

Consiglio Nazionale delle Ricerche

Information and
Communication Technologies

Tecnologie di informazione e
comunicazione

Earth and Environment

Terra e Ambiente

Materials and Devices

Materiali e Dispositivi

Energy and Transport

Energia e Trasporti

Production Systems

Sistemi di Produzione

Cultural Heritage

Patrimonio Culturale

Molecular Design

Progettazione Molecolare

Cultural Identity

Identità Culturale

Life sciences

Scienze della vita

Agrifood

Agroalimentare

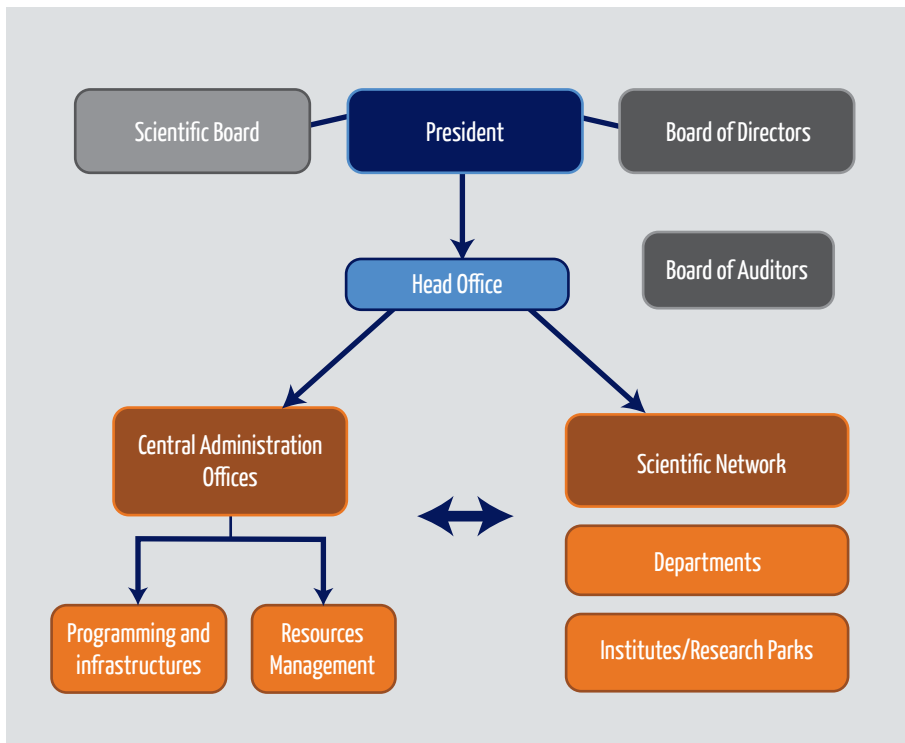
Medicine

Medicina

Overview

The **Italian National research Council (CNR)** is the largest public research institution in Italy, the only one under the Research Ministry performing multidisciplinary activities.

The **Mission** is to perform research in its own Institutes, to promote innovation and competitiveness of the national industrial system, to promote the internationalization of the national research system, to provide technologies and solutions to emerging public and private needs, to advice Government and other public bodies, and to contribute to the qualification of human resources.



The Scientific Network

The Departments

CNR's Departments are organizational units, structured by macro – areas of technological and scientific research, with the task of planning, coordinating and monitoring research activities in the affiliated institutes, by assuring them the necessary financial resources. Each Department furthermore has its national and international relations, dealing with its macro–area of interest. Every Department sets up its own research strategies and programmes, also in cooperation with other Departments, and follows up their implementation through specific research projects. An Institute affiliated to one Department, performing research in interrelated scientific fields, can participate in other Departments' projects. Among the 82 on going projects, 10 are inter–departmental.

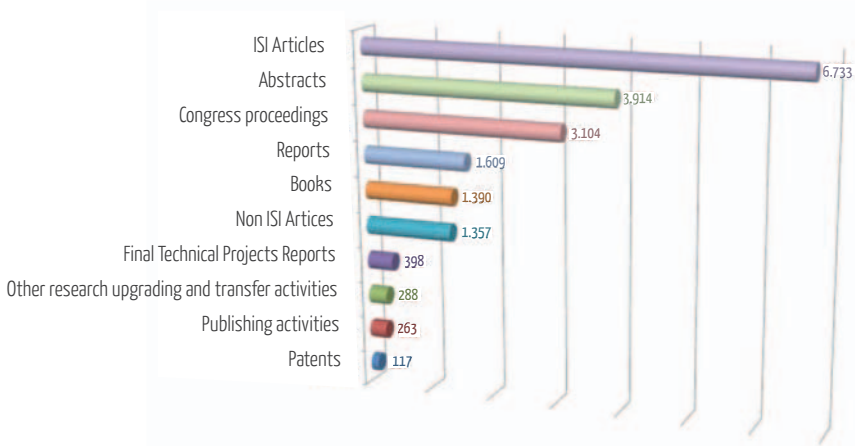
The Department decides, together with its institutes, single project's scientific lines, identifying the research groups to be entrusted with the relevant research tasks, at the same time providing them with the necessary resources. Each group of researchers, in charge of carrying out a single scientific line, thus gives its contribution to the achievement of the Project goals.

The 11 Departments are:

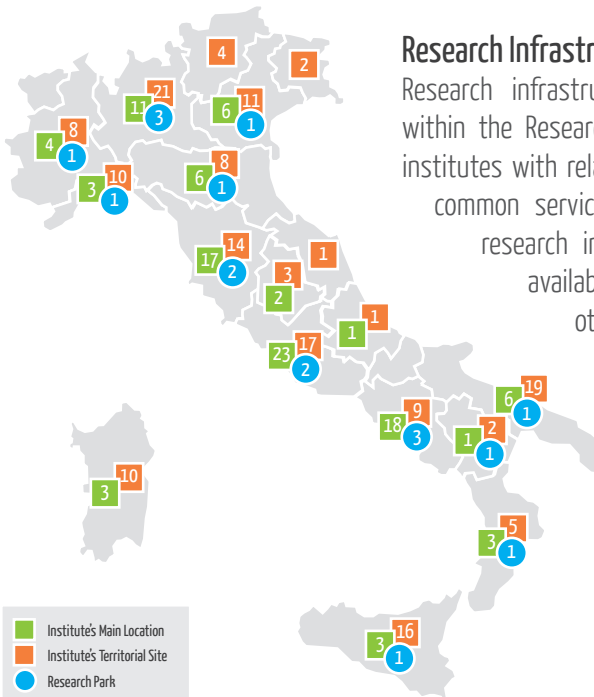
- Agrifood
- Cultural Heritage
- Cultural Identity
- Earth and Environment
- Energy and Transport
- Information and Communication Technologies
- Life sciences
- Materials and Devices
- Medicine
- Molecular Design
- Production Systems

The Institutes

The 108 Institutes, located throughout Italy, grouping together these technical and scientific areas of expertise, have been given the task of proposing programmes and implementing the scheduled activities, coordinated by the departments. The Institutes are not dependent on the Departments but are autonomously responsible for their scientific research and duties. The geographical distribution of the Institutes, and their interdisciplinary and multidisciplinary features, enable them to contribute to the growth of regional innovation systems.



The Scientific Network Localization



Research Infrastructures

Research infrastructures are mainly located within the Research Parks, grouping together institutes with related scientific tasks, sharing common services. The use of some large research infrastructures is also made available to researchers belonging to other scientific institutions in Italy and abroad, such as marine vessels, or other facilities settled in remote locations (i.e. Svalbard islands and Himalaya region) for environmental research.

Financial Resources

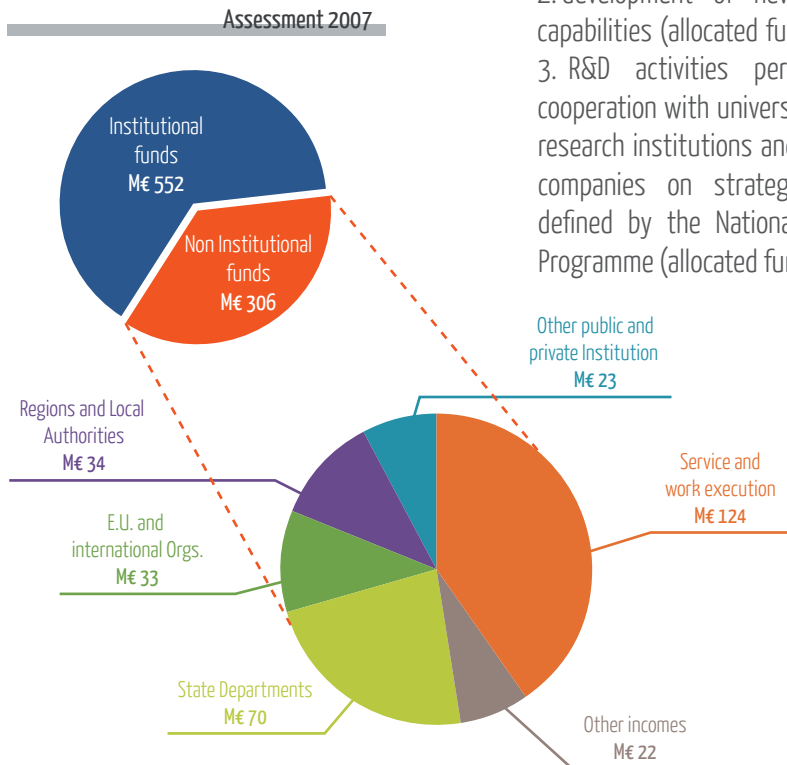
From a financial point of view, the main resources come from the Government, 552 M€ of Institutional Funds in 2007, but also from the market: even 30% of CNR's balance sheet is the result of revenues coming from external job orders for studies and activities of technical advice as well as from agreements with firms, contracts with the European Union and with other international organizations.

Research Activity Portfolio

CNR financial strategy, as mentioned in its three-year Research Plan, identifies the following three main funded activities: 1. curiosity driven research (allocated funds: 15%);

2. development of new research capabilities (allocated funds: 15%);

3. R&D activities performed in cooperation with universities, other research institutions and industrial companies on strategic themes defined by the National Research Programme (allocated funds: 70%).

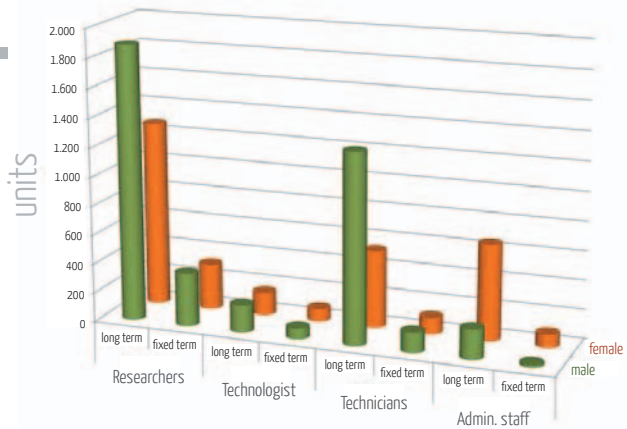


Human Resources

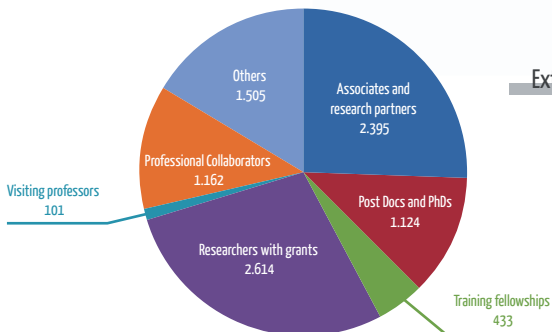
In the CNR's research world, the main resource is the available knowledge which means people, with their skills, commitment and ideas. This capital comprises more than 8.000 employees, of whom more than half are researchers and technologists. These are complemented by more than 1.500 technicians. At the same time, some 4.000 young researchers are engaged in postgraduate studies and research training at CNR within the organization's top-priority areas of interest.

A significant contribution also comes from research associates: researchers, from Universities or private firms, who take part in CNR's research activities.

Internal 2007



External 2007



International Cooperation

Promoting the internationalization of the Italian Scientific and technological research system, by taking part in large research programmes and international organisations and fostering collaboration with foreign research institutions, is one of CNR's main statutory tasks. Cooperating modes are the following :

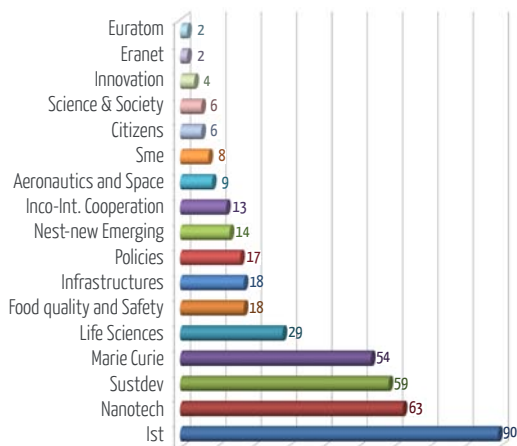
- Participating in the European Framework Programmes for Research and Technological Development and other EU initiatives
- Participating in EuroHORCs and ESF and their international initiatives and programmes
- Representing Italian science in international non-governmental Organizations
- Ensuring national participation in management and use of large international scientific facilities
- Fostering cooperation by means of bilateral Agreements and Memoranda with similar organisations in other countries, enhancing the exchange of researchers
- Supporting visits of young researchers in labs abroad through the "Short Term Mobility" Programme.

EU Programmes

In the 6th Framework Programme CNR obtained the European co-financing in 412 projects (61 coordinated by a CNR Institute). The majority of these projects were financed in the IST/Information Society Technologies thematic area (90), in the Nanotechnologies area (64) and in the Sustainable Development area (59).

The figures of the first calls for proposals of the 7th Framework Programme place CNR as the first Italian research public body for submitted proposals and funded projects; this result, spread among the different programmes and themes of the Framework Programme, is a clear indication of the multidisciplinary excellence of CNR. After the first calls for proposals, in 2007 and 2008, CNR has signed more than 120 contracts, 25% coordinated by CNR Institutes. So far, the most funded theme is ICT/Information and Communication Technologies with 33 projects funded, followed by Environment (13 projects) and Nanosciences (10 projects). It's worth mentioning the positive outcome of

FP6 Thematic Priorities (Tot. 412 projects)

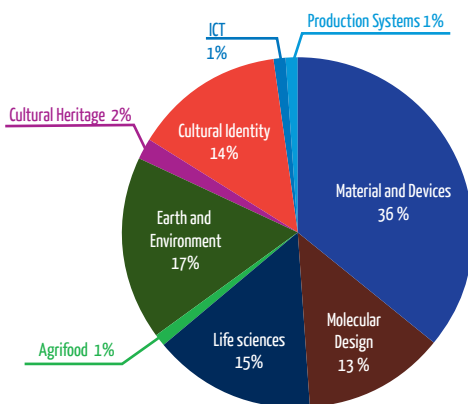


the first IDEAS call for proposals; 6 excellent projects of CNR young researchers were funded under the Starting Independent Researcher Grants scheme.

EuroHORCs and ESF

CNR is an active member of the European Heads of the Research Councils association (EuroHORCs) and of the European Science Foundation (ESF). CNR's contribution to ESF's general budget allows the Italian scientific community to take part in strategic activities as Forward Looks and Exploratory workshops. Moreover, taking part in cooperative programmes, as Eurocores (32 funded projects in 2009) and Research Networking Programmes (10), is indeed an effective instrument for promoting CNR and Italy researchers' participation in European initiatives of excellence and raising the value of nationally funded projects. Member Organization Fora (4) aim at developing common targets and strategies in science management, thus contributing to improve the conditions for the establishment of ERA.

CNR funding of ESF activities in 2008 distribution by scientific area



International Scientific Organizations, Programmes and facilities

CNR is the full member for Italy of 53 of the most important international scientific non-governmental Organisations gathering together the worldwide scientific community. A number of specific interdisciplinary committees coordinate such membership activities at a national level and are the reference point for the main international associations.

CNR is also committed with several international scientific programmes and large facilities, most of them directly followed by the Scientific Departments. It is also involved in some other programmes of governmental interest: HFSP - Human Frontier Science Program, W3C - World Wide Web Consortium, Baghdad Virtual Museum in collaboration with the Italian Ministry of Foreign Affairs.

Researchers' mobility Programmes

Two main instruments are placed at the disposal of the Italian scientific community, particularly CNR, as different tiers of cooperation which are integrated, guaranteeing both the broadest flexibility of use and a bottom-up approach.

Bilateral Agreements on scientific and technological cooperation offer a permanent framework of reference for research partnership and are implemented by:

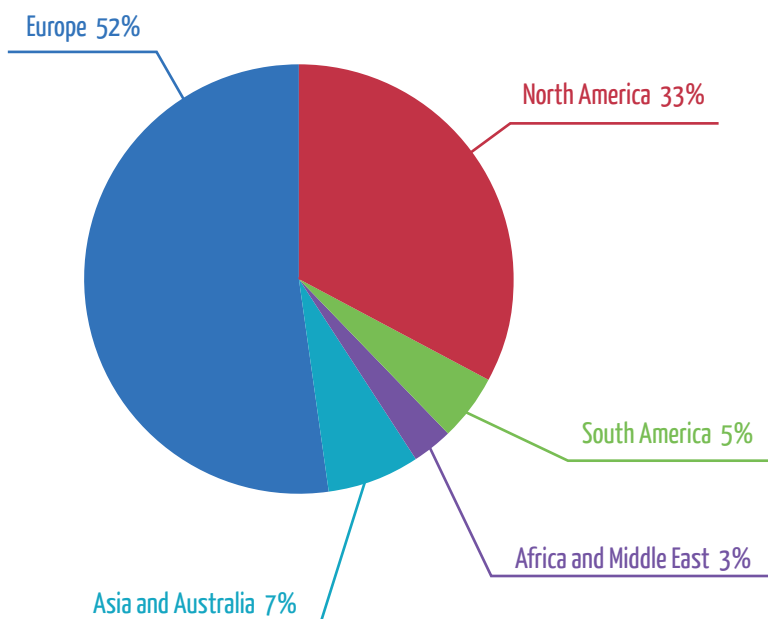
- Joint research projects, of two-three year duration, carried out by research groups, consisting of Italian and foreign scientists;
- individual visits;
- bilateral workshops.

Bilateral Agreements in force

Albania - ASA	China - CASS	Morocco - CNRST	Spain - CSIC
Argentina - CONICET	Korea - KOSEF	Mexico - CONACYT	Switzerland - SNSF
Brazil - CNPq	Egypt - ASRT	Peru - CONCYTEC	Taiwan - NSC
Bulgaria - BAN	France - CNRS	Poland - PAN	Turkey - TUBITAK
Chile - CONICYT	Germany - DFG	Portugal - FCT	Hungary - MTA
China - CAAS	Japan - JSPS	Czech Rep. - AVCR	USA - NEH
China - CAF	India - CSIR	Slovak Rep. - SAV	
China - CAS	Israel - MOST	Russia - RAS	

The **Short-Term Mobility Programme** is aimed at promoting short-term mobility of Italian and foreign researchers and specifically addressed to researchers belonging to or working for CNR, Italian Universities or other Italian public research institutions, wishing to participate in research activities to be carried out in foreign scientific institutions or universities. It also provides for short-term visits of highly qualified foreign scholars in Italian scientific institutions.

Short-term mobility Programme 2008: areas of destination



Technology Transfer

CNR plays three main roles in the Italian economic system:

1. encouraging innovation and stimulating the competitiveness of businesses through market oriented Technology Transfer activities;
2. disseminating know-how that can raise national cultural and scientific standards through what is known as education-oriented Knowledge Transfer;
3. concluding partnership agreements with external parties to improve cooperation between the scientific and the business communities.

The scientific network (made up of Departments and Institutes) is supported by centralized “agile” structures:

- A central Business Development Unit whose task is to promote and coordinate a network of experts and researchers with managerial skills and able to evaluate the implementation of new spin-off enterprises;
- Rete Ventures, a Technology Transfer enterprise, 90% - owned by CNR, whose task is to provide the scientific network with professional services and entrepreneurial skills to protect, valorize and commercialize new technologies.
- Quantica SGR, an Asset Management Company, whose aim is to invest in high-tech spin-offs stemming from scientific research and to promote the developing of venture capital.

Technology Transfer Functions



In particular the activities in support of the Technology Transfer include the setting up of spin-offs (42 operating in 2009) and the protection and enhancement of CNR scientific results (340 Patents in the entire CNR intellectual property right portfolio).

Joint Ventures

CNR, as at 31 December 2008, participates in 93 joint ventures, both Italian and foreign. The joint ventures cover the entire spectrum of legal structures: companies, consortia, associations, foundations, and European Economic Interest Groupings. The joint ventures are in most cases non-profit and are set up in order to share the related risks and costs in carrying out scientific activities of common interest involving other public and private bodies.

Interactions with outside partners

CNR promotes and is a party to different types of Conventions/Contracts and framework agreements.

Its partners are mainly:

- large hi-tech companies linked to many partners in the form of subsidiary suppliers and customers;
- sectorial associations carrying out actions designed to enhance the competitiveness of the manufacturing system through the use of the CNR's laboratories and know-how for the elaboration of new processes and new products;
- entities that are widely spread throughout Italy, particularly for the dissemination and the transfer of know-how;
- government departments and local authorities.

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The Department

The Agrifood Department's (DAA) mission is to contribute to the progress of the scientific and technological knowledge useful for the development and improvement of a sustainable and innovative agro-food system. For this purpose the department promotes research projects through planning, coordination and control activities. The research projects managed by the Department are performed by 20 Institutes distributed all over Italy.

DAA Projects

1. Development of advanced biotechnologies for the agro-food system

Study of the basic cell functions, undertaken also through approaches of functional and proteomic genomics and aimed at the development of biotechnologies applied to the plant and food productions and to the plant production of compounds of agro-industrial interest

2. Biological researches and agro-ecosystem preservation

Metabolic and genetic characterization of the biodiversity profiles of plants, animals and microorganisms of agriculture and agro-food interest; the development of advanced technologies for the conservation and protection of the germoplasm; the achievement of a prototype for a model of information management

3. Rural development and territory

Improvement of the knowledge and technologies aimed at formulating anticipatory systems for the management of the environmental, genetical, social, cultural and infrastructural resources available on the territory and the creation of scenarios for the evaluation of the impact of the production and quality of the agro-food system.

4. Sustainable development of the agro-food system

Improvement of the knowledge and the contemporaneous development of technologies for integrated and eco-compatible processes in the vegetable and zootechnical production; the achievement of new genetic material (cultivars) with improved agronomic characteristics or tolerant to biotic and abiotic stresses or with an increased nutritional value; the study and the application of new biotechnologies for the sustainability of the conservation, packing and transformation processes of the agro-food products.

5. Safety, food quality and health

Improvement of the knowledge for the retraceability and the advanced diagnostics aimed at the analysis of the quality, typicality and the geographical origin of the agro-food products; evaluation of the safety of use and of the early diagnosis in the agro-food chain; acquisition of new knowledge on the overall relationship among diet and safety and the development of communication media (food consumers science); development of the regulations related to the certification in the agro-food sector and in food law.

Institutes of DAA

IBBA	Institute of Biology and Agricultural Biotechnology
IBIMET	Institute of Biometeorology
IGV	Institute of Plant Genetic
IPP	Institute of Plant Protection
ISA	Institute of Food Sciences
ISPA	Institute of Sciences of Food Production
ISPAAM	Institute for Animal Production System in Mediterranean Environment
IVV	Institute of Plant Virology
ISAFoM	Institute for Mediterranean Agriculture and Forest Systems
IDAIC	Institute of International and Comparative Agriculture Law

Institutes participating in DAA Activities

IAMC	Institute for Coastal Marine Environment
IBP	Institute of Protein Biochemistry
IBAF	Institute of Agro-Environmental and Forest Biology
IC	Institute of Crystallography
IGB	Institute of Genetics and Biophysics "Adriano Buzzati Traverso"
IMC	Institute of Methodological Chemistry
ISMAR	Institute of Marine Science
IVALSA	Institute of Tree and Timber
ISE	Institute of Ecosystem Study
IFAC	Institute of Applied Physics "Nello Carrara"

Main National Collaborations

In Italy, the public research system in agrifood field is spread all over the national territory and it is characterized by several single organisms (Universities, Organizations or Institutes) including Ministries and Local Administrations.

The main objective is the creation of an Italian scientific network in agrifood field. It is important, therefore, the agreement with CRA (Agricultural Research Council—MiPAF) and the planned agreement with INRAN (National Institute of Research for Food and Nutrition—MiPAF).

With Regions, in particular, Campania, Lombardia, Piemonte, Puglia, Sardegna, Sicilia, Toscana, we are working through conventions, agreements and joint participation (with Universities and enterprises) in consortia and technological districts.

Collaborations and single conventions with Universities are widespread, and it is important to point out that a part of our staff has teaching jobs in Universities and Universities staff works as partner in our Institutes.

Main International Projects and Collaborations

Presently 34 projects financed by European Community involve researchers and structures of the Agrifood Department-CNR both as partners and as coordinators.

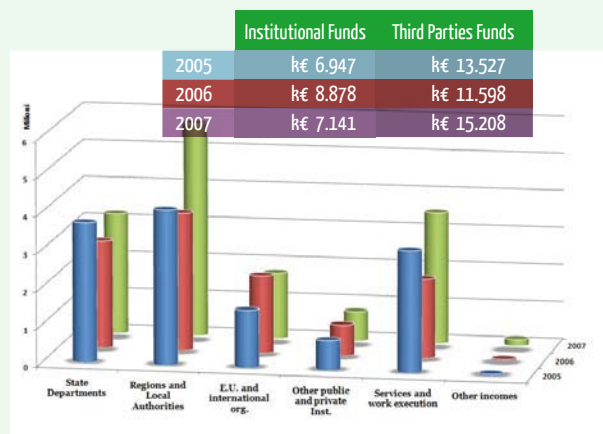
International Projects are active with Charities and international organizations in biotechnological fields.

The Department supports the Italian and European platforms “Plant for the future”, “Food for life” and “Biofuels”. Under the platform “Food for life”, the Department is involved with its own delegation in the Safe Consortium executive board.

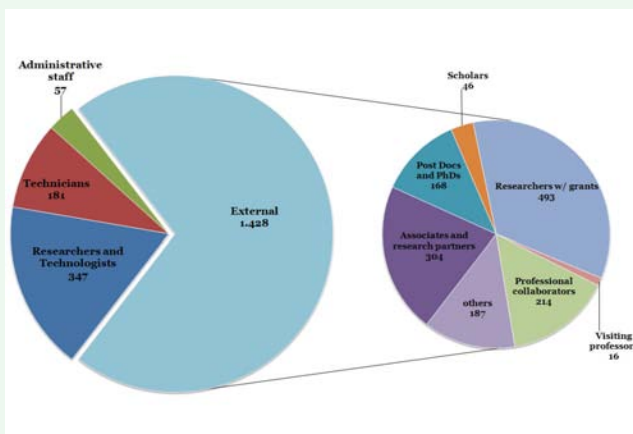
Concerning the relationship with Developing Countries, the last projects implemented on the basis of international cooperation or on the specific requests from other countries are 77 and involve mainly the Mediterranean and sub-Saharan area, followed by Asia and Latin America as macro regions.

In the last years, moreover, about 33 Bilateral agreements in cooperation with MAE and CNR have been implemented at international level.

Financial Resources 2005-2007



Human Resources 2007



Other Information

In the last years, with an upward trend, the research projects afferent to the Department have resulted in between 370 and 440 publications per year on magazines reviewed at international level (ISI) as well as about a double number of articles on scientific collections and no JCR magazines. Among the ISI publications there are many articles of a scientific excellence, published in the best international journals. CNR's Patents managed by the agrifood department are 52, 23 of which registered in the last 2 years. 24 patents, therefore, have met an active and specific interest from companies through the use of license contracts or for pre-industrial research and development programs.

Among this, 8 patents have been commercialized in the last 2 years. Department's Institutes take part in public/private laboratories financed by MIUR projects (Bioinformatics, hard wheat, tomato) and to laboratories network qualified for analysis and support in agrifood fields. They carry out consultancy and planning activities with regions and local structures for the creation and the supply of environmental database and for environmental protection and management models and effect genetic sanitary certifications for vegetal material interesting for producers, associations or enterprises. The Department takes part in consortium societies with industrial partners (presently 7).



The Department

All the strategic lines of the ICT Department are mainly accomplished through its role of hub in accordance with CNR's general strategy. The Department collects its resources both from public and private entities, interested in boosting the research activity within the ICT field. Good examples of the ICT activity developed between 2006 - 2008, are represented by several initiatives: MERIT, approved and financed by the Ministry for University and Research and by the Ministry for Innovation with 24 million Euro; TERIT, elaborated in close collaboration with the National Inter-University Consortium for Telecommunications (CNIT) and the main national industrial actors in the sector; RITMARE developed in collaboration with the whole maritime-shipyard sector lead by the RINA, with the Department Earth and Environment of the CNR, the OGS, the INSEAN and the principal Inter-University Consortia of reference; SERIT, under construction, in collaboration with FINMECCANICA.

DICT Projects

- 1. Devices and Technologies for Telematic Networks.** This project constitutes a pool of expertise at national level from which they can draw on to participate in research projects and programs, both nationally and internationally.
- 2. Data Mining, Ontologies and Semantic Web.** This project contributes to the creation of a Platform of Knowledge for the Knowledge Society in Italy.
- 3. GRID and High Performance Computing (HPC).** The HPC and Grid projects aim at enhancing and coordinating cooperation between CNR research groups.
- 4. Multimodal and Multidimensional Content and Media.** The research in this project is targeted at improving the representation and use of multi-dimensional media.
- 5. Modelling and Simulation of Complex Systems.** The research activities conducted under this project aim at developing models and methods for representation, simulation, management and control systems and processes.
- 6. Security (Interdepartmental – Lead by DICT).** The project intends to address both meanings of "security" and "safety".
- 7. Bioinformatics (Interdepartmental – Lead by DICT).** This project allows a constant updating of knowledge in a highly innovative sector such as Bioinformatics applied to Genomics and Proteomics.

Institutes of DICT

IASI	Institute for System Analysis and Computer Science "Antonio Ruberti"
ICAR	Institute for High Performance Computing and Networking
IEIT	Institute of Electronics, Computer and Telecommunication Engineering
IIT	Institute for Informatics and Telematics
IMATI	Institute for Applied Mathematics and Information Technologies
IREA	Institute for Electromagnetic Sensing of the Environment
ISTI	Institute of Information Science and Technology "Alessandro Faedo"

Institutes participating in DICT Activities

CERIS	Institute of Research on Firm and Development
IAC	Institute for Applied Mathematics "Mauro Picone"
ICIB	Institute of Cybernetics "Edoardo Caianiello"
ICRM	Institute of Chemistry of Molecular Recognition
IDPA	Institute for the Dynamics of Environmental Processes
IFAC	Institute of Applied Physics "Nello Carrara"
ILC	Institute of Computational Linguistics
IMAA	Institute of Methodologies for Environmental Analysis
IPCF	Institute for Chemical and Physical Processes
IRPPS	Institute for Research on Population and Social Policies
ISIB	Institute of Biomedical Engineering
ISN	Institute of Neurological Sciences
ISSIA	Institute of Intelligent Systems for Automation
ISTC	Institute of Cognitive Sciences and Technologies
ISTM	Institute of Molecular Science and Technologies
ITTIG	Institute of Legal Information Theory and Technology

Main National Collaborations

Minister of University and Research (MUR)
Tuscany Region
Civil Protection
Telespazio
Insean
INAF-IRA

INGV
ASI
CNIPA
ISTAT
Istituto Superiore Mario Boella Turin
Astronomical Observatory of Arcetri

National Institute for Studies and Experiences of Naval Architecture
IASF
ICEmB
CNIT

Main International Projects and Collaborations

Seventh Framework Programme (FP7) - Theme for research and development under the specific programme "Cooperation" implementing the Seventh Framework Programme (2007-2013) of the European Community for research, technological development and demonstration activities.

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions

European Information Society 2010

Information Technology Union - 2008 - Report on the World summit on the Information Society Stocktaking

United Nations - Development-oriented policies for socio-economic inclusive information society - Kuala Lumpur

ICT Policy Support Program

CCLRC (UK), ERCIM EurID register ccTLD.eu, INRIA, ESA, the European Southern Observatory (ESO).

Los Alamos National Labs, San Diego Supercomputing Center, Edinburgh Parallel Computing Centre, CNRS, Institut FOKUS, MIT Media Lab, Marie Curie Research, Europe Labs, CNES, ONERA, Fraunhofer-Gesellschaft, ENST, UCAR / NCAR, Max-Planck - Institut, ESA.

Russian Academy of Sciences

Getronics, Intel (UK), IBM Research, Thomson, CSP, CREATE-NET VPtech,

BiometriKa, Microsoft, Vodafone, Motorola, ZGDV, British Telecommunications, Hewlett Packard, NEC Europe, Microsoft Innovations, Jujitsu, IBM, Oracle, SUN, Toyota Technological Institute, Konica, Minolta.

Universities: EPFL, Loughborough, Portsmouth, Cambridge, Di Vigo, Barcelona, Ulm, Goteborg, Thessaloniki Aristotle, Bradford, Graz, Carlos III de Madrid, Surrey, Toulouse, Twente, Cork, Linz, Uppsala, Vrije Universiteit, University Catholique de Louvain, LIB Université de France, Université de Luminy, Melbourne; Portsmouth, Universidad Complutense de Madrid, Iowa University, University of Paris South, University of York, Glasgow, Grenoble, Istanbul, Granada, Bristol, Colorado University, Dallas, Louisiana, Tel Aviv, Grenoble, Cologne, Heidelberg, Polytechnic of Catalonia, Georgia Institute of Technology.

European registry for internet domains VZW/ASBL

CWI (Olanda)

ZIB (Germania)

ERCIM (Francia) Groupment europeen d'internet economique

ISRO (India)

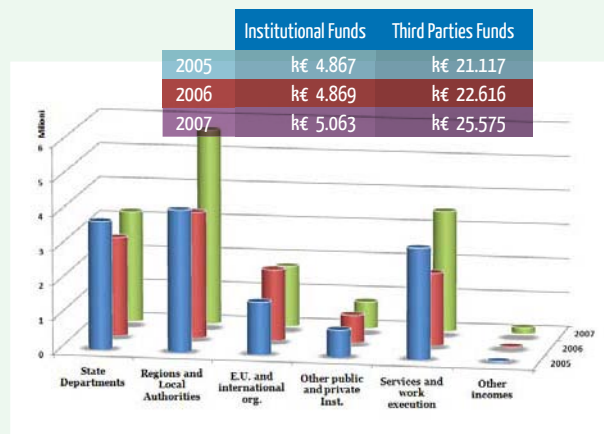
IMCCE (Francia)

WPI (Austria)

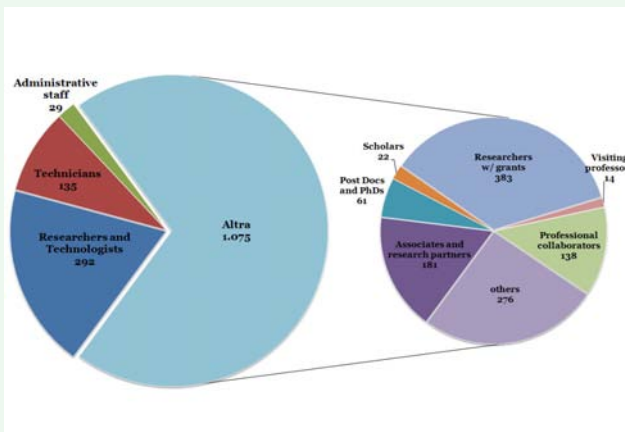
FORTH (Grecia)

LLNL (USA)

Financial Resources 2005-2007



Human Resources 2007



Other Information

International Patents

MODOSK - Operating system kern-SAD: distributed file system "- PHIRS / PFI-EOS: a performance evaluation tool for CODASYL databases EASYMAP-The System: a tool for logical database design-MEDABAS" Metadabase System "- EROS: an automatic tool for physical database design-XEMETA-XMDS System - List of Programs-Wave propagation - A teaching unit-The teacher guides BIS386 System Software System-associative architecture for the management of data in databases and related data management method-CHAIN + + ": a library for implementing software-kinematic analysis system for the satellite transmission of real-time data, able to counter the signal attenuation due to bad atmospheric conditions - ASTRA-"Looking for a job" - ARCA Target Z-39.50 "Method of

Block-Matching Motion Estimation with Full Search in a Video Sequence and Low Complexity / High Throughput Architecture "- Method of active control of vibrations by means of material and electrorheologic damping device that carries out this method-Azimuth pre-processing method for Synthetic Aperture Radar signals acquired in spotlight mode and on-Interferometric system for the simultaneous measurement of the index of refraction and of the thickness of transparent materials, and related procedures-An Interactive and User-Friendly Environment for Remeshing Surface-Triangulations. Plumber: an interactive interface for multi-scale segmentation of triangulated surface-SHREC: Shape characterization and structuring through Reeb graph Computation.- LODE: Learning Object Environment.



The Department

The activities of the Cultural Heritage Department (DPC) are addressed to improve knowledge and preservation of the Italian, European and Mediterranean heritage through the management of national and international research projects and the exploitation of its research results. Its aim is to increase the value of the heritage and to improve its governance. Strategy and strength of DPC is an innovative model of scientific network able to establish fruitful co-operations and synergies between human and engineering sciences and operative expertise and skills, both necessary and inseparable knowledge in the field of research for cultural heritage.

DPC Projects

1. **Territory and settlements in Europe and the Mediterranean area** to reconstruct interaction between environmental, anthropic and cultural elements in the Mediterranean area and in Europe, in order to develop and to define models for the reconstruction of historical and archaeological sites.
2. **Manufactured artefacts as historical and material evidence of cultural heritage** to catalogue and to rebuild historical, artistic and monumental artefacts - also through virtual techniques - in order to highlight the presence and the dissemination of ancient civilisation in Europe, in the Mediterranean area and the Near and Far East.
3. **Diagnosis, intervention and conservation of cultural heritage** to study, to develop and to use new technologies and models for the diagnosis, intervention and conservation of cultural heritage with attention to the historical and landscape context.
4. **Creation of a need of cultural heritage** to study the offer of cultural

heritage in social, economic and anthropological terms and promotion of the corresponding demand, in order to build social and cultural growth in the areas in which such assets are located.

5. **Exploitation and valorisation of cultural heritage** to create innovative tools for the exploitation and valorisation of cultural heritage through communication tools, virtual reconstructions and dissemination strategies.
6. **Cultural landscape** to study, also through cartographic heritage and its development in ancient and modern times, the cultural and social values of a territory linked to its monumental assets and its environmental features.
7. **Culture and Landscapes (Interdepartmental—Lead by DPC)** to define, realise and test tools of Governance and Compliance system for an integrated management of interactions between culture and landscape, according to a conscious, shared and participated model.

Institutes of DPC

IBAM	Institute of archaeological heritage - monuments and sites
ICEVO	Institute for Aegean and Near Eastern studies
ICVBC	Institute for the conservation and promotion of cultural heritage
ITABC	Institute for technologies applied to cultural heritage
ISCIMA	Institute for the study on the Italic and ancient Mediterranean civilisations

Institutes participating in DPC Activities

CERIS	Institute of research on firm and development
IAC	Institute for applied mathematics "Mauro Picone"
IBIMET	Institute for biometeorology
ICAR	Institute of high performance computing and networking
ICIB	Institute of cybernetics
ICIS	Institute of inorganic chemistry and surfaces
IDPA	Institute for the dynamics of environmental processes
IFAC	Institute of applied physics "Nello Carrara"
IFN	Institute for photonics and nanotechnologies
IGG	Institute of geosciences and earth resources
IIA	Institute for atmospheric pollution

ILC	Institute of computational linguistics
IM	Istituto motori
IMAA	Institute of methodologies for environmental analysis
IMATI	Institute for applied mathematics and information technologies
IMC	Methodological chemistry institute
IPCF	Institute for chemical and physical processes
IRAT	Institute for service industry research
ISAC	Institute of atmospheric sciences and climate
ISC	Institute for complex system
ISEM	Institute of Mediterranean Europe history
ISM	Institute of structure of matter
ISMAR	Institute for marine science
ISOF	Institute for organic syntheses and photo-reactivity
ISSIA	Institute of intelligent system of automation
ISSM	Institute of studies on Mediterranean societies
ISTC	Institute of cognitive sciences and technologies
ISTEC	Institute of science and technology for ceramics
ISTI	Institute of information science and technology "Alessandro Faedo"
ITC	Institute for construction technologies
ITD	Institute for educational technologies
IVALSA	Trees and timber institute

Main National Collaborations

MIBAC (Ministry of Cultural Heritage)

ENEA (Department for new technologies, energy and the environment)

Regione Valle D'Aosta, Regione Toscana, Regione Campania

Provincia di Crotone

Università di Ferrara

ICOMOS Italia, International Council on Monuments and Sites

Main International Projects and Collaborations

PREPRI, Ancient and middle Minoan settlements and necropolis at Prinias, Crete (Greece)

SYBRITA, Pottery production and consumption in Early Iron Age, Crete (Greece)

PACE, Plants and culture: seeds of the cultural heritage of Europe

PORTI E FARI, Maritime industrial archaeology of the Adriatic: ports and lighthouses of Terra d'Otranto

CUPOLES, Cupoles et habitats. Une tradition constructive entre Orient et Occident

BYHERINET, Byzantine HERitage NETwork: restoration, highlighting and management in the Eastern Mediterranean basin

RECES, A network of small ancient centres as a model of urban quality and sustainable development

PLACE, Preserving places. Managing mass tourism urban conservation and quality of life in historic centres

SECHURBA, Sustainable energy communities in historic urban Areas

PALAIS, Patrimoine Architectural local et aménagement innovant et strategique

H-KNOW, Advanced infrastructure for knowledge based services for

buildings restoring

MESSIB, Nanosciences, nanotechnologies, materials and new production technologies

BIOFILMS, Biofilms on exposed monumental stones. Mechanisms of formation and development of new control methods

SENSORGAN, Sensor system for detection of harmful environments for pipe organs

TeACH, Technologies and tools to prioritize assessment and diagnosis of air pollution impact on immovable and movable cultural heritage

BEDESTAN, Structural and architectonic restoration of the Bedestan-St. Nicholas Church, Nicosia, Cyprus

EU-ARTECH JRA1, Development and evaluation of new treatments for the conservation-restoration of outdoor stones and bronze monuments

RIPOLL, Virtual presentation of the Ripoll portal

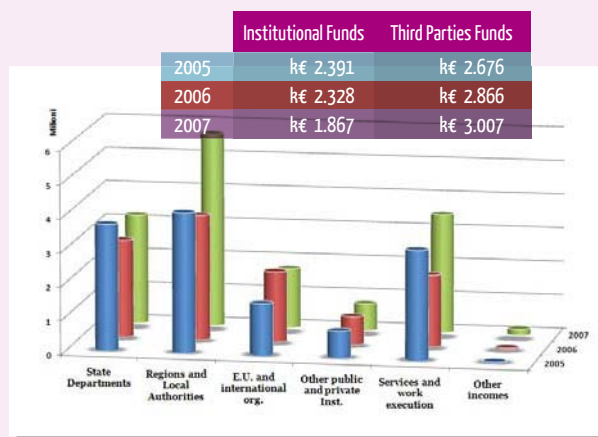
3D-COFORM, Tools and expertise for 3D collection formation

V-CITY, The Virtual City

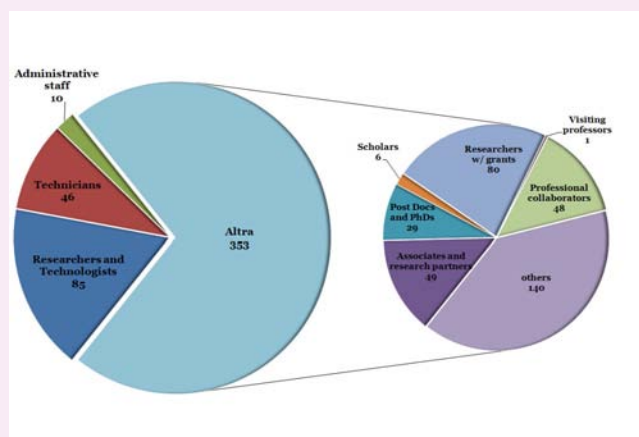
CINEMA, Central Italy network to enhance competitiveness business activities

S3T, Smart structural systems (ESF-EUROCORES)

Financial Resources 2005-2007



Human Resources 2007



Other information

Innovative Technologies and Methodologies for Cultural Heritage

Characterization of archaeological and architectural ceramics;
Electrochemical impedance spectroscopy tool for in-situ monitoring of corrosion of metal surfaces

Field Emission Gun—Environmental Scanning Electron Microscope—
Energy Dispersion Spectroscopy—Back Scattered Electron Diffraction to study nano-materials

Integrated Ground Method for Archaeological Prospection (IGMAP)

Light dosimeters to measure light levels inside exhibition rooms

Non-contact portable tool for the detection of voids, cracks, detachments, holes in different kinds of materials

Non-destructive acoustic method and device for determination of

detachments of mural paintings

PIXE-ALPHA device for in situ quantitative non-destructive analysis of inorganic materials

Portable X-Ray Fluorescence spectrometer for measurements in situ

Sensors for the detection of condensation on the surface of ancient stained glass windows

Compatible mortars for the conservation of the architectural and archaeological heritage

Fluorinated polymers for conservation and restoration of stone artifacts

Virtual reality applications for cultural heritage, off and on line

3D virtual modelling systems



The Department

The research activities of DTA are focused on increasing the knowledge of 1. the structure of the planet, defining the temporal and spatial changes of the structure and composition of the different features constituting the Earth system, from the mantle to the atmosphere; 2. the dynamics of the planet, studying the energetic exchanges among the several components of the Earth and the effects on its dynamics; 3. the ecology and metabolism of the planet, contributing to the understanding of terrestrial and marine ecosystems, to their evolution, to the interactions and the exchanges of the biosphere with the other components of the Earth system.

DTA Projects

1. **Earth system: interactions among solid Earth, Sea, internal Waters, Atmosphere and Biosphere** - Improvement of our understanding of processes that regulate the Earth system and the interactions between its components, aimed at predicting the main evolutionary trends.
2. **Global change** - Evaluation of ancient and recent climatic changes in the Earth system as a result of natural and anthropogenic causes, using models and experimental measurements; prediction of the ecological responses of species and communities.
3. **Quality of environmental systems** - Improvement of the evaluation of environmental system quality; support to local and national policies devoted to the safeguard and recovery of land and marine ecosystems.
4. **Sustainability of land and water systems** - Definition of the level of functionality of environmental systems and their response to human impact; development of methods and standards to support sustainable management.
5. **Natural and anthropogenic risks** - Improvement of the knowledge of the causes of natural and human induced risk in both inland and

off-shore areas; development of efficient prevention and now-casting strategies; cooperation with Civil Protection.

6. **Earth Observation** - Development of technologies to observe the Earth by ground-based, airborne and satellite instruments; participation into Euro-Mediterranean infrastructure systems focused on global monitoring and security.

7. **Pollution Control and Ecological Restoration** - Development of technologies and methods to reduce environmental pollution and to support ecological restoration, also providing new inputs to industrial technological development.

8. **Health and Environment (Interdepartmental – Managed by DTA)** - Improvement of the knowledge of environmental factors which can potentially affect health.

9. **GILDA, Integrated and Interoperational Management of Environmental Data (Interdepartmental – Managed by DTA)** - Development of a multi-purpose infrastructure system for the management, elaboration and valuation of environmental data.

Institutes of DTA

IAMC	Inst. for Coastal Marine Environment
IBAF	Inst. of Agro-Environmental and Forest Biology
IDPA	Inst. for the Dynamics of Environmental Processes
IGAG	Inst. of Environmental Geology and Geoengineering
IGG	Inst. of Geosciences and Earth Resources
IIA	Inst. for Atmospheric Pollution
IMAA	Inst. of Methodologies for Environmental Analysis
IRPI	Inst. for Geo-Hydrological Protection
IRSA	Inst. for Water Research
ISAC	Inst. of Atmospheric Sciences and Climate
ISE	Inst. of Ecosystem Study
ISMAR	Inst. of Marine Science
IVALSA	Inst. for Trees and Timber

Institutes participating in DTA Activities

CERIS	Inst. of Research on Firm and Development
IA	Inst. of Acoustics "O.M. Corbino"
IAC	Inst. for Applied Mathematics "Mauro Picone"
IBF	Inst. of Biophysics
IBIMET	Inst. for Biometeorology
IBIM	Inst. of Biomedicine and Molecular Immunology "Alberto Monroy"
IBP	Inst. of Protein Biochemistry
ICIS	Inst. of Inorganic Chemistry and Surfaces
ICRM	Inst. of Chemistry of Molecular Recognition
IFAC	Inst. of Applied Physics "Nello Carrara"
IGV	Inst. of Plant Genetics
IMATI	Inst. for Applied Mathematics and Information Technologies
IMC	Inst. of Methodological Chemistry
IREA	Inst. for Electromagnetic Sensing of the Environment
ISAFoM	Inst. for Mediterranean Agriculture and Forest Systems
ISSIA	Inst. of Intelligent Systems for Automation

Main National Collaborations

Ministry of the Environment
 Civil Protection Department
 ENEA - Department for new technologies, energy and the environment
 OGS - National Institute for Experimental Oceanography and Geophysics
 ISS - National Institute of Health
 ASI - Italian Space Agency

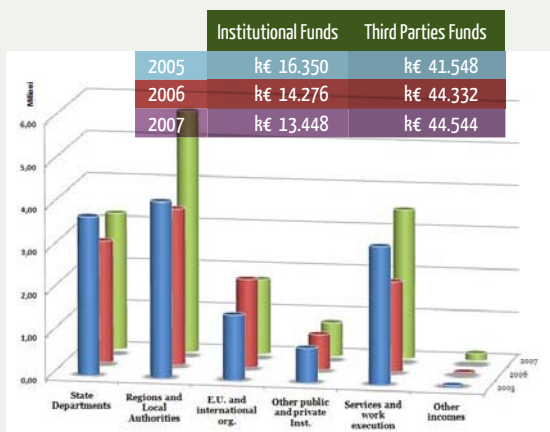
ISPRA - Superior Institute for Environmental Protection and Research
 INFN - National Institute for Nuclear Physics
 INGV - National Institute of Geophysics and Volcanology
 Meteorological Service of the Italian Air Force
 Local and regional authorities
 Major Italian network of enterprises

Main International Projects and Collaborations

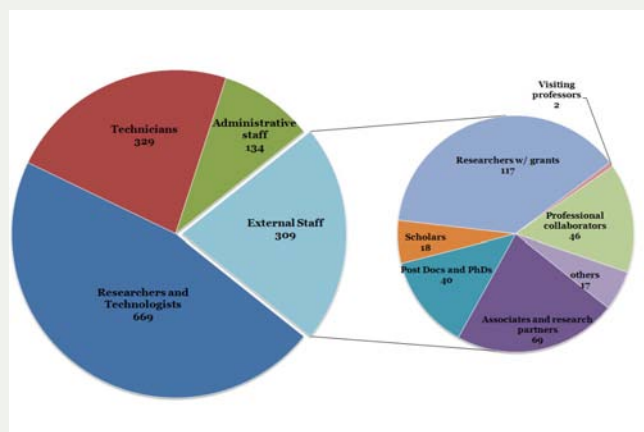
ACCENT (Atmospheric Composition Change the European Network of Excellence)
 ACQWA (Assessing climatic change and impacts on the quantity and quality of water)
 AQUASTRESS (Mitigation of Water Stress through new Approaches to Integrating Management, Technical, Economic and Institutional Instruments)
 CAREX (Coordination action for research activities on life in extreme environments)
 CIRCE (Climate Change and Impact Research: the Mediterranean Environment)
 CITYZEN (mega CITY – Zoom for the Environment)
 COPAL (COmmunity heavy-PAYload Long endurance Instrumented Aircraft for Tropospheric Research in Environmental and Geo-Sciences)
 EARLINET (European Aerosol Research Lidar Network)
 ERA-EnvHealth (ERANET for coordination of national environment and health research programmes Environment and Health)
 ERICON-AB (European Polar Research Icebreaker Consortium – Aurora Beoralis)
 EUFAR (Instrumented Aircraft for Tropospheric Research in Environmental and Geo-Sciences)
 EURO-SITES (Integration and enhancement of key existing european deep-ocean observatories)
 EUSAAR (European Supersites for Atmospheric Aerosol Research)
 GEOLANDz (Towards an operational GMES Land Monitoring Core service)
 H-KNOW (Advanced Infrastructure for Knowledge Based Services for Buildings Restoring)
 INFRAPOLAR (European Polar Infrastructures)
 INNOWATECH (Innovative and integrated technologies for the treatment

of industrial wastewater)
 MACC (Monitoring Atmospheric Composition and Climate)
 MESSIB (Multi-source Energy Storage System Integrated in Buildings)
 MIRAGE (Mediterranean intermittent river management)
 MODEL-PROBE (Large-scale MAPPING and characterization of air pollution levels in Megacities and their regional impact in air quality and climate)
 MYOCEAN (Ocean Monitoring and Forecasting)
 NEAREST (Integrated observations from Near shore Sources of Tsunamis)
 OASIS (Ocean Atmosphere Sea Ice Snowpack)
 PERBIOF (A new technology for treating municipal and/or industrial wastewater with low environmental impact)
 POLAR AOD (Aerosol Optical Depth in Polar Regions)
 PRIMAC (Protection of the coastal aquifer by seawater intrusion)
 SARDONE (Improving the assessment and management of small pelagic species in the Mediterranean Sea)
 SPICOSA (Science and Policy Integration for COastal System Assessment)
 TeaCH (Technologies for the diagnosis of air pollution impact on Cultural Heritage)
 EUROCORES Programme “EURO-DEEP” (MIDDLE - Microbial Diversity in the Deepest Hypersaline Anoxic Lakes, BIOFUN - BIODiversity and ecosystem FUNctioning in contrasting southern European deep-sea environments: from viruses to megafauna)
 EUROCORES Programme “Topo-Europe” (Topo-4D, Topo-Europe, Topo-Med, VAMP)
 IODP (Integrated Ocean Drilling Program)
 International Global Atmospheric Chemistry
 Coordination Group for Meteorological Satellites
 International Precipitation Working Group
 UNEP Mercury Programme

Financial Resources 2005-2007



Human Resources 2007



Other information

Polar Research Network (www.polar.net.cnr.it)
 The Pyramid International Laboratory-Observatory high altitude scientific research center (in collaboration with Ev-K²-CNR)
 “Dirigibile Italia” Italian Arctic base in Ny Ålesund, Svalbard Islands (Norway)

French-Italian base “Concordia” in Antarctica
 Research vessels Urania and Dalla Porta
 Patents: more than 30
 Publications: more than 1300 ISI in 2007



The Department

The general goal of the Department of Molecular Design (DPM) is the development, through the "chemical manufacturing", of innovative functionalities in molecular, macromolecular and solid systems with different level of structural organization. The purpose is to contribute to the innovation in some specific fields such as the development of new molecules with bio-pharmaceutical properties, products and industrial processes with low environmental impact, materials built-up from innovative nanostructures. The Department strategy is focused in three main areas of interest: 1) Health 2) Sustainability 3) Convergent technologies.

DPM Projects

1. Design of new molecules with biochemical properties. The general objective of the project, involves the design, realization, characterization and pre-competitive development of new molecules with predetermined biochemical properties, as well as innovative processes within the industrial, medical and pharmaceutical biotechnology.

2. Nano-structured polymeric systems and membranes. Objectives of the project are the development, the advanced characterization and the engineering of macromolecular systems with different levels of structural organization with the aim of developing multi-functional structures designed for sectoral and cross-sectoral applications. The integration of pre-existing competences in the field of synthesis and chemical modification (bulk and surfaces), advanced characterization, design techniques, engineering and processes will be focused to the development of added value materials and the related processes and technologies.

3. Innovative products and processes for sustainable chemistry. The Project is aimed at the intensification of CNR research towards sustainable chemistry, in particular the minimization of waste and the replacement of harmful chemicals, steering the production of environmentally compatible products from renewable resources. Advancement in catalysis is the mandatory tool to reach these goals by enabling processes with low energy demand and low environmental impact improving at the same time their efficiency and selectivity.

4. Nano-organized systems with electronic, photonic and magnetic properties. Integration of the molecular design of nanostructured

multifunctional materials together with multiscale fabrication of innovative architectures of novel optoelectronic and photonic devices for next manufacturing and biodiagnostic is the general aim of the Project.

5. Molecular design of thin films and surfaces. The project is developed in the strategic field of molecular manipulation aimed at the fabrication of thin films and multifunctional surfaces. The project is focused on the design and synthesis of inorganic and hybrid organic-inorganic multifunctional systems and on the widespread characterization of their composition, morphology and structure up to the testing of their functional performances.

6. Enabling Technologies for Drug Discovery. This Project is in a close and contiguous position with respect to Life Sciences and Materials Science, targeting its achievements into the field of Medical Sciences. The three objectives are: - Drug Design, Development and Delivery - Discovery of Targets and Biomarkers - Study of Systems and Modeling

7. Computational Modelling. The most significant motivations are related to the increasingly central position of molecular modelling and computer simulations in connection with:

- the rationalization at the molecular level of material properties;
- the targeted synthesis of innovative products and materials, by means of molecular design;
- the design and optimization of nanosystems for a wide range of applications, ranging from electronics, to catalysis, to the development of (bio)materials endowed with sophisticated features.

Institutes of DPM

- IBB Institute of biostructure and bioimaging
- ICB Institute of biomolecular chemistry
- ICCOM Institute of chemistry of organometallic compounds
- ICRM Institute of chemistry of molecular recognition
- ICTP Institute of chemistry and technology of polymers
- IC Institute of Crystallography
- ICIS Institute of inorganic chemistry and surfaces
- IMCB Institute for composite and biomedical materials
- IMC Methodological chemistry institute
- ISTM Institute of molecular science and technologies
- ISOF Institute for organic syntheses and photoreactivity

- ISMN Institute of nanostructured materials
- ISMAC Institute for macromolecular studies
- ITM Institute on membrane technology

Institutes participating in DPM Activities

- ITB Institute of Biomedical Technologies
- IBP Institute of Protein Biochemistry
- IBIM Institute of Biomedicine and Molecular Immunology "Alberto Monroy"
- IGB Institute of Genetics and Biophysics "Adriano Buzzati Traverso"
- IGM Institute of Molecular Genetics
- IPCF Institute for Chemical and Physical Processes

Main National Collaborations

MUR Ministry of University and Research
 MISE Ministry of Economic Development
 ISS National Institute of Health
 CISI Center for Biomolecular Interdisciplinary Studies and Industrial Applications
 INSTM Italian Interuniversity Consortium on Materials Science and Technology
 CSGI Italian Interuniversity Consortium for Colloid and Surface Science

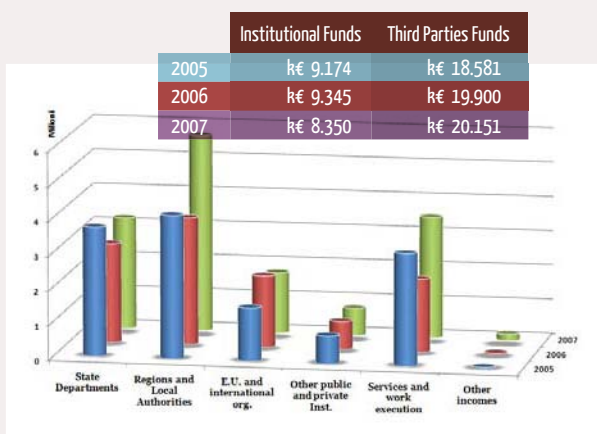
IMAST Technological District on Polymeric and Composite Materials Engineering and Structures
 FEDERCHIMICA Italian Federation of Chemical Industry
 FINMECCANICA Italian industrial group operating globally in the aerospace, defence and security sector
 Local and regional authorities
 Major Italian enterprises

Main International Projects and Collaborations

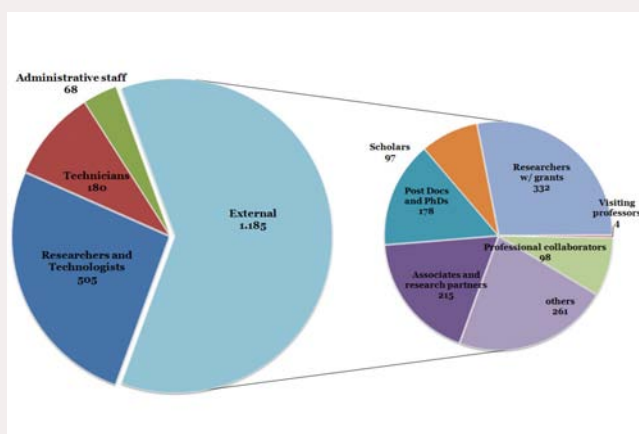
NOVELQ (Novel Processing Methods for the Production and Distribution of High-Quality and Safe Foods. Innovative, integrated physical processing and preservation methods through solutions of development problems and performances of relevant strategic basic research)
 DISC REGENERATION (Novel Biofunctional highly porous polymer scaffolds and techniques controlling angiogenesis for the regeneration and repair of the degenerated intervertebral disc)
 NANOGLOWA (Nanostructured membranes against global warming)
 IDECAT (Integrated Design of Catalytic Nanomaterials for a Sustainable Production)
 NANO-HOST (Homogeneous Supported Catalyst Technologies: the sustainable approach to highly-selective, fine chemicals production)
 AQUACHEM (Transition Metal Chemistry and Catalysis in Aqueous Media)
 OLLA (Organic Led for Lighting Applications)
 OLAS (Organic electrically pumped LASer by engineering of heterostructures in field-effect devices)
 OFSPIN (Organic-Ferromagnetic Hybrid Interfaces for Spintronic Applications)
 MAGISTER (Highly porous bioactive scaffolds favouring angiogenesis for tissue engineering)
 BIMORE (Bio-Inspired Molecular Opto-Electronics)

MAGMANET (Molecular Approach to Nanomagnets and Multifunctional Materials)
 NAIMO (Nanoscale Integrated Processing of Self Organizing Multifunctional Organic Materials)
 MOLSPINQIP (Molecular Spin Clusters for Quantum Information Processing)
 EUROGLYCANET (Congenital disorders of Glycosilation: a European network for the advancement of a growing group of rare disorders)
 NANOSPAD (Protein microarray for enhanced diagnostics at low cost by integration of new technological developments)
 BACABS (Assessment of Structural Requirements in Complement Mediated Bactericidal Events: Towards a Global Approach to the Selection of New Vaccine Candidates)
 INSTRUC (Infrastructure for Structural Biology)
 PROMET (Developing new analytical techniques and materials for monitoring and protecting metal artefacts from Mediterranean region)
 EU-VILLAGE (EUropean Virtual Integrated Laboratory for Large-scale Applications in a Geographically-distributed Environment)
 THETIS (Theoretical Tools for In-silico Spectroscopy)
 ESF - EUROCORES: Sons 2

Financial Resources 2005-2007



Human Resources 2007



Other information

ACTIVITY HIGHLIGHTS MOLECULAR DESIGN DEPARTMENT
<http://www.dpm.cnr.it/highlights.pdf>

PATENT PORTFOLIO
http://www.dpm.cnr.it/elenco_brevetti_en.htm



The Department

The Department of Energy and Transport (DET) objectives mainly focus on: energy source diversification; efficiency improvement and emission control; waste recovery and exploitation; optimization and safety of energy production systems; more sustainable road transport; development of new and advanced materials for energy applications. The Department also carries out external activities aiming at strengthening its role of "hub" for R&D on energy and transport. The DET Directorate, based in Rome, is supported by a Scientific/Technical Staff Office engaged in the following main tasks: specific agreements with Italian Regional and Municipality Administrations; technical advice for Italian Ministries in the fields of Energy and Transport; support to the participation of CNR Institutes in the European Framework Programme.

DET Projects

- 1. Clean energy generation by fossil fuels**
 - New processes and technologies for fossil fuels combustion/gasification
 - High efficiency & low environmental impact
- 2. Rational use of energy and transport**
 - Innovative engines and alternative fuel applications
 - Advanced projects for higher performances, lower pollution and fuel consumption
- 3. Distributed energy generation**
 - Renewable energy integration in the energy production system
 - Fuel cells, heat pumps, biomass, waste recycling and new materials for small-scale energy generation
- 4. Participation in national and international programmes on nuclear fusion**
 - Tests on a magnetically confined plasma in RFX
 - Development of RF systems and neutral beam Injector for ITER Project
- 5. Nanotechnologies and physical metallurgy for energy and transport devices**
 - Development of new manufacturing materials and methods
 - Energy Efficiency Improvement of energy/transport actuators and devices
- 6. Sustainable mobility in urban areas (Interdepartmental - Lead by DET)**
 - Best practices identification in the urban context
 - Methods and Model definition for system evaluation

Institutes of DET

- IENI Institute for Energetics and Interphases
- IFP Institute for Plasma Physics "Piero Caldirola"
- IGI Institute on ionized gas
- IM Institute on engine research
- IRC Institute on combustion research
- ITAE Institute for advanced energy technologies "Nicola Giordano"

Institutes participating in DET Activities

- ISTEC Institute of science and technology for ceramics
Research Unit at the University of Cagliari

Main National Collaborations

Ministry of Economic Development
 (to manage a R&D program on the national electrical system)
 International Centre for Technology Transfer on Renewable Energies in Tuscany
 Regional administrations: Campania, Tuscany, Sicily, Veneto
 (to prepare the local transport and energy plans)
 Technical Center on Energy and Transport (aeronautics included) in Naples
 Technological District on Transport in Sicily.

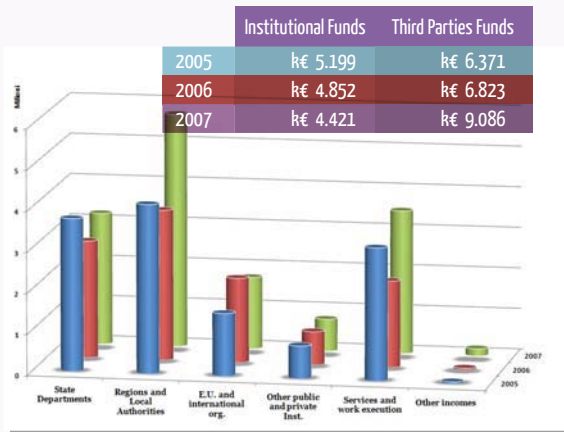
CRF, FIAT POWERTRAIN, Elasis
 Universities, ENEA, CESI
 ENI, ENEL, ITALGAS, Eni Tecnologie
 Ferrari Motori, Dell'Orto
 Pirelli Labs, Nuvera, Sudchemie
 SORIN, Galileo Avionica, Ansaldo
 Riello, Alenia Spazio, Snam Progetti
 Ecotec, EFDA-ITER (Garching-GE)
 Consorzio RFX, Consorzio Metrologico Gas
 Consorzio Ricerche Innovative per il Sud

Main International Projects and Collaborations

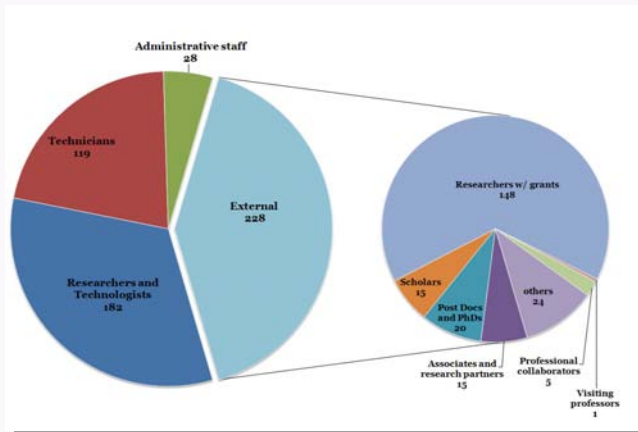
EARPA (that joins all the independent European research centres of the automotive sector)
 EURATOM / ITER Project (for research on Nuclear Fusion)
 European JTI on Hydrogen
 ESA (for aerospace research activities)
 CNRS
 Institut Français du Petrol

Max-Plank Institut
 Universities of Osaka, Cambridge, Leeds
 Daimler Chrysler, Bosch, STM, General Motors

Financial Resources 2005-2007



Human Resources 2007



Other Information

The Department of Energy and Transport manages for the Italian Ministry of Economic Development an important national R&D Program on the electrical system.

The Department takes part in RFX Consortium within the ITER international project on nuclear fusion research.



The Department

The overall goals of this Department (DMD) include both scientific topics at the frontier of knowledge and technological applications with significant outcomes. It has a leading role at national and international level in the field of applied physics, condensed matter and materials science.

The main objectives are: 1. Functionalities, processes and properties referring to atomic and molecular condensed states; 2. Development of the fundamental knowledge and of the technological use of matter; 3. Synergy of different disciplines such as physics, chemistry, biology and engineering in the areas of photonics and nanosciences.

DMD Projects

1. Biophysics and soft matter. Study and identification of possible applications of the so called "soft" matter, the state of matter mainly characterised by processes which are self-aggregated in mesoscopic complex structures having extraordinary resistance and/or adaptation properties. Study of the structures and mechanisms ruling the organization and dynamics of biological systems from the molecular to supra-molecular, up to the systemic level.

2. Complex materials and systems. Interdisciplinary applications of complex systems; models and theoretical methods; study of disordered, vitreous and composite materials; many-body systems and high-Tc superconductivity; development and applications of experimental methods for complex systems. Analysis by light and neutron spectroscopy and X-rays of complex, disordered, vitreous, porous and granular systems as well of heterogeneous catalysts and new superconductors.

3. Optics, photonics and plasmas. New materials for photonic and optical devices; ultrashort pulse sources and intense-fields physics; new optical devices for photons manipulation; innovative coherent sources and advanced spectroscopic techniques in less explored spectral regions; new imaging methods and techniques; theoretical and experimental study of new non classical field states and of quantum correlations; quantum effects in ultra-cold atoms systems; study of atomic and molecular systems, including those relevant in the chemistry and physics of plasmas; collisional plasmas.

4. Magnetic and superconductor materials and devices. Magnetic, superconductors and complex functional materials based on strong

electronic correlations; advanced devices for applications in magnetic memories, electronic devices and magnetic and superconducting sensors. Focus on three main macro areas: a) Magnetization processes and transport mechanisms in magnetic and superconducting materials; b) Spintronics and oxides electronics; c) Magnetic, magnetoelectronic and superconducting devices.

5. Microelectronics and microsystems. Materials and processes for miniaturising CMOS technology; silicon integrated optoelectronics; power and hyperfrequency devices; materials and processes for sensors and actuators; microsystems technologies and micro-components development; microsystems for environment, food, biomedicine and space applications.

6. Nanosciences and nanotechnologies. Interdisciplinary activity combining fundamental research, search for new materials and innovative methodologies and devices with major applications in electronics and telecommunications, pharmaceuticals, genomics and biomedicine.

7. Photonics 2015 (Interdepartmental project—Lead by DMD). Promotion of research activities in the field of photonics with particular attention to the young researchers. It corresponds to an important strategic activity planned in the period 2009-2011 supporting the establishment of the technological national platform on photonics, called PHORIT - Photonics Research in Italy and coordinated by the Department in collaboration with some Italian Universities, consortia and main industrial groups involved in photonics.

Institutes of DMD

IAC	"M. Picone" Institute for Computational Applications
IBF	Institute of Biophysics
ICIB	"E. Caianiello" Institute of Cybernetics
IFAC	"Nello Carrara" Institute of Applied Physics
IFN	Institute of Photonics and Nanotechnologies
INFM	National Institute for the Physics of Matter (21 R&D centres and laboratories)
INOA	National Institute of Applied Optics
IMIP	Institute of Inorganic Methodologies and Plasmas

IMM	Institute for Microelectronics and Microsystems
IPCF	Institute of Chemical and Physical Processes
ISC	Institute of Complex Systems
ISM	Institute of Structure of Matter

Institutes participating in DMD Activities

IMEM	Institute of Materials for Electronics and Magnetism
ISTI	"A. Faedo" Institute of Information Science and Technologies
ISAC	Institute of Atmosphere Sciences and Climate

Main National Collaborations

ASI (Italian Space Agency)

INFN (National Institute for Nuclear Physics)

Area Science Park (Trieste)

Major Italian Enterprises such as Finmeccanica (Alenia Aeronautica, Galileo Avionica, Selex Sistemi Integrati, ...), STMicroelectronics, Carlo Gavazzi Space, El.En.

Universities

Ministry of Foreign Affairs

ENEA (Italian National Agency for New Technologies, Energy and the Environment)

CNISM (National Inter-Universities Consortium for the Physical Sciences of Matter)

Local and Regional Authorities

Main International Projects and Collaborations

Nano Sci - ERA (Fundamental research at the nanometric scale) ERA-net scheme of the EU FP6.

Several projects approved within the FP7.

EUROCORES PROGRAMMES (ESF) : FoNE, SONS, S3T, EuroQUAM, EuroQUASAR, FANAS

RESEARCH NETWORKING PROGRAMMES (ESF) : "Arrays of Quantum Dots and Josephson Junctions - AQDJJ", "Nanoscience and Engineering in Superconductivity - NES"

Different projects with European Space Agency (ESA), Centre National de la Recherche Scientifique (CNRS), Consejo Superior de Investigaciones Cientificas (CSIC), Max Planck Institutes and Deutsche Forschungsgemeinschaft and with different institutions in Canada, Israel, India (Indian Institute of Technology), Japan (Piezotech) and Russia (Academy of

Sciences), USA (Naval Research and Los Alamos Laboratories), China and Taiwan.

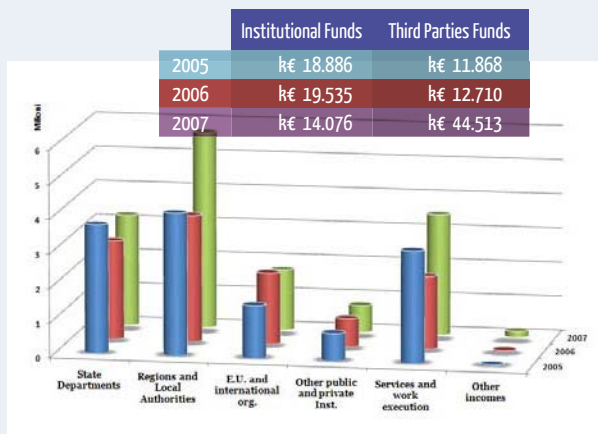
ELETTRA - Synchrotron Light Laboratory, Trieste, Italy

Institut Laue-Langevin (ILL) and European Synchrotron Radiation Facility ESRF Grenoble, France

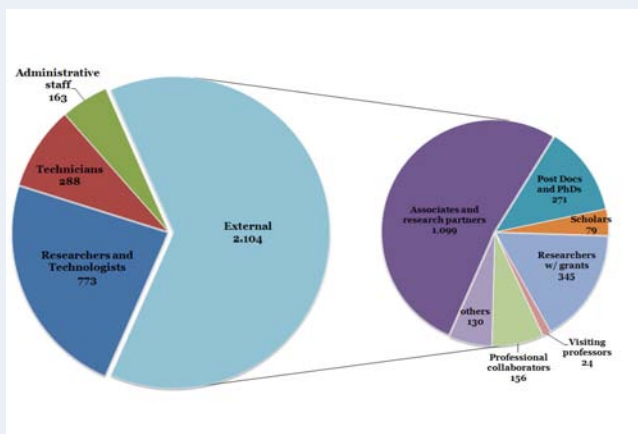
ISIS (world's leading pulsed neutrons and muons source), Rutherford Appleton Laboratory, Oxford, UK

European Research Infrastructure (ESFRI) Roadmap: ELI (Extreme Light Infrastructure), ESRF upgrade, ESS (European Spallation Source), European XFEL, HIPER (High Power Laser for Energy Research), ILL 20/20, INSTRUMENT (Integrated Structural Biology Infrastructure), IRUVX-FEEL, PRINS (Pan-European Research Infrastructures for Nano-Structures).

Financial Resources 2005-2007



Human Resources 2007



Other information

PUBLICATIONS: In 2008 the scientific production of the Department was equal to 2000 articles published on JCR journals, with over 9.600 in the period 2004-2008. The citations in the same period, according to data available on ISI Web of Science, were about 48.000.

PATENTS: 116 patent families, most of which with international extension (as to April 2009)

In the framework of the "Energetic Efficiency" calls of the national programme "Industry 2015", four projects with the participation of Institutes pertaining to the Department have been awarded among the 30 best research and development projects with a total funding of 60 M€.

In the first ERC Starting Grant competition of 2007, four young researchers working in the Department have been awarded the ambitious grants to support their investigator-driven frontier research.



The Department

The Department of Medicine performs research and training in Biology, Medicine and Public Health providing technologies and services to the National Health System and to the public and private industrial sectors. The mission of the Department of Medicine is to promote knowledge in health-related fields by studying the mechanisms of various diseases and by exploring new therapeutic opportunities with the aim of transferring results to the amelioration of the health of mankind.

DM Projects

1. Cardiovascular and Pulmonary Diseases

Imaging; Genetics of monogenic and complex diseases; ICT; Drug development

2. Neuroscience: molecular bases and clinical application

Neuroimaging; Behavioral sciences; Genetics of chronic degenerative diseases

3. Oncology

Tumor transcriptome and genomics of molecular targets; Development of immuno-therapy and new radiant therapies

4. Immunology and Infective Diseases

Identification and development of immune system antibiotic-resistant strains; Development of new antibiotic and anti-viral drugs

5. Human Molecular Medicine

Genetic and molecular determinants of illnesses; Development of animal models; Design of vectors for gene therapy; Application of stem cells for disease therapy

6. Biomedical Technologies

Development and validation of ICT technologies applicable to medicine, imaging, surgery, biotechnology, bio-engineering, biomaterials and medical devices

7. Epidemiology and Health Care Research

Identification and quantification of genetic and environmental risk factors; Development of informatics systems for the organization and management of health care and services

Institutes of DM

ITB	Institute of Biomedical Technologies
INMM	Institute of Neurobiology and Molecular Medicine
IN	Institute of Neuroscience
ISN	Institute of Neurological Science
IGM	Institute of Molecular Genetics
IBFM	Institute of Molecular Bioimaging and Physiology
IFC	Institute of Clinical Physiology IFC
IBC	Institute of Cell Biology
ISIB	Institute of Biomedical Engineering
INN	Institute of Neurogenetics and Neuropharmacology
IBIM	Institute of Biomedicine and Molecular Immunology
ITOI	Institute of Organs transplantation and immunology

Institutes participating in DM Activities

IBB	Inst. of Biostructures and Bioimages
IASI	Inst. Analysis of Informatics Systems
IAC	Inst. "Mauro Picone" Calculus Applications
IMATI	Inst. Applied Mathematics and Informatics for Technologies
IRPPS	Inst. Research on Population and Social Problems
ISTC	Inst. Science and Technology of Knowledge
ISTEC	Inst. Science and Technology of Ceramic Materials

Main National Collaborations

Italian Ministry of University and Research
 Italian Ministry of Health
 Italian Ministry Reform and Innovation in the Public Administration / Dep. for Innovation and Technologies
 Italian Ministry Economic Development
 Italian Ministry of Environment and of the Protection of the Territory and Sea
 Local and Regional Authorities

ISS National Institute of Health
 IRCCS Specialized Hospitals for Research and Cure (Ministry of Health)
 Universities
 Consortia
 Private and public research bodies
 Pharmaceutical, biomedical and biotechnological companies
 Joint Spin-offs
 ASL Health Mutual Organizations

Main International Projects and Collaborations

EMMA (European Mouse Mutant Archive and Data Base) Project – EU (finalized to set up a bio-depository for mouse strains mimicking human diseases at the Institute of Cell Biology, Monterotondo -RM).

National Institutes of Health (NIH), USA (The NIH's Institute of Aging sponsors a project of community genotyping aimed at finding haplotypes of common diseases).

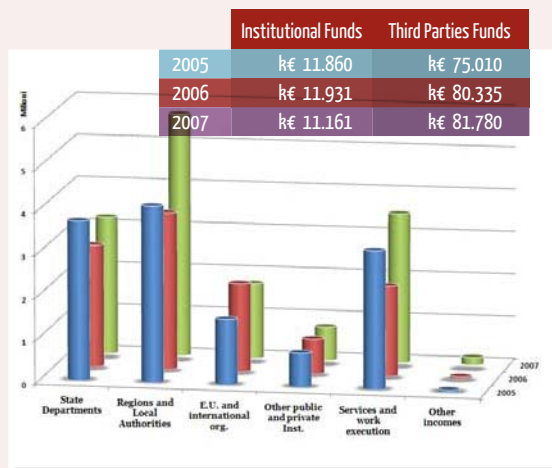
INSERM (Institut Nationale de la Santé et de la Recherche Médicale) France (Italo-French laboratories, common post-doctoral fellowships, Interphase

contracts/People Co-Funding Programme VII FP: exchange program between INSERM and CNR and the network).

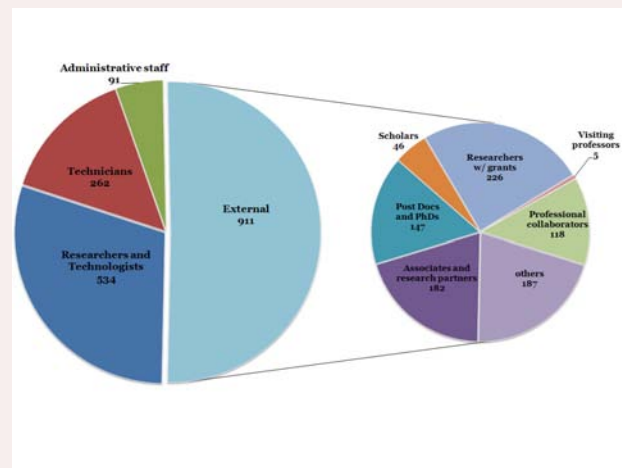
IMI Innovative Medicine Initiative (a pan-European collaboration in the public and private sector between biopharmaceuticals, hospitals, regulatory offices, universities and patients).

GENOME CANADA (agreement for research programmes on genetics and stem cells).

Financial Resources 2005-2007



Human Resources 2007



Other information

PUBLICATIONS: by DM units in 2008: 705

PATENTS: 220 patents in DM portfolio - 70 declarations of invention

The Department

The Department of Cultural Identity consists of 15 Research Institutes which deal with a highly diverse range of subjects including linguistics, juridical and socio-economic studies, the history of thought, Mediterranean cultures, cognitive sciences and technological studies in the field of humanities.



DIC Projects

1. History of Ideas and Culture. This project researches European and Mediterranean cultural traditions, from antiquity to the present day through a thorough analysis of languages and the history of ideas. It investigates the origins of Greek, Latin and Arab civilizations and examines the evolution of scientific and philosophical language and thought.

2. Italian language: structures, patterns, archives material. This project investigates the Italian language and its history, development and use, using innovative methods of lexicographical analysis and close examination of phonetics, morphology, syntax and dialects. The research combines linguistics and cognitive sciences; moreover, new research topics such as computational philology on digital files have been introduced thanks to use of information technology in the field of humanities.

3. Quality and identity in educational systems and research. The study of the relationship between cognitive processes and our social and physical environment throughout our lives, and of technological innovations aimed at improving the quality of all aspects of educational systems and scientific research: cognitive, educational organizational and economic.

4. European and Mediterranean Identity: Mobility, Migration and the intercultural relationships. This study looks at migration flows in the Mediterranean area, investigating the relationship between cultures from the Middle Ages to the present day, with specific focus on the latter. It examines a broad spectrum of related issues: reciprocity and interdependence; mobility, Diaspora and languages; the construction of identity, cultural practices, social relationships, new communication systems, transnational perspectives and localism.

5. Italian innovation and development in the post-industrial global economy It is the aim of this research to compare the Italian economic system with other international economies, looking at the evolution of the main features of our economy and analyzing the development of localized economic systems. The role of services, Industrial Districts, and the national manufacturing system are investigated as well as the problem of

financial intermediaries and their effects on Italian economic development.

6. The Juridical lexicon and Italian juridical heritage. Tradition, Interpretation and Innovation. This research considers the entire Italian juridical heritage not just as a collection of norms but also as a complex of values and fundamental rights. The aim of the project is to apply new communication technologies to the juridical system as a whole, from the lexicon to archives and the teaching of law, and not least to foster and improve the diffusion of juridical information.

7. International law and unification of law. The aim of the project is to make the Italian juridical system more widely known internationally, highlighting its basis in Roman law and looking at models and tools of international law as well as at the process of globalization of law or at new technologies and private law. The objective is to contribute to the development of an international legal system in order to participate in the evolution of European unity.

8. Social and institutional transformation of governances. This research area includes different projects concerning different aspects of the multilevel Governance at European level: federalism, regionalism and institutional policies and procedures. It also investigates Governance of judicial systems on comparative analyses of: judicial governance institutions, judicial and prosecutorial roles and extra-judicial activities of judges and public prosecutors.

9. Historical memories, values and institutions. This project researches cultural and civil values of national culture, investigating the process of unification of different identities of Italian population, with regard to cultural and historical phenomena and taking into consideration Romans and Christian roots of Italian culture.

10. Migration. This study looks at migration phenomena as a displacement of knowledge and cultural experiences; books authors, translations. It analyzes migration with an interdisciplinary perspective examining different related issues: history, philosophy, linguistics, demography, legal studies and education science.

Institutes of DIC

CERIS	Institute for economic research on firms and growth
ILC	Institute of computational linguistics "Antonio Zampolli"
ILIESI	Institute of European intellectual lexicon and history of ideas
IRAT	Institute for services industry research
IRPPS	Institute of research on population and social policies
IRSIG	Institute of research on judicial system
ISEM	Institute of history of Mediterranean Europe
ISGI	Institute for international legal studies

ISPF	Institute for the history of philosophical and scientific thought in modern age.
ISSIRFA	Institute for the study of regionalism federalism and self governance
ISSM	Institute of studies on Mediterranean societies
ISTC	Institute of cognitive sciences and technologies
ITC	Institute for educational technology
ITTIG	Institute of legal information theory and technique
OVI	The Italian dictionary

Institutes participating in DIC Activities

IREA Institute for Electromagnetic Sensing of The Environment
 ISAC Institute of Atmospheric Sciences and Climate
 ISTI Institute of Information Science and Technologies

Main National Collaborations

Public and Private Universities
 Ministry of Education, University and Research

Ministry for the Cultural Heritage and Activities
 Ministry of Foreign Affairs
 Ministry of Economy and Finance
 Local Authorities
 Foundations
 Istat- National Institute of Statistics
 Iss- Italian National Institute of Health
 Crusca Accademy
 National Council of Italian Notaries

Main International Projects and Collaborations

European and International Universities

European Science Foundation

CUPL - China University of Political Sciences and Law - Beijing

Eurocores: The Evolution of Cooperation & Trading (Tect)

Eurocores: Consciousness in Natural and Cultural Context (Cncc)

LGA - Language Grid Association

Bernard Van Leer Foundation of Bruxelles

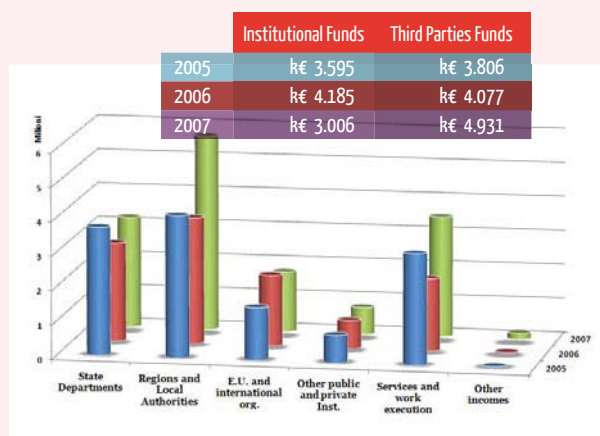
CSIC - Spanish National Research Council

CNRS: Leibniz Laboratory – Grenoble

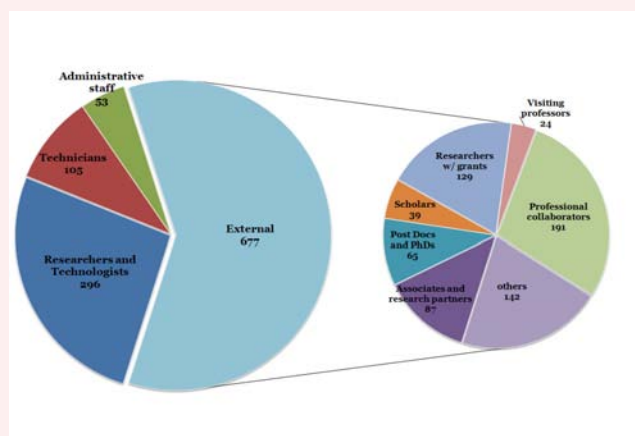
Centro Para el Desarrollo Tecnológico y Industrial

ASSER - Institute Of International Law

Financial Resources 2005-2007



Human Resources 2007



Other information

The Department produces a range of publications for a variety of audiences, offering an overview of current issues in Social Science and Humanities. It also produces a range of research publications highlighting and publicizing social sciences and research.

Herit- Heritage Research Italy

The project aim is the study of heritage and cultural identity of each European nation through the participation in the European technological

platform in the field of social science and humanities.

Department Observatories

- China Legal Studies and Codification of Law on the Basis of Romans Law
- Neologisms in Italian Language
- Agri-food Standard
- Italian Migrations



The Department

The Department of Life Sciences (DSV) embraces a range of research on the fundamental mechanisms governing living organisms. DLS supports research on the human and model genomes and on all aspects of genetics, basic biochemistry and cell biology related to health and disease, including the translation of knowledge into health policy and practice, and the societal implications of genetic discoveries.

DSV Projects

1. Function, regulation, and evolution of eukaryotic genomes

Define the molecular mechanisms which regulate the expression of genes involved in the fundamental biological process check and identify the function of new genes of biomedical and biotechnological interest. Study the genetic mechanisms of mutation and recombination and epigenetic those, independent of the sequence of DNA, to the variability and genetic alteration and to genomic plasticity.

2. Structure, function and design of proteins, nucleic acids and their supramolecular complexes

Study the relationships among three-dimensional structure, dynamics and protein function and nucleic acids and some recognition processes among macromolecules; plan proteins and nucleic acids with new functions. Improve the structural/functional knowledge of the supramolecular structure components with special attention to nucleic protein-acid complexes and to the ones involved in the cellular respiration.

3. Molecular mechanisms and signaling in the control of cell proliferation, differentiation and death

Develop the understanding of the molecular mechanisms which produce (the cellular diversity) and regulate differentiation, homeostasis, oncogenic transformation and death of the cell; their applicatory relapses in diagnostics and therapy. Study the conversion mechanisms of the extracellular signals in intracellular, their role in the integration of the metabolic activities of the tissues and organs. Pharmacological use of molecules which interfere with these signals.

4. Animal models in physiopathology and behaviour

Use of organisms model to understand the specific gene function in the regular physiological activity of some superior organisms and study human illnesses in which such functions are altered. Study the biological

evolution, behavioural and cognitive of the human and not human primates, also through genetic and molecular techniques, and their cognitive and applicatory relapse in the behavioural neuroscience.

5. Biodiversity and mechanisms of adaptation to stress

Study the adaptation mechanisms of extremophile organisms to the adverse environmental condition (temperature, pHs, salinity) and those basic for the answer to exogenous stresses in model organisms. Develop ad hoc methods for the identification and the cataloguing of animals and plants kind through bioinformatic analysis of genomic sequences also to contribute to the safeguard of biodiversity.

6. Bioinformatics and Computational Biology

Develop and get ready informatics technologies for the organization and genic and proteomic sequence management; expect proteomic structures based on the analysis of well known three-dimensional protein family structures. Analysis of specific populations in their environmental context through multidisciplinary studies in order to identify genomic areas associated with complex pathologies and risk factors for common illnesses (diseases).

7. Biodiversity Molecular (Interdepartmental— Lead by DSV)

Biodiversity Molecular users located in many different fields ranging from basic biology to applied research.

The general objectives of the project are:

- Enhance the study of biodiversity at the molecular level in various fields from the activities currently performed in laboratories of the CNR in the Departments of: Life Sciences, Medicine, Agrifood, Earth and Environment, Information and Communication Technology, and possibly others.
- Expand and establish links between research in the field and the possible fallout in the world of production, labor and education.

Institutes of DSV

IBP	Institute of Protein Biochemistry
IBPM	Institute of Molecular Biology and Pathology
IBBE	Institute of Biomembrane and Bioenergetics
IEOS	Institute Experimental Endocrinology and Oncology "Gaetano Salvatore"
IGB	Institute of Genetics and Biophysics "Adriano Buzzati Traverso"
IGP	Institute of Population Genetics

Institutes participating in DSV Activities

IAC	Institute for Applied Mathematics "Mauro Picone"
IBC	Institute of Cell Biology
IBIM	Institute of Biomedicine and Molecular Immunology "Alberto Monroy"
IGM	Institute of Molecular Genetics
IN	Institute of Neuroscience
INMM	Institute of Neurobiology and Molecular Medicine
ISMAL	Institute for Macromolecular Studies
ISTC	Institute of Cognitive Sciences and Technologies
ITB	Institute of Biomedical Technologies

Main National Collaborations

Italian Ministry of Health
 Italian Ministry of University and Research
 ISS - National Institute of Health
 ASI - Italian Space Agency
 IPI - Institute for Industrial Promotion (Italian Ministry Economic Development)
 TELETHON
 AIRC

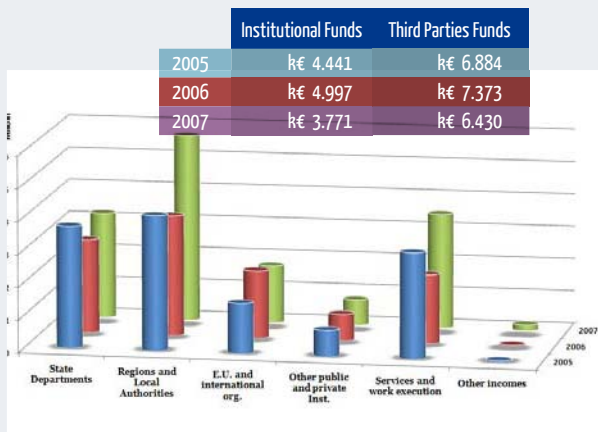
IRCCS Specialized Hospitals for Research and Cure (Italian Ministry of Health)
 The main important private and public research bodies
 Stazione Zoologica "A. Dohrn"
 Quantica SGR
 Local and Regional authorities
 The main important Italian Universities

Main International Projects and Collaborations

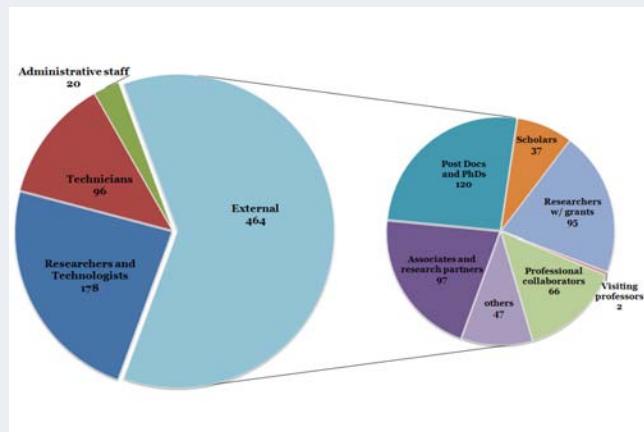
Memorandum of Understanding between Genome Canada and CNR.
 LIFEWATCH
 IMI - Innovative Medicine Initiative
 INSERM - Institut National de la Santé et de la Recherche Médical (France)
 ELIXIR - European Life Sciences Infrastructure for Biological Information
 ERA INSTRUMENTS - Infrastructure funding in the Life Sciences
 CENTROSOME CONTROL - Study of centrosome maturation as a pivotal process between G2 checkpoints and mitotic entry in mammalian cells
 EMIL - European Molecular Imaging Laboratories
 INTEGRAL - Intensifying training in Europe for genomic research activities on legumes
 CANCERDEGRADOME - Extracellular Proteases and the Cancer Degradome: Innovative Diagnostic Markers, Therapeutic Targets and Tumour Imaging Agents

VASOPLUS - Placental Growth Factor (PlGF): new diagnostic and therapeutic applications in cardiovascular disease
 GAZLEN - Global allergy and asthma european network
 MUVAPRED - Mucosal vaccines for poverty related diseases
 MARINE GENOMICS - Implementation of high-throughput genomic approaches to investigate the functioning of marine ecosystems and the biology of marine organisms
 BIOMINTEC - Biomineralization is the formation of minerals by living cells and organisms
 LeptinMS - Leptin, metabolic state and natural regulatory T cells: cellular and molecular basis for a novel immune intervention in autoimmunity
 EUROCORES: EUROMEMBRANE, Membrane Architecture and Dynamics
 RNA QUALITY

Financial Resources 2005-2007



Human Resources 2007



Other information

Patents
 19 Italian Patents, 14 Of Which Have An International Extension.

Consortia
 Shar.dna S.P.A.

Constem - Consorzio Per La Ricerca Sulle Cellule Staminali
 Gear - Genomics For Applied Research Scarl
 Centro Regionale Di Competenza In Biotecnologie Industriali Bioteknet S.C.P.A.
 Bio.for.me Foundation

The Department

The Department Production Systems (DSP) is the unique scientific initiative generated by CNR that focuses the coordinated efforts of a meaningful number of researchers, belonging to different disciplinary sectors, on the research thematic in the field of industrial process and product.



DSP Projects

1. High-Tech industrial processes: methods and tools. The project analyzes the processes that, in the correlation which connects the vertical chains of production, characterize the life cycle of the factory in its main macrolevels (machine, cell/system, enterprise) and individualizes the major processes (designing, management, reconfiguration) with the aim to obtain a real competitive knowledge-based advantage.

2. Embedded microsystems. The general objective consists in: design, realization, study and application of innovative materials and systems of interest for the national production system. In the development phase we point out: monitoring systems of high performance (detectors of gas and high energy radiations, chemical sensors, etc.); actuators and transducers for applications in mechanics, domotics and manufacturing systems; innovative materials for energy generation and transport.

3. Robots and integrated production systems. The project integrates competences of mechatronics, robotics, and automation, with impact on enterprises that operate in different production sectors with medium-high technologies. The project is oriented to the design and development of integrated production systems, machine tools, robots, automation, and high-tech systems/components for different applications. The activities are of interest for: integrated development, choice of materials, simulation, prototyping, patenting process, industrialization, normative adjustment of production systems and related processes.

4. Sustainable technologies for building and civil construction. Study and analysis of innovative/non conventional construction technologies and materials for the control of pollution in the constructed environment and for safe and high-performing construction. In particular, it is oriented to the study of technologies and tools for the improvement of the energetic and acoustic sustainability.

5. Process of implementing and managing building and civil works. Improvement of the efficiency and efficacy of the process of constructing managing works of civil building and engineering by means of evolving information systems, technical education in the field, computer applications at support of the innovation of processes/products of the construction sector. To this aim, the project exploits also new engineering methodologies for the analysis and recovery of the constructed environment, architectural cultural heritage included, and for the technical evaluation of innovative products for construction and certification.

6. Monitoring, control and safety systems in manufacturing context
Autonomous intelligent systems for monitoring, control and safety in

specific application contexts with development of design methodologies which are alternative to the current ones so to meet the innovative needs of the involved application contexts.

7. Systems for movimentation and manufacturing in non-structured environment. Thematics of application interest for relevant industrial sectors: advanced development of machines and their power chains; development of mechatronic drives and related control architecture (sw/hw level); advanced simulation of complex systems; development and application of health and comfort requirements both from the ergonomic point of view and from the point of view of active and passive safety of the equipment (physical risk and EMC); acoustic intensimetry for the characterization of complex sources.

8. High-Tech industrial products. The objective is to progress in the development of knowledge-based products for the so-called mature manufacturing, which is typical of Made-in-Italy, to improve, reinforce and exploit the strength points of the national enterprises on foreign markets. In particular, the project works on the development of new materials, even nanostructured, within traditional industrial sectors: footwear, textile, wood industry, ceramics and bioceramics (innovative and traditional), electronic components.

9. Functionalization of materials and sensors for industrial use
Functionalizations of materials of any form (thin and/or thick film, etc) are kinds of technological (also nanotechnological) processes by which aggregations of chemical groups may infer to a given substrate predetermined behaviours in the physical, chemical and biological domains, in particular enhanced mechanical, electrical and chemical properties suitable for sensors and sensor systems applications.

10. Tourism: Open production system (Interdepartmental – Lead by DSP)
Inter-departmental project. Objective of the project is to prepare a set of methods, techniques, and tools to develop tourism as a sustainable productive system endowed with high quality and profitability, and integrated with the productive systems with which it is correlated.

11. Advanced components for the micro-production of energy in the civil sector (Interdepartmental – Lead by DSP). ITC-CNR has been involved for a long time on polygeneration topics. Over the last two years a specific case study has been carried out on a microCHP plant installed in an experimental building. Field trials permitted to specify a methodology for microgenerator's optimization, try out the methodology and verify good results for building-plant system efficiency and energy saving.

Institutes of DSP

IA	Institute of acoustics "Orso Mario Corbino"
IMAMOTER	Institute for agricultural and earthmoving machines
IMEM	Institute of materials for electronics and magnetism
ISSIA	Institute of intelligent systems for automation
ISTEC	Institute of science and technology for ceramics
ITC	Institute of construction technologies
ITIA	Institute of industrial technologies and automation

Institutes participating in DSP Activities

IAC	Institute for applied mathematics "Mauro Picone"
IMATI	Institute for applied mathematics and information technologies
IMCB	Institute for composite and biomedical materials
IFAC	Institute of applied physics "Nello Carrara"
ISTC	Institute of cognitive sciences and technologies
ITM	Institute on membrane technology
ISMAL	Institute for macromolecular studies
IVALSA	Institute for tree and timber

Main National Collaborations

Universities and Polytechnic Schools
 Ministry of Interior
 Ministry of University and Research
 Ministry Economic Development
 Ministry of Cultural Heritage and Activities
 Local and regional authorities
 CESI - Italian Electrical Experimental Centre
 ASI (Italian Space Agency)
 ENEA (Italian National Agency for New Technologies, Energy and the Environment)

INGV - National Institute of Geophysics and Volcanology
 UNI – Italian Organization for Standardization
 CEI - Italian Electrotechnical Committee
 ARPA - Regional Agency for Wastes and Waters
 CONFARTIGIANATO - Italian Federation of Handicrafts
 Italian Associations of Category
 ENEL - Italian Energy Provider
 EDISON s.p.a. - Italian company of gas and energy
 Major Italian Enterprises

Main International Projects and Collaborations

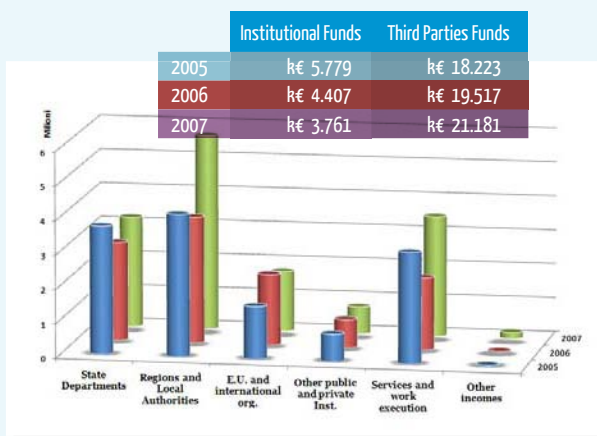
Definition and realization of hardware/software interfaces for inter-communication between industrial PLC based control systems and PC based simulation systems for the assisted design of control algorithms (project EU VI PQ RIMACS).

based control systems which are based on IEC 61499 standard (project EU VI PQ CEC Shoe).

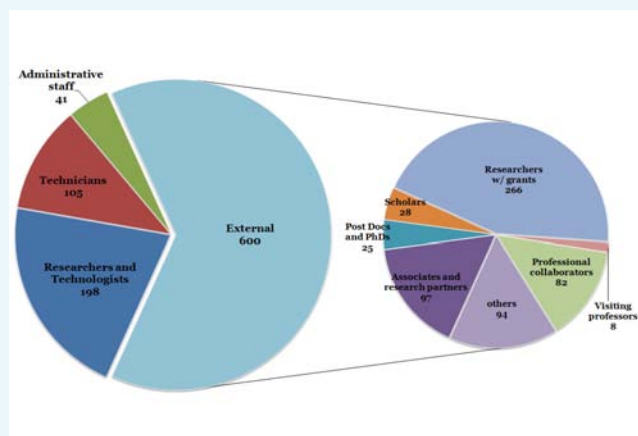
Design and development of configuration environments of industrial PC

European project “ROM – Network of optics in Mediterranean Countries” (EU INTERREG MEDOCC)

Financial Resources 2005-2007



Human Resources 2007



Other information

At national level, the relations with the Regions have been concretized with the approval of three projects:

- Pilot project for the technology transfer directed towards the development and creation of enterprises with high innovative content in the sector of the building and construction chain of Calabria Region (5M€);
- New technologies and instruments for the energetic efficiency and the utilization of renewable resources in the final civil uses - Lombardia Region (12 M€ , of which 6 are co-financed by CNR);

- High-tech processes and user oriented products for the competitiveness Lombard manufacturing industry - Lombardia Region (12 M€, of which 6 are co-financed by CNR);

At European level, through the participation and engagement in the European technological platforms and in the implementation of the national ones on future manufacturing technologies: MANUFUTURE; and on European Construction Technology: ECPT.