Edmund K. Burke
Hana Rudová (Eds.)

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Practice and Theory of Automated Timetabling VI

6th International Conference, PATAT 2006
Brno, Czech Republic, August/September 2006
Revised Selected Papers

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Preface

This volume contains a selection of the papers presented at the Sixth International Conference on the Practice and Theory of Automated Timetabling (PATAT) which was organized in Brno, Czech Republic, from August 30 to September 1 of 2006.

The PATAT conferences, which are held every 2 years, bring together researchers and practitioners from across the broad spectrum of inter-disciplinary research activity in search methodologies for automated timetable generation. This includes university timetabling, school timetabling, personnel rostering, transportation timetabling, sports scheduling. The programme of the 2006 conference featured 70 presentations which represented the state of the art in automated timetabling: there were four plenary papers, 17 full papers, 41 extended abstracts, and eight system demonstrations. After the conference, all authors were invited to submit their papers to a second round of rigorous refereeing for this volume of selected revised papers. We are pleased to have accepted 25 papers for this volume. This figure represents the highest number of acceptances in a PATAT post-proceedings volume and is a testament to the high standards of the papers that were submitted.

The organization of the book is structured around particular problem areas. Several papers are devoted to employee timetabling. It is not surprising to see that most of these papers are concerned with health care personnel scheduling which, historically, has always been an active application area at PATAT. The last, more general, paper in this section studies the relationship with production scheduling. The section on sports timetabling contains papers which are mostly oriented towards various tournament timetabling problems. The last article on referee assignment has a close relationship with employee timetabling. As usual, the volume contains a wide range of papers on educational timetabling. During the conference, various discussions were generated by Barry McCollum's plenary talk where questions on the applicability of the current academic research on real-world university timetabling were posed. This is an important issue and it is likely to impact significantly upon future timetabling research.

Of course, a very important aspect of the presented papers, across all applications, is represented by the search methodologies that are presented and discussed. This volume presents a wide variety of new and innovative techniques which represent an important contribution to the timetabling research literature. We think that this work provides a strong platform for the future and we look forward to the ongoing success of the conference series.

The meeting in Brno was the sixth in the PATAT series of international conferences. The first five conferences were held in Edinburgh (1995), Toronto (1997), Konstanz (2000), Gent (2002), and Pittsburgh (2004). Selected papers

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from these conferences have all appeared in the Springer *Lecture Notes in Computer Science* series. The full references are:

Edmund K. Burke and Peter Ross (Eds.): Practice and Theory of Automated Timetabling, 1st International Conference, Edinburgh, UK, August/September 1995, Selected Papers, Lecture Notes in Computer Science, Vol. 1153, Springer, 1996.

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Edmund K. Burke and Hana Rudová (Eds.): Practice and Theory of Automated Timetabling, 6th International Conference, Brno, Czech Republic, August–September 2006, Selected Papers, Lecture Notes in Computer Science, Vol. 3867, Springer,. (This volume.)

The seventh conference will be held in Montreal, Canada, August 2008. See http://www.asap.cs.nott.ac.uk/patat/patat-index.shtml for information on the conference series.

We would like to express our gratitude to the large number of people who contributed to the excellent conference in Brno and who worked very hard to prepare this volume. The Steering Committee ensures that the series goes from strength to strength. The Programme Committee represents the pool of referees for both rounds of the reviewing process. The papers for this volume were carefully refereed by four members of the Programme Committee. Their insight has meant that many of the papers were significantly improved during the reviewing process. We should also extend our thanks to all the authors who carried out a significant amount of work to produce papers of the current high level of quality. Our thanks also go to Piers Maddox, our copy editor, who, as usual, prepared the volume to an extremely high standard of formatting and typesetting.

We would particularly like to thank the Faculty of Informatics at Masaryk University for hosting the conference. We are also grateful to all the members of

the Organizing Committee, who helped so much to ensure that the conference was a success. A very special thank you should go to Adam Rambousek for his support and for granting us the permission to use his conference management system. We would also like to express our gratitude to Jakub Mareček for his assistance with the typesetting of the conference proceedings and Lenka Bartošková for her assistance with the budget. Particular thanks should also go to Emma-Jayne Dann for her administrative support. Last but not least, we would like to thank the conference sponsors: ORTEC bv, eventMAP Ltd, CELCAT, AVmedia, a.s., and the Ministry of Education, Youth and Sports of the Czech Republic for their support under research intent No. 0021622419.

We are, of course, also very grateful to all the delegates. They helped to create a wonderful atmosphere at the conference in Brno. We are looking forward to seeing them together again at the next conference in Montreal in the Summer of 2008.

July 2007

Edmund K. Burke
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General Issues

A Perspective on Bridging the Gap Between Theory and Practice in University Timetabling

Barry McCollum

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Abstract. The study of the relationship and interaction between the work carried out in the academic literature and the requirements of university administrators is essential if ideas generated by research are to benefit every-day users. Conversely, it is crucial that the needs of the timetabling community influence the direction taken by research if high-quality practical solutions are to be produced. A main objective of the work presented here is to provide up-to-date information which will enable researchers to further investigate the area of timetabling research in relation to the generation of robust and flexible techniques which can cope with complexities experienced during implementation in 'real world' scenarios. Furthermore, although not discussed here in detail, it is essential, from a commercial perspective, that these developed leading edge techniques are incorporated and used within general applicable timetabling tools. The aim of this paper is to motivate the discussion required to *bridge this timetabling gap* by bringing timetabling research and educational requirements closer together.

1 Introduction and Context

In the recent international review of Operational Research in the UK (commissioned by the Engineering and Physical Sciences Research Council), a major identified weakness in the current approach to Operational Research is described as follows [50]:

> ... a gap still remains between the output of a successful research project and what is needed for direct use by industry.

In general, the area of educational timetabling is one such area. Our research-based spin-out company, eventMAP Limited, has an important role to play with respect to this 'gap' as it is in a unique position to integrate leading edge research techniques with the requirements of the user base in the provision of timetabling solutions. One of the primary overall aims of the company is to specify software which acts as an enterprise resource planning tool as well as a management information service, informing on strategic ways forward for the need for, use of and allocation of resources within an institution. A major aspect of the adopted strategy for achieving this is to highlight the important aspects of institutional

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