European Alliance Against Coronavirus

Thursday 18th June 2020 at 8:30

IoT for new cross-sectoral value chains

Working format is based on "*Gilles Rules*":

1. conceptual framework
2. needs and disruptions
3. solutions

Speaker:

- **Guillaume Roux, Pôle SCS-** Ecosystème Européen Leader Sur Les Technologies

Link to session´s recording

1. CONCEPTUAL FRAMEWORK

About Pôle SCS

SCS is a **world-class competitiveness cluster** dedicated to digital technologies. Created in 2005 in the Provence Alpes Côte d'Azur region in the South of France, it brings together **an ecosystem of almost 310 industrial players**, large multi-national groups, SMEs and start-ups, research laboratories and leading universities in their fields. They are working together to **develop and market products** and **innovative services** to generate knowledge and jobs in high growth markets.

Projects

To achieve ambitious goals of innovation and growth for its companies, SCS **develops cluster projects** and involves industrial and academic partners in innovative R&D or industrialization projects. The cluster gives **support to receive French and European financing programs.** As a **catalyst for innovation**, it is involved in funding research and project valorisation across its network of 20 European clusters in 12 countries.

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2. IDENTIFICATION OF DISRUPTIONS

First disruption: sectoral implementation of IoT and digital transformation challenge

Source: Guillaume Roux

Evidence: Due to volatile and fast-moving markets, increasing competition, as well as more complex products and production processes, industrial companies are facing increasingly intricate challenges. Among these, digital transformation represents one of the biggest challenges that a company has to

face nowadays, since it represents not only a technical issue, but also a cultural shift. In fact, the change does not only affect industrial processes, but they require a shift from the present company values toward a continuous improvement philosophy. Even if the Industry 4.0 solutions and smart technologies are available for some time, not all organizations and sectors can claim to have reached a mature implementation. Some sectors are more advanced than others in digital transformation and the advances in IoT (Internet of Things), e.g. automotive, aerospace and defense, energy, and electronics. Industry 4.0 refers to the industrial exploitation of Cyber-Physical Systems (CPS) for the intelligent decentralization in the factory. The result is the so called "smart factory" where, Information and Communication Technology (ICT), IoT, Customer-to-Machine (C2M), Customer-to-Customer (C2C), Machine-to-Machine (M2M) communications are integrated with distributed sensing, processing and actuating capabilities. Digital transformation is no longer an opportunity, but a necessity for the competitiveness of European companies. As the speaker stated, he still sees potential in ecosystems like tourism, textiles, and agri-food.

Geographical impact: EU

Stage of value chain: all company's functions and processes

Character of the disruption: lack of IoT implementation and digitisation

Time frame: mid and long term

EU actions needed:

- **Funding:** research and innovation projects

Recommendation:

- Process flexibility and intelligent data management enabled by IoT and digital solutions are characteristics that can generate a great competitive advantage for Europe in the long term.
- The COVID crisis represents a further barrier to digital transformation since many companies had to close and stop their operations and activities for several weeks. This is a strong brake against digitisation. However, it also generated the further need to "reinvent" the structure of the factories to face the crisis, which must now be even more digital, automated, agile and safe.

Second disruption: lack of standardisation and common protocols

Source: Antonio Novo Guerrero, Nuno Lopez

Evidence: IoT solutions make factories more flexible and intelligent. In general, there are not particular barriers and critical issues in finding technologies and components for the implementation of digital transformation (sensors, machines, etc). In Europe, there are big companies that are world leaders in designing and implementation of IoT solutions for industries and factories. However, the solutions are mostly not compatible with each other, generating gaps for a widespread implementation. Thus, the real challenge is standardization. In order to be leaders and totally independent from world competitors (e.g. USA, China and Japan), we have to improve standardisation of communication protocols and network architectures (e.g. FIWARE). MQTT and OPC-UA are clear examples of increasingly widespread communication protocols, but today´s solutions on the market which are compatible with their integration are still a minority. The creation of common standards creation would be an opportunity for European companies, especially for SMEs, which would benefit from these common standards.

Geographical impact: EU

Stage of value chain: operations

Character of the disruption: lack of standards

Time frame: mid and long term

EU actions needed:

- **Funding:** research and innovation projects
- **Regulation:** creation of guidelines and standard regulation

Recommendation:

- The absence of common standards generates risks. When companies want to integrate solutions, devices, or cloud systems for data management, they often choose free or low-cost solutions (sometimes they customise them on their own). This process generates disadvantages and inefficiencies from multiple points of view, in particular the lack of competitive advantage. Therefore, standardizations would boost the competitiveness of our economy.

Third disruption: importance of IoT solutions to foster green economy

Source: Guillaume Roux

Evidence: Several digital solutions have already been developed to connect I4.0 and green economy. Trying to put together the sustainability-oriented and technology-oriented views under the same umbrella, the concept of Smart Sustainability has been proposed more and more by research and companies as a new way for making goods and managing production processes in a more sustainable way by exploiting smart technologies. Among many, experts consider some main ways to describe benefits achievable from the interaction between digital solutions and the green economy and sustainable manufacturing:

1. digitisation of the Circular Economies, considering I4.0 technologies as a set of opportunities supporting enterprises in increasing their circular degree and to foster resources recovery (e.g. disassembly processes and other EoL techniques digitalization);
2. the role that I4.0 technologies have in enabling circular business models related to the stakeholder's involvement (e.g., customers, shorter supply chains, local supply chains, etc.);
3. IoT solutions for monitoring and optimising energy and resource efficiency during lifecycle management.

Geographical impact: EU

Stage of value chain: factories and supply chain management

Character of the disruption: need to improve solutions

Time frame: mid and long term

EU actions needed:

- **Funding:** research and innovation projects

IDENTIFICATION OF NEEDS

Summarising, the main needs to increase EU companies' competitiveness in IoT and digital solutions fields are:

A) Need to guide digital transformation, especially for SMEs

B) Need to boost standardisation of IT architectures and communication protocols

C) Need to foster Sustainable Manufacturing paradigm through digital and advanced solutions