Editorial

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Biographical notes: Antonio Padovano received his Master in Management Engineering. He is a Summa Cum Laude at the University of Calabria, Italy, where he is currently a Research Fellow and teaching assistant in the field of Industrial Systems Engineering. During his PhD, he actively cooperates (or cooperated) with several research institutions, organisations and companies worldwide, including Harvard Medical School, MIT's Zaragoza Logistics Center, NASA KSC, NATO STO CMRE, Rutgers University. He is also the guest editor of different international journal's special issues and authored/peer-reviewed articles for conferences and journals. He is also member of the IPC, organisational committee and track chair of the I3M multiconference.

Yongping Zhang is working towards her PhD degree at the School of Automation Science and Electrical Engineering from the Beihang University, Beijing, China. Her main research interests are the areas of manufacturing service management, service-oriented manufacturing, and smart manufacturing, decision-making and scheduling of distributed resource services in the cloud.

Letizia Nicoletti was the CEO of the Cal-Tek SRL where she is also currently the Senior Manager. She has followed as Scientific Responsible, many research projects in different areas including logistics and distribution, defence and cultural heritage in collaboration with international research centres (e.g., NATO STO CMRE). She is an author of more than 50 scientific papers and has been actively involved in the organisation of the International Multidisciplinary Modeling & Simulation Multiconference (I3M), one of the major events in the

field of modelling simulation worldwide. She is an expert in software development and modelling and simulation (M&S) methodologies including distributed real time simulation.

Smart manufacturing is made of "fully-integrated, collaborative manufacturing systems that respond in real time to meet changing demands and conditions in the factory, in the supply network, and in customer needs" (National Institute of Standards and Technology – NIST). But smart manufacturing has been also defined as "the ability to solve existing and future problems via an open infrastructure that allows solutions to be implemented at the speed of business while creating advantaged value." By the way, smart manufacturing and the concept of Industry 4.0 is being predicted as the next industrial revolution, enabled by the recent technology connectivity and the unprecedented access to and sharing of data. However, smart manufacturing implies numerous challenges, such as the need of integrating data from multiple devices and sensors, sharing information among different vendor applications and products that can be composed to form new solutions, and synchronising the involved systems at the right time. Thanks to the recent advances in ICT, such technologies can be applied to a single machine, to an entire factory, or across a network of suppliers and customers. As a consequence, the merge of physical and virtual items (the so-called cyber physical systems – CPS) opens up new areas of innovation that can optimise the entire manufacturing industry to create higher quality products, improve productivity, increase energy efficiency, and sustain safer plant floors. Smart manufacturing is emerging as the new backbone of factory operations to enable fluid integration of new and legacy physical and virtual technologies to permit dynamic processes necessary to accommodate high product variability and volatility. Complex system, sub-system, and component interactions within smart manufacturing systems make it challenging to determine specific influences of each on process faults and failures.

This CFP solicits papers that discuss approaches, models, methods and tools for enterprise modelling and system integration into the smart manufacturing context and aims at achieving knowledge-intensive enterprise applications, system integration and related service delivery for smart manufacturing, based on smart interoperable collaborative systems.

This special issue follows the 14th edition of the International Multidisciplinary Modeling & Simulation Multiconference (I3M 2017), which was held in Barcelona, Spain, from September 18 to 20, 2017. It is one of the biggest events of modelling and simulation (M&S) worldwide hosting eight international conferences/workshops (EMSS, HMS, MAS, IMAACA, DHSS, IWISH, SESDE and FOODOPS) and three collocated events (McLeod Workshop, Modelling and Simulation Network Workshop, New Simulation Project Workshop). The main idea of the special issue is to provide the readers with an overview of the current state of the art including theories, methodologies, applications and tools in the context of smart manufacturing and to feature high-level original research articles on the latest research trends in the broad area of Industry 4.0.

The special issue on 'Smart manufacturing systems: theories, advances and applications' deals with the use of M&S in an advanced computing perspective to support smart manufacturing. And it will focus on approaches, models, methods and tools for enterprise modelling and system integration into the smart manufacturing context and

knowledge-intensive enterprise applications, system integration and related service delivery for smart manufacturing, based on smart interoperable collaborative systems.

All the special issue papers, after their extensions (devoted to include latest results and scientific achievements) have undergone rigorous peer review and revision process to ensure high-quality scientific relevance. Final accepted five papers were based on further reviewing in this special issue, which are introduced as follows:

In the paper 'Multiple-model description and generalised algorithm of ship-building wharf scheduling', an SBW scheduling problem is investigated, which features dynamically distributed jobs, resources, flows, structures. A new original multiple-model description for SBW scheduling as OPC of job execution dynamics coupled with combinatorial optimisation and based on a natural dynamic decomposition of the scheduling problem and its solution with maximum principle in combination with MP is presented.

In the paper 'Agent-based modelling of urban land-use development: modelling and simulating households and economic activities location choice', aiming at the prospective assessment in the field of transport and land-use planning, a land use and transport interaction model that can perform estimations of changes in the location of population, economic activities, energy consumption, greenhouse gases and real estate prices has been introduced. An agent-based approach is used to simulate location choices to account for land use changes and to estimate residential and economic activities location.

In the paper 'Risk management and design of mitigation plans through discrete events simulation and genetic algorithms in offshore wind processes', risks are identified and quantified, and mitigation plans that avoid the risks identified in offshore wind processes are proposed.

In the paper 'Numerical and experimental comparisons of pressed blades for large Francis turbine runners manufactured with a reconfigurable pressing setup and a conventional setup', a reconfigurable setup of punch and die matrices for forming blades from very thick plates offers a flexible alternative to the conventional setup, finding that results agree well with data collected on blades pressed for the rehabilitation of a hydropower plant in Quebec.

In the paper 'An operating simulation tool for modelling and managing a job shop system', the machinery department of an important Italian company that manufactures plants for the food industry is analysed. An operational tool that can be used by the production manager to envisage the effect of different dispatching rules on the operating performance of the system is investigated.

This special issue has been made possible by the strong support of Professor Fei Tao, the Editor-in-Chief of the journal, and the joint effort of the Journal Manager, Mr. Alexandra Starkie. We would like to express our gratitude to the authors for their contributions, the referees for ensuring the quality of the accepted papers, and the staff of the Editorial Office and Production Department for their help in finalising this special issue.