3 - Identifying and ranking critical success factors of the nine challenges in Malaysian vision 2020

Rafikul Islam, Department of Business Administration, International Islamic University Malaysia, Jalan Gombak, 53100, Kuala Lumpur, Malaysia, rislam@iiu.edu.my

By the year 2020, Malaysia aspires to become a fully developed nation. In order to realize this vision, Malaysia needs to address nine strategic challenges identified by the former Malaysian Prime Minister Tun Dr. Mahathir bin Mohammad. The present paper intends to identify and rank the critical success factors of those nine challenges by applying Analytic Hierarchy Process. The findings are expected to provide valuable guidelines to the Malaysian government in course of developing effective action plans to achieve vision 2020.

■ TC-16

Tuesday, 11:30 AM - 1:00 PM
Sandton Sun: Jacaranda

Air Transportation
Stream: Air Transportation
Invited session
Chair: *Qing Ding*, School of Business, Singapore Management University, 50 Stamford Road, Singapore 178899, 178899, Singapore, Singapore, dingqing@smu.edu.sg

1 - Robust crew pairing scheduling

Viktor Dück, University of Paderborn, Warburgerstr. 100, 33098, Paderborn, Germany, vdueck@upb.de

Traditional crew pairing scheduling does not consider the possibility of disruptions on the day of operations. We extend the traditional model to allow creating schedules, which are more robust to such disruptions and changes of the environment. Furthermore we present an IP Column Generation method to solve the new model.

2 - An iterative approach to integrated aircraft routing, crew pairing and flight re-timing

Oliver Weide, Engineering Science, The University of Auckland, Auckland, New Zealand, o.weide@auckland.ac.nz, *David Ryan, Matthias Ehrgott*

We consider the airline scheduling problems aircraft routing, crew pairing and flight re-timing. Aircraft and crew must be allocated to flights in a schedule in a cost minimal way while the departure times of some flights are allowed to vary within a time window. We solve the aircraft routing and crew pairing problem with an iterative approach, alternately solving aircraft routing and crew pairing. This generates a series of low cost solutions that are also robust to disruptions. We additionally allow some flexibility for the departure times and present results for real world data sets.

3 - Revenue management in aircraft leasing business

Qing Ding, School of Business, Singapore Management University, 50 Stamford Road, Singapore 178899, 178899, Singapore, Singapore, dingqing@smu.edu.sg, *Brian Rodrigues, Kwan Eng Wee*

In this paper, we study a multi-period aircraft leasing problem. In each period, independent airline companies can lease aircraft from a leasing company to augment existing capacity, e.g., if needed for contingencies such as demand peaks. Before the first period, the leasing company must decide on its lease capacity for the planning horizon. For each period, the leasing company also decides rental rates while each airline determines its lease quantity and fare pricing policy. Using a principal-agent model, we derive managerial insights arising from the interactions of these decisions.

■ TC-17

Tuesday, 11:30 AM - 1:00 PM
Sandton Sun: Oleander

Software Demos II (AIMMS/MPL)
Stream: Software Demonstrations
Contributed session
Chair: *Bjarni Kristjansson*, Maximal Software, Ltd., Nordurasi 4, 110, Reykjavik, Iceland, bjarni@maximalsoftware.com
Chair: *Robert Fourer*, Industrial Engineering and Management Sciences, Northwestern University, 2145 Sheridan Road, 60208-3119, Evanston, IL, United States, 4er@iems.northwestern.edu

1 - Teaching OR and solving business problems with AIMMS

Frans de Rooij, AIMMS, Paragon Decision Technology B.V., Schipholweg 1, 2034 LS, Haarlem, Netherlands, frans.de.rooij@aimms.com

AIMMS is the advanced modeling system for building optimization-based decision support applications.
AIMMS can be used to teach OR very effectively: Students can focus on problem analysis and try out various model formulations without having to learn a complicated language. The integrated visualization enables interactive analysis and further model development.
AIMMS can also be used to solve complex business problems, as we will show with real-life cases. AIMMS models can be turned into fully-operational optimization applications, enabling business users to experience the power of OR.

2 - Introducing new release of MPL modeling system for optimization with new and enhanced features

Bjarni Kristjansson, Maximal Software, Ltd., Nordurasi 4, 110, Reykjavik, Iceland, bjarni@maximalsoftware.com

We will be demonstrating the newest release of MPL, the fastest and most scalable modeling language on the market today. The innovative OptiMax 2000 Component Library, which allows MPL models to be easily embedded into end-user applications, has been augmented to include several new objects and methods. The speed and scalability of the model generation has been greatly enhanced, and with new 64-bit machines capable of solving much larger models than ever before. Several new solvers have been added and existing solvers updated. Data access has been improved and now offers full XML support.

■ TC-18

Tuesday, 11:30 AM - 1:00 PM
Sandton Sun: Syringa

Meta-heuristics for optimizing telecommunications networks
Stream: Telecommunications
Invited session
Chair: *Mauricio Resende*, Algorithms & Optimization Research, AT&T Labs Research, 180 Park Avenue, Room C241, 07932, Florham Park, NJ, United States, mgcr@att.com

1 - A simulated annealing approach for the replica placement problem in content delivery networks

André Dahlmann, Lehrstuhl für Technische Dienstleistungen und Operations Management, Technische Universität München, Arcisstr. 21, 80333, München, Germany, andre.dahlmann@wi.tum.de, *Rainer Kolisch*

A content delivery network represents a part of the internet and consists of servers (nodes) and data links (edges) between them. We consider the problem of allocating copies (replicas) of a single content to servers such that the total costs of placement, update and delivery are minimized subject to service level constraints (maximum latency). A simulated annealing approach is suggested and experimentally tested.