EURO 2015

12 -15 JULY 2015
GLASGOW

27th EUROPEAN CONFERENCE ON
OPERATIONAL RESEARCH

FINAL
REPORT

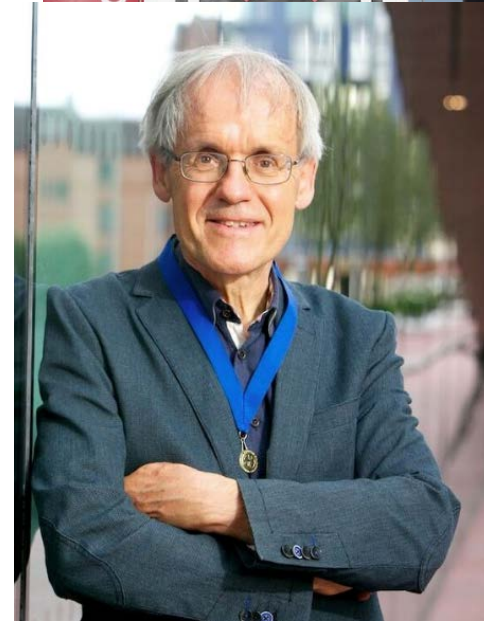**EURO**
The Association of European
Operation Research Societies

or
THE OR SOCIETY

Contents

CONFERENCE ORGANISATION

EURO2015 was the product of intensive collaboration over more than two years. Here we give some of the vital facts and figures about the conference.

Conference Organisation

The EURO2015 Conference was held at University of Strathclyde in Glasgow, from 12-15 July 2015. The event was organized under the auspices of the UK Operational Research Society working in collaboration with the University of Strathclyde and with EURO.

The Programme Committee was led by Prof David Pisinger of DTU, and the Organising Committee was led by co-chairs Prof Val Belton and Prof Tim Bedford of the University of Strathclyde.

Programme Committee

David Pisinger, Chair of the Programme Committee
Technical University of Denmark, Denmark

Gernot Tragler
Vienna University of Technology, Austria

Patrick De Causmaecker KU
Leuven, Belgium

Claudia Archetti University of
Brescia, Italy

Juan-José Salazar-González

Universidad de La Laguna, Tenerife

Sibel Alumur Alev
University of Waterloo, Canada

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Anita Schöbel
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Ahti Salo
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Philip Jones
Defence Science and Technology Laboratory, United Kingdom

Valerie Belton
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Tim Bedford
University of Strathclyde, United Kingdom

Marc Sevaux
Université de Bretagne-Sud, France

Sally Brailsford
University of Southampton, United Kingdom

Gerhard-Wilhelm Weber
Middle East Technical University (METU), Turkey

Daniele Vigo
Alma Mater University of Bologna, Italy

Organising Committee

Val Belton, Co-Chair of the Organising Committee,
University of Strathclyde

Tim Bedford, Co-Chair of the Organising Committee,
University of Strathclyde

Andy Harrison
FICO

Paul Harper
Cardiff University

Gavin Blackett
The OR Society

Hilary Wilkes
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Rosmary Byde
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Independent Consultant

Galina Andreeva
University of Edinburgh

Ana Isabel Barros
TNO

Rosemary Byde
RBS

Andy Harrison
FICO

Philip Jones
DSTL

David Lowe
DSTL

Jane Parkin
Jigsaw

Ramune Sabaniene
Equinity

Collaborating Organisations

University of Strathclyde

The University of Strathclyde traces its origins back to its establishment in 1796 as a 'place of useful learning' at the time when the industrial revolution was transforming society. Its founder, John Anderson, was a friend of the inventor James Watt and of the American "founding father" Benjamin Franklin whose foundation of the University of Pennsylvania was also based on similar principles. Today Strathclyde University is recognised as a leading international Technological University, with an excellent record of industrial research collaboration symbolised by its new Technology and Innovation Centre. The Department of Management Science plays a key role in collaborative research with industry – often working closely with colleagues in the Engineering, Science and Social Science faculties. Management Science is an important part of Strathclyde Business School – one of the UK's top ten Business Schools as demonstrated in the recent Research Excellence Framework results.

The Association of European Operational Research Societies

EURO is the Association of European Operational Research Societies. It is a non-profit organisation, founded in 1975 and domiciled in Switzerland, and its objective is to promote Operational Research throughout Europe. EURO is a regional grouping within the International Federation of Operational Research Societies (IFORS) and full membership is restricted to national societies that are members of IFORS.

EURO is regulated by a Council consisting of representatives/alternates of all its members and an Executive Committee, which constitutes its board of directors. In addition the Executive Committee and Council select an IFORS Vice-President to liaise with IFORS. EURO is supported by additional officers who have specific responsibilities and administrative roles.

The aims of EURO are the advancement of knowledge, interest and education in operational research by the exchange of information, the holding of meetings and conferences, the publication of books, papers, and journals, the awarding of prizes, and the promotion of early stage talents. Full details of EURO activities can be found at: https://www.euro-online.org/

The OR Society

Founded over 60 years ago in succession to the Operational Research Club which was set up in 1948. The UK's OR Society is the world's oldest-established learned society catering to the Operational Research (O.R.) profession, and one of the largest in the world, with 2,700 members in over 60 countries.

The Society's principal activities are:

- Fostering higher standards in O.R. by providing the world's most extensive training programme in O.R. and Analytics
- Enabling members of the profession to keep up to date by publishing journals of international repute and organising national, international and specialist conferences in the subject.
- Enabling members to share their work through a Document Repository and by the Society's special interest groups and regional societies, which organise regular meetings open to all.
- Demonstrating to the wider community the benefits, in terms of greater efficiency, improved service or otherwise, that O.R. can bring to society. Activities include the Science of Better www.scienceofbetter.co.uk , O.R. in Schools and Pro Bono O.R. initiatives

More details about the activities of the OR Society can be found at www.theorsociety.com

MCI

At MCI, we believe that when people come together, magic happens.

That's why we've been bringing people together through innovative meetings, events, congresses and association management since 1987.

Through face-to-face, hybrid and digital experiences, we help companies and associations to strategically engage and activate their target audiences, building the dedicated online and offline communities they need to strengthen their brands and boost their performance.

An independent, privately held company with headquarters in Geneva, Switzerland we have offices in over 30 countries across Europe, the Americas, Asia-Pacific, India, the Middle East and Africa and deliver projects for clients all over the world.

At EURO2015, MCI are the Professional Conference Organising Company chosen by the conference Organising Committee to support the organisation of and aid the successful running of the conference.

EURO 2015: Summary – delegate numbers and financial outcome

EURO2015 delegate numbers			
"Regular participants"	Registration Cost	Numbers	% of regular delegates
Student Early Reg (to 15 April)	£137.50	571	28%
Student Late Reg	£208.33	10	0%
Regular Early Reg	£250.00	1130	56%
Regular Late Reg	£333.33	298	15%
Total		**2009**	
Others			
Accompanying persons	£110.00	53	
Exhibitors & Sponsors		22	
Invited speakers		13	
Committee members		30	
Student support		60	
Total		**125**	
Overall TOTAL		**2134**	

Financial Outcome

INCOME

Registration Fees

	Unit Cost		No.		Amount		
Student Early	£	137.50	571	£	78,512.50		
Student Late	£	208.33	10	£	2,083.30		
Regular Early	£	250.00	1130	£	282,500.00		
Regular Late	£	333.33	298	£	99,332.34		
Acc. Person	£	110.00	53	£	5,830.00		
			TOTAL			£	468,258.14

Social Event Fees

	Unit Cost		No.		Amount		
Inf. Network Stu.	£	24.58	160	£	3,933.33		
Inf. Network Reg.	£	28.75	369	£	10,608.75		
Conference Dinner	£	58.33	529	£	30,858.33		
			TOTAL			£	45,400.42
Accommodation Fees						£	139,259.40
Exhibition Fees						£	9,975.00
Sponsor Fees						£	71,415.00
	GRAND TOTAL					£	734,307.96

EXPENDITURE

Congress Centre Rental		£	45,945.00
Printed Matter & Promo Material		£	22,422.26
Marketing & promotion		£	4,220.55
Techical Equipment / Services		£	31,481.20
Material for Participants		£	5,723.45
Speakers & Committee		£	32,479.08
On-site staff costs		£	17,654.77
Pre-congress secretariat		£	3,000.00
Insurance		£	4,983.59
Meals & Social Activities		£	174,000.29
EURO Fees / Conf. App / System integ.		£	61,769.87
PCO fees		£	107,927.73
SUB-TOTAL (BUDGET S/SHT)		£	**511,607.79**
Accommodation		£	141,355.50
Registration Fee Refunds		£	1,793.90
GRAND TOTAL		£	**654,757.19**

SURPLUS £ **79,550.77**

Organisational matters

Marketing:
Due to the overlap of the EURO-2015 conference with ISMP-2015 in Pittsburgh July 12-17, 2015 an extra effort had to be done to attract speakers and delegates to the conference.

- Fliers were handed out at numerous conferences
- Gerhard-Wilhelm Weber and other PC and OC members did a great effort marketing the conference at various conferences
- EURO2015 hat a stand at IFORS Barcelona, July 13-18, 2014. The stand was open and manned during all breaks.
- Also, several mailing lists were used to announce the conference, themes, invited speakers, etc.

The conference was announced very widely, also to developing countries, and considerable resources were put into helping these people getting visas and possible fee reduction. Unfortunately, many of these talks had to be cancelled in the end because the delegates could not get funding or travel permissions for their trip. Future conferences should consider how this should be arranged in the future so we both can be inclusive to developing countries, but also do not drown in administrative support.

Important Deadlines
The deadlines for the most important activities relating to the Conference were as follows.

- November 2014, web page open for submissions
- 16 March 2015, original abstract deadline
- 30 March 2015, extended abstract deadline
- 14 April 2015, notification of acceptance
- 20 April 2015, early bird registration deadline
- 12-15 July 2015, conference in Glasgow

The original deadline for abstract submission was March 16th, but following the tradition of EURO conferences it was extended by two weeks until March 30th. This meant that the PC had a good overview of all submitted papers for the joint PC-OC meeting in April 2015.
Several papers were accepted after the deadline to fill holes in the program stemming from participants who could not find funding.

Work of the Committees
Formal meetings took place as follows:
July 17th 2014. First meeting of the PC, Barcelona
September 2014. First meeting of the OC
April 13-14 2015. Joint PC-OC meeting, Glasgow

In addition to this, the PC had several ad-hoc phone meetings, and the PC chair visited Glasgow twice to inspect the venue and discuss with the OC.

Members of the OC worked on specific aspects of the conference (sponsorship, scheduling, social media, conference App, social events, financial support for delegates) and a subgroup of the OC formed the core of the group that organised the Making an Impact streams).

On a (approximately) 6 week basis there were regular meetings between the OC Chairs, MCI, the University conference team and the OR Society.

The coordination of the event was ensured through weekly telephone meetings between the PC and OC Chairs.

Submissions

EURO-2015 confirmed a general tendency seen over the last years, indicating that there are still more OR-conferences, and the competition to attract delegates is getting more and more tight. The overlap between EURO2015 and ISMP2015 did not make the situation easier.

The PC therefore decided to strive towards a higher quality of the EURO-2015 conference. This should be achieved by having excellent plenary and keynote speakers, tighter review process, longer abstracts of 1500 characters, and better keywords.

Keywords were improved by asking the authors to choose the first keyword from a given list of most common keywords. This made it easier to group contributed abstracts in appropriate sessions, and hopefully delegates could also easier find relevant talks.

The longer abstracts made it easier to judge the quality of a presentation, and hopefully it also helped delegates in choosing the right talks to attend. Moreover the PC hoped that forcing the delegates to write more in the abstract would motivate the speakers to start preparing the talk earlier.

The review process was improved by instructing stream and session organizers about clear acceptance criteria for the abstracts. Wherever possible, authors were asked to improve the abstract, instead of just rejecting it.

Unfortunately there were a few cases of plagiarism in the submissions. This was discovered during the review process. After contacting the authors it turned out that it was apparently migrants trying to get invitations and a visa in this way. With the current global situation, one could expect that this will be a growing problem for future conferences, and it should be considered whether it is possible to have automated plagiarism control as part of the EURO submission system.

The submissions followed the general tendency from previous conferences with most abstracts submitted in the last days before the deadline.

The figure below shows a comparison between submissions for EURO-2013 (blue bars) and EURO-2015 (brown line). As seen, the submissions follow the same tendency, with EURO-2015 reaching around 1900 submissions at the first deadline. However, the extended deadline only gave 400-500 extra submissions, whereas EURO-2013, which was joint with INFORMS, received significantly more. One important reason for this difference could be that the extended deadline for EURO-2015 was announced after the first deadline, while EURO-2013 announced it a few days before the first deadline. While the submissions generally followed the trend from previous conferences, authors were generally slow at registering. This made it quite difficult to schedule the program, when it was unclear whether the speakers intended to participate. Future conferences should consider registration (not necessary with payment) as a prerequisite for submitting an abstract.

(EURO2013 in blue, EURO2015 in brown)
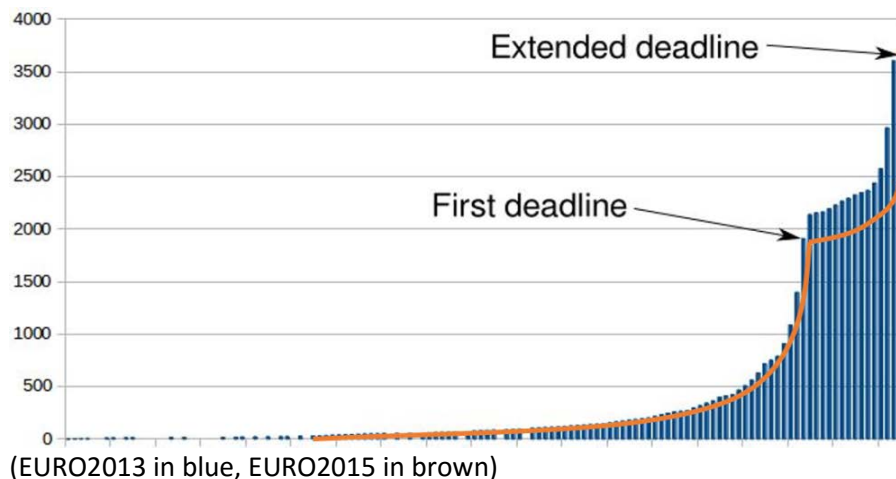
Finally, the conference used an innovative conference app that made it much easier for the delegates to find the appropriate talks. For this reason, only a limited number of the Conference Programme (which included the abstracts of talks) were printed. However, it was decided to include the full conference schedule (author name(s) and title of talk) in the Conference Handbook and to provide a printed copy of this for all delegates (both the schedule and full programme were also downloadable as a pdf).

Areas and streams
The PC decided to update the areas of the conference. First of all, following the theme of the conference and reflecting the strong emphasis on OR in practice in the UK, an area on "Making an Impact" was introduced. Moreover, some smaller areas having quite few submissions in the last years were merged, area names made more precise. This resulted in the list of areas shown later.
Each PC member was responsible for 2-3 areas, taking care of inviting stream organizers, advertising the area, and ensuring quality control. This resulted in the 163 streams shown later.

Presentations
Overall 1924 presentations were delivered at EURO-2015 during the days 12-15 July. A breakdown of the presentations by country shows that most presenters came from United Kingdom (321 talks) followed by Germany (162 talks), Turkey (136 talks), Spain (105 talks), France (91 talks) and United States (84 talks).
It is interesting to note that United States was the sixth largest presenter at EURO-2015 despite the overlap with ISMP-2015 in Pittsburgh. This shows that EURO and ISMP conferences have a different scope, where EURO has more contributions on e.g. the application side, while ISMP has more contributions on e.g. mathematical programming. Probably future EURO conferences need to have a clear profile in order to maintain its position as the leading OR conference.

AREA	
Telecommunication, Networks and Social Networks	Analytics, Data Science, Data Mining
Soft OR and Problem Structuring Methods	Practice of OR
Location, Logistics, Transportation	Revenue Management
Energy/Environment and Climate	Production Management & Supply Chain Management
Continuous Optimization	Simulation, Stochastic and Robust Optimization
Control Theory & System Dynamics	OR in Health, Life Sciences & Sports
Computing	Scheduling, Time Tabling & Project Management
Service Systems	Metaheuristics
Discrete Optimization, Geometry & Graphs	Multiple-Criteria Decision Making and Optimization
Financial Modeling & Risk Management, Accounting	Decision Analysis, Decision Support Systems, DEA and Performance Measurement
OR for Developing Countries, Humanitarian Applications	
OR Education, History, Ethics, and Behavioural OR	OR in Industry and Software for OR
Emerging Applications of OR	Artificial Intelligence, Fuzzy Systems
OR in Natural Resources	Game Theory, Mathematical Economics

Talks by Country					
United Kingdom	321	Switzerland	16	Peru	3
Germany	162	Colombia	16	Egypt	3
Turkey	136	Ireland	14	Serbia	3
Spain	105	South Africa	13	New Zealand	3
France	91	Norway	12	Saudi Arabia	3
United States	84	Israel	12	Luxembourg	3
Italy	79	Australia	12	Lebanon	3
Brazil	76	Sweden	10	Pakistan	2
Netherlands	58	Indonesia	10	Belarus	2
Belgium	57	Mexico	9	Latvia	2
Taiwan	52	Hong Kong	9	Azerbaijan	2
Portugal	52	Nigeria	9	Philippines	2
Japan	50	Iran		Argentina	2
China	38	Lithuania	7	Bulgaria	2
Poland	34	Croatia	6	Iceland	2
Canada	34	Slovenia	6	Afghanistan	2
Austria	34	Hungary	5	Jordan	1
India	33	Algeria	5	Qatar	1
Denmark	30	Romania	5	Malaysia	1
Finland	29	Singapore	5	Ecuador	1
Chile	28	Ukraine	5	Uruguay	1
Russian Federation	24	Tunisia	4	Moldova	
Greece	20	Venezuela	4	Thailand	1
Czech Republic	19	Slovakia	4	Bosnia And Herzegovina	1

Innovations

In this section we discuss various innovations in the delivery of the conference, and consider how respondents to our end of conference questionnaire rated these innovations.

Longer abstracts
The permitted length of submitted abstracts was increased to 1500 characters (from 600 or 700) to enable delegates to make better informed choices about which papers to attend. Of the 691 questionnaire respondents 47% found this helpful (43% didn't notice the change). The only "cost" associated with this was the small print run of the full abstract book (500 pages) hence we would recommend continuing this practice.

Pre-conference and in-conference email newsletters
In the run up to the conference a weekly email newsletter was sent to all authors/registered participants. 96% of questionnaire respondents received these and 81% found them interesting useful. On this basis we would recommend continuing this practice.
A daily email was sent out each morning during the conference – 96% of questionnaire respondents received these and 81% said they were useful (13% didn't read them).
Again, we would recommend continuing this practice.

Conference App

This was the first time that EURO has used an app. The Guidebook App previously used by ORS was used, but because of the size and complexity of the conference we used the pay-for version with support from a Guidebook developer. The initial version was created after a survey of existing large-conference apps enabled us to identify a couple with similar structure and size. This was then revised to make it easier to drill down to talk level though multiple entry points (eg day, building, stream etc). The main technical issue was to ensure that information from the EURO system could be easily streamed into the app back-end. Some development work by B. Fortz was required for this and, although that process was not without its challenges, in general the data sharing worked well. 50% of the questionnaire respondents downloaded the EURO2015 App and 89% of these rated it as Very Good or Fairly Good
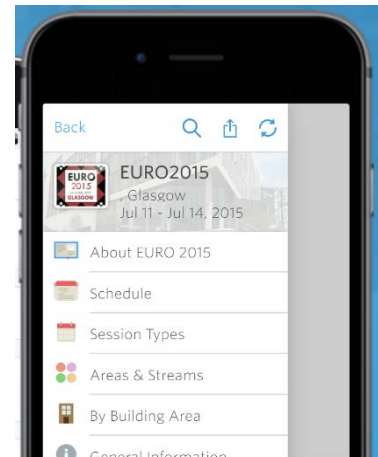
In its android/iphone app version, Guidebook was well worth using. The web interface suffered from both a lower quality interface and the slow pace of searching/downloading pages. This problem would be considerably reduced for a smaller conference. There are now several conference app vendors (and indeed INFORMS has its own proprietary app). Several systems have apps for a wider range of smart phones (eg also windows phone and Blackberry).

The ease of use of a smartphone app, the ability to access information through multiple channels (eg building, stream, time), and the ability to update programme information essentially on-the-fly during the conference gives it many advantages over conventional printed systems. However, the risk to the conference of dependency on an external organisation was underlined through the problems on the week prior to the conference, when Guidebook unexpectedly scheduled a major IT upgrade which initially caused many problems.

It is recommended that future conferences use an app, but that the IT risk is mitigated through use of printed conference programme guides. Use of a developer is worthwhile to ensure that the full capability of the app is used.

Making an Impact

This was the first time that a portfolio of MAI activities has been incorporated in a EURO Conference and it certainly contributed significantly to the promotion of the conference as one with a focus on "OR in Practice". Ruth Kaufman, chair of the MAI group has provided a detailed report on MAI which can assist future EURO organisers interested to include similar sessions. Overall, 44% of the questionnaire respondents said they had heard about MAI before the conference and an additional 28% heard about it during the conference. The nature of MAI, which is very different in format to a standard EURO stream, meant that were some small organisational challenges with regard to scheduling and facilities and if this innovation is to continue at future EURO Conferences (we hope it will) it would be advisable to start discussions with both the PC and OC at an early stage.

PhD Events

Bernd Wurth, a Strathclyde PhD student, took the initiative to organise a number of activities for PhD students. An informal social evening, which was held at Giraffe was very popular.

SOCIAL EVENTS

During the conference a number of social events were held: The opening reception held across two locations, The Technology and Innovation Centre, and the historic Glasgow City Chambers; An informal party and dinner held at the Merchant Square, a group of restaurants based in the old indoor market; A traditional Scottish Ceilidh Dance held in the historic Barony Hall; and, the formal Conference Dinner held in and amongst the displays of the Glasgow Science Centre.

The Civic Reception … Delegates taken to the City Chambers by our EURO2015 Piper!

The inside of the ornate Glasgow City Chambers…

Conference Chairs David Pisinger, Val Belton and Tim Bedford unexpectedly demonstrate their talents in close-harmony singing, accompanied by the Celtic music band at the formal Conference Dinner in the Glasgow Science Centre

VENUES AND CAMPUS MAP

Technical sessions were held in several buildings on campus, with the main hub in the new Technology and Innovation Centre, and the plenary and Tutorial Sessions held in the historic Barony Hall. Buildings were grouped into nine sets, marked by both different colours and shapes. The signage used around the campus reflected the colours and shapes indicated here.

UNIVERSITY OF STRATHCLYDE

.& 1. TECHNOLOGY & INNOVATION CENTRE
   2. GRAHAM HILLS BUILDING
D 3. LIVINGSTONE TOWER
Ll 4. COLLINS BUILDING
D 5. McCANCE BUILDING
e 6. COLVILLE BUILDING

O 7. JOHN ANDERSON BUILDING
({" B. ARCHITECTURE BUILDING
* 9. LORD HOPE BUILDING
10. BARONY HALL
11. LORD TODD / AROMA
12.

PROGRAMME
OVERVIEW

Programme overview

EURO2015 Schedule at a Glance

Sunday 12 July		Monday - Wednesday		Monday 13 July	Tuesday 14 July	Wednesday 15 July
		Morning (A)		MA 08.30-10.00	TA 08.30-10.00	WA 09.00-10.30
				Parallel Session	Parallel Session	Parallel Session
		Refreshment break		10.00-10.30	10.00-10.30	10.30-11.00
		Morning (B)		MB 10.30-12.00	TB 10.30-12.00	WB 11.00-12.00
Registration Open 11.00 – 20.00				Parallel Session	Parallel Session	**Plenary**
		Lunch 12.00 - 14.15		12.00 - 12.30	12.00 - 12.30	12.00 - 12.30
			Midday (C)	MC 12.30-14.00	TC 12.30-14.00	WC 12.30-14.00
				Parallel Session	Parallel Session	Parallel Session
				14.00 - 14.30	14.00 - 14.30	14.00 - 14.30
Exhibition Open 15.00 - 20.00		**Afternoon (D)**		MD 14.30-16.00	TD 14.30-16.00	WD 14.30-16.00
				Parallel Session	Parallel Session	Parallel Session
		Refreshment break		16.00-16.30	16.00-16.30	16.00-16.30
SE 16.30-18.00		**Afternoon (E)**		ME 16.30-17.30	TE 16.30-17.30	WE 16.30-17.45
Opening Session				**Plenary**	**Plenary**	**Closing Session**
Welcome Reception		**Evening**		Merchant Square Networking Event	Conference Dinner	Informal Farewell Party

Awards Presentations Schedule

	Sunday 12/7	Monday 13/7	Tuesday 14/7	Wednesday 15/7
Morning A	*all events here take place in the Barony, Bicentenary Hall*	MA 08.30-10.00 **ROADEF/EURO**	TA 08.30-10.00 **ROADEF/EURO**	WA 09.00-10.30 **ROADEF/EURO**
Morning B		MB 10.30-12.30	TB 10.30-12.00 **EDDA 1**	WB 11.00-12.00
Midday C		MC 12.30-14.00 **EEPA 1**	TC 12.30-14.00 **EDDA 2**	WC 12.30-14.00 **Ethics in OR**
Afternoon D		MD 14.30-16.00 **EEPA 2**	TD 14.30-16.00	WD 14.30-16.00
Afternoon E		ME 16.30-18.00	TE 16.30-17.30	WE 16.30-17.45

EEPA – EURO Excellence in Practice Award

EDDA – EURO Doctoral Dissertation Award

ROADEF – ORS France / La Société Française de Recherche Opérationnelle

Invited Speakers Schedule

	Sunday 12/7	Monday 13/7	Tuesday 14/7	Wednesday 15/7
Morning A		MA 08.30-10.00 tutorial **Thomas Stuetzle** *Automatic Algorithm Configuration: Advances and Perspectives* Barony Great Hall	TA 08.30-10.00 keynote **Tony O'Connor** *O.R. at the heart of Government – how the Government OR Service influences decision making* Barony Great Hall	WA 09.00-10.30 keynote **Raimo P. Hämäläinen** *Behavioural Operational Research* Barony Great Hall
Morning B		MB 10.30-12.00 keynote **Michael Trick** *Business Analytics: Combining Predictive and Prescriptive Analytics to Have Broad Impact* Barony Great Hall	TB 10.30-12.00 tutorial **Martin Savelsbergh** *Advances in Criterion Space Search Methods for Multiobjective Mixed Integer Programming* Barony Great Hall	WB 11.00-12.00 plenary **M. Grazia Speranza** *Trends in Transportation and Logistics* Barony Great Hall
Midday C		MC 12.30-14.00 keynote **Markku Markkula** *Regional Innovation ecosystems pioneering the Europe 2020 development – integrating top-down and bottom-up* Barony Great Hall	TC 12.30-14.00 keynote **Stefan Nickel** *Is Optimal Still Good Enough? – Modern Supply Chain Planning* Barony Great Hall	WC 12.30-14.00 tutorial **Jacek Blazewicz** *O.R. models and algorithms for Bioinformatics* Barony Great Hall
Afternoon D		MD 14.30-16.00 keynote **Horst Hamacher** *Operations Researcher Models in Evacuation Planning* Barony Great Hall	TD 14.30-16.00 keynote **Eva K. Lee** *Optimizing and Transforming the Healthcare System* Barony Great Hall	WD 14.30-16.00 keynote **Ariela Sofer** *O.R. Education in the Age of Analytics* TIC Main Auditorium
Afternoon E	SE 16.30-18.00 Opening Session TIC Main Auditorium	ME 16.30-17.30 plenary **R. Tyrrell Rockafellar (IFORS Distinguished Lecturer)** *Risk and Reliability in Stochastic Optimization* Barony Great Hall	TE 16.30-17.30 plenary **Alan Wilson** *Solving complex problems for the long term: cities in 2065* Barony Great Hall	WE 16.30-17.45 **Closing Session** TIC Main Auditorium
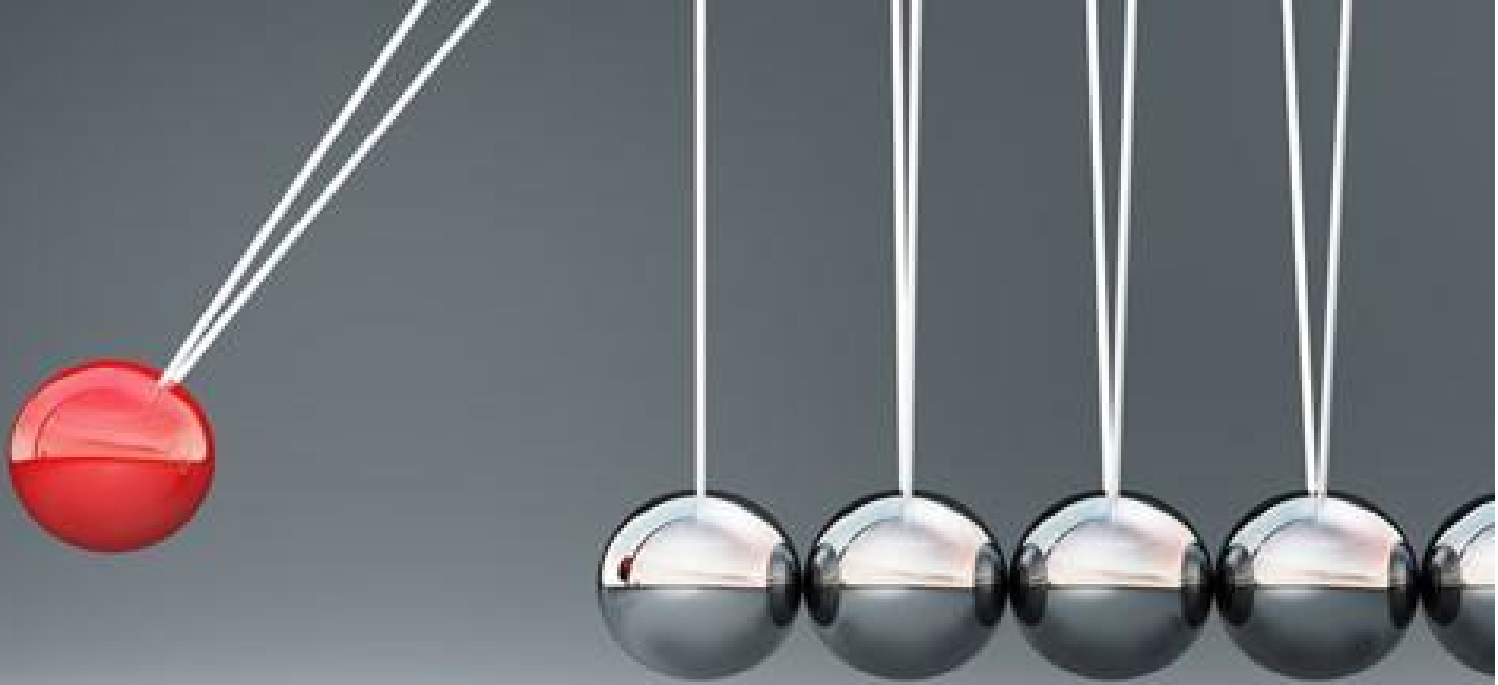
MAKING AN IMPACT

'Making an Impact' activities are aimed at helping practitioners to become more effective and to encourage academic/practitioner interaction.

Making an Impact:

Participative Sessions for Practitioners (everybody welcome)

'Making an Impact' (MAI) is a series of participative activities aimed at helping practitioners to become more effective.

For practitioners *and* academics
All MAI participative sessions are open to everybody. However, they are designed for people whose main aim is to make the organisations they work for more effective; rather than to develop the O.R. discipline, theory or quality of research.

MAI aims to enable O.R. professionals to have more impact on the outside world, by helping them find solutions to typical practical challenges, gain understanding of tools/techniques they haven't used before, build their networks, and learn from others in order to inspire and expand their own practice.

MAI included:

❖ **Workshops**, each lasting either a whole or half session, on issues relevant to practitioners, such as: introductions to novel techniques or developments; dealing with practical issues such as cleaning data sets or quality assuring models; reflecting on professional practice and progression; and extending professional practice beyond the workplace;

❖ Facilitated **'speed networking'** sessions to help grow your professional network;

❖ **Academic-practitioner** collaborative sessions: a '**bazaar**' for sharing information on hot topics, and two **panel discussions** to inform better collaboration;

❖ **Mentoring sessions**, where practitioners or would-be practitioners can receive 20 minutes of mentoring from their choice of a number of experienced practitioners (advance sign-up essential – see the 'Making an Impact' desk in Level 2 TIC Building Exhibition area);

❖ '**Grand Challenges'**: exploring how O.R. people can contribute to today's grand social challenges, to tackle disadvantage, challenge inequality and build strong, safe communities and identifying a 'call to action' and next steps.

Practitioner activities at Euro2015

Legend: Workshops · Speed networking · Academic-practitioner collaboration · Mentoring · Key presentations · Practitioner-interest streams

	Making an Impact and other case study/practice-based						Also worth checking out - just some of the many alternatives
MA	MA-03; TIC Auditorium A Speed networking	MA-09; TIC Conf Rm 3 Group Causal Mapping	MA-42; McCance MC301 Case studies in OR/Analytics 1: Overview/Public Sector	MA-43; McCance MC303 Defence and Security	MA-78; Architecture AR201 Practical OR in Healthcare		Retail Demand Planning (MA-04); Humanitarian Applications (MA-38); Decision Processes (MA-39); Behavioural OR (MA-77); OR for Public Health (MA-79)
MB	MB-01; Barony Great Hall Mike Trick: Business Analytics	MB-09; TIC Conf Rm 3 Add value with business analytics	MB-42; McCance MC301 Case studies in OR/Analytics 2: Production/Logistics	MB-43; McCance MC303 Defence and Security	MB-78; Architecture AR201 Practical OR in Healthcare		Retail Inventory Management (MB-04); software for optimisation (MB-18); Humanitarian Applications (MB-38); ; Behavioural OR (MB-77)
MC	MC-02; Barony Bicentennial Hall Euro Excellence in Practice I	MC-09; TIC Conf Rm 3 System Dynamics	MC-43; McCance MC303 Defence and Security				Retail Inventory Management (MC-04); large optimisation problems (MC-08); Public Transport (MC-38); Humanitarian Applications (MC-38); Applications of Business Analytics (MC-69); Behavioural OR (MC-77)
MD	MD-02; Barony Bicentennial Hall Euro Excellence in Practice 2	MD-03; TIC Auditorium A 1-1 mentoring for practitioners 1	MD-09; TIC Conf Rm 3 Cleaning/joining/trusting large datasets	MD-43; McCance MC303 Defence and Security			Evacuation Planning (MD-01); Decision Process (MD-39); Behavioural OR (MD-77); Simulation in Healthcare (MD-79)
ME						Plenary	
TA	TA-03; TIC Auditorium A Academic-practitioner Bazaar	TA-47; Graham Hills GH 513 Data Science: How To	TA-51; Graham Hills GH542 Non-linear optimisation	TA-42; McCance MC301 Case studies in OR/Analytics 3: Effective Basic Analysis	TA-43; McCance MC303 Defence and Security	TA-01; Barony OR in government	Retail Supply Chain (TA-04); Schedules/logistics (TA-27); Airport Ops (TA-31); Public Transport (TA-45); Business Analytics (TA-69); Behavioural OR (TA-77)
TB	TB-08; TIC Conference Rm 2 Agents onto maps	TB-09; TIC Conference Room 3 OR consultancy: art or science?	TB-47; Graham Hills GH513 Stand out - for the right reasons	TB-42; McCance MC301 Case studies in OR/Analytics 4: Human Aspects	TB-03; Graham Hills GH542 1-1 mentoring for practitioners 2	TB-43; MC303 Defence and Security	Water networks (TB-12); Timetabling (TB-28); Humanitarian Applications (TB-38)
TC	TC-08; TIC Conference Rm 2 Design Thinking	TC-51; Graham Hills GH542 Lessons from manufacturing	TC-47; GH513 Ac-prac round table: expectations	TC-42; McCance MC301 OR in civil government			Supply Chain (TC-01), OR Applications in Industry (TC-05), Energy Efficiency and Industry (TC-12), Airport Operations (TC-49), Maritime Transport (TC-50)
TD	TD-03; TIC Auditorium A OR Careers Exposition	TD-47; Graham Hills GH513 Grand challenges	TD-51; Graham Hills GH542 Do the right OR - and do it right!	TD-42; McCance MC301 OR in Civil government			Water Management (TD-07); Supply Chain (TD-25); Public Transport (TD-45); Maritime Transport (TD-50); Routing (TD-61); Sports (TD-79)
TE	Plenary						
Tue Extra	17.40-18.30; TIC Auditorium A Speed networking 2						
WA	WA-03 TIC Auditorium A Speed networking 3	WA-08; TIC Conference Room 2 Data Science at Work	WA-09; TIC Conference Room 3 a) Pro Bono OR b) Using government data	WA-47; Graham Hills GH513 OR in schools			Behavioural OR (WA-01); MCDM software (WA-24); Developing Countries (WA-37); Routing (WA-61); Sport (WA-79)
WB	Plenary						
WC	WC-08; TIC Conference Rm 2 Towards the Internet of Things	WC-09; TIC Conference Room 3 OR for policy design	WC-47; Graham Hills GH513 Trust me! - I'm a modeller	WC-51; Graham Hills GH542 Who do you think you are?	TB-42; McCance MC301 Case studies in OR/Analytics 5: Analytics		Supply Network Risk (WC-17); Disaster Risk Management (WC-60); Routing (WC-61); Behavioural OR (WC-77); Health Care Scheduling (WC-82)

WD	Mentoring 3; TIC Conference Room 2	WD-09; TIC Conference Room 3 Soft side of simulation Turn ideas into solutions FAST	WD-51; Graham Hills GH542 Optimising the real world, robustly	WD-47; Graham Hills GH513 Ac-prac round table 2: structures		Forestry and Sustainable Management (WD-10); Supply Network Risk (WD-17); Telecommunication & Networks (WD-48); Disaster Risk Management (WD-60); Routing (WD-61)
	Closing session					

STREAM OVERVIEW

Stream	Su	Monday					Tuesday					Wednesday				
	16.30-18.00	08.30-10.00	10.30-12.00	12.30-14.00	14.30-16.00	16.30-17.30	08.30-10.00	10.30-12.00	12.30-14.00	14.30-16.00	16.30-17.30	09.00-10.30	11.00-12.00	12.30-14.00	14.30-16.00	16.30-17.45
	SE	MA	MB	MC	MD	ME	TA	TB	TC	TD	TE	WA	WB	WC	WD	WE
Opening Session	■															
Closing Session																■
Tutorial Speaker Thomas Stuetzle		■														
Keynote Speaker Michael Trick			■													
Keynote Speaker Markku Markkula				■												
Keynote Speaker Horst Hamacher					■											
Plenary Speaker R. Tyrrell Rockafellar						■										
Keynote Speaker Tony O'Connor							■									
Tutorial Speaker Martin Savelsbergh								■								
Keynote Speaker Stefan Nickel									■							
Keynote Speaker Eva K. Lee										■						
Plenary Speaker Alan Wilson											■					
Keynote Speaker Raimo P. Hämäläinen												■				
Plenary Speaker M. Grazia Speranza													■			
Tutorial Speaker Jacek Blazewicz														■		
Keynote Speaker Ariela Sofer															■	
Airport Operations and Airline Scheduling									■							
Algorithms and Computational Optimization												■		■	■	
Allocation Problems in Game Theory and Some Problems on Inventory and Logistics Situations		■	■	■												
Analytic Hierarchy/Network Process		■	■	■	■		■	■	■	■						
Applications of Dynamical Models								■	■							
Applications of Operations Research in Education								■								
Behavioural Operational Research		■	■	■	■		■	■	■	■				■		
Biomass-Based Supply Chains					■		■									
Boolean and Pseudo-Boolean Optimization		■	■													
Business Analytics and Intelligent Optimization		■		■	■		■									
Case Studies in OR / Analytics		■	■				■							■	■	
Combinatorial Optimization		■	■	■	■		■	■	■	■		■				
Community OR							■									
Computational Biology, Bioinformatics and Medicine		■	■	■	■		■									
Computational Statistics								■	■	■						
Computing								■	■							
Container Terminals		■	■	■	■		■									
Continuous Multiobjective Optimization and Robustness		■	■	■	■		■									
Continuous Optimization (contributed)					■											
Control Theory & System Dynamics (contributed)										■						
Convex Optimization												■		■	■	
Convex, Semi-Infinite and Semidefinite Optimization												■		■	■	

Stream Overview

Stream	Su	Monday					Tuesday					Wednesday				
	16.30-17.30	08.30-10.00	10.30-12.00	12.30-14.00	14.30-16.00	16.30-17.30	08.30-10.00	10.30-12.00	12.30-14.00	14.30-16.00	16.30-17.30	09.00-10.30	11.00-12.00	12.30-14.00	14.30-16.00	16.30-17.30
	SE	MA	MB	MC	MD	ME	TA	TB	TC	TD	TE	WA	WB	WC	WD	WE
Customer Based Services: Personalization, Interaction and Strategies												■				
Cutting and Packing		■	■	■	■		■	■								
Data Analysis for Emerging Applications		■	■	■	■											
Data Mining in Early Warning Systems							■	■								
Data Mining in Finance and Commodities		■	■													
Data Science for Optimisation		■	■	■												
DEA and Performance Measurement		■	■	■	■		■	■		■						
Decision Making Modeling and Risk Assessment in the Financial Sector												■		■		
Decision Processes		■	■	■	■											
Decision Support Systems							■	■	■	■						
Defence and Security Applications		■	■	■	■		■	■								
Demand and Supply in Retail and Consumer Goods		■	■	■	■		■	■								
Disaster Risk Management												■		■	■	
Discrete and Global Optimization				■	■											
Dynamic Models in Game Theory					■											
Dynamic Programming		■	■	■												
Dynamical Models in Sustainable Development												■		■	■	
Dynamical Systems and Mathematical Modelling in OR		■	■	■	■		■									
Education Policy										■						
Emerging Applications in Game Theory and Management															■	
Emerging Applications in Portfolio Selection and Management Science														■	■	
Emerging Applications of OR in Economics									■	■						
Emerging OR Applications on Cloud Computing										■			■			
Emerging Research and Applications of OR in Understanding Satellite, Climate, Weather and Earth Data														■		
Energy Market/System Modeling					■		■	■	■	■						
Energy/Environment and Climate (contributed)																
Engineering Optimization												■		■	■	
Environmental Sustainability in Supply Chains								■	■	■		■				
EURO Awards and Journals		■	■	■	■		■	■	■				■			
Experimental Perspectives and Challenges in Management Accounting and Management Control		■	■													
Financial and Commodities Modeling									■	■		■		■	■	
Financial Mathematics and OR		■	■	■	■		■	■								
Forecasting & Time Series Prediction		■	■	■	■		■	■	■							

Stream Overview

Stream	SE	MA	MB	MC	MD	ME	TA	TB	TC	TD	TE	WA	WB	WC	WD	WE
	Su	Monday					Tuesday					Wednesday				
	16.30-17.30	08.30-10.00	10.30-12.00	12.30-14.00	14.30-16.00	16.30-17.30	08.30-10.00	10.30-12.00	12.30-14.00	14.30-16.00	16.30-17.30	09.00-10.30	11.00-12.00	12.30-14.00	14.30-16.00	16.30-17.30
Fuzzy Decision Support Systems, Soft Computing, Neural Network		■	■	■	■		■	■								
Fuzzy Optimization - Systems, Networks and Applications									■	■						
Game Theory and Social Networks				■												
Game Theory, Solutions and Structures		■	■	■												
Geometric Clustering															■	
Global Optimization														■	■	
Graph Searching														■	■	
Graphs and Networks					■		■	■								
Health Care Emergency Management									■							
Health Care Management										■		■				
Healthcare Service Improvement		■	■	■	■		■									
Humanitarian Applications		■	■	■	■		■									
IBM Research Applications									■	■	■					
Information and Intelligent Systems							■	■								
Initiatives for OR Education		■	■	■	■											
Knowledge in Organizations										■						
Location		■	■	■	■		■	■	■	■						
Location, Logistics, Transportation (contributed)										■		■		■	■	
Long Term Financial Decisions				■	■											
Long Term Planning in Energy, Environment and Climate					■		■	■	■	■						
Lot Sizing, Lot Scheduling and Related Problems							■	■	■	■						
Machine Learning and Its Applications																
MADM Applications		■	■	■	■											
Making An Impact 1 (MAI 1)		■	■				■	■	■	■		■		■	■	
Making An Impact 2 (MAI 2)		■		■	■			■	■							
Making An Impact 3 (MAI 3)								■	■							
Maritime Transportation								■	■	■		■				
Mathematical Economics									■			■		■		
Mathematical Models in Macro- and Microeconomics								■								
Mathematical Programming		■	■	■	■											
Matheuristics															■	
MCDM									■	■		■				
Metaheuristics		■	■	■	■		■									
Methodology of Societal Complexity												■		■	■	
Mixed-Integer Nonlinear Programming												■				
Multiobjective Optimization - Methods and Applications										■						
Multiple Criteria Decision Aiding		■	■	■	■		■	■	■	■		■		■	■	
Nonconvex Programming: Local and Global Approaches										■						
Nonlinear Programming		■	■	■												

Stream Overview

Stream	Su	Monday					Tuesday					Wednesday				
	16.30-17.30	08.30-10.00	10.30-12.00	12.30-14.00	14.30-16.00	16.30-17.30	08.30-10.00	10.30-12.00	12.30-14.00	14.30-16.00	16.30-17.30	09.00-10.30	11.00-12.00	12.30-14.00	14.30-16.00	16.30-17.30
	SE	MA	MB	MC	MD	ME	TA	TB	TC	TD	TE	WA	WB	WC	WD	WE
Nonsmooth Optimization														■		
Numerical and Simulation Methods in Finance							■	■								
Operational Research and Quantitative Models in Banking												■				
Operational Research and Decision Making					■											
Operational Research for Public Health		■	■	■												
Operational Research in Financial and Management Accounting									■	■						
Operations Research, other		■	■	■	■		■	■	■	■		■		■	■	
Operations/Marketing Interface									■	■						
Optimal Control															■	
Optimization		■	■	■	■		■	■	■	■		■		■		
Optimization for Sustainable Development		■	■	■	■											
Optimization of Public Transport		■	■	■	■		■	■	■	■		■				
OR and Climate Change			■	■												
OR and Ethics												■		■		
OR and Real Implementation		■	■	■	■											
OR and the Arts															■	
OR Applications in Industry								■	■	■						
OR for Development and Developing Countries									■	■		■				
OR for Energy and Resource Efficiency		■	■	■	■		■									
OR for Sustainable Development							■									
OR in Agriculture, Forestry and Fisheries												■		■	■	
OR in Civil Government									■	■		■				
OR in Quality Management							■	■	■							
OR in Sports							■	■	■	■		■		■		
OR in Water Management and Natural Resources									■	■						
Practical Operational Research in Healthcare		■	■													
Preference Learning												■		■	■	
Production and Operations Management		■	■	■	■		■	■	■	■		■		■	■	
Production and the Link with Supply Chains												■				
Project Management and Scheduling															■	
Quality and Performance Measurement in Humanitarian Relief Chains									■							
Realistic Production Scheduling					■		■									
Recent Advances in Dynamics of Variational Inequalities and Equilibrum Problems				■	■											
Revenue Management		■	■	■												
Robust Optimization		■														
Routing I - Models and Methods		■	■	■	■		■		■	■						
Routing II - Emerging Applications					■		■	■	■			■		■	■	
Scheduling in Healthcare												■		■		

Stream Overview

Stream	Su SE 16.30-17.30	Monday MA 08.30-10.00	MB 10.30-12.00	MC 12.30-14.00	MD 14.30-16.00	ME 16.30-17.30	Tuesday TA 08.30-10.00	TB 10.30-12.00	TC 12.30-14.00	TD 14.30-16.00	TE 16.30-17.30	Wednesday WA 09.00-10.30	WB 11.00-12.00	WC 12.30-14.00	WD 14.30-16.00	WE 16.30-17.30
Scheduling Theory and Applications				■	■											
Scheduling with Resource Constraints		■	■	■	■											
Scheduling, Sequencing, and Applications							■	■	■							
Simulation and Optimization							■	■	■	■		■		■		
Simulation in Health Care					■											
Simulation in Management Accounting and Management Control														■	■	
Soft OR and Problem Structuring Methods (contributed)									■	■						
Software for Optimization		■	■	■												
Stochastic Modeling							■	■	■							
Stochastic Modeling and Simulation in Engineering, Management and Science		■	■	■	■		■	■	■							
Stochastic Models in Healthcare								■								
Stochastic Models in Renewably Generated Electricity							■	■								
Stochastic Optimization		■	■	■	■											
Strategy and Analytics									■	■						
Supply Chain Management									■	■		■		■		
Supply Network Risk and Resilience												■		■	■	
Sustainable Living: Cognitive, Social, Economical, Ecological and World View								■								
Sustainable Supply Chains		■	■	■	■											
System Dynamics Modeling and Simulation							■	■	■							
Teaching OR/MS							■	■								
Telecommunication, Networks and Social Networks (contributed)												■		■	■	
Telecommunications and Network Optimization									■	■						
Timetabling							■		■	■						
Traffic and Transportation		■	■	■	■											
Transportation Planning		■	■	■	■		■	■								
Vector and Set-Valued Optimization										■		■		■		
Vendor Sessions							■		■	■						

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