



Advanced Technologies for Industry

Monitoring the uptake of Advanced Technologies for effective Industry 4.0 policies

21st April 2021 - 10.00 -12.30 CEST Zoom Webinar

Organised on behalf of:

European Commission DG GROW

Executive Agency for Small and Medium sized Enterprises (EISMEA)

By IDC and Technopolis Group

The event “Monitoring the uptake of Advanced Technologies for effective Industry 4.0 policies” was the fifth in a series of 10 events organised within the Advanced Technologies for Industry (ATI) project (<https://ati.ec.europa.eu/>) commissioned by EISMEA and DG GROW. The aim of the Make it Work events was to inform public and private intermediaries from different regions on latest project activities and findings. It will also, helped participants to brainstorm on new ideas and viewpoints to translate their regional smart specialisation priorities into potential collaborative high-quality projects and smart investments. In this context, the Advanced Technologies for Industry (ATI) project provides a systematic monitoring of technological trends and data on advanced technologies to properly support the implementation of policies and initiatives and finally promote a competitive European industry.

This Make it work event had two main objectives:

- to present some interesting tools monitoring advanced technologies’ trends and developments such as the Data dashboard and Technology Watch reports on AI and IoT which can represent a valuable source of information when planning and implementing Industry 4.0 policies at national level;
- to discuss how to better monitor technology uptake across EU sectors giving voice to Industry 4.0 platforms and to share and exchange experiences in order to benefit from ATI in a practical way. For example, through the definition of joint projects or the formulation of questions to policy makers.

Welcome and introduction

Introduction to the ATI project - Marta Batalla Masana, DG GROW, European Commission

Marta Batalla Masana briefly presented the ATI project, commissioned by DG GROW and having as main goal assessing the uptake and the level of adoption of advanced technologies in Europe. The project identifies 16 advanced technologies, divided into key enabling technologies and digital technologies. The work performed within the ATI project is distributed through different areas and provides several tools, such as the Data dashboard and the Technology Centers mapping, offering a list of Technology centres, public or private organisations carrying out applied research and close-to-market innovation in Advanced Technologies for Industry.

The project aims the increasing the level of competitiveness of the European industry and through this specific event the objective is to learn from national Industry 4.0 platforms experience and give relevant recommendations to policy makers.

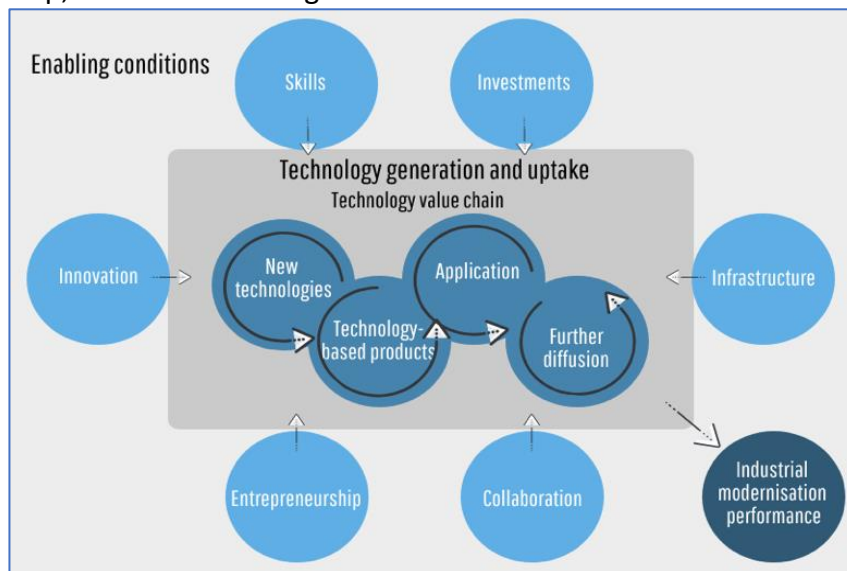
ATI project: Capturing technological transformation and actual practices

Advanced Technologies for Industry – Kincsö Izsak, Principal Consultant, Technopolis Group

Kincsö Izsak gave an overview of the ATI project and on the context in which the project operates. The Advanced Technologies for Industry analyses and systematically monitors the state of uptake of advanced technologies by EU industry. ATI provides policy makers, industry representatives and academia with:

- Statistical data on the creation and use of advanced technologies (including information on enabling conditions such as skills, investment or entrepreneurship).
- Analytical reports on technological trends, sectoral insights and products.
- Analyses of policy measures and policy tools related to the uptake of advanced technologies.
- Analyses of technological trends in competing economies such as in the US, China or Japan.
- Access to technology centres and innovation hubs across EU countries.

Through the data dashboard, ATI provides up-to-date and reliable data on the production and use of advanced technologies including enabling conditions such as skills, investment or entrepreneurship, as shown in the figure below.



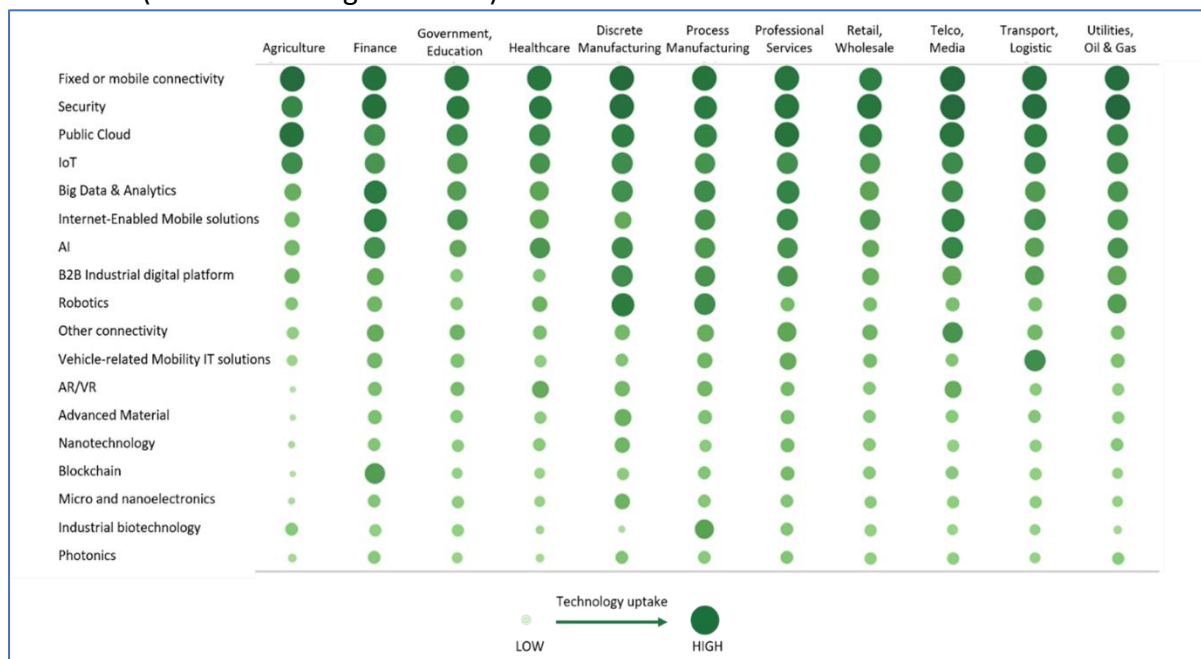
An interesting exercise the ATI project is carrying on relates to the skills analysis of professionals with advanced technology skills based on LinkedIn data. The identification of skills is based on keywords for each advanced technology allowing to filter the database by location and industry. Data are being captured in several time points (December 2019, January, March, June, October, December 2020, March 2021).

The main advantages of this exercise are the following:

- It represents a unique opportunity to gain insights into the distribution of professionals with specific technological skills across countries and sectors.
- It enables us to analyse talent flows and change over time.
- It also allows comparison internationally e.g. with the USA.

Capturing technological transformation and actual practices: The Case of AI, IoT and Blockchain
- Giorgio Micheletti, Consulting Director IDC4EU, IDC and Gabriella Cattaneo, Associate Vice-President, IDC4EU, IDC

Giorgio Micheletti gave an overview of the uptake of advanced technologies in the different industries (shown in the figure below).



The visualisation highlights how a distinct group of technologies features a marked horizontal diffusion across all industries (general purpose technologies Connectivity, Security, Public Cloud, Mobile solutions, Big Data & Analytics, Internet of Things (IoT) and Industrial Digital Platform): they represent the technology portfolio necessary (but not sufficient) for digital transformation. In fact, COVID-19 impact on trade caught many firms unprepared, with negative consequences on supply chains. Covid-19 drastically changed the focus from a low-cost country sourcing mantra to a more resilient and simple network. Implementing new technologies is turning supply chain processes and activities towards less uncertainty and complexity. Technologies like Robotics, AI, IoT, Blockchain and Edge Computing are the key drivers to achieve these goals, together with efficiency benefits and zero-touch production (ZTP) processes.

Mr. Micheletti explained how the AT watch reports focus on the market, business and socioeconomic trends driven by technology innovation for industry from the point of view of enterprises. He continued focusing on three technologies which are driving industry transformation, namely AI, IoT and blockchain and giving more details on the main uses cases. More information can be found visiting the ATI website: <https://ati.ec.europa.eu/reports/Technology-Watch>.

Q&A

Have you looked at the impact of the deployment of these technologies on employment? Any relevant findings or at least tendencies?

Answer from Kincsö Izsak: The updated Prodcom database is currently being analysed by the ATI study team. Some insights on the employment of Advanced Technologies will be included in the next analysis of the Second General Findings Report. (available in June 2021 on the ATI website [Advanced Technologies for Industry \(europa.eu\)](https://europa.eu/advanced-technologies-for-industry)).

Roundtable Discussion

Moderated by Giorgio Micheletti

Panelists:

- **Jordi Llinares**, Deputy Director General for Industrial Digitalisation and Collaborative Environments - Industrial Connectada 4.0 (Spain)
- **Roland Sommer**, Managing Director Austrian Industry 4.0
- **Thomas Hahn**, Chief Software Expert at Siemens and Member of the Plattform Industrie 4.0 steering committee (Germany)

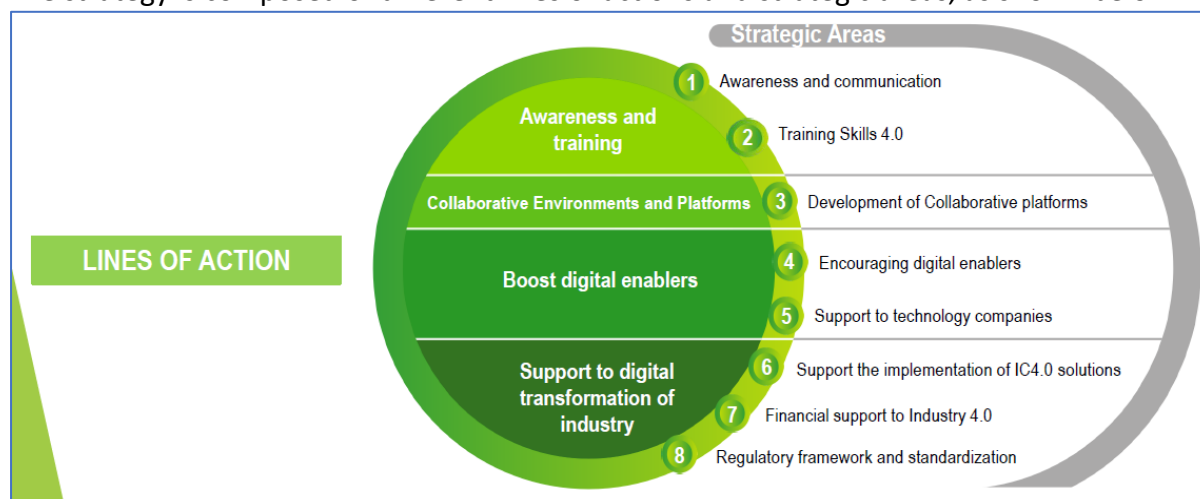
The moderator introduced the three panelist and opened the discussion with the following question: “Most of the EU governments have made Industry 4.0 a priority adopting large-scale Industry 4.0 policies to increase productivity and competitiveness and improve the high-tech skills of their workforce. What are the essential components (policy design, funding approaches and implementation strategies) of your national flagship Industry 4.0?”.

Jordi Llinares, Deputy Director General for Industrial Digitalisation and Collaborative Environments - Industrial Connectada 4.0 (Spain)

Jordi Llinares presented the Spanish national strategy on digitisation of industry (Industria Conectada 4.0). The main objective is to boost the digital transformation of the Spanish industry and in particular to:

- Increase the industrial added value and skilled employment in the industrial sector.
- Strengthen and develop digital solutions for the Spanish industry.
- Develop competitive and differential levers to foster Spanish industry and its exports.

The strategy is composed of different lines of actions and strategic areas, as shown below.



From this top-level structure, the Spanish strategy is then translated in a number of programmes and initiatives, such as:

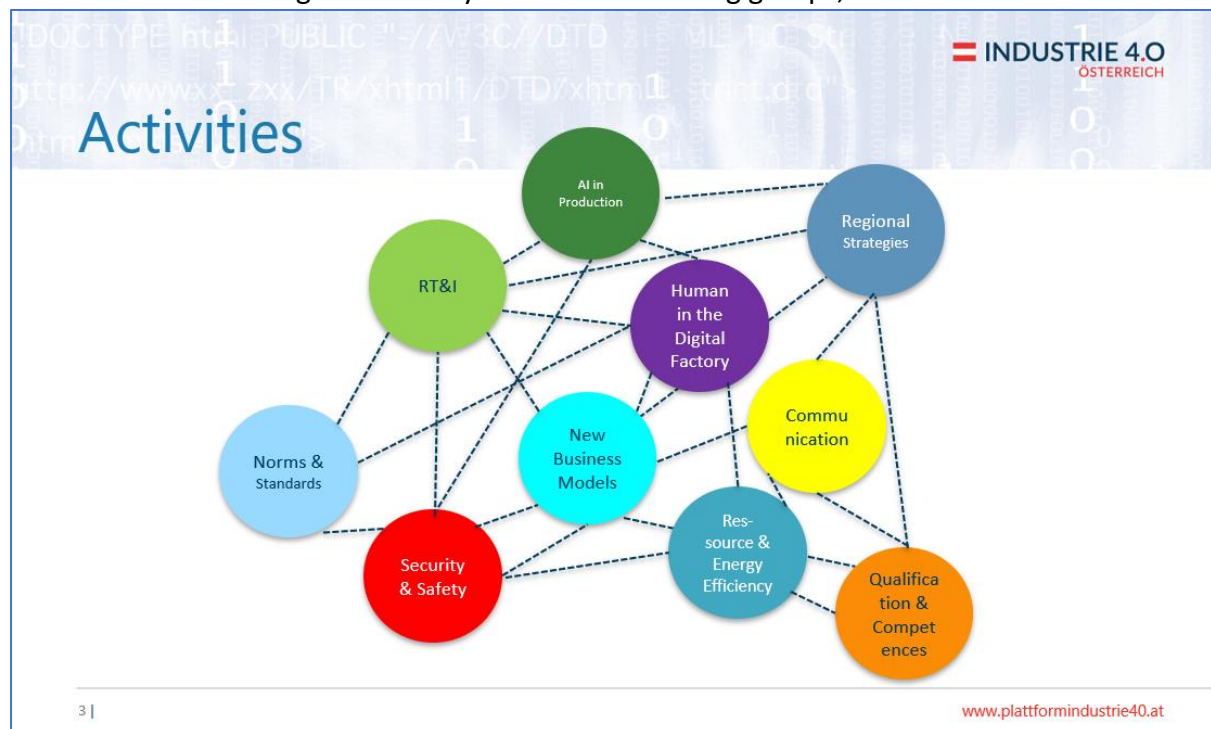
- ACTIVA Industria 4.0, Specialised and customised consulting support programme that will be carried out by recognised business and technology consulting firms with experience in Industry 4.0.
- HADA, the Advanced self-diagnostic digital tool, allowing to measure the degree of preparation and maturity of a company to face the challenges of Industry 4.0.

In terms of funding, Spain has launched a call “ACTIVA CYBERSEGURIDAD”, to determine the current security level of SMEs and to establish the level they need to reach for protecting their corporate systems and information.

The crucial role played by clusters in fostering digitalisation is also an important point in the Spanish strategy, indeed the government has also created the AEI Cluster, having among its objectives increasing efficiency and market orientation in R&D&I, encouraging small business growth through collaboration and boosting the creation of collaborative ecosystems throughout the national geography.

Roland Sommer, Managing Director Austrian Industry 4.0

Roland Sommer introduced Industry 4.0 and its main features. It is a membership fee based institution grouping both small companies and bigger corporations, research institutions working on Industry 4.0 and other institutions working in the field of smart textile, photonics, additive manufacturing. The activity is based on working groups, as shown below.



Among the different working groups, the Human in the Digital Factory (focused on human-technology interaction) is very important.

Some examples related to the activities Austrian Industry 4.0 carries out:

- Predictive maintenance (very important to give information on potential developments to take the right decisions)

- AI for good (employees and employers working together to ensure compliance with privacy)
- Data sharing in manufacturing (identify use cases and bring people together on this important topic)
- 5G (many companies are interested in knowing more about 5G but need some guidance on its infrastructure and business models)
- Standards (trying to help SMEs to find their way in the standardisation path, mapping the different institutions working on this topic)
- Policy learning lab (through an Interreg project)
- New business models (there is a huge interest in companies to learn about successful business models already implemented; sharing of their experiences is crucial).

Among the lessons learned through the implementation of the national strategy, Mr. Sommer highlights that being a membership fee-based association surely brings independence, budgets and new projects. In addition, having a broad range of stakeholders helps in assuming a stronger relevance at the national and international level.

“We are not running out of jobs but running out of people”

Thomas Hahn, Chief Software Expert at Siemens and Member of the Plattform Industrie 4.0 steering committee (Germany)

Thomas Hahn provided an overview of the development of Platform Industry 4.0.

The platform is a no-profit organisation hosted by the German government. One of the main distinctive elements is the inclusion of several disciplines and different type of stakeholders, policy makers, business associations, science, trade unions.

Six working groups supported by an independent research council and coordinated by a steering committee represent the hearth of the platform.



The work realised is published through the dedicated website and they have also developed an online map to give guidance to SMEs.

The vision behind the strategy can be summarised through the following concepts:

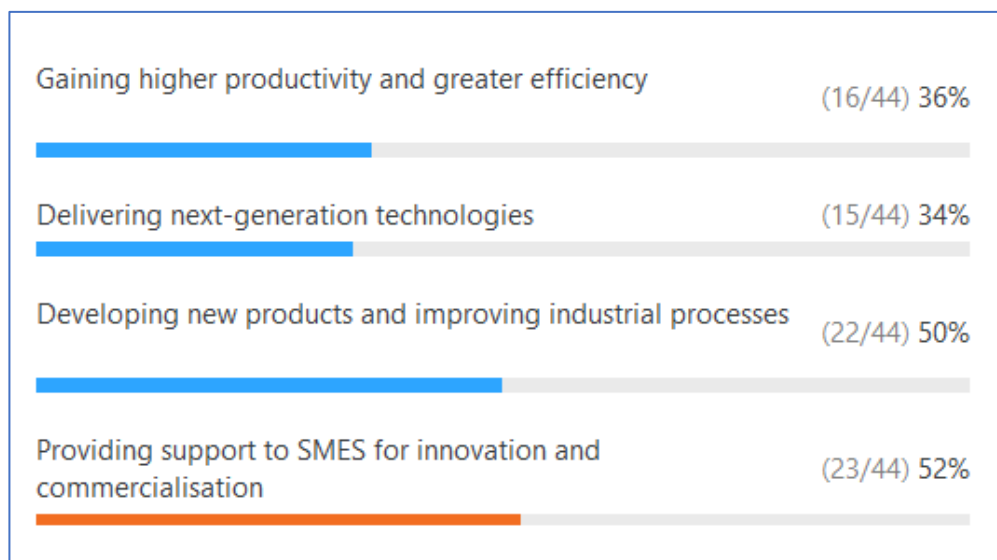
- Autonomy – Self-determination and free scope for action guarantee competitiveness in digital business models.
- Interoperability - Cooperation and open ecosystems permit plurality and flexibility.
- Sustainability - Modern industrial value creation ensures high standards of living.

The German platform has extensive international cooperation in the EU (with the Netherlands, France, Italy, Austria, Czech Republic as an example) and throughout the world (USA, Mexico, China, Korea, Japan, Australia).

Panel questions

The moderator launched some questions addressed to the panellists but also involving the audience through live polls.

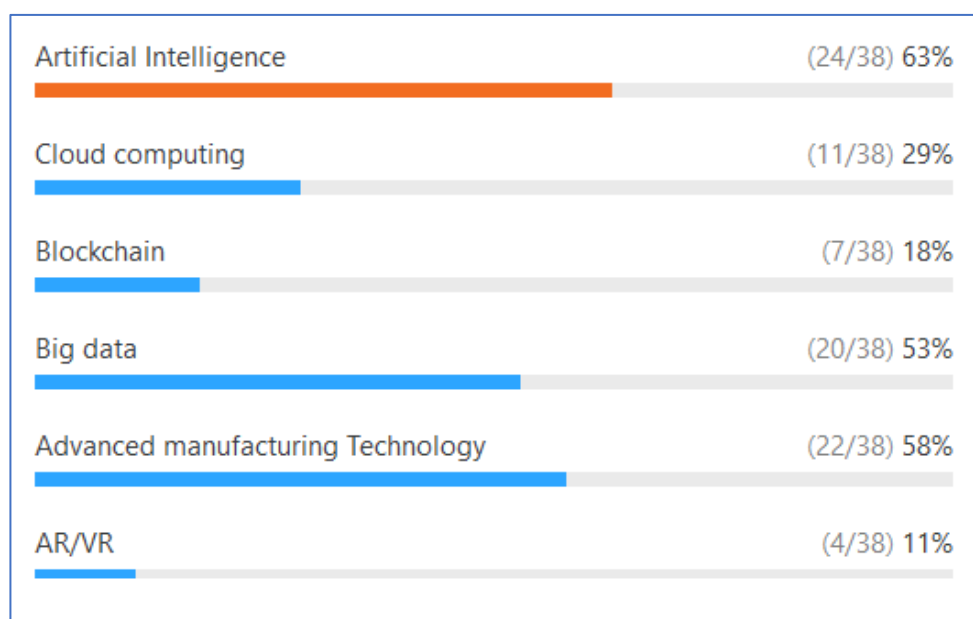
Notwithstanding the common goals, the policies show some variation in how these economic objectives are to be achieved. What do you think should be the main objective of the I4.0 policy?



Roland Sommer: The focus should be on providing support to the SMEs, which need a specific training on Advanced Technologies. An important role should be played by research funding, especially in sectors like energy and defense. The initial concept of Industry 4.0 was broader, it was an artificial expression and this give us now the possibility to change its content with flexibility.

Thomas Hahn: The original plan for Industry 4.0 was focused on optimisation, efficiency and improvement. Now, the objectives should also include sustainability and interoperability.

One of the objectives of the Industry 4.0 policies is to foster innovation through the adoption of advanced technologies. What do you think should be the technology focus of your national I4.0 policy strategy?



Thomas Hahn: The Technology focus should be on two topics: Big Data (getting value of data and bases for new business model) and on Artificial Intelligence. Together with Advanced manufacturing technology.

Roland Sommer: Reducing the complexity is the focus. The real challenge is on the combination of technology the SMEs have to adopt. We have to advance with the Technology and Digital Hubs and come up with robust solution for smaller and medium enterprises.

Jordi Llinares:

Companies need to increase competitiveness, no matter what technology they need to use. That's what the cluster programme (Industria Conectada 4.0) is about: how to implement the strategy of the company in in order to increase its competitiveness.

Although national authorities are aware of the I4.0 policies of their peers, a more systematic cooperation and exchange of good practices is missing. A better coordination at EU level of national policy efforts allowing for effective knowledge and best practice sharing seems indispensable. What is your experience and position at this regard and what would be your request to policy makers?

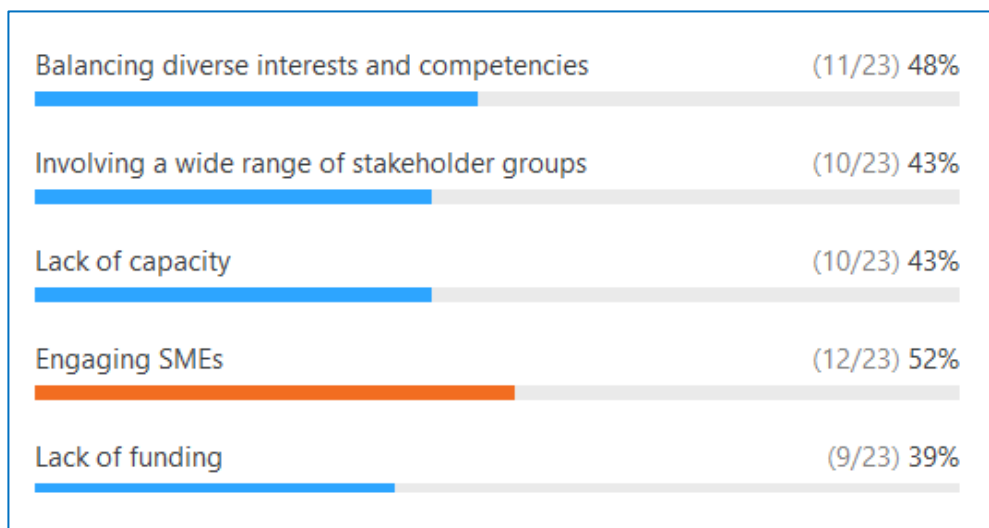
Roland Sommer: Coordination is extremely important and exchanging experience is fundamental, in this sense, starting from the collection of use cases is fundamental; the second step could be the exchange of the experience (e.g. How did you start? How did you manage to have success?). In this phase, it is important to be neutral. On another hand, it is also important to cooperate with other countries, stimulating the economic interlinks. The EC should play a role in fostering this collaboration, building an ecosystem of trust between Member States.

Jordi Llinares: During the implementation of the programme “Industria Conectada 4.0”, it was clear that sharing and working together are key elements to make the most out of this type of programme. The projects we run are not individualised but based on collaboration. Spain is working with many Latin American countries and UN to share the results of these programs and stimulate synergies.

Thomas Hahn: Collaboration across different disciplines is very important and it should cover different technologies, we are developing a joint initiative on 5G as an example.

Marta Batalla Masana: Cluster organisations play a key role in translating information on which kind of technologies will have a bigger impact on SMEs. Moreover, they can connect the dots with technology centres and academia. DG GROW is supporting the creation of strong and wide alliances for SMEs, in order to stimulate the development of innovative products and services.

What do you think are the main barriers to an efficient implementation of Industry 4.0 policies?



Roland Sommer: The main barrier is engaging SMEs. Nowadays, there are three major political topics: migration, digitalisation, climate change. There is a lot of potential, we as Europe should consider this as increasingly interlinked and use its synergies to increase the cooperation.

Jordi Llinares: The main barriers may vary across countries; for Spain the main barrier is the lack of skills/knowledge for companies to accomplish digital transformation and Industry 4.0 solution. The main objective in this sense is to boost the digital transformation of the Spanish industry and in particular to increase the industrial added value and skilled employment in the industrial sector.