

New Opportunities for Operations Research – Feature Issue of the Joint EURO/INFORMS Conference, Istanbul, July 2003

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The EURO/INFORMS Joint International Meeting 2003, which was held at the Conrad Hotel in Istanbul from 6–10 July, was a remarkable conference in many respects. It was remarkable in terms of the excellent facilities and the perfect organisation which were offered at the conference site, the high quality of both scientific and social program, and not to forget the unmatched hospitality offered by our Turkish friends.

However, for many of us who have been involved in the preparation of the conference for such a long time, perhaps the most remarkable aspect was the huge number of participants, which—despite the war in Iraq and SARS—found their way to Istanbul. After a very slow start, we finally ended up close to a record number of registrations for a EURO conference. In total, 1641 delegates participated in the conference, and more than 1500 papers were scheduled and presented in 410 sessions. Obviously, only a very limited selection of the presented papers could be accommodated in this feature issue.

The papers published here have been arranged into two parts. Part one presents the papers from the awards which were handed out at the conference.

The EURO Gold Medal 2003 was conferred to *András Prékopa* during the Opening Session of the conference. In his speech the laureate recalled the origins and subsequent developments of the “Hungarian Inventory Control Model”. It is based on the assumption that the delivery of the ordered amount takes place in an interval rather than at one point in time. From the model, one wants to determine the minimum safety stock level that ensures continuous production with a certain predefined probability.

EURO’s new, prestigious award, the Management Science Strategic Innovation Prize (MSSIP), was handed out for the first time in Istanbul. The jury chaired by Christof Weinhardt selected the paper on “The Valuation of Options on Capacity with Cost and Demand Uncertainty” by *Stefan Spinler* and *Arnd Huchzermeier* as the winner. The authors develop an analytical model for the valuation of options on production capacity for non-storable goods and dated services. The market consists of a sequence of contract and spot market, which is shown to be Pareto-improving in comparison to alternative market schemes.

The Excellence in Practice Award (EPA) has already become a regular feature of EURO Conferences. The jury chaired by Mike Pidd selected three papers for presentation in the conference. In their talk "MABS: Spreadsheet-Based Decision Support for Precision Marketing", *Bert De Reyck* and *Zeger Degraeve* presented a system for scheduling and optimising broadcasts of advertisements to mobile phones. *Christos Voudouris et al.* outlined "ARMS: An Automated Resource Management System" which they developed for British Telecommunications plc and that integrates a forecasting tool with a resource balancing and management tool for operational/tactical planning of the company's engineer workforce. *Patrik Eveborn, Patrik Flisberg, and Mikael Rönnqvist* dealt with "LAPS CARE—An Operational System for Staff Planning of Home Care". Their system is meant to generate visiting schedules for home-care providers that consider specific restrictions and soft objectives. The finalists' papers are included in this issue. They all represent success stories of the application of Operations Research in practice. After the presentation the jury decided to grant the EPA 2003 to *Patrik Eveborn, Patrik Flisberg, and Mikael Rönnqvist*. Congratulations to the prize-winners for a superb piece of practical OR!

Part two of this feature issue represents a collection of papers devoted to the conference theme "New Opportunities for Operations Research". They have been submitted following the programme committee's Call for Papers and were refereed according to regular EJOR standards. From 64 papers originally submitted, 13 finally made it into this issue.

Three papers were assigned to the area of Finance and Accounting. In "Bayesian Portfolio Selection with Multivariate Random Variance Models", *Refik Soyer* and *Kadir Tanyeri* take a look at multiperiod portfolio selection problems where the variance of the security returns is defined by a discrete time stochastic model. *Javier de Frutos* discusses "Implicit-Explicit Runge-Kutta Methods for Financial Derivatives Pricing Models". It is shown that these methods can be considered as alternatives in the valuation of American-type contracts. *Hubert Missbauer* and *Wolfgang Hauber* deal with a bid-pricing problem in which the final payment can differ with the actual workload which is not completely known in advance: "Bid Calculation for Construction Projects: Regulations and Incentive Effects of Unit Price Contracts".

The largest number of papers was accepted for the cluster on Production, Logistics, Supply Chain Management. *Jutta Geldermann et al.* present an "Integrated Technique Assessment Based on the Pinch-Analysis Approach for the Design of Production Networks". The authors claim that the combination of engineering, process integration and Operations Research allows for an integrated technique assessment, considering a variety of economic and environmental process attributes. In "Modeling Reverse Logistics Tasks within Closed-Loop Supply Chains: An Example from the Automotive Industry", *Frank Schultmann et al.* discuss different design options for a Closed-Loop Supply Chain which are based on real-world data.

Reverse logistics aspects are modeled by means of vehicle routing planning. *Aaron Luntala Nsakanda et al.* introduce a "Hybrid Genetic Approach for Solving Large-Scale Capacitated Cell Formation Problems with Multiple Routings". They develop a model that integrates the cell formation problem with the machine allocation problem and the part routing problem and considers multiple process plans for each part and multiple routing alternatives. *H. Wong et al.* ("Multi-Item Spare Parts Systems with Lateral Transshipments and Waiting Time Constraints") analyse a continuous review model of two-location inventory systems for repairable spare parts. The spare parts are used for expensive technical systems and require high target availability levels. In "A Comparison of Outbound Dispatch Policies for Integrated Inventory and Transportation Decisions" *Cetinkaya et al.* compare time-based and quantity-based dispatch policies. For the case of stochastic demand it is shown that substantial cost savings can be obtained through quantity-based policies. In addition to that, also hybrid policies are analysed.

Three papers form the cluster on Natural Resources and Energy. As markets have been deregulated in Europe, energy companies must optimise power generation considering the rapidly fluctuating price on the spot market. New production technologies, such as gas turbines, combined heat and power generation, and combined steam and gas cycles require "Non-Convex Power Plant Modelling in Energy Optimisation". *Simo Makkonen* and *Risto Lahdelma* formulate the decision-problem of a power company as a large mixed integer programming model. *William Rosehart et al.* analyse the use of "Interior Point Models for Power System Stability Problems" and they present an approach that incorporates voltage stability criteria in traditional Optimal Power Flow formulations. In "Optimization of a Large-Scale Water Reservoir Network by Stochastic Dynamic Programming with Efficient State Space Discretization", *Cervellera et al.* consider a water reservoir network with ten basins, which are affected by stochastic inflows and controlled by means of water releases. Optimal management of the reservoir system can be formulated as an optimisation problem in which the aim is to determine the quantity of water releases that minimise a total cost function over a given time horizon.

This conference issue concludes with a cluster on applications to decision problems in the airline industries. In their paper "Check-In Computation and Optimization by Simulation and IP in Combination", *Nico M. van Dijk* and *Erik van der Sluis* look at the problem of determining the optimal number of check-in counters in order to meet a certain service level for each flight. *Yufeng Guo et al.*, in "A Partially Integrated Airline Crew Scheduling Approach with Time-Dependent Crew Capacities and Multiple Home Bases", consider the crew scheduling problem where crew members are stationed unevenly among home bases. Furthermore, their availability changes dynamically during the planning period due to prescheduled activities.

When preparing this feature issue, the editor has received valuable contributions and support from numerous members of the OR community. In the end, it was their help which made this issue possible! My sincere thanks deserve Murat Tarimcilar (programme committee co-chair, INFORMS) and the members of our programme committee. They were an enormous support in screening more than 1800 abstracts and structuring them into the final conference program. Murat and I are indebted to Gülay Barbarosog?lu and her organising committee for their hospitality during several preparatory meetings in Istanbul and their constant willingness to discuss schedules with us and pointing out their consequences to us. Taner Bilgic gave us invaluable help in managing abstracts and papers electronically. It has been a privilege to work with them all!

The chairmen of the MSSIP and the EPA juries, Christof Weinhardt and Mike Pidd, did a great job in selecting the prize-winners. Thanks also to them for making the papers of the competitions available to this feature issue and for the support in editing the papers! Elif Akcali, Süleyman Özekici, Ilhan Or, and Christine Strauss took over much of the workload in organising and managing the review process of the contributed papers. Thanks go to them and to the numerous referees, without their advice and comments this issue couldn't have been completed.

I hope that the readers of this feature issue will find the papers and the presented results stimulating. For those who have been attending the Istanbul conference, I trust that this issue of EJOR will bring back many pleasant memories.