BIFOCALPS Project
Boosting Innovation in Factory Of the future value Chain in the Alps

Project Number: 510

D.T1.3.1: Manufacturing sector maps at national level

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D.T1.3.1: Manufacturing sector maps at national level

• Map 1: Italy
This project is co-financed by the European Regional Development Fund through the Interreg Alpine Space programme.

**National Industry 4.0 Plan**
- a public investment of about 20 billion euros
- a super and hyper amortisation of 140% and 250%
- a 50% tax credit on R&D investments
- incentives on investments in start-ups and innovative small businesses

**Company FoF strategy:**
- 29.7% have not a strategy yet
- 34.3% have a clear roadmap
- 24.3% have clear business goals with KPI

**Company organisational structure:**
- Now: highly centralised
- In 3-5 years: collaborative

**Most important skills and competencies:**
1. Problem solving
2. Ability to collaborate
3. Computer based

**Supply chain:** which new players in 5 yrs?
- 59% Suppliers of specialized SW and system for Advanced Manufacturing
- 43% Suppliers of automation systems

**9 Enabling Technologies**

**Research and Innovation Roadmap**
**Strategic Action Lines**
1. Systems for personalised production
2. Strategies, methods and tools for industrial sustainability
3. Factories for humans
4. High-efficiency production systems
5. Innovative production processes
6. Evolutive and adaptive production systems
7. Strategies and management for next-generation production systems

**The Italian Technology Cluster “Intelligent Factories”**

**Online Survey**
36 companies from AS

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Smart Specialization: AGRIFOOD
- 70,000 Production sites, > 245,000 employees
- The value of agro-industrial production exceeds 12.3 billion euro
- One of the leading entrepreneurial realities of the Italian modern distribution
- Innovation and research: Parco Tecnologico Padano, University of Pavia, Politecnico of Milan, Bicocca University of Milan and University of Brescia.
- Research priority themes: sustainable and competitive agri-food supply chain, individual well-being, food safety and security.
- Lombardy Agri-Food High Technology Cluster

Smart Specialization: ADVANCED MANUFACTURING
- 100,000 Enterprises
- 1 million employees
- Turnover: 250 billion Euro
- First manufacturing region in Italy in terms of turnover and added value.
- Public research system: CNR-ITIA, Politecnico of Milan, University of Milan, Bicocca, University of Milan, University of Brescia, University of Bergamo, University of Pavia, Insubria University.
- 50 university spin-offs created since 2003.
- 160 research and technology transfer centres
- Advanced manufacturing processes; mechatronics for advanced manufacturing systems; modelling, simulation, forecasting methods and tools; ICT; sustainable manufacturing technology; advanced materials; strategy definition and management methodologies

Smart Specialization: SUSTAINABLE MOBILITY
- 100 Enterprises operating in different automotive sectors
- 43,000 employees
- Turnover: 12 billion Euro, representing 30% of the total Italian turnover generated by components (Brescia is the second largest automotive pole after Turin)
- Extremely vigorous supply chain for the building of pleasure boats (19,000 employees)
- Excellente private research system: Brembo Research Center (mechatronics and sensortronics) and Pirelli Labs
- Priority themes include: structural weight reduction; reduction of CO2 signature through alternative transmissions and fuels; vehicle safety systems; advanced materials

Smart Specialization: AEROSPACE
- 185 Companies, > 15,000 employees
- Turnover: 4 billion Euro
- Regional technologies and skills covering the entire supply chain: Agusta Westland, Alenia Aermacchi, CGS, Selex Galileo, Thales Alenia Space
- Specialized Universities: Politecnico of Milan, Bicocca University of Milan; University of Pavia; Carlo Cattaneo LIUC University
- Research centres: INAF, CNR-IREA, AWPARC
- Enabling technologies: advanced materials, advanced manufacturing technologies, micro and nano electronics and photonics.

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AFIL – Lombardy Intelligent Factory Association
Smart Specialization: AEROSPACE

- 140 Companies with 8,000 employees and a total of 15,000 people in the sector >
  high specialization index; Turnover: 2.5 billion Euro
- Involvement at international level in many military and civil programs (e.g.: A380, B787 Dreamliner, Typhoon, the new JSF fighter, Ariane 5)
- **Universities and Research actors**: Politecnico di Torino, the Piedmont Aerospace District Committee, a Technology Platform and incubators as Enne3 and I3P.
- Strong integration between the scientific research system and industry represented by 9 large companies (Alenia Aermacchi, Avio, Aviospace, Icarus, Intecs, Mecaer, Microtecnica, Selex, Thales Alenia Space) and 200 SMEs.
- Strengths: a long tradition on production and research; the presence of specialisation areas with global leadership; high technology and strong tendency to export; regionally and nationwide structured partnerships and collaborations
- **Priority themes**: remotely piloted aerial systems; eco-friendly engine tuning solutions; more electric aircraft; clean sky; space exploration; management systems in orbit

Smart Specialization: AUTOMOTIVE

- Leading Italian region in the sector and one of the top five European clusters for "intense automotive"
- 2,673 Enterprises operating in different automotive sectors (among which FCA)
- 82,083 employees (16,5 % of national share)
- The 73.5% of Piedmontese automotive companies produce vehicles and their components
- Almost 50% of the regional European patents from companies operating in the automotive industry.
- **Research system**: Politecnico di Torino > unique concentration of expertise in the automotive sector; Centro Ricerche Fiat (CRF), over 900 engineers; GM Powertrain Europe research center for new generation low emission engines
- **Priority themes**: control and power systems and technologies; alternative drive systems; power and energy storage; high security mechanical components and subsystems, performance and energy efficiency; board systems for driver assistance and emergency management; Car-to-Car Communication (C2C) and Car-to-Infrastructure (C2I) technologies; non-traditional materials (composites, nanostructured etc) with high performances and low environmental impact

Smart Specialization: MECHATRONICS

- includes two major segments: the Mechanics and Electronics, which are integrated with the automation and ICT
- 3,500 Enterprises and 170,000 employees, Half of them work in electronics and mechanical engineering industries
- **The Research System**: MESAP (Polo Mechatronics and Advanced Production Systems), Politecnico di Torino, Two CNR institutes and incubators as I3P.
- **Priority themes** Technological development mainly spread on two major areas: the smart products, the flex processes and green processes.

Smart Specialization: MADE IN PIEMONTE

- Food and textiles is the core of economic activities: 37,000 local units and 172,000 employees representing 12.5% of the Piedmontese workforce
- **The Research System**: Universities, a technological platform, two Innovation Hubs, 7 CNR institutes, some incubators (Enne3, I3P) and CSP
  - MESAP (Polo Mechatronics and Advanced Production Systems), Politecnico di Torino, Two CNR institutes and incubators as I3P.
  - **Priority themes**: food-sustainability; farm-of-the-future; material for selective crop protection; probiotics and nutraceuticals; wearable technologies/smart textiles; technical protective clothing; functionalized textiles for medical applications; furniture items and structural textiles for buildings and transportation

Smart Specialization: BIFOCALPS

- Interreg Alpine Space Programme
Friuli Venezia Giulia

**Smart Specialization:**

**MANUFACTURING & INDUSTRY**

Most important manufacturing segment > the engineering sector: metallurgy, manufacture of metal products and machinery and equipment

- **Production System:** 2,705 active companies (2014), representing 28.4% of the manufacturing > biggest companies in metallurgy and steel industry, SMEs in the manufacturing of metal products and machinery
- more than 39,000 workers, mostly in the province of Udine (49.0%) and Pordenone (35.0%)

- **Research System:** University system with the faculties of Engineering of Udine and Trieste, scientific and technology parks, including for instance Area Science Park, Friuli, Pordenone technology park, Innova FVG, Districts and consortia (cluster COMET)
- **Priority themes:** technology of numerical modeling of process and product; methods and technologies for integrated design; smart machines

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**FURNITURE**

- Wood industry and products and by companies operating in the manufacture of furniture
- **Production System:** over 2.890 companies (2014), which account for about 30% of the manufacturing sector. In 2011, Furniture (limited to the wood industry and furniture manufacturing) employed over 22.500 employees
- Turnover amounted to more than 4.4329.443 euro

- **Research System:** Universities of Trieste and Udine, with the faculties of engineering and the related departments of physics and architecture
- **Priority themes:** four important scientific and technological trajectories for the territory and for immediate implementation: technology related materials; methods and technologies for the rapid design; technologies for energy efficiency in buildings; cloud computing technologies.
Veneto

Smart Specialization:
SMART AGRIFOOD

- Strengths of the sector are: high quality product diversification, the promotion of traditional products, and the strong ties with the region.
- **Production System**: several peaks of excellence in the food industry, 34,000 workers in 3,650 companies.
- The flagship product is wine. Veneto is the biggest producer of wine in Italy: 35 PDO and PGI wines, 14 DOCG wines, and 28 DOC ones, as well as 370 traditional food products.
- Weaknesses: prevalence of small companies, inability to coordinate and difficulty in taking the opportunities offered by innovation.
- **Leader companies in the Verona area, for wine and fresh products, Prosecco wine region of Conegliano and Valdobbiadene, and in the fishing district of Polesine and the south of the Venice province.**

**Research System**: 4 universities in the region: the University of Padova, the University of Verona, and Ca’ Foscari University and the IBAV institute in Venice. The four universities organised consortia and inter-university research centres. Lack of collaboration between research and the industrial sector;

- **Priority themes**: nutrition, health and food safety, sustainable agrifood, a smart management of natural and energetic resources, innovative and sustainable processing, and traceability and protection of the supply chain

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Smart Specialization:
MANUFACTURING & INDUSTRY

- **Production System**: 16,754 companies, employing about 219,550 workers. The mechanical manufacturing sector has 556 “best companies”, large and high quality companies.
- The leather tanning district in Vicenza is the biggest in Italy and one of the most important in the world; it represents 50% of the national production and it employs 40% of the local workers.
- **Several excellence sectors, such as automotive, mechatronics, precision work, thermotechnics, and component production**
- **Main weaknesses of the system: small size of companies, lack of networking between businesses, logistics and mobility, technological backwardness of several companies**

**Research System**: Collaborations between companies and research centres, although still few, are helping make applicative innovation more usable.

- **Priority themes**: sustainable production and industrial processes, cognitive and automation systems, innovative and inclusive workplaces, new organisation and production models, and the design and production of high-tech production systems. Energy efficiency, active ageing and design are the main drivers of technological innovation in the sector.

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Smart Specialization:
CREATIVE INDUSTRIES

Vento has the shoemaking district of the “Riviera del Brenta” area, the “sport system” area of Asolo and Montebelluna, the Belluno eyewear district, and the Vicenza goldsmith district, which are among the most famous in the country.

- **Production System**: In 2013, the fashion industry of the region generated a surplus of 6.3 billion Euros on the trade balance
- The traditional sectors are shoemaking and clothing, leather tanning, goldsmithing, eyewear, artistic ceramics and glass, tourism, culture, and mobile, unique peaks of excellence

**Research System**: Research on new cloth materials, special fibres and composite, “bio-based materials”, and functionalised materials

- **Priority themes**: research on fibres and innovative and sustainable materials (fastest growth), innovative marketing and product virtualisation, Made in Italy, and business model restructuring.
D.T1.3.1: Manufacturing sector maps at national level

• Map 2: Germany
Core of the national economic policies in **Germany**:

- Development of the **German Industry 4.0**
- Digitalization
- Environment protection
- Foster national competitiveness
- Boost exports

- Support key and lead industries:
  - Biotechnology
  - Aerospace
  - Electronic engineering
  - Energy research and technology
  - Automotive Systems
  - Microsystems technology

Future Trends:
- Globalisation and future markets
- Dynamic technology & innovation
- Focus on the customer
- Automation and robotics

**Strengths:**
- New Materials
- Data Security
- Customer Relationship Management
- Advanced Manufacturing
- Enterprise-Resource-Planning

**National economic policies and initiatives in Germany:**

- **Infrastructure (ICT and Transport)**
  - WiFi Hotspots
  - 2016 Cyber-Security Strategy
  - DigiNetz Law
  - Intelligente Vernetzung Program
  - Bundesverkehrswege 2020 Program

- **Start-Ups**
  - EXIST Program (Collaboration Start-Ups – R&D Institutions)
- **Industry 4.0**
  - Zukunft der Industrie Association
- **Neue Gründezzeit Program**
- **Invest Program**
- **High-tech Gründerfonds III Program**
Smart Specialization: MEDICAL TECHNOLOGY
- 46,000 employees
- 11.7 billion Euro turnover
- global players: Roche, Boehringer Ingelheim and Aesculap
- great innovative power
- excellent research institutes (Fraunhofer Institute)
- Cluster Medizintechnik
- Main challenge: High-tech and innovative Robotics in clinic services

Smart Specialization: MECHANICAL ENGINEERING
- 306,000 employees
- more than 55,000 engineers
- 73.9 billion Euro sales
- 70 universities and almost 100 research institutes
- Allianz Industrie 4.0 initiative
- Main challenge: globalise enterprises

Smart Specialization: ELECTRICAL ENGINEERING AND ELECTRICAL INDUSTRY
- 160,000 employees
- 36 billion Euro sales (a quarter of the turnover of the entire German electrical industry)
- 33 institutes/specialist areas and centers at the universities as well as six specialist universities
- Robert Bosch Center for Power Electronics
- VDE Association for Electrical, Electronic & Information Technologies
- Main challenge: electro mobility (to find new ways to make a sustainable energy future possible)

Smart Specialization: AEROSPACE
- 15,000 employees
- 4.5 billion Euro turnover
- global players: EADS
- Aerospace Forum Baden-Württemberg
- excellent research institutes (Fraunhofer Institute)
- Main challenge: improve visibility of small-size German enterprises

Smart Specialization: AUTOMOTIVE INDUSTRY
- 219,000 employees
- 113 billion Euro turnover
- export-oriented industry
- more than 20 networks and clusters
- global players: Daimler, Porsche and Bosch
- 8 billion Euro annual investment in R&D
- excellent research institutes (Fraunhofer Institute)
- Cluster Automotive
- Main challenge: electromobility and lightweight design

This project is co-financed by the European Regional Development Fund through the Interreg Alpine Space programme
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Smart Specialization: **MECHATRONICS**
- 550,000 employees
- 190 billion euros
- excellent research institutes (Fraunhofer Institute)
- **Cluster Mechatronik & Automation e.V.**
- Main challenge: transfer of expertise from research to business

Smart Specialization: **IT-SECTOR**
- 260,000 employees
- global players: Siemens
- medium-sized "hidden champions" (KUKA → robotics)
- specialized universities (Technische Universität München)
- Bayern Digital initiative
- Main challenge: Integrate regional initiatives and enhance cross-border cooperation

Smart Specialization: **AEROSPACE**
- 7 billion Euro revenues
- 60,000 employees
- global players: Airbus or MTU
- important institutes: Deutsche Zentrum für Luft- und Raumfahrt/ German Aerospace Center, Max Planck Society
- **Cluster Aerospace: bavAiria e.V.**
- Main challenge: improve visibility of small-size German enterprises

Smart Specialization: **AUTOMOTIVE**
- 197,460 employees
- 102 billion Euro turnover
- global players: BMW, Audi and MAN
- well-known suppliers: Bosch Rexroth AG, Continental, Dräxlmaier Group
- 28 universities
- Main challenge: electromobility and lightweight design

Smart Specialization: **MANUFACTURING**
- 920,000 employees
- turnover: 9% of the GDP
- 107,140 enterprises
- automatization, robotisation of production
- Main challenge: intelligent, self-configuring and controlling production systems

Bayern Schwaben + Oberbayern
D.T1.3.1: Manufacturing sector maps at national level

• Map 3: France
« New Industrial France » programme: 9 industrial solutions and 47 key technologies

- Data economy
- Smart objects
- Digital trust
- Smart food production
- New resources
- Sustainable cities
- Eco-mobility
- Medicine of the future
- Transport of tomorrow

France-Alpine Space Region

Support for new industrial France projects (since 2013)

- 1,000 innovative industrial projects
- €1.9 billion in public support
- €5 billion in tax incentives
- 1500 SMEs supported
- 33,000 businesses and 1.1 million employed represented in the Industry of the Future Alliance

« Industry of the Future » Alliance:

- 22 national members: trade union, trade federation, engineering schools, RTO, ...
- 12 regional Industry of the Future programmes funded by Alliance
- 26 Industry of the future showcases
- Mapping of French FoF companies (169 examples)
- Industry of the future handbook

7 key action areas

- Digital technology, virtualisation and the Internet of Things
- The human factor in manufacturing plants, cobotics, augmented reality
- Additive manufacturing (3D printing)
- Monitoring and control
- Composites, new materials and assembly
- Automation and robotics
- Energy efficiency

French competitiveness clusters

- 71 clusters
- Compétitivités and business clusters organization (AFPC): 57 members
  - +1000 large and medium-sized companies
  - 900 SMEs
  - 3000 lab. and universities
Auvergne-Rhône-Alpes Region

Main figures
- 490,000 industrial jobs; 16% of the French industrial jobs;
- DIRD: 6.5Mds€; 14% of national GDP; 2.7% of regional GDP
- GDP: 243Mds€; 11.7% of French GDP; 2nd French region;
4th European region
- 46,000 industries; >200 employees: 370;
>50 employees: 1763
- 18.5% share of regional GDP added value by industry;
18% share of regional jobs

600 Fof technologies providers identified by regional chamber of commerce in Feb. 2017

Smart Specialization
Factory of the Future
- Chemistry environment, industrial processes and eco-efficient plant,
- Construction of industrial equipment, intelligent machines, internet of objects, simulation chains
- Mechanical, machining, high precision and complex machining, additive manufacturing,
- Robotics, mechatronics, digital technologies,
- Composite and bio-sourced materials, technical textiles, plastic parts, etc.

8 French competitiveness clusters:
- Viaméca
- Plastipolis
- Axelera
- Mont-Blanc Industries
- Minalogic
- Tennerdis
- Techtera
- Imaginove

6 Regional industry clusters
- Cluster Aerospace
- Coboteam
- Rhône-Alpes automotive Cluster
- Cluster Efficience
- Mecalaire
- Mecaboorg

Three main academic centers:
- COMUE Univ. Grenoble Alpes
  (Grenoble INP member)
- COMUE Université de Lyon
- L-Site Université de Clermont

Regional Industry of the Future Alliance programme

Regional Industry clusters
- Coboteam
- Clust'R numérique
- E-Cluster

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Auvergne-Rhone-alpes a territory of logistics
- 40% in North Isere area
- 5 000 000 m² warehouses,
- 185 000 direct jobs

1 regional logistic cluster: Piles

Smart Specialization
Digital
- Advanced production and industrial robotics: photonics, sensors, nanotechnologies, embedded software, augmented reality, control command, single crystals, Design and Human and Social Sciences,
- Service robotics and ambient intelligence: applications in health and well-being, efficient buildings, mobility, data processing and cybersecurity,
- Digital content industries: cultural and creative industries, industries and e-learning and immersive environments (virtual reality ...)

Map source: https://www.interreg-alpine-space.eu
D.T1.3.1: Manufacturing sector maps at national level

• Map 4: Austria
Smart Specialization:

**AUTOMOTIVE – further information**

- 450,000 employees (direct & indirect)
- 43 billion € turnover
- global players: MAN, Magna, BMW, Robert Bosch, GM - Opel
- well-known suppliers: Höckle, Magna, MAN
- 2,2 Mio Engines per year
- + 5% growth per year since 2000
- 99 % export quota
- Cluster: ACStyria, Automobilcluster Österreich
Smart Specialization: MECHANICAL ENGINEERING, ELECTRONIC and MECHATRONICS – further information

- 7,705 companies
- 11 billion € turnover
- Global players: Mechanical Engineering: Andritz, Liebherr, Palfinger, Engel, Doppelmayr
- Global players: Electronic: Siemens, Zumtobel, Infineon, Kapsch, AT&S
- Further global players: VOEST, Magna, AVL, Beda-Lutz Werke, Bertsch, Binder&Co, etc.
- 80% export quota
- Universities and research centres: more than 60, e.g. TU Vienna, TU Graz, FH Vorarlberg, FH Joanneum, Johannes Kepler University, Austrian Institute of Technology, Fraunhofer Research Austria etc.
  - research investment 21%
  - Clusters, e.g.: Mechatronik-Cluster Oberösterreich, Cluster Mechatronik Tirol, Linz Center of Mechatronics
Smart Specialization:
ICT & Telecommunications – further information

- 290,000 employees
- 7,705 companies
- 566 courses in 34 universities & 21 universities of applied studies
- Research intensive companies: Infineon, BMW Motoren, Siemens, VOEST Alpine, AVL List, etc.
- More than 50 centres of excellence
- More than 60 clusters, e.g. SIC Software Internet Cluster (Austria), RFID-Hotspot (Styria), ME2C-Cluster (Austria), Cluster Informationstechnologien Tirol
Smart Specialization:

LOGISTICS – further information

- Global Players: Österreichische Post, Rail Cargo Austria, LKW Walter, Schenker & Co, Kühne & Nagel, Gebrüder Weiss, Cargo Partner, JCL
- Clusters: Netzwerk Logistik, Logistik Cluster Niederösterreich
Smart Specialization: CHEMISTRY / PLASTIC – further information

- Plastic Clusters:
  - 440 partners, 56.800 employees, 13 billion € revenue
  - Kunststoff-Cluster
  - Kunststoff-Burgenland
  - Materials Cluster Styria
  - Nanonet
  - ACstyria
- Chemistry industry:
  - 562 companies, 25.780 employees, 9.5 billion € revenue
  - global players: Henkel, BASF, Borealis, Sabic, Evonik, Asota, Sunpor, ENGEL
- Universities and research-institutions: TU Graz, Montanuniversity Leoben, BOKU, IFA Tulln, Joanneum Research
D.T1.3.1: Manufacturing sector maps at national level

• Map 5: Slovenia
Core of the national economic policies in **Slovenia**:

Strategic focus of S4 is in **Sustainable technologies and services for healthy living** thus positioning Slovenia as a **green, creative and smart region with superb conditions for creating and innovating**.

Nine priority areas:

- **Digital**
  - Smart cities and communities
  - Smart buildings and homes including wood

- **Circular**
  - Networks towards Circular economy
  - Sustainable food production
  - Sustainable tourism

- **(S)Industry 4.0**
  - Factories of the future
  - Health - medicine
  - Mobility
  - Materials as products
Focus areas and technologies:

1. **Factories of the future:**
   - Production optimisation
   - Optimisation and automation of production processes
   - **Technologies:** robotics, nanotechnologies, modern production technologies for materials, plasma technologies, photonics and micro and nanoelectronics, control technology

2. **Health and medicine:**
   - Biopharmaceutical
   - Translational
   - Cancer treatment
   - Resistance bacteria
   - Natural medicines and natural cosmetic

Focus areas and technologies:

3. **Mobility**
   - Niche components and systems for motors with injection combustion engines
   - Systems for e-mobility and storage energy
   - Systems and components for security and comfort
   - Materials for automotive industry.

4. **Materials as end products**
   - Sustainable technologies in procession alloys and metals
   - Multi-components smart materials and coating.
9 STRATEGIC RESEARCH AND INNOVATION PARTNERSHIPS (SRIP) established in 2016 in Slovenia

- Smart cities and communities
- Smart buildings and homes, including wood chain
- Networks for the transition into circular economy
- Sustainable food production
- Sustainable tourism
- **Factories of the Future**
  Jožef Stefan Institute
- **Health – medicine**
  Slovenian Innovation Hub – European Economic Interest Grouping
- **Mobility**
  Economic Interest Grouping Automotive Cluster of Slovenia
- **Development of materials as end products**
  Chamber of Commerce and Industry of Slovenia

This project is co-financed by the European Regional Development Fund through the Interreg Alpine Space programme.
SMART SPECIALIZATION: AUTOMOTIVE:
Number of companies: 268
Number of employees: 16,856
Revenues (in €): 3.7 billion
Exports (in €): 3.3 billion
Main actors: KLS Ljubno, TAB, Adria Mobil, Revoz, Starkom, Akrapovic, Hidria AET...

Main challenge: Automatization of production

Universities, Research Institutions and Associations:
University of Ljubljana, Faculty of Electrical Engineering
University of Ljubljana, Faculty of Mechanical Engineering
University of Maribor, Faculty of Electrical Engineering and Computer Science
University of Maribor, Faculty of Mechanical Engineering
ACS - Automotive Cluster of Slovenia
Car industry institution RTC
TECOS - Slovenian Tool and Die Development Centre
Tool-making Cluster of Slovenia

SMART SPECIALIZATION: CHEMICALS & PHARMACEUTICALS
Number of companies: 882
Number of employees: 28,040
Revenues (in €): 5.5 billion
Exports (in €): 4.2 billion
Main actors: Henkel Maribor, Krka, Belinka-Belles, Lek, Frutarom Etol, Juteks...

Main challenge: To increase the export and to get at least one foreign investment

Universities, Research Institutions and Associations:
University of Ljubljana, Faculty of Pharmacy
University of Ljubljana, Faculty of Chemistry and Chemical Technology
University of Maribor, Faculty of Chemistry and Chemical Engineering
National Institute of Chemistry Slovenia
Chemical Office of the Republic of Slovenia
Technology Platform “Advanced Materials and Technologies” NaMat
Slovenian Plasttechnics Cluster
SusChem – Slovenian Technology Platform for Sustainable Chemistry
SMART SPECIALIZATION: ELECTRICAL & ELECTRONICS:

Number of companies: 628
Number of employees: 27,573
Revenues (in €): 4.1 billion
Exports (in €): 3.1 billion
Main actors: Interblock, Kolektor ETRA, Iskraltel, Kolektor Sikom, ITW Metalflex

Main challenge: Optimisation and automation of production processes

Universities, Research Institutions and Associations:

University of Ljubljana, Faculty of Electrical Engineering
University of Maribor, Faculty of Electrical Engineering & Computer Science
Jozef Stefan (Scientific) Institute
TECES – Research and Development Centre of Electrical Machines

SMART SPECIALIZATION: ICT

Number of companies: 3,140
Number of employees: 20,794
Revenues (in €): 3.4 billion
Exports (in €): 1.1 billion
Main actors: Si.mobil, Telemach, IBM Slovenija, Telekom Slovenije, Bankart...

Main challenge: To increase the number of patents in ICT, to increase the export of systems and equipment for the automatization of industrial systems

Universities, Research Institutions and Associations:

University of Ljubljana, Faculty of Electrical Engineering
University of Maribor, Faculty of Electrical Engineering & Computer Science
Jozef Stefan (Scientific) Institute
TECES – Research and Development Centre of Electrical Machines
SMART SPECIALIZATION: MACHINING & METALWORKING

Number of companies: 3,072
Number of employees: 52,812
Revenues (in €): 7.0 billion
Exports (in €): 4.4 billion
Main actors: Danfoss Trata, Acroni, Pisek - Viti Krpan, Difa, Akers valji Ravne...

Main challenge: the use of multi-components smart materials and coating technologies

Universities, Research Institutions and Associations:

- University of Ljubljana, Faculty of Mechanical Engineering
- University of Maribor, Faculty of Mechanical Engineering
- Institute of Metals and Technology
- TECOS - Slovenian Tool and Die Development Centre
- Toolmakers Cluster of Slovenia

SMART SPECIALIZATION: LOGISTICS & DISTRIBUTION

Number of companies: 2,920
Number of employees: 24,465
Revenues (in €): 4.1 billion
Exports (in €): 1.8 billion
Main actors: Luka Koper (Port of Koper), BTC, Adria Airways, Schenker, Aerodrom Ljubljana, SZ - Tovorni promet (Slovenian Railways)...

Main challenge: The use of RFID (radio-frequency identification) technology in logistics processes

Universities, Research Institutions and Associations:

- University of Ljubljana, Faculty of Maritime Studies and Transport
- University of Maribor, Faculty of Logistics
- Institute of traffic and transport Ljubljana
- Ministry of Infrastructure
SMART SPECIALIZATION: WOOD-PROCESSING

Number of companies: 1,069
Number of employees: 11,093
Revenues (in €): 1.3 billion
Exports (in €): 648 million
Main actors: Lesonit, Merkscha, Profiles, Lumar inzeniring, GG Novo mesto...

Main challenge: Manufacturing plants need to be upgraded with new technologies – more automatization and robotization in wood-processing sector.

Universities, Research Institutions and Associations:

- University of Ljubljana, Biotechnical Faculty – Department of Wood Science and Technology
- Higher Vocational College of the Wood Technology Maribor
- Ministry of Agriculture, Forestry and Food
- Slovenian Forestry Institute
- Wood Industry Cluster

Sources:
- https://www.investslovenia.org/industries/

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15 respondents:

- 32% have clear business goals set with KPIs
- 25% have a clear roadmap for implementing FoF
- 25% do not have strategy yet
- 6% have an overall FoF strategy in place (written in a document and in execution)
- 6% have assigned clear responsibilities for implementing FoF

QUESTIONNAIRE RESULTS: SLOVENIA

Current investments in FoF (% of annual revenue):

- 2-3%: 9 companies
- 0-1%: 6 companies
- 4-5%: 2 companies
- 6-10%: 2 companies

Future investments in 3-5 years in FoF (% of annual revenue):

- 2-3%: 5 companies
- 4-5%: 3 companies
- 6-10%: 3 companies
- 0-1%: 2 companies
- 10-15%: 1 company
- >15%: 1 company

Is it enough?

31%: YES
38%: NO
31%: DO NOT KNOW
QUESTIONNAIRE RESULTS: SLOVENIA

The biggest inhibitors for building FoF:

• Lack of a clear digital vision / strategy and of support / leadership from top management
• Costs and challenges associated with doing things differently
• Lack of knowledge about providers

Main companies goals of the FoF strategy in 3-5 years:

• Realising high-efficiency, evolutive and adaptive production systems
• Digitalisation of the existing product portfolio
• Increasing market share of core products