Editorial

Special Issue on Multicriteria Decision Support Systems

During the last decades the development of Multicriteria Decision Analysis (MCDA) has contributed significantly to the evolution of the theoretical and applied field of Operations Research and Decision Science. Additionally, the advances of MCDA kept pace with the development of Information Technology and Computer Science. It led to the development of Multicriteria Decision Support Systems (MCDSS) which constitute a powerful tool for analyzing complex and ill-structured problems in order to provide integrated support in deriving effective decisions in real time. "Multicriteria Decision Support Systems" comprise a Decision Support System's subcategory since they exhibit the main characteristics of a DSS, provided that at least one of their supported models stems from the MCDA field.

The aim of this special issue of Computación y Sistemas is to provide a representation of the new trends of MCDSS. It reports original research, techniques, state-of-the-art surveys, and advanced applications of MCDSS. This special issue includes extended and carefully revised version of the bestpapers presented during the 3th Meeting of the Iberoamerican Network on Multicriteria Decision and Evaluation (RED-M). After a reviewing process, six papers were finally accepted for publication in the special issue. Next, we give a brief overview of these papers.

The first contribution, by I. Litvinchev et. al., deal with a mixed-integer linear programming (MILP) model for the bi-objective public R&D projects portfolio problem. The proposed approach provides an acceptable compromise between the impact and the number of supported projects. They use Lagrangian relaxation techniques to get easy computable bounds for the objectives. Furthermore, the authors validate the proposed approach using some test examples.

The second paper, by A. Oddershede et. al., presents a multicriteria decision making model for evaluating an Information and Communication Technology network system in health care. The authors propose a methodology to develop criteria for evaluating quality of service issues of an Information and Communication Technology network system within a healthcare environment using the Analytic Hierarchy Process.

The third paper, by A. Turón et. al., focus on E-cognocracy, a new system conceived for the purpose of extracting and diffusing the knowledge derived from the scientific resolution of complex problems that arise in the field of public decision making which use multicriteria decision making techniques. The authors present a set of procedures oriented towards group decision making which use graphical visualization tools as starting point in the creation of knowledge all the participants involved in the problem resolution.

The fourth paper, by C. Garuti et. al., center on the use of the eigenvector as the operator that derives priorities in the Analytic Hierarchy Process. Using concepts of Systems Theory, the authors show that the eigenvector, because it is a systemic

operator, is the most suitable to represent and capture the behavior of the whole system and its emerging properties.

The fifth paper, by E. Sevilla and C.E. Escobar, addresses a multicriteria problem that occurs commonly in the industry. This problem is the application of preventive maintenance; using the PROMÉTHÉE-GAIA methodology, the authors recommend a solution which includes the management and the ranking of the process equipment in order to apply preventive maintenance opportune.

Last, but not least, the paper by M.E. Captivo and J.N. Clímaco concentrate on location problems. The authors outline the more relevant multicriteria mixed-integer location models and approaches taking into account several issues. They also discuss the adequacy of the available models to reality and put in evidence the importance of interactive approaches discussing a decision support tool in which they are co-authors.

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