PRO-VE session on "Manufacturing Ecosystem Collaboration"

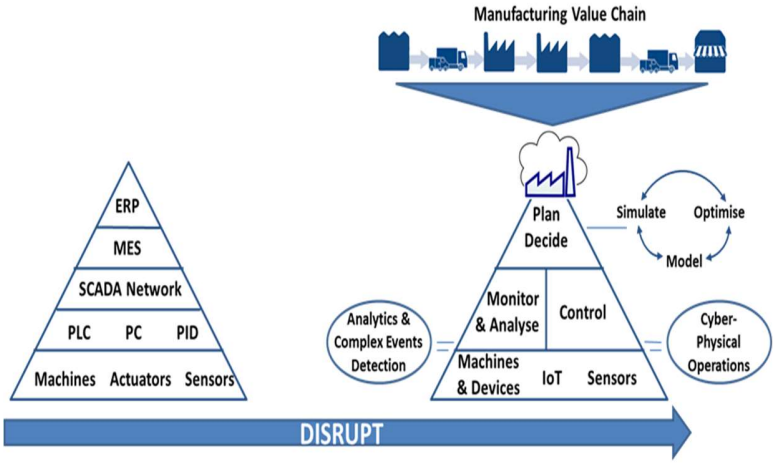
On September 18, 19 and 20, ITIA- CNR, one of the partner of DISRUPT organized the PRO-VE 2017 conference in Vicenza. For this edition the focus was on the "Collaborative networks in a data-rich environment" and the DISRUPT project coordinated a special session dedicated to "Manufacturing Ecosystem Collaboration". Manufacturing value chains are distributed collaborative networks dependent on complex information and material flow requiring new approaches inside and outside the factory both on process and product lifecycle level. Advances are needed in value chain and supply-chain communication and collaboration schemes that merge machine, human and organizational aspects; the new production architectures need to be more responsive to dynamic market demands which require radical change to achieve dynamic production re-configurability, scaling and resource optimization.
The special session allowed to present the main results of 4 European project; the authors discussed about their contribution to improve the integration of the ICT, automation and robotic technologies and the platforms in the paradigm of Industry 4.0.

The first work (Molina et al. "The AUTOWARE framework and requirements for the cognitive digital automation") was about the results of the AUTOWARE project after one year from its beginning. AUTOWARE will establish and push forward an open CPPS ecosystem, allowing SMEs to access all the different components in order to develop digital automation cognitive solutions for their manufacturing processes The hierarchical architecture allows to manage the complex flow of data from the devices, used in the production lines, to the cloud: a control plane is able to decide where it is better replicate, move and stored the data. In addition, the analysis shows the importance of the optimization modelling. It was demonstrated that the application of optimization would lead companies to save energy and therefore, become more cost-efficient.

The second presentation, (Sholze et al. "An Approach for Cloud-based Situational Analysis for Factories Providing Real-time Reconfiguration Services) discussed the results of the SAFIRE project. The project aims to develop a tool for the analysis and reconfiguration of the production system; the authors discussed the role of sensors and data management techniques for the industries pursuing Cyber-Physical Systems (CPS) and connected product networks (CPN). The four components of tool's architecture are: Situation Monitoring & Determination, Predictive Analytics Platform, Reconfiguration and Optimization Engine, and Security, Privacy & Trust. The

primary tool to achieve the proposed architecture is the combination of big data analytics and situational awareness to provide real-time optimization and reconfiguration opportunities.

The third presentation in this session was about the DISRUPT project (Eirinakis et al."A Proposal of Decentralised Architecture for Optimised Operations in Manufacturing Ecosystem Collaboration").



The proposed architecture aims at monitoring and predicting disruptions in manufacturing by introducing a different framework compared to the traditional automation pyramid. More specifically, the architecture consists of four components: Data Analytics and Complex Event Processing, Cyber-Physical Operations, the decision support toolkit, and Controller on the Cloud. The tool proposes a model in which co-simulation and optimization, combined with Cyber-Physical Systems (CPS), along with the analytics and complex event detection facilitate the decision-making process for the actors in the total manufacturing value chain. In the project are involved two industrial partners: the FCA group, from the automotive sector, and Arcelik from consumer durables and electronics sector. FCA will be able to manage more efficiently production planning and control with a responsive and dynamic reaction to disruptive events involving different levels of the supply chain. Arcelik will use the tool for the reconfiguration of the production layout in the plants and the logistics flows to face the fast dynamic markets demands.

In the last work (Ryynänen et al. "Supporting Product-Service Development through Customer Feedback"), the authors discussed the role of customers in product-service (PS) development. It focuses on the method of collecting the customer feedback which is the proposed method for MANUINTELLIGENCE project. Customer feedback is expected to improve the P-S, customer satisfaction, process efficiency and overall company competitiveness. New methods and channels for customer feedback require that the platform is able to integrate and manage the rich feedback data.