Preface

This special issue of RAIRO-Operations Research is dedicated to the 14th ROADEF Conference (ROADEF 2013) of the Operations Research (OR) and Management Science (MS) French Society, held in Troyes, *Université de Technologie de Troyes* (UTT) on February 13–15, 2013. The ROADEF is a yearly conference and the biggest French forum for exchanging and discussing OR/MS recent scientific developments and new trends. In spite of being organized by the OR/MS French Society, the ROADEF gathers researchers from several countries, in particular it has gained visibility and attracted foreign young researchers by means of the ROADEF Challenge. ROADEF 2013 brought out several interesting and emerging works with 346 high-quality contributions and about 500 participants from academia and industry, which illustrates the dynamism of the OR/MS French Society. The conference covers all aspects of OR/MS, including applications and theoretical issues. Detailed information about ROADEF 2013 is available on http://roadef2013.utt.fr/.

Twenty-four articles were submitted to the special issue "*Combinatorial Optimization in production and logistics systems*". The six selected contributions are a sample of the rich diversity of studies presented in ROADEF 2013, and address the following topics: mathematical formulations for healthcare, a generalized consistent neighborhood search for satellite range scheduling problems, metaheuristics for a lot-sizing production planning problem with returns, a multi-objective exact procedure for a network design problem, and notation and classification for vehicle routing problems and network design models.

The study of Gourgand, Grangeon and Klement investigates a real-life problem found in the new French organization: the Hospital Community of Territory (HCT). HCT aims at providing a collaborative system to share human and material resources among geographically close hospitals. The authors propose mathematical formulations for planning medical exams, by taking into account the material constraints and deciding the best deployment of human resources.

Zufferey and Vasquez present a generalized version of the Consistent Neighborhood Search (CNS) and apply it to three types of satellite range scheduling problems. The CNS is a local search which deals with partial feasible solutions and its generalization manages active and relaxed constraints, and threshold values used in the repairing phase. The applications are of particular interest to the French National Space and Aeronautic Agencies, and the U.S. Air Force Satellite Control Network.

Zouadi, Yalaoui, Reghioui and El Kadiri propose metaheuristics for a variant of the lot-sizing production planning, where manufacturing and remanufacturing are considered with the goals of reducing the holding, set up and preparation costs. The remanufacturing appears in the reverse logistics and it is one of the most promising ways of improving the products' end-of-life and of satisfing up-to-date constraints such as economical and environmental ones.

De Sousa, Santos and Aloise propose an exact procedure based on Parallel Partitioning Method for the bi-objective Minimum Diameter-Cost Spanning Tree problem (bi-MDCST). This theoretical study provides Pareto-optimal fronts to instances broadly applied in the literature for the bi-MDCST and the well-known Bounded Diameter Spanning Tree Problem. The bi-MDCST finds applications in network design and in the strategical and tactical levels of decision for high-speed trains infrastructure, where the goals are twofold: reducing costs and improving the quality of service.

The two last contributions reflect the interest of the scientific community in providing a standard and accurate way to refer the large number of variations and generalizations for classical optimization problems. The main motivation is the limits attained by the acronyms, prefixes and suffixes, which are often ambiguous, with numerous redundancies and imprecisions. Cherif, Rachid, Bloch and Chatonnay propose a new notation and classification for Vehicle Routing Problems with four fields: the VRP parameters and horizon, the system structure, the resources and demands, and the constraints and objectives. The study of Gayraud, Grangeon, Deroussi and Norre presents a new notation and classification for multi-period logistic network design models. It takes into account three fields: the network structure (single or multiple echelon, *etc.*), management rules (stochastic or deterministic, *etc.*) and costs (transport, distribution, *etc.*). Both studies are inspired by the scheduling notation and classification.

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