9th IFAC/IFIP/IFORS/IISE/INFORMS Conference
Manufacturing Modelling, Management and Control MIM 2019

Proposal of Special Session on "SME Digitalization in the era of Industry 4.0"

In recent years, many European countries have launched innovation and development plans for micro-, small and medium enterprises (with common name SMEs), funded by governments, in order to help them to overcome the economic crisis began in 2007. Both the titles ("Industry 4.0") and the scopes of the national plans are common, as they all tend to promote a strong development of "smart factories", in terms of "smart production", i.e. new automation and digitalization that allow full interconnection and integration of the production system, and with suppliers and customers.
Industry 4.0 plans have been launched in about fifteen European countries, starting from the German experience in 2013, and then extending to other countries, such as France, Austria, Belgium, Czech Republic, Denmark, Spain, Hungary, Italy, Lithuania, Luxembourg, Holland, Poland, Portugal, Sweden (as listed in the European Parliament, ITRE Committee, 2016), as well as USA.

The common objective of the Industry 4.0 measures in the various countries is to renew production and logistic processes and personnel organization of micro, mini and small enterprises, in terms of digitalization and automated integration of machine tools with the factory logistics system and the supply and distribution network, and in terms of interconnection of each machine with the development of product design. and with the control of the production quality level (see in papers as the one by Dolgui).

For SMEs it would be a great opportunity.
However, their managers (who usually are at the same time, owners, operations managers and technicians) face great difficulties in accessing funding from an "Industry 4.0" plan, due to lack of information and limits on their knowledge of new ICT technologies.

To overcome these difficulties of small business managers, some universities and agencies of various European countries have organized programs to support innovation and development of SMEs. Common objectives are to disseminate more precise knowledge of the measures of Industry 4.0, provide counseling for the development of projects funded by Industry 4.0, follow the company's development in its transformation based on a broad and accurate digitalization of production processes.

This Special Session aims to discuss the experiences of SME support implemented in European countries and in the USA, in a "round table" that gathers contributions from participants in the PMInnova program, a support plan for innovation and technological-organizational-management development started at the beginning of 2018 through an agreement between il Politecnico di Torino e il Gruppo Bancario Cassa di Asti, Biella e Vercelli.

The internationally renowned experts invited to participate in the "Round Table" are all members of the Scientific Council of the PMInnova Program.

Proposal 51 submitted to 9th IFAC Conference on Manufacturing Modelling,
Management and Control. Received October 31, 2018.

They will be invited to discuss two main problems related to the application of Industry 4.0 measures that push the digitization of SMEs:

- First, how to set up a technical consultancy - about structure and control of operations in the production process through a wide digitalization of machines and logistic supports - or a management-organizational consultancy - about monitoring and control of the volumes produced, the quality of components and final products, and on-time delivery;
- Second, how to use the knowledge acquired in a project financed by Industry 4.0 in their respective country, for collaborating in projects supported by the European Commission. In fact, a secondary goal of pans Industry 4.0 is to stimulate SMEs in their country to collaborate in joint research and development projects, financed by the European Commission, by reference to some their project prepared for "Industry 4.0" in the respective nation.

The list of internationally renowned experts invited to participate in the "Round Table : "SME Digitalization in the era of Industry 4.0" are:

- Prof. Alexander Dolgui, IMT-Atlantique, Nantes , France
- Prof. Dieter Spath, Fraunhofer IAO and University Stuttgart, Germany
- Prof. Chris O'Brien, Emeritus Professor, Nottingham University, UK & China
- Prof. Bart MacCarthy, Department Director, University Nottingham, UK
- Prof. Cathal Heavey, EU Project Coordinator, University Limerick - Ireland
- Mr. Markus Lux, Co-Director, Bosch Stiftung, Stuttgart, Germany
- Prof. Chrysostomos Stylios, Department Director, Tec. Ed. Institute Epirus, Greece
- Prof. Shimon Nof, IFPR Past-President, Director, PRISM Center, Purdue University, USA
- Prof. Xavier Boucher, Fayol Institute, St. Etienne, France
- Prof. Dominik Matt, Free University of Bolzano-Bozen, Italy
- Prof. Joachim Lentes, Fraunhofer IAO, Stuttgart, Germany
- Prof. Willelm Bauer, Fraunhofer IAO, Stuttgart, Germany
- Prof. Dr. Manfred Dangelmaier, Fraunhofer IAO, Stuttgart, Germany
- Prof. Veli-Matti Virolainen, IFPR President, University Lappeenranta, Finland
- Prof. Mrs. Daniela Popescu, Vice Rector Technical University of Cluj-Napoca, Romania
- Prof. Stephen J Childe, Plymouth University, Plymouth PL4 8AA UK
- Prof. Andrew Kusiak, University of Iowa, USA
- Prof. Jim Browne, University College Galway, Ireland
- Prof. Luis Camarinha-Matos, NOVA University of Lisbon, Portugal,
- Prof. Enrique Ares, E.E.I. Universidad de Vigo , España.

Special Session Proposers: Dott. Teresa Taurino and Prof. Agostino Villa, Responsible of PMInnova Program, on behalf of Politecnico di Torino,