

Preface

Computational logistics comprises the planning and implementation of large and complex logistics tasks using modern information and communication technology (ICT) and advanced decision support systems. It is applied in various areas, such as the movement of freight and people. More and more it also touches on issues of digital transformation. Optimization models and algorithms are combined with advanced computer technology for obtaining good-quality solutions in a reasonable time as well as for providing/allowing interactivity and visualization for a better understanding of the problem and corresponding solutions. The use of information systems and modern ICT for the design, planning, and control of large-scale logistics networks as well as the complex tasks within them also belongs to the essential options for advancing computational logistics.

The International Conference on Computational Logistics (ICCL) provides an opportunity for academia, industry, and governmental agencies to share solutions, address new challenges, and discuss future research directions in the application of information, communication, optimization, and control technologies to logistic activities. The 7th International Conference on Computational Logistics was organized by the Center for Mathematics Fundamental Applications and Operations Research (CMAF-CIO), and was held at the University of Lisbon, Portugal, September 7–9, 2016.

CMAF-CIO appeared in 2015 as a result of the merging of two former units, the Center for Mathematics and Fundamental Applications and the Operations Research Center. The CMAF-CIO has a solid optimization group that has been working on the modeling and resolution of numerous real-world problems, several of them arising in the field of logistics/routing. Despite the existence of several protocols with governmental agencies and private companies, CMAF-CIO still has the challenge to reduce the gap between academic real-life-based projects and real-life applications. Thus, for this conference, the company Wide Scope was invited as a partner. Wide Scope has been working successfully in many real-life applications in Portugal and even abroad. The Department of Statistics and Operations Research of the University of Lisbon was also closely related to organizing the conference with some of its members being part of the Organizing Committee of the conference. The ICCL conference provides an opportunity to spread, to PhD and master's students of the department, the knowledge and information concerning the bridge between academia and industry.

The special theme of ICCL 2016 was “Road to Logistics Excellence.” Despite what has already been achieved in the field of logistics, a proactive look ahead to refinement, improvement, and advancement toward excellence is demanded. Decision analytics and business intelligence are increasingly becoming the key drivers toward solving logistics problems. While this allows us to have a better and advanced integration of logistics processes within supply chains and supply chain networks, the road also opens up for new opportunities. One of the grand challenges in logistics is the question of

how to cope with disturbances. While we perform optimization along the supply chain, the vulnerability against errors, failures, and the like becomes even more severe. Logistics excellence not only has to optimize every single part but it also has to think about how to be proactive in avoiding disturbances, or—in case they still happen—how to anticipate proper reactions.

This volume of *Lecture Notes in Computer Science* consists of 29 selected papers presented at the conference. The contributors are from over 30 countries and all the papers were accepted after a thorough review process. The papers were grouped into the following themes:

- Container Terminals and Maritime Transportation
- Intermodal Transport
- Location and Routing
- (General) Logistics and Supply Chain Management

While we believe that these proceedings provide insight into the state-of-the-art of the field, we expect that the development of these themes will continue to grow in the near future, pointing to new research opportunities and paving the road to logistics excellence. Also, a few critical areas have been recognized as the frontier where the links between practical needs, policy requirements, and innovative academic contributions are needed more than ever. These include further integration and/or synchronization in all areas of logistics from warehouse design and operations to multimodal transportation; fostering usage of large-scale computational techniques to tackle the complexity of coordination; the increasing use of greener vehicles such as electric cars or bicycles; and finally efficient ways to deal with disruptions or uncertainty that characterize, for instance, maritime transportation.

Organizing a conference and publishing the proceedings comprise a significant effort, for which we are grateful to the support of a large group of people. The greatest thanks go to the authors, who kept the scientific debate open and at a high-quality standard. We greatly appreciate the valuable cooperation of the reviewers who made a substantial effort in evaluating the papers to achieve a high scientific standard. A special thank you goes to our conference partner Wide Scope and especially Ana Pereira, the Program Committee, and the local organizers in Lisbon.

ICCL 2016 in Lisbon was the seventh of its kind, after Shanghai (2010, 2012), Hamburg (2011), Copenhagen (2013), Valparaíso (2014), and Delft (2015). The contributions presented at ICCL 2016 and the papers in these proceedings show that computational logistics has been spreading among different areas and businesses and we are looking forward to the next developments!

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