Editorial

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Biographical notes: Pablo Cortés is a Full Professor in Industrial Engineering at the University of Seville. His research interests focuses on the fields of optimisation and simulation, mostly using bio-inspired methodologies with application to transport and logistics, and vertical transportation. He has been author of more than 200 publications and he is also editorial board member of several journals and has been appointed as the Guest Editor for different special issues such this one. He is evaluator and consulter for the Spanish Agency for Research, the European 7h Framework Programme and Horizon 2020.

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Industrial engineering is an expertise of the engineering that appears strongly linked to the concepts of operations management, management science, operations research, systems engineering and computational intelligence, amongst others. However, the industrial engineering concept in the 21st century is overpassing these concepts and is extending to a systemic vision of all the fields and departments of the productive and service systems in an integrated way.

Industrial engineering thus appears as a toolbox of key-enabling technologies providing the most efficient management and optimisation of complex processes or systems. It relates to the capabilities of designing, developing and implementing integrated solutions for complex problems associated to supply chain, logistics, operations management, staff management, information systems, equipment, energy and material handling issues amongst others.

To deal with such complex systems their modelling, as well as the design of efficient algorithms capable of providing efficient and effective decisions turn into critical actions for a successful management. To do so, bio-inspired computation emerges as a suitable toolbox able to provide efficient methodologies for managing industrial engineering systems.

This special issue focuses on bio-inspired algorithms for decision support in industrial engineering systems in order to tackle with real life decisions in industrial engineering problems.

Ponte et al. make use of a multi-agent architecture to interpret and forecast real water demand. Certainly, water policies have gained extraordinary relevance since the last decades. In this line, the water demand management has turned into a strategic activity for such water policies. The goal is providing the required water making use of the fewest resources. To do so, demand forecasting arises as a critical factor.

Grillo Espinoza et al. have submitted a paper dealing with the supply chain master planning in an uncertainty domain that is tackled by using a particle swarm optimisation approach. Supply chain is one of the most recognised fields of application of the industrial engineering discipline.

Sáiz-Bárcena et al. present a knowledge management model for the power sector by means of a neuro-genetic system. Knowledge management systems are gaining relevance in terms of organisation survival and maintenance

of competitive strength. However, the special characteristics of the energy sector make such systems more crucial as energy is commonly a strategic national industry for most countries.

Escudero-Santana et al. tackle the drayage problem that appears within intermodal transport activities. Drayage in intermodal container terminals involves the pick up or delivery of containers at customer locations, and the main objective is normally the assignment of transportation tasks to the different vehicles, often with the presence of time windows. Such complex problem is solved using viral system, a bio-inspired approach that makes use of a virus-infection biological analogy.

All of them are good examples of the rigorous and serious research being undertaken in Spain to support complex decisions in the field of industrial engineering by using bio-inspired methodologies.

The papers submitted to this special issue were reviewed thoroughly by the referred reviewers and we on behalf of the Chief Editor Professor Zhihua Cui, extend my sincere thanks to all the authors and the reviewers. The four papers, which are included in this issue, have been chosen to give a wide coverage to the application of different bio-inspired approaches to support a broad variety of complex problems in different industrial engineering fields.