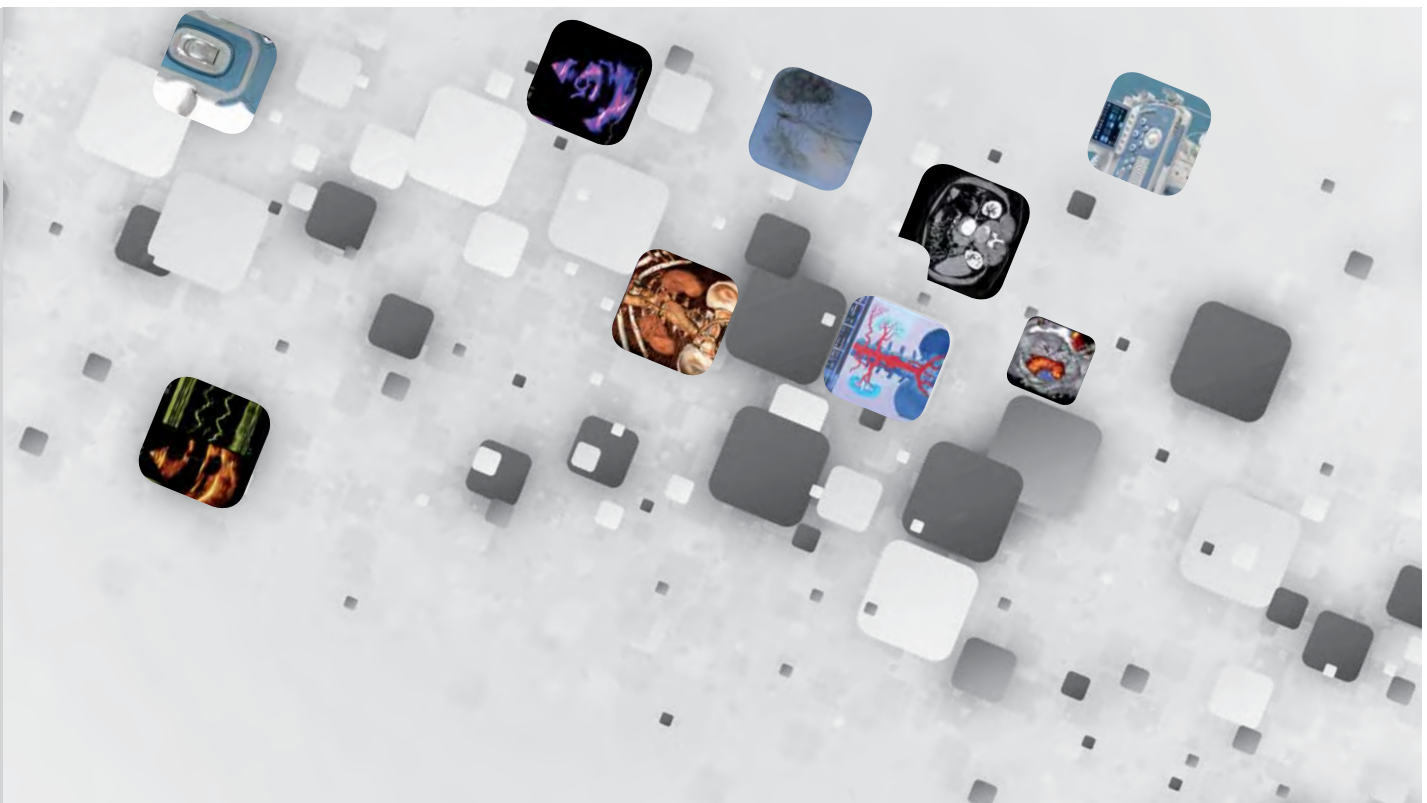


# Innovation Poles of LIGURIA

## Teaming-up for Innovation in Medical Imaging



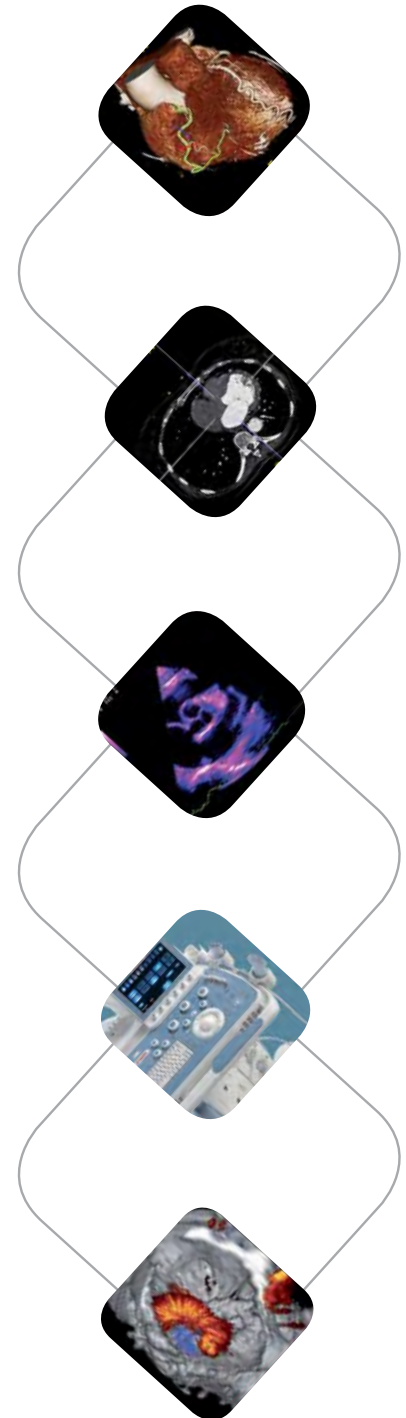
## DESCRIPTION AND SPECIFIC EXCELLENCE

### Mission and background

POLITECMED is a consortium of companies and research institutions operating in the sector of diagnostic imaging and healthcare IT, and strongly linked by industrial and research collaborations. POLITECMED was founded with the purpose of fostering the research and innovation activities of the partners, improving the transfer of knowledge between academia and industry, and supporting the partners in understanding and approaching the market, with the final goal of promoting the partners competitiveness on the global marketplace.

As all the partners are committed to the development of innovative products and solutions, with high levels of R&D investments and participation in publicly financed projects, POLITECMED has defined 5 directions of innovation, consistent with the interests of its partners and the market trends:

- novel acquisition and reconstruction techniques for ultrasound and magnetic resonance images;
- software systems for diagnostics;
- management of biomedical data;
- development of components and advanced instrumentation;
- innovation of the IT infrastructure.



## Alliance/Collaboration

Most POLITECMED industrial partners are members of:

RIBES: a network of Italian companies spanning the entire biomedical production chain;

SIIT, Liguria's technological district focused on intelligent and integrated systems ([www.siitscpa.it](http://www.siitscpa.it));

POLITECMED partners have strong collaborations with several Healthcare institutions in Europe.

## PRODUCTS AND PROJECTS

### Products or Services offered

The products and services offered by POLITECMED partners span the entire biomedical production chain, ranging from components to complete diagnostic systems and software for biomedical image analysis.

### Projects

All POLITECMED's partners are strongly linked by industrial and research collaborations and committed to the development of innovative products and solutions, with high levels of R&D investments (for a total of approximately 30.000.000 Euros) and participation in publicly financed projects.

Research and innovation at POLITECMED is organized into 5 macro-areas, covering the interests of all partners:

- acquisition and reconstruction techniques for biomedical images (because of Esaote's strong presence in these markets, the focus of this macro-area is on ultrasound and MRI modalities);
- software systems for diagnostics (e.g. CAD systems), and more generally the analysis of biomedical images;
- management of biomedical data;
- development of components and advanced instrumentation;
- innovation of the IT infrastructure (e.g. distributed computing, mobile platforms).



## POLITECMED

*Teaming-up for Innovation in Medical Imaging*  
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### CONTACTS

Curzio Basso



**30**

Million euros for R&D

**500**

R&D operators (industrial partners)

**200**

Fellows (research institutions)

## PARTNERS

POLITECMED is coordinated by **CAMELOT Biomedical Systems Srl** ([www.camelotbio.com](http://www.camelotbio.com)), a start-up company developing software tools for the quantitative analysis of biomedical data, and is spearheaded industrially by **Esaote Spa** ([www.esaote.com](http://www.esaote.com)), one of the top ten diagnostic imaging companies worldwide.

The consortium includes a number of SMEs, as follows:

- **OMS Ratto Spa** ([www.ratto.com](http://www.ratto.com)): production of components for the biomedical area;
- **Softeco Sismat Srl** ([www.softeco.it](http://www.softeco.it)): activity in image processing, 3D visualization, and CAD systems;
- **FOS Srl** ([www.gruppofos.it](http://www.gruppofos.it)): ICT company with high R&D investments;
- **Esacontrol Srl** ([www.esacontrol.it](http://www.esacontrol.it)): provider of components for biomedical systems;
- **SyO Srl** ([www.syo.it](http://www.syo.it)): consulting, services and solutions company in ICT, design and engineering.

POLITECMED takes advantage of the participation of two research institutions: **University of Genoa** ([www.unige.it](http://www.unige.it)) and **Centro Nazionale delle Ricerche** ([www.cnr.it](http://www.cnr.it)) - and of the **SIIT-PMI** consortium of SMEs belonging to Liguria's technological district focused on intelligent and integrated systems ([www.siiit-pmi.it](http://www.siiit-pmi.it)).



Science and business together for quality of life



## DESCRIPTION AND SPECIFIC EXCELLENCE

### Mission and background

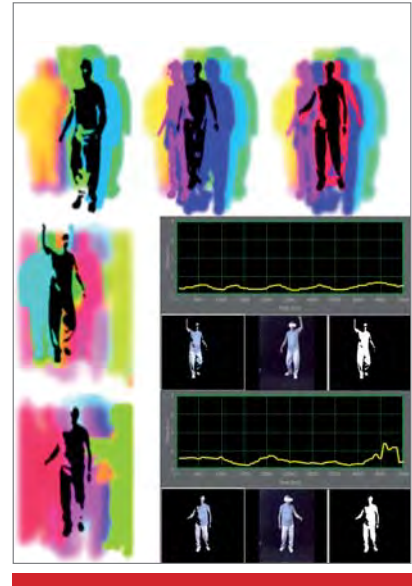
SI4Life is a new scientific-technological Innovation Hub in Italy with the aim of improving the quality of life of elderly and disabled people.

SI4Life wants to create systematic synergies and technological transfer between Companies, Research Institutions and Health Facilities.

Through high-level research, SI4Life objectives are to develop new tools, aids and prosthetic products enhancing social integration and achievements, recovery skills, autonomy and quality of life for elderly people and individuals with sensory (vision, hearing), neuromotor and cognitive disabilities, when combined with innovative rehabilitation and educational re-training methods.

Currently focused primarily on:

- smart environments and solutions for chronic disease and home care;
- remote health monitoring;
- prosthetic aids (artificial ear, artificial robotic motor, tactile substitutes...);
- smart assistive technology to enhance mobility and participation;
- serious games in healthcare and rehabilitation.



### Alliance/Collaboration

SI4Life maintains relationships with user organizations and public and private stakeholders, to promote the qualification of human capital through training and dissemination of good practice.

### Technology and Patents

- “SI4Life” is a registered trademark.
- Quality certification in progress for many services, e.g.: call selection, advice in project writing, project coordination, distance learning and FAD platform.
- Patent of ICF targeted browser (SI4Life ICF Web).



## PRODUCTS AND PROJECTS

### Products or Services offered

SI4Life promotes:

- synergies between the different bodies engaged in Research, Innovation, Training, Production and use of aids and Technologies for the elderly or disabled people;
- basic and translational research on mechanisms of sensory processing and motor neuro programming, even in the presence of cognitive deficits.

SI4Life supports action for deriving products, assistive devices, methods, patents on:

- Advanced and innovative aids for disabled persons derived from basic and translational research.
- Feasibility studies and research and development of prosthetic aids and/or replacement.
- Research on the limits of autonomy with regard to safety (road, work, home) in particular where there are sensory and neuro-motor deficiencies, in the elderly, in the workplace, functional tests, classification, control techniques, optimization haptic.
- Tools, procedures and strategies for early diagnosis and prevention of sensory, motor and cognitive deficiencies.
- Tools, procedures and alternative strategies for the rehabilitation of sensory, motor and cognitive deficiencies.
- Tools for mobility and participation.
- Monitoring of relapse and application of spin-off of individual research projects.
- Software in teaching and affordable home automation and remote home care to improve quality of life of the cognitive, sensory and neuromotor disabled people.

SI4Life implements courses and training on-demand on various issues, health-related (e.g. on ICF International Classification of Functioning, Disability and Health).

Four action areas:

- innovation and technology transfer;
- appliance for sensory-motor deficits;
- easy access to information and participation;
- smart environment.

Four targets: sensory impairments (vision, hearing), neuromotor deficits, cognitive disabilities, problems of ageing society.

### Projects

SI4Life is dealing with a number of Italian regional and national projects concerning science, health and the quality of life:

- distance monitoring of elderly people (National project “An integrated approach to motor and cognitive rehabilitation in Multiple Sclerosis: from neuroplasticity to clinical evidence”);
- study of post-traumatic syndromes in children;
- development of specific devices enabling blind people to access graphical information;
- design and the development of “serious games” supporting people with cognitive impairments.

Other projects involves end-users, such as: “Snoezelen Room” in the International Pediatric Hospital Giannina Gaslini; exercises to improve blind people proprioception by using sensory supplementation.

At European level, through its associates, SI4Life participates in a number of projects concerning the use of ICTs to support health, ageing well and rehabilitation. Among these, we can highlight ASC-Inclusion project (VII FP 2011-2013) which aims to develop serious games supporting autistic subjects in learning and imitate mimic expressive interaction.

### Useful additional information

SI4Life is included in the official shortlist of subject qualification for the establishment of public-private participation in European projects (Resolution of Region Liguria Council no. 551 - 18 may 2012).

SI4Life is a Research and Innovation hub with financial support from the European Fund for Regional Development - PO Ob. CRO FESR 2007-2013 Asse 1.



**SI4LIFE**

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**CONTACTS**

Barbara Mazzarino-Managing Director

**1**

Mission: quality of life

**18.240**

Employees

**1.000.000**

End users

**PARTNERS**

SI4Life includes big RTD, big enterprises, SME and association active in rehabilitation of people with disability, SME active in the Information & Communication Technology field and Electronics industry:

- University of Genoa
- Italian Institute of Technology (IIT)
- National Research Council (CNR)
- Fondazione Don Carlo Gnocchi Onlus
- International Pediatric Hospital Istituto Giannina Gaslini
- Istituto David Chiossone Onlus
- Cepim Centro Italiano Down
- CAP S.p.A.
- Celin S.r.l.
- Elsel S.r.l.
- ETT S.r.l.
- Fides Medica S.p.A.
- GGallery S.r.l.
- IFM Group
- Linear S.r.l.
- Optics International s.a.s.
- Smart Group S.r.l.
- Soft Jam S.p.A.
- Telerobot S.p.A.

Security - Safety - Integration - Mobility - Logistic - Processes - Robotics



## DESCRIPTION AND SPECIFIC EXCELLENCE

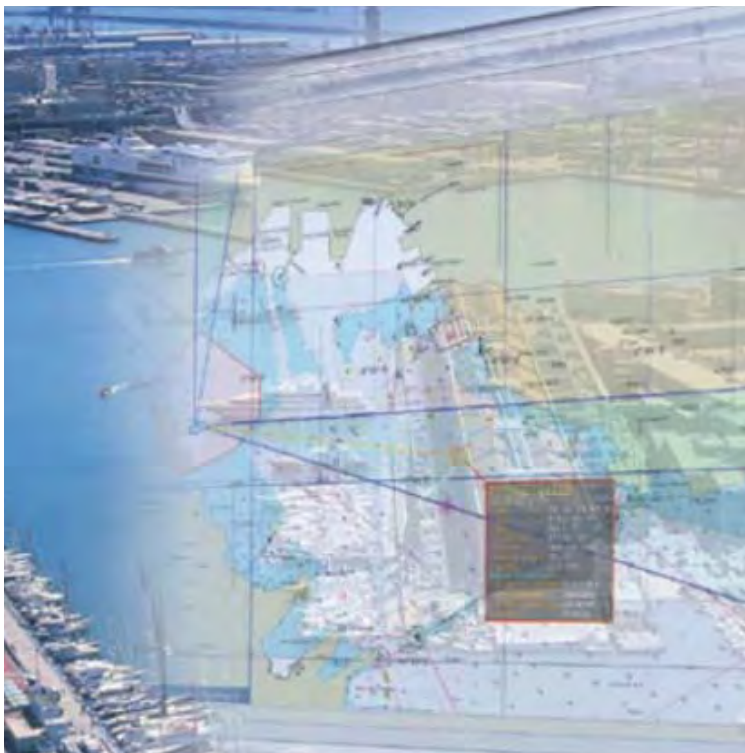
### Mission and background

The “Polo SOSIA” main mission is to stimulate industry innovation in Liguria Region, encouraging intensive interaction, the use of shared installation, the exchange of knowledge and experiences and the technology transfer, operating in the “Intelligent Automation” area. The field in which the “Polo SOSIA” operates is focused on the “System of systems” technology that can be shared in two significant areas:

- Distributed Intelligence - within functional subsystems forming wider aggregations.
- Internal Intelligence to machines- internal to each subsystem.

The activities developed in the sectors identified will be generated in Liguria Region:

- An increase in the innovation level.
- The development of new products and industrial system engineering.
- The activation and enhancement of skills in the area.
- The definition of new offers for foreign customers.
- The potential acquisition of new orders primarily in the international area, also from new markets.



### Alliance/Collaboration

Polo TRANSIT  
 Polo DLTM  
 SERIT Platform - SEcurity Research in Italy  
 NANOMED S.r.l. - research grants  
 AITEK S.p.A.  
 Piaggio Aero Industries S.p.A.  
 SOSE - System Of Systems Engineering  
 Scuola Telecomunicazioni FF.AA. di Chiavari  
 Festival della Scienza

### Technology and Patents

Polo SOSIA is an aggregation of Industries (large, medium and small) and research institutes. SELEX Sistemi Integrati is the Leader of this group, but each member of the aggregation possesses owns its own Technologies and Patents.

Research trajectories:

SELEX Sistemi Integrati, in line with competencies and by vocation, decided to develop the theme of the “Intelligent Automation” through the use of **System of Systems**, shared and analyzed mainly in two different groups:

- **Distributed Intelligence** “within machines” - functional subsystems aggregated to create integrated complex systems - System of Systems
- **Internal Intelligence to machines** - internal to each subsystem, sensors, platforms, equipment - thanks to the use of pervasive technologies, aimed at the incorporation and/or interpenetration of “embedding technologies” within the individual subsystems, components or processes.

## PRODUCTS AND PROJECTS

### Products or Services offered

- Consulting on issues relative to Polo SOSIA members.
- Creation and participation in thematic events (workshop, seminars).
- Study, development and support to preparation of research projects.

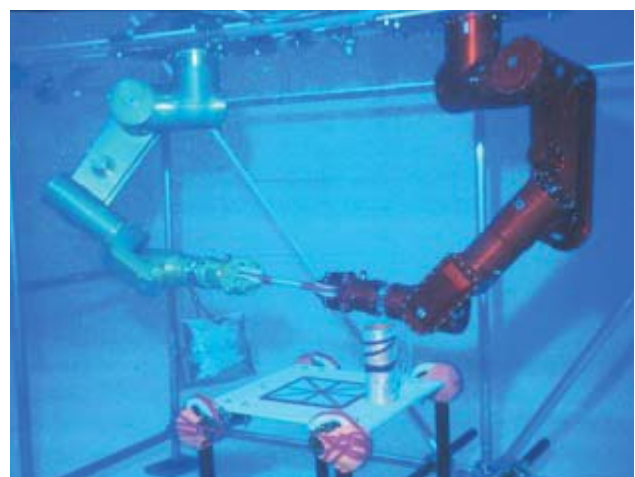
### Projects

Here there are some projects in which one or more members of Polo SOSIA are involved:

- ISMPP - “Integrated Security, Management and Planning of Port operation” - Integrated indoor-outdoor tracking in industrial areas.
- Nanostructured sensors for chemical detection.
- Groups of Cooperating Heterogeneous Autonomous Vehicles.
- Systems of Photometry and Vision for Robotic Automatic Systems.

### Fields covered:

Homeland security, protection of concentrated or distributed critical infrastructure, disaster recovery, crisis management, environment monitoring, risk area monitoring, cyber security, communication systems based on middleware data distribution system, monitoring of complex systems and decision support, evaluation of “swarm centric” systems, technologies for safety and robotics, improvement of processes and of productive functions, sensors and environmental perception, integration of the aspects of: safety, security, mobility, logistics (with Polo T.R.A.N.S.I.T.), and improving of processes in port and airport areas.



**S.O.S.I.A.***System Of Systems and Intelligent Automation*

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**CONTACTS**

Paolo Orlandi - Antonello Gamaleri

**4.400**

SELEX Sistemi Integrati S.p.A employees distributed worldwide (mainly in Italy, USA, UK, Germany)

**65**

Cetena S.p.A. employees, shared in six offices and one laboratory in Italy

**100**

SIIT Scpa is a consortium that aggregates some large industries, and about 100 SME

**200**

Hyla Soft S.p.A. employees; offices worldwide: Italy, USA, Brazil, South Africa, Spain and Australia

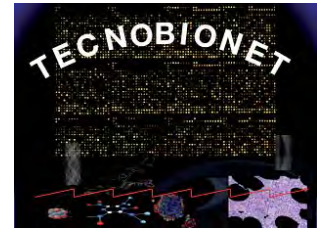
**TEAM POLO S.O.S.I.A.****Coordinator:**

SELEX Sistemi Integrati S.p.A. (www.selex-si.com):

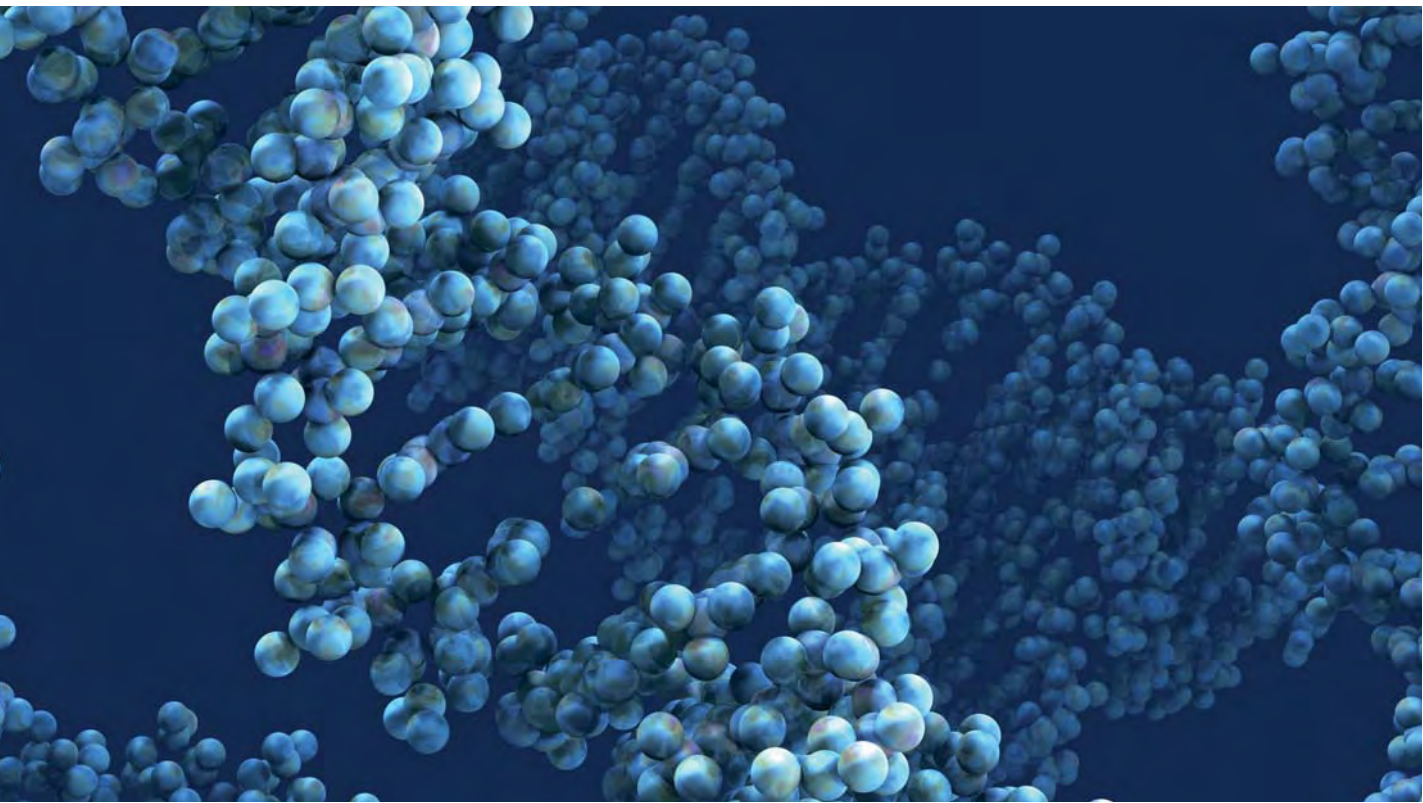
the company designs and develops integrated complex systems for Homeland Protection, systems and radar for air defense, battlefield management, naval warfare, air traffic control, coastal and maritime surveillance.

**Partners:**

- SIIT S.c.p.a. (Sistemi Intelligenti Integrati e Tecnologie): is a consortium consisting of many large companies, about 100 SMEs, Genoa University and CNR.
- Cetena S.p.A.: Research and Consultancy in Maritime Field: Hydrodynamics, Ship Structures and Materials, Noise and Vibration, Vulnerability Signatures and Naval Human Factors, Virtual Reality and Prototyping, Risk Analysis and Simulation Process.
- Hyla Soft S.p.A.: Execution and Control of Production, GIS, Asset Management, Analysis and Process Improvement.
- Selesta Ingegneria S.p.A.: Development and Production Hardware and Software: Physical security (access control and CCTV integration), Human Resources, Production Progress Control.
- Telerobot S.p.A.: Design and construction of machines/systems for automating production processes in the areas: Automotive, Packaging, Postal Applications Off-shore automation of discrete processes.
- University of Genoa: DIST (Department of Computer Science and System Sciences) and DIBE (Department of Biophysical and Electronic Engineering).
- CNR (National Research Council) with its institutes: ISSIA (Institute for Studies on Intelligent Systems and Automation), IMATI (Institute of Applied Mathematics and Information Technologies), IEIIT (Institute of Electronics and of Information and Telecommunication Engineering).



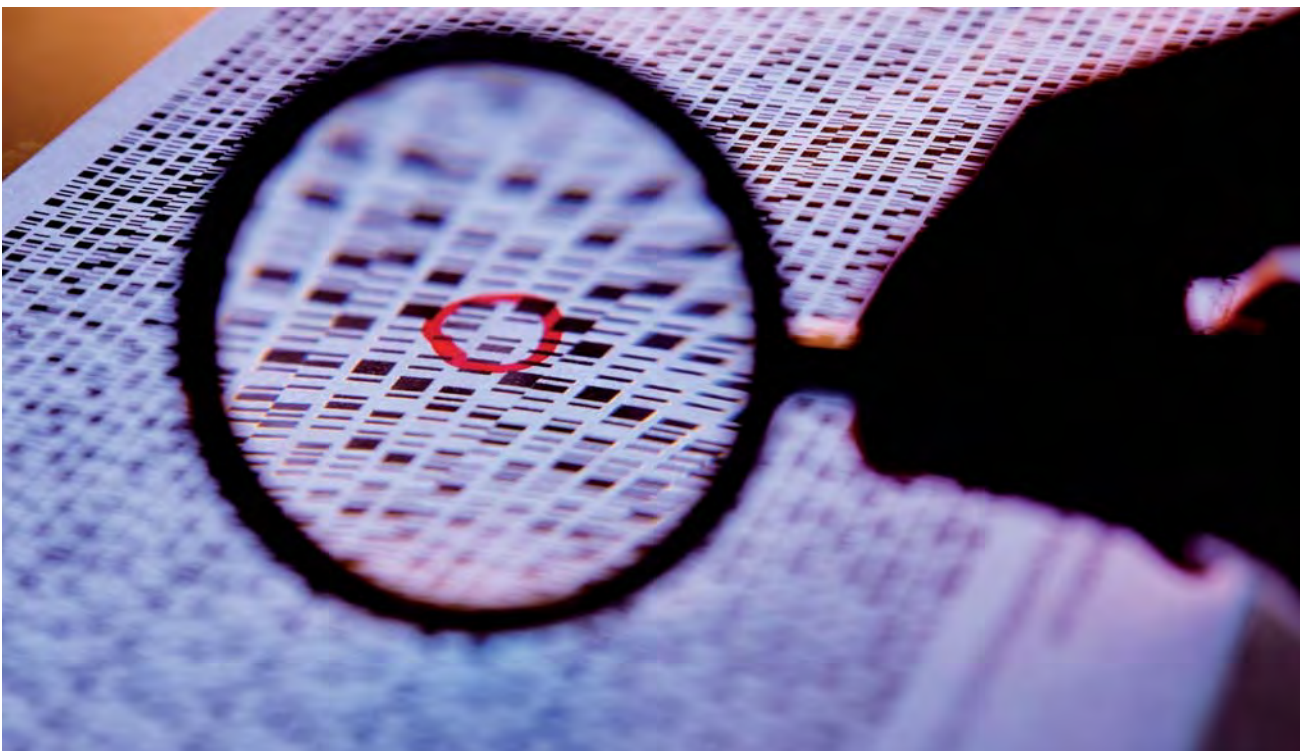
Biotechnologies and Biomedical Technologies Pole



## DESCRIPTION AND SPECIFIC EXCELLENCE

### Mission and background

In recent decades, the development of biotechnologies and biomedical methods in health sciences has assumed the characteristics of a conceptual and methodological revolution. Indeed, the notable complementarity of these two scientific domains has greatly modified the diagnostic and therapeutic approach to several aspects of the clinical workflow: biotech tools study the molecular mechanisms at the basis of most diseases by utilizing cellular and in vitro models while biomedical technologies validate such methods in vivo, to either animal models or human beings. The general objective of Tecnobionet is to enhance this connection between in-depth and in extenso approaches to diagnostics and therapy, by linking the notable wealth of research institutions active in Liguria in the biotech and biomedical imaging domains to a productive framework of national and even European level.



## Alliance/Collaboration

The collaboration among Tecnobionet's partners involves all their potentialities. Specifically, the medical hospitals inspire the scientific effort pointing out clinical problems that can be addressed by means of biotech or biomedical approaches. The research institutions work on the solution of these problems, applying scientific approaches based on biological and computational tools. Lastly, the high-tech industries and SMEs exploit the research results to provide the clinical workflow with innovative products that can even represent breakthroughs in this highly competitive market.

## Technology and Patents

In order to realize its ambitious goals, Tecnobionet devised a methodological roadmap based on five strategic interplaying domains, providing technological products in:

1. Drug discovery, delivery and development;
2. Neuroscience and neuropharmacology;
3. Stem cells and cell therapy;
4. Advanced diagnostics and technology;
5. Imaging tools and development.

Sharing know-how and facilities in these five lines of activity will lead to the development of new products of high technological content and to the definition of innovative processes in the clinical and therapeutic work-flow.

## PRODUCTS AND PROJECTS

### Products or Services offered

Tecnobionet's work-plan will involve two back-office activities concerning:

- the definition of the administrative framework of the structure;
  - the description of all the software and hardware facilities at disposal of the structure;
- and three front-office tasks concerning:

- the realization of procedures for an effective transfer of knowledge, for the protection of the intellectual property and for the optimal exploitation of patents;
- the realization of activity groups for fund raising;
- the identification of procedures for the dissemination of Tecnobionet's activity.

### Projects

Tecnobionet is currently involved in several projects concerned with both industrial research and innovation and basic scientific investigation. Examples of such projects are the production of induced Pluripotent Stem Cells as a tool for translational research; the role of the abscisic acid in some important functional diseases; the characterization of genetic mutations in neoplastic diseases; the integration of PET and MRI data for applications in hematology; the development of imaging tools for positron emission tomography of small animals.





## TECNOBIONET

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### CONTACTS

Prof. Gianmario Sambuceti - President



**9** Public and private bodies

**3** Large enterprises

**9** SME

## PARTNERS

- the University of Genoa, involved with several Departments belonging to both the School of Medicine and the School of Science;
- the Biophysics Institutes of the Italian National Research Council (CNR), whose mission is to apply methodologies and techniques typical of the physical sciences to the study of the structure and functions of biological systems;
- IIT (Italian Institute of Technology) whose mission is to promote Italy's technological development and higher education in science and technology;
- IRCCS San Martino-IST, E.O. Ospedali Galliera, Istituto G. Gaslini, the three biggest Hospitals in Genoa, two of which are also Research Hospitals and one of which is also a University Hospital;
- ABC (Advanced Biotechnology Center), whose mission is to foster innovative research, research and technology transfer and higher education in the area of biotechnology. ABC is the Managing body of TECNOBIONET;
- CeRSAA (Centre for Agricultural Experimentation and Assistance), a special agency of the Chamber of Commerce, Industry, Handicraft and Agriculture of Savona, that is actively involved in experimental, demonstration, training and service activities in floriculture and phytopathology;
- CNRB (National Biological Resource Centre), which groups a network of biotechnological Italian Institutes of excellence that are strongly representative at local and national level within the field;
- Angelini - ACRAF S.p.A., Carestream Health S.r.l., Bureau Veritas S.p.A., three multinational companies producing pharmaceuticals, software for medical imaging and archiving and providing services for health management;
- Arrow Diagnostics S.r.l., Active Cells S.r.l., Biorigen S.r.l., Mastelli S.r.l., Nanomed S.r.l., Omega S.r.l., Paramed S.r.l., Sirius Biotech S.r.l., Tib Molbiol S.r.l., SMEs active in different domains of biotech and medical devices.



“Energy/Environment” Regional Innovation Hub:  
one step closer to a greener future



## DESCRIPTION AND SPECIFIC EXCELLENCE

### Mission and background

Ticass - Innovative Technologies for Environmental Control and Sustainable Development - is a non-profit Consortium including public research bodies (Departments of the University of Genoa), SME's and large Companies. It is the core of the Regional Innovation Hub "Energy and Environment" supported by ERDF in the Liguria Region in Italy.

### Ticass mission

- Building synergies among stakeholders engaged in research, innovation, training, production and use of sustainable approaches and technologies.
- Promoting advanced research on macro domain moving from enhancement of each partner's experience, tools and research.
- Increasing a critical mass in terms of human, technological and financial resources, in order to achieve an internationally recognized level of excellence.
- Creating conditions to attract funds from both private and public investors to finance research and innovation.
- Promoting and improving structures and equipment for research activities.
- Supporting researcher exchange between research bodies and industry.
- Ensuring set-up and implementation of innovative projects between the research system and companies.

### Alliance/Collaboration

Confindustria  
Legambiente Liguria-Onlus  
Centro Interuniversitario per lo Sviluppo della Sostenibilità  
dei Prodotti (Cesisp)  
CNR  
Unioncamere  
Federchimica

### Technology and Patents

Innovative appliances and technologies development for environmental monitoring and chemical and morphological evaluation of airborne nanoparticles.

Design and development of processes based on membrane technologies applied to purification, concentration, separation, recycling and recovery of products for a sustainable development and quality of life improvement.

Development innovative appliances and technologies for captation, purification and reuse of CO<sub>2</sub> from combustion and/or chemical or biological processes.



## PRODUCTS AND PROJECTS

### Laboratories

Ticass has set up a wide network of laboratories covering different expertises in order to meet all the needs arising in Energy and Environment sector.

### Project Management and development

Ticass aims to provide activities focused on promotion of small, medium and large companies participation in national and EU co-funded projects. Ticass services varies from set-up of concepts and subsequent proposals to be presented for funding, to the definition of the partnership, from the support for start-up activities to global project management.

### Consultancy

Consultancy and Assessment related to the following areas: industry chemistry, energy, environment.

### Training

Courses are available for:

- professional training on safety, hygiene and work environment protection;
- highly specialized thematic courses for new employees;
- training-on-the-job or new assignment: 1 to 5 days training packages;
- training on international projects: technical courses for non-EU companies, courses based on European funding;
- main topics covered: Water Treatment, intellectual properties rights, Reach regulation (see website for up-to-date information).

### Reach

Ticass provides support on risk assessment of chemicals resulting from the obligations identified in the REACH regulation and promotes and organizes highly specialized courses such as “Management of Chemicals. Safety and environmental impact of substances from the chemical point of view: integrated approach to legislation CE 1907/06 - Reach” (Master's Degree).

### R&D

Ticass pursues research in cooperation with its partners, combining technologies and know-how in order to achieve more ambitious goals that cannot be reached individually.

Ticass performs, promotes and coordinates research aimed at developing and/or technology transfer for excellence in regional, national and international levels in order to increase the knowledge and introduce innovative technologies.



## PROJECTS

### POR FESR 2007-2013

- Study focusing on complete recovery of oil and treatment of bilge wastewater through innovative processes & technologies.
- Study and development of instruments for monitoring of atmospheric concentration of ultrafine particles and nanoparticles correlated to their speciation.
- Study and development of innovative purification/depuration systems for gaseous effluent from cooking with high energetic and environmental performances.
- Application of the process of spraying powders, PTA-reduced pollution for facings, antiwear and antifriction of rolling cylinders.
- Susteen: environmental sustainability support to SMEs acting in specific sectors.
- Medolico: prevention and reduction of environmental impact of Olive Mill Wastewater.
- Netwater: two-level education system: establishment and promotion of interfaculty Russian Master courses aimed at forming water management cycle specialists.
- Green Ma: two-level education system: promotion of educational process in the field of Energy Saving for Environmental Protection and Control in Russian Federation.

### Integrated cross - border project

Alcotra PIT Tourval and a wide number of initiatives started before the official launch of the Innovation Hub Activities (details upon request).

### Research grants on PO CRO FSE (European Social Fund)

Post graduate projects for funding research grants on the following topics:

Construction Industry: new products with water and pollutants barrier properties, new paints with thermal barrier properties. Environmentally friendly synthesis of potential antitumor activity of hydroxytyrosol derivatives. Air conditioning in urban areas through trigeneration. Ecotoxicological methods according to EC Regulation 1907/2006 (REACH). Thermodynamic and kinetic aspects in high temperatures thermodecomposition processes. Process modeling of molecular thermodecomposition. Implementation of integrated platforms for territorial governance (underground sensors networks). Innovative systems for CO<sub>2</sub> emissions capture. Engineering process "membrane contactor" applied to real processes. Phytoremediation process in urban areas. In vitro scenarios to human health risk by exposure to waste ash and mixtures. Nanoparticles and human health: development of in vitro models to assess the possible toxicity. Innovative techniques for monitoring of emerging contaminants in cool water. Development of protocols for analysis for speciation of atmospheric nanoparticles through electron microscopy.

### Useful additional information

As a regional Innovation Hub our aim is to become a landmark for both Public and Private firms, by creating synergies in order to establish an authoritative network to access international research networks, increase innovation and business opportunities, pool resources and knowledge, transfer technological knowledge in areas affected, integrating within the local economy.



**TICASS**

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segreteria@ticass.it - www.ticass.it

**CONTACTS**

Prof. Gustavo Capannelli  
(President of the Board of Directors),  
Stefano Gianazzi (Program Manager)



**34** Associated companies

**6** Large Companies

**27** SME

**2** Foundations

**2** Research centres

**5** University of Genoa  
(Departments)

**PARTNERS**

The Consortium brings together expertise from different companies, public, and private research centers sharing skills, knowledge, laboratories and equipment resources to achieve their goals.

**Companies**

- A&A F.lli Parodi S.p.A.
- ABIRK Italia S.r.l.
- AMIU S.p.A.
- Analisi e Controlli S.p.A.
- Antea S.r.l.
- Arcadia S.r.l.
- Archimede Ricerche srl
- Boero Bartolomeo S.p.A.
- C.P.G.Lab S.r.l.
- Circlecap S.p.A.
- Fondazione CIMA
- CeRSAA
- Siit PMI
- Erde S.r.l.
- Eurochem Chemical Management Italia S.r.l.
- Faci S.p.A.
- Fondazione AMGA
- Gis & Web S.r.l.
- Gisig
- Giuseppe Santoro S.r.l.
- I.A. Industria Ambiente S.r.l.
- Iplom S.p.A.
- Ireos Laboratori S.r.l.
- Ireos S.p.A. Iren Acqua Gas S.p.A.
- Ismar Chimica S.p.A.
- Istituto Italiano della Saldatura - Ente Morale
- Italiana Coke S.r.l.
- Istituto Nazionale di Fisica Nucleare - INFN
- Itec Engineering S.r.l.
- P.&T. s.r.l. - Port and Territory
- Laboratori merceologici della Camera di Commercio di Savona
- Medservice S.r.l.
- Mesa s.r.l.
- Servizi Ecologici Porto di Genova
- Servizi Industriali Genova SIGE S.r.l.

**University of Genoa - Departments**

DCCI • DIFI • DISTAV • DICCA • DIME

# TRANSIT

Technology and Research on Security and Transport Intermodality



## DESCRIPTION AND SPECIFIC EXCELLENCE

### Mission and background

T.R.A.N.S.I.T. originated from the need of create a regional cluster of excellence, focused on the main following areas:

- ITS systems and solutions
- Operation support and management systems
- Safety and security
- Telecommunications

In Liguria, mainly concentrated in Genoa, there is an extremely large and qualified group of Companies (both Large and Medium/Small), University Departments and Research Centers operating for many years in the previous domains, having significant know-how, generally operating with no structured synergy.

The main mission of T.R.A.N.S.I.T. is to promote the share and integration of knowledge and experience, through a structured cooperation among the Partners, aimed at increasing their competitiveness and creating new business opportunities, for instance through joint participation in public funding tenders.



### Alliance/Collaboration

T.R.A.N.S.I.T. has much active collaboration at various levels, some of the most significant are the following:

- institutional level: Comune di Genova, Regione Liguria, Port Authority;
- business level: Confindustria, Transport & Commercial Associations, TTS Italia;
- other Regional Districts: Piemonte, Veneto, Toscana, Lazio, Campania;
- international level: Pole Mov'EO, Pole SCS, Pole Capenergies.



## Technology and Patents

Technologies are available through T.R.A.N.S.I.T. Partners; some of the most relevant are the following:

- ITS and Infomobility:
  - Public transport management
  - Road-mobility management
  - User information
  - Modelling and forecasting tools
- Operation Support & Management Systems:
  - Freight management
  - Data integration and dispatching
  - Integrated Logistics
  - Decision Support Systems
- Safety and Security:
  - Surveillance and Access Control
  - Dangerous goods management
  - Port Security
  - Telecommunications Security
- Telecommunications:
  - TLC Networks for Private and Secure Communications, both civil and military
  - TLS Specific solutions for transport operators and emergency services



## PRODUCTS AND PROJECTS

Trough specific associations with its Partners, T.R.A.N.S.I.T. is capable of providing a wide range of advanced products and solutions, combining consolidated and new technologies, covering all the application domains listed previously. For a detailed list of these, refer to the web-sites and offer portfolio of each Partner.

**T.R.A.N.S.I.T.**

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**4** Research Institutions

**4** Large Enterprises

**8** Medium/small Enterprises

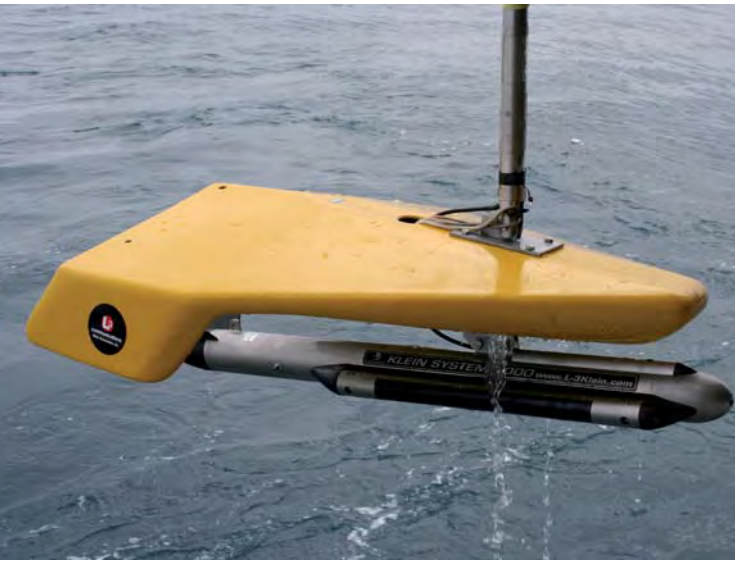
**PARTNERS**

Together with the list of the Partners, a short description of the specific areas of competence in the domain addressed within T.R.A.N.S.I.T.:

- SIIT (Ligurian District on Integrated Intelligent Systems and Technologies) Technological district managing T.R.A.N.S.I.T. pole, joining most industries, academic and research bodies operating on the regional territory: around 20 Large Industries, more than 100 Medium and Small Companies, University of Genoa, CNR (National Research Center);
- Selex Elsag , ITS, infomobility, security, logistics, telecommunications;
- Softeco Sismat, ITS, infomobility and freight management applications;
- Aitek, ITS, port-security, road safety;
- RINA, traffic monitoring, safety and security standardization, port-city logistics;
- D'Appolonia, ITS, safety and security, decision & support tools;
- Selesta Ingegneria, Access control, security;
- University of Genoa, TLC and ICT architectures, mobility and logistic modeling;
- CNR (National Research Council), Technologies for transport, modeling, security in telecommunications;
- IIT Istituto Italiano di Tecnologia, smart materials, nanotechnologies;
- Selex Sistemi Integrati, civil system for traffic management, logistic support, homeland security;
- Hyla Soft, automotive, utilities;
- Darts Engineering, smart mobility, ICT solutions;
- Gruppo Sigla, industrial automation;
- G.Ter, geomatics;
- Iris, ICT solutions.

Marine Innovation becomes PoloDLTM





## DESCRIPTION AND SPECIFIC EXCELLENCE

### Mission and background

Polo DLTM is charged with managing the Marine and Environmental Research and Innovation Pole (PoloDLTM) and its activity at local and global level. PoloDLTM was set up to support enterprises to share know-how and expertise, in their fields of competence, to help technology transfer and interrelations between key players based in the Region. The focus is on research, innovation and education.

### Alliance/Collaboration

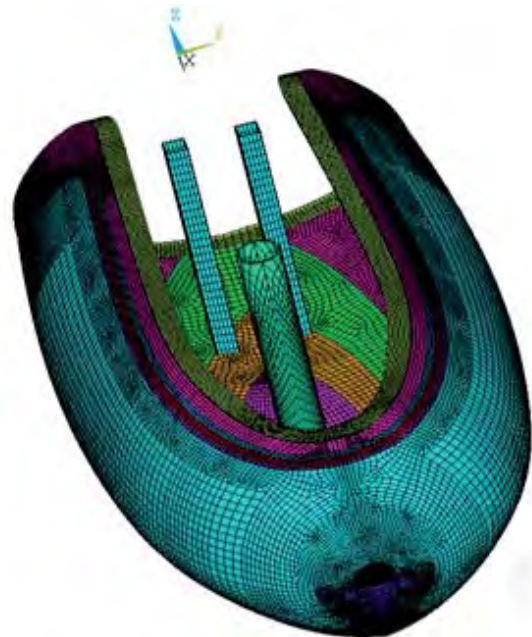
Polo DLTM is part of the Italian and European Waterborne Technology Platform, collaborates with Pôle Mer Bretagne (Bretagne and Provence Marine Cluster) and Pôle Mer Paca (Alps e Cote Azure Cluster) and has established several contacts with similiar European contexts to develop projects at EU level.

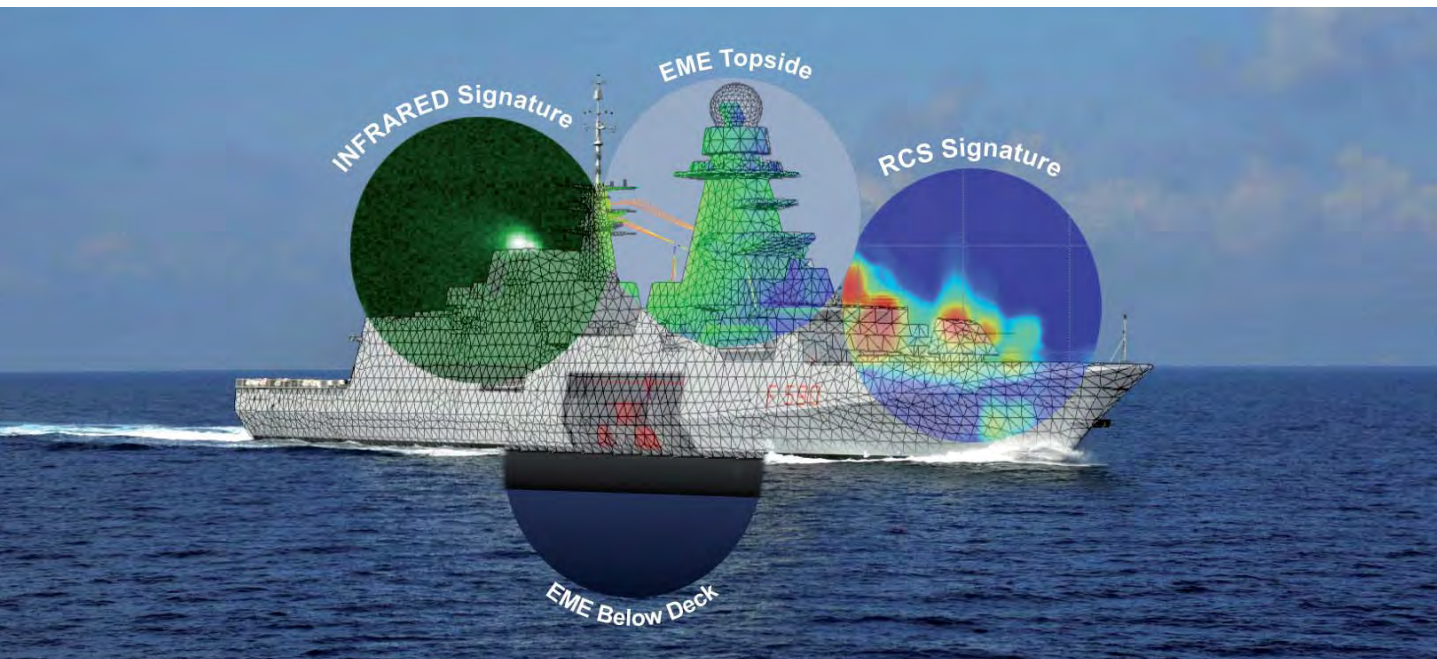
## PRODUCTS AND PROJECTS

### Products or Services offered

PoloDLTM offers the following services, to meet the needs brought out from the survey carried out within the seaborne Ligurian sectors.

- Assistance for R&D projects, providing project management skills to organize and administer project development and support access to funding schemes.
- Lectures and innovation technology workshops.
- Evaluation of SME competitiveness assessing companies on the market compared to their primary competitors.
- Technical advice to SMEs on their compliance with maritime laws, directives and regulations.
- Priming the Pole's members internationally through Tecnomar Consortium, especially with Turkey and Atlantic Canada.
- Matching initiatives through Tecnomar Consortium to represent SMEs.
- High Performance Computing resources and software for advanced design and simulation in a Cloud environment.
- Training courses for the use of advanced design and simulation tools.





## Projects

A total amount of 100 million of euros of research, innovation and education projects, over five years. DLTM is creating three Cooperative Research Labs to support innovation, encourage know-how and experience exchange, technology transfer, interconnection and information sharing between research and industrial players:

- MPESA Lab (Measurement, Design, Advanced Simulation lab): emissions measurement and monitoring, energy efficiency, innovative design and optimization of maritime vessels using advanced software.
- HPC Lab (High Performance Computing center): creation and optimization of advanced software and platforms for parallel calculations in the relevant areas of the Cluster to develop the system functionality further in addition to industrial innovation.
- MARE Lab (Sea lab): monitoring and safety of marine environment, also through the use and testing of underwater sensors.



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9

R&D Large National projects

1

Postgraduate Training project

80

Post-Doctoral Fellowships

32

Regional research and innovation projects

3

Cooperative labs

4

Phd scholarships

## PARTNERS

25 Ligurian-based large companies, almost 100 small and medium sized enterprises grouped in the Tecnomar Consortium, together with all the public and private research organizations are members of the Polo DLTM.

The areas of the competence are: naval technologies for both the defense and the civil sectors, shipbuilding and leisure boat crafting technologies and monitoring, remediation and security of the marine ecosystems.

More specifically, these activities include civil and military naval shipbuilding, leisure boats and mega yachts, oil and energy offshore, port and naval systems, mechanical and fluid dynamics equipment, plants for underwater and naval applications, security and logistics, materials for marine applications.

Research and innovation for sustainable development



## DESCRIPTION AND SPECIFIC EXCELLENCE

### Mission and background

ES was established to bring together Ligurian companies and research institutes for the purpose of exchanging knowledge and experience and developing research and innovation activities that focus on:

- the use of energy production plants that utilise renewable sources;
- the reduction of the environmental impact of fossil fuel generation systems;
- the efficient management of energy infrastructures.

These activities, consistent with community and regional energy and environmental policies, are considered indispensable for the proper sustainable development of the territory.

The project is the end result, on one hand, of the exchange of sustainable development objectives and priorities among all ITS participants and, on the other, of the increasingly deep-rooted presence in the area of highly developed, energy-related expertise in the university and production contexts.

ES is located in Savona, and specifically at the University of Savona Campus and in the Ferrania Technology Park (Cairo Montenotte), sites with adequate areas for hosting research infrastructures, test centres, dedicated instrumentation and calculation laboratories for the Cluster's innovation activities.

The Sustainable Energy Pole is managed by IPS, the Savona Development Agency.



### Alliance/Collaboration

Among the objectives of the ES is the development of partnerships with Italian and foreign Excellence and Innovation Clusters belonging to the same technological area of sustainable energy.

The ES has entered into partnerships with international research centers including the Pôle de compétitivité CAPENERGIES, the National School of Energy and Environment Polytechnic Institute of Grenoble, the National Energy Technology Cluster and in the framework of the participation to Region of Knowledge (Seventh Framework Programme) with Région Provence-Alpes-Côte d'Azur, South Transdanubian Regional Innovation Agency, University of Pécs, Intelligent Integrated Systems Technologies, Agenzia Regionale per l'Energia della Liguria, Business Region Göteborg, Technical Research Institute of Sweden, Västra Götalandsregionen, Energie Campus Nürnberg.



## PRODUCTS AND PROJECTS

### Products or Services offered

ES will utilise owned infrastructures and technical-scientific equipment and others made available by other exponents of the group. A part of these infrastructures will be located at the University of Savona Campus (combustion diagnostics and calculation centre) and another part at the Valbormida Technology Park (characterisation of materials).

### “Laser Induced Fluorescence” and “Particle Image Velocimetry” combustion diagnostic systems

ES acquired an LIF/PIV combustion system made by Dantec Dynamics to detect the elements OH, NO and CH and to simultaneously measure the fluid field of motion.

The system consists of diagnostic instrumentation designed to study combustion in gas turbines, boilers and industrial furnaces, with a thermal power of up to 2 MW and a pressure of up to 6 bar.

The purpose is to study the characteristics of the reactive flows with analysis of the various chemical species, also as a trace, through measurements carried out using LIF (Laser Induced Fluorescence) and PIV (Particle Image Velocimetry) systems. The LIF consists of a dye laser with a diffraction grating of 2400 l/mm fed by a 850mJ@1064nm ND:YAG laser.

The PIV consists of a Dualpower 200 mJ@532nm dual pulsed and double cavity laser.

The LIF and PIV lasers can be combined to obtain the same optical path. The Imaging system consists of two HiSense 1344x1024 pixel CCD cameras with a quantum efficiency of more than 70% at 450-550nm and a velocity up to 115 fps.

### Soon-to-be-acquired infrastructures

ES intends to acquire the following main equipment within the next two years:

1. Pilot instrumentation for the functional and design characterisation of biomass combustion systems.
2. Climatic cell and instrumentation for material characterisation (salt spray tests, thermal cycle programming, rigidity measurements and dielectric losses).
3. Material characterisation instruments for energy applications mainly in the solar sector.
4. Hardware and software for the calculation and simulation centre: HPC cluster and commercial calculation software for analysis codes and technical-financial simulations.
5. Digital oscilloscope.

### Infrastructures available to the Pole but not on an exclusive basis

Based on agreements with members or third parties, the ES will utilise other infrastructures in addition to those owned by directly.

The most important include the existing and soon-to-be-established laboratories and equipment at the Savona Campus - creating synergies with the “Energy 2020” Research Centre, promoted by the Faculty of Engineering at the University of Genoa and utilising the integrated and modular real-time simulation system for mechanical,



thermal and electric plants - and at Valbormida Technology Park - that will acquire instrumentation for the optical and morphological characterisation of materials for energy applications and solar measurement and simulation systems (light-activated device characteristic detector, current-voltage and capacitance-voltage characteristic detector) in order to provide its members with a complete and functional set of research and testing infrastructures.

Lastly, another synergetic part of the park's research activities will be the "Smart Polygeneration Microgrid" (SPM), an experimental and demonstrator infrastructure of excellence capable of increasing the quality of scientific research by the Faculty of Engineering and of creating a point of attraction toward the outside world.

## Projects

Presently, the ES has participated as an operating partner in regional, national and European calls for tenders.

At European level, the Pole has participated to the Seventh Framework Programme and to the Competitiveness and Innovation Framework Programme.

At the regional level, the Pole is participating to a regional call reserved to members for the financing of research projects and experimental development.

At the national level, the Pole is participating to a national call for the establishment of a National Energy Cluster.

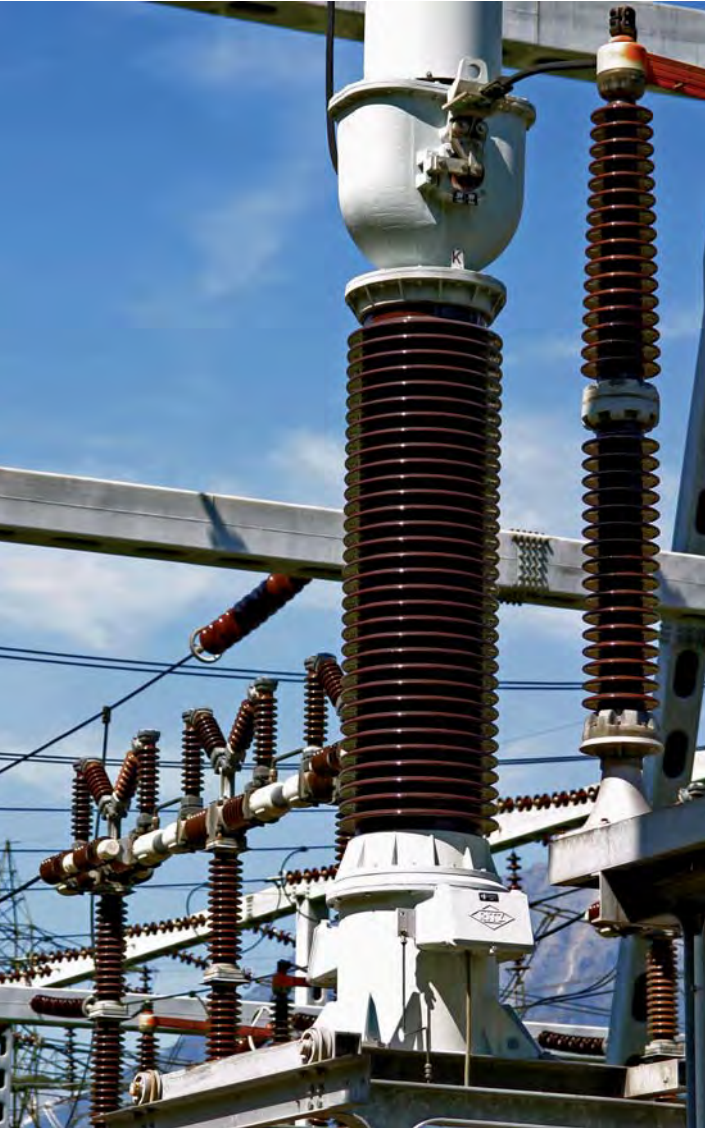
## OBJECTIVES

The general objectives are:

1. to overcome the fragmentation of the territorial economic system through establishment of operational partnerships in R&D, innovation and training;
2. to provide the territory with a high-level and shared design-planning and coordination instrument;
3. to provide companies with high added value services to support start-ups and knowledge-based enterprises;
4. to optimise current know-how and planning systems;
5. to enhance the attractiveness of the territory in terms of public and private investments;
6. to activate qualified services to support the ES companies as preliminary activities for innovative and experimental projects and to support the subsequent activity phase;
7. to develop partnerships with Italian and foreign Centres of Excellence and Innovation that are part of the same technological area of sustainable energy;



# ENERGIA SOSTENIBILE



8. to develop proposals for training and personnel qualification activities, focusing regional support actions on specific needs;
9. to foster the development of new entrepreneurship, through “incubation” activities;
10. to act as an intermediary for the member companies intent on interfacing with other Ligurian and non-Ligurian innovation centres.

ES general objectives will be pursued through technical-scientific research activities in the areas of intervention, identified starting from the specific characteristics of the local production system and from the territorial supply chains with the greatest growth potential. In brief, these are:

1. Renewable Energy Generation
  - 1.1. Photovoltaic
  - 1.2. Wind
  - 1.3. Biomass
  - 1.4. Fuel cells
  - 1.5. Decision support systems
2. Generation of energy from highly efficient fossil fuel with ultra-reduced emissions of greenhouse gas and pollutants
3. Transmission, distribution and intelligent management of energy
  - 3.1. Energy accumulation



## ENERGIA SOSTENIBILE

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41

Number of members

10

Large firms

26

SMEs

5

Research centres

## PARTNERS

ES includes independent companies (innovative start-ups, small, medium and large enterprises) as well as research institutions to carry out activities in the sustainable energy sector with the objective of stimulating innovation.

The Pole will consist of the most important companies for the area in the fields of energy production, transport and management, production of plants and components for the energy sector and advanced services.

The Cluster comprises 38 members including:

- 30 companies including 10 large firms and 23 SMEs
- National Research Council
- National Institute of Nuclear Physics
- University of Genoa
- Regional Centre for Experimentation and Agricultural Assistance
- Val Bormida Technology Park

The participation of players headquartered in Liguria is supported by cooperation with international research centres. The ES is open to participation by companies and research centres.