



MANUMIX
Interreg Europe



European Union
European Regional
Development Fund

RIS3 Strategy of Piedmont

Piedmont Region



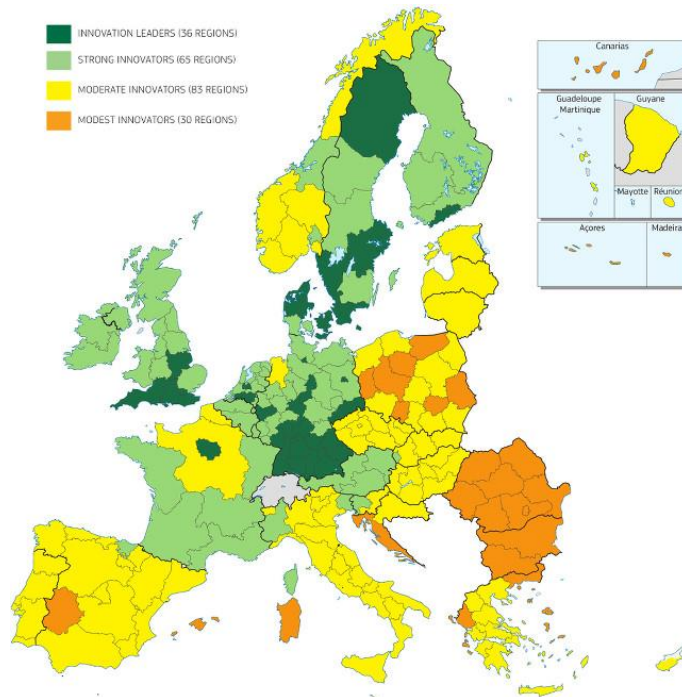
- ✓ Over 200 private and public R&D centers
- ✓ 380 laboratories
- ✓ 4 universities
- ✓ 7 innovation clusters

- ✓ Population: 4,404,000 inhabitants
- ✓ Density: 173 inhab./Km²
- ✓ 8 Provinces
- ✓ 1.207 Municipalities

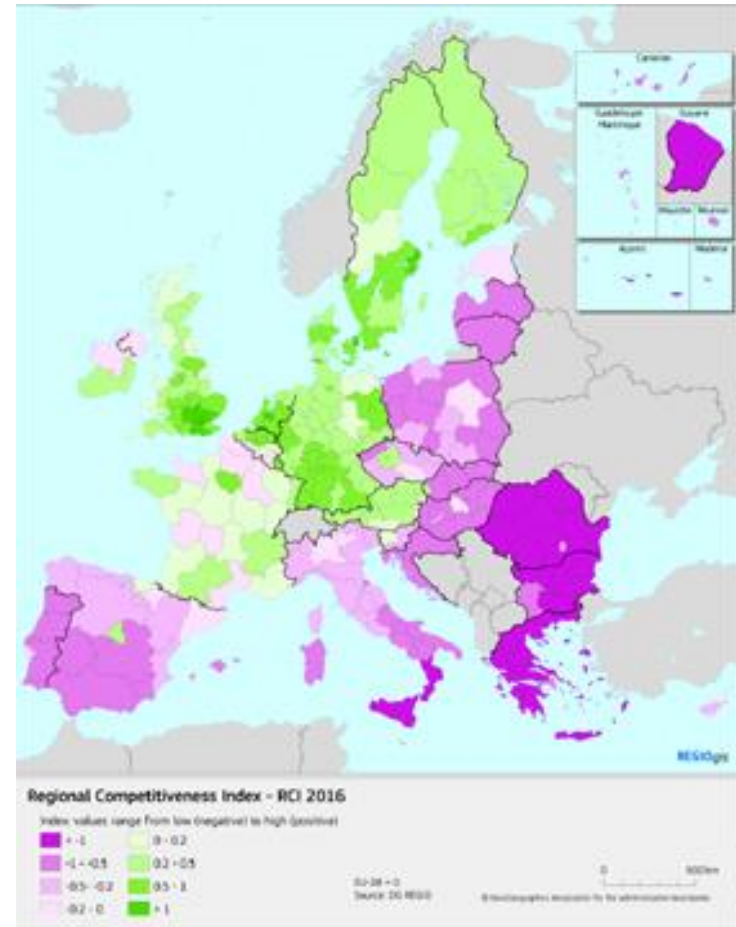
- ✓ More than 440,000 enterprises
- ✓ € 123 billion GDP
- ✓ R&D intensity 1,82% (% GDP invested in R&D, public + private funds)
- ✓ More than 26,000 R&D employees

The positioning of Piedmont

Rising international competitiveness rankings is a general goal of the regional strategy.



Regional Innovation scoreboard 2016
and Regional Competitiveness Index 2016



Smart specialisation strategy

A primary requirement for investment support with the aim of strengthening research, technological development and innovation

5 basic elements

- Focused on selected priorities.
- Built from strengths, competitive advantages of the region.
- Involve the private sector
- Encourage stakeholder engagement.
- Being evidence-based, based on measurable actual results.

With the aim of

- Identify resources and features and highlight competitive advantages.
- Strengthen regional innovation systems, improve knowledge and spread the benefits of innovation in the regional economy.

The vision

Support and accelerate a process of transforming industry through research and innovation policies into selected areas of innovation and addressing new challenges and new needs by investing and consolidating the skills in the health and well-being of citizens.

6 innovation areas

- 1. Aerospace**
- 2. Automotive**
- 3. Green Chemistry / cleantech**
- 4. Mechatronics**
- 5. *Made in***
- 6. Health**



The choices

Mappatura Invitalia	Politiche regionali	Capacità progettuali	Cluster nazionali	Focus group e scelte
Aerospazio	✓	✓	✓	AEROSPAZIO
Agrifood	✓	✓	✓	MADE IN PIEMONTE
Made in Italy (tessile)	✓	✓		
Automotive	✓	✓	✓	AUTOMOTIVE
Chimica e cleantech	✓	✓	✓	CHIMICA V./CLEANTECH
Edilizia/tecnol. ambienti di vita	✓	✓		
Economia del mare				
Energia e ambiente	✓	✓		
Ind. culturali e creative				
Mobilità e logistica			✓	
Scienze della vita	✓	✓	✓	SALUTE E BENESSERE
Smart communities	✓	✓	✓	
Smart manufacturing	✓	✓	✓	MECCATRONICA

Innovation areas

Aerospace

140 local units¹ and more than 15,000 employees



5 big player e 300 SME

World leadership

High technology and export intensity

Participation in international programs

Partnership network at regional, national and European level.

APPLICATION AREAS

Remotely piloted aerial systems

Eco-friendly motor solutions

More electric aircraft

Clean sky

Space exploration

Orbit Management Systems

Engineering, logistics and control services

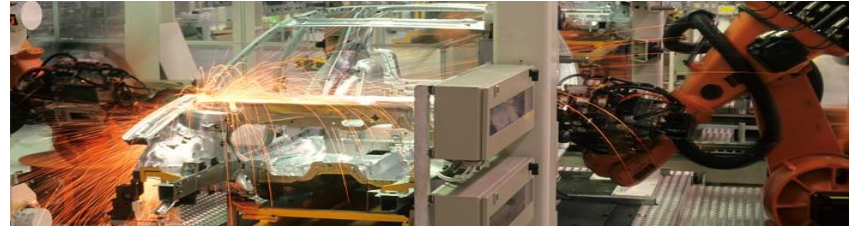
Innovative satellite platforms (excluding payload)

¹ The local unit is an enterprise or part thereof (e.g. a workshop, factory, warehouse, office, mine or depot) situated in a geographically identified place. At or from this place economic activity is carried out for which - save for certain exceptions - one or more persons work (even if only part-time) for one and the same enterprise -The Organisation for Economic Co-operation and Development (OECD)

Innovation areas

Automotive

2,600 local units and 82,000 employees



Industrial leadership and one of the 5 "intensive automotive" European clusters

High engineering skills on green cars

GHG Emission Reduction Technology, Sustainable Mobility, Safety Systems (active, passive), R&D

Wide network of universities, excellent research centers, international companies.

Participation in National and International associations

APPLICATION AREAS

Innovative engines and traction systems

Safe and efficient components

ADAS (Advanced Driver Assistance Systems) systems

Vehicle-to-Vehicle Communication (V2V), Vehicle-to-Infrastructure (V2I), infomobility and infotainment

Fleet management and intermodal transport

Smart ticketing and geolocalised IT systems (POI)

Citylogistic, fleet and mean for mobility

Non-traditional high performance materials and reduced environmental impact

End of life vehicles technologies

Innovation areas

Green Chemistry/cleantech

3,750 local units and 48,000 employees

“Innovation leader” in chemicals from renewable sources

Bioindustries investing in RDI projects and training

Innovative products with high added value (biochemicals and bioplastics).

Collaboration between industry, agriculture, research, environmental services and utilities.



APPLICATION AREAS

Waste management, treatment and exploitation / recovery

Waste water management, treatment and exploitation / recovery

Secondary raw material management

Technologies for remediation / clean-up of polluted sites

Biorefinery and non-food biomass conversion plants for the production of chemicals, biofuels, bioplastics

Innovation areas

Mechatronics

35,000 local units and 170,000 employees

Pervasive cross fertilization among different industries (aerospace, automotive, production systems,..)

Strong track record in Mechanics, Electronics, ICT and control science

Valuable asset to the regional industrial development

Technology transfer from universities and research centers to start ups, SMEs, Large Enterprises



APPLICATION AREAS

Smart Products: Applications for Consumer and Industrial Products

Flex & Green Processes: Applications for Flexibility, Adaptation and eco-efficiency and eco-compatibility of production processes

Technologies

- Virtual performance simulation
- Mechatronic Automation
- Human Machine Interface
- Micro-nano technologies
- Photonics applications
- Manufacturing transformation

Innovation areas

Made in Piedmont

Two relevant industrial sectors (agro-food, textiles and clothing) with 37,000 local units and 172,000 employees

Districts and highly specialized sectors (manufacturing, technology, R&D)

Innovations applicable to almost the entire manufacturing areas

Sustainability, transformation of traditional productions, integration with public services and public welfare, innovation in the use of new materials and reuse of second raw materials



APPLICATION AREAS

Traceability, tracking, product authentication

Quality, safety and composition of foods, processes, packaging

Marketing, logistics

Reduced environmental impact and energy

Precision farming and precision livestock

Mechanization, efficiency and safety of agricultural machinery

Selective protection of cultures, probiotics and nutraceuticals

Textile substrates and special materials

Wearable technologies/smart textiles, protective clothing

Textiles for medical applications

Textiles for buildings / means of transport

Innovation areas

Health and well-being

1,800 local units and 7,000 employees in pharmaceuticals, medical instrument manufacturing, R&D in biotechnology.

Technological platforms and facilities.

Product innovation for pathologies requiring new drugs and diagnostics.

Industrial skills in key therapeutic areas and regenerative medicine.

Areas of excellence in molecular biology, imaging, oncology, mCNS, cardiology, regenerative medicine, molecular diagnostics, orthopedics.

International Research Network.

A research institute specialized in oncology.



APPLICATION AREAS

eHealth

Customized medicine

Imaging

Diagnostics

Regenerative medicine

Prosthetic

Scientific instrumentation

Pharmaceutical biotechnologies

Bioinformatics and ICTs for health research

Oncology, cardiovascular, metabolic diseases

Innovative and targeted pharmaceutical approaches

Bioengineering and surgical robotics

Advanced biomedical solutions

Trajectories

SMART

Enabling technologies for the production sectors, using recognized international expertise in ICT, but also in mechatronics, micro nanotechnologies, new materials, additive technologies, sensors, embedded electronic systems, advanced logistics in areas of priority innovation.

The use of expertise and efficiency improvement processes in the innovation areas to support a more sustainable regional economy, contributing to the achievement of the objectives of the European Environmental and Energy Policies.

RESOURCE EFFICIENCY

Key Enabling Technologies (KETs) contribute to the competitive positioning of the regional production system and at the same time represent an effective tool for medium / long-term challenges

BIOTECHNOLOGIES

ADVANCED PRODUCTION SYSTEMS

PHOTONICS

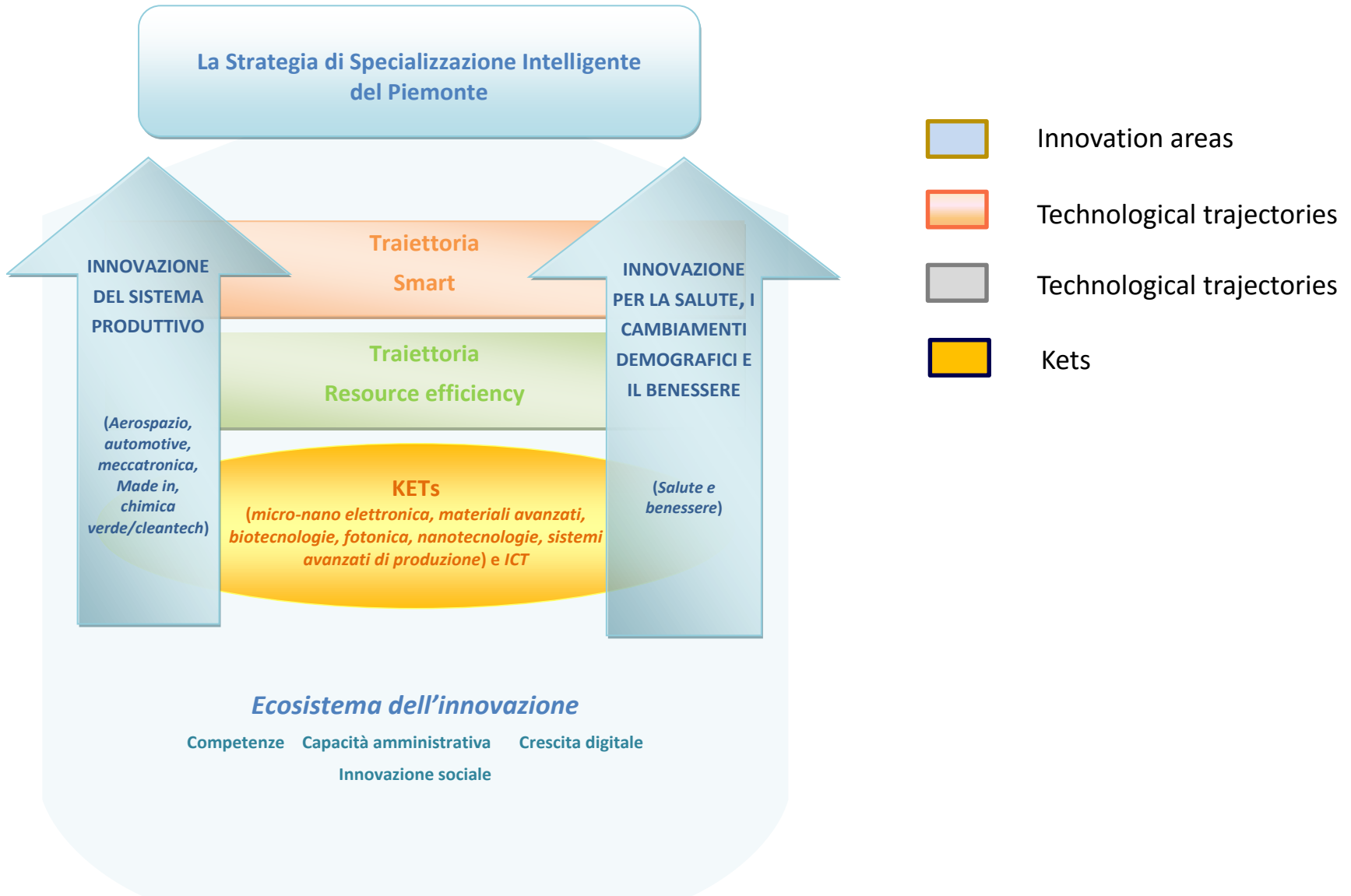
ADVANCED MATERIALS

MICRO-NANO ELECTRONICS

NANOTECHNOLOGIES

ICTs

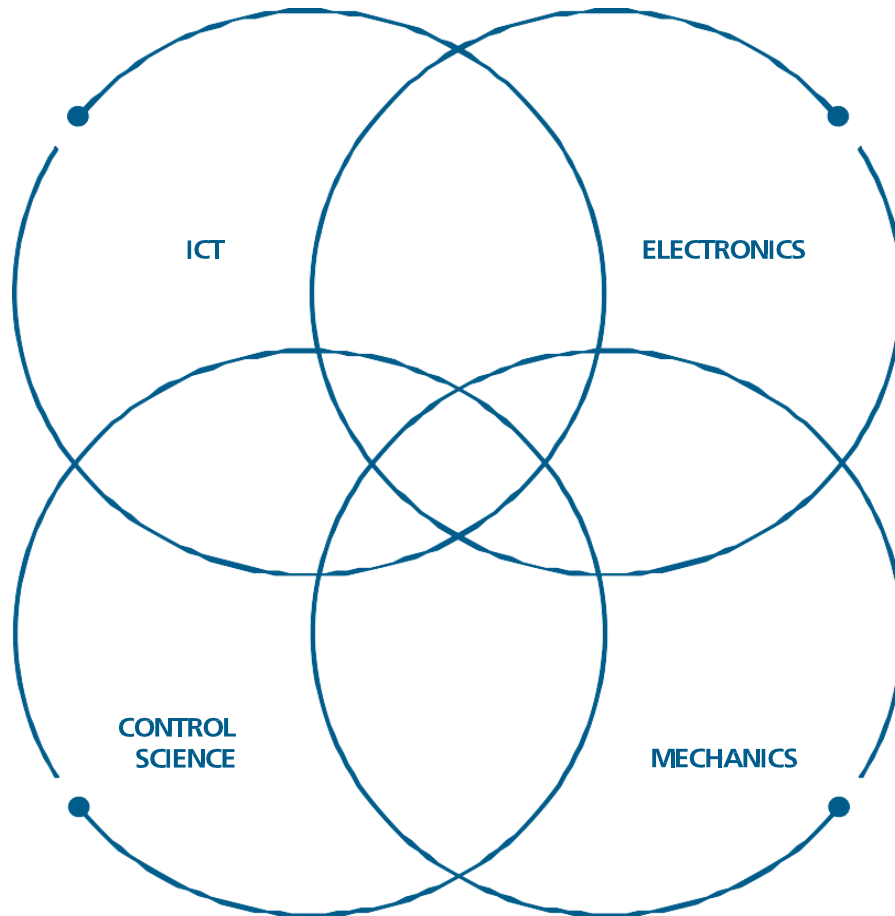
The Piedmont strategy at a glance



Focus on Mechatronics and Advanced Manufacturing

Mechatronics

Mechatronics is defined as a multidisciplinary field of science, the integration of Mechanics and Electronics, control science and ICT



Background

Piedmont has a strong history and industrial footprint in Mechanics and Electronics, integrated with control science and ICT

Mechanics

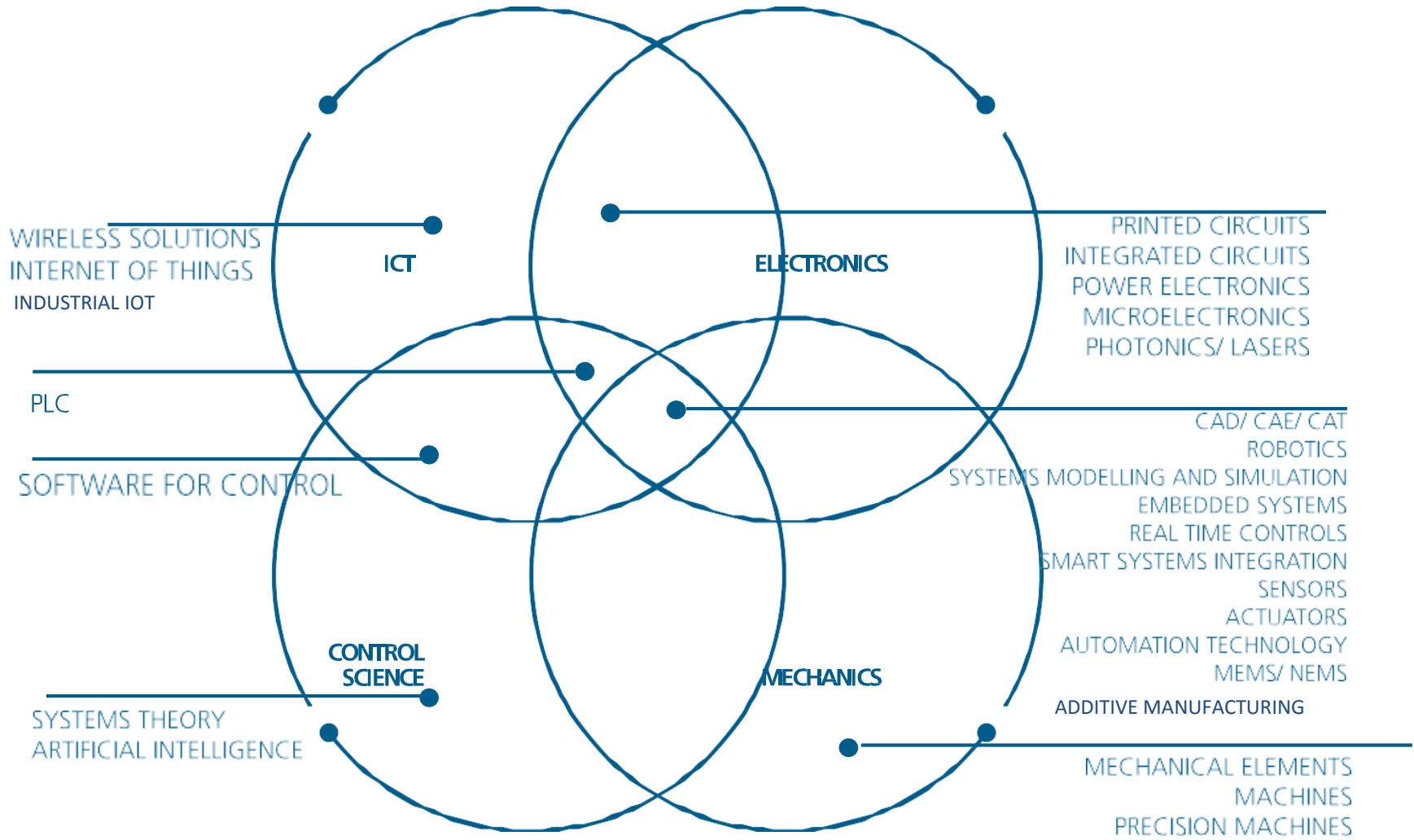
- Fiat was founded in Turin in 1899, and grew in the 20th century as a conglomerate with different business (automobiles / trucks / railway / airplanes / power turbines)
- In the last part of the 20th century and the 21st century large part was sold to large companies (ALSTOM, GE, LEONARDO, THALES)
- Olivetti was founded in Ivrea (Turin) in 1908, specialized in typewriting machines.

Electronics & ICT

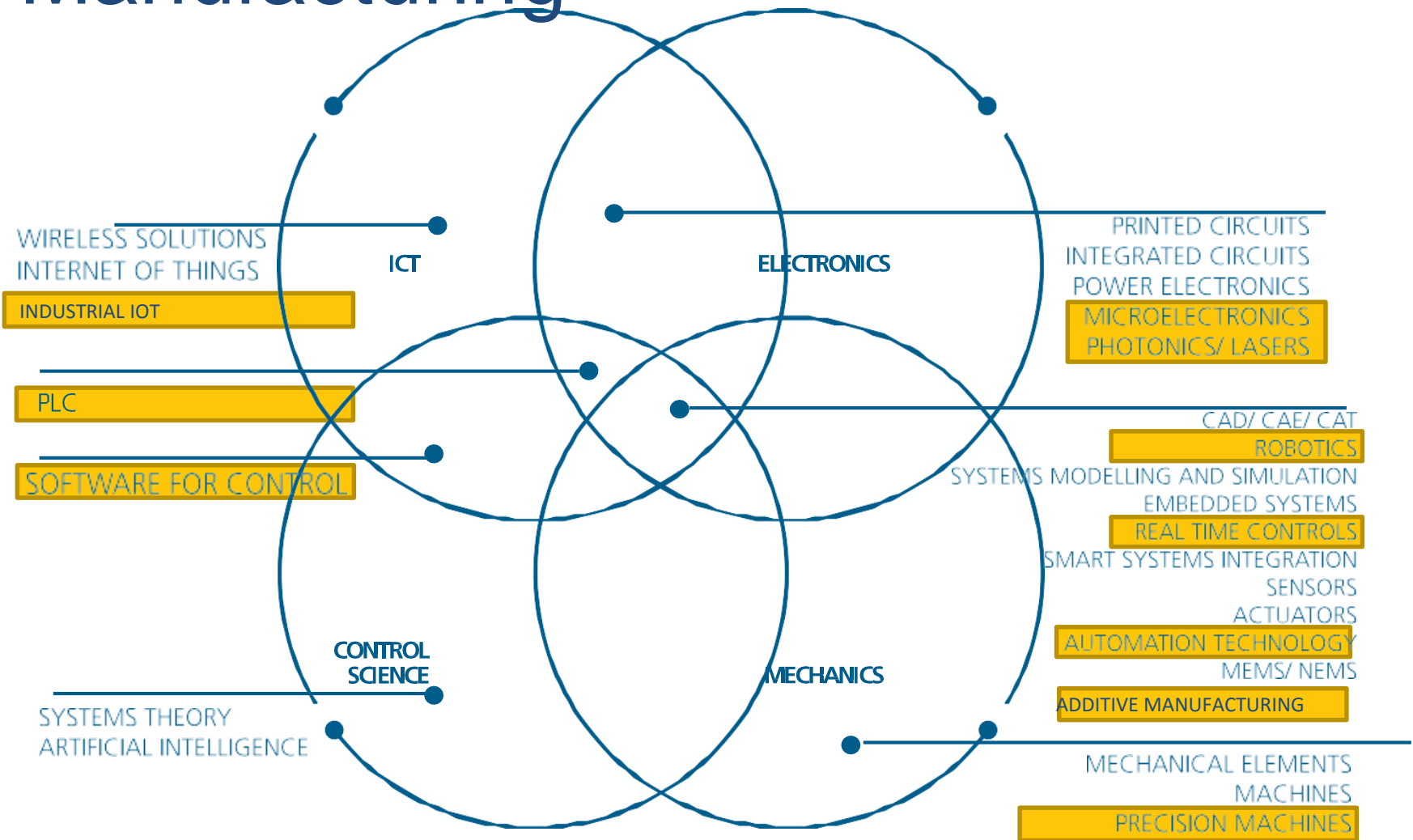
- Olivetti, starting from 1960, launched one of the first mainframe computer (Elea 2003) and continued to develop Personal Computers.
- In the same years, the controlled company O.M.O. developed N.C. manufacturing machines
- COMAU, a Fiat owned company, developed CNC manufacturing machines and robots

A huge number of companies, suppliers of parts, subsystems, SW and production machines continued to grow

Mechatronics



Mechatronics and Advanced Manufacturing

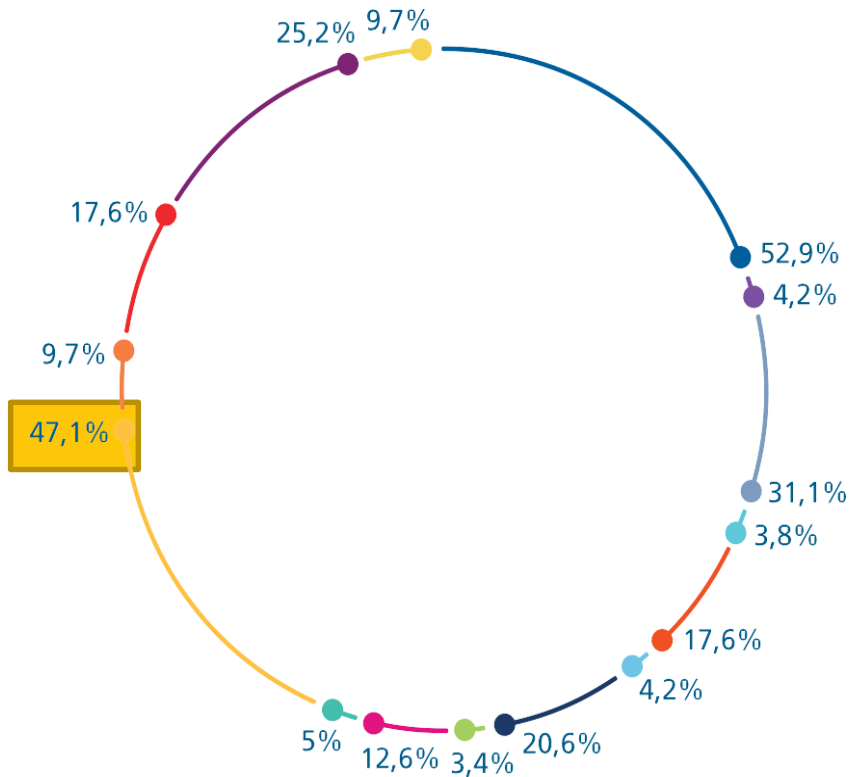


MESAP Regional Innovation Cluster



- MESAP has been in **Turin** since 2009
- It was the Piedmont Innovation Cluster for **Mechatronics and Advanced Production Systems** until 2015
- Today it has become the innovation cluster for **Smart Products and Manufacturing**
- It has been **co-funded by the Piedmont Region** with the ERDF 2007-2013 and 2014-2020 today
- It is managed by the Turin Industrial Union service company

Members' industrial sectors



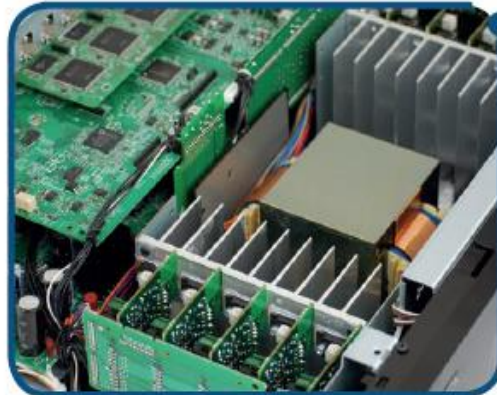
- AUTOMOTIVE AND OPERATIONS MACHINES
- FOOD AND AGRICULTURE
- CONSTRUCTION, DOMOTIC
- CHEMICAL
- NANOTECH
- NAUTIC/ NAVAL
- TEXTILE
- PRINTER
- ENERGY AND ENVIRONMENT
- RAILWAY
- ICT
- HEALTH
- HOUSEHOLD MACHINES

Members' value chain

R&D Prototyping & testing



Parts/Systems



Production/Assembly



MESAP Regional Innovation Cluster National & International Networks



National networks

- Founding member of the "Smart Factory" National Technological Cluster (CFI-Cluster Fabbrica Intelligente) since 2012
- Member of the "Transport" National Technological Cluster (**Trasporti Italia 2020**) since 2017



International networks

- Member of ETP EPoSS and EFFRA since 2016
- Member of Silicon Europe Alliance since 2017
- Member of Di. Ma. Hub (I4MS) since 2016



Dima-hub



DIMA-HUB is a I4MS Project.

I4MS (ICT Innovation for Manufacturing SMEs) is the initiative promoted by the EC to support the European leadership in manufacturing through the adoption of ICT technologies

Partners:

Politecnico di Torino

Università di Torino

MESAP Cluster

ICT Cluster

Istituto Superiore Mario Boella



POLITECNICO
DI TORINO



UNIVERSITÀ
DEGLI STUDI
DI TORINO



Dima-hub objects



Main Objectives:

- ✓ To assess the feasibility of establishing a RDMI (Regional Digital Manufacturing Innovation) Hub in Piedmont
- ✓ To involve the main local stakeholders
- ✓ To identify the main beneficiaries

Technologies:

- ✓ Advanced Laser-based Applications
- ✓ Robotics
- ✓ Cyber Physical Systems (CPS) and Internet of Things (IoT)
- ✓ High Performance Computing (HPC)

Outcomes:

- ✓ Business plan and roadmap

Laser systems

The leadership of Piedmont on the Italian manufacturing scenario is particularly evident in laser-based manufacturing, since in this region both technology leaders and lead users are located.

Many applications were experimented and developed in this Region, like 3D laser cutting or the remote laser welding for automotive and additive manufacturing for aerospace, texturing, laser metrology.

PRIMA and Comau are leaders at the European level in laser sources and laser systems and have primarily developed their specialization on laser applications for the automotive and the aerospace industry (e.g. FCA, CNH Industrial, AVIO, THALES ALENIA, LEONARDO).

Piedmont's industrial system also includes many SMEs using laser-based technologies, mainly job shop and tier-1 suppliers of aerospace and automotive companies.

Also, in the last years, Piedmont has seen the growth of several start-ups and high tech companies providing laser devices, for example monitoring and process control systems, scanner heads and beam delivery fibers. Also, solution integrators and software providers in terms of off line program and real time CNC software are traditionally located in this Region.

Additive Manufacturing

Additive Manufacturing is booming in this Region, through the aerospace companies and the foundries whose are converting their business.

AVIO prop, acquired by GE, and many small companies are investing in new technologies and new business models based on this emerging laser application.

Under the point of view of research and innovations, many companies located in this Region are part of European Associations (EFFRA PPP, Photonics21 and AM -Additive Manufacturing- European Platform) and and they participate to important EU collaborative projects.

PRIMA Industrie is part of the LASHARE project and they endorse their suppliers OPI Photonics for the participation in APPOLO (I4MS programs).

In terms of laser based applications in collaborative projects, it should be mentioned: Borealis (Additive Manufacturing new concept machine), coordinated by Prima and involving 4 regional associations/ companies (Polytechnic of Turin, IRIS, OPI photonics, Prima Electro).

Other important EU H2020 projects for laser based manufacturing are Symbionica, MM tech, Mashas, Whiter, AMATHO.

Policy Instruments

Regional Technological Platform - Intelligent Factory

In 2015 the Piedmont Region has launched the call for proposals “Regional Technological Platform - Intelligent Factory”, with an initial total funding of 39,2 M€.

The call was for projects focused on R&D activities, containing also higher education activities (ITS, post graduate courses) to increase the employment in the companies involved in the projects. This framework (R&D activities together with education) is considered a milestone and almost unique in Italy.

These projects, led by Large Enterprises, require almost the 30% of the total costs dedicated to SMEs.

10 projects were selected, involving 208 partners and 100M€ costs; a large number of enterprises are among the members of MESAP.

Due to the high quality of the proposals, further 17,5M€ of POR FESR funds have been added reaching a total of 57,5M€.

An additional 1M€ fund has been added by the Valle d’Aosta region that is close to Piedmont to encourage the participation of its enterprises to this large collaborative projects and to strengthen the collaboration with piedmontese enterprises.

Technologies & Priorities(I)

MACRO-TEMATICHE	TECNOLOGIE/SISTEMI
Processi di produzione, sistemi meccatronici e robotici per il manifatturiero avanzato	Manifattura additiva
	Sistemi e processi laser
	Sistemi ad alte prestazioni (alta precisione, alta produttività, alta affidabilità)
	Processi avanzati di deformazione, lavorazione e asportazione per nuovi materiali
	Modellizzazione e simulazione di processi e sistemi di produzione
	Processi di produzione sostenibili
	Sensoristica per il monitoraggio ed il controllo dei processi di produzione
	Componenti, macchine e robot intelligenti.
Soluzioni ICT quali tecnologie abilitanti per la fabbrica del futuro	Soluzioni ICT per l'implementazione di piattaforme distribuite e collaborative orientate ai servizi
	Soluzioni ICT per l'inclusione del mondo reale nella fabbrica
	Soluzioni ICT per la modellizzazione e la memorizzazione di grandi quantità di dati, la loro visualizzazione e l'estrazione automatica delle informazioni
	Nuove infrastrutture ICT per il supporto dei processi avanzati di manifattura
	Soluzioni ICT per l'efficiamento energetico e la green factory

Technologies (II)

Produzione e impiego di materiali innovativi nel settore manifatturiero	Materiali multifunzionali
	Micro-nano materiali
	Materiali eco-compatibili
Tecnologie, strategie, metodi e gestione della manifatturiera avanzata	Metodi e strumenti per la progettazione e gestione della strategia manifatturiera
	Strategie per la gestione della catena dei fornitori
	Interazione avanzata uomo-macchina
	Ergonomia, tecnologie per ambienti più confortevoli e sicuri, aumento della competitività attraverso la valorizzazione delle persone
	Modellizzazione e simulazione per la progettazione e gestione integrata di prodotti, processi e sistemi
Aspetti trasversali: integrazione con aspetti afferenti l'area delle scienze economiche/umanistiche/sociali	Organizzazione del lavoro, sicurezza, tossicologia dei nuovi materiali, sociologia del lavoro, analisi degli impatti sociali, business model, comunicazione etc.

ERA – NET Manunet

The Piedmont region has been participating to the ERA-NET Manunet since 2012; Manunet II (2016) and Manunet III (2017, the call is open) have been funded with 2M€ POR FESR in each call.

In Manunet III the topics are:

- Knowledge-based engineering, information and communication technologies for manufacturing
- Manufacturing technologies for environmental and energy applications including resource efficiency and recycling
- Adaptive manufacturing technologies including processes for removing, joining, adding, forming, consolidating, assembling
- New materials for manufacturing
- New manufacturing methods, components and systems
- Other technologies/products related to the manufacturing field

IR2 – Industrialization of Research Results

The Piedmont region has put 68M€ to fund projects that aim to industrialize the results of research activities (patents, demonstrators, prototypes).

Projects have to be larger than 5M€ costs.

These projects requires a two step approach, with a direct negotiation with regional authorities before proceeding with the second step.

Innovation Clusters

The Piedmont region has put a total of 50M€ to fund projects for innovation and technology transfer for SMEs and Large Enterprises that are members (35 M€) or would like to join (15M€) Regional Innovation Clusters with two separate calls.

Technology transfer could be done to enterprises by Universities and research centers with subcontracting or by Innovative SMEs in partnership. Small consortia (also just one SME) are encouraged.

This call has been set up to strengthen the collaboration among research providers and enterprises in a customer – supplier.

Minimum projects size: 300K€ (only SMEs), 600K€ (with LE, max budget 60%).



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Thank you!

Questions welcome



Project smedia