Editorial

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Biographical notes: Francesco Longo received his PhD in Mechanical Engineering from the University of Calabria. He is currently an Assistant Professor and Director of the Modelling and Simulation Center, Laboratory of Enterprise Solutions (MSC-LES). His research interests include modelling and simulation for training procedures in complex environments, supply chain management and security. He has published more than 120 papers in international journals and conferences. He is an Associate Editor and Guest Editor of *Simulation: Transactions of the SCS*. He is a Guest Editor of the *International Journal of Simulation and Process Modelling*. He is the Editor-in-Chief of the *SCS M&S Newsletter* and he has extensively supported the organisation of international conferences as General co-Chair, Program co-Chair and Track Chair (MAS, EMSS, I3M, SCSC, etc.).

Yuri Merkuryev graduated from Riga Technical University as an Engineer in Automation and Remote Control in 1976. He received his Doctor of Engineering (Dr.sc.ing.) in Technical Cybernetics and Information Theory in 1982 from Riga Technical University ('Minimax estimation of control objects model parameters under interval uncertainty of initial information'), Habilitated Doctor of Engineering (Dr.habil.sc.ing.) in Information Technology in 1997 from Riga Technical University ('Methods for discrete-event systems simulation under limited resources').

This special issue is intended to capture the latest advances in terms of applications and approaches for logistic systems design and management. Indeed, logistics entails a wide variety of open issues that continue challenging researchers and practitioners to find out even more competitive and attractive solutions (Slats et al., 1995). In particular, the need for integrated as well responsive supply chain management policies, where the logistic system has to be considered as a whole rather than a set of facilities, resources and connections, calls for a great effort to capture and deal with such a complex matter (Min and Zhou, 2002).

Although research outcomes have provided valuable and sought-after solutions over the years, answers to logistic systems needs are far from being taken for granted. The

fast-changing economical and technical scenario, indeed, ceaselessly discloses new needs, and at the same time new opportunities. To this end, the search for deterministic rules is not even remotely feasible (Alfieri and Brandimarte, 1997). As a matter of facts, although dealing with quite similar operational scenarios, in most cases detecting a suitable management strategy does not imply unambiguous solutions due to inherent circumstances that make each single system unique.

This is why, analytical, numerical or computational approaches are called to provide ready-to-use and/or deploy solutions. Moreover, the need for flexibility in capturing fast-changing behaviours as well as the need to take into account many conflicting objectives, often qualitative and stochastic in nature, testifies the continuous search for advanced tools such as, for instance, those underpinned by modelling and simulation (M&S) or by the latest ICT technologies. Indeed, as widely shown in literature, many successful applications can be referred to as a proof of concept, see Swaminathan et al. (1998), Fujimoto (1999), Park et al. (2001), Lee et al. (2002), Terzi and Cavalieri (2004), Kim (2005), Lau et al. (2007), Bruzzone and Longo (2008), Viswanathan (2009), and many others.

In this perspective, the special issue on 'Advances in logistics cutting edge methodologies and applications' seeks to be a showcase of novel approaches and applications showing aspects and issues not explored yet and capturing the many facets of logistic systems. In particular, the main contributions pertain to routing problems, technologies for training, approaches for costs assessment and supply chain performances evaluation. These works are extended versions of previous researches presented during the International Workshop on Innovation for Logistics 2013 (WINLOG 2013). Thus, on one side, this special issue sums the various and heterogeneous aspects, pertaining to logistic systems, up and, on the other side, seeks to contribute to the state of the art pushing forward the available body of knowledge.

In 'Solution approaches for determining user-oriented paths on dynamic networks', by Luigi Di Puglia Pugliese and Francesca Guerriero, the authors face the time dependent multi-objective constrained shortest path problem. The solution process takes into account information given by the user in order to obtain a path, satisfying his/her requirements. For the first time, more than two criteria are considered and the reference point methodology is used to define the aggregation function. In addition, knapsack-like constraints are introduced in the formulation in order to model budget restrictions.

In 'New enabling technologies and solutions for car terminals procedures enhancement and operators training' by Agostino Bruzzone, Francesco Longo, Marina Massei, Roberto Musmanno and Letizia Nicoletti, the authors present a modular and scalable approach devoted to support training activities in car terminals. The training effectiveness is related to the ability of the proposed system to recreate, realistically and with a suitable level of detail, the main features and operational processes of a car terminal. Moreover, the proposed solution has been provided with interoperability capabilities that allow experiencing joint cooperative training scenarios involving drivers, parkers and different types of ships and yard layout.

In 'Integrated method of analysing logistics costs in supply chain' by Valery Sergeyevich Lukinskiy, Lukinskiy Vladislav Valeryevich and Daria Alexandrovna Zamaletdinova, the authors develop a methodical approach to come up with a computational model able to assess the impact of different logistics operations factors (for example, transportation, storage, orders, etc.), on total logistics costs and service levels.

In 'How many to produce? The impact of machine flexibility on the performance of a supply chain', by Eleonora Bottani, Roberto Montanari and Marta Rinaldi, the authors analyse the impact of machine flexibility on the performance level of a supply chain. A simulation model is developed to reproduce different supply chain configurations, with one player per echelon. The machine flexibility is modelled as the capability of the manufacturer to produce different kinds of products, in response to the customers' requests, and of the supply chain to manage those products. In the simulation model, this is reproduced by appropriately setting some specific parameters of the manufacturer. Overall, six different supply chain configurations are investigated, resulting from the combination of two factors, namely the number of supply chain players (from 3 to 5) and the number of products managed by the supply chain (1 or 3).

This special issue is the result of a joint effort between the International Workshop on Innovation for Logistics 2013 and the *International Journal of Supply Chain and Inventory Management*. I would like to thank authors and reviewers for their valuable work and the high quality contributions they have provided. Furthermore, I would like to express my special and sincere thanks to Prof. Eleonora Bottani (Editor-in-Chief of *the International Journal of Supply Chain and Inventory Management*) who has put a great effort on this special issue.

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