



BIFOCAlps

Interreg
Alpine Space
BIFOCAlps



Boosting Innovation in Factory of the Future Value Chain in the Alps



Manufacturing sector map at transnational level

A multilevel description of FoF competences and technologies along manufacturing value chain and main innovation actors in AS region.

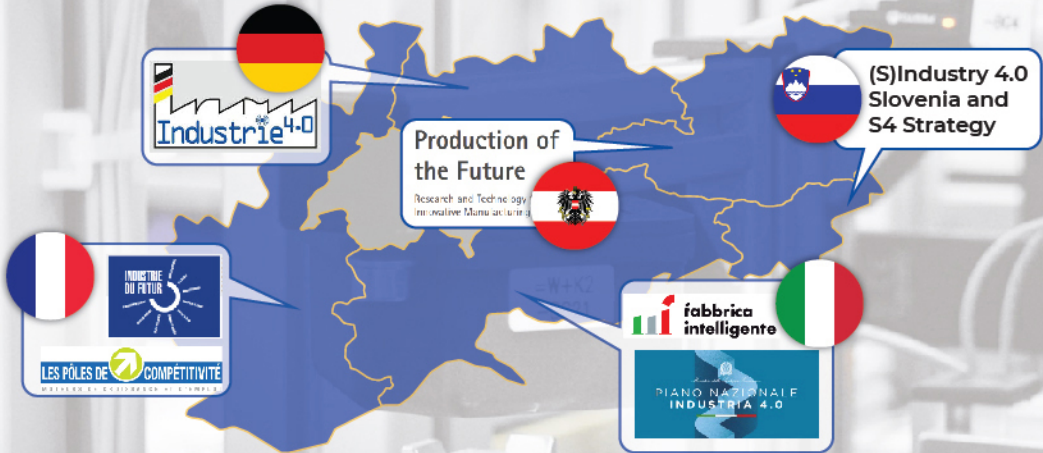
BIFOCAlps' main objective is to increase collaboration and synergies among the main actors of the Alpine Space region for a sustainable, smart and competitive development of the manufacturing value chain towards the FoF.

Methodology steps

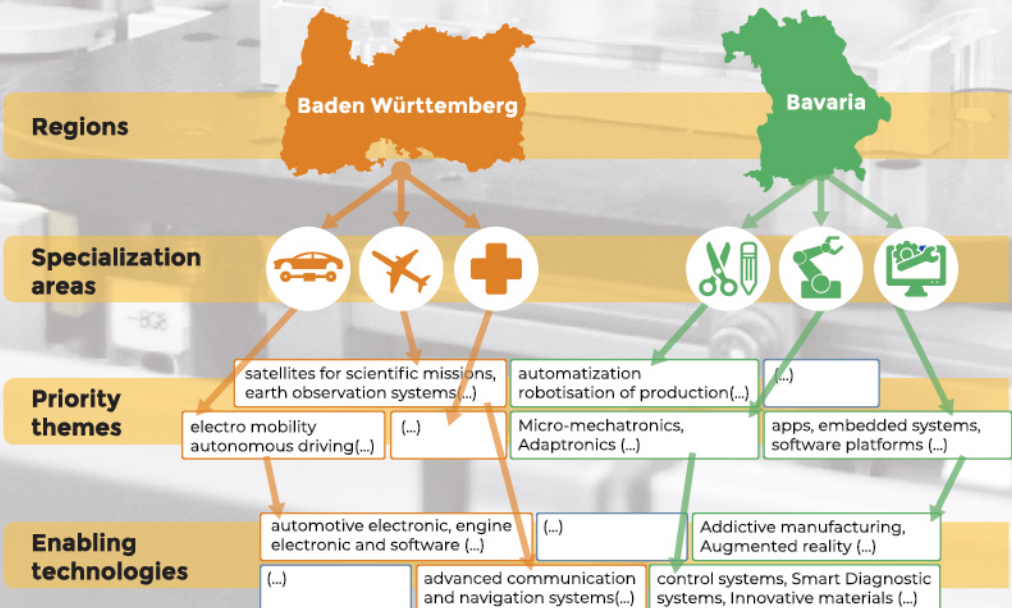


Definition of FoF manufacturing framework

Analysis of local initiatives for the implementation of the FoF in the AS



Analysis of Smart Specialization Strategies

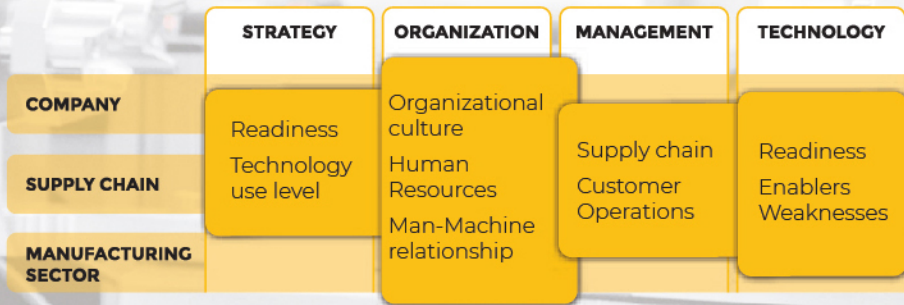


Survey on FoF practices

Aims

- Investigate the current state of awareness and adoption of Factory of the Future (FoF) solutions in the manufacturing companies of the Alpine Space region
- Highlight main strategic, organisational, managerial and technological issues linked to FoF in the manufacturing environment
- Build national manufacturing sector maps (Austria, France, Germany, Italy, Slovenia) and transnational manufacturing map

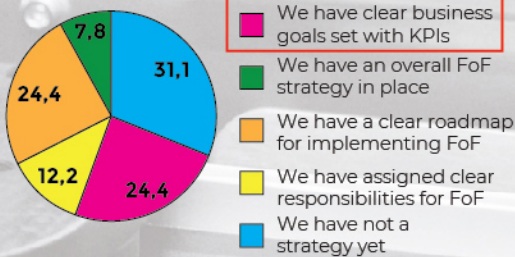
Structure



Examples

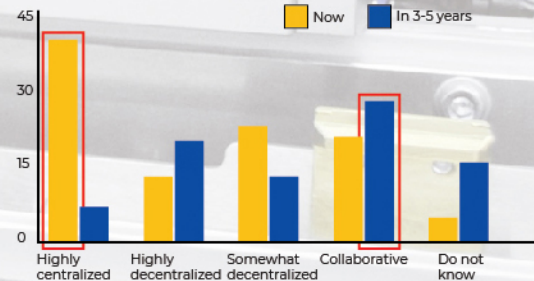
STRATEGY

Which statement is valid for your company's strategy towards FoF?



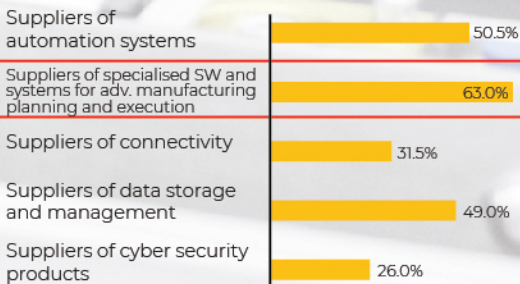
ORGANIZATION

How would you classify your company's organisational structure?



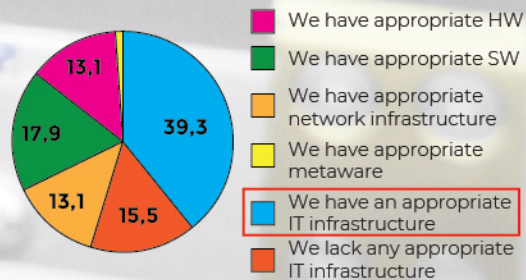
MANAGEMENT

Which new players are you planning to introduce in your SC in the next 5 years?



TECHNOLOGY

Do you think your company's actual IT infrastructure is appropriate for the switch to Factory of the Future?



Manufacturing sector maps in AS

- Manufacturing sector maps at national level

1 map per country with data from FoF Framework analysis, survey results and other main sources

ITALY



Survey results

Company organisation:
Now : highly centralised
In 3-5 years: collaborative

Piemonte

Lombardia

Survey results

Most important skills:
Problem solving
Ability to collaborate
Computer based

Smart specialisation

MECHANICAL ENGINEERING

- 306,000 employees, 55,000 engineering graduates, 110 billion Euro sales
- 70 universities and almost 100 research institutes, **Allianz Industrie 4.0 initiative**
- Main challenge: **globalise enterprises**

National level initiatives:

National Industry 4.0 Plan

- Public investment of about **20 billion euros**
- Super and hyper **amortisation of 140% and 250%**
- **50% tax credit on R&D investments**
- incentives on investments in start-ups and innovative small businesses



Research & Innovation Roadmap

- Systems for **personalised production**
- Strategies, methods and tools for **industrial sustainability**
- **Factories for humans**
- High-efficiency **production systems**
- Innovative **production processes**
- **Evolutive and adaptive** production systems
- Strategies and management for **next-generation production systems**



Smart specialisation

AUTOMOTIVE INDUSTRY

- 219,000 employees, 113 billion Euro turnover
- global players: **Daimler, Porsche and Bosch**
- **8 billion Euro annual investment in R&D**
- excellent **research institutes** (Fraunhofer Inst.)
- **Cluster Automotive**
- Main challenge: **electromobility and lightweight design**

Smart specialisation

MEDICAL TECHNOLOGY

- 46,000 employees, 11.7 billion Euro turnover
- global players: **Roche, Boehringer Ingelheim and Aesculap**
- **Cluster Medizintechnik**
- great **innovative power**, excellent **research institutes** (Fraunhofer Inst.)

**Online Survey:
90 companies
from AS**

Survey results

Supply chain in 5 yrs:

59% Suppliers of specialized SW
and system for Advanced Manufacturing
43% Suppliers of automation systems

Friuli VG

Veneto

Survey results

Company FoF strategy:

29,7% have not a strategy yet
24,3% have a clear roadmap
24,3% have clear business goals with KPI

Regional details

GERMANY

Baden Württemberg

Specialisation

Employees, 73.9

Research
and
development
expenditures

Smart specialisation

AEROSPACE

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

○ Tübingen



○ Freiburg

Smart specialisation

ELECTRICAL ENGINEERING & ELECTRICAL INDUSTRY

- 160,00 employees, 36 billion Euro sales
- 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)

Manufacturing sector maps in AS

- Policies and Smart Specializations

A comparison of national policies and Smart Specializations area matching research priorities and enabling technologies

7
Comparison of national initiatives



Initiative	Focus	Objectives	Target assistance	Funding assistance	Budget	Results achieved
France Plan France Industrie du Futur	AI, digitalization and manufacturing innovation, development of national ecosystem, Development of advanced Manufacturing industries	To reinforce the French production base and production tools and to support the use and integration of digital technologies in production, to transform companies and business models, to create new sources of growth and jobs	French industry clusters, production base and its investments in R&D and startups	Public and private funding, private financing, venture capital, etc.	€100 billion in public and industry contributions	100+ Startups, 400+ companies, 100+ research projects, 100+ experts identified, 100+ regions
Germany Industrie 4.0	Intelligent production based on cyber-physical systems, digitalization along value networks, and to end-to-end engineering, real-time production, security aspects and controlling, new ways of working and education	Efficient, flexible manufacturing, increased productivity, interoperability of products, value chains and networks, to support models, the networking of industry players and identification of opportunities	German industry clusters, SMEs	Public and private funding, venture capital, etc.	€100 billion in public and industry contributions	100+ Startups, 400+ companies, 100+ research projects, 100+ experts identified, 100+ regions
Italy Industria 4.0	National plan with the support of the regions, incentives for work to improve competitiveness	Innovation, digitalization, development of the digital economy, increase growth, research & development	Italian industry clusters, SMEs	Public and private funding, venture capital, etc.	€100 billion in public and industry contributions	100+ Startups, 400+ companies, 100+ research projects, 100+ experts identified, 100+ regions

Mapping of Smart Specialization Areas

Region	Smart specialization areas			
Italy	Lombardy	Aerospace	Agri-food	
	Piemonte	Aerospace	Mechatronics	
	Veneto	Smart Manufacturing	Smart Agri-food	
	FVG	Manufacturing & industry	Furniture	
Germany	Baden-Württemberg	Aerospace	Medical Technology	
	Bavaria	Aerospace	Mechatronics	
	Rhineland-Palatinate	Factory of the future	Digital	

Comparison of priority themes and enabling technologies

Region	Priority themes	Enabling technologies
Lombardy	Smart production, reduction of CO2 footprint through the use of energy-efficient technologies, development of efficient clean production systems through digitalization, new materials	AI, data science, robotics, nanotechnology, advanced manufacturing systems
Piemonte	Control and power systems and predictive maintenance, digital production energy storage, high density mechanical components and sub-systems, performance and energy efficiency, liquid systems for digital production and energy management, CO2 capture and utilization (CCU) and Hydrogen Infrastructure (HI) technologies, new materials (nanomaterials, composites, nanocomposites) and AI, High performance materials and environmental impact	AI, data science, robotics, nanotechnology, advanced manufacturing systems, digital production energy storage, high density mechanical components and sub-systems, performance and energy efficiency, liquid systems for digital production and energy management, CO2 capture and utilization (CCU) and Hydrogen Infrastructure (HI) technologies, new materials (nanomaterials, composites, nanocomposites) and AI, High performance materials and environmental impact
Baden-Württemberg	Electric mobility, autonomous driving, including all elements associated with AI and technologies for sharing and other near traffic solutions by modern generation, carbon emission reduction, smart traffic management, internal combustion engine, energy efficiency, development of alternative drive systems, new production of	AI, data science, robotics, nanotechnology, advanced manufacturing systems, digital production energy storage, high density mechanical components and sub-systems, performance and energy efficiency, liquid systems for digital production and energy management, CO2 capture and utilization (CCU) and Hydrogen Infrastructure (HI) technologies, new materials (nanomaterials, composites, nanocomposites) and AI, High performance materials and environmental impact

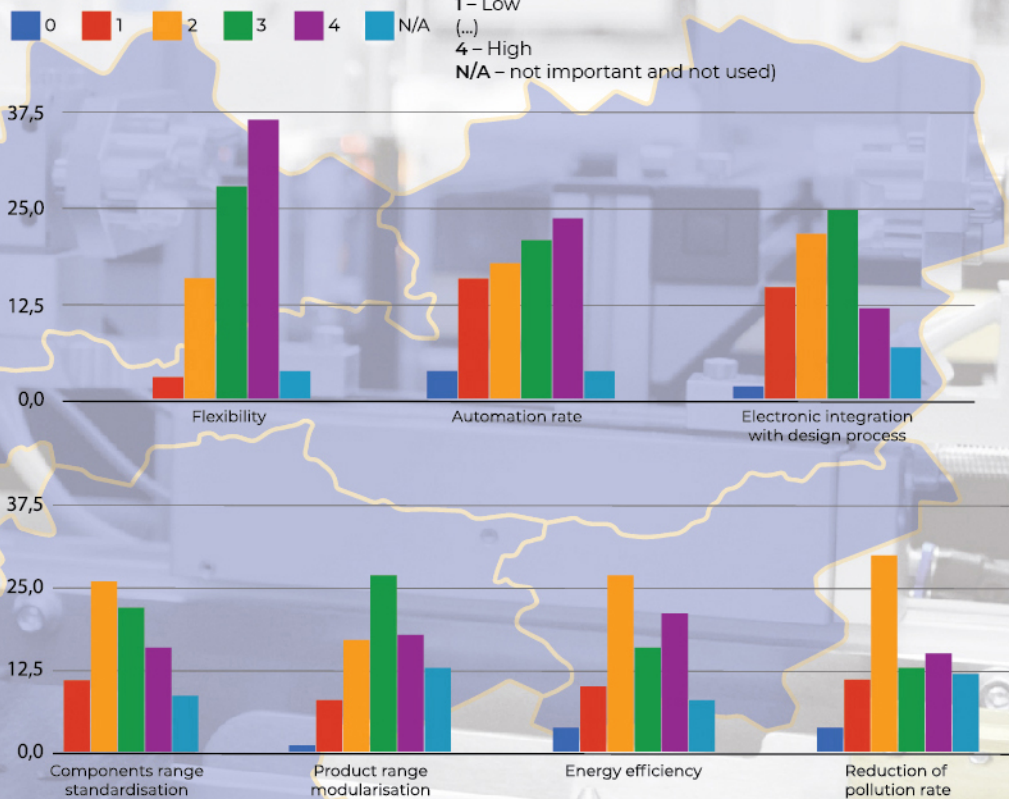
- A transnational perspective: practices

An example of operations

An overview of FoF practices along the manufacturing supply chain in the AS according to the four main domains analysed in the survey.

- AGGREGATED LEVEL

Focusing on production, please evaluate the level of utilisation
0 – non already used but important
1 – Low
 (...) **4** – High
N/A – not important and not used)



- COUNTRY LEVEL



1° most used
 2° most used
 3° most used

Flexibility	Flexibility	Automation Rate	Flexibility	Flexibility
Product range modularisation	Product range modularisation	Energy Efficiency	Energy Efficiency	Automation Rate
Automation Rate	Energy Efficiency	Product range modularisation	Automation Rate	Component range stand



Interreg Alpine Space BIFOCAlps

EUROPEAN REGIONAL DEVELOPMENT FUND



PROJECT'S INFO

START DATE: 1st November 2016

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Partnership: 11 partners from Italy, France, Germany, Austria and Slovenia

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UPDATES

Follow the project on its website and social media channels.

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