

IFORS

NEWS

INTERNATIONAL FEDERATION OF OPERATIONAL RESEARCH SOCIETIES

FROM THE PRESIDENT

Janny Leung <jannyleung@um.edu.mo>

In the past few days, the Aurora Borealis was seen in cities much further south than usual, due to a rare geomagnetic storm. Many people enjoyed seeing the magical light show put on by nature, but the geomagnetic storm may also cause disruptions in telecommunications. Recent weeks have also seen unusual weather events. The UAE experienced the worst rainstorm in 75 years, flooding Dubai airport and halting its operations. A tornado hit a town in north England, and even Macau experienced a hailstorm! These severe weather events caused a lot of damage, but long-term climate change may also make traditionally arid land become arable for food production. The consequences of any event are never of equal impact to those affected. Similarly with new technology. AI tools help us to discover new knowledge, but can also be used to spread misinformation. Every technology is a two-edged sword. In this increasingly complex world, the professional expertise of us operational researchers becomes ever more important, so we can help decision-makers do the right thing in balancing and reconciling the many interests of all stakeholders.



In this issue of the newsletter, you will find the reports for 2023 from IFORS Vice-President, Treasurer as well as the Vice-Presidents of the four IFORS regions – ALIO, APORS, EURO and NORAM. You will see from their reports that 2023 has been a very busy year, with many workshops and scientific exchange activities all over the world. Of course, the highlight of 2023 was the very successful 23rd triennial conference held in Santiago, Chile. The conference attracted over 950 participants from over 60 countries around the world. I am sure that the many new projects (and friendships!) initiated during the triennial conference are still going strong one year later! The momentum of advancing the science and practice of operational research continues. In 2024, we look forward to the opportunities for exchange of scientific ideas and sharing of experiences at the regional conferences --- CORS in London Ontario in June, EURO in Copenhagen in June/July, INFORMS in Seattle in October, CLAIO in Guadalajara in October / November and APORS in Hangzhou in November. I look forward to meeting many of you at these conferences! 🌍

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FROM THE EDITOR-IN-CHIEF

Antonio Mauttone <mautonne@fing.edu.uy>

Welcome to the June issue of the IFORS Newsletter!

The June issue is a particular one, since we report on the IFORS activities carried out throughout the past year. It is both exciting and rewarding to see all the work done and its results. By reading the annual reports, one can feel that the OR global community is a diverse and cohesive one, at the same time. I would like to thank once more to Section Editors and articles' authors for their contributions. Moreover, I would like to thank both National Societies and Regional Groupings for being available to provide information and content to this publication. Before presenting this issue, let me introduce our new Co-Section Editor, Jinal Parikh. She will be developing the task jointly with Gerhard-Wilhelm Weber. Thank you, Jinal, for joining our team.



The June issue of the IFORS Newsletter includes content related to its regular sections. In the *OR and Development* section, colleagues from HEC Montréal, Canada, and Ozyegin University, Turkey, present an application of collaborative inventory management methodologies and tools to a case in Madagascar. While the aim of the study is to tailor a disaster relief operations management tool, the authors highlight the importance of having detailed logistical, socio-demographic, and geographical information, which is not always available in developing countries. The primary goal of this work is to promote coordination, cooperation, and collaboration among the stakeholders involved. Moreover, in this section we include a short article introducing an item recently added to the repository of "Developing Countries online resources", namely, the book "Develop Your English with the United Nations Sustainable Development Goals", which combines both English and Sustainability concepts learning. In the *Tutorials* section, a colleague from Ghent University, Belgium, introduces the topic of sports scheduling, which typically involves cost minimization and complex constraints representing the logistical operations of several teams. Sport scheduling problems can be modeled by using concepts of graph theory and are solved using both exact and heuristic methods. In this article, the author also introduces a repository of problem instances aimed to be used by researchers in the field. In the *OR Impact* section, colleagues from the UK present an application of the Systems Thinking methodology at the government level, to conduct risk management, identification of opportunities, and driving collaboration toward the goal of reaching net zero carbon emissions. The team built a casual loop diagram that models interactions among several key aspects previously identified, namely, buildings, energy, industry, transport, and land use. The authors highlight the importance of correct management of communication among the professionals (both analysts and users) involved in the project.

Moreover, the *Conferences* section reports 17 events worldwide on OR and related disciplines, while the *Book Review* section reports on the volume "Employee competence management supported by statistical methods".

We thank all authors and section editors for their contributions, and we hope you enjoy the reading! 🌍

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REPORT OF THE PRESIDENT

Janny Leung <jannyleung@um.edu.mo>

The year 2023 saw many IFORS activities around the world, as you can see from the reports of the Regional Vice-Presidents. Here, I summarise some of the events.

Triennial Conference. The highlight of the year 2023 was undoubtedly the 23rd Triennial conference held in Santiago Chile. As the first in-person IFORS conference after the Covid pandemic, the conference attracted over 900 participants from all over the world. Undeterred by the long travel distance and unfazed by the magnitude 5.6 earthquake on the first day, the conference attendees actively engaged with each other in the many well-attended sessions on a wide range of topics. Many thanks to Jorge Vera and Rafael Epstein and their team of Organising and Programme Committee for making the conference such a rousing success!

OR in Development Prize. A much-anticipated event at the IFORS conference was the competition for the OR in Development Prize. It was a difficult job for the Judging Panel, chaired by Mario Guajardo, to select the winners among a strong pool of finalists! The runner-up was a team from Argentina (led by Rodrigo Castro) who built "Data Science and Simulation Tools for Supporting Argentina's COVID-19 Response Decision-Making", and the winning project was "Evacuation Simulation and Logistics Models for Effective Disaster Preparation and Response in Taiwan" by a team from Taiwan led by Kuo-Hao Chang. Congratulations!

Global webinars. The winner and runner-up teams of the OR in Development Prize presented their work at an IFORS Global webinar in October. Earlier in April, another webinar on "OR and Sustainability" was held. The IFORS global webinars, began in 2020, is a useful resource that brings relevant topics in operational research to a worldwide audience. Recordings of all past webinars are available on the IFORS website.

IFORS Distinguished Lectures (IDL). IFORS sponsors world-renowned operational researchers (typically from a different IFORS region) to give distinguished lectures at regional conferences. While there were no APORS, CLAIO or EURO conferences in 2023, Daniel Kuhn of EPFL gave the IDL at the Informs Phoenix conference in October.

IFORS Fellows. The IFORS Fellows award, established in 2020 by Past-President Grazia Speranza, recognizes distinguished contributions to the international operational research community. Three Fellows were selected in 2023 --- Dai Yu-hong (Chinese Academy of Sciences), Karla Hoffman (George Mason University, USA) and Sue Merchant (Blue Link Consulting, UK). The 2023 Fellows, as well

as all previous awardees, were presented with certificates at the Santiago conference.

IFORS Hall of Fame. After a hiatus of nearly twenty years, three OR pioneers were inducted into the IFORS Hall of Fame at the Santiago conference. We were delighted to pay tribute to Clovis Gonzaga, Fred Hillier and Ailsa Land for their tremendous contribution to the field of operational research, and especially happy that Prof. Hillier was able to attend the induction ceremony in person.

Publications. IFORS's two flagship journals, ITOR and SAM, continue to do well. The contract for ITOR was renewed with Wiley for another 5 years, with more favourable terms for IFORS and the Editor-in-Chief. The contract for SAM's Editor-in-Chief was also renewed with Elsevier. A new procedure for oversight of the journals by the Publication Committee (with term limits for the EICs) was also set up. We hope this new procedure will provide stronger support for the Editors-in-Chief. Celso Ribeiro and Elsie Miller-Hooks, and the journals. Meanwhile, the quarterly digital IFORS Newsletter, edited by Antonio Mauttone, continues to provide news and valuable resources to the IFORS community. Remember to sign up for a free email newsletter subscription via the IFORS website.

Administrative Matters and Finances. To facilitate the effort to attain non-profit status in Switzerland, changes were proposed to the IFORS Statutes; the changes also streamlined the decision-making process for IFORS. I am happy to report that the revision passed unanimously after a 6-month ballot in March 2024. The transition of the IFORS Secretariat from Informs to the Operational Research Society was accomplished smoothly, with Gavin Blackett taking on the role of IFORS Secretary since March 2023. We are grateful to Mary Magrogan and Christy Blevins for their years of dedicated service to IFORS! With a busy year in 2023, IFORS maintained a healthy financial position, under the stewardship of Richard Hartl who completed 9 years as IFORS Treasurer. We thank Richard for his dedicated service and welcomes Marco Laumanns as our new Treasurer from 2024. We also bid farewell to Frits Spieksma who resigned as IFORS Vice-President at the end of 2023 to take up his new role as President-Elect of EURO! Thank you and congratulations to Frits!

The work of IFORS in promoting operational research worldwide continues throughout 2023 and beyond, and I thank you all for your support. 🌍



REPORT OF THE VICE PRESIDENT

Frits Spieksma <f.c.r.spieksma@tue.nl>

For IFORS there was a single highlight in 2023, and of course, your vice president's report cannot not start with it: the triannual conference in 2023 in Santiago, Chile. Years of preparation culminated in a global gathering of OR scientists and practitioners. It is hard to choose a best experience: was it the opening talk by the Chilean minister of Transport? Or physically meeting my fellow AC members? Or my favorite session OR in Sports? Or the social program (that in my case was a visit to Valparaiso)? Or the conference dinner? In any case, the conference was unforgettable.

Of course, there were the regular activities in 2023 such as the webinars. We organized one on OR and Sustainability. Speakers were Adrian Ramirez Nafarrate (from Tecnológico de Monterrey), Kristen Schell (from Carleton University), Michael Craig (University of Michigan) and Marc Reimann (University of Graz). Quoting from the report: Sustainability is a key word in our times. It has become a cliché to state that using our global resources in a responsible, ie, sustainable way is an enormous challenge. Dealing with vested interests, with rapid innovations, with rising standards of living leads to multi-faceted questions. Our field is well-placed to contribute to answer these questions.

We also organized a webinar on OR and Development, a webinar devoted to the IFORS

Prize for OR and Development. Indeed, the effect of Operations Research models and methods are at different stages in different places in the world. To incentivize and reward influential work that contributes to the practical impact of OR in various countries, IFORS hands out a prize, called the prize for OR and Development ([see https://www.ifors.org/ifors-prize-for-or-in-development/](https://www.ifors.org/ifors-prize-for-or-in-development/)); it is handed out every three years at the IFORS conference, and dates back to 1987. On October 4, 2023 IFORS organized a Global Webinar featuring Rodrigo Castro and Daniela Parada (University of Buenos Aires), and Kuo-Hao Chang (National Tsinghua University Taiwan).

2023 marked my last year as IFORS Vice-President. It was a great experience, and I thank my colleague AC members for their enthusiasm and commitment; Janny, Rina, Stefan, Francis, Richard, Antonio, Grazia, Gavin: thanks! 🌍



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OCT 28 - NOV 01, 2024

CALL FOR ABSTRACTS

DEADLINE: MAY 15TH, 2024

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REPORT OF THE TREASURER

Richard Hartl <richard.hartl@univie.ac.at>

The approved 2023 budget projected a slight operating deficit of \$ 8,500. Compared to this, the unaudited 2023 actuals, as shown in the table, show a deficit of \$ 38,660 not including accruals, which will be determined by the auditors. The main reason to the discrepancy is that the surplus from the Triannual IFORS Conference 2023 has only been received and therefore booked in the 2024 financial year.

On the income side, we notice slightly higher actuals than what was budgeted for all remaining items. The member societies dues were higher by \$ 9,030 mostly due to delayed payments from the previous year, which almost offsets exactly the reverse effect from 2022. The changed trend in interest rates led to an interest income of \$ 8,023 whereas no interest was budgeted. In total, the unaudited actual income was \$ 88,429 less than budgeted.

On the expense side, several items showed slightly higher actual amounts than budgeted. ITOR editorial costs, which include IAOR web hosting, was \$ 28,100 compared to \$ 26,000 and also the cost for the IFORS website was marginally higher than budgeted. The costs related the hall of fame is a new item and will need to be foreseen in the budgeted for conference years going forward. Taxes were slightly higher than budgeted as were the expenses related to the change of the legal structure of our organization. The change of office and related overlap to ensure the smooth transfer

of duties and activities, the IFORS office and secretary costs were \$ 7,790 higher than usual and projected.

On the other hand, several budget expenses were not incurred, such as ITOR Awards, SAM waivers, costs for summer/winter schools or the developing countries committee. As in the last years, there were no contingencies. Some expenses were notably lower than budgeted such as fellowships and grants, committee costs including Administrative Committee, or the IFORS newsletter. In total this led to expenses of \$ 138,231, significantly lower than the \$ 196,500 budgeted.

Due to the deficit, the financial year 2023 finished with a correspondingly lower cash position compared to the opening of the year. Taking into account the accruals, we expect the total assets to have increased by around \$ 45,000. The exact and validated numbers will be known once the financial audit has been completed. For the years 2024 and 2025 our budget will foresee a slight deficit each, as usual to account for the inter-temporal effects of the non-conference years while generally ensuring a balanced income and expense over each three-year period. 🌍



REPORT OF THE VICE PRESIDENT REPRESENTING ALIO

Antonio Mauttone <mauttone@fing.edu.uy>

The Association of Latin Iberoamerican Operational Research Societies (ALIO) is growing in both size and organization. Here is a summary of main activities carried out in 2023 and early 2024, and what is already planned for 2024-2025.

ALIO Recognitions

During year 2024 ALIO launched, for the first time, three initiatives aimed to recognize personal achievements along different dimensions, namely:

ALIO Medals, which are awarded on the basis of at least one outstanding and one very good evaluation in two of the following areas: research,

practice, service, education, management and human resources. Three medals were awarded initially by the ALIO Executive Committee, to founding members and outstanding contributors in the region: Andres Weintraub (Chile), Hugo Scolnick (Argentina) and Nelson Maculan (Brazil). Moreover, at each biannual CLAIO conference, a maximum number



of three medals will be awarded. The last call for submissions closed on April 15th, and members of the jury are working on the evaluation right now.

ALIO Women in OR, aimed to showcase and promote the participation of women in OR activities. To this end, informative graphics including text, pictures and other artifacts of communication are built. Nominations can be submitted at any time and are evaluated by a jury on the basis of the contributions in the areas of research, practice and education. The first informative graphic has been dedicated to Irene Loiseau (Argentina) and we hope to have more to be shown in the next CLAIO.

ALIO Prize of excellence in practice of OR, aimed to recognize outstanding OR-based studies applied within a country of ALIO, by a research team mostly composed of ALIO researchers. The prize is awarded at each CLAIO conference, to a team selected from a short list of finalists. There are prizes for winner and runner-up, both announced at CLAIO. The current call is open until June 30th, and nominations will be evaluated by a jury on the basis of criteria including impact on practice, scientific quality, relevance to OR in the ALIO region and originality of the methodology.

More information about ALIO recognitions can be found here. <https://www.alio-online.com/distinciones>

Before closing this section, I would like to mention another two recognitions (of another type) which made us very proud. Héctor Cancela (Uruguay) was elected as President of IFORS for the 2025-2027, and Andrés Medaglia (Colombia) was designated as President of the Program Committee of the next IFORS Triennial Conference. Congratulations to them for these very rewarding achievements!

ALIO Working Groups

Currently, ALIO has two working groups (AWG), namely, the “Ibero-American Network of Evaluation and Multicriteria Decision (Red-M)” and the “OR in Health” working group. The aim of these working groups is to congregate researchers and practitioners in the subject of the ALIO region, facilitating the development of joint research and spaces for dissemination. The call for new AWGs

is permanently open and we hope to receive submissions on further topics of interest to the region.

National OR Conferences in Latin Iberoamerican countries

During 2023, most of the national OR events in ALIO countries have been held successfully, in face-to-face mode. Just examples of these are JALIO (Argentina), SBPO (Brazil), SMIO (Mexico) and SEIO (Spain).

CLAIO - XXII Latin Iberoamerican Conference on Operational Research (CLAIO) October 28-November 1, 2024, Guadalajara, Mexico

One of the main activities of ALIO is its biennial meeting, the Latin Iberoamerican Conference on Operational Research - CLAIO. It has occurred biennially since 1982 in different Latin American cities. The Mexican Operations Research Society will organize the XXII edition of CLAIO, which will take place in Guadalajara, Mexico, from October 28 to November 1, 2024. The conference purposefully coincides with the Mexican “dead festivities”. Moreover, Guadalajara is the region of famous Tequila houses. The Organizing Committee has ensembled an exciting program, including six plenary speakers from different countries worldwide. The call for papers has closed recently and a significant number of attendants is expected to guarantee the success of the event. More information can be found here. <http://www.smio.org/home-claio-2024.html>

INFORMS/ALIO/ASOCIO International Conference, June 16-19, 2024, Medellín, Colombia

ALIO interacts with other regions and societies like EURO and INFORMS by organizing joint events that reinforce the links between the researchers of the two regions. The 2024 INFORMS ALIO-ASOCIO International Conference, to be held in Medellín, Colombia, is an international conference for operations research and analytics academics and practitioners from around the world. The program includes 12 Plenary/Keynote speakers as well as 9 Tutorial speakers, who ensure a rich experience for all attendants. Last details of the event are being coordinated as we close the edition of this issue of the newsletter. More information can be found here. <https://meetings.informs.org/wordpress/2024international> 

REPORT OF THE VICE PRESIDENT REPRESENTING APORS

Francis Miranda <franzmiranda@yahoo.com>

In 2023, the Asia Pacific operations research societies rebounded with vigor, resuming their diverse range of activities after the pandemic. From conferences to workshops, the societies engaged the members to foster innovation and knowledge exchange. Here are some highlights from the various societies.

The Australian Society for Operations Research, ASOR co-organized the 25th International Congress on Modelling and Simulation last July 13, 2023, attended by 45 ASOR members. Other than this, the organization also conducted six seminars throughout 2023 with topics on optimization, games, machine learning, and predictive control. These seminars are open to members and non-members with presentations followed by a Q&A portion. The organization continues to encourage participants, and these seminars are accessible through subscription to the ASOR mailing list.

Operations Research Society of China, ORSC conducted their first in-person meeting of the organization following the lifting of COVID-19 restrictions at the beginning of the year. Held in Changsa, the meeting was attended by more than 1000 participants from all over the country. ORSC also had their national conference program in Tianjin last December 8-11, 2023. The event consisted of an award presentation, plenary talks, parallel sessions, and other social activities—with the organization introducing their newest special interest committee on optimization algorithms to cap off the year.



▲ ORSC2023 Opening Ceremony

The organization continues to encourage original works in the OR communities for submissions to their journals in line with their goal to publish internationally recognized work related to operations research.

Operational Research Society of India, ORSI held their joint convention together with the Indian Institute of Science and the Analytics Society of India last December 18-20, 2023 at Bangladore. The event

consisting of the joining of the 56th Annual Convention of ORSI and the 10th International Conference on Business Analytics and Intelligence was carried out by the organizations with the aim to create a leading platform to facilitate knowledge sharing from the industry and academe. The organizations continue to encourage industry professionals and academics for submissions of their works for the field of OR, decision science, engineering science, BA, and BI.



Indonesian Operations Research Association, IORA though they did not conduct any large events or conferences in 2023, last November of 2022 the organization collaborated with the Universiti Teknikal Malaysia Melaka to conduct the 11th International Conference on Global Optimization and its Application. This consisted of four main tracks with the overall theme of integrating IR4.0 and optimization towards global sustainability.



▲ 16th International Conference of IORS

Iranian Operations Research Society, IORS conducted their 16th International Conference of Iranian Operations Research Society last May 15-17 of 2023 at the Rahman Institute of Higher Education with 276 participants and 160 research paper presenters on operations research. The organization also conducted various activities in line with the organizations goal to uphold quality and extend reliability of scientific activities for the OR industry. The IORS continues to invite international participation and contributions for the 17th International Conference for qualified studies, to be held on July 3-4 of 2024.



▲ 2023 Summer Joint Conference

Korean Operations Research and Management Science Society, KORMS organized three academic conferences this 2023, consisting of the Spring Conference in May, a joint conference in August, and a third conference in the Fall in November. The spring conference was held at ICC Jeju with 1,200 participants and 550 research paper presenters.

The joint conference in August was conducted in collaboration with 30 related academic societies, garnering upwards of 3,000 attendees at their venue— Busan Exhibition & Convention Center. Lastly, their fall conference focused on AI Transformation and Management Science featured 80 presentations to a total of 200 attendees.



▲ Associate Professor Andrew Mason receiving the Hans Daellenbach Prize

Operations Research Society of New Zealand, ORSNZ held their annual ORSNZ conference last November 23-24, 2023. Two special interest groups were given focus during the event namely on Healthcare

Analytics and Energy and Natural Resources, as well as talks on OR algorithms and modelling. The highlight of the event was during the session of Associate Professor Andrew Mason — award winner of the Hans Daellenbach Prize, with his talk on “MacSimplex to OpenSolver: A 35 year Journey Applying Operations Research”. ORSNZ ended the year with a change in organization’s leadership team for the president, vice president, and secretary positions.

Operations Research Society of the Philippines, ORSP began the transition to near-normal activities this 2023. Starting with the theme “Reforme: The Way Forward”, ORSP brought students from various universities in the Philippines and discussed various applications for operations research from petroleum, warehouse competitions and logistics industries.

Other than this, ORSP also conducted various technical workshops on ChatGPT, Python, as well as Data Science and Analytics— introducing and discussing their applications for OR studies and other sectors. The year ended with the 14th National Conference held on November 17, bringing together plenary speakers, research paper presenters, and 66 onsite and 54 online participants from the academe and related industries.

Operational Research Society of Singapore, ORSS highlighted their significant collaborations with the National University of Singapore (NUS) Department of Analytics and Operations and the Institute of OR and Analytics this 2023. This resulted in various seminars and activities to promote the study of OR and OR-related subjects at local universities.

Other than this, the ORSS also continues to award top graduating undergraduate and masters students from leading tertiary institutions in Singapore in line with the key objective of the society to foster training and education in Operations Research and propagate the knowledge of Operational Research in Singapore. 🌍



▲ A gathering of ORSS Management Committee members in 2023



▲ National Conference closing ceremonies with onsite and online participants

REPORT OF THE VICE PRESIDENT REPRESENTING EURO

Stefan Nickel <stefan.nickel@kit.edu>

The European regional grouping within IFORS, EURO (The Association of European Operational Research Societies), consisting of 31 member societies, has had a very productive year 2023. Its members benefited from many opportunities to meet and discuss face-to-face again. The annual meeting of the European Conference on Operational Research was suspended due to the triennial meeting of the 23rd IFORS in Chile from the 10th to the 14th of July.

The absence of the main conference on the European continent did not hinder several workshops and conferences initiated by the 33 working groups associated with EURO. For example, the working group on locational analysis (EWGLA) hosted the triennial meeting of the 16th International Symposium on Location Science (ISOLDE) in Kaiserslautern and Baden-Baden, Germany. Other meetings included the 25th meeting of the working group on transportation in Santander, Spain, the 6th meeting of the working group on retail operations in Stockholm, Sweden, and the 96th meeting of the working group on multi criteria decision aiding in Paris, France.

The scientific results of the year 2023 generated by the researchers associated with EURO and its working groups are captured in the four EURO journals, among others: European Journal of Operational Research (EJOR), EURO Journal on Computational Optimization (EJCO), EURO Journal on Decision Processes (EJDP), and EURO Journal on Transportation and Logistics (EJTL). More information on the EURO journals can be found online on the EURO webpage. <https://www.euro-online.org/web/pages/106/publications>

The EURO association continued supporting especially young researchers with various education and sponsoring programs in 2023. The EURO PhD School, for example, is an initiative established for post-graduate education for PhD students under a school format. Students receive advanced lectures and tutorials on one specific topic while benefiting from the opportunity to build their professional network. In 2023, 3 PhD schools took place: in Bielefeld, Germany on Data Science meets Combinatorial Optimization, in Stockholm, Sweden on Sustainable Supply Chains, and in Hagen, Germany on Sustainable Supply Chains. For example, in Stockholm 25 students from Europe and North America participated in a program designed to teach state-of-the-art tools to analyze and solve operations problems in the retail industry using data. For 2024, 3 more PhD schools are planned in Istanbul, Turkey (EURO PhD School on Operations Research in Computational Biology, Bioinformatics and Medicine), Málaga, Spain (EURO

PhD School on Multiple Criteria Decision Making: Methodologies and Applications to the Sustainable Development Goals), and Vienna, Austria (EURO PhD School on Behavioral OR). EURO further supports PhD students interested in participating in the National Taught Course Centre in Operational Research (NATCOR), which delivers taught courses in the UK (EURO PhD Schools).

Another EURO education initiative is the EURO Summer and Winter Institutes (ES/WI). They are meant to give early-stage researchers an opportunity for scientific exchange with other researchers of their field. In September 2024, there is a new institute planned in Forio d'Ischia, Italy, on Decision-making under uncertainty for commodities and financial markets.

In conclusion, 2023 was a very successful and productive year for the entire EURO association and all its members. Now, we summarize the events of the beginning of 2024 and provide an outlook on activities planned for the rest of the year.

Anita Schöbel remains the president of EURO, supported by the president elect Frits Spieksma. Seán McGarraghy replaces Joanna Jozefowska as Vice President (VP) 1. Ana Póvoa continues to serve as VP 2, just as VP 3 Juan José Salazar González, Secretary Jesper Larsen, Treasurer Marino Widmer, and IFORS Vice-President Stefan Nickel continue their service (EURO Executive Committee).

EURO is supported by additional Officers who have specific responsibilities and administrative roles: Manager Dr. Sarah Fores, Executive Assistant and Website Editor Diane Wilson, Information Technologies Manager Prof. Bernard Fortz, and Advisor to EURO-k Conferences Prof. Gerhard-Wilhelm Weber (EURO Officers). There will be many events in 2024.

We are looking forward to the 33rd EURO conference which will take place in Copenhagen, Denmark, from the 30th of June until the 3rd of July (EURO-2024). Furthermore, the 9th edition of the triannual ODYSSEUS meeting will be held in Carmona, Spain, from the 19th until the 24th of May as well as the 50th meeting of the working group on Operational Research Applied to Health Services (ORAHs) is planned to take place in Turin, Italy from 14th until 20th of July. 🌍



REPORT OF THE VICE PRESIDENT REPRESENTING NORAM

Rina Schneur <rinarsg@gmail.com>

The North American Research Societies (NORAM) is made up of two societies: The Canadian Operations Research Society (CORS) and the Institute for Operations Research and the Management Sciences (INFORMS). Activities of the two societies for 2023 as well as planned events for 2024 are reported below. Both societies have been expanding and evolving to better serve their member communities. A few of such initiatives are highlighted below:

- CORS established its first Equity, Diversity and Inclusion (EDI) Fund and EDI Award; it also approved an EDI standing committee.
- CORS focused on promoting interdisciplinary events.
- CORS has increased industry collaboration in events and in the CORS 2024 conference.
- INFORMS created a new branding tagline - "Smarter Decisions for a Better World" - with input from current, former, and potential members.
- INFORMS established three board-level ad hoc committees: AI (Radhika Kulkarni, Chair); Early career practitioners (Dave Hunt, Chair); Volunteer pipeline and diversity (Mark Lewis, Chair).
- INFORMS continues to be focused on the strategic plan adopted in 2021 (<https://www.informs.org/About-INFORMS/Governance/INFORMS-Strategic-Plan>).

CORS Activities and Leadership

The Canadian Operational Research Society (CORS) or Société Canadienne de Recherche Opérationnelle is the leading Canadian professional society for operational researchers. Established in 1958, CORS brings together OR professionals with annual conferences held across Canada, special interest groups, traveling speakers' programs, and student support. CORS sponsors the INFOR journal and publishes the Bulletin, a newsletter of the Society and related activities.

Currently CORS is administered by a Council of eleven members: President Samira Abbasgholizadeh-Rahimi (McGill University), Vice President Anjali Awasthi (Concordia University), Secretary Majid Taghavi (Saint Mary's University), Treasurer Gregory Paradis (University of British Columbia), Immediate Past President Peter VanBerkel (Dalhousie University), Councillors: Sibel Alumur Alev and Houra Mahmoudzadeh (University of Waterloo), Masoud Chitsaz (HEC Montreal), and Saied Samiedaluie (University of Alberta).

CORS has a comprehensive structure of standing committees, including Awards, Education and Student Affairs, Equity Diversity and Inclusivity (EDI), Membership, Program, Public Relations, and Publications. Alongside these, Special Interest Groups and a range of ad-hoc committees contribute dynamically to CORS.



CORS Meetings

In 2023 CORS and Optimization Days held a joint international meeting in Montreal, QC, Canada that was chaired by Nadia Lehoux (Université Laval) and Nadia Lahrichi (Polytechnique Montréal). The Plenary speakers included: Christian Blum (Spanish National Research Council), Valerie Botta-Genoulaz (INSA Lyon, France), Amelia Regan (University of Washington and University of California), Louis-Martin Rousseau (Polytechnique Montréal), and Sophie D'Amours (Université Laval) who gave the Harold Lardner Memorial Lecture.

The CORS 2024 annual conference will be held in London, ON, Canada in June 2024. The conference chairs are Fredrik Ødegaard and Tiffany Bayley (Ivey Business School) and the plenary speakers include Pinar Keskinocak (Georgia Institute of Technology) who will give the Harold Lardner Memorial Lecture.

CORS Awards

In 2023 CORS presented the following awards:

- The annual Harold Larnder Prize to an individual who has achieved international distinction in operational research was awarded to Sophie D'Amours.
- The Omond Solandt Award, given to an organization that has made an outstanding contribution to operational research in Canada, was awarded to IVADO (Montreal, QC).
- CORS Award of Merit winner was Taraneh Sowlati. The award is given for significant contributions of a current or past member of CORS to the profession of operational research.
- The Eldon Gunn Service Award, presented to members of the Society who have made outstanding contributions of time and

service to the Society, was given to Michael Pavlin and Navneet Vidyarthi.

- CORS Practice Prize winners were Mikael Rönqvist, Nazanin Sharif, Kaoutar Hajli (Université Laval); Gurjeet Warya, Trung Ngo, Martin Brousseau, Brian Hatter (True North Marine); Jean-François Audy (Université du Québec à Trois-Rivières); Jean-François Cordeau (HEC Montréal); Camélia Dadouchi (Polytechnique Montréal); Patrik Flisberg for their work entitled “Weather Routing for Maritime Vessels”.
- CORS Student Paper Competition Open Category winner was Setareh Farajollahzadeh (University of Toronto).
- CORS Student Paper Competition Undergraduate Category winners were Scholar Sun, Ernest Osei, and Johnson Darko (University of Waterloo).
- CORS Forestry SIG David Martell Prize winner was Vanessa Simard (Université Laval).
- CORS Health Care Operational Research SIG Prize winner was Chaoyu Zhang (University of Toronto).
- CORS Queueing and Applied Probability SIG Prize winner was Likang Ding (University of Alberta).
- OR/MS Scientific Prize co-winners were Joëlle Cormier (HEC Montréal) and Rafael Ajudarte de Campos (Université Laval). >>

CORS Publications

CORS publishes the journal *INFORMS*, a quarterly journal on Information Systems and Operational Research (Joe Naoum-Sawaya, Ivey Business School, Canada, Editor in Chief) with a goal to publish research at the intersection of data analytics, Operations Research, computational intelligence, and optimization. It also publishes the CORS Bulletin (Andrea Friars, Editor).

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INFORMS Activities and Leadership

INFORMS activities *INFORMS* (www.INFORMS.org) promotes best practices and advances in operations research, management science, and analytics through an array of highly cited publications, conferences, competitions, networking communities, and professional development services.

2023 INFORMS Board of Directors, President, Laura Albert; President-Elect, Julie Swann; Past President, Radhika Kulkarni; Secretary, Mark Lewis; Treasurer, Susan Martonosi; Vice President International Activities, Miguel Anjos; Vice President Technology Strategy, Warren Hearnese; Vice President Education, Illya Hicks; Vice President Practice, Robin Lougee; Vice President Membership and Professional

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INFORMS Meetings

In 2023, INFORMS hosted the Business Analytics Conference, which took place in Aurora, Colorado in April, the INFORMS Healthcare conference held in Toronto, Canada in July, and the INFORMS Annual Meeting, which was held in Phoenix, Arizona in October. The INFORMS meetings for 2024 include the Analytics Conference, which was held in Orlando, Florida in April, the INFORMS International Conference from June 16–19, 2024, in Medellín, Colombia, the INFORMS Security Conference, which will be held in Arlington, Virginia from July 28-30, 2024, and the INFORMS Annual Meeting, will take place in Seattle, Washington from October 20-30, 2024. Our 2023 Healthcare and Annual Meeting exceeded expectations in terms of number of attendees and engagement. INFORMS is looking forward to building on the momentum in 2024 and beyond.

INFORMS Publications

INFORMS offers a wide array of content and information about Operations Research and Analytics to meet the needs and interests of researchers, practitioners, students, business leaders, policy-makers, and the public.

INFORMS publishes 17 journals: Decision Analysis, Information Systems Research, INFORMS Journal on Applied Analytics, INFORMS Journal on Computing, INFORMS Journal on Data Science, INFORMS Journal on Optimization, INFORMS Transactions on Education, Management Science, Manufacturing & Service Operations, Marketing Science, Mathematics of Operations Research, Organizational Science, Operations Research, Service Science, Stochastic Systems, Strategy Science and Transportation Science. It also publishes three magazines (OR/MS Today, Analytics and student-run OR/MS Tomorrow) as well as two serial publications (INFORMS Analytics Collections and TutORials in Operations Research). View them all at <https://pubsonline.informs.org>.

INFORMS Communities

INFORMS community includes researchers, industry professionals, thought leaders, students, and more. INFORMS has a variety of focused communities tailored to members' interests. 13 Societies, 22 Sections, 6 Forums, and 75 geographic and student chapters provide members with opportunities to connect with like-minded professionals, share knowledge, and advance their careers and impact. There has been an increase in the number of

members interested in starting new groups, especially local geographically based one and ones based the type of work members do. At this time, it is not known how many will actually formally request to start a group but INFORMS encourages new groups when members ask to form one.

INFORMS Awards

The following prize winners for fall 2023/spring 2024 include:

1. The Daniel H. Wagner Prize for Excellence in Operations Research Practice was awarded to Karl Kempf (Intel), Nicholas Mason (Intel), Rachel Rosenberg (Intel), Evan Rash (Intel)
2. The Doing Good with Good OR - Student Paper Competition was awarded to Aysu Ozel, Northwestern University.
3. The Donald P. Gaver Junior Early Career Award was presented to Santiago Balseiro, Columbia University.
4. The Franz Edelman Winner for 2024 is Molslinjen.
5. The Frederick W. Lanchester Prize was awarded to Guanghui Lan, Georgia Institute of Technology and Rakesh V. Vohra, University of Pennsylvania
6. The George B. Dantzig Dissertation Prize was given to Hannah Li, Columbia Business School
7. The George E. Kimball Medal was given to Jonathan Owen, GM (retired) and Steve Graves, MIT.
8. The George Nicholson Student Paper Prize was awarded to Yunbei Xu, Columbia University
9. The INFORMS Case Competition was awarded to Deniz Akturk, Washington University in St. Louis and Ozan Candogan, University of Chicago.
10. The INFORMS Early Career Practitioner Award winner for 2024 is Cristiana Lara, Amazon.
11. The INFORMS President's Award was given to Sheldon H. Jacobson, University of Illinois at Urbana-Champaign.
12. The 2024 INFORMS Prize winner is Jingdong (JD.com).
13. The John von Neumann Theory Prize was awarded to Christos Papadimitriou, Columbia University and Mihalis Yannakakis, Columbia University
14. The Judith Liebman Prize was awarded to Durant Fullington, Mississippi State University and Madison Evans, Auburn
15. The Philip McCord Morse Lectureship was awarded to David B Shmoys, Cornell University
16. The Prize for Teaching of the OR/MS Practice was awarded to Timothy Chan, University of Toronto.
17. The Saul Gass Expository Writing Prize was awarded to Mark S. Daskin, Northwestern University.
18. The Volunteer Service Prize was awarded to: Michael Johnson (University of Massachusetts), Beverly Wright (Burtch Works), Jun Zhuang (University of Buffalo)
19. The Undergraduate Operations Research Prize was awarded to Naveen Durvasula, University of California (Berkeley).
20. The 2024 UPS George D. Smith Prize winner is University of South Carolina, Management Science Department.

In addition, the following people were inducted as INFORMS Fellows in 2023:

1. Selim Akturk, Bilkent University
2. Maged Dessouky, University of Southern California
3. Ozlem Ergun, Northeastern University
4. Arnold Greenland, Retired
5. Simge Küçükyavuz, Northwestern University
6. Andrea Lodi, Cornell Tech and Technion - Israel Institute of Technology
7. Ranganath Nuggehalli, UPS
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10. Cole Smith, Syracuse University
11. Kwokleung Tsui, Virginia Tech
12. Peiling Wu-Smith, General Motors 

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AN OPTIMIZATION FRAMEWORK TO SUPPORT COLLABORATIVE INVENTORY MANAGEMENT DECISIONS IN MADAGASCAR

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Disasters are increasingly affecting human lives with greater frequency and severity over the years. The strategic placement of relief supplies in disaster-prone areas prior to emergencies—commonly referred to as prepositioning—is a widely adopted approach among humanitarian actors. It often enables faster and more cost-efficient response by mitigating the scarcity of supplies and the need to procure and transport them at inflated post-disaster prices. A significant challenge to the effectiveness of prepositioning is to allocate limited budget and stocks under high level of uncertainty regarding when, where and how much relief supplies will be needed. In a large network, for example, different hazards may threaten different regions. Given limitations in maintaining inventory levels to satisfy the needs arising from every disaster scenario, inventory may be distributed to various locations by considering possible impacts. This can be an important issue when the stockpiles and affected areas are far from each other, especially if compounded by disruptions in the distribution network caused by the disaster. The challenges encountered during response operations in Madagascar provide a precise illustration of this situation. In this study, we partner with Emergency Supply Prepositioning Strategy (ESUPS) initiative to provide an optimization framework that supports inventory management decisions in Madagascar.

ESUPS is a collaborative initiative that aims to provide advice and guidance on emergency preparedness to national and regional stockholders. Their primary mandate is to foster coordination, cooperation, and collaboration (3Cs) in disaster relief operations. They have been conducting projects with their partners to demonstrate benefits of different 3C mechanisms, including information sharing on stock-related data, loan-borrowing strategies, and branding

postponement. One of the core elements of their recommended 3C practices is the “STOCKHOLM” platform (STOCK of Humanitarian Organisations Logistics Mapping). It is a collaborative platform developed by ESUPS, serving a technological enabler for 3C mechanisms. The usage of it entails users (e.g., stockholders) entering and sharing their inventory data within the platform (see Figure 1), which then provides optimal collective stock levels and analyses for a national (in-country) prepositioning strategy. This information is currently accessible for Madagascar, Honduras, and Vanuatu, with several other countries still in progress. We are engaged in the design of an optimization framework for Madagascar that integrates additional parameters and decision variables not currently accounted for in the platform. This integration is aimed at better capturing the needs and complexities of the system, thereby making it more accurately representative.

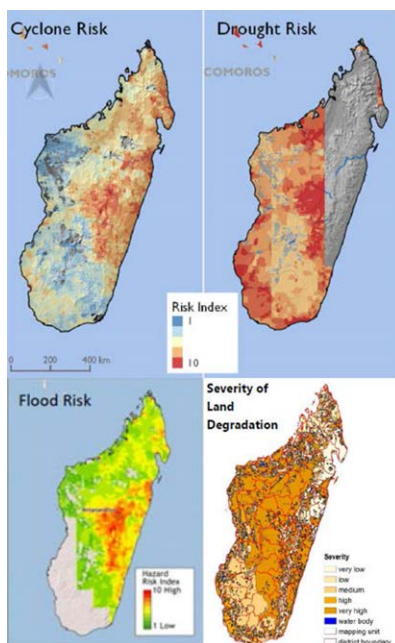
Focusing on in-country prepositioning leads to different challenges for different countries. It is important to understand the local context and develop adapted approaches to effectively address these challenges. Therefore, we employ a bottom-up data-driven research approach that we first aim to understand the problems faced in inventory management and then provide tailored recommendations and a decision support tool.

As shown in Figure 2, Madagascar is prone to various hazards due to its geographical location, such as cyclones, floods, and droughts, which result in destructive impacts on thousands of people and the country’s development every year (IMF, 2022). The road network of the country primarily consists of poorly maintained roads, which are particularly susceptible to damage from strong winds and heavy rains. Adverse weather conditions usually cause

significant infrastructure damage, hindering the transportation of relief supplies. It is therefore important to enhance inventory capacity in high-risk areas, ensuring timely delivery by mitigating logistical challenges. Moreover, some disasters can be predicted to some extent, allowing for anticipated response planning. Incorporating this predictive information into inventory management decisions could significantly enhance effectiveness in managing such events.

Our study aims to estimate the possible impact of disasters by considering logistical, socio-demographic, and geographical characteristics of the areas, and to develop inventory management strategies that can address the aforementioned issues. In many developing countries, pertinent information is typically aggregated only at the national level, leaving a gap in data availability for smaller administrative units. Therefore, a notable challenge we encountered during our research is the scarcity of micro-level data and information necessary to parametrize and test the model.

We also develop and test 3C mechanisms in line with ESUPS's mandate, which are pivotal factors that can significantly influence the success of disaster relief operations in any context. We specifically focus on information sharing and warehouse sharing, as well as collective decision-making and actions among stakeholders. In particular, coordinating the decisions of various actors helps prevent inefficiencies and inefficacies, such as the improper

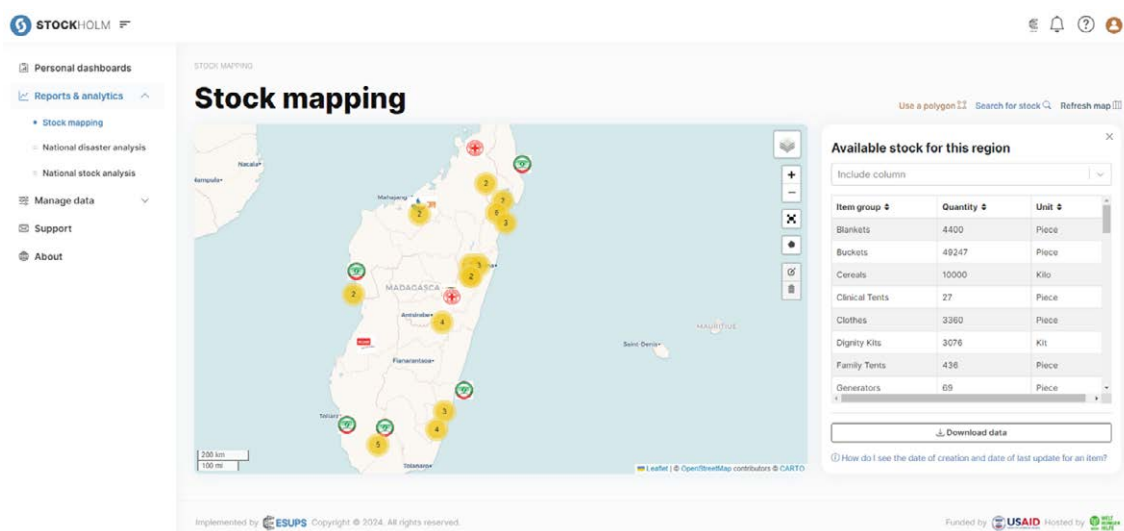


▲ Figure 2 - Cyclone, Drought, and Flooding Risks, and Severity of Land Degradation (IMF, 2022)

placement of relief supplies and the accumulation of excessive stocks in a single high-risk location while leaving other areas undersupplied. These issues undermine the purpose of prepositioning by causing delays in aid distribution and the waste of scarce resources. Additionally, inventory management decisions may be constrained when the stockholders only use a limited number of facilities that they operate within certain parts of the distribution network. The cooperative usage of warehouses helps overcome storage limitations by providing additional storage options. Furthermore, it addresses funding constraints by pooling resources and capabilities.

Implementing 3C mechanisms in practice and building a useful decision-support tool necessitates a comprehensive framework and continuous feedback from practitioners. Our research is conducted around the conceptual framework presented by Adsanver et al. (2023), which highlights the important elements to be considered for the design and management of 3Cs.

These elements include the 3C benefits and performance measures (e.g., reduced response time), factors influencing the design and performance of the 3Cs (e.g., visibility), as well as the necessary means for implementing these mechanisms (e.g., information technologies). We had regular and frequent meetings with our partner, helping us to conceptualize and model 3C mechanisms based on the framework, as well as integrating our analytical approach into the STOCKHOLM platform. 🌍



▲ Figure 1 - A screenshot of the stock mapping provided in the STOCKHOLM platform.

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“RESOURCE”-FULL CONTRIBUTION OF IFORS FOR DEVELOPMENT AND DEVELOPING COUNTRIES

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Continuing its long-standing (65-years) unwavering efforts of extending relentless support as well of “doing good through OR” to the OR community in general, the developing countries in specific and the society at large, the IFORS (currently comprising 54 national societies), has a dedicated section - “Developing Countries online resources” under its “Resources” tab which can be accessed through the weblink - https://ifors.org/developing_countries/index.php?title=Main_Page. This section has been specifically designed and orchestrated to serve as a platform to provide widespread access to ‘free’ and ‘publicly-available’ materials of Operational Research for Development to the entire OR community including researchers, academicians, and scholars in the Developing Countries (DCs). It also aims to provide a venue for people who are working in the area to share their completed or in-process work, learn from others, and stimulate comments and discussions on the work.

The committee on Web-based Resources on OR for Development comprises senior eminent members and distinguished mentors (https://www.ifors.org/developing_countries/index.php/IFORS_Developing_Countries_Online_Resources>About) across the world including Dr. Elise del Rosario (past president of the IFORS) and Ms. Sue Merchant (past president of the OR Society of the UK; past vice president of IFORS), who work dedicatedly towards creating and distributing these resources. The role of the designer and webmaster of IFORS, Mr. Ruel Tan, in keeping the website lively and contemporary is commendable.

Let us give an example. Considering the relevance and importance of Sustainable Development Goals (SDGs) of the United Nations in today’s times, one of the most recent contributions added to the page is the book link https://ifors.org/developing_countries/index.php/Develop_Your_English_with_the_United_Nations_Sustainable_Development_Goals. This book which combines professional English learning with Sustainable Development Goals (thus Economics, Management and Social Sciences and Operational Research) could be of interest for those who wish to enhance their knowledge of Sustainable Development in addition to sharpening their English skills.

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Develop Your English

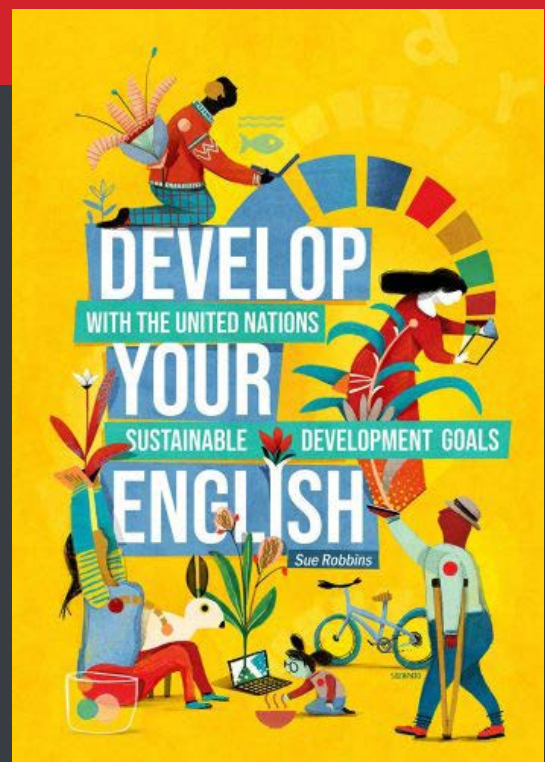
with the United Nations Sustainable Development Goals

Sue Robbins

Develop Your English is a textbook for upper intermediate to advanced level English language learners (B2/C1) that offers perspectives on world issues alongside opportunities to develop English as an international language. Its innovative approach incorporates a global perspective into the language learning process through a focus on international themes, organised around the United Nations Sustainable Development Goals. Each unit offers authentic texts (spoken and written) and a focus on grammar and vocabulary selected from the texts to examine and review. The interactive tasks that accompany the material encourage systematic vocabulary and language skills development, and invite the reader to communicate about the world, and themselves in the world.



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SPORT SCHEDULING: WHEN (AND WHERE) TO PLAY?

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Every sports contest needs a schedule of play. Which games are to be played is determined by the tournament format; a popular format is for instance the so-called k-round-robin tournament, where each team meets each other team k times. Determining when (and sometimes also where) the games are to be played is the problem known as sport scheduling. An example of a (part of a) sports schedule is given in Fig.1.

Friday 03/05/2024		
21:00	Luton Town	Everton
Saturday 04/05/2024		
13:30	Arsenal	AFC Bournemouth
16:00	Brentford	Fulham
16:00	Burnley	Newcastle United
16:00	Sheffield United	Nottingham Forest
18:30	Manchester City	Wolverhampton Wanderers
Sunday 05/05/2024		
15:00	Brighton & Hove Albion	Aston Villa
15:00	Chelsea	West Ham United
17:30	Liverpool	Tottenham Hotspur
Monday 06/05/2024		
21:00	Crystal Palace	Manchester United

▲ Fig 1. The schedule of matchday 36 of the English Premier League soccer (source: Soccerway)

In practice, finding a good schedule is far from trivial, since there is a wide diversity of wishes from various stakeholders (clubs, players, fans, broadcasters, police, etc.) to be taken into account. While some of these wishes are common in most competitions (e.g. respecting the availability of the stadium), many leagues have their peculiarities (e.g. Chilean football clubs must not travel to the other side of the – elongated - country twice in a row, see Alarcon et al., 2017). Professional sports also have other concerns (e.g. maximizing TV viewership, avoiding hooliganism) than amateur sports (e.g. player availability and convenience). Since the schedule requirements are often conflicting, most real-life sports scheduling problems are formulated using soft constraints, each with an associated penalty in line with its importance. The idea is then to find a schedule that minimizes the total penalty resulting from

violated soft constraints.

In the late 1970s, sports scheduling found its way to academic research, and – motivated by a large number of innovative applications in practice – gradually developed into a sizeable research field (see e.g. Kendall et al., 2010). On the one hand, to gain a better understanding of the fundamentals, the literature has studied simplified versions of real-life problems. The traveling tournament problem (Easton et al., 2001) is undoubtedly the best-known case. It stems from the scheduling problem faced by the Major League Baseball (MLB), but focusses solely on minimizing the total travel distance of the teams, knowing that teams can make trips between the stadiums they visit (instead of returning home each time). Another such problem is the break minimization problem (Elf et al., 2003), where for a given timetable, the home advantage of each game needs to be optimized, such that teams avoid consecutive home games (or consecutive away games) as much as possible. Note that sports scheduling has a strong link with graph theory, which is particularly clear in these simplified problems (see e.g. Ribeiro et al., 2023). On the other hand, there are dozens of papers that present a tailor-made solution approach for a specific sports competition in practice (see e.g. Kendall et al., 2010). The fact that most of these algorithms have typically been tested on just one or two problem instances, which – due to confidentiality reasons – were rarely shared, forms one of main obstacles for the field.

Data set	Ref.	No. Teams	No. Slots	Classification
Cost minimal1	Briskorn & Drexl [1]	6 - 18	5 - 17	1RR, C, 0 BR1, BR2, CA1, CA3, CA4, GA1 CR
Chilean 2nd division soccer	Durán et al. [2]	11	44	4RR, C, M BR1, BR4, CA1, CA3, CA4, CA5, FA1, GA1 CR
Korea professional baseball league	Kim [3]	10	54	6RR, C, P CA1, CA3, CA4, FA3, GA1, SE1 TR

▲ Fig. 2 The RobinX online query tool. Users color buttons green or red to indicate whether or not the queried problems should have the indicated characteristics.

To create some order in this myriad of problem variants, a three-field notation to describe sports scheduling problems in terms of the tournament format, the constraints in use, and the objective, coined RobinX, was developed (Van Bulck et al., 2020). It is accompanied by XML-based file templates to store problem instances and their solutions, and presents an online platform (<https://robinxval.ugent.be/RobinX/>) that offers three useful tools. First, a query tool assists users to select the relevant set of papers for a problem with specified characteristics (see Fig.2.). Second, the online platform provides access to an XML data repository that contains real-life and artificial problem instances from different countries and sports. It also includes the artificial benchmark problem instances for the traveling tournament problem, which were previously managed by prof. Mike Trick. Finally, the website enables users to interact with a free and open-source C++-library to read and write XML files and to validate and evaluate encoded instances and solutions.

One very popular (and successful) method is the so-called first-break-then-schedule approach (Nemhauser & Trick, 1998), which decomposes the problem into two subproblems. The first determines for each team in every time slot whether it plays home (i.e. in its own venue) or away (i.e. at the venue of the opponent). A team's succession of home/away matches is known as its home-away pattern (HAP), see Fig.3 (left). Next, given a HAP for each team, opponents are determined, taking into account that a team that plays at home in some timeslot can only face a team that plays away in that timeslot, see Fig.3 right. Although deciding whether or not a compatible opponent schedule exists was conjectured to be polynomially solvable by Briskorn (2008), a full characterisation of what makes a set of HAPs feasible – let alone promising – still eludes us. Hence, the quality of the final schedule heavily depends on the ability to backtrack between the subproblems. Recent progress show how this decomposition is related to Benders' decomposition, and how traditional Benders' cuts can be used to efficiently organize backtracking (Van Bulck & Goossens, 2023a). First-break-then-schedule works particularly well if the most important constraints are related to when teams play their home games. If this is not the case, first-schedule-then-break, which solves the subproblems in the other order, can be a viable alternative.

Matchday	1	2	3	4	5	6	1	2	3	4	5	6
A	H	A	H	A	H	A	B	C	D	D	C	B
B	A	H	H	A	A	H	A	D	C	C	D	A
C	A	H	A	H	A	H	D	A	B	B	A	D
D	H	A	A	H	H	A	C	B	A	A	B	C

▲ Fig. 3 A HAP set (left) and corresponding opponent timetable (right) for a 2RR tournament with 4 teams (A,B,C and D).

Recently, in the context of an international timetabling competition (Van Bulck & Goossens, 2023b), 45 artificial, but realistic and diverse benchmark instances were generated. They were

tackled with a wide variety of approaches, including mixed integer programming (branch&cut), simulated annealing, adaptive large neighbourhood search, pseudo-boolean optimization, constraint programming and SAT solvers. While the timetabling competition has shown that it is possible to build effective generic solvers that handle the wide variety of constraints that are common in sports timetabling, the best approach depends on the type of constraints present in the problem. Trying to understand what approach works best, depending on the characteristics of the problem is one of the challenges the field is currently facing.

In conclusion, what makes sports scheduling problems exciting is that they are typically easy to explain, and (sports-minded) people will easily relate to them. This makes them a great topic for illustrating OR concepts in teaching (see e.g. Goossens & Beliën, 2023).

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HOW OR IS HELPING THE UK GOVERNMENT TO REACH NET ZERO EMISSIONS

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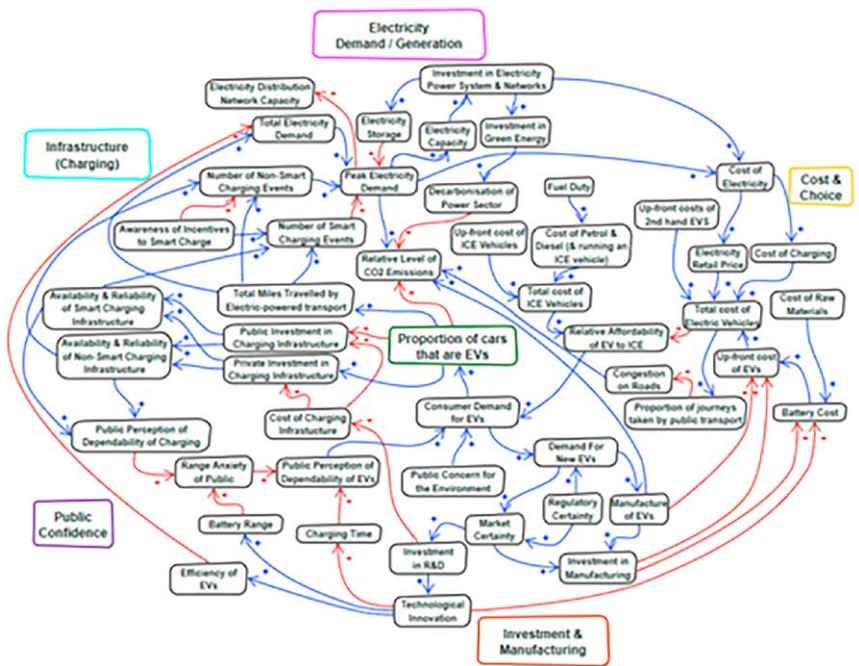
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Overview

The UK has set itself on a path to reaching net zero carbon emissions by 2050. This is a complex delivery challenge, demanding departments across UK Government to collaborate to develop a robust decarbonisation pathway. To help understand and navigate this complexity, the UK Department for Energy Security and Net Zero (DESNZ) has partnered with the Departments for Transport (DfT), Environment, Food and Rural Affairs (Defra), Levelling Up, Housing and Communities (DLUHC) and the Cabinet Office to create a ground-breaking interactive visualisation tool using Systems Thinking: the Net Zero Systems Tool (NZST). The NZST plays a crucial role in decision-making for achieving net zero. It empowers decision makers to understand and navigate the interconnected nature of this landscape, enabling effective risk management, identification of opportunities, and driving further collaboration across government. The government OR service (GORS) has played a major role.

The Approach

The NZST covers five relevant systems of interest – buildings, energy, industry, transport and land use. Given the complexity of these systems and the need for stakeholder engagement, the project team employed principles from Soft OR, particularly Systems Thinking (see Appendix). Thus, each of these systems has been carefully modelled using causal loop diagrams (sometimes referred to as maps) including their interactions with each other (see below). These principles enable the involved parties to gain a joint understanding of the issues and their interactions, resulting in a shared vision of how to meet the overall objectives. With this type of OR approach, the practitioner takes on both an analytical and a facilitation role, so as to enable collaborative working with interested and involved departments. Whilst quantification, where possible, helps, in this situation, it is subservient to the overall systems approach. An example of a causal loop diagram is shown in Fig. 1, which shows the linkages involved in planning to phase out petrol and diesel vehicles in favour of electric vehicles (EVs). Here



▲ Fig 1. An example of a causal loop diagram: Promoting the Uptake of Electric Vehicles

the overall aim is to identify linkages that would influence the introduction of electric vehicles. An obvious influence is the number of available public charging points but some influences in a very complex landscape can be unexpectedly important (such as range anxiety for EVs).

The Net Zero Systems Team

The then Government Chief Scientific Advisor wrote to the Prime Minister, in his role as co-chair of the Prime Minister’s Council for Science and Technology, requesting a systems approach for net zero. This was approved and led to the creation of the Net Zero Systems team, with a commitment, in 2021, to taking a systems approach to delivering the Net Zero Strategy. The commitment was reconfirmed in the Net Zero Growth Plan in 2023.

The key concept was to create and embed a digital interface to view and interact with interconnected systems diagrams (described below) covering the core five sectors contributing to Net Zero. The project required collaboration with (i) internal and external domain consultants (e.g. land use) to develop a Net Zero Systems Tool (NZST), (ii) workshops involving officials across government, third sector parties, wider non-government stakeholders, industry experts, and academics to develop a consensus for the systems diagrams within the NZST, and (iii)

senior policy makers, analysts and their teams for the five core net zero systems.

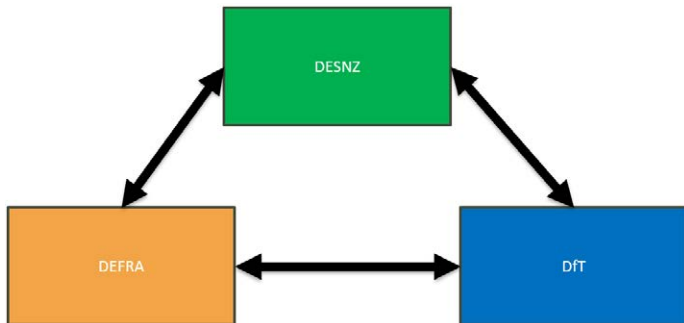
The Net Zero Systems Tool (NZST)

This needed to be underpinned by a clear set of principles, namely that:

- Complex issues are part of an integrated whole
- The focus is on learning and leverage opportunities
- Qualitative insights are valued
- Those with relevant experience and knowledge (e.g. social researchers and economists) need to be involved
- Soft OR consultants need to be embedded within teams, building relationships and working collaboratively
- The NZST should complement existing quantitative OR models

The Net Zero Systems team, led by Adam Mackenzie-Jones, based in the DESNZ, designed the unique concept of the tool and had to address several key challenges to ensure that the tool was fit for purpose:

1. Working across Departmental Boundaries: An innovative cross-government systems team across DESNZ, DfT and Defra working towards the same vision was established, with systems processes and tools for Buildings, Land Use, Transport, Industry and Energy, embedded. In addition, Systems Leads for each sector were identified. This is illustrated in Fig. 2.



▲ Fig 2. Working across Department boundaries

2. Developing Dynamic and Interactive Systems Diagrams. The aim was to create a tool that could interactively display systems diagrams for a variety of users and demonstrate the impact of making a change.

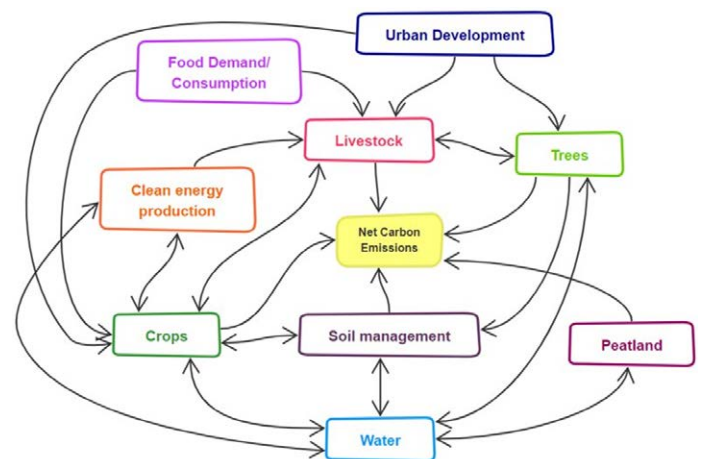
3. Mapping the Systems. A series of workshops to develop each diagram (or map) were run, which included stakeholders from across government, academia and industry, with the aim of iteratively developing a shared view in each sector, including key variables and relationships. The diagrams were then validated by expert academics, and a data review was conducted for each sector. An example of an initial basic diagram is shown in Fig. 3, which led to two further levels, each of increasing detail and comprehensiveness, via the workshops.

4. Resisting the Drive to Quantify: There was also the risk of focusing on the quantifiable variables and ignoring the unquantifiable elements in

the diagrams, which are key to understanding the complexity of the system. From the review outputs, the preferred solution was a variation on the traditional causal loop diagram technique that demonstrated the relative strengths of changes. The NZST should help to structure problems and identify areas for further research and analysis, in some cases with existing models. It also aimed to integrate the tool with outputs from existing OR models, supporting policy with both quantitative and qualitative insight, and encouraging exploration of new modelling opportunities.

5. Developing a User Focused Tool. To facilitate the desired culture change, the NZST needed to be usable and understandable by a broad user base. The team were conscious that causal loop diagrams can be perceived as being very technical and complicated by those unfamiliar with the technique. Thus, an agile and iterative approach to the design of the tool was taken, bringing in extensive user testing and reviewing at each stage to ensure the product met the needs of the intended users. An extensive User Experience-led design review was also conducted and fed into the iterative development.

Consultants from the Government OR Service then supported the development of the key systems diagrams for each of the five Departments, e.g. see Fig 3. This involved identifying senior sponsors in each Department; engaging with analytical and policy teams to explain the benefits and potential uses of the NZST; and closely collaborating with sector experts to verify and validate the content of the diagrams. The NZST itself promotes collaboration and is critical in creating a shared understanding of the wider system impacts of policy interventions on achieving Net Zero.



▲ Fig 3. Food and Agriculture: A Basic System Diagram

Results, Impact and Benefits

The finalised NZST provided an overview of the systemic impacts of policy interventions, as illustrated in Fig 4.

The NZST is being used some 400 times a month by a variety of users to stimulate novel Systems Thinking work across the Government's net zero portfolio. The team has received continuation funding from HM Treasury, focused on continuing to embed



▲ Fig 4. Overview of Systems Diagrams

systems approaches within government processes, specifically spending reviews and budgets, business cases, evaluation, and delivery reporting.

Editors' Comment: Systems Thinking approaches can provide powerful insights into complex issues where qualitative aspects are critical and can extend the application of OR. However their application requires that the OR consultant has an understanding and experience of business processes, an ability to work at the strategic level in client organisations and also to be comfortable and competent in a facilitation role. The references provide further detail about Systems Thinking, System Diagrams and Soft OR generally.

Note: This work was awarded the OR Society's President's Medal for Excellence in Practice in 2023.

Appendix

Systems Thinking (ST) is often regarded as originating in biology as a reaction to problems with reductionism within science. Reductionism means taking objects to pieces to understand how they work. Biologists argued biological phenomena literally disappear when plants and organisms are taken to pieces and their systemic properties can't be studied. The world should be viewed as hierarchical and interconnected. ST became highly influential in organisational theory and sociology; for example, 'culture' might be an example of a systemic property of an organisation or a society. From an OR perspective, ST tools have been used to conceptualise organisational referents like business units or processes and also to model the behaviour of complex systems. Famous approaches include the **Viable System Model** (Beer) and **Soft Systems Methodology** (Checkland) for conceptualisation and design of organisational referents, and **System Dynamics** (Forrester) for systems modelling and simulation. OR academics have also explored critical perspectives relating to ST including topics such as multi-methodology and boundary judgements.

Causal Loop Diagrams are the first step in **Systems Dynamics Modelling**, developed by Forrester and colleagues at MIT in the USA. They are a causal diagram which shows how variables in a system are interrelated. Causal links can be positive or negative, for example, 'resources per person' is positively linked to 'life expectancy' within society. Causal links can also lead to feedback loops, which may be reinforcing or balancing. We often refer to reinforcing loops as viscous or virtuous cycles in day-to-day language. A map can be constructed relatively quickly to aid facilitation in a workshop or in a more detailed and analytical manner to fully explore systems and develop powerful quantitative simulation models. Examples of SD simulation software include iThink, STELLA, Powersim Studio and Vensim. Facilitated mapping (sometimes referred to as Group Model Building) helps groups learn about the situation they face and arrive at negotiated agreement about how to resolve issues and move forward. Simulation models can help predict the behaviour of systems over time.

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2024 INFORMS ANALYTICS CONFERENCE, ORLANDO, FL - AN UNFORGETTABLE EXPERIENCE

Kathryn Walter <Kathryn.Walter@avistacorp.com>

* This article has been modified and was previously published in *OR/MS Today* magazine.

Kathryn Walter, CAP, was the General Chair of the 2024 INFORMS Analytics Conference, Orlando, FL, April 14-16, 2024.

The **2024 INFORMS Analytics Conference** was held on April 14-16 at the *Hyatt Regency Grand Cypress* in Orlando, Florida, and featured practitioners at every career stage and students wanting to learn more about their future careers.

Opportunities to Learn: Attendees learned from keynote speakers, track talks, competition and award presentations, and other training.

Keynote Speakers: This year's keynote speakers were *Tom Koulopoulos* and *Kris Saling*. The *INFORMS Roundtable*-sponsored speaker, *Tom* is a leader at *Delphi Group*, a 30-year-old Boston-based think tank, who speaks and writes on what we need to do to help our organizations thrive in the future. *Kris* is a *U.S. Army Colonel* who has been transforming the service's human resources practices through analytics.



▲ The 2024 Franz Edelman Award was presented to the finalist team from Molslinjen.

forecasting and revenue management toolbox for data-driven operation of ferries in Denmark.

Additional competition winners were also recognized during the gala. These included the *INFORMS Prize*, *UPS George D. Smith Prize* and the *Daniel H. Wagner Prize*. This year's *Edelman Gala* also debuted the winner of the inaugural *Early Career Practitioner Award*, recognizing early career professionals for their exceptional contributions.



▲ The conference opened with the *INFORMS Roundtable*-sponsored keynote speaker *Tom Koulopoulos* (left). The final day of the conference started with keynote speaker *Kris Saling* (right).



Track Talks: The conference featured more than 100 sessions within tracks covering a wide range of topics. Almost all track presentations had foundations in advanced uses of analytics that have been applied in industry, government or nonprofit organizations.

Competition and Award Sessions: Finalists for the *Edelman Competition* (often referred to as "*The Nobel Prize*" of *O.R. and advanced analytics*) gave their presentations in Orlando, and the winner was announced during the *Edelman Gala* on Monday night. The 2024 award was presented to *Molslinjen* for the development and operation of a bespoke

Training: The conference also offered continuing education credits, which included multiple sessions about the *Certified Analytics Professional (CAP®)* program. New this year were activities for students and early career practitioners looking to upskill, which included best

practices for networking and resume writing. These additional training opportunities were built into the conference program at no extra cost to attendees.

Opportunities to Connect: The 2024 conference hosted many networking events and different ways to meet with fellow attendees.

Networking Events: The conference officially kicked off Sunday evening with multiple receptions. The Executive Forum, for analytics and operations research organization leaders, enabled attendees to connect with peers to discuss analytics-related issues. For non-executives, there was specific

programming to their level of experience to help connect them with peers.

Other Ways to Network: The conference Exhibit Hall featured workshops on Sunday and technology tutorials throughout the conference. Attendees were able to connect directly with providers of leading services or software solutions.

For photos and videos of the conference, visit the

[INFORMS YouTube channel](#) and [INFORMS Flickr album](#), and learn more about the [2025 INFORMS Analytics Conference](#), April 6-8, in Indianapolis, Indiana. 🌍

Cordially thanks to dear **Ashley Kilgore**, for communication and editing assistance that make this partial reprint possible.

- G.-W. Weber and J. Parikh

THE ORAHS FAMILY CELEBRATED THEIR ANNUAL REUNION AT THE ORAHS 2023 IN GRAZ, AUSTRIA

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The *Annual Meetings of the EURO Working Group on Operational Research Applied to Health Services (ORAHS)* have a long history in combining outstanding scientific sessions with an exciting social program that adds the atmosphere of a family reunion to the conference. The 49th edition of the ORAHS meeting at the Technical University of Graz, Austria (July 15th - 21st, 2023), followed this tradition by welcoming contributions taking a holistic view on health systems and encourages researchers, academics, practitioners and students to present research covering aspects of integrated planning and provision of services and offering various social activities for attendees and accompanying persons (<https://www.tugraz.at/events/orahs2023/home>).

More than 120 researchers and 14 accompanying persons from 18 countries joined the ORAHS 2023 meeting. The conference hosted 22 regular sessions covering almost any application area of OR in the health care industry and a broad spectrum of OR tools, ranging from classical optimization methods or simulation to data analytics and machine learning methods. Besides regular talks, the conference included a discussion session, a poster session, an interactive world café session on serious games in OR, a panel discussion with local policymakers. We also enjoyed two exceptional

plenaries by *Erwin Hans* from the University of Twente in the Netherlands and *Michael O'Sullivan* from the University of Auckland in New Zealand. Doctoral students presenting a poster were asked to pitch their work in a designated “*poster-pitch session*” and were nominated for the *Steve Gallivan Award*. Among many excellent posters pitched and presented, the work of *Martina Doneda* from the Polytechnic of Milano in Italy stood out in particular and was awarded the price.

Further, the OEGOR working group “*Operations Research in Health Care & Disaster Management*” held a hybrid workshop on current topics in health and disaster management as an integral part of the ORAHS Conference 2023. The workshop, organized by *Patrick Hirsch*, *Marion Rauner*, and *Margit Sommersguter-Reichmann* featured a diverse program in designated health and disaster related sessions, demonstrating the close connection between the working group and practice.

Besides the scientific program, attendees enjoyed a diverse social program including city tours (culinary, historic, street art and pub tours), sporting activities (beach volleyball, table tennis, basketball challenges and an ORAHS run), a boat trip and sea side dinner at the *Wörthersee* and the conference dinner at the *Schlossberg* overlooking the beautiful historic city centre of Graz. 🌍



▲ ORAHS 2023: Panel Discussion.



▲ Conference Dinner at the Schlossberg Graz.

CHINA OR SOCIETY HELD ITS FIRST NATIONAL CONFERENCE ON OPTIMIZATION ALGORITHMS, SOFTWARE, AND APPLICATIONS

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The *Operations Research Society of China* ([ORSC, http://www.orsc.org.cn](http://www.orsc.org.cn)) established in the end of 2023 a new special interest committee (a technical division under *ORSC*) of optimization algorithms, software, and applications and organized the first national conference in Tianjin, 8-11 December 2023, with more than 400 participants (<https://www.orsc.org.cn/article/detail?id=881>).



▲ Opening session of the *Optimization Algorithm, Software & Application 2023* conference.

The newly formed committee is chaired by *Professor Deren Han*, Beihang University, with objectives to focus on exchanges on efficient optimization algorithms and software tools, and bridge the gap between universities and industry, and between theories and applications.



▲ *Optimization Algorithm, Software & Application 2023* conference: *ORSC* President congratulating the new special interest committee (left). *Prof. Deren Han* addressed the audience to welcome the committee members and attendees (right).

During the conference, four invited speakers gave their plenary talks: *Prof. Ye Yinyu* from Stanford University on “*Modern Mathematical Programming Software Theories, Development, and Progress*”, *Prof. Tang Lixin* from Northeast University, on “*Data Analytics and Optimization for Smart Industry*”, *Dr. Xuan Xiaohua* from HuaAT Shanghai on “*Opportunities of Optimization Algorithms and Software Research and Development*”, and *Prof. Wen Zaiwen* from Peking University on “*Introduction to Formal Mathematics*”. 68 contributed papers were presented on the topics including continuous optimization, concrete optimization, global optimization, simulation, optimization in engineering and management, AI and optimization, etc. A young researcher forum was also organized.

A special feature of the conference is that several special sessions were designed to encourage dialogues between algorithm and software designers and industry users, discuss real-world problems and solutions, and seek collaborative opportunities between academic researchers and practitioners in manufacturing, energy, and logistics sectors. The ASA has been planned as an annual conference. 🌍

EURO WISDOM FORUM: WINTER 2023 / SPRING 2024 EVENTS

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EURO WISDOM Forum (Women In Society: Doing Operational Research and Management Science) which was launched in January 2020, has been actively engaged in promoting gender equality in *OR* since then (cf. <https://www.euro-online.org/web/pages/1654/wisdom>). *WISDOM*'s international board comprises of representatives of *OR* communities from 12 European countries and other participant members who wish to be actively engaged in its activities. Some of the most important events organized by *WISDOM* during the Winter of 2023 and Spring of 2024 are presented here.

WISDOM

WOMEN IN SOCIETY:
DOING OPERATIONAL RESEARCH
AND MANAGEMENT SCIENCE

YW4OR 2023: YoungWomen4OR Initiative: This initiative aims to introduce our community to young women working in academia and industry. Like every year, in the year 2023 too, a jury comprising of members of the Events Subcommittee selected 12 finalists from the 30 applications including 12 final-year PhD students and 20 young researchers from 15 different countries received under the aegis of *YW4OR* initiative. The names of the finalists were announced in December 2023 and interviews with the finalists are being published monthly on LinkedIn and the group's page.



YoungWomen4 OR 2023 Finalists

EURO WISDOM Webinars: The main purpose of the *WISDOM* virtual webinars is to present the research of the awardees of the *WISDOM YW4OR* initiative to the *OR* community as well as use them as a platform to discuss the state of research in relevant areas of *OR*. Mostly, they are planned by the Events subcommittee under the guidance of the *WISDOM* chairs and are held via Zoom. A subject matter expert is invited to comment on the *YW4OR* presentations and to reflect on potential future research directions. The recordings of all webinars can be accessed from the YouTube channel of *WISDOM*: <https://www.youtube.com/@euroWISDOMforum>.

During Winter 2023 - Spring 2024, the following Webinars were held: *Routing and Scheduling Webinar* - September 2023; *Learning, Fairness and Sustainability Webinar* - November 2023; *Joint EURO WISDOM, WORAN and WORMS Winter Event* - December 2023; *Location and Routing Webinar* - March 2024.

WISDOM at IFORS 2023 Conference: While several *WISDOM* committee members participated in the event, *Professor Dolores Romero Morales* delivered the keynote lecture "*OR and the fight against biases in Machine Learning*" at *IFORS 2023* held in Santiago, Chile, during July 10-14, 2023. All *WISDOM* members are proud of the successes of *Dolores* and of *Ana Paula Barbosa-Póvoa*, who, along with her five co-authors, received the 2023 Best EJOR Paper Award (EABEP) under the Innovative Applications of *OR* category for the paper "*Building disaster preparedness and response capacity in humanitarian supply chains using the Social Vulnerability Index*". *Margaretha Gansterer* announced that the next *IFORS* meeting will take place in Austria in 2026.

WISDOM at Global Women Forum 2023: The "*Global Women Forum*", which aims to promote exchange between women entrepreneurs from Europe and the Arab region, took place on 15 November, 2023, in Berlin, Germany, and was positively received by its audience. *Dr Chara Karakosta*, presented the goals and main activities of *WISDOM* at this networking platform which also focuses on sustainability and creating meaningful connections between women in STEM. 🌍

EUROMA SUSTAINABLE OPERATIONS AND SUPPLY CHAINS FORUM 2024 HAMBURG - RETHINKING SHARED VALUE CREATION THROUGH SUSTAINABLE OPERATIONS AND SUPPLY CHAINS

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▲ Impressions from the *EurOMA Sustainability Forum 2024* at KLU in Hamburg.

The *EurOMA (European Operations Management Association; <https://www.euroma-online.org/>) Sustainable Operations and Supply Chains Forum (<https://euroma-sustainabilityforum.org/>)* is a specialized event that encourages in-depth discussions on sustainable operations and supply chains. The 17th edition of this Forum took place from March 4 to 5 at *Kühne Logistics University (<https://www.klu.org/>)* in Hamburg, Germany. It brought together a diverse audience of over 150 participants from various countries across the globe, including Europe, Japan, the USA, Hong Kong, Turkey, India, and Nigeria. The event centered around the theme “*Rethinking Shared Value Creation through Sustainable Operations and Supply Chains*,” aiming to align business interests with societal and environmental needs to generate long-term value for stakeholders. We cultivated an informal, collegial, and constructive atmosphere throughout the conference, encouraging open discussions and collaboration among participants. Attendees had numerous opportunities to network, engage, and exchange ideas. Besides the scientific program, attendees enjoyed a memorable conference dinner on board the *MS Hammonia*, including a trip through the port of Hamburg.

The program included almost 100 presentations covering a wide range of topics, such as Food Supply Chains, Circular Economy, Digital Transformation, Social Sustainability, Buyer-Supplier Relationships, Humanitarian Operations, and many more. The *Sustainability Forum* also incorporated avenues for discussing innovative teaching cases and hosting incubator sessions. One such session, “*Best Practices to Get Your Research Published*,” aimed to assist young researchers in disseminating their research papers. Additional sessions concentrated on pioneering teaching methods to build up a sustainability mindset among students, as well as sessions on *African perspectives* on sustainable

supply chains, optimizing supply chain preparedness in the humanitarian sector, or a session on the future trajectories of trade: the necessity of growth versus degrowth.



▲ Keynote Speech by *Christoph Wolff*, CEO of Smart Freight Centre.

Another highlight was the keynote speech by *Christoph Wolff*, CEO of the *Smart Freight Centre (<https://smartfreightcentre.org/en/>)*, who provided insights into decarbonizing road freight supply chains and overcoming coordination challenges. This presentation offered attendees valuable insights into areas requiring further research and practical solutions in real-world contexts. We extend our gratitude to all participants, reviewers, and members of the organizing committee for their invaluable contributions to the *Sustainability Forum*. The next Forum will be held in Porto, Portugal, with *Ricardo Augusto Zimmermann* and *António J. Baptista* serving as the organizers. We eagerly anticipate the insightful discussions and collaborations that will emerge in the years to come. 🌍

8TH AIROYOUNG WORKSHOP SUCCESSFULLY HELD: YOUNG RESEARCH SCHOLARS ENJOYING OR IN BEAUTIFUL CALABRIA, ITALY

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Last February, about 60 young operational researchers from all over Europe invaded the *University of Calabria (UNICAL)*, a beautiful campus in *Rende, Cosenza*, in Southern Italy, to participate in the *8th AIROYoung Workshop* (<https://www.unical.it/ayw2024>). Three intense days alternating between interesting talks, plenary sessions, and moments of fun. *AIROYoung*, the thematic section of the *Italian Association of Operational Research (AIRO)*, has become an important national (but not only) reference point for young researchers and Ph.D. students in *Operational Research*. The *AIROYoung Workshop* is the main event organized by this section every year. The theme of this edition was “*Emerging technologies for decision support systems and innovative optimization paradigms*”.



▲ *AIROYoung 2024*: The organizing committee.

The opening session was held by the organizing committee, a group of 11 young operational researchers from *UNICAL*. This included a special speech by *Professor Francesco Valentini*, a University Senator, who welcomed the participants and stressed the importance of research and the enthusiasm of young people. Then, during the three days of the workshop, the young researchers presented 45 talks, organized in 10 sessions, alternated with three plenary lessons held by *Professor Manlio Gaudioso* from *UNICAL*, *Professor Claudio Sterle* from the University of Naples Federico II, and *Professor Daniele Vigo* from the University of Bologna, respectively.

The topics covered during the talks were numerous, ranging from classical operational research themes such as scheduling, routing, healthcare organization, and railway optimization, to the application of data science and artificial intelligence to several problems. The scientific sessions were interspersed with social moments, such as two social dinners and a guided tour of the *Cosenza* city center, organized to raise awareness and promote the history and culture of the host area. These events were a fruitful opportunity for participants to make contacts and expand their network. A big thank you to the many companies who supported and participated in the event, confirming the strong interest of industry in OR: this workshop of great success would not have been possible without their contribution. In particular, we mention the *University of Calabria*, the *Department of Mechanical, Energy and Management Engineering (DIMEG)* and the *Department of Economics and Statistics “Giovanni Anania” (DESF)* of *UNICAL*.



▲ Group picture of the *8th AIROYoung Workshop* participants.

Full of enthusiasm and energy, *AIROYoung* has already started organizing the next workshop for 2025: stay tuned to *AIROYoung* website <https://airoyoung.airo.org/> for exciting news! 🌍

Education 2.0 Conference in Dubai sets forth OR Solutions to Global Challenges

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Education 2.0 International Conference (<https://www.education2conf.com>) transpired at the *Intercontinental Hotel of Dubai Festival City*, Dubai, UAE, February 20-22, 2024. It was a 3-day knowledge intensive conference that attracted the most dynamic leaders in the education sector and brought fresh insights and perspectives to empower, inspire and enrich the global learning community. It also gathered together most renowned educators, EdTech innovators, policy makers and researchers looking for innovative OR solutions to the most pressing problems impacting learning and teaching in the global level.

This global event was unique since there were panel discussions and “*fire-side chats*” in addition to keynote/plenary lectures. The discussions offered its stage to education leaders with inspiring stories, journeys and perspectives promoting network collaborations between them. Topics revolved around teacher’s empowerment and successful OR models utilized by them, intersectionality and cultural responsiveness, recognizing and valuing multiple identities, strengthening collaborative research and innovation networks to address global challenges, trends in educational technology, education and social mobility, cyberbullying and online addiction, navigating the digital landscape, promoting global citizenship through cross-cultural education and collaboration and many more. All these included OR models to address problems affecting the field of education.

One of the highlights of the conference was the conferment of the *Outstanding Leadership Award* to deserving educators based on the following criteria: Leader’s Reputation, Achievements and Accolades, Professional Experience and Creative Thinking and Decisive Leadership. The author of this article was one of the conference awardees.

The conference was live on YouTube and was attended by more than 300 participants coming from Asia, Europe, Africa, Middle East, USA, UK, etc. Based on the interviews of the organizers, the attendees learned a lot from the conference. It was also an opportunity for them to meet new friends and foster collaborations to discuss challenges in their own educational institutions. The event was successful and made even more meaningful by the sponsors and exhibitors. 🌍



▲ Prof. Milagros R. Baldemor (third) as one of the discussants of the fire-side chat on “*Strengthening Collaborative Research and Innovation Networks to Address Global Challenges*”.



▲ The Outstanding Leadership Awardees with the author (front, fourth from left).

9TH INTERNATIONAL CONFERENCE ON INFORMATION, COMMUNICATION INFORMATION, COMMUNICATION & COMPUTING TECHNOLOGY (ICICCT-2024), CELEBRATED IN NEW DELHI AND ONLINE WORLDWIDE

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ICICCT-2024 was organized by Department of IT, Jagan Institute of Management Studies, Sector-05, Rohini, New Delhi, India via Zoom meeting on May 11, 2024 (<https://icicct.org>). The conference received total 175 submissions, of which 54 papers were shortlisted for review, and 13 were recommended for publication in Springer CCIS proceeding indexed in Scopus. Out of the 13 recommended papers, 09 were international and 04 were national. The conference received papers from USA, Ireland, Egypt, Singapore, UAE, Bangladesh, Switzerland, South Africa, North Africa, Australia, Pakistan, Mexico, Russia & Germany. In India, the conference received majority papers from IIT, NIT and other government institutes of repute.

The welcome address was delivered by *Dr. Praveen Arora* (Principal, IPU Affiliated Programs) in which she discussed the role of pattern recognition and intelligent systems in the modern era of computing. She also emphasized that pattern recognition plays a crucial role in the modern world across various domains, including technology, healthcare, finance, security, and more. *Dr. Pooja Jain*, Director, JIMS Rohini, addressed the audience about the role of intelligent systems in personal aid and chatbots. She accentuated the inevitable role of intelligent systems in powering the virtual assistants like Siri, Alexa, as well as chatbots deployed in customer service and support. These systems utilize Natural Language Processing (NLP) and machine learning to understand user queries, provide relevant information, and perform tasks such as setting reminders, playing music, or ordering products.

The 1st keynote address on “Computer-aided Diagnosis: Engineering Improved Healthcare” was delivered by *Prof. Rangaraj M. Rangayyan*, Professor Emeritus of Electrical and Computer Engineering Institute, University of Calgary, Alberta, Canada.

General Chair addresses were pioneered by *Prof. Gerhard Wilhelm Weber*, Professor in Engineering Management at Poznań University of Technology, Poland, and *Prof. Jose Francisco Martinez* Trinidad, Professor of Computer Science, National Institute for Astrophysics Optics and Electronics, Mexico. The 2nd keynote address on “Intelligent IoT Sensing for Aging Well: Research Activities and Future Directions” was delivered by *Prof. Michael Sheng*, Professor at Macquarie University, Sydney, Australia.



▲ ICICCT 2024: Prof. Michael Sheng delivering the keynote address.

Technical Session 1 started at 11.00 am with a *welcome address* by *Dr. Pratyay Kuila*, Associate Professor, Department of Computer Science & Engg, National Institute of Technology (NIT), Sikkim, India. The first technical session comprised 7 papers. *Dr. Pratyay Kuila*, who was also the session chair of this session, concluded the session by sharing his knowledge and wisdom in this domain.

Technical Session 2 started at 2.00 pm with a *welcome address* by *Dr. Mantosh Biswas*, Associate Professor, Department of Computer Science, University of Delhi, Delhi, India. It comprised 6 papers. *Dr. Mantosh Biswas*, the session chair of this session, closed this session with his insights on the said topic.

The conference concluded at 4.15 pm (IST) with a vote of thanks by *Dr. Latika Kharb & Dr. Deepak Chahal*, Convener & Member Editorial Board, ICICCT-2024. 🌍

INTERNATIONAL NETWORK OPTIMISATION CONFERENCE (INOC) 2024, CELEBRATED IN DUBLIN, IRELAND

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INOC is the biennial conference of the *EURO Network Optimization working group (ENOG)* to disseminate works and research in the field of Network Optimization. *INOC 2024* took place in the *Quinn School of Business, University College Dublin, Ireland*, 11-13th March 2024. The ENOG Steering Committee *Edoardo Amaldi* (Politecnico di Milano), *Walid Ben Ameur* (Télécom SudParis), *Bernard Fortz* (HEC Liège), *Luis Gouveia* (Universidade de Lisboa), *Arie Koster* (RWTH Aachen University), and *Adam Ouorou* (Orange Labs Research) worked with the UCD organising committee who come from the Schools of Business, Computer Science and Mechanical Engineering to organise *INOC 2024*. Presentations extended from network applications to heuristic and exact methods for addressing traditional and new network problems, such as smart grids. Sessions included Telecommunications Networks, Robust Optimization, the p-Median Problem, Decision Trees, Sustainable Transportation, Routing, and Combinatorial and Network Optimization.



▲ Snapshots from *INOC 2024*: keynote speakers and programme chair (left) and cultural activities (right).

Three keynote talks and two tutorials from experts enhanced the scientific programme. *Prof. Bernardetta Addis* (Université de Lorraine) presented “*From green networking to network virtualization: some interesting problems arising from telecommunication applications*”. *Prof. Stefan Schmid* (TU Berlin) presented “*Self-adjusting networks*”. Our third keynote by *Prof. Ivana Ljubic* (ESSEC Business School) was “*Benders Adaptive-Cuts Method Applied to Network Design and Facility Location Problems Under Uncertainty*”. Our first tutorial was by *Dr. Scott McDonald* and *Kanika Sharma* from Eaton Corporation on “*Buildings as a grid*”. Our second tutorial was by *Assoc. Prof. Le-Nam Tran* (UCD) on “*cell-free massive multiple-input multiple-output technology*”.

Over 75 participants from North and South America, Europe, Middle East, India, China and Japan enjoyed the scientific programme and a range of cultural events. In addition to a welcome cocktail and enjoyable conference dinner, participants were treated to a traditional Irish music performance and several lunchtime campus tours including a [Medieval Roundhouse](#) reconstructed by the UCD School of Archaeology, the [UCD Classical Museum](#), the [Irish Folklore collections](#), and the UCD [District Heating Network](#) which proved exceptionally popular and insightful for the Network Optimization community. For more details see the conference website: <https://inoc2024.sciencesconf.org/>. 🌍

LATIN AMERICAN WORKSHOP ON OPTIMIZATION AND CONTROL

8TH LAWOC CELEBRATED IN CÓRDOBA, ARGENTINA - A “STRONG PIECE” OF OR

Claudia Sagastizábal <sagastiz@unicamp.br>,
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Lisandro Parente <parente@cifasis-conicet.gov.ar>
(the last three coauthors on behalf of LAWOC 2026 Steering Committee)

The *Latin American Workshop on Optimization and Control* has been organized since 2008 every two years, in different countries of South America. The event series was created with the aim of consolidating a regional network of researchers working on the topics of the conference.

The very first meeting was the result of discussions held in a hostel in Zurich, during the 6th ICIAM, by two colleagues from Ecuador and Argentina: *Juan Carlos de los Reyes* from Escuela Politécnica Nacional of Quito and *Lisandro Parente* from Universidad Nacional de Rosario. They had the dream of boosting collaborations between two independent research communities, that are scientifically close but have not had much interaction, at least not in the region and not 20 years ago. There two “formerly disjoint” groups, one with researchers working on optimization, and the other one working on optimal control, differential equations and dynamical systems. Because the project was sound and timely, several further senior international colleagues from both communities agreed to participate. The *kick-off event* took place in 2008 in Quito, and since then, *LAWOC* has established its reputation as a well-known meeting for researchers in optimization and control of the region.

LAWOC is a thoroughly democratic event, even without plenary talks and few or none parallel sessions. It is a cozy meeting, with about 50 participants, that facilitates exchanges between senior and junior researchers. Thanks to its format,

postdoctoral fellows and graduates are able to interact with outstanding international researchers who present their work in

LAWOC. This is particularly important, to increase the exposure of South American students to international meetings (traveling far away being a PhD student is often impossible in the region).

In February 2024, the 8th edition of *LAWOC* was held in the city of Cordoba, Argentina. The meeting was not large but had an impressive 28% of female participation. In addition to advances in Optimization and Optimal Control, several talks focused on state-of-the-art applications, referred to COVID-19, transportation problems, growth of microalgae, design of thermo-electro-mechanic actuators, energy management of hybrid cars and full wave inversion of seismic images.

The *LAWOC* editions so far took place in Argentina, Chile, Ecuador, and Peru. In 2026, the meeting will be held for the first time in Brazil, and there are talks for the 2028 edition to be organized in Colombia. We invite colleagues interested in optimization and control, particularly those from Latin America, to contact us for information on those future events. 🌐



Quito 2008 and 2018

Lima 2014

Valparaíso 2012

Rancagua 2022

Córdoba 2024

Rosario 2010

Tandil 2016

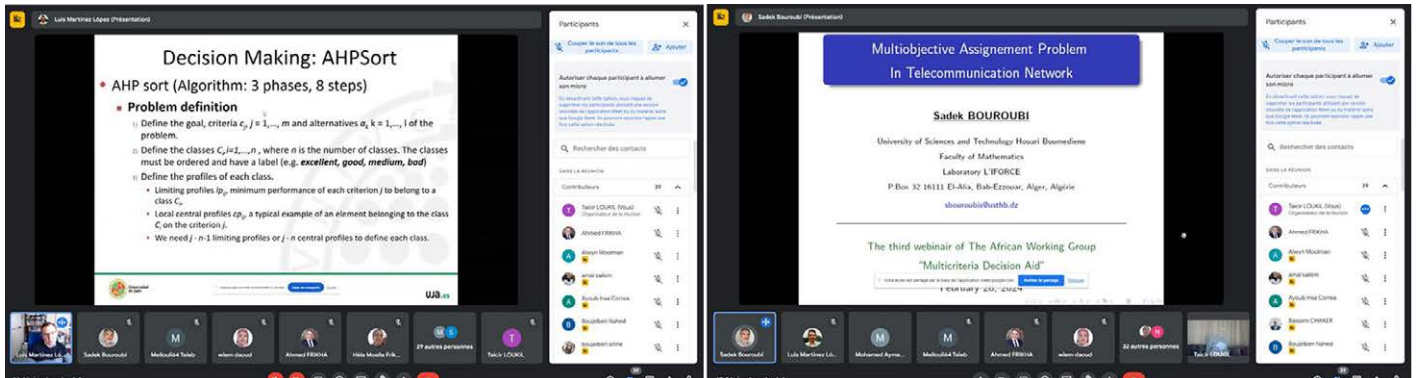
Rio de Janeiro 2026



▲ Distribution of *LAWOC* locations so far.

EMERGING DOMAINS OF OPERATIONAL RESEARCH: 3RD WEBINAR OF THE AFRICAN WORKING GROUP “MULTICRITERIA DECISION AID” 2024

Taicir Loukil <loukilt@gmail.com>



▲ Impressions from the lectures by Prof. Luis Martínez (left) and Prof. Sadek Bouroubi (right).

The third webinar of The African Working Group “*Multicriteria Decision Aid*” was held online February 28th, 2024, from 14:30 pm to 16:30 pm (GMT+1) at meet.google.com/edw-sdrg-jvf.

The *invited* talks were:

1. “*How to make more flexible MCDA Sorting: AHP Fuzzy Sort*” by Professor Luis Martínez, University of Jaén, Department of Computer Science, Spain.

Abstract: Multi-Criteria Decision Analysis (MCDA) relates to the process of making decisions in situations where there are multiple and conflicting criteria. Different types of decision problems can be formulated within the context of MCDA from choice, sorting, ranking and description problems, to elimination and design ones. In all the previously developed MCDA sorting methods, a strict boundary is assumed: i.e. above a boundary an alternative belongs to class A, below that it belongs to class B. This strict boundary has two major problems though: There is the necessity of fine-tuning processes to avoid ambiguous or doubtful class assignments for alternatives that are close to the boundary. Insignificant differences in the priorities obtained by the alternatives can result in significant differences in the class assignment in the sorting MCDA approach. This talk introduces an Analytic Hierarchy Process-Fuzzy Sorting (AHP-FuzzySort) model that uses fuzzy sets theory and the fuzzy linguistic approach to improve the assignment of alternatives to classes in a flexible way providing more realistic sorting results.

2. “*Multiobjective Assignment Problem In Telecommunication Network*” by Professor Sadek Bouroubi, University of Sciences and Technology Houari Boumediene, Faculty of Mathematics, Department of Operations Research, Algeria.

Abstract: This presentation introduces a computational approach to address multi-objective problems in the telecommunications network field, as proposed by an Algerian industrial company. Our objectives are:

- Develop a temporary solution to address issues within the existing management system,
- Establish a mathematical operational model.

In this presentation, we employ a widely recognized multi-objective evolutionary algorithm, the Nondominated Sorting Genetic Algorithm (NSGA-II). We compare the results obtained with those generated by the Strength Pareto Evolutionary Algorithm-II (SPEA2) and suggest a method to assist decision-makers, often faced with the challenge of selecting a final solution. This involves using a utility function based on a Choquet integral measure to express their preferences. Finally, numerical experiments are presented to validate our approach.

The webinar hosted 40 participants from Tunisia, France, Algeria, Spain and Germany, which led to a smooth and enjoyable meeting. It was very successful and many were posed which enriched the discussions and gave the opportunity of cooperation between attendees. 🌍

THE OSS MACHINE LEARNING NeEDS MATHEMATICAL OPTIMIZATION ANNOUNCES ITS OFFICIAL CLOSURE ALONG WITH A NEW BEGINNING

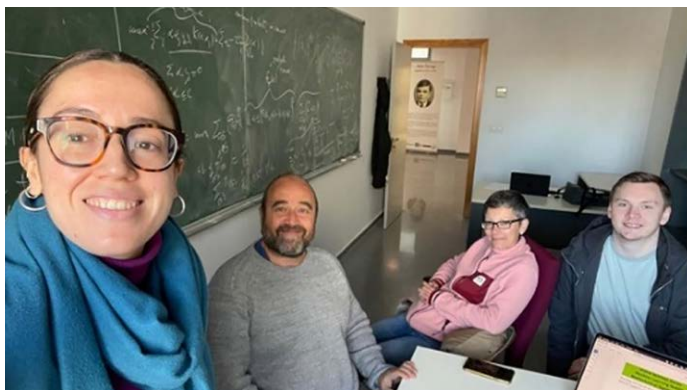
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The organizers (*Prof. Emilio Carrizosa*, IMUS-Instituto de Matemáticas de la Universidad de Sevilla, *Prof. Dolores Romero Morales*, Department of Economics of Copenhagen Business School, *Nuria Gómez-Vargas*, PhD student at IMUS-Instituto de Matemáticas de la Universidad de Sevilla, *Thomas Halskov*, PhD student at Department of Economics of Copenhagen Business School) of the *Online Seminar Series "Machine Learning NeEDS Mathematical Optimization"* (January 2021 - May 2024), an activity from the EU H2020 MSCA RISE *NeEDS* project aimed at branding the role of Operational Research in Artificial Intelligence with the support of *EURO* (<https://www.euro-online.org>), recently announced its official closure. The announcement came in line with the closure of the *NeEDS* project.

This weekly virtual event has counted more than 100 speakers from more than 20 countries till date. While more than 2,000 people from more than 90 countries subscribe to its mailing list, its playlist at the *NeEDS* YouTube Channel has more than 20,000 views.

The program schedule of the Online Seminar Series "*NeEDS Mathematical Optimization*" with its 10 noteworthy speakers from across the globe during the period February 2024 - May 2024 is enlisted below:

- **February 12, 2024:**
Prof Shiqian Ma (Rice University, USA),
- **February 19, 2024:**
Prof Stanislav Uryasev (Stony Brook University, USA),
- **February 26, 2024:**
Prof Nathan Kallus (Cornell University, USA),



▲ *OSS NeEDS* Organizers 2024 (from left to right): Nuria Gómez-Vargas, Emilio Carrizosa, Dolores Romero Morales, Thomas Halskov.

Online Seminar Series Machine Learning NeEDS Mathematical Optimization

Branding the role of OR in AI
 with the support of EURO



<https://congreso.us.es/mlneedsmo/>



Organizers: Emilio Carrizosa, Nuria Gómez-Vargas,
 Thomas Halskov, Dolores Romero Morales



- **March 4, 2024:**
YOUNG session with *Nathan Justin* (University of Southern California, USA), *José Ángel Martín Baos* (University of Castilla-La Mancha, Spain) and *Loana Molan* (Trier University, Germany),
- **March 11, 2024:**
Dr Pooja Dewan (Ex-CDAO Otis Elevators, BNSF Railway),
- **March 18, 2024:**
Dr Bernardino Romera Paredes (Google Deep Mind, UK),
- **April 8, 2024:**
YOUNG session with *Cheng Peng* (Stony Brook University, USA), *Haofeng Zhang* (Columbia University, USA) and *Giulia Di Teodoro* (Sapienza University of Rome, Italy),
- **April 22, 2024:**
Prof Güzin Bayraksan (The Ohio State University, USA),
- **April 29, 2024:**
Joint YOUNG-WISDOM session with *Dr Paula Carroll* (Chair of the EURO WISDOM Forum), *Nuria Gómez-Vargas* (University of Sevilla, Spain), *Maria Eduarda Pinheiro* (Trier University, Germany) and *Bahar Taşkesen* (EFPL, Switzerland),
- **May 6, 2024:**
Prof Pierre Pinson (Imperial College London, UK).

The good news is that the organizers have already prepared a new round of talks for the next academic year under a different name, and will be announcing this widely through their mailing list and social networks; at the same time ensuring that the quality of these talks is at par with that of *NeEDS*. 🌍

EXPANDING OR COVERAGE IN NIGERIA: IORMS-MOUAU WORKSHOP

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▲ At IORMS-MOUAU Workshop (left to right): Prof. Oruh, Dr. Iwuji, Dr. Adiele, Prof. Etukudo, Dr. Enogwe, Prof. Igbokwe, Dr. Marshal.


As a part of the preparation for the *Institute of Operations Research and Management Science of Nigeria (IORMS) Conference, 2024* coming up on the 3rd to 6th of September, 2024, at the University of Port Harcourt, Rivers State, Nigeria, the IORMS Team lead led by the President of IORMS, Prof. I. A. Etukudo, and Dr. S. Marshal, paid a courtesy and working visit to the *Michael Okpara University of Agriculture (MOUAU)*, Umudike, Abia state, on 7th February, 2024. The team was welcomed on arrival at the University by the Assistant General Secretary of IORMS, Dr. Samuel Enogwe. He led the team to the Department of Statistics for a brief discussion with the HOD of Statistics Dr. D.F. Adiele, and some other senior staff members.

The IORMS Team, the MOUAU Team, the Management team, and the Vice-Chancellor (VC) Prof. Maduebibisi Ofo Iwe later converged for the workshop. The workshop started with the VC presenting the teams with kola nuts, as a part of the welcome tradition in the Eastern part of Nigeria. Others attendees included: Director of Admissions MOUAU, Prof. B.I. Oruh, Prof. Joy C. Nwabueze, Prof. E. J. Ekpenyong and Prof. D. I. Igbokwe.

IORMS President Prof. I. A. Etukudo thanked the VC and the University Management for the warm welcome on behalf of the Governing Council (GC) of IORMS. The President informed the VC that IORMS, was registered in 2014 as a professional body and hence statutorily recognized under the laws of the Federal Republic of Nigeria to regulate and

promote the learning and practice of operations research and management sciences in Nigeria. He further sensitized the VC about the mission and vision of IORMS. Prof. Etukudo informed the VC that as part of its mandate, IORMS was formed to collaborate with institutions in the country to bridge the gap between the theory and practice of OR and management sciences, the results of which could have a large impact on the communities. He stated, for instance, that in MOUAU, whose main concern is agriculture, OR techniques could be employed to maximize food production.

The President concluded his presentation by making an appeal to the Vice Chancellor for support since IORMS has decided to establish the *South East Zonal Office* in MOUAU. He further appealed that such support should also be extended to the hosting of the *IORMS Regional Workshop* in the University when the *IORMS South East Zone*, as well as the *MOUAU Chapter of IORMS*, will be formally inaugurated on a date to be announced soon.

In his response, the VC promised to do his best to support the IORMS in MOUAU since its activities will positively affect the nation in general and the staff performance in particular. The event concluded with a group photograph of the attendees. Information about MOUAU can be accessed from: <https://mouau.edu.ng/>. For more on the presentation, planned workshop, and other programs of IORMS, please visit: www.iorms.org.ng. 

NORS PHD WORKSHOP “REALITY BITES” HELD IN OSLO

Markus Brachner <markus.brachner@sintef.no>

The Norwegian Operations Research Society (NORS) recently organized the workshop titled “Reality Bites: Bridging the Gap from Research to Application in Combinatorial Optimization”. Hosted by the research and technology organization SINTEF, it was held on 30.11.23 and 1.12.2023 in Oslo, Norway. This workshop brought together scholars, practitioners, and OR enthusiasts from diverse backgrounds to explore the practical implications of research in combinatorial optimization.



▲ The participants follow presentations from the intersection of research and practice.

The goal of the workshop was to underscore the challenges and opportunities inherent in translating theoretical advancements into actionable solutions within the realm of combinatorial optimization. Attendees were treated to an intellectually stimulating program featuring a rich tapestry of presentations aimed at exploring the nexus between research and real-world application.

The agenda was curated to encompass a wide spectrum of topics drawn from various domains, such as air and rail traffic management, electric power grids and markets, sports scheduling, and fish farming. Through a series of engaging sessions, participants delved into the intricacies of these domains, exploring how combinatorial optimization techniques can be leveraged to address complex challenges and optimize operational processes.


PhD scholars had the opportunity to present their work in poster sessions, offering fresh perspectives and innovative solutions.

The program provided ample opportunities for networking and collaboration, with participants seizing the chance to forge new connections, exchange perspectives, and cultivate professional relationships with peers and industry experts alike. Joint meals, coffee breaks, and informal gatherings fostered a convivial atmosphere conducive to

fostering meaningful dialogue and collaboration. A joint dinner in the evening provided attendees with a relaxed atmosphere for networking and discussions.

The NORS workshop emerged as a resounding success, serving as a catalyst for advancing the dialogue between academia and industry. A continuation on a regular basis is considered.

Special commendation is extended to SINTEF for hosting the event, the speakers, and participants for their unwavering dedication and contributions to the workshop’s success. For

further information and updates on upcoming events, please visit the NORS homepage at <https://www.nors-online.no/>. 

Many thanks to dear Prof. Peter Schütz, for communication that has made this report possible.
- G.-W. Weber and J. Parikh



▲ Discussions continue during the break.

PMS 2024 AT THE UNIVERSITY OF BERN, SWITZERLAND: PROJECT MANAGEMENT AND SCHEDULING WITH BEAUTIFUL VIEWS OF THE ALPS

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The 19th International Workshop on Project Management and Scheduling (PMS 2024 <https://www.pms2024.unibe.ch/>) was held at the University of Bern in Switzerland from April 2 to 5, 2024. PMS is an international workshop series devoted to Project Management and Scheduling that was initialized by the *EURO Working Group on Project*



▲ View from the University of Bern at the Welcome Reception.

Management and Scheduling. The workshop takes place every two years in different locations in Europe and brings together researchers and practitioners from Computer Science, Operations Research, Optimization Engineering, Mathematical Programming, and Industrial Engineering. The PMS 2024 workshop in Bern hosted 85 participants from 19 countries and five continents. Nearly 40% of the attendees were young researchers currently pursuing their PhD. The scientific program featured 40 presentations in parallel sessions, three plenary talks, and two special sessions dedicated to the *Best Student Paper Award*.

The workshop started with a welcome reception on Tuesday evening. The lovely weather, paired with the beautiful views of the Alps and the local wine from the vineyards of Bern, provided an ideal setting to connect with old colleagues and meet new faces. On Wednesday, after a warm welcome address by *Norbert Trautmann*, *Joanna Józefowska*, and *Erik Demeulemeester* from the International Program Committee, plenary speaker *Federico Della Croce Di Dojola* kicked off the scientific program with his inspiring talk on the topic “*Iterated Inside Out: A New*

Exact Algorithm for the Transportation Problem”. After the parallel sessions and the networking lunch at the Restaurant *Grosse Schanze*, the tours of the social program - a guided walk in Bern’s old city, a tour of the parliament building, and a tour of the *SBB Pavilion* showcasing the future of Bern’s train station - provided memorable experiences in some of Bern’s most unique places.

Another exciting day awaited the participants on Thursday, with *Nicole Megow’s EURO Plenary* on “*Scheduling with Predictions*” and the presentations and winner ceremony of the *Best Student Paper Award*. The conference dinner at the Restaurant *Rosengarten* was the social highlight of the workshop, and everyone enjoyed the delicious seasonal menus and

the atmosphere in the charming Rose Garden. The workshop wrapped up on Friday with the plenary talk on *Scheduling with Hexaly Optimizer*, given by the industry experts *Julien Darlay* and *Léa Blaise*.

Hosting the PMS community in Bern was a great honor for our team, and we thank everyone who contributed to the workshop’s success. We look forward to meeting again at PMS 2026 in Toulouse! 🌍



▲ Best Student Paper Award Ceremony at the Conference Dinner.

SIMANTAP 14TH CELEBRATED IN MEDAN, INDONESIA, AND INTERNATIONAL VISITING PROFESSORS IN PEMATANG SIANTAR, INDONESIA

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SIMANTAP 14th 2023 was an international and national conference for sharing knowledge and research in mathematics and OR as a platform for teachers, researchers and practitioners from both academia as well as industry to meet and share the cutting-edge development of mathematics (<http://simantap.potensi-utama.ac.id/>). *OR-MS*

and related educational research. It took place at *Universitas Potensi Utama Convention Center*, in the metropolis Medan, North Sumatra, Indonesia. It

was a collaboration between *Universitas Potensi Utama and IndoMS SUMUT-ACEH*, Indonesia, on November 28-29, 2023, was dedicated to a motto from Operational Research: “*Continuous Sustainable Development Through Various Knowledge Networking*”, which is of a vast importance worldwide, especially, for an emerging nation like Indonesia with its young population. This conference aimed to bring together the scientists, engineers, researchers,

practitioners, academicians, and representatives of civil society organizations within a scientific forum; to share theoretical and practical *OR* knowledge. This congress was especially used as a scientific stage for accommodating exchange between young promising researchers, mostly from Indonesia. For lively impression of the congress, you may please visit <https://www.youtube.com/watch?v=8pPAUuJokOE>.

There were 8 keynote speakers of the conference. These were the local leaders and representatives *Prof. Poltak Sihombing*, *Prof. Syahril Efendi* (both from Universitas Sumatera Utara, Medan), *Prof. Roslina* (Politeknik Negeri Medan, Indonesia), *Prof. Herman Mawengkang* (Universitas Sumatera Utara), and the international guests *Prof. Milagros Baldemor* (Don Mariano Marcos Memorial State University, the Philippines), *Prof. Dorien DeTombe* (chair of EURO Working Group “*Ethics and OR*”, the Netherlands), *Prof. Adewoye S. Olabode* (Yaba College of Technology, Nigeria) and *Prof. Gerhard-Wilhelm Weber* (Poznan University of Technology, Poland), who also invited to the conference highlights of *EURO 2024* in Copenhagen, Denmark, *EURO 2025* in Leeds, UK, and *IFORS 2026* in Vienna, Austria.

Prof. Herman Mawengkang extends his deepest appreciation to all local organizers, the team around the Conference Chair, *Bob Subhan Riza* (Chairman of Universitas Potensi Utama Foundation) and *Ms. Ratih Puspasari*, who worked very hard and showed a great care and warmth, to all the keynote speakers, participants and all the many friends from near and far. We from Sumatra Island hope to see you at *SIMANTAP 15th 2024*!



▲ *SIMANTAP 2023*: Keynote speech by *Dorien de Tombe* (left) and by *G.W. Weber* (right).

The conference season in North Sumatra ended with a visit in the beautiful city of Pematang Siantar with meeting, lectures and discussions of the *International Visiting Professors* with around 300 cheerful young people in STIKOM TUNAS BANGSA (<https://stikomtb.ac.id/web/>), including a visit to neighboring Lake Toba with its eco-tourism project 🌍.



▲ *International Visiting Professors* at STIKOM TUNAS BANGSA (right to left): *Herman*, *Dorien* and *Willi*.

STOCHASTIC PROGRAMMING SOCIETY - THE RETURN OF VIRTUAL SEMINAR SERIES

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Giorgio Consigli <giorgio.consigli@ku.ac.ae >
(on behalf of the Committee on Stochastic Programming)

The *Stochastic Programming Society* is delighted to announce the return of its *Virtual Seminar Series*, which was initiated during the challenging times of 2020. It aims to foster dialogue and knowledge exchange among its participants and connect a diverse global community of researchers and practitioners interested in stochastic programming and decision-making under uncertainty. Our ambition is not only to share a set of emerging topics and recent contributions in *stochastic programming* but also to bridge our discipline with contiguous research domains, so to promote a rich and comprehensive growth of our society. We are excited to continue this journey, which resumed on January 19, 2024, with seminars scheduled every other Friday from 10-11 AM (EST).

2024 Seminar Highlights

This year's lineup featured an array of thought-provoking talks. *David Woodruff* delved into stochastic programming with unknown probability distributions, while *Anton Kleywegt* tackled optimization challenges in ride-hailing systems. *Yiling Zhang* offered insights into bilevel programming under uncertainty, and *Yongjia Song* discussed logistics planning for hurricane relief. The series also included *Tito Homem-de-*

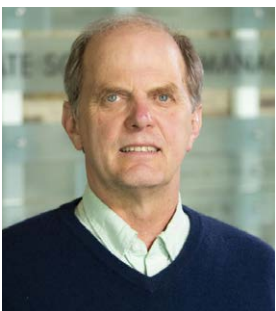
Mello's examination of energy transition models, *Beste Basciftci's* strategies on partially adaptive stochastic programming, and *Céline Gicquel's* innovative approaches to lot-sizing problems under uncertainty.

The series included even more enriching content with a junior session and a tutorial talk, ensuring that participants from all stages of their careers can find valuable learning opportunities. *Renata Pedrini* and *Aras Selvi* presented their work on handling the impact of climate change in long-term generation scheduling via DRO-SDDP and Wasserstein machine learning with mixed features, respectively, whereas *Marco Campi* discussed key aspects relating to data-driven optimization and introduced a collection of data-driven optimization techniques from algorithmic and theoretical perspectives.

Join our quest for cutting-edge solutions and vibrant discussions. For more information and to participate in the upcoming sessions, register on the [SPS Seminar Series website](#). Our past seminar recordings can be found on the [SPS Youtube Channel](#).

Connect with *SPS*. Visit our website for updates and detailed information! 🌐

Presenters in the SPS Seminar Series 2024



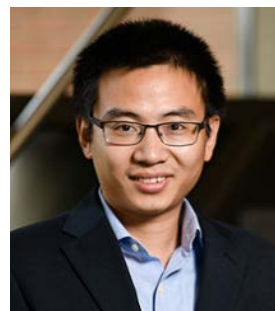
▲ Prof. David Woodruff



▲ Prof. Anton Kleywegt



▲ Prof. Yiling Zhang



▲ Prof. Yongjia Song



▲ Prof. Tito Homem-de-Mello



▲ Renata Pedrini



▲ Aras Selvi



▲ Prof. Marco Campi



▲ Prof. Beste Basciftci



▲ Prof. Celine Gicquel

EMPLOYEE COMPETENCE MANAGEMENT SUPPORTED BY STATISTICAL METHODS

by Maciej Szafranski, Marek Goliński, Magdalena Graczyk-Kucharska, Małgorzata Spychała

Wydawnictwo Politechniki Poznańskiej Poznań 2022

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OR-ANALYTICS – COMPETENCE MANAGEMENT

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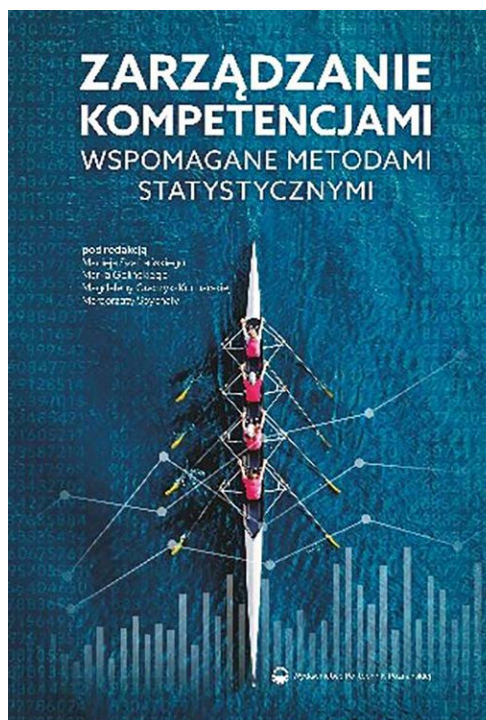
This monograph edited by *Maciej Szafranski, Marek Goliński, Magdalena Graczyk-Kucharska* and *Małgorzata Spychała* provides an overview on how to make an extensive use of multi-layered data collected from IT platforms for managing competences in an organization given its increasing importance in management and quality sciences. Specifically, this unique monograph intends to exhibit how to optimize the efficiency of data analysis through the multi-layered use of the same set of organizational data collected on IT platforms in general and on employment platforms in particular, to solve as many decision-making problems as possible in competence management. To this aim, this monograph has been planned to accomplish three main objectives viz. – cognitive, methodological, and utilitarian. The cognitive objective intends to investigate the conditions suited for conducting research on competence management in the conditions of limited possibilities for the design of obtaining data for research. The methodological objective consists of exemplifying the possibility of using selected statistical methods in the process of searching for valuable data in a selected IT system (system.zawodowcy.org platform has been used as an example in this monograph) for the purpose of solving multiple decision-making problems related to competence management. More specifically, it is about in what way and how much data can be obtained, what conclusions can be drawn using one chosen tool, and more importantly, how to do it and what difficulties can be expected. The utilitarian objective intends to extend the use of statistical methods in research in competence management in organizations and to provide them with guidance as to how to acquire and use knowledge about competences from their environment.

To enhance the understanding of its contents for its readers, each chapter except the first which discusses the prerequisites and the second which describes the challenges, begins with an introduction which provides the background of the topics being discussed in it along with a detailed research problem and objective. Next, it describes the application of statistical method used to solve the research problem so identified followed by a detailed discussion on the results of the analyses, and ends with a summary which recapitulates its contents in a nutshell. These chapters feature the extended descriptions of statistical methods justifying their use in solving pertinent competence management problems in organizations. Some chapters are also supplemented by relevant application examples appended to the monograph. Each chapter is accompanied by an enriching list of bibliography for the readers who wish to delve into the details further.

A brief overview of the book's eight chapters, following an introduction, along with their contents is as follows (based on translations from Polish).

The monograph begins with an Introduction which provides the background and explanation of how can the various statistical methods and the results of this research regarding the development and use of IT systems be ubiquitously adopted and applied not only to competence management but also to various other functional areas of management. It adeptly describes the scope and structure adopted by the authors to accomplish their research objectives.

Chapter 1 – “Prerequisites for the use of statistical methods in competence management” provides the basis for the use of



OR-Analytics - Competence Management supported by statistical methods.

statistical methods in competence management. It begins with a discussion on the basic issues of employee competence management, goes on to explain the growing role of data and information processing in competence management and closes with a discussion on the scope of use and perceived reasons for limitations of statistical methods in competence management.

Chapter 2 – “Challenges related to the preparation of data on competences for research using statistical methods” introduces the readers to the data used in the analyses described in this monograph along with the challenges related to data acquisition and data analysis in scientific research based on the results of the long-standing experience and expertise of the authors.

Chapter 3 – “Determinants of interest in job offers” revolves around a discussion on how to increase the candidates’ interest in published job offers. Specifically, it verifies how candidates’ interest in job offers is impacted by various levels of determinants such as experience, shifts, form of employment and size of a company.

Chapter 4 – “Relationships between the profession chosen by a candidate and his/her digital competences” assesses how does the profession of a candidate affect his/her possession of digital competences, such as basic acquaintance with computer operation and office packages.

Chapter 5 – “Correlations between commercial and social competences on the job market” investigates whether there are correlations between the required levels of social competence components, such as the ability to communicate with a customer, the ability to cooperate with customers and colleagues, negotiation skills and selected commercial components viz. knowledge of a company’s product range, knowledge of products offered and their technical data, the ability to set sales goals, etc. on the job market.

Chapter 6 – “Testing the similarity of districts with relation to social skills and other selected attributes of technical high school students – an example of the use of cluster analysis in specific contexts” elucidates the use of cluster analysis to classify districts in the Wielkopolska region based on their similarities assessed on 16 social skills and 8 selected attributes of technical high school students.

Chapter 7 – “Using fuzzy cluster analysis to single out homogenous groups of competence requirements in the profession of an economist technician” depicts the use of c-means fuzzy cluster analysis to synthesize the requirements of competences by reducing a large set of skills to a relatively smaller one through an example of an economist technician.

Chapter 8 – “A Model of matching a candidate to an offer using the MARSplines method and neural networks” describes how to predict the matching of candidates with job offers using predictive modelling.

The book is well-organized, well-structured, well-researched, statistically sound, timely, and easy to understand. It provides novel research approaches to understand the use of various statistical methods for multi-layered use of data for mapping competences in an organization. It is intended to cater to a wide range of readers including data scientists and data analysts, statisticians, human resource managers, operations researchers, politicians, educators, graduate and doctoral students in management, economics, and to specialists and practitioners in competence management.

Coauthors of employee competence management supported by statistical methods



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While the research results of this monograph may be particularly useful to enterprises, they may also find their applicability to other institutions, such as governments, schools, universities, job market institutions and educational institutions. Given its versatility and extensiveness, it can, therefore, be an enriching resource for anyone who wishes to learn statistical research methods without really having to master the language! For further information regarding the monograph, the authors can be reached at - <maciej.szafranski@put.poznan.pl>, <Marek.Golinski@put.poznan.pl>, <magdalena.graczyk-kucharska@put.poznan.pl> and <malgorzata.spychala@put.poznan.pl>.

While this monograph vividly describes the multilayered use of data for managing competences in an organization through various applications, many further scientific, practical, and real-world applications in various domains can be further explored in the vast and quickly expanding universe of modern contemporary research. 🌍



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