

Preface

The presented book titled: “Advanced concepts, methodologies and technologies for transportation and logistics” is a collection of original works/articles produced by the members of the Euro Working Group on Transportation (EWGT) in the last several years (2015–2017). The scope of this book falls within the generic theme of the Springer Series “*Advances in Intelligent Systems and Computing*”. The chapters included in this book present the results of various research projects carried out by the members of the EWGT, the extended versions of their conference presentations (usually organized under the patronage of the Association of European Operational Research Societies), and original findings produced by the authors. This book is a sample of EWGT research activities and covers the state of the art in quantitative-oriented transportation/logistics research.

The Euro Working Group on Transportation (EWGT) is a specialized chapter of EURO—the Association of European Operational Research Societies. The EWGT activities are focused on the development and application of operations research techniques, methods, and algorithms in transportation. In recent years, the scope of the group has extended toward logistics. The EWGT gathers transportation and logistics professionals: researchers, analysts, consultants, and practitioners from all the World (primarily from Europe), who are interested in mathematical modeling, quantitative analysis, and optimization of transportation/logistics processes and systems. The EWGT members are involved in the analysis of transportation – logistics phenomena and behavior, developing solution procedures for complex transportation and logistics decision situations and assisting decision makers (DM-s) who face difficult and unstructured transportation/logistics – oriented decision problems. The interests of EWGT cover both methodological and technological advances at the boundary of disciplines such as transportation and logistics (T&L), computer science (CS), information technology (IT), operations research (OR), decision aiding (DA).

The EWGT was founded in July 1991 in Cetraro (Italy), and the 1st Meeting of the Group was held in Landshut (Germany) in October 1992. Many activities

have been performed since then, including organization of international seminars and workshops, publishing books and conference proceedings (e.g., Springer books and Elsevier series *Transportation Research Proceedings*), launching common research projects at the European level, organization of Summer and Winter Euro Institutes for young researchers, arranging transportation and logistics streams at the Euro Conferences, organizing thematic Mini-Euro Conferences, and, last but not least, holding 20 International Meetings of the Group in different European cities, such as Paris (twice), Barcelona, Newcastle upon Tyne, Goteborg, Helsinki, Budva, Rome, Bari (twice), Poznan (twice), Ischia, Padova, Porto, Seville, Delft, Istanbul, and Budapest (next meeting).

The Guest Editors of this book are strongly involved in the activities of EWGT. Prof. Riccardo Rossi is the Group Coordinator (since 2011) and the Chair of one of the previous EWGT Meetings, Prof. Jacek Żak is the member of the EWGT Scientific Committee and the Chair of two previous EWGT Meetings, and Prof. Yuval Hadas is an active participant of the group activities for the last 5 years.

The presented book is a follow-up of a previously published (2014) Springer Monograph on “Computer based modeling and optimization in transportation” edited by Prof. Jorge Freire de Sousa and Prof. Riccardo Rossi. The latter covered the research output of EWGT for the years 2012–2014. Its success measured by the number of the downloads (more than 33 000) has indicated the need for the presentation of new works and findings of EWGT community. Thus, the Guest Editors have launched this project to demonstrate the current level of research carried out by the members of EWGT.

This book is composed of 23 chapters split into four major thematic streams/sections. Due to the complexity and diversity of the topic considered, the Guest Editors assigned specific persons to coordinate each of the above-mentioned streams/sections. Each stream covers a specific, important area of transportation and logistics research, including

- Section 1: Multiple Criteria Analysis in Transportation and Logistics—7 chapters, coordinated by Prof. Jacek Żak (Poznań University of Technology, Poland).
- Section 2: Urban Transportation and City Logistics—7 chapters, coordinated by Prof. Yuval Hadas (Bar-Ilan University, Israel).
- Section 3: Road Safety—4 chapters, coordinated by Prof. Massimiliano Gastaldi (University of Padova, Italy)
- Section 4: Artificial Intelligence and Soft Computing in Transportation and Logistics—5 chapters, coordinated by Prof. Michele Ottomanelli (Technical University of Bari, Italy).

Each stream/section is initiated by an introductory chapter prepared by its coordinator. It presents an overview of the considered theme and shortly describes all its components, i.e., the contributions (chapters) included in the stream. It is followed

by 4–7 chapters, each of which presents an original output generated by the authors (contributors), falling within the thematic scope of the stream/section.

Roughly, 50 articles have been considered for publication in this book. All of them have gone through a stringent, peer-reviewed procedure and have been finally recommended for publication by the referees and Guest Editors. The finally accepted 23 chapters present a variety of research topics and problems, transportation modes, and proposed approaches:

- Network design problems; traffic control strategies; transportation and logistics projects analysis; assessment of supply chain management models; selection of suppliers; analysis of drivers' behavior; terminal design problems.
- Road, railway, air, and water transportation considered both in passenger and freight environment.
- Exact (e.g., integer programming) and approximate algorithms (e.g., meta-heuristics: genetic algorithms; evolutionary approaches); single and multiple criteria methods (e.g., Electre, AHP); deterministic and non-deterministic methods (e.g., fuzzy algorithms).

The Guest Editors are very thankful to all 63 contributors, representing 11 countries and 3 continents (Europe, Asia, and North America), who prepared particular chapters of this book. Their interesting research has produced an original outcome of this book and has created an added value for transportation and logistics research. The Guest Editors realize that the picture presented in each stream is not complete. At the same time, they would like to indicate that the works collected in this book cover a representative selection of subjects significant for transportation and logistics research. This book is focused on advanced methodologies and technologies applied in transportation and logistics. In the Guest Editors' opinion, the presented selection of topics should generate an interest of a wide spectrum of readers and at the same time give them a good theoretical background and inspiration for further in-depth investigation in selected topics.

The Guest Editors would like to express their sincere gratitude to all four coordinators of thematic streams for their assistance in shaping this book and to all 40 anonymous referees (2–3 per chapter) representing 13 countries, who responded willingly to our requests for reviewing the chapters. The refereeing process required from the referees comprehensive and interdisciplinary knowledge, diverse expertise and fair justification of the submitted contributions. Their efforts are highly appreciated. Special thanks are addressed to our partner—editors at Springer who are responsible for book typesetting and production, in particular to Dr. Thomas Ditzinger representing in Springer the area of Applied Sciences and Engineering, who contributed substantially to the final success of this book.

This book is dedicated to Professor Shinya Kikuchi (Virginia Polytechnic, USA) and Professor Matthew G. Karlaftis (National Technical University of Athens, Greece) who passed away unexpectedly in the recent years and left emptiness behind. Shinya and Mathew were great friends for the EWGT community and

contributed enormously to our development. They still inspire many of us. We are proud that Shinya and Matthew carried out common research with us and participated in our activities. The EWGT community will always miss them.

Jacek Żak
Yuval Hadas
Riccardo Rossi

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