

THE CONFERENCE PROGRAMME

Version 2.1



**Faculty of Navigation
Gdynia Maritime University**

and



**14th INTERNATIONAL CONFERENCE
ON
MARINE NAVIGATION
AND SAFETY OF
SEA TRANSPORTATION**

TransNav 2021

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Conference Office:

*Department of Navigation
Faculty of Navigation
Gdynia Maritime University
Al. Jana Pawła II 3
81-345 Gdynia
Poland*

phone: + 48 58 5586136, +48 58 6616955

e-mail: transnav@umg.edu.pl

Conference web site: <https://transnav2021.umg.edu.pl>

Journal web site: <http://www.transnav.eu>



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
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Gdynia Maritime University, Gdynia, Poland

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Gdynia Maritime University, Gdynia, Poland

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Prof. Gisela Aquino **Pires do Rio** 
Federal University of Rio de Janeiro, Brazil

Prof. Uwe **Plank-Wiedenbeck** 
Bauhaus-Universität Weimar, Germany

Prof. Michał **Pluciński** 
University of Szczecin, Poland

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Gdynia Maritime University, Gdynia, Poland

Prof. Thomas T. **Porathe** 
Norwegian University of Science and Technology, Trondheim, Norway

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Texas A&M University at Galveston, Texas, The United States

Prof. Malek **Pourzanjani** 
South African International Maritime Institute (SAIMI), Port Elizabeth, South Africa

Prof. Boris **Pritchard** 
University of Rijeka, Croatia

Prof. Adam **Przybyłowski** 
Gdynia Maritime University, Gdynia, Poland

Prof. Dorota **Pyć** 
University of Gdańsk, Poland

Prof. Antonio **Querol Sahagún** 
University of Cadiz, Spain

Prof. Refaat **Rashad**, Master Mariner
President of the Arab Institute of Navigation (AIN) 
Arab Academy for Science, Technology and Maritime Transport, Alexandria, Egypt

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Univeriti Teknologi Malaysia, Johor Bahru, Malaysia

Prof. Martin **Renilson** 
Australian Maritime College, University of Tasmania, Launceston, Australia

Prof. Philippe **Rigo** 
ANAST, University of Liege, Belgium

Prof. Jonas **Ringsberg** 
Chalmers University of Technology, Gothenburg, Sweden

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University of California, UCI, Irvine, California

Prof. Jerzy B. **Rogowski**, Fellow of TransNav 
Gdynia Maritime University, Gdynia, Poland

Prof. Hermann **Rohling** 
Hamburg University of Technology, Hamburg, Germany

Prof. María Carolina **Romero Lares** 
World Maritime University, Malmö, Sweden

- Prof. Paulo **Rosa-Santos** 
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Shanghai Maritime University, Shanghai, China
- Prof. Marina **Ruggieri** 
University of Roma "Tor Vergata", Roma, Italy
- Prof. Abdul Hamid **Saharuddin** 
University Malaysia Terengganu (UMT), Malaysia
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Austral University of Chile, Valdivia, Chile
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University of California, Berkeley, California, The United States
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Yonsei University, Incheon, South Korea
- Prof. Arnaud **Serry** 
Université du Havre, Le Havre, France
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Batumi State Maritime Academy, Batumi, Georgia
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Azerbaijan State Marine Academy, Baku, Azerbaijan
- Prof. Chaojian **Shi**, Fellow of TransNav 
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- Prof. Ruri **Shoji** ●
Tokyo University of Marine Science and Technology, Tokyo, Japan
- Prof. Mirosław **Siergiejczyk** 
Warsaw University of Technology, Warsaw, Poland
- Prof. Jacek **Skorupski** 
Warsaw University of Technology, Warsaw, Poland
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Maritime University of Szczecin, Poland
- Prof. Roman **Smierzchalski**, Fellow of TransNav 
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- Prof. Igor **Smirnov** 
Admiral Ushakov Maritime State University, Novorossiysk, Russia
- Prof. Leszek **Smolarek** 
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Gdynia Maritime University, Gdynia, Poland
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- Prof. Joanna **Soszyńska-Budny** 
Sopot University of Applied Sciences, Poland
- Prof. Cezary **Specht**, Fellow of TransNav 
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Clemson University, Clemson, South Carolina, United States
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Gdańsk University of Technology, Gdańsk, Poland
- Prof. Anna **Stelmach** 
Warsaw University of Technology, Warsaw, Poland
- Prof. Kathleen **Stewart** 
University of Maryland, College Park, Maryland, USA

Prof. Tadeusz **Stupak** 
Gdynia Maritime University, Gdynia, Poland

Prof. Manivannan **Subramaniam**, Master Mariner 
Malaysian Maritime Academy (ALAM), Kuala Sungai Baru, Melaka, Malaysia

Prof. Mutlu **Sumer** 
BM Sumer Consultancy & Research, Istanbul Technical University, Turkey

Prof. Miroslav **Svitek** 
Czech Technical University in Prague, Czech Republic

Prof. Jan **Szantyr** 
Gdańsk University of Technology, Gdańsk, Poland

Prof. Joanna **Szłapczyńska** 
Gdynia Maritime University, Gdynia, Poland

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Gdańsk University of Technology, Gdańsk, Poland

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AGH University of Science and Technology, Kraków, Poland

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Rear Admiral 
Polish Naval Academy, Gdynia, Poland

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Massachusetts Maritime Academy, Buzzards Bay, Massachusetts, USA

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Old Dominion University, Norfolk, Virginia, The United States

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University of Turku, Centre for Maritime Studies, Kotka, Finland

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Gdynia Maritime University, Gdynia, Poland

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Instituto Superior Tecnico (IST), Lisboa, Portugal

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Delft University of Technology (DUT), The Netherlands and Curtin University of Technology, Perth, Australia

Prof. El **Thalassinos** 
University of Piraeus, Greece

Prof. Erik **Theunissen** 
Delft University of Technology, Delft, The Netherlands

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Chairman of Ukraine Branch of the Nautical Institute 
Odessa National Maritime Academy, Odessa, Ukraine

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Parthenope University, Naples, Italy

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National Technical University of Athens, Greece

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Odessa National Maritime Academy, Odessa, Ukraine

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Prof. Janusz **Uriasz** 
Maritime University of Szczecin, Poland

Prof. Eddy **Van de Voorde** 
University of Antwerp, Belgium

- Prof. Pieter H.A.J.M. **van Gelder** 
Delft University of Technology, Delft, The Netherlands
- Prof. Rowan **Van Schaeren** 
Antwerp Maritime Academy, Belgium
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- Prof. Dang **Van Uy** 
Vietnam Maritime University, Hai Phong City, Vietnam
- Prof. Durk **van Willigen**, FRIN 
Reelektronika b.v., Reeuwijk, The Netherlands
- Prof. Carmen Ivelise **Van-Dúnem do Sacramento Neto dos Santos** 
Academia de Pesca e Ciências do Mar do Namibe, Angola
- Prof. Marc **Vantorre** 
Ghent University, Ghent, Belgium
- Prof. Dracos **Vassalos** 
University of Strathclyde, Glasgow, Scotland, United Kingdom
- Prof. Brian **Veitch** 
Memorial University of Newfoundland, St. John's, Canada
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Czech Technical University in Prague, Czech Rep.
- Prof. Tiedo **Vellinga** 
Delft University of Technology, Delft, The Netherlands
- Prof. George Yesu Vedha **Victor** 
Dharti Dredging and Infrastructure Ltd, Hyderabad, Andhra Pradesh, India
- Prof. Peter **Vidmar** 
University of Ljubljana, Slovenia
- Prof. Vladimir **Volkogon** 
Kaliningrad State Technical University, Kaliningrad, Russia
- Prof. Mario **Vultaggio** 
The University of Naples „Parthenope” Naples, Italy
- Prof. Peter **Wadhams** 
Cambridge University, United Kingdom
- Prof. Aleksander **Walczak**, Master Mariner 
Maritime University of Szczecin, Poland
- Prof. Jin **Wang** 
Liverpool John Moores University, Liverpool, The United Kingdom
- Prof. Jinling **Wang** 
University of New South Wales, Sydney, Australia
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Gdynia Maritime University, Gdynia, Poland
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Chairman of the Committee of Transport of the Polish Academy of Sciences 
Warsaw University of Technology, Warsaw, Poland
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Gdynia Maritime University, Gdynia, Poland
- Prof. Mariusz **Wąż** 
Polish Naval Academy, Gdynia, Poland
- Prof. Christiane **Weber** 
French National Centre for Scientific Research, Montpellier, France
- Prof. Robert **Weber** 
Vienna University of Technology, Vienna, Austria
- Prof. Adam **Weintrit**, FRIN, FNI, Fellow of TransNav, Master Mariner 
Gdynia Maritime University, Gdynia, Poland
- Prof. Yuanqiao **Wen** 
Wuhan University of Technology, China

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University of Warmia and Mazury in Olsztyn, Poland

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Gdynia Maritime University, Gdynia, Poland

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University of Southampton, The United Kingdom

Prof. Bernard **Wiśniewski** 
Maritime University of Szczecin, Poland

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Bremen University of Applied Sciences, Bremen, Germany

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Polish Naval Academy, Gdynia, Poland

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Shanghai Jiao Tong University, Shanghai, China

Prof. Yingjie **Xiao** 
Shanghai Maritime University, Shanghai, China

Prof. Min **Xie** 
City University of Hong Kong, Hong Kong

Prof. Hideo **Yabuki**, Fellow of TransNav 
Tokyo University of Marine Science and Technology, Tokyo, Japan

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Wuhan University of Technology, Wuhan, China

Prof. Byeong-Deok **Yea**, Master Mariner 
Korea Maritime and Ocean University, Busan, South Korea

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Florida Gulf Coast University Ft. Myers, Florida, The United States

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Maritime University of Szczecin, Poland

Prof. Elżbieta **Zaloga** 
University of Szczecin, Poland

Prof. Janusz **Zarębski** 
Gdynia Maritime University, Gdynia, Poland

Prof. Damir **Zec**, Master Mariner 
University of Rijeka, Rijeka, Croatia

Prof. Kefei **Zhang** 
SPACE Research Centre, RMIT University, Melbourne, Australia

Prof. Renping **Zhang** 
Dalian Maritime University, Dalian, China

Prof. Nesreen **Ziedan** 
Zagazig University, Zagazig, Egypt

Prof. Enrico **Zio** 
Politecnico di Milano, Milano, Italy

Prof. Francesco **Zirilli** 
University of Roma "La Sapienza", Roma, Italy

Honorary Committee:

Ms Jillian **Carson-Jackson** FNI, FRIN – President of The Nautical Institute, London

Prof. Adam **Weintrit** FNI, FRIN – Rector of the Gdynia Maritime University

Conference Hosts:

Prof. Adam **Weintrit** – Rector of the Gdynia Maritime University

Prof. Tomas **Neumann** – Dean of the Faculty of Navigation, Gdynia Maritime University

Prof. Ryszard **Wawruch** – Head of Department of Navigation, Gdynia Maritime University

Honorary Fellowship of TransNav

The 7th International Symposium on Marine Navigation and Safety of Sea Transportation TransNav 2007

jointly organized by the Faculty of Navigation of the Gdynia Maritime University and The Nautical Institute
Gdynia, 20 - 22 June 2007

Prof. Michał Holec	Poland	Prof. Kinzo Inoue	Japan
Prof. Mirosław Jurdziński	Poland	Prof. John Kemp	UK
Prof. Józef Urbański	Poland	Prof. Chaojin Shi	China
Prof. Władysław Rymarz	Poland	Prof. František Vejražka	Czech Rep.
Prof. Adam Weintrit	Poland	Prof. Ismail Deha Er	Turkey

The 8th International Symposium on Marine Navigation and Safety of Sea Transportation TransNav 2009

jointly organized by the Faculty of Navigation of the Gdynia Maritime University and The Nautical Institute
Gdynia, 17 - 19 June 2009

Prof. Daniel Duda	Poland	Prof. Vidal Ashkenazi	UK
Prof. Andrzej Felski	Poland	Prof. Knud Benedict	Germany
Prof. Jacek Januszewski	Poland	Capt. Richard Coates	UK
Prof. Ryszard Wawruch	Poland	Prof. Eamonn Doyle	Ireland
+Prof. Bernard Wiśniewski	Poland	Prof. Mykola Tsymbal	Ukraine

The 9th International Symposium on Marine Navigation and Safety of Sea Transportation TransNav 2011

jointly organized by the Faculty of Navigation of the Gdynia Maritime University and The Nautical Institute
Gdynia, 15 - 17 June 2011

Prof. Włodzimierz Filipowicz	Poland	Prof. Masao Furusho	Japan
Prof. Lucjan Gucma	Poland	Prof. Qinyou Hu	China
Prof. Tadeusz Kaczorek	Poland	Prof. Nikitas Nikitakos	Greece
Prof. Lech Kobyliński	Poland	Prof. Gyei-Kark Park	Korea
Prof. Józef Lisowski	Poland	Prof. Hideo Yabuki	Japan

**The 10th International Conference on Marine Navigation and Safety of Sea Transportation
TransNav 2013**

jointly organized by the Faculty of Navigation of the Gdynia Maritime University and The Nautical Institute
Gdynia, 19 - 21 June 2013

Prof. Wiesław Galor	Poland	Prof. Yasuo Arai	Japan
Prof. Krzysztof Kołowrocki	Poland	Prof. Avtandil Gegenava	Georgia
Prof. Zbigniew Pietrzykowski	Poland	Prof. Melchor Magramo	Philippines
Prof. Roman Śmierchalski	Poland	Prof. F.X. Martinez de Oses	Spain
Prof. Cezary Specht	Poland	Prof. Homayoun Yousefi	Iran

**The 11th International Conference on Marine Navigation and Safety of Sea Transportation
TransNav 2015**

jointly organized by the Faculty of Navigation of the Gdynia Maritime University and The Nautical Institute
Gdynia, 17 - 19 June 2015

Prof. Jerzy Czajkowski	Poland	Prof. Anatoli Alop	Estonia
Prof. Andrzej Grzelakowski	Poland	Prof. German de Melo	Spain
Prof. Andrzej Królikowski	Poland	Prof. Kazuhiko Hasegawa	Japan
Prof. Bogumił Łaczyński	Poland	Prof. Pentti Kujala	Finland
Prof. Andrzej Lenart	Poland	Prof. Evgeniy Lushnikov	Russia

**The 12th International Conference on Marine Navigation and Safety of Sea Transportation
TransNav 2017**

jointly organized by the Faculty of Navigation of the Gdynia Maritime University and The Nautical Institute
Gdynia, 21 - 23 June 2017

Prof. Krzysztof Czaplewski	Poland	Prof. Sauli Ahvenjärvi	Finland
Prof. Zbigniew Łukasik	Poland	Prof. Angelica Baylon	Philippines
Prof. Jerzy Mikulski	Poland	Prof. Tae-Gweon Jeong	Korea
Prof. Jerzy Rogowski	Poland	Prof. Takeshi Nakazawa	Japan
Prof. Henryk Śniegocki	Poland	Prof. Vladimir Torskiy	Ukraine

**The 13th International Conference on Marine Navigation and Safety of Sea Transportation
TransNav 2019**

jointly organized by the Faculty of Navigation of the Gdynia Maritime University and The Nautical Institute
Gdynia, 12 - 14 June 2019

Prof. Andrzej Banachowicz	Poland	Prof. Paolo Alfredini	Brazil
Prof. Zbigniew Burciu	Poland	Prof. Michael Baldauf	Germany
Prof. Andrzej Fellner	Poland	Prof. Tor Einar Berg	Norway
Prof. Jakub Montewka	Poland	Prof. Vitaliy Koshevyy	Ukraine
Prof. Marek Szymoński	Poland	Prof. Viktoras Senčila	Lithuania

Hevelius Award winner:

2019 Prof. Mirosław Jurdziński Poland

Ulysses Award winner:

2019 Capt. Szczepan Kowalewski Poland

Organising Committee:

Chairman: Prof. Dr. Adam Weintrit, Master Mariner, FNI, FRIN
Rector of the Gdynia Maritime University, Poland
Head of the Poland Branch of The Nautical Institute

Executive Chair of the TransNav Conference:

Prof. Tomasz Neumann
Dean of Faculty of Navigation, Gdynia Maritime University, Poland

Members: Mr. Andrzej Bomba, MSc, Head of Technical Committee

Dr. Piotr Kopacz
Mr. Ireneusz Meyer, MSc
Mr. Dariusz Krucki, BSc
Mrs. Maria Łozińska, MA
Mrs. Magdalena Zuzelska, MSc
Mrs. Dorota Rajmańska

Conference Co-Organizers:

Faculty of Navigation, Gdynia Maritime University

<https://transnav2021.umg.edu.pl>; <http://umg.edu.pl> <http://www.transnav.eu>

The Nautical Institute

<http://www.nautinst.org>;



*Prof. Dr. Adam Weintrit, Master Mariner, FRIN, FNI
Chairman of the Conference
Rector of the Gdynia Maritime University
Head of the Poland Branch of The Nautical Institute*

Opening Address for TransNav 2021

Message from Conference Chairman

Rector of the Gdynia Maritime University

Ladies and Gentlemen, Distinguished Guests, Dear Participants of TransNav 2021,

It is my pleasure and honour to welcome you to TransNav 2021, the 14th International Conference on Marine Navigation and Safety of Sea Transportation jointly organized by the Faculty of Navigation, Gdynia Maritime University and The Nautical Institute. Welcome to virtual Gdynia. I am glad that such a large group of stakeholders is ready today for a remote debate and exchange of views. Many thanks to everyone for participating.

The delegates are from over hundred institutions from many countries around the world (69): Algeria, Angola, Australia, Austria, Azerbaijan, Belgium, Brazil, Bulgaria, Canada, Chile, China, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, Estonia, Finland, France, Georgia, Germany, Ghana, Greece, Hong Kong, Hungary, India, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Latvia, Lebanon, Lithuania, Luxembourg, Malaysia, Malta, Montenegro, Netherlands, Nigeria, Norway, Oman, Panama, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Turkey, Ukraine, United Kingdom, United States, Venezuela, and Vietnam.

As you can see almost 70 countries are involved in TransNav 2021 as the Scientific Committee members, reviewers, authors of papers, presenters, moderators, panellists, chairmen, attendees, and our partners. Among us there are Presidents and Rectors of the Universities and Academies, deans of faculties, directors of institutes, heads of departments, scientists, researchers, professors, lecturers and students, master mariners, skippers and yachtsmen, representatives of international organizations, maritime administration, maritime institutions in higher education, universities and academies, institutes of navigation, professional and scientific societies, hydrographic, meteorological and oceanographic offices, space and maritime safety agencies, ports, transport and logistics companies, shipping industry, shipowners, navy, coastguards, classification societies, and marine manning agencies.

We really believed that it is possible to conduct the conference in a traditional way. Unfortunately, due to the ongoing coronavirus pandemic, we finally decided to organize the conference remotely. It will be the first time in our nearly thirty-year history. I would like to apologize to all conference participants that the Conference Programme appeared almost at the last minute. We had many internal discussions on how to organize it, and not to spoil the present position and role of the conference as well as not to cut off contacts with our former participants.

Due to the fact that the conference will be organized remotely, the current rules are of course changing. However, we know how to proceed. There will be plenary sessions, moderator-led discussions, oral presentations and poster sessions. Everything should be fine. We hope so.

To conclude, I believe that the 14th TransNav 2021 International Conference will serve as a good discussion platform for safety at sea, maritime security and protection of the maritime environment. I wish you an enjoyable and productive virtual visit to Gdynia. I wish all participants fruitful discussions!

With kindest regards,

*Prof. Dr. Adam Weintrit, Master Mariner, FRIN, FNI
Chairman of the Conference*



Captain **André L. LeGoubin**, MNM MA FNI
Senior Vice President – The Nautical Institute

André is currently employed as a Mooring Master in the lightering trade, undertaking underway ship-to-ship transfers of oil, offshore in the USA, and South America, having decided to return to sea in the summer of 2012 after over eight years ashore, working as a marine consultant in Houston, Texas.

He emigrated from the UK to the USA in January 2004, leaving the London Pilotage Service where he was a first class marine pilot. Before becoming a pilot, André was Master of high-speed ferries, initially hydrofoils, then mono- and multi-hull ro-ro/passenger vessels.

André's seagoing career formally (he left school with almost 6 months sea time!) began with Cunard Shipping Services Ltd. where he served as a deck officer in various ranks, gaining experience of a wide variety of vessels.

In 2013 he started his own company, DNA Marine, where he specializes in providing Expert Witness services to the maritime community based on his vast marine experience.

He holds a current Class 1 Master Mariner (Unlimited) certificate and in 2009 achieved a Pass with Distinction, MA Work Based Learning Studies (Marine Accident Investigation), from Middlesex University, London. Following on from his research degree, André wrote the book *Mentoring at Sea – The 10 minute challenge* which was published by the Nautical Institute in December 2012. He was elected a Fellow of the Nautical Institute in 2009.

In October 2013 André was awarded the British Merchant Navy Medal for services to the maritime industry and The Nautical Institute.

André and his Wife live in Florida, USA and have three adult children, all settled in various parts of the US.

Opening Address of the Senior Vice President of The Nautical Institute

It is with great pleasure that I join you all today from Florida, USA, at the opening of the 14th International Conference on Marine Navigation and Safety of Sea Transportation – TransNav 2021. On behalf of our President Jillian Carson-Jackson (who could not be here with you today), our Chief Executive Officer, Captain John Lloyd (who you will hear from a little later) and our 7,000 members, The Nautical Institute welcomes you online to Gdynia, Poland.

I know that many of you, like myself, will be disappointed not to be here in person at the wonderful Faculty of Navigation but, thanks to the technology that has significantly developed over the last 15 months and the skills that we have attained, we can still enjoy and take part in the conference from around the world. Having said that, it's not the same as meeting in person, is it? There is no doubt that we are moving in the right direction, and I hope, by 2023, to be with you all, together again as we share our knowledge and experience.

Perhaps some of you, especially our younger seafarers and members of the Maritime Community are thinking *“this is not for me – where do I fit in – I am not at the level to be able to contribute in the ‘most innovative world conference on maritime transport research’”*.

Let me take you back to 2008 when I was asked to submit a technical paper for presentation at TransNav 2009. At that time, I was just completing my MA studies at Middlesex University and I had plenty of research material to use so, I wrote my very first paper. It was accepted and in 2009 here I was, at this prestigious faculty, with some of the maritime world's leading global experts, with the President of The Nautical Institute, and completely out of my depth!

How did I cope? Well, I spoke about something I am passionate about, mentoring at sea and the transfer of experiential knowledge onboard ships, to prevent marine accidents. So, I say to those of you who are feeling like I did in 2009, seize that passion, believe in it and then share it.

For me, that is the most important thing, sharing your knowledge. All of you here today whether presenting or not, are passionate about something. Whether it be The Nautical Institute, seafaring, teaching the next generation of younger seafarers, your innovative work on safety at sea, an idea that you have had but is still in its infancy, or a myriad of other subjects that influence the Maritime Community. But the most important thing is that you chose to share your passion.

Thank you for your contribution, for your attendance and support, and I look forward to hearing of your future success which, like me, may have started here at TransNav.

Enjoy your conference.

Captain **André L. LeGoubin**, MNM MA FNI
Senior Vice President of The Nautical Institute



Prof. Tomasz Neumann
Dean of the Faculty of Navigation of the Gdynia Maritime University
Executive Chair of the TransNav Conference

Opening Address

Message from Dean of the Faculty of Navigation, GMU

Distinguished Guests, Ladies and Gentlemen,

It is my pleasure to welcome panelists, moderators, chairmen, speakers and all other participants to the 14th International Conference on Marine Navigation and Safety of Sea Transportation.

Hard times have come, the times of the COVID-19 pandemic that have changed our entire lives. We have moved to a large extent to the virtual world. We cannot meet at conferences or conventions, and most of the scientific events take place remotely. For the first time in our history, we are gathering virtually during the TransNav Conference. This is the first time in the nearly 30-year history of our conference. I hope that the virtual meetings will be a substitute for real meetings.

All papers approved by the Scientific Committee will be published in the TransNav journal. Some of them have already been published, you can find them on the journal's website. I would like to take this opportunity to invite you to publish in our journal. It is worth noting that the papers are indexed in such databases as Web of Science or Scopus.

As the Dean of the Faculty of Navigation of the Gdynia Maritime University, and on behalf of the Organizing Committee I would like to thank you for your participation. I hope that the broad spectrum of presented papers will allow the participation to obtain a wider view on the problems of marine navigation and safety of sea transportation and will provoke fruitful discussions on new trends.

I sincerely hope that during the next edition of the TransNav conference, we will be able to meet in June 2023 in Gdynia.

Prof. Tomasz Neumann
Dean of the Faculty of Navigation of the Gdynia Maritime University
Executive Chair of the TransNav Conference

14TH INTERNATIONAL CONFERENCE ON MARINE NAVIGATION AND SAFETY OF SEA TRANSPORTATION

TRANSNAV 2021

16-18 June 2021, Gdynia, Poland

PROGRAMME OVERVIEW

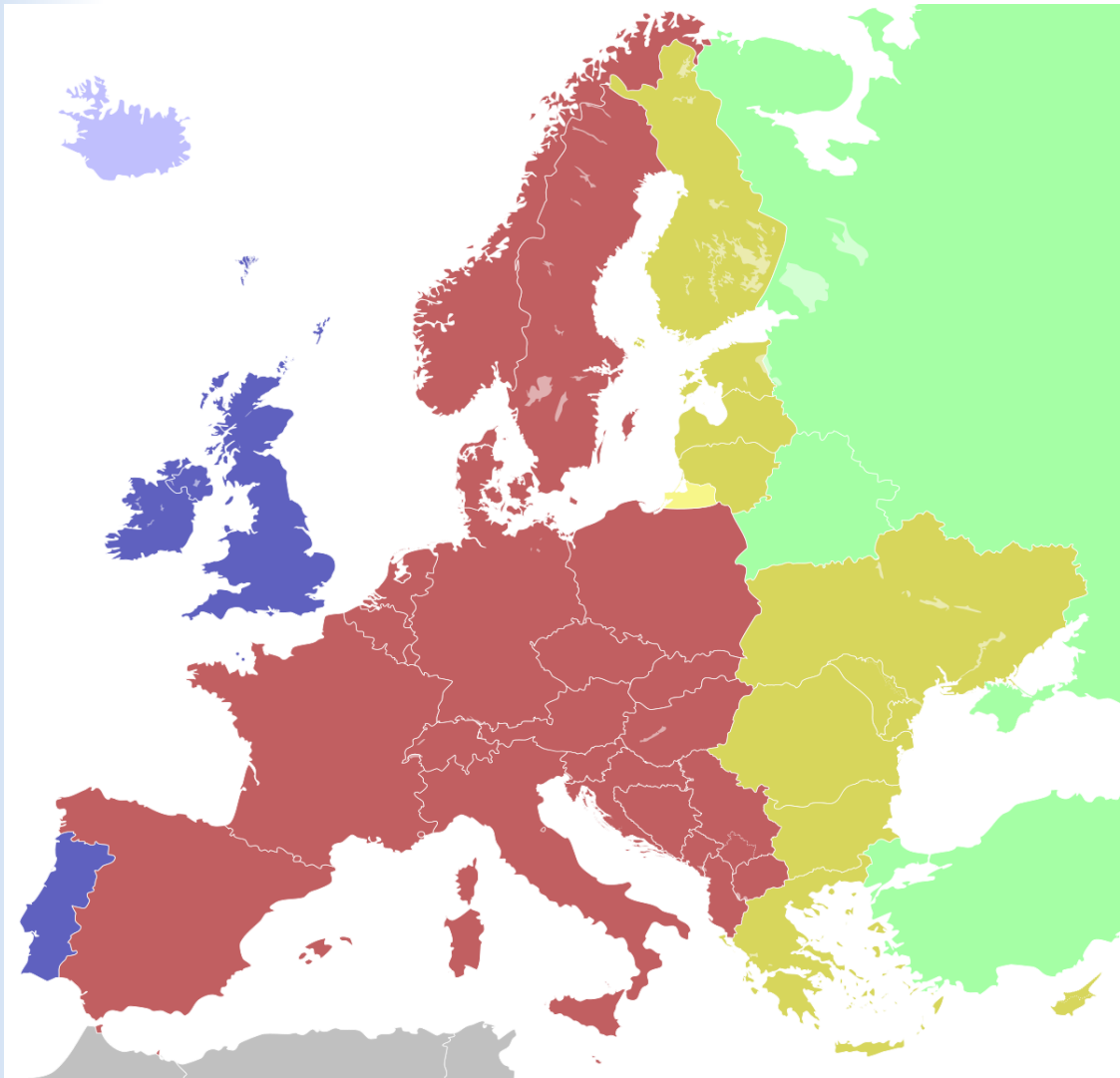
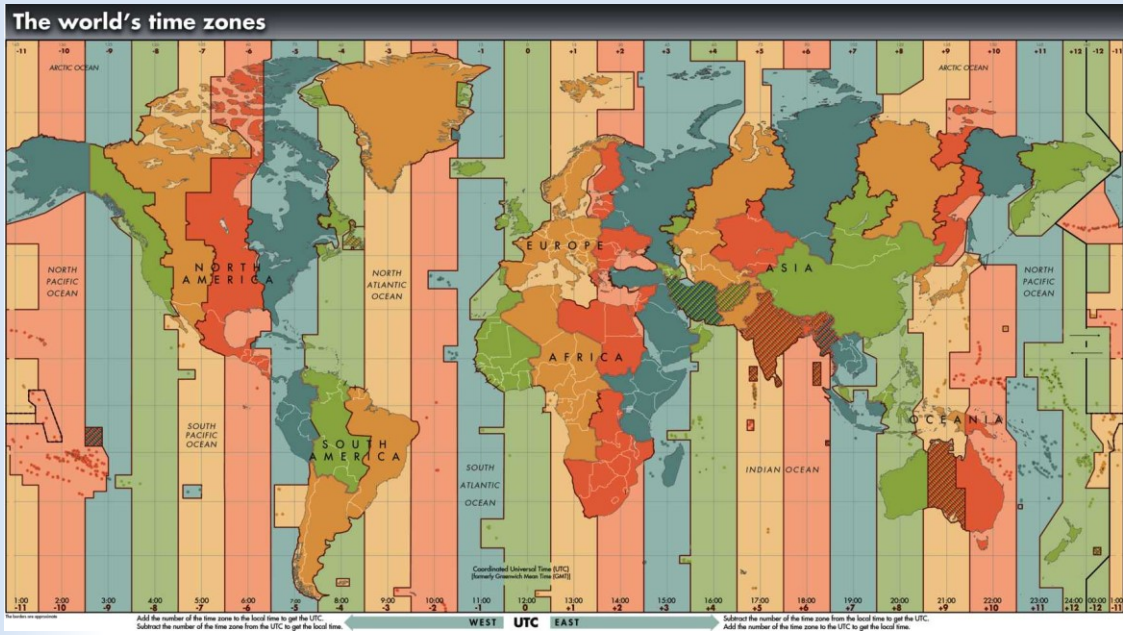
Note: All timing and papers are subject to change - please consult the 'News' and 'Program' pages of our website <https://transnav2021.umg.edu.pl> for the most up to date timetable.

Wednesday 16th June 2021	
0800-1100	Registration Webinar Registration Link: https://room.us/webinar/register/
1100-1200	Plenary Session A0 Opening Ceremony Presentations of DUVs and Herdus Awards winners TransNav Fellow ship nominations
1200-1215	Performance of Gdynia Maritime University's Choir under the direction of Dr. Karol Hillb
1215-1330	Plenary Session A1 Round Table Panel Session Autonomous Vessels - Autonomous Shipping
1330-1345	Technical Break Short Movie on Gdynia Maritime University
1345-1500	Session B1 Round Table Panel Session Maritime Safety and Security Communication
Poster Session N1 - Marine Navigation	

Thursday 17th June 2021	
0800-1100	Registration Webinar Registration Link: https://room.us/webinar/register/
1100-1215	Session B2 Round Table Panel Session Maritime Education & Training e-Navigation
1215-1230	Technical Break Short Movie on Gdynia
1230-1345	Session B3 Round Table Panel Session GANS Sea Transportation
1345-1400	Technical Break Short Movie on Pomerania
1400-1500	Session B4 Annual General Meeting of the Polish Branch of The Nautical Institute Search and Rescue (SAR)
Poster Session T1 - Safety of Sea Transportation	

Friday 18th June 2021	
0800-1100	Registration Webinar Registration Link: https://room.us/webinar/register/
1100-1215	Session B5 Round Table Panel Session Ship Manoeuvring Miscellaneous Maritime Problems
1215-1230	Technical Break Short Movie on Gdansk
1230-1345	Session B6 Round Table Panel Session Offshore Technology - Wind Farms Safety at Sea
1345-1400	Performance of Gdynia Maritime University's Choir under the direction of Dr. Karol Hillb
1400-1430	Plenary Session A2 Closing Ceremony Presentations of the Best Paper Awards winners

5 minutes before each session, there is time for logging in and technical issues.



All times used in the Conference Programme are set at Central European Summer Time.
Central European Summer Time = Polish Local Time = UTC + 2 Hrs

Wednesday 16th June 2021

0800 - 1100 Registration at Webinar Registration Link: <https://zoom.us/webinar/register/>

Plenary Session A0 - Opening Ceremony

- 1100 - 1200 <https://zoom.us/webinar/register/>
Chairmen: *André L. LeGoubin* (*The Nautical Institute*), *Adam Weintrit* (*Poland*)
- Welcome Address containing the words of the official opening of the Conference
Adam Weintrit, Chairman of the Conference, Rector of the Gdynia Maritime University
- Opening Address for TransNav 2021
André L. LeGoubin, Senior Vice President of The Nautical Institute on behalf of Ms Jillian Carson-Jackson, President of The Nautical Institute
- Opening Address
Tomasz Neumann, Dean of the Faculty of Navigation, Gdynia Maritime University
- Overview of the 14th International Conference on Marine Navigation and Safety of Sea Transportation TransNav 2021
Adam Weintrit, Chairman of the Conference
- Presentations of Ulysses and Hevelius Awards winners
Adam Weintrit, Chairman of the Conference
- Presentations of TransNav Fellowship nominations
Adam Weintrit, Chairman of the Conference
- 1200 - 1215 Performance of the Gdynia Maritime University's Choir under the direction of *Dr. Karol Hilla*

Plenary Session A1 – Round Table Panel Session Autonomous Vessels – Autonomous Shipping

- 1215 - 1330 <https://zoom.us/webinar/register/>
Moderators: *Rudy R. Negenborn* (*Netherlands*), *Cezary Łuczywek* (*Poland*)
- Distinguished Panellists:*
- Carlos **Barrera** (Spain)
- Carmen **Chirea-Ungureanu** (Romania)
- Hans-Christoph **Burmeister** (Germany)
- Carlos **Jahn** (Germany).
- Thomas **Porathe** (Norway)
- Discussion inspired by the following papers:
- Preparing for an Unknown Future. Autonomous Ships Versus Position of the ME/IMO SMCPs in Maritime Practice. How Are We Going to Solve this Problem?*
Chirea-Ungureanu Carmen (Romania)
- Modelling the Processes of Taking Over the Watch From an Autonomous Navigation System
Hochgeschurz Stephanie (Germany), **Dalinger** Elena (Germany), **Motz** Florian (Germany)
- Human-Automation Interaction for Autonomous Ships: Decision Support for Remote Operators
Porathe Thomas (Norway)

Trends and Challenges in Unmanned Surface Vehicles (USV): From Survey to Shipping
Barrera Carlos (Spain), **Padron Isidro** (Spain), **San Luis Felipe** (Spain), **Llinas Octavio** (Spain), **Marichal Nicolas** (Spain)

A Scalable Web-oriented Architecture for Deploying Multiple Unmanned Vehicles as a Service
Au Ching Nok (Hong Kong), **Delea Cosmin** (Romania), **Schneider Vincent Emanuel** (Germany), **Oeffner Johannes** (Germany), **Jahn Carlos** (Germany)

1330 - 1345 [Short movie on the Gdynia Maritime University](#)

Session B1 – Round Table Panel Session Maritime Safety and Security

1345 - 1500 <https://zoom.us/webinar/register/>
Moderators: **Srdan Žuškin** (Croatia), **Ryszard Wawruch** (Poland)

Distinguished Panellists:

David **Brčić** (Croatia),

Dimitrios **Dalaklis** (Greece)

Erlend **Erstad** (Norway)

Gary C. **Kessler** (United States)

Per Håkon **Meland** (Norway)

Discussion inspired by the following papers:

The CAN Bus in the Maritime Environment – Technical Overview and Cybersecurity Vulnerabilities

Kessler Gary C. (United States)

Overreliance on ECDIS Technology: A Challenge for Safe Navigation

Kristić Miho (Croatia), **Žuškin Srdan** (Croatia), **Brčić David** (Croatia), **Car Maro** (Croatia)

Ships' Routes to Polish Ports of the Gulf of Gdańsk

Wawruch Ryszard (Poland)

A Retrospective Analysis of Maritime Cyber Security Incidents

Meland Per Håkon (Norway), **Bernsmed Karin** (Sweden), **Wille Egil** (Norway), **Rødseth Ørnulf Jan** (Norway), **Nesheim Dag Atle** (Norway)

An Operational Approach to Maritime Cyber Resilience

Erstad Erlend (Norway), **Ostnes Runar** (Norway), **Lund Mass Soldal** (Norway)

Understanding the Interrelation between the Safety of Life at Sea Convention and Certain IMO's Codes

Guevara David (Ecuador), **Dalaklis Dimitrios** (Greece)

1500 **End of the first day of conference proceedings**

Session C1 – Oral Presentations Communication

1345 - 1500 <https://zoom.us/webinar/register/>
Moderators: **Sanja Bauk** (Montenegro), **Karol Korcz** (Poland)

Developments of Interface for VHF, MF/HF Communication Using DSC in GMDSS Services in the Framework of e-Navigation Concept

Koshevyy Vitaliy M. (Ukraine), Shyshkin Oleksandr (Ukraine),

SMART Digital Selective Calling User Interface on the Base of Integration Maritime Navigation and Radiocommunication Equipment

Koshevyy Vitaliy M. (Ukraine), Konovets Victor (Ukraine), Shyshkin Oleksandr (Ukraine)

Practical Communication Approach in Maritime English

Acar Ugurcan (Turkey), Varsami Corina (Romania)

Implementation of the Multifunctional Communication System for RIS Center Supporting Inland Navigation

Lisaj Andrzej (Poland)

Modelling the Logistics Cost, Time and Mode-choice Submodels Within the NOVIMOVE Framework **(to be confirmed)**

Shobayo Peter (Nigeria), Nicolet Adrien (Switzerland), van Hassel Edwin (Netherlands), Atasoy Bilge (Turkey), Vanelslander Thierry (Belgium)

1500

End of the first day of conference proceedings

Local Times

Tokyo, Japan

18:00 - 22:00



Beijing, China

17:00 - 21:00



Moscow, Russia

12:00 - 16:00



Gdynia, Poland

11:00 - 15:00



Paris, France

11:00 - 15:00



London, UK

10:00 - 14:00



New York, US

05:00 - 09:00



Los Angeles, US

02:00 - 06:00



Thursday 17th June 2019

0800 - 1100 Registration at Webinar Registration Link: <https://zoom.us/webinar/register/>

Session B2 – Round Table Panel Session Maritime Education & Training (MET)

1100 - 1215 <https://zoom.us/webinar/register/>
Moderators: *Eamonn Doyle (Ireland), Adam Przybyłowski (Poland)*

Distinguished Panellists:

Sauli **Ahvenjärvi** (Finland)

Inga **Bartuseviciene** (Lithuania)

Maria **Carrera Arce** (Spain)

Simone **Heirs** (Jamaica)

Johnny A. **Johannessen** (Norway)

Discussion inspired by the following papers:

Effective Learning from Safety Events Reporting Takes Two: Getting to the Root & Just Culture

Carrera Arce Maria (Spain), Baumler Raphael (France)

ISTLAB – New Way of Utilizing a Simulator System in Testing & Demonstration of Intelligent Shipping Technology and Training of Future Maritime Professionals

Ahvenjärvi Sauli (Finland), Löytökorpi Marko (Finland), Lahtinen Janne (Finland), Marva Meri-Maija (Finland)

Sustainable Maritime Career Development: A case for Maritime Education and Training (MET) at the Secondary Level

Heirs Simone (Jamaica), Manuel Michael Ekow (Ghana)

An Integrative Approach for Digitalization Challenges of the Future Maritime Specialists: A Case Study of the Lithuanian Maritime Academy

Bartuseviciene Inga (Lithuania), Valionienė Elena (Lithuania)

Tools for Optimizing Performance of VOYages at Sea

Johannessen Johnny A. (Norway), Perrin Adrien (France), Gaultier Lucile (France), Herlédan Sylvain (France), Pouplin Clément (France), Collard Fabrice (France), Maze Jean Pierre (France), Dussauze Morgan (France), Rapp Jocelyn (France), Fanebust Roar (Norway), Andersen Stein (Norway), Franks Oswald (South Africa), Meyer Rory (South Africa)

1215 - 1230 **Technical Break**

Session C2 – Oral Presentations e-Navigation

1100 - 1215 <https://zoom.us/webinar/register/>
Chairmen: *Pentti Kujala (Finland), Pawel Zalewski (Poland)*

Cross-Section of ECDIS Education and Training Worldwide and in the Republic of Croatia: Relations Between Programs and User Perceptions

Car Maro (Croatia), Tominca-Coslovich Sandra (Croatia), Brčić David (Croatia), Žuškin Srđan (Croatia)

Monitoring and Identification of DP Operators Behavioural Traits and Common Errors During Simulator Training

Bogachenko Yevgen (Ukraine), Pipchenko Oleksandr (Ukraine)

Identification of Weak Links in the ECDIS - Operator System Based on Simulator Training

Pipchenko Oleksandr (Ukraine), Burenkov Oleksandr (Ukraine), Tsybal Mykola (Ukraine), Pernykoza Viktor (Ukraine)

Design and Application of an Automated Smart Buoy in Increasing Navigation Safety and Environmental Standards in Ports

Bojic Filip (Croatia), Karin Ivan (Croatia), Juricevic Ivan (Croatia), Cipcic Marijan (Croatia)

BRAT: A BRidge Attack Tool for Cyber Security Assessments of Maritime Systems

Hemminghaus Christian (Germany), Bauer Jan (Germany), Padilla Elmar (Germany)

1215 - 1230

Technical Break

Session B3 – Round Table Panel Session Global Satellite Navigation System (GNSS)

1230 - 1345

<https://zoom.us/webinar/register/>

Moderators: *Manuel López-Martínez (Spain), Cezary Specht (Poland)*

Distinguished Panellists:

Samieh **Alissa** (Sweden)

Virginia **Antón** (Spain)

Renato **Filjar** (Croatia)

Rodrigo **González** (Spain),

Vitaliy M. **Koshevyy** (Ukraine)

Discussion inspired by the following papers:

Low Bandwidth Network-RTK Correction Dissemination for High Accuracy Maritime Navigation

Alissa Samieh (Sweden), Håkansson Martin (Sweden), Henkel Patrick (Germany), Mittmann Ulrich (Germany), Hüffmeier Johannes (Sweden), Rylander Robert (Sweden)

Modelling GPS Positioning Performance in Northwest Passage during Extreme Space Weather Conditions

Špoljar Darko (Croatia), Jukić Oliver (Croatia), Sikirica Nenad (Croatia), Lenac Kristijan (Croatia), Filjar Renato (Croatia)

GPS Synchronization of Audio Watermarks in the Maritime Automatically Identified Radiotelephony

Shyshkin Oleksandr (Ukraine), Koshevyy Vitaliy M. (Ukraine), Ryboshapka Igor (Ukraine)

EGNOS Performance Along Finnish Coast

González Rodrigo (Spain), Lacarra Elisabet (Spain), López-Martínez Manuel, (Spain), Heikonen Kaisu (Finland)

Evolution of SBAS/EGNOS Enabled Devices in Maritime

López-Martínez Manuel (Spain), Antón Virginia (Spain)

1345 - 1400 **Technical Break**

Session C3 – Oral Presentations Problems of Sea Transportation

1230 - 1345 <https://zoom.us/webinar/register/>

Chairmen: *Masao Furusho (Japan), Grzegorz Rutkowski (Poland)*

Ship-Cargo Interface: Concept of Optimization, Using Risk Assessment Methods and Modern Electronic Technologies

Sagaydak Alexander (Ukraine), Torskiy Vladimir (Ukraine)

Comparison of Problems Related to the Carriage of Goods by Sea Between Traditional and Autonomous Vessels

Pijaca Marija (Croatia), Bulum Božena (Croatia)

From Conventional to Machine Learning Methods for Maritime Risk Assessment

Rawson Andrew (United Kingdom), Brito Mario (United Kingdom), Tran-Thanh Long (United Kingdom), Sabeur Zoheir (United Kingdom)

Verification of a Deterministic Ship's Safe Trajectory Planning Algorithm from Different Ships' Perspectives and with Changing Strategies of Target Ships

Lazarowska Agnieszka (Poland)

Comparison of Multi-criteria Static Optimization Methods in Game Control of Ship

Lisowski Józef (Poland)

1345 - 1400 **Technical Break**

Session B4 – Annual General Meeting of the Poland Branch of The Nautical Institute

1400 - 1500 <https://zoom.us/webinar/register/>

Chairmen: *John Lloyd (United Kingdom), Adam Weintrit (Poland)*

This is an open meeting. Program distributed to members of the Poland Branch of the NI.

1500 **End of the second day of conference proceedings**

Session C4 – Oral Presentations Search and Rescue (SAR)

1400 - 1500 <https://zoom.us/webinar/register/>

Moderators: *Sauli Ahvenjärvi (Finland), Teresa Abramowicz-Gerigk (Poland)*

Modern Equipment of the Polish SAR Service During a Real Rescue Operation in the Baltic Sea Taking Into Account the Recommendations of the 3-volume IAMSAR Manual

Krajewska Paulina (Poland)

Changes in and Recent Experiences from Norwegian Emergency Towing Service (NETS)

Berg Tor Einar (Norway), Selvik Ørjan (Norway)

Analysis of Maritime Accidents in the Context of Demand for MoB MEDS the Mobile Base of the Marine Emergency Diving Service

Jurczyński Michał (Poland), Rutkowski Grzegorz (Poland)

An Automated Lifeboat Manifesting Embarkation System (ALMES): Optimizing Evacuation and Passenger Manifestation Via RFID/NFC
Andreadakis Antonios (Greece), Sloane Tabor Forrester (United States), Dalaklis Dimitrios (Greece)

1500

End of the second day of conference proceedings

Friday 18th June 2019

0800 - 1100 Registration at Webinar Registration Link: <https://zoom.us/webinar/register/>

Session B5 – Round Table Panel Session Ship Manoeuvring

1100 - 1215 <https://zoom.us/webinar/register/>
Moderators: *Michael Baldauf (Germany)*, *Piotr Kopacz (Poland)*

Distinguished Panellists:

Tor Einar **Berg** (Norway)

Robert **Grundmann** (Germany)

Rafael **Esferra** (Brazil)

Marc **Mansuy** (Belgium)

Igor **Surinov** (Ukraine) (to be confirmed)

Discussion inspired by the following papers:

Remote-Controlled Tug Operation via VR/AR: Results of an In-Situ Model Test
Byeon Seongsu (South Korea), *Grundmann Robert (Germany)*, *Burmeister Hans-Christoph (Germany)*

Nautical Access Study Based On Real Time Bird's Eye View Simulation
Mansuy Marc (Belgium), *Candries Maxim (Belgium)*, *Eloot Katrien (Belgium)*

Manoeuvring Study – Norwegian Double-Ended Ferry
Berg Tor Einar (Norway), *Selvik Ørjan (Norway)*, *Steinsvik Kristian (Norway)*, *Leinebo Daniel (Norway)*

Simulation in Reduced Scale Hydraulic Models of the Mooring System of Ships Docked Under the Effect of the Passage of Other Vessels (Passing Ship)
Esferra Rafael (Brazil), *Bernardino José Carlos de Melo (Brazil)*, *de Oliveira Bezerra Roberto (Brazil)*, *Pion Lucas Martins (Brazil)*

Algorithms and Calculation Scheme for Planning the Way of Movement of Trajectory Point During Maneuvering for Anchoring (to be confirmed)
Surinov Igor (Ukraine)

1215 - 1230 **Technical Break**

Session C5 – Oral Presentations Miscellaneous Maritime Problems

1100 - 1215 <https://zoom.us/webinar/register/>
Chairmen: *Nikitas Nikitakos (Greece)*, *Krzysztof Wróbel (Poland)*

Differentiable Programming for the Autonomous Movement Planning of a Small Vessel
Bahls Christian (Germany), *Schubert Agnes (Germany)*

Impact of Defective Turbocharging System on the Safety and Reliability of Large Marine Diesel Engine

Anantharaman Mohan (Australia), Islam Rabiul (Australia), Sardar Abdullah (Australia), Khan Faisal (Australia), Garaniya Vikram (Australia)

Seafarers' Wellbeing or Business, a Complex Paradox of the Industry
Tetemadze Badri (Georgia)

Tools for Supporting Mental Health Surveillance of Sea Workers
Dramski Mariusz (Poland)

Impact of Hydrotechnical Structures on Forming the Tombolo Oceanographic Phenomenon in Kołobrzeg and Sopot
Specht Cezary (Poland), Lewicka Oktawia (Poland), Specht Mariusz (Poland), Zblewski Sławomir (Poland)

1215 - 1230 **Technical Break**

Session B6 – Round Table Panel Session Offshore Technology - Offshore Wind Farms

1230 - 1345 <https://zoom.us/webinar/register/>
Moderators: *Wolfgang Lukas (Germany), Sławomir Kalicki (Poland)*

Distinguished Panellists:

Juliusz **Gajewski** (Poland)

Nourhan I. **Ghoneim** (Oman)

David Salvador **Sanz Sánchez** (Spain)

Maciej **Sobieraj** (Poland)

Simon J. **Watson** (Netherlands)

Discussion inspired by the following papers:

Risk Assessment Approaches for Offshore Structures
Shouman Mohamed R. (Egypt), Ghoneim Nourhan I. (Oman), El-Khatib Mostafa (Egypt), El-Khatib Ahmed (Egypt)

Bioactive Ceramic Coating Solution for Offshore Floating Wind Parks
Sanz Sánchez David Salvador (Spain), García Sergio (Spain), Trueba Laura (Spain), Trueba Alfredo (Spain)

1345 - 1400 **Technical Break**

Session C6 – Oral Presentations Safety at Sea

1230 - 1345 <https://zoom.us/webinar/register/>
Chairmen: *Tor Einar Berg (Norway), Przemysław Wilczyński (Poland)*

Methodology for the Development of Parameters for the Navigational Safety Risk Assessment Model in Port Approaches
Bojic Filip (Croatia), Bosnjak Rino (Croatia), Gudelj Anita (Croatia), Lušić Zvonimir (Croatia)

Which Radar and ECDIS Functionalities Do Nautical Officers Really Need in Certain Navigational Situations?

Hochgeschurz Stephanie (Germany), **Motz** Florian (Germany), **Grundmann** Robert (Germany), **Thiele** Lerke (Germany)

Estimation of Changes in Marine Traffic Flow Due to Installation of Virtual Buoys Based on the OZT Method

Fukuda Gen (Japan), **Tamaru** Hitoi (Japan), **Shoji** Ruri (Japan)

Development of Precise Point Positioning Algorithm to Support Advanced Driver Assistant Functions for Inland Vessel Navigation

Lass Christoph (Germany), **Ziebold** Ralf (Germany)

Assessment of the Concept of the New Methodology for the Evaluation of Ship Planned Maintenance System

Stanivuk Tatjana (Croatia), **Stazić** Ladislav (Croatia), **Vidović** Frane (Croatia), **Bratić** Karlo (Croatia)

1345 - 1400 **Technical Break**

Plenary Session A2 - Closing Ceremony

1400 - 1430 <https://zoom.us/webinar/register/>
Chairmen: **John Lloyd** (The Nautical Institute), **Adam Weintrit** & **Tomasz Neumann** (Poland)

1400 - 1415 Handing out prizes: the Best Paper Award, and the Best Poster Award

1415 - 1430 Closing Speech
Adam Weintrit, Chairman of the Conference
John Lloyd, CEO of The Nautical Institute

1430 **End of the third day of conference proceedings**

POSTER SESSIONS

Session P1 - Miscellaneous Problems of Marine Navigation

- N1** - Determining Competences in MET of Ship Officers
Gundić Ana (Croatia), Županović Dino (Croatia), Grbić Luka (Croatia), Barić Mate (Croatia)
- N2** - Wind Influence on Ship Manoeuvrability – a Turning Circle Analysis
Novaselić Marko (Croatia), Mohović Robert (Croatia), Barić Mate (Croatia), Grbić Luka (Croatia)
- N3** - Learning to Swim – How Operational Design Parameters Determine the Grade of Autonomy of Ships
Ugé Constance (Germany), Hochgeschurz Stephanie (Germany)
- N4** - Simulation Model of Ships Artillery Shooting
Mihanović Luka (Croatia), Nakić Ivan (Croatia), Ristov Pančo (Croatia), Dojkić Damir (Croatia)
- N5** - Analysis of the Relationship of Energy Flows in a Vessel's Power Plant
Veretennik Oleksandr (Ukraine), Kulyeshov Igor (Ukraine), Mikhailov Sergey (Ukraine)
- N6** - A Concept Explanation on the Development of Wheel Over Point Mathematical Model for Efficient Course Alteration
Kamis Amir Syawal (Malaysia), Ahmad Fuad Ahmad Faizal (Malaysia)
- N7** - Reducing a Human Factor in Cruise Ships Accidents by Improving Crew Competences
Gundić Ana (Croatia), Vujičić Srđan (Croatia), Maglić Lovro (Croatia), Grbić Luka (Croatia)
- N8** - Port Tugboat Formation Multi-Agent Control System
Koznowski Wojciech (Poland), Lebkowski Andrzej (Poland)
- N9** - Determination of the Cruise Vessels Seasonal Pattern in Eastern Adriatic
Stanivuk Tatjana (Croatia), Mišura Antonija (Croatia), Stazić Ladislav (Croatia), Štolfa Ivan (Croatia)
- N10** - Stockholm Agreement Analysis for Ro-Ro Passenger Ships Navigating in the North European Waters and the Baltic Sea
Szymoński Marek (Poland)
- N11** - Minimizing the Number of Ice Channels Given the Increased Traffic in the Ob Bay as an Example
Andreev Oleg (Russia), Buzin Igor V. (Russia), Gudoshnikov Yurii P. (Russia), Vinogradov Roman (Russia)
- N12** - Prediction of Wetland Loss Due to Sea Level Rise Around the Largest Port Area in Latin America
Alfredini Paolo (Brazil), Arasaki Alfredini Emilia (Brazil)
- N13** - Combined Method of Sight Reduction
Buslă Alina (Romania)
- N14** - Modified Integer Model for Solving the Master Bay Problem
Tsymbal Mykola (Ukraine), Kamieniev Kyrylo (Ukraine)
- N15** - Analysis of Wind and Drifter Movement Parameters in the Surface Water on the Example of the Szczecin Lagoon
Kasyk Lech (Poland), Pleskacz Krzysztof (Poland), Kijewska Monika (Poland), Kapuściński Tomasz (Poland)
- N16** - Using Neural Networks to Recover Lost Measurement Data from the AIS System in Order to Recreate the Trajectory of a Moving Floating Object
Dramski Mariusz (Poland)

- N17** - Use of Fuzzy Fault Tree Analysis and Noisy-OR Gate Bayesian Network for Navigational Risk Assessment in Qingzhou Port
Zhao Congcong (China), Wu Bing (China), Yip Tsz Leung (Hong Kong), Li Jieyin (China)
- N18** - Modelling the Effectiveness Index of Digital Marketing Strategy Oriented to Increase the Popularity of Maritime Education
Mickienė Rima (Lithuania), Valionienė Elena (Lithuania)
- N19** - Case Study and the Model for Improving the Safety of Navigation when Using the AIS
Medić Dario (Croatia), Bukljaš Mihaela (Croatia), Bosnjak Rino (Croatia), Vukša Srđan (Croatia)

Session P2 - Miscellaneous Problems of Transport

- T1** - Estimating Shipping Emissions – A Case Study for Cargo Port of Zadar, Croatia
Knežević Vlatko (Croatia), Pavin Zoran (Croatia), Čulin Jelena (Croatia)
- T2** - The Development of a Combined Method to Quickly Assess Ship Speed and Fuel Consumption at Different Powertrain Load and Sea Conditions
Krata Przemyslaw (Poland), Kniat Aleksander (Poland), Vettor Roberto (Portugal), Krata Hubert (Poland), Guedes Soares Carlos (Portugal)
- T3** - Study of Ship Oil Products Properties by NMR and Optical Spectroscopy
Sinyavsky, Nikolay (Russia)
- T4** - Hygroscopic Properties of Green Coffee Transported by Sea
Ruszkowska Millena (Poland), Dmowski Przemyslaw (Poland), Urbanowicz Krzysztof (Poland)
- T5** - Safety of Rail-road Crossings at the Hinterland of the Port of Gdynia
Nowakowski Mirosław (Poland)
- T6** - Analysis of Changes on the National Road GP15, Comparison of Traffic Parameters for Various Planned Traffic Organization Plans
Ziemska Monika (Poland), Ujazdowski Szymon (Poland)
- T7** - Near-Miss Reporting as Seen from Seafarers' Perspective
Hasanspahić Nermin (Croatia), Frančić Vlado (Croatia), Vujičić Srđan (Croatia), Maglić Lovro (Croatia)
- T8** - Construction and Analysis of Mathematical Models of Hydrodynamic Forces and Moment on the Ship's Hull Using Multivariate Regression Analysis
Kryvyi Olexandr (Ukraine), Miyusov Mykhaylo V. (Ukraine)
- T9** - Estimation of LNG Use by Sea-going Ships
Chłopińska Ewelina (Poland), Tatesiuk J. (Poland), Śnieg J. (Poland)
- T10** - Distribution of the International Marine Traffic Air Pollutant Emissions in the Port of Split
Mihanović Luka (Croatia), Lalić Branko (Croatia), Bratić Karlo (Croatia), Stazić Ladislav (Croatia)
- T11** - Determination of the Loading of the Carrying Structure of a Tank Wagon During Transportation by a Railway Ferry
Fomin Oleksij (Ukraine), Vatulia Glib (Ukraine), Lovska Alyona (Ukraine), Gerlici Juraj (Slovakia), Kravchenko Kateryna (Slovakia)
- T12** - Stability Study of Tank Containers Placed on a Roll-Trailer During Transportation by Railway Ferry
Fomin Oleksij (Ukraine), Vatulia Glib (Ukraine), Lovska Alyona (Ukraine), Gerlici Juraj (Slovakia), Kravchenko Kateryna (Slovakia)
- T13** - Selected Quality Characteristics of Sea Salt Important During Transport and Storage

Śmiechowska Maria (Poland), Ruszkowska Millena (Poland)

- T14** - An Influence of Fouling Gathered on the Heat Transfer Surfaces on the Heat Performance Characteristics of the Ship Steam Systems' Heat Exchangers
Hajduk Tomasz (Poland)
- T15** - A Small Wind Turbine Output Model for Spatially Constrained Remote Island Micro-Grids (to be confirmed)
Žigman Dubravko (Croatia), Meštrović Krešimir (Croatia), Tomiša Tomislav (Croatia)
- T16** - Invariant subspaces of fractional discrete-time linear systems
Kaczorek Tadeusz (Poland), Sajewski Łukasz (Poland)
- T17** - Measuring the Voltage of a Three-Phase Circuit in a Generator Set Control System
Vyshnevskiy Leonid (Ukraine), Mukha Mykola (Ukraine), Vyshnevskiy Oleh (Ukraine), Vyshnevskiy Dmitro (Ukraine)
- T18** - The Impact of a Constant, Homogeneous Magnetic Field on the Sorption Properties of Soybean Meal During Maritime Transport
Ocieczek Aneta (Poland), Kaizer Adam (Poland), Otremba Zbigniew (Poland)
- T19** - Certification of Unmanned Aircraft (UA)
Pettke Grzegorz (Poland), Kozyro Wojciech (Poland), Galka Przemysław (Poland), Trzeciak Grzegorz (Poland), Wolejsza Piotr (Poland)
- T20** - Changes in International Legal Regulations Concerning the Protection of the Marine Environment
Śniegocka-Dworak Magda (Poland), Wilczyńska Aleksandra (Poland), Śniegocki Henryk (Poland)



Gdynia (German: *Gdingen*; 1939-1945 *Gotenhafen*) is a city in the Pomeranian Voivodeship of Poland and an important seaport of the Gulf of Gdańsk on the south coast of the Baltic Sea. Located in Kashubia in Eastern Pomerania, Gdynia is part of a conurbation with the spa town of Sopot, the city of Gdańsk and suburban communities, which together form a metropolitan area called the Tricity (*Trójmiasto*), with a population of over a million people. Gdynia is a relatively modern city. Its architecture includes the 13th century St. Michael the Archangel's Church in Oksywie, the oldest building in Gdynia, and the 17th century neo-Gothic manor house located on Folwarczna Street in Orłowo. The city also holds many examples of early 20th century architecture, especially monumentalism and early functionalism, and modernism. A good example of modernism is PLO (Polish Ocean Lines) building situated at 10 Lutego Street.

The surrounding hills and the coastline attract many nature lovers. A leisure pier and a cliff-like coastline in Kępa Redłowska, as well as the surrounding Reservation Park, are also popular locations. In the harbour, there are two anchored museum ships, the *ORP Błyskawica* destroyer and the *Dar Pomorza* tall ship frigate. A 1.5 kilometre long promenade leads from the marina in the city centre, to the beach in Redłowo. Most of Gdynia can be seen from Kamienna Góra (54 metres above sea level). The decision to build a major seaport at the Gdynia village was made by the Polish government in 1920. Construction of Gdynia seaport was started in 1921. Till the end of 1930 docks, piers, breakwaters and many auxiliary and industrial installations were constructed or started. In 1938 Gdynia was the largest and most modern seaport on the Baltic Sea, as well as the tenth biggest in Europe. The city was constructed later than the seaport. In 1925 a special committee was inaugurated to build the city; city expansion plans were designed and city rights were granted in 1926. The city started to grow significantly after 1928.



Gdynia today is poised at an interesting stage in its development, riding on the crest of Poland's economic reforms. With a population of over 250,000 and one of the most buoyant economies in the whole of Poland, Gdynia is certainly going places, and it can no longer be dismissed as the grey counterpart of neighbouring Gdansk and Sopot. Certainly, it has none of the flamboyant sweep of its neighbours. Gdynia has plenty of tricks up its sleeve. And belying its reputation as a business hub, Gdynia is certainly no pauper when it comes to cultural attractions. The city can boast one of the country's top film festivals (often dubbed the 'Polish Cannes').



Statement of Scientific Committee

Qualified and approved papers not included in the Conference Programme for various reasons, which will not be presented at the Conference, but will be published in the TransNav Journal:

Case Study of Compare Maritime and Ocean Educational Style for Under MET

Takimoto Tomoki (Japan)

Influence of Mutual Position of Communication Network Users on Accuracy of Positioning by Telemetry Method

Džunda Milan (Slovakia), Džurovčin Peter (Slovakia)

Analysis of Dynamic Characteristics of Selected Pneumatic Systems with Fractional Calculus. Simulation and Laboratory Research

Luft Mirosław (Poland), Pietruszczak Daniel (Poland), Krzysztozek Konrad (Poland), Nowocień Artur (Poland)

Model of the Motion of a Navigation Object in a Geocentric Coordinate System

Džunda Milan (Slovakia)

Methods of Prevention of Devices Misoperation in DC Auxiliary Circuits

Olszowiec Paweł (Poland)

Garbage Truck Operation in an Urban Area

Olszowiec Paweł (Poland)

Intercept Method Using Sin Hc Formula

Buslă Alina (Romania)

Fix Position Using Two Astronomical Line of Position

Buslă Alina (Romania)

Validation of a Flow Channel to Investigate Velocity Profiles of Friction-Reducing Ship Coatings

Weisheit Jonathan (Germany), Schneider Vincent Emanuel (Germany), Serr J.M. (Germany), Hagemeister Nils (Germany), Oeffner Johannes (Germany)

Simple Proof of Incorrectness of the Formula Describing Aliasing and Folding Effects in Spectrum of Sampled Signal in Case of Ideal Signal Sampling

Borys Andrzej (Poland)

Maritime Delimitation in the Baltic Sea: An Update

Franckx Erik (Belgium)

Influence of Cruise Ship Size on Length of Stay in Port

Juric Zdeslav (Croatia), Bratić Karlo (Croatia), Dobrota Đorđe (Croatia), Štolfa Ivan (Croatia)

Pre-approved papers not covered by the Conference Programme, which were officially withdrawn by the authors for various reasons and therefore will not be presented at the Conference:

Study the Effects of Exposure to Different Doses of X-ray on Some Blood Rheological Properties

El-Khatib Ahmed (Egypt), El-Khatib Mostafa (Egypt), Ghoneim Nourhan I. (Egypt), Shouman Mohamed R. (Egypt)

Behavior of Sea Level in the Period from 1980 to 2017 on the Gulf of Maranhão, Brazil

Alfredini Paolo (Brazil), Arasaki Alfredini Emilia (Brazil), Fortner Eric (Brazil)

Main Areas of the TransNav Conference Interests:

- Nautical Science; Marine Navigation; Current Practical Applications, Developments and Deployments of Positioning, Navigation and Timing (PNT) Systems
- Safety and Security of Maritime Shipping; Safety at Sea; Role and Importance of Safety in Maritime Transportation; Global Cooperative Interoperability
- Sea Transport and Transportation Technology; Technological Advances in Maritime Transportation; Advanced Application and Future Developments
- Growing Sustainability Challenges in the World's Oceans; Ocean Research and Governance; Technology Development in Maritime and Ocean Engineering
- Safety and Environment Protection at Sea; Health, Safety and Environment Protection Policy; Ocean Sustainability, Governance and Management; Green Production
- Global Shipping Industry; Recent Trends and Future Perspectives for Maritime Shipping; Emerging Technologies; Civil Protection and Disaster Management
- Geodetic, Hydrographic and Navigational Support of Human Activity at Sea; Human Impacts on the Ocean; Safety of Life at Sea; Human Element in Shipping
- Essential Geodesic based Trajectories in Navigation: Loxodrome (Rhumb Line), Orthodrome (Great Circle), Great Ellipse and Geodesic Line; Oblate Spheroid
- Geometry of Navigation; Computational Geometry in Navigation and Path Planning; Surface Navigation; Meridian Convergence; Direct and Inverse Problems
- Geodesy; Geodetic Systems; World Geodetic System WGS-84; Land Surveying; Geodetic Surveying and the Adjustment of Observations; Plane Survey
- Hydrography; Sea Surveying; Hydrographic Service; Hydrographic Survey Methods and Equipment; Sounding; Processing and Sharing of Geospatial Data
- Marine Cartography; Chart Projections; Chart Datum; Coastal and Ocean Mapping; Hydrographic Survey Map; Simultaneous Localization and Mapping (SLAM)
- Geospatial Sciences; Geographic Information Systems (GIS); GIS Technology; Geoinformatics; Geomatics and GIS in Maritime Applications; GIS Software
- Spatial Data Analysis; General Bathymetric Chart of the Oceans (GEBCO); Mobile Mapping Technologies (MMT); Virtual, Artificial and Augmented Reality
- Geovisualization; Animated and Dynamic Cartography; Generalization and Multi-Scale Representation; Marine Data Presentation, Plotting, Charting, Mapping
- Earth Observation; Application of Integrated Interactive Media to Mapping and Visualizing Geographical Information; Global Ocean Observing System (GOOS)
- Spatial Planning of Maritime Areas; Maritime Spatial Planning Directive; Marine Protected Areas (MPA); Earth and Marine Sciences (EMAS); Marine Spatial
- Remote Sensing Applications in Marine Science and Technology; Global Monitoring for Environment and Security (GMES); Monitoring the Oceans from Space
- Earth Information Science; Geophysics; Geodynamics; Geoscience; Environmental Science and Geography; Virtual Geographic Environments (VGE);
- Marine Digital Terrain Model; Marine Digital Elevation Model; Numerical Maps; Marine Geospatial Data; Terrain Models of the Seabed; 3D Mapping
- Electronic Chart Display and Information System (ECDIS); Electronic Chart System (ECS); Electronic Navigational Charts; Chartplotters; Digital Mapping
- Nautical Charts and Publications; Navigational Charts: SNC, ENC, RNC, DNC, 3DNC; Nautical Charts Production; Admiralty Maritime Products and Services
- Inland, Sea-River, River and Pilot Navigation Systems; Inland Shipping; Canals and Inland Waterways; River Information Services (RIS); Inland ECDIS

- Maritime Safety Information; Presentation of Navigation-Related Information; User Interface; Navigational System Receiver; Multi-Functional Display (MFD)
- Phases of Navigation; Routing of Ships and Associated Protected Measures; Ship Reporting; Traffic Separation Schemes (TSS); Waterways Design;
- Route Planning and Route Monitoring; Voyage (Passage) Planning; Ship's Routing; Ocean Routes; Optimization of Navigation Trajectory; Shipping Lane
- Integrated Navigational Systems INS; Integrated Bridge Systems IBS; Integrated PNT Technology; Electronic Navigation; Portable Pilot Unit (PPU)
- Multisensor Integration; NMEA Standards; NMEA Protocol; NMEA Interface; Communication Between Marine Electronics; Radio Communication
- Inertial Navigation; Multi-Sensor Navigation; Indoor Wayfinding; Urban Navigation; Pedestrian Navigation; Personal Navigation; Underground Mine Navigation
- Orienteering; Inertial Systems for Positioning & Orientation; Sensor Based Navigation: Optical Processing, Sensor Fusion, Multiconstellation GNSS
- Remotely Operated Vehicle (ROV); Autonomous Navigation (Car, Boat, UAV, USV, UMV, ASV, AGV); Maritime Drones: Flying, Swimming and Diving
- e-Navigation Concept; Strategy for the Development and Implementation of e-Navigation; Maritime Service Portfolios (MSPs); Data Communication
- Global Satellite Navigation Systems GNSS (GPS, GLONASS, Galileo, BeiDou, QZSS, IRNSS); GNSS Vulnerabilities; Embracing the Multi-GNSS Era
- Satellite Geodesy; Active Geodetic Networks; GNSS Ground Based Augmentation Systems (GBAS); Space Based Augmentation Systems (SBAS); MSAS
- Emerging Application Areas for GNSS; GNSS Interference, Jamming and Spoofing; Cyber Attacks; Next Generation GNSS; GNSS Receiver Development
- GNSS Training, Awareness and Promotion; Multi-GNSS Receivers and Emerging Navigation Satellite Systems; DGNSS, GNSS Hardware Technology; eGNSS
- GNSS Meteorology; Space Weather and Atmospheric Effects on GNSS; GNSS Environmental Sensing; GNSS Earth Observation; Robust GNSS Services
- Integration of Satellite Navigation, Geospatial Information Management and Wireless Communication Systems; Wireless and Optical Communications
- PNT (Positioning, Navigation, and Timing); Time and Navigation; Clocks Technology and Timing Applications; Resilient PNT; Time and Frequency Transfer
- Astronomy; Planetary Science; Astro Navigation; Nautical Almanac; Celestial Navigation: Formulas and Calculations; Planetarium and Space Observatory
- Nautical Equipment, Appliances, Tools, Instruments and Accessories; Marine Converters and Calculators; Instrumentation; Vintage Navigation Tools
- Earth Magnetism; Magnetic Compass; Gyroscope; Mechanical, Fiber Optic and Ring Laser Gyro Compasses; Vintage Marine Compasses; Pelorus; ePelorus
- Radio Frequency Technology; Radio Based Navigational Systems; Radio Navigation; Long-Range Navigation System (LRNS); Enhanced Loran - eLoran
- Deep Space Navigation; Target-Relative Navigation; Radiometric Tracking Technique; Navigating in Deep Space; Deep-Space Positioning System (DPS)
- Determining the Ship's Position; Position Fixing; Accuracy and Precision; Accuracy Standards for Navigation; Application of Kalman Filter to Estimate Position
- Terrestrial Navigation; Pilotage & Dead Reckoning (DR); Navigational Infrastructure; AtoN; Virtual Aids to Navigation; AIS AtoN (Real, Synthetic and Virtual)
- Precise Point Positioning (PPP); Real-Time Kinematic (RTK) Positioning; Location-Based Services (LBS); Positioning Infrastructure; Alternatives to GNSS
- Vision, Lidar, and Inertial Technologies for GNSS-Denied Navigation; Augmented Reality and Navigation; Electronic Position Fixing System (EPFS)

- Real-Time Locating System (RTLS); Ranging and Angulating; Multilateration (MLAT); European Geostationary Navigation Overlay Service (EGNOS)
- Dynamic Carrier Allocation Techniques; Mobile Positioning and Tracking; Localization Techniques; Satellite and Terrestrial Radio Positioning Techniques
- Vision Based Localization; Next Generation 3D Network Localization, Tracking, and Navigation; Mobile Data Management for Location-Based Services
- Automation Aspects in Transport and Navigation; Informatics in Control, Automation and Robotics; Optimization Methods; Wayfinding; Path Finding
- Techniques, Algorithms and Methods in Navigation; Deep Space, Aviation, Marine, Offshore, Underwater, Land, Urban and Inland Water Applications
- Maritime Casualties, Ship Safety, Maritime Risk, Safety Culture; Maritime Safety Culture in Digitalization; Design for Safety; Eye Tracking Glasses
- Safety of Ships and Port Operations; Facilities & Cargo Handling; Marine Cranes; Port Management; Warehouses & Cargo Storage; Ship-to-Ship Cargo Transfer
- Status and Role of Sea Ports in Transport Corridors; Marinas, Ports and Harbours Development; Seafront Wharf Structures; Green Port and Shipping
- Cargo Work: Loading, Discharging and Stowing Cargo; Stowage Plan; Cargo Surveying; Draught Survey; Carriage of Cargoes; Transport of Commodities
- Commodity Science; Dangerous and Hazardous Goods; IMDG Code; Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
- Containerization; Container Shipping, Vessels and Terminals; TEU & FEU; Container Tracking; Safe Transport of Containers by Sea; Container Lashing
- Liquefied Natural Gas (LNG): Fuel, Stock, Market, Storage, Process, Transport, Vessels, Terminals, Containers, Stations, Companies, Stakeholders, Procedures
- Hydrotechnics; Hydrotechnical Infrastructure; Hydrotechnical Structures and Constructions: Power Plants, Waterways, Bridges, Locks, Dams, Turbine Houses
- Inland, Ocean, Marine, Coast and Offshore Infrastructure and Engineering; Analysis and Design of Deepwater and Coastal Structures, Civil Engineering
- Marine Industry; Ocean, Coast, Offshore and Ship Technology; Offshore Surveying; Offshore Support Vessels (OSV); Ocean, Offshore and Arctic Engineering
- Offshore Energy, Gas & Oil; Renewable Ocean Energy; Green Energy Logistics; Wind Turbines; Ocean Wave Energy Resource; Smart Energy Systems
- Automation, Robotics, Underwater Technology and Offshore Constructions; Fundamentals of Marine and Offshore Systems Design and Construction
- Innovations and New Marine Technology, Vehicles, Constructions, Structures, Facilities, Equipment and Related Matters; Wing in Ground (WIG) Crafts; Hydrocrafts
- Maritime Traffic Engineering; Traffic Analysis; Traffic Control System; Multilane Traffic Flow; Traffic Flow Theory and Simulation; Marine Traffic Data
- Organization and Management of Vessel Traffic; Piloting; Vessel Navigation and Traffic Services for Safe and Efficient Ports and Waterways
- Systems of Control, Guidance and Monitoring of Traffic; Vessel Traffic Service VTS, VTMS, VTMS; Monitoring, Control and Surveillance (MCS)
- Ship Manoeuvring in Shallow and Confined Water; Ship to Ship Interaction; Ship Squat; Bank Effect; Side-Wall Effects; Under Keel Clearance; Ship Grounding
- Naval Hydrodynamics and Manoeuvrability of Ships; Ship Behaviour in Shallow and Confined Water; Manoeuvring in Waves, Wind, Current and Swell
- Modelling of the Ship Dynamics; Numerical Simulation of Ship Motion; Steering of the Ship Motion; Steering Control Systems; Autopilot Systems
- Ship Stability and Buoyancy; Analysis of Stability; Ship Stability, Dynamics and Safety; Floodability, Insubmersibility, Unsinkability of a Ship; Trim & Strength

- Ship Motion; Degrees of Freedom; Numerical Modelling of Propulsion, Control and Ship Motions in 6 Degrees of Freedom; Manoeuvring and Control of Craft
- Ship Stability and Seakeeping; Static and Dynamic Stability Criteria; Ship Displacement; Buoyancy; Floodability; Watertight Compartments; Heeling Moment
- Sea Wave Theory; Ocean Wave Modelling; Computational Fluid Dynamics (CFD); Fluid Mechanics; Vibrations; Ocean Dynamics; Mastery of the Seas
- Hydraulic Phenomena: Flow in Channels, Maritime Flows, Tides and Waves; Sedimentology in Rivers, Estuaries and Coastal Waters; Water Supply Systems
- Global Ocean Ecosystem Dynamics; Coastal Ecosystems; Marine Ecosystem Monitoring; Deep-Sea Exploration; Mining and Exploitation of the Seabed
- Deploying Positioning, Sensor and Navigation Systems in Sectors such as Autonomy, Smart Infrastructure, Medical Care, Disabilities, Indoor Tracking, Agritech
- Water Resources, Hydrology and Hydraulic Engineering; Limnology; Physical, Chemical, Biological, Geological and Technical Oceanology; Ocean Monitoring
- Mechanical Engineering; Machinery Construction & Operation; Ship Propulsion; Pitch Propeller; Main Engine & Auxiliary Machinery; Engine Room Simulator
- Ship Generator and Power Supply; Applied Mechanics and Mechanical Automation; Diagnostics of Marine Engineering; Thermodynamics; Oils and Lubricants
- Fuel Bunkering; Vessel Efficiency & Fuel Management; Energy Monitoring; Energy Efficiency Measures for Marine Shipping; Future Fuel for Marine Industry
- Ship Maintenance and Repair; Anti-Corrosion for Maritime Industries; Smart Coatings for Materials Protection; Marine Paints, Coatings, Adhesives & Sealants
- Health Monitoring of Maritime Structures; Stress & Fatigue Analysis; Structural Dynamics; Forces & Moments Acting on Ships; Advance Materials Research
- Structural Life Extension for Offshore Installations and Marine Vessels Masterclass; Condition Monitoring and Fault Diagnosis; Cathodic Protection
- Submarine Cables and Pipelines; Cable and Pipe Transits for Marine Industries; Laying Undersea Cables and Pipelines; Cables for Offshore Wind Turbines
- Navy; Marine Defense; Warship Technology; Defense, Security & Military News; Military Challenge; Safety of Transport and Disposal for Explosive Ordnance
- Shipbuilding Industry; Shipyards; Ship Repair Yards; Recycling of Ships; Industrial Restructuring; Ship Repair & Conversion; Marine Construction and Welding
- Naval Architecture; Ship Design; Ship Production; Ship Construction: Plate Machining, Assembly of Hull Units and Block Erection; Floating Dry Docks
- Naval Weapon; Naval Warfare; Naval Forces and Military Technology; Undersea Maritime Threats, Swarming Technology and Anti-Submarine Warfare
- Naval Construction and Engineering; Mathematics and Computers in Naval Engineering; Naval Research; Naval Technology; Naval Operations; Convoys
- Tactical Navigation for Military Vehicles; Warship ECDIS (WECDIS) and Tactical Awareness Solutions; ECDIS-Navy; Digital Nautical Charts (DNC)
- Leadership, Management, Command and Control; The Responsibility of Leadership in Command; Leadership and Teamworking Skills; Command of the Ship
- Maritime English; Standard Marine Communication Phrases (SMCP); Communications in Multinational Shipping Industry; International Code of Signals (ICS)
- International Standardization of Navigation Terminology; Glossary of Nautical Terms; Standard Marine Navigational Vocabulary; Maritime Terms & Definitions
- Radiolocation; Ground-based, Ship-borne and Airborne Radars; Automotive Radar; Radar Image Matching; Radar Overlay; Radar Applications; 3D Radars
- Marine Radar; Radar Equipment; FMCW, SAR/RAR, ARPA, EPA, ATA; Radar Theory and Techniques; Radar Transponders; Radar Technology & Navigation

- Rules of the Road; Collision Regulations (Colregs) and Anti-Collision; Preventing Collisions at Sea; Collision Avoidance; Marine Accident Reconstruction
- Ship Domain - A Criterion of Navigational Safety Assessment; Concept and Empirical Model of Ship Domain for Navigation in Restricted Waters; 3D Domain
- Ship Handling and Manoeuvring; Manoeuvring Characteristics and Interaction; Seamanship; Safety, Freedom of Manoeuvre, and Decision-Making Advantage
- Intelligence, Surveillance and Reconnaissance (ISR); Tracking Systems; Mobile Vehicle Tracking and Monitoring; Navigation for Safety-Critical Applications
- Automatic Identification System (AIS); Long Range Identification and Tracking (LRIT); Satellite AIS (SAT-AIS); AIS-Based Initiatives; Maritime ISR
- Electronic Log Book; Voyage Data Recorder (VDR), Simplified-VDR (S-VDR); Black Box; Data Recording; Voyage Reports and Documentation
- Safety, Security and Emergency in Transportation; Cyber Security Vulnerabilities; Risks to Infrastructure and Industries; Maritime Cyber Security; e-Security
- Marine Salvage; Maritime Search and Rescue (SAR); Towing Operations; Search and Rescue Satellite Aided Tracking (SARSAT) System; Escape
- Maritime Tragedies; Disasters at Sea and Their Impact on Shipping Regulation; Survival in Maritime Disasters; Survival Data Analysis; First Aid to Survivors
- Piracy and Armed Robbery; Maritime Terrorism; Refugees and Stowaways; Smuggling; Armed Security on Board; Coast Guards, Border Protection
- Life-Saving Service; Life-Saving Appliances (LSA); Immersion Suits; Shipboard Firefighting; Fire Protection Engineering; Safety Signs; Evacuation Procedures
- Bridge Team Management (BTM); Bridge Resource Management (BRM); Bridge Team Training; Teamwork; Crew Manning; Sea-Based Maritime Careers
- Duties and Liabilities of the Ship's Captain; Master's Responsibility and Authority; Emergency Procedures; Pilot-Master Relationship; Elite Maritime Selection
- Ballast Water Management; Ballast Water Treatment (BWT) Solutions; Water Purification (Filtration, Sedimentation, Distillation, Flocculation and Chlorination)
- Human Factor; Ergonomics; Human Errors and Marine Accidents; Human-Computer Interaction; Human and Machine Relationship; Situation Awareness
- Oil and Chemical Spills; Sea Pollution and Environmental Protection; Protection of Water Resource; Marine Conservation; Water and Wastewater Treatment
- Marine Environmental Science; Marine and Environmental Biology and Zoology; Biodiversity; Chemical Science; Aquatic, Fishery and Marine Biology
- Crew Resource Management; Safe Manning; Stress and Fatigue; Human Resources in Transport; Behavioural Techniques for Seafarers to Reduce Stress at Sea
- Maritime Employment and Competitiveness; Seafarers Work, Family Life; Organizational and Health Behavior at Sea; Maritime Occupational Health Service
- Maritime Psychology; Women Seafarers in Shipping; Gender; Maritime Sociology; Dangerous Diseases & Disorders of Seafarers; Medical Care for Seafarers
- Marine Resource Assessment; Natural Resource Management; Operation in Hostile Environments; Marine Ecology; Marine Debris; Garbage and Waste
- Modelling and Simulation of Marine Systems; Advanced Numerical Algorithms; Mathematical Modelling; Computational Modeling, Simulation and Applied Mathematics
- Full Mission Bridge Simulators; Navigational Simulators; Ship Handling Simulators; Ship Manoeuvring Simulators; Virtual Reality Training Simulators
- Ships Surveys, Audits, Vistitations, Inspections and Certifications; Port State Control (PSC); Flag State Control (FSC); Implementation of IMO Instruments
- Maritime Education and Training (MET); IMO Model Courses Validation; STCW Implementation; Computer-Based Assessments in Seafaring Training

- Frontiers in Educational Methods; Computer Based Training (CBT); e-Learning and Virtual Innovations; Pedagogy and Didactics; Distance Learning; LLL & CE
- Web Technologies for Open Access to Maritime Learning and Education; Smart and Virtual Learning; Digital Education, Innovation & Knowledge Management
- History of Marine Cartography and Historical Cartography; Historical Nautical Charts; Sea Charts; Mappa Mundi; Portolan Charts; Mercator Projection
- History of Navigation; Marine Navigation in Ancient Times; Historical Navigation Instruments & Accessories; Ocean Mythology, Mysteries, Gods & Monsters
- Maritime Civilizations; The History of Maritime Technology; Historic Maritime Vessels; Naval Battles; Wrecks; Maritime Tradition, Customs and Ceremonial
- Marine Archaeology; Underwater Research; Underwater Exploration; Deepwater Archaeology; Historic Shipwrecks; Loss, Salvage and Demolition
- Marine and Coastal Geography; Marine GIS; Ocean Informatics; Data Visualization Technologies in Earth and Marine Sciences; Numerical Weather Prediction
- Tides and Tidal Currents; Tides and Tide Prediction; Ocean Surface Currents; Warm and Cool Surface Flows; Ocean Salinity and the Global Water Cycle
- Nautical Meteorology and Oceanography; Limnology and Aquatic Sciences; Green Navigation; Marine Weather Phenomena; Monsoons; Trade Winds; El Niño
- Weather Routing; Marine Weather Forecast; Ice Patrol; Weather Radar; Heavy Weather; Tropical Cyclones and Impact of Extreme Storms; Ocean Passages for the World
- Ocean Disaster Assessment and Prevention; Emergency Networks for Public Protection and Disaster Relief; Extraordinary, Amazing Ocean Phenomena
- Atmospheric and Oceanic Sciences; Climatology; Climate Change; Global Warming; Coastal Risks and Sea Level Rise; Protection of Global Climate
- GNSS-based Machine Guidance and Control Methods for use in Agriculture, Construction, Surveying and Mining; GNSS Algorithms and Techniques
- Geotechnical Engineering; Geohazards (Volcano Eruptions, Landslides, Floods, Earthquakes, Seismicity, Tsunami Waves); Disaster Prevention and Mitigation
- Polar Research; Safe and Sustainable Traffic in Ice/Winter Conditions; Arctic Navigation; Ice Navigation; Arctic Marine Shipping Assessment (AMSA)
- Integrated Coastal Zone Management (ICZM); Environmental Management; Coastline Marine Service; Dredging; Maritime Spatial Planning (MSP) Platform
- Marine & Coastal Protected Areas; Particularly Sensitive Sea Area (PSSA); Ships Routing Measures to Protect PSSAs; Greenhouse Gas Emissions in Shipping
- Marine Biotechnology; Biology, Ecology, Behaviour of Marine Animals; Biological, Animal, Human, Cognitive Navigation, and Quantum Technologies
- Fisheries and Aquaculture; Fish Farming; Fishing Industry; Ecosystem Approach to Fisheries and Aquaculture; Fishery Oceanography; Fishing Boats & Supplies
- Cruise Shipping; Passenger Ferries; High Speed Crafts (HSC); Ocean Travel; Passenger Terminals; Crisis Management & Human Behaviour on Passenger Ships
- Nautical Tourism and Yachting; Sailing Vessels; Small and Pleasure Crafts; Marine Leisure Industry; Water-Based Tourism, Sport, Leisure and Recreation
- UNCLOS; Delimitation of Maritime Boundaries; Maritime Zones; Exclusive Economic Zone (EEZ); Territorial Waters; Contiguous Zone; Jurisdiction at Sea
- Advanced Maritime Policy and Governance; Maritime Administration (MARAD); Global Maritime Situational Awareness; Maritime Domain Awareness
- Maritime Law, Insurance and Arbitration; Law at the Sea; International Maritime Conventions, Protocols and Codes (SOLAS, MARPOL, STCW, FAL, etc)
- Communication, Electrical, Electronic and Control Engineering; Technology of Antennas; Microwave Theory and Technique; Optics and Photonics

- Information and Communication Technology; Information Technology and Applications in Maritime Sector; Information Technology Management
- Computer Engineering; Digital System Design; Computer Applications in Maritime Engineering; Design of Maritime Information Systems; Computer Networks
- Computer Science; Information Processing and Engineering; Computer Aspects of Technological Change; Computer Graphics; Computer Animation; Internet
- Security and Information Assurance; Information and Coding Theory; Cryptography and Information Security; Malicious and Unwanted Software; Spyware
- Maritime Clouds; Digital Data Exchange; Secure Cloud Computing and Big Data; Data Integrity; Multi-Sensor and Data Fusion; Data Science; Blockchain
- Multimedia, Network & Communication Technology & Application; Communications Services & Multimedia Applications; Satellite & Space Communications
- Marine Telecommunications; Global Maritime Distress & Safety System (GMDSS); Emergency Position-Indicating Radiobeacon (EPIRB); Connectivity at Sea
- Domain Awareness and Decision Advantage, from the Seabed to Space; Hybrid System of Satellite Communications Technology; Interactivity via Satellite
- Wireless Maritime Services & Mobile Technology; 5G Wireless Networks; Network Management, Privacy & Security; e-Technology; Constraint Solving
- Signal & Image Processing; Data Transmission, Processing and Analysis; Radio Propagation; Multi-function Antennas; Radio Frequency Identification (RFID)
- Expert Systems and Marine Applications in Navigation, Safety at Sea, Shipping and Maritime Transportation; Research and Development in Expert Systems
- Fuzzy Logic; Artificial Intelligence Technologies; Artificial Neural Network ANN; Fuzzy Inference Systems; Fuzzy Inference in Artificial Intelligence; Neuroscience
- Decision Support Systems and Artificial Intelligence Methods in Maritime Transport; Shipping Operation Intelligent Decision Support System; Decision Tree
- Neuroevolution; Artificial Immune System; Reinforcement Learning; Genetic Algorithms; Numerical Optimization; Evolutionary Computation; Neural Networks
- Telematics in Maritime Transportation; State-of-the-Art Telematics Systems; Applications to Automated, Semi-Autonomous, and Full-Autonomous Systems
- Intelligent Transportation System (ITS); Maritime Intelligent Transportation Systems; Global Intelligent Transport Systems Market; Transport System Telematics
- Autonomy in Transport Systems; Modelling of Autonomous Vehicle Operation in Intelligent Transportation Systems; Autonomous Maritime Ecosystem
- Smart Vehicles: Connectivity Technologies and ITS Applications; Location Technologies for Intelligent Transportation Systems; Mobility and Transport
- Maritime Knowledge; Knowledge-Based Intelligent Information and Engineering Systems; Knowledge and Innovation; Innovation and Technology Transfer
- Ships Dynamic Positioning (DP); DP Intelligent Control System; DP Technology; Position Reference Systems; Georeferencing; SIMOPS (Simultaneous Operations)
- Autonomous Vehicles: Modelling, Control Design, and Simulation; Autonomous Navigation Technology; Maritime Autonomous Surface Ships, MASS Operations
- Acoustic Remote Sensing; Hydroacoustics; Sonars; Multibeam Echo Sounders (MBES); Acoustic Doppler Current Profiler (ADCP); Sea-Floor Mapping
- Underwater Acoustic Measurements: Technologies, Methods and Systems; Sound Transmission in Water; Underwater Acoustics Communication (UWAC)
- Maritime Sensors, Technology and Infrastructure in Waterside Security; Waterborne Transportation Infrastructure; Vessel Anchoring, Berthing and Mooring
- Modelling and Numeric Methods in Maritime Industry; Marine Engineering Mathematics; Operational Research (Management Science, Decision Science)

- Marine Applications in Systemics, Cybernetics, Informatics, Electronics, Robotics, Automation and Mechatronics; Autonomous Marine Operations and Systems
- Transport Statistics; Mathematical Methods of Statistics; Probability; Bayesian Statistics, Markov Processes; Stochastic Modelling; Weibull Distribution
- Severity, Probability and Risk of Accidents during Maritime Transport; Maritime Accident Statistics; Marine Accidents, Casualties, Mishaps, Disasters
- Mathematical Model Applications in the Operation of Vessel and Port Machinery; Applied Science in Engineering; Theoretical Physics; MATLAB and Simulink
- Mathematical Fundamentals of Safety and Dependability, Maintainability of Maritime Objects; Safety and Security of Complex Systems; Probabilistic Approach
- Quality, Reliability, Risk, Maintenance and Safety Engineering; Maintenance Scheduling of Distribution System with Optimal Economy and Reliability
- System Availability, Software and Structural Reliability; Improving Safety Critical Systems with a Reliability Validation; Critical Infrastructure Protection
- Maritime Safety, Security and Risk Management; Risk and Safety Analysis, Assessment and Prediction; Quantitative Risk Assessment (QRA); Risk Factors
- Crisis, Emergency, Natural Hazard and Disaster Management; Disaster and Emergency Planning for Preparedness, Response & Recovery; Marine First Aid Kit
- International Safety Management Code (ISM Code); International Ship and Port Facility Security Code (ISPS Code), IMO Instrument Implementation (III Code)
- Reliability and Safety Methods: HAZOP, HAZID, HRA, FMEA, FTA, ETA; Formal Safety Assessment (FSA); Marine Risk Assessment; Hazard Identification
- Quality Management; Quality Assurance; Quality Control; Quality Maritime Training; Quality Maritime Service; Standards Implementation in Maritime Sector
- Transport Systems: Operation, Management, Control and Maintenance; Shipping Management; Transport and Maritime Management; Strategic Management
- Main Maritime Shipping Routes; Transportation Planning and Management; Economic, Legal and Social Aspects; Transport Policy; e-Government
- Management Information System; Fleet Management System; Maritime Fleet Management Information System; Modern Ship Management; Shipping Companies
- Marine Ship Economy; Marine Finance and Insurance; Management and Business Strategy; Customs Duties, Taxes, Freights, Insurance Rates; Blue Economy
- Maritime and International Trade; International Commercial Terms (Incoterms); Foreign Trade; Trade Routes; Entrepreneurship; e-Commerce; e-Marketing
- Impact of Economic Recession on Maritime Transport; Financial Planning; Shipping Financial Management; Financial Modelling; Economic Risk; e-Business
- Sea Freight and Forwarding; Modes of Shipment; Chartering; Charter Party; Bill of Lading; Cargo Claims and Recoveries; Measuring and Weighting Units
- Transportation and Modes of Transport; Intermodal, Multimodal and Combined Transport; Water, Air, Rail and Road Transport; Sustainable Transportation;
- Maritime Transport and Logistics Systems; Maritime Economics and Logistics (MEL); Logistics and Supply Chain Management; Integrated Logistics
- Geography of Transport Systems; Modelling of Transport Systems; Design of Intermodal Transport Networks; Traffic Management and Traffic Flow Theory
- Smart City and Port; Technological, Ecological and Social Challenges; Geo-localities and Cultural Effects; Waterfront Infrastructure; Coastal & Marine Tourism
- Multi-Agent System (MAS); Multi-Agent Control for Maritime Transport Networks; Autonomous Marine Multi-Agent Systems; Modelling and Design of MAS
- Ship Classification Societies; Application and Evaluation Studies; Technological Standards, Certification, Analysis and Control; Marine Technical Innovations

- Development of Methods and Criteria for International Regulations, Codes, Standards and Specifications; Legislation; Standardization; Classification Rules
- IMO, IHO, IALA, IEC, ISO, IAIN, IMLA, IMSF, IMSO, IAME, IAMU, EMSA, ITU, IEEE, RTCM, NMEA, PIANC, EUGIN, PNF, RIN and NI Activities



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Nationalities involved in the Conference TransNav 2021



Nationalities of Scientific Committee members



Nationalities of authors of submitted papers, moderators, chairmen and presenters



TransNav 2021 Chair List

Slot 0			
Time	Plenary Session		Name
Wednesday 16th June 2021 1100 - 1200	A0	Opening Ceremony	Adam Weintrit
			Jillian Carson-Jackson

Slot 1			
Time	Plenary Session A1 – Round Table Panel Session		Name
Wednesday 16th June 2021 1215 - 1330	A1	Autonomous Vessels – Autonomous Shipping	Cezary Luczywek
			Rudy R. Negenborn

Slot 2			
Time	Sessions		Name
Wednesday 16th June 2021 1345 - 1500	B1	Round Table Panel Session Maritime Safety and Security	Ryszard Wawruch
			Srdan Žuškin
	C1	Oral Presentations Communication	Karol Korez
			Sanja Bauk

Slot 3			
Time	Sessions		Name
Thursday 17th June 2021 1100 - 1215	B2	Round Table Panel Session Maritime Education & Training (MET)	Adam Przybyłowski
			Eamonn Doyle
	C2	Oral Presentations e-Navigation	Paweł Zalewski
			Pentti Kujala

Slot 4			
Time	Sessions		Name
Thursday 17th June 2021 1230 - 1345	B3	Round Table Panel Session Global Satellite Navigation System (GNSS)	Cezary Specht
			Manuel López-Martínez
	C3	Oral Presentations Problems of Sea Transportation	Grzegorz Rutkowski
			Masao Furusho

Slot 5			
Time	Sessions		Name
Thursday 17th June 2021 1400 - 1500	B4	Annual General Meeting of the Poland Branch of The Nautical Institute	Adam Weintrit
			John Lloyd
	C4	Oral Presentations Search and Rescue (SAR)	Teresa Abramowicz-Gerigk
			Sauli Ahvenjärvi

Slot 6			
Time	Sessions		Name
Friday 18th June 2021 1100 - 1215	B5	Round Table Panel Session Ship Manoeuvring	Piotr Kopacz
			Michael Baldauf
	C5	Oral Presentations Miscellaneous Maritime Problems	Krzysztof Wróbel
			Nikitas Nikitakos

Slot 7			
Time	Sessions		Name
Friday 18th June 2021 1230 - 1345	B6	Round Table Panel Session Offshore Technology - Offshore Wind Farms	Sławomir Kaliński
			Wolfgang Lukas
	C6	Oral Presentations Safety at Sea	Przemysław Wilczyński
			Tor Einar Berg

Slot 8			
Time	Plenary Session		Name
Friday 18th June 2021 1400 - 1430	A2	Closing Ceremony	Adam Weintrit John Lloyd