Scienze Economiche e Finanziarie "G. Prato"

The Department was founded in December 1994 merging the existing Department of Economics, the Department of Public Finance and the Department of Economic History. Giuseppe Prato, economist and economic historian, was one of the founders of the School of Economics at the University of Turin. Today, the members of the Department work in both micro and macroeconomics, finance, industrial economics, monetary economics, public economics, agricultural economics, political economy and history of economic thought.

The faculties are affiliated with many research centers in the Turin area. Each center focuses on specific aspects of economic research. The members of the department work in cooperation with researchers at the Department of Economics "Cognetti De Martiis" and the Department of Statistics and Applied Mathematics at the University of Turin, and the Dipartimento di Sistemi della Produzione ed Economia dell'Azienda at the Politechnic of Turin. The departments and research centers in the Turin area have reached a significant critical mass and excellent qualitative level.

The Department publishes a series of working papers (I Quaderni di Ricerca) to disseminate quickly the research findings of its faculty.

The Department offers three masters degree programmes: the Masters in Economics, the Masters in Economics and Finance and the Masters in Health Economics, organized by CORIPE at the Collegio Carlo Alberto.

The Department offers three doctoral programmes organized by the Vilfredo Pareto Graduate School (the Doctorate in Economics, the Doctorate in Economics of Complexity and Creativity and the Doctorate in Statistics and Applied Mathematics) and the International PhD Programme in Comparative Analysis of Institutions, Economics and Law. All courses are based at the Collegio Carlo Alberto.

## Università del Piemonte Orientale "Amedeo Avogadro"

The Università del Piemonte Orientale "Amedeo Avogadro" was established as an autonomous institution in 1998. The aim of the university is to be competitive in both teaching and scientific research. As far as teaching is concerned, a major strength lies in the favorable teacher-student ratio.

At the same time, researchers work in a well equipped environment. With its 7 Faculties and 12 Departments, the University is distributed in three towns (Alessandria, Novara, Vercelli), with a total of about 10,500 students, 380 faculty members and 350 members of

the technical and administration staff.

The University offers a full range of courses from 3-year (Bachelor degree) courses to PhD courses. It has established a number of agreements with Universities from other countries, in and outside Europe, for teaching and research purposes and it is currently involved in 10 European projects.

#### Dipartimento di Studi per l'Impresa e il Territorio

The Dipartimento di Studi per l'Impresa e il Territorio encompasses relevant expertises in the fields of business administration, managerial economics, financial economics, and comparative commercial law.

the Department aims at developing studies of economics and of law applied to markets for goods, persons and services together with a particular focus on the territorial impact of such phenomena. The Department is enriched indeed by specialists in geoeconomics and transport and tourism science in order to develop the territorial issues in each research.

#### Dipartimento di Informatica

The Dipartimento di Informatica of the Università del Piemonte Orientale, placed in Alessandria,

was established in 2002. Its research activity covers several research areas: computer networks, computer forensics, system modeling for performance and dependability evaluation, multimedia systems, data compression algorithms, programming language semantics and logics, artificial intelligence. In the latter, several groups are active, dealing with machine learning and data mining, and several issues in knowledge representation and automated reasoning: nonmonotonic reasoning, reasoning about actions, model-based reasoning, temporal reasoning, case-based reasoning, probabilistic reasoning. Several national and international projects (including PRIN, FIRB, EU) have been carried out or are currently active.

#### CERIS CNR

Ceris, Istituto di Ricerca sull'Impresa e lo Sviluppo (Institute for Economic Research on Firms and Growth) is the main centre of CNR (National Research Council) which specialises in applied industrial and managerial economics. Ceris was established in 1964 as a spin-off of the former Centro di Ricerca e Documentazione per l'Industria (Centre for Research and Documentation on Industry), founded in 1956 by Professor F.M. Paccès. It can now boast considerable experience in economic research on company behaviour and industry structure as well as connections with issues of industrial policy. Its research staff has long standing relationships with Universities, Ministries, Governmental Institutions, Authorities and private research centres. Ceris is directed by Secondo Rolfo, and its external referee within the CNR is the Scientific Committee for Economics, Statistics and Sociology.

In the first months of 2003, following the dissolution of ISPRI-CNR, two research units have been created in Rome (Institutions and Policies for Science and Technology) and Milan (Dynamics of Economic Systems). This way Ceris enlarges its research competencies towards the economic development issues and the science policies. Contractual agreements and research partnerships can be signed with both private and public institutions willing to finance in full or in part research programmes and related publications. In recent years Ceris has intensified its international liaisons by joining

European Community programmes as well as collaborative international projects with research groups at The University of East Anglia (Great Britain); Wissenschaft Zentrum Berlin (Germany); Erasmus Universiteit (Netherlands); Katholieke Universiteit Leuven (Belgium); Université de Savoie (France); Audencia-Nantes (France); MIT, Massachusetts Institute of Technology (USA); Boston College (USA), Lest-CNRS (France), Max Planck Institute of Economics (Germany). Ceris has also joined the European network PRIME and Gate 2 Growth.

The main fields of the on-going research activity are:

- 1) Firm strategy and industrial structure: studies on the impact of the institutional context (financial markets, corporate governance, Single Market Program) on companies' real and financial decisions;
- 2) Studies on the industrial organisation within the European Union (especially on the hi-tech industries);
- 3) Analysis of the local growth problems (industrial districts, clusters);
- 4) Comparative survey of public policies in European countries (industrial, social, innovation, local growth policies);
- 5) Analysis of technological innovation and competitiveness. Studies on the production, use and diffusion of new products and services;
- 6) Studies on the research system, the technological transfer and the related evaluation methods.

#### Institute of Cognitive Sciences and Technologies ISTC CNR

The Institute of Cognitive Sciences and Technologies ISTC CNR, Laboratory of applied ontology (LOA)

The Institute of Cognitive Sciences and Technologies (ISTC) is the result of a fusion of various institutions such as: the former Institute of Psychology, the former Institute of Phonetics and Dialectology in Padova and some groups from Biomedical Technologies in Rome, LADSEB in Padova and from the Solid State Electronics group in Rome.

The Institute is involved in research, enhancement, technological transfer and training activities in the following scientific areas and as far as the following themes are concerned:

- 1) Cognitive, communicative and linguistic processes: acquisition, elaboration, deficit, multimodality, communication technologies.
- 2) Theory, analysis and technology of spoken language and of linguistic variability.
- 3) Cognitive development, learning and socialization in children and non-human primates.
- 4) Artificial intelligence, artificial life, artificial societies.
- 5) Cognitive technologies, neural networks, autonomous robotics.
- 6) Social cognition: behaviour, motivations, cultural transmission and cultural processes.
- 7) Decision-making and cooperation technologies.
- 8) Quality of the environment, health and society: prevention, education, integration, handicap, technological planning.

The Laboratory for Applied Ontology (LOA) performs basic and applied research on the ontological foundations of conceptual modeling, exploring the role of ontologies and ontology management in different fields, such as: knowledge representation, knowledge engineering, database design, information retrieval, natural language processing, and the semantic web. The group is characterized by a strong interdisciplinary approach that combines Computer Science, Philosophy and Linguistics, and relies on logic as a unifying paradigm. On the application side, special emphasis is given to the use of ontologies for e-government, enterprise modeling and integration, natural language processing, and the Semantic Web.

LOA is the result of the fusion of two previously distinct ontology groups, one with the former LADSEB-CNR (Padua), and the other with the former ITBM-CNR (Rome).

Following a major restructuring process within the Italian National Research Council (CNR), LOA now belongs to the Institute of Cognitive Sciences and Technology (ISTC).

## XEROX Research Center Europe

Documents play an important role in organizations. The way they are created and used can have an important impact on productivity. The work at XEROX (Xerox Research Centre Europe) focuses on increasing productivity in the workplace through new document technologies. While drawing on the strength of the Xerox Corporation around the world, XEROX's focus is on Europe. XEROX cooperates with the scientific community and with businesses and their customers to ensure that the developed technologies are not only innovative, but also match the requirements of the market. Both researchers and developers work closely together.

XEROX's primary activity is research. XEROX forms partnerships, collaborates with a wide range of European research organizations, and works with the business divisions of Xerox and with customers to understand their strategy and requirements. The Xerox Research Centre Europe is committed to inventing and designing document technologies that business both needs and wants. It pursues a vision of document technology where language, physical location and medium - electronic, paper or other - impose no barrier to effective use. Its specific mission is to become a Centre of Excellence for the understanding of document processes and for the invention of technologies which support them. The research carried out at XEROX covers the following areas: "Content Analysis", "Parsing and Semantics", "Document Structure" "Image Processing" and "Work Practices". Core competencies relevant to this project are more specifically shallow and deep parsing, semantics processing which are activities carried out by "Parsing and Semantics" area headed by Dr. Frederique Segond (coordinator of the project).

## Institute of Legal Information Theory and Techniques (ITTIG)

The Institute of Legal Information Theory and Techniques (ITTIG) belonging to the Italian National Research Council is the official Italian institution dealing with legal information. It researches into and applies information and communication technology to the areas of law and legal language, legislative technique, legal decision-making, and the training of lawyers. In particular, the Institute is interested in the study of techniques and methods for the computational analysis, production and evaluation of legal acts as well as for the building up of legal knowledge organization and legal reasoning models. ITTIG is partner and co-ordinator of various European projects such as ePsiNet (Public Sector Information Network), Caselex (CASE Law Exchange), LOIS (Lexical Ontologies for Legal Information Sharing) and Dalos (DALOS-Drafting Legislation with Ontology Based Support), as well as in public national projects such as NIR (Norme in Rete) and NirEditor, an XML specific environment for legislative drafting developed within the NIR project.

Daniela Tiscornia graduated in law and she is Research Director at ITTIG. Her research interests deal with the field of "computational law", that is the applications of IT technology to legal domain, where she has been working in the development of knowledge-based and conceptual retrieval systems. She has been involved in several Italian and European Projects in the field of Legal Information Accessing and of Legal Knowledge Management; among others: ePSInet CaseLex, has been the co-ordinator of the Lois project and currently, of the Dalos project. She is author of publications and scientific papers on the formal representation of legal norms and legal reasoning. Her current research interest is focused on the development of ontology-based model of legal knowledge.

## CIRSFID

CIRSFID is one of the main centres of excellence in Italy and one of the leading centres at international level for the area of computer science and law. The Centre is involved in several local, national and European research projects, promotes and organises undergraduate and graduate University courses, including the only Italian PhD in Computer Science and Law, works within national and international bodies and is involved in several publishing initiatives. One of the main area of interests is Legal Informatics. Inter-disciplinary research group concerning the application of informatics within the context of the legal environment such as eGovernment services, management of legal documentation with XML techniques, semantic web and ontology in the legal domain, legal drafting techniques and related software tools (databases, IR, editors, web services), Legal information system (Norma-System ) with a legal drafting specialised editor able to manage the entire life-cycle of the normative legislation process in different environments. CIRSFID is part of the Legal laboratory of Piedmont Regional Council (<http://www.consiglioregionale.piemonte.it/labgiuridico/index.htm>).

## PROF. Monica PALMIRANI

Associate Professor with CIRSFID, Law Faculty, University of Bologna in Computer Science and Law since 2001. Main Research Fields: Application of informatics within the context of the legal environment and as such involves law-related organizations (e.g., law firms, courts, parliament). In particular she has the following main research fields: i) eGovernment and e-Learning; ii) Modelling legal resources with legal XML standards and Semantic web techniques oriented to manage the updated version of the law; iii) eLegislation and eParticipation; iv) creation of legal ontology in OWL and Topic Map.

## PROF. Enrico PATTARO

Full Professor of Philosophy of Law (tenure), University of Bologna. Founder and Director of the Ph.D. Course in Computer and Law. Founded the Bologna University Faculty of Law's Master's Course in Legal Informatics, offered in association with EULISP (the European Legal Informatics Study Programme). President of the Italian Association for Legal Philosophy and the Association of Legal Informatics.

Main Research Fields: Legal Philosophy, General Jurisprudence, History of Legal Ideas, Law and Computer. Author of 10 books and another 150 works. Main speaker in national and international conferences. Invited speaker by Italian, European and American Universities.

## CELI

CELI is a company founded in May 1999 by researchers and engineers, previously working in the research sector. The main goal of CELI is to bring the results of the most advanced research activities in the Human Language Technology, Artificial Intelligence, and Web Interaction fields into products and solutions for the enterprise.

Some of CELI's customers are:

Xerox Research Center Europe - Grenoble; ITC-IRST – Trento; CSELT S.p.A. – Torino; TQM s.r.l. – Torino; TQM Network s.r.l. – Viareggio (LU); Aster-X Agenzia di servizi per il

terzo settore – Bologna; AMT s.r.l. – Milano; Loquendo S.p.A. – Torino; Dipartimento di Scienze del Linguaggio dell'Università di Torino (Atlante Linguistico Italiano)-Torino; Sistemi S.p.A. – Torino; ITTIG – Firenze; RIBES SPA - Ivrea; Università degli studi di Torino - Torino; GonetWork s.r.l. Torino, Molinette Hospital - Torino, BMW – Munich, ICS – Roma, CSP – Torino, CSI – Torino – Telecom.

CELI works in close co-operation with several European research centres (e.g., DFKI–Saarbruecken, Sheffield University, Scuola Normale Superiore) and has participated in the TAL Italian national project (national infrastructure for linguistic resources in the automatic processing of spoken and written natural language).

The company has been technological partner in the MIETTA and MIETTA II consortia (RTD project, partially funded within the IV and V Framework, European Union, DGXIII), the Deep Thought consortium (funded within the V Framework, European Union, DGXIII), and it was technical coordinator of the LOIS project (eContent). It is currently participating to the EU funded project CACAO (eContent+).

The company offers consulting, business modelling, design, and implementation of complete “language sensitive” software solutions, together with a whole range of personalized services.

The current focus of the company is on information extraction technologies applied to several practical domains such as:

- 1) Business Intelligence
- 2) Customer opinion monitoring (also known as “sentiment analysis”)
- 3) Investigative Intelligence

In the last year of activity a strong importance was attached to research on cross language information retrieval. This culminated with the release of the cross language legal portal [www.elois.biz](http://www.elois.biz) and the participation to the CLEF evaluation challenge (DELOS NoE).

## Comdata

Comdata proposes an innovative outsourcing modality combining Specialized Consulting, excellent Operations Centers and advanced Technologies, capable of foreseeing Customers’ needs and proposing process renewal, bringing value and transformation. Since its birth (1987), Comdata has known a constant revenue growth, achieving 130 MI€ in 2006, with a 2007 result of about 200 MI€.

In its centers dislocated in the whole Italian territory (Torino, Milano, Roma, Ivrea, Scarmagno, Asti, Monza, Cernusco SN, La Spezia, Padova, Trieste, Pomezia, Olbia, Cagliari, Caserta, Palermo), Comdata now employs more than 5.100 people. Comdata centers, endowed with the most innovative infrastructures and technologies, are directly linked by a dedicated network and operate under the supervision of a control room that monitors activities in real time and manages overflows through load balancing capabilities. Comdata is characterized by solid competences, deep market knowledge and consolidated technological partnerships; it stands out for its research and development activities accompanied by the testing of new solutions and the constant training of specialists.

All Comdata actions are based on the attention paid to Customers and on the valorization of human resources. Comdata values are shown in the capability of understanding Customers’ needs, in proposing adequate solutions rapidly, in dealing with every project with passion and enthusiasm.

### Business offer

The propensity to anticipate commercial evolutions and the capability of transforming original ideas in engineered solutions, allow Comdata to develop successful projects in

different market segments: telecommunication, finance, industry, services and Public Administration.

Comdata proposes a complete business offering, from the technological infrastructure on which applications are based, their integration and management, to business process outsourcing and transformation.

Comdata business offer is composed by:

- 1) Business Transformation Services: a framework of methodologies, skills and assets to improve business performance;
- 2) Business Process Management: management of "end to end" processes, with specific focus on Customer Relationship Management and Document Management;
- 3) Applications & Application Management Services: applications maintenance, updating and development, aiming at the improvement of business process management;
- 4) Technology Infrastructure: Information Systems engineering, development, maintenance and management; consulting and support.

In January 2007, Comdata acquired Met Sogeda, a company specialized in the BPO and ERP area; the first result was the birth of Comdata Tech, a new society that will provide the market with full outsourcing IT solutions. The approach is the usual Comdata one: process competence combined with great capabilities in software development and system integration.

At the same time, Comdata acquired Selfin, strengthening its presence in South Italy. Thanks to this operation, Comdata reinforces the Information Technology component of its offer with relevant skills on IBM technological platforms and expands its presidium in the Public Administration market, in particular within the Health Service area.

In November 2007, Comdata created Comdata Care, as a result of the acquisition of Vodafone's Back office division: 914 highly specialized people in 5 centers – Milano, Ivrea, Padova, Roma and Napoli. Thanks to this operation, Comdata aims at becoming the first Italian company in the domain of Customer Management, and one of the most relevant in Europe.

## Convey

Convey I&K Srl. works in the Intellectual Property protection services and creates value from IP assets management since 1982.

Convey operates on two complementary fields of activities:

- a) services regarding the protection of the so called "productive knowledge", especially the one which can be protected through the Intellectual Property Rights (IPRs): patents, trademarks, copyright, etc.
- b) technological solutions in the Open Source Intelligence (OSI) and Knowledge Management (KM), to leverage intellectual capital assets.

Convey develops OSI and KM solutions focused on surveillance/analysis activities on particular corporate intangible assets/IPRs:

- 1 Detailed trademarks monitoring on the Internet websites in order to spot potential abuses/counterfeiting
- 2 Systematic monitoring of counterfeit patent, trademark and copyright abuse on E-commerce sites;
  - 1 Strategic analysis of patent portfolios and technical intelligence solutions
  - 2 Analysis and monitoring of Consumer Generated Media regarding famous brands.

## Augeos

Directional and technological consultancy society, specialized in software solution

development and high added value services, specifically for finance domain. In a trading scenario in which new normative contexts periodically impose new obligations to intermediaries, Augeos offers specific solutions for some normative aspects such as IAS, Basilea 2, Vigilanza Bancaria, MIFID. Augeos participates in internationally recognized research projects about applied finance, aimed at commercial software development. Augeos takes part of ORME (Operational Risk Management Environment) consortium, together with Futurespace, PEG GROUP and the Computer Science and Systemistics Department of the Bicocca University. The Consortium is also finalized to the development of the "New Basco" platform, which will be employed in giving a service for concerns' financial evaluation.

## SSB Progetti

SSB Projects is an information technology company specialized in projecting and realizing software solutions with high technological contents. Working since the half of the eighties, it combines the mastery of the innovative technologies with the experience of a team of professional men of ICT.

It propose itself to its customers as reference partner, placing at their disposal:

- a) the capability to project modular applications based on modern architectures services oriented;
- b) the competence in using the instruments of Java EE, .NET platforms and of the main alternatives Open Source;
- c) the knowledge of Internet based technologies and of new communication media;
- d) the experience in realizing solutions for security and networking, integrating owns products with other technologies of the market and of the world of Open Source.

It works in the main ICT fields, particularly in Finance where it has realized strategic projects for some of the main Italian banking groups.

## Observatory Board

### Piedmont Regional Council

The Piedmont Regional Council is the legislative organism of the Piedmont Region. Its Legal laboratory (Laboratorio giuridico, <http://www.consiglioregionale.piemonte.it/labgiuridico/index.htm>) manages the database of norms Arianna and its internet portal and makes Piedmont leader among Italian Regions in the application of information technology to the legal field.

### Fondazione Torino wireless

Torino Wireless is a foundation for the promotion of the growth of the ICT District in Piemonte, in synergy with the other local players. It works out the strategic guidelines of the District and fosters synergies among the different players in development, granting coherence and integration to the ICT development policies of the local area. Torino Wireless is the first technology district in Italy to provide central coordination in order to dialogue constantly and coherently with other districts in the world.

### Confindustria Piemonte