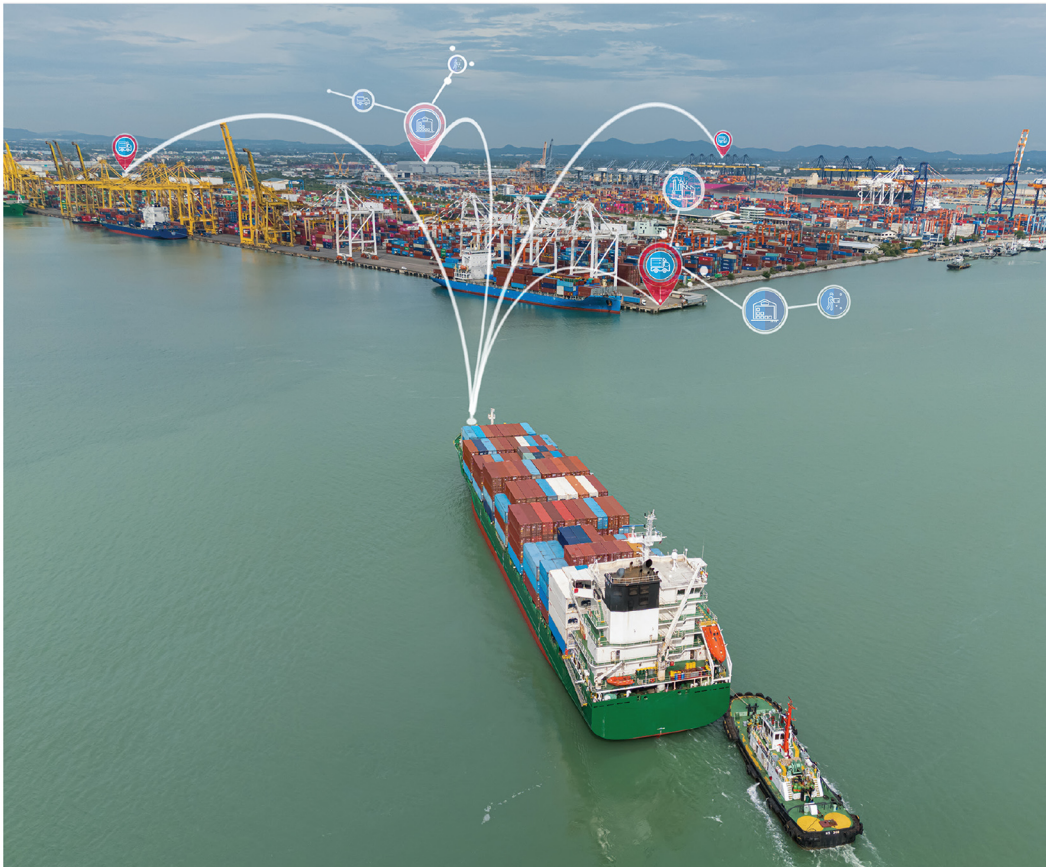


Digital Transformation in Maritime Transportation and Logistics

Edited by
Michele Fiorini and Dorota Książkiewicz



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Digital Transformation in Maritime Transportation and Logistics

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Foreword

The global maritime sector has long served as the backbone of international trade, yet it has rarely faced a moment as transformative as the one we inhabit today. We are currently witnessing a historic convergence – a “triple transition” where digitalisation, decarbonisation, and geopolitics are no longer separate agendas but a singular, complex reality. To navigate this era, the industry requires more than just incremental technical updates; it requires a fundamental rethinking of how we define efficiency, resilience, and sovereignty. In this context, *Digital Transformation in Maritime Transportation and Logistics* arrives as an essential map for an uncharted territory, offering a sophisticated analysis of a sector at a critical crossroads.

What makes this volume particularly significant is the unique synergy of its editors, who bridge the gap between industrial innovation and academic excellence. Dr Michele Fiorini brings a distinguished background in maritime engineering and technology leadership to this project. As a chief technology officer and a key contributor to international bodies such as IALA and NATO, his work at the forefront of systems engineering – including his award-winning integration of generative AI and Large Language Models – provides the book with a cutting-edge technological lens. Complementing this, Dr Dorota Książkiewicz offers deep academic insight from the University of Gdańsk. Her rigorous analysis of transport policy and the economic mechanisms of global supply chains provides the necessary framework for understanding how these digital tools function within the volatile landscape of global trade. Together, they have curated a work that is as grounded in economic reality as it is inspired by technological possibility.

The strength of this volume lies in its extraordinary breadth and the diversity of its voices. Drawing on the collective wisdom of sixty-one authors spanning eighteen countries, the book offers a truly global perspective that reflects the borderless nature of maritime commerce. By balancing high-level strategic inquiries into the “Northern Frontier” of Arctic shipping with granular, practical realities – such as the modernisation of small-to-medium ports and the deployment of AI in specialised logistics – the contributors ensure that no corner of the industry is left unexamined. This geographic and professional diversity allows the book to move beyond theoretical abstraction, offering instead a comprehensive view of how cultural, institutional, and regional lenses shape the digital transition.

The narrative of this work argues persuasively that sustainability and innovation are now two sides of the same coin. The chapters do not merely celebrate progress; they courageously address the “shadow side” of the digital shift. By providing critical insights into the vulnerabilities of cybersecurity, the nuances of

AIS spoofing, and the physical integrity of port infrastructure through digital twins, the authors prepare the reader for the risks inherent in an interconnected domain. This exploration acknowledges a new reality: that maritime routes and infrastructure investments are now shaped as much by regional tensions and the quest for strategic autonomy as they are by traditional market forces.

Ultimately, *Digital Transformation in Maritime Transportation and Logistics* is more than a survey of current trends; it is a call to action for a more resilient and inclusive maritime future. For the policymaker seeking a regulatory compass, the shipping executive managing risk, or the researcher exploring the next frontier of automation, these pages offer indispensable guidance. Dr. Fiorini and Dr Książkiewicz have provided the industry with a vital resource that balances the precision of engineering with the foresight of economic policy. I invite you to engage with these insights and use them to help navigate the complex, digital seas that lie ahead, from the boardroom to the quay.

Dr Alfonso FARINA, FREng, FIET, LFIEEE,
PhD HC on ITC, Selex-ES (retired)
Consultant Leonardo S.p.A.
Roma, December 2025

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We wish to express our sincere gratitude to all sixty-one contributing authors for their commitment, insight, and intellectual generosity in shaping this volume. Each chapter reflects a shared dedication to advancing the understanding of how digitalisation, decarbonisation, and geopolitical dynamics intersect to enable a more sustainable, resilient, and secure maritime future. This work is, above all, a testament to the power of global, interdisciplinary collaboration in addressing the complex challenges of our time.

Special thanks are extended to the Institution of Engineering and Technology (IET) for its continuous support and visionary commitment to fostering innovation and the global dissemination of knowledge. This publication would not have been feasible without such invaluable patronage. Particular appreciation is due to Sarah Lynch, Head of Books Publishing; Philippa Jefferies, Commissioning Editor; and Brittany Insull and Olivia Wilkins, Editorial Assistants, for their diligent efforts in upholding the highest standards of publishing excellence.

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Michele Fiorini and Dorota Książkiewicz
Scientific Editors
Roma and Gdańsk, December 2025

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List of contributors

- (1) **Dr. Alfonso FARINA, FREng, FIET, LFIEEE** received the Dr. Ing. degree in electronic engineering from the University of Rome La Sapienza, Rome, Italy, and a PhD HC in ICT from the University of Palermo, Palermo, Italy. From 1973 to 2014, he worked at Selex ES until he became Senior Vice President (SVP) and Chief Technology Officer (CTO). Currently, he is President of the Leonardo Radar & Sensors Academy and President of the Underwater and Sensors Systems of the Leonardo Electronics Division. Alfonso is a Fellow of IEEE, IET, Royal Academy of Engineering, Académico Correspondiente de la Real Academia de Ingeniería de España, European Academy of Science, and National Academy of Engineering (USA). Dr. Farina was a recipient of the Fred Nathanson Memorial Radar Award (1987), Finmeccanica Award for Innovation Technology (2004), IEEE Dennis J. Picard Medal for Radar Technologies and Applications (2010), Oscar Masi Award (2012), IET Achievement Medal (2014), IEEE SPS Industrial Leader Award (2017), Christian Hülsmeier Award (2019), IEEE AEISS Pioneer Award (2020) and the ISIF Yaakov Bar-Shalom Award for a Lifetime of Excellence in Information Fusion (2025). A multifaceted engineer, scientist, and university professor, he is among the 2% top world scientists and one of the world's leading experts on radar systems.
- (2) **Ana Cornelia BADEA** is full professor in Geodetic Engineering at the Faculty of Geodesy, Technical University of Civil Engineering Bucharest. Within the European alliance EU-CONEXUS, focused on the Smart Urban Coastal Sustainability, she is responsible for the courses: “GIS and GeoAI”, “GIS and Remote Sensing”, “UAS Principles, Data Modeling and Analysis”. She is leading the Research Centre “Geodetic Engineering Measurements and Spatial Data Infrastructures”, being the coordinator of the MSc program “Spatial Planning and GIS for Sustainable Development”.
- (3) **Gheorghe BADEA** is full professor with over 35 years of experience in higher education, at the Faculty of Geodesy and PhD supervisor in the field of Geodetic Engineering, with expertise in the workflow of collection, processing and modeling of geospatial data. Professor Badea is responsible for the course “Standards and Geoportals of Spatial Data”. He is also involved in teaching activities at the Faculty of Geography and the Faculty of Urban Planning in Bucharest.

- (4) **Anca Patricia GRÂDINARU** is a PhD engineer and lecturer at the Technical University of Civil Engineering Bucharest (UTCB). She is actively involved in the Smart Urban Coastal Sustainability (SmUCS) research area within the EU-CONEXUS alliance. Her research focuses on the use of artificial intelligence for geospatial data classification.
- (5) **Hervé Baudu**, member of the French Maritime College, former naval officer, is a senior professor of nautical sciences at the École Nationale Supérieure Maritime, which trains merchant navy officers and engineers. He is a specialist in ice navigation. He is an expert on polar maritime issues for the Ministry for Europe and Foreign Affairs.
- (6) **Marina Zanne** is an Associate Professor at the Faculty of Maritime Studies and Transport, University of Ljubljana. She earned her Ph.D. in transport policy and has developed her academic career at the intersection of transportation systems and economic analysis. In recent years, her research has increasingly focused on port economics, emphasizing efficiency, sustainability, and the digital transformation of maritime logistics.
- (7) **Elen Twrdy**, a full professor, works at the Faculty of Maritime Studies and Transport at the University of Ljubljana. She has authored several academic and research papers in transport technology and transport logistics, with a particular focus on terminals, ports, and maritime logistics. She has contributed as an author to many studies, surveys, and research projects on the planning, organisation, and development of transport systems and logistics. She is also the author of several textbooks.
- (8) **Dr. Anas S. Almoush** is a post-doctoral research associate at the World Maritime University (WMU) and a former ship captain. He holds a PhD in Maritime Affairs, specializing in maritime energy management, and an MSc in Shipping Management and Logistics from WMU, where his research focuses on sustainable port development and maritime energy transition and decarbonization. Actively engaged in international projects such as the EU Horizon Seanergy, POTENT-X and IMO GHG impact assessments, Dr. Anas has published widely in leading journals and was awarded the Queen of Denmark Margrethe II Medal for his outstanding contributions to international maritime affairs.
- (9) **Professor Dr. Aykut I. Ölçer** is a naval architect and marine engineer holding the Nippon Foundation Professorial Chair in Marine Technology and Innovation at the World Maritime University (WMU), where he also serves as Director of Research and Head of the Maritime Energy Management specialization. His career spans leading academic roles at Newcastle University, the University of Strathclyde, and Istanbul Technical University, with extensive experience in EU- and IMO-funded research on sustainable maritime technologies. An internationally recognized expert in maritime decarbonization, Professor Ölçer has published widely in top journals and delivered keynote speeches worldwide on energy management and innovation in the maritime sector.

- (10) **Mona Swoboda**, M.A., is Program Manager at the Inter-American Committee on Ports (CIP) of the Organization of American States (OAS), where she implements port development and technical assistance projects across 34 Member Countries, with initiatives focusing on trade facilitation, digitalization, security and disaster risk management. Mona holds a Master's Degree in Interdisciplinary Latin American Studies from Freie Universität Berlin and is a member of the International Port Community System Association (IPCSA) Foresight Group, a former Senior Advisor to the World Maritime University's BUGWRIGHT2 project, and an author of several publications on port-related issues.
- (11) **Andrew Baskin** is Vice President, Global Policy and Trade at ShorelineHudson, a global port and maritime risk management firm. Mr. Baskin leads the firm's port modernization and digitalization practice and oversees the firm's engagement in Latin America and the Caribbean. In this role, Mr. Baskin directs projects related to port and trade digitalization, legislation and regulation, operations and governance, environmental frameworks, infrastructure advisory, and cyber resiliency.
- (12) **Professor Zhang Min** is the Deputy Dean of the School of Maritime Law and Transportation Management at Guangzhou Maritime University. Her primary research interests include maritime law and legal frameworks for autonomous ships.
- (13) **Fang Li** is currently an Associate Professor in Guangzhou Maritime University. She received the the PhD. degree in Traffic Information Engineering and Control from Wuhan University of Technology, Wuhan (WHUT), China, in 2021. She went to Norwegian University of Science and Technology, NTNU as a visiting student from August, 2017 to August, 2018. Her main research interests are intelligent ships and signal processing.
- (14) **Sichao Chen** is a Lecturer in Law at Dongguan City University. She holds an LL.M. in Maritime Law from the National University of Singapore. Her research interests include maritime law, data privacy law and comparative law.
- (15) **Hao Wang** is a lecturer at Guangzhou Maritime University. His main research directions are intellectual property law and artificial intelligence governance.
- (16) **YungHo, YU**, is a retired professor from the IT division of Korea Maritime and Ocean University. He had the experience of a chief engineer of a SOLAS ship, a technical surveyor of the ship classification society KR. He is now the project leader of ISO 25750, 25933, and convenor of ISO TC 8 SC 26 WG 4 secured ship network.
- (17) **Kun Yang** is a Full Professor and Academic Vice-Dean at the Information Engineering School, Zhejiang Ocean University. He directs the Ocean Connectivity Lab and the Key Laboratory of Oceanographic Big Data Mining & Application of Zhejiang Province. His work focuses on maritime connectivity and radio propagation over the sea, drawing on 15+ years of field and project experience.

- (18) **Hossein Norouz Fashkhami** is Director of Market Development and relations within the Caspian and Eurasian region at the Anzali Free Zone Organization (Iran). He holds a Master of Business Administration (MBA) with a specialization in Marketing from the University of Gilan. His professional focus lies in the development of multimodal trade corridors and regional connectivity across the Caspian and Eurasian regions. His interests include strategic logistics planning, port development, and cross-border trade facilitation.
- (19) **Andrzej Gab** has been involved lately with Maritime Cyber Guild (a community of Maritime Cybersecurity Experts) and for a long time has served as the Global Leader of the Maritime Cybersecurity Hub at EY from 2023 to 2025. He is recognized for projects within the maritime sector, authorship of articles, and as a speaker at international conferences dedicated to enhancing cyber resilience in shipping and port operations. His work includes public discussions with leading experts, engaging industry leaders on topics such as threats to vessel systems, port infrastructures, and the adoption of best practices in maritime security governance. He holds several cybersecurity certifications including well-recognized CISSP and Maritime Cyber Threat Mitigation (Cyber-SHIP lab, University of Plymouth) . Although he is now a deputy CISO in one of the Polish banks he is very keen on maritime and he is still involved in cyber projects there.
- (20) **Dmitry Rostopshin** is the Managing Director and Founder of DiNav Marine Oy, a company specialised in VTS, smart port solutions, port call optimisation and e-Navigation. He has over 25 years of international experience supporting ports and maritime authorities in developing safe, efficient and future-ready maritime traffic systems.
- (21) **Dr Demosthenes Polyzos** – Professor in the Department of Mechanical Engineering & Aeronautics at the University of Patras, specializing in boundary-element methods, wave propagation and computational mechanics. He holds a Diploma in Mechanical Engineering and a Ph.D. in Mechanical Engineering, and participates in research on the development of Boundary Element Method numerical solvers.
- (22) **Dr Stefanos Tsinopoulos** – Professor in the Department of Mechanical Engineering at the University of the Peloponnese, with expertise in boundary element methods and gradient elasticity for solids and structural systems. He earned his doctoral degree at the University of Patras and contributes to corrosion degradation modelling and digital-twin frameworks in maritime corrosion and asset-life studies.
- (23) **Dr Konstantinos Kolovos** – Associate Professor of Chemistry at the Hellenic Army Academy, specialising in cement and concrete chemistry and the durability of construction materials. He holds BSc, MSc and PhD degrees in chemical sciences and brings expertise in corrosion mechanisms of marine infrastructure, supporting mitigation and digitalisation.
- (24) **Dr Ioannis Kartsonakis** – Assistant Professor in the School of Chemistry at Aristotle University of Thessaloniki, working on smart corrosion-protective

coatings and polymer-based materials. He holds a Chemist's degree, an MSc in Polymer Science and a Ph.D. in Chemistry, and contributes by developing material solutions that integrate into the digital-twin and corrosion risk-management framework.

- (25) **Dr Ioannis Boutopoulos** – AI & CFD Engineer at FEAC Engineering, focusing on computational fluid dynamics, machine learning and digital twins for biomedical and industrial applications. He is a Physicist with a Ph. D. in Bioengineering and applies his simulation and digital-twin expertise to modelling corrosion in maritime transport systems.
- (26) **Mr Kevin Strehl** – Engineer at FEAC Engineering, acting as an interface between high-fidelity simulation/digital-twin technologies and industrial maritime end users. He holds an engineering degree from ZHAW School of Engineering and supports FEAC by enabling simulation-driven solutions to corrosion and digitalisation in maritime transportation.
- (27) **Mr Konstantinos Loukas** – Senior Numerical Simulation Engineer at FEAC Engineering, involved in marine and industrial flow simulations and digital-twin projects. His engineering background and experience focus on digital-twin modelling of corrosion in maritime assets and risk-mitigation strategies.
- (28) **Mr Ioannis (Giannis) Georgiadis** – CAE Engineer and FEA specialist at FEAC Engineering, working on structural analysis and simulation-driven design. As a Mechanical & Aeronautics Engineer (M.Sc.), he contributes to the company via the simulation of structural degradation in maritime transport environments and digital-twin integration.
- (29) **Mrs Eliza Kavoura** – CAD & FEA Simulation Engineer at FEAC Engineering, contributing to digital-twin projects and advanced structural optimisation (e.g., marine-transport components). She is a Mechanical Engineer (M.Sc.) and supports the corrosion-in-maritime-transport theme through simulation of component degradation and digital-twin tracking.
- (30) **Dr Stratos Kountouras** – Engineer at FEAC Engineering, engaged in multi-physics simulation and digital-twin development for complex engineering systems, including maritime environments. He holds a degree from the Ionian University and applies simulation tools for modelling and mitigating corrosion in maritime transport.
- (31) **Dr Dimitrios Labropoulos** – Researcher/Engineer at FEAC Engineering involved in numerical simulation and AI-assisted reduced-order modelling for real-time applications. He holds a Ph.D., and his work supports digitalisation by enabling efficient digital-twin frameworks for monitoring corrosion in maritime transport.
- (32) **Mrs Penny Vergadou** – Researcher/Engineer at FEAC Engineering, responsible for coordinating complex engineering tasks and managing data-driven workflows. She holds a degree in Mathematics and supports the company by ensuring the structured integration of scientific, technical and digital-twin methodologies for addressing corrosion challenges in maritime transport.

- (33) **Mr Dimitrios Tziatzios** – Mechanical Engineer at FEAC Engineering, specialising in engineering software integration (CAD/CAM/CAE) and SaaS platforms. His “Dipl.-Ing.” qualification and technical role support the practical deployment of digital-twin systems for corrosion monitoring and mitigation in maritime transport.
- (34) **Dr Dimitrios Kalovelonis** – Adjunct Lecturer/Researcher and corrosion expert working with FEAC Engineering on cathodic protection design and offshore structural corrosion challenges. He holds a Ph.D. in Mechanical/Materials Engineering and focuses on modelling corrosion mechanisms in maritime transport structures and implementing digital-twin solutions.
- (35) **Dr Theodoros (Theodore) Gortsas** – Assistant Professor/Postdoc in Mechanical Engineering & Aeronautics at the University of Patras, focusing on computational mechanics, scientific machine learning and BEM/FEM methods. He holds a Diploma and a Ph.D. in Mechanical & Aeronautical Engineering and applies his digital-twin and simulation expertise to modelling corrosion risks in maritime transport assets.
- (36) **Mr Kostas Lafkas** – Mechanical Engineer at FEAC Engineering, specialising in engineering management, numerical-simulation workflows and the integration of digital technologies in industrial applications. He holds an M. Sc. in Mechanical Engineering and contributes to the company through his technical support of digital-twin methodologies and corrosion-related engineering processes in maritime transport.
- (37) **Mr Dionysis (Dionysios) Petropoulos** – Software Engineer at FEAC Engineering, developing software and AI-driven tools that support digital-twin platforms and engineering workflows. He studied Electrical & Computer Engineering at the University of the Peloponnese and contributes to the company by building the software/AI infrastructure for monitoring and simulating corrosion in maritime transport systems.
- (38) **Mr Sotiris (Sotirios) Kokkinos** – Electrical Engineer at FEAC Engineering, leading its digital-twin and simulation-driven engineering strategy in defence and high-tech industries. He holds an MSc in Electrical Engineering & Computer Technology and has more than 15 years of experience in simulation and digital-technology engineering.
- (39) **Mikael Lind** is the world’s first (adjunct) Professor of Maritime Informatics engaged at Chalmers and Research Institutes of Sweden (RISE). He is a well-known expert frequently published in international trade press, is co-editor of the first two books on Maritime Informatics and is co-editor of the book *Maritime Decarbonization*.
- (40) **Wolfgang Lehmacher** is a global supply chain logistics expert. The former director at the World Economic Forum and CEO Emeritus of GeoPost Intercontinental is an advisory board member of The Logistics and Supply Chain Management Society, an ambassador for F&L, and an advisor to Global:SF and RISE. He contributes to the knowledge base of Maritime Informatics and co-editor of the book *Maritime Decarbonization*.

- (41) An Italian Supreme Court lawyer and senior partner at SLB, **Giando Boglione** has spent over three decades in insurance, maritime and transport law, supporting underwriters, corporations and private clients worldwide. Trained in Italy and the UK and seasoned by practice in London, he later joined his family's firm in Genoa and led its growth to Milan and Rome. SLB is regarded as an elite firm in international disputes, and he is noted for his work in complex cross border cases.
- (42) **Giorgio Maria Briozzo** is a practicing lawyer admitted to the Rome Bar, who specialises in international trade law, maritime law and insurance law. He assists clients in transnational matters both before national and international courts. Since 2014, he has been a Teaching Assistant at LUISS Guido Carli University in Rome, teaching EU Law, International Law, and International Organizations. He is a member of the Italian Maritime Lawyers Association, of the International Society for Military Law and the Law of War, and of the Migration and Asylum Unit of the Centre for International Strategic Studies
- (43) **Simone Moretti** graduated in Law from Bocconi University (Milan) in 2008 and has been a member of the Genoa Bar Association since 2011. He is a Partner at Studio Legale Boglione, where he primarily advises Italian and international clients on maritime law, as well as on commercial contracts, compliance, and civil and commercial litigation. He also focuses on emerging areas of insurance law, including cyber risk and the legal implications of transport digitalisation.
- (44) **Svitlana Onyshchenko** is a Professor in Fleet Operating and Shipping Technologies at Odesa National Maritime University, Ukraine. She is a Doctor of Economics, the Active Member of the TransportAcademy of Ukraine and has published almost 200 papers on Safety and Efficiency of Shipping, Sustainable Development in the Maritime sector. She has been a member of the peer review college of the Eastern-European Journal of Enterprise Technologies since 2012.
- (45) **Iryna Savelieva** is a Vice-rector for Research at Odesa National MaritimeUniversity, Ukraine. She is a Doctor of Economics and the Active Member of the Transport Academy of Ukraine. She specialises in Blue Economy, Digital Skills and Human Capital. She is currently working on the Blue Gates project with the support of the European Union and the Interreg VI-B NEXT Black Sea Basin Programme.
- (46) **Dr. Zoran Lajic** is Energy Efficiency Director of the Angelicoussis Group. He joined the Angelicoussis Group 9 years ago. Before Angelicoussis Group, he worked with A.P. Moller – Maersk (MMT, Copenhagen) as a General Manager / Lead Performance Analyst. He worked on many practical and research projects in the Maritime industry. Zoran holds a PhD degree in Maritime Engineering from Technical University of Denmark.
- (47) **Eftymia Nousi** is an R&D Manager and GIS Expert at INFRALABS Ltd, with over 20 years of experience in geoinformatics, GIS project management, and European research programmes. She holds an MSc in

Geoinformatics from the National Technical University of Athens and a Bachelor's degree in Geography from the University of the Aegean. Her research interests include geoinformatics, GIS software development, spatial analysis, geospatial data modelling, GeoAI, explainable artificial intelligence (XAI), cultural heritage data infrastructures, and methodological approaches involving fuzzy logic.

- (48) **Chiara Notaro** is a senior R&D specialist at CETENA S.p.A., part of the FINCANTIERI Group, with a Master's in Naval Engineering from the University of Genova, in Italy. She drives national and European research projects, shaping R&D strategies for sustainable maritime innovation. Chiara currently serves as Chair of ECMAR and Co-Vice-Chair of WATERBORNE TP, actively contributing to the advancement of collaborative research and policy development in the maritime transport sector.
- (49) **Luca Isgrò** is Head of the Simulation Solutions Business Unit at CETENA S.p.A., part of the Fincantieri Group. With extensive expertise in advanced naval simulation technologies, Luca leads the development of cutting-edge training systems, including bridge simulators and immersive VR platforms for naval crews. Under Luca's leadership, CETENA has delivered major projects such as the MANTA architecture and one of the world's largest naval training centers for the Qatari Navy. A recognized figure in maritime innovation, Luca regularly represents CETENA at international defense and technology events.
- (50) **Luca Fengone** is a Senior Electronic Engineer and Head of Production for the Simulation Systems area at CETENA. He leads teams and processes with strategic vision for the development and delivery of innovative, high-complexity technological solutions. His passion, comprehensive preparation, and polyhedral competence enable a cross-functional technical-scientific vision that embraces every aspect of the programs he manages. His extensive expertise is cross-functional: he operates as a Program Manager, Product Manager, and Project Manager, excelling at the seamless integration between business objectives and operational performance. Driven by an approach focused on total accountability, he guarantees measurable impact by taking informed decisions and assuming full ownership of results. He employs a model of pragmatic, value-oriented leadership, which combines innovation and methodological soundness for the continuous maximization of team and stakeholder performance.
- (51) **Daniele Milazzo** is a Naval Engineer at CETENA S.p.A., part of the FINCANTIERI Group, graduated from the University of Genoa (Italy), working in the field of maritime simulation and port engineering. His expertise focuses on vessel maneuverability, mooring and hydrodynamic modeling, and the development of simulation tools supporting design and operational decision-making. He collaborates with Port Authorities, Pilots, and Maritime Institutions on projects aimed at enhancing safety and efficiency in port and offshore environments.

- (52) **Maria Grazia Socievole** is a Naval Engineer at CETENA S.p.A., part of the FINCANTIERI Group, graduated from the University of Genoa (Italy). She works in the field of maritime real-time 3D simulation and port engineering. Her professional activity includes the study of ship manoeuvrability, mooring system analysis, hydrodynamic modelling, and the development of simulation tools. She is also involved in port studies and risk analysis related to navigation safety and port and offshore operations, in collaboration with Port Authorities, Pilots' Corporations, Maritime Institutions port stakeholders.
- (53) **Irene Zampini** is a Graphic Designer at CETENA S.p.A., part of the FINCANTIERI Group, and holds a degree in Social Media Strategy. She previously worked for a Genoa-based startup in the simulation and multimedia sector, focusing on 2D graphics, texturing, and user interface (UI/UX) design for simulation platforms in both civil and military contexts. She has also worked as a graphic designer for museums and national events, developing visual and multimedia communication projects. Today, she works within CETENA's simulation solutions area, combining technical expertise, user-centered design, and visual communication, supporting and managing port study activities together with a specialized team and contributing to the development of solutions that enhance ship maneuverability, port safety, and operational efficiency.
- (54) **Ivan Bobok** is a Doctor of Engineering in the field of Information Security, a Professor at the Odesa Polytechnic National University, and a laureate of the Verkhovna Rada of Ukraine Prize for Young Scientists for the development of a general methodology for the integrity expertise of digital images. His scientific interests include: steganography, steganalysis, social engineering, and state information security.
- (55) **Alla Kobozieva** is the Head of the Department of Cybersecurity and Information Protection at Odesa National Maritime University, a Doctor of Engineering in the field of Information Protection, with over 20 years of research experience. Main areas of scientific activity include: steganography, steganalysis, and digital information integrity expertise.
- (56) **Olena Lebedieva** is a PhD (specialty 'Information Protection Systems'), and Associate Professor at the Department of Cybersecurity and Information Protection at Odesa National Maritime University. Main areas of scientific activity include: digital information integrity expertise, and the detection of the results of digital content processing by means of graphic editors.
- (57) **Alexandros Troupiotis-Kapeliaris** is a postdoctoral researcher of the Intelligent Transportation Systems Lab at the University of the Aegean. His research interests include mobility data analytics, knowledge extraction and streaming systems. In the past has served as a member of research teams at the National Centre for Scientific Research (NCSR) 'Demokritos' and MarineTraffic.
- (58) **Giannis Spiliopoulos** is a senior software engineer and researcher of the Intelligent Transportation Systems Lab of the University of the Aegean,

where he is also conducting his doctoral studies. His focus lies on applied and realized machine learning algorithms, statistical analytics and the design of data intensive systems, with experience in both academia and industry.

- (59) **Dimitris Zissis** is a Professor of Information and Communication Systems at the Department of Product & Systems Design Engineering, University of the Aegean (Greece). He is the Head of the Intelligent Transportation Systems Lab (SmartMove) and Director of the Postgraduate Programme in Autonomous Systems.
- (60) **Alexandra Middleton** is an Adjunct Professor and Postdoctoral Researcher at University of Oulu specializing in Arctic economic development and sustainability. She is a Fellow at Harvard's Arctic Initiative. Her work focuses on advancing research and policy solutions for resilient Arctic communities.
- (61) **Kun Yang** is a Full Professor and Academic Vice-Dean at the Information Engineering School, Zhejiang Ocean University. He directs the Ocean Connectivity Lab and the Key Laboratory of Oceanographic Big Data Mining & Application of Zhejiang Province. His work focuses on maritime connectivity and radio propagation over the sea, drawing on 15+ years of field and project experience.

About the editors

Dr Michele Fiorini is a distinguished leader in maritime engineering and systems innovation. He currently serves as Chief Technology Officer (CTO) of the Electronics Division at Leonardo S.p.A. in Rome, where he provides technical and management leadership for maritime applications across both civil and military domains. Educated at the universities of Ancona (Italy), Bath (UK), and Gdańsk (Poland), he holds both PhD and MBA degrees. Dr Fiorini is a Fellow of the IET (FIET), a Senior Member of the IEEE (SMIEEE), and a Chartered Engineer (CEng) in the UK.

A recognized expert in his field, he serves as an Industrial Member of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and represents Italy within the NATO Industrial Advisory Group (NIAG). He has authored numerous peer-reviewed papers, holds an international patent, and has previously co-edited two volumes in the IET Transportation Series dedicated to maritime transportation. Recently, he received a Special Mention at the 2025 Leonardo Electronics Innovation Awards for his work on “Leo,” a generative AI-driven humanoid robot designed for collaborative applications.

Dr Dorota Książkiewicz is an Assistant Professor within the Department of Transport Policy and Economic Integration at the University of Gdańsk. As a leading academic tutor and lecturer, her research focuses on the intricate mechanisms of the contemporary global economy, with a specific emphasis on the resilience, security, and efficiency of global supply chains.

Beyond her analysis of global trade disruptions, Dr Książkiewicz specializes in the development of sustainable technological and organizational solutions for the transport and logistics sectors. She is the author of numerous scientific publications and is a key figure in bridging the gap between academia and industry, coordinating numerous high-level projects with business partners and practical educational programs. Her work is instrumental in shaping how modern logistics models adapt to the demands of the green transition and digital transformation.