

CONFERENCE PROGRAMME

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Gdynia Maritime University**

and



**13th INTERNATIONAL CONFERENCE
ON
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AND SAFETY OF
SEA TRANSPORTATION**

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 Prof. Ilias **Visvikis**, American University of Sharjah (AUS), United Arab Emirates
 Prof. Peter **Wadhams**, Cambridge University, United Kingdom
 Prof. Aleksander **Walczak**, 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
 Prof. Ryszard **Wawruch**, Gdynia Maritime University, Gdynia, Poland
 Prof. Wojciech **Wawrzyński**, Warsaw University of Technology, Warsaw, Poland
 Chairman of the Committee of Transport of the Polish Academy of Sciences
 Prof. Mariusz **Wąż**, Polish Naval Academy, Gdynia, Poland
 Prof. Christiane **Weber**, French National Centre for Scientific Research, Montpellier, France
 Prof. Adam **Weintrit**, Gdynia Maritime University, Gdynia, Poland
 Editor-in-Chief: TransNav, the International Journal on Marine Navigation and Safety of Sea Transportation
 Prof. Jingnong **Weng**, Beihang University, Beijing, China
 Prof. Paweł **Wielgosz**, University of Warmia and Mazury in Olsztyn, Poland
 Prof. Ireneusz **Winnicki**, Military University of Technology, Warsaw, Poland
 Prof. Zbigniew **Wiśniewski**, University of Warmia and Mazury in Olsztyn, Poland
 Prof. Kazimierz **Witkowski**, Gdynia Maritime University, Gdynia, Poland
 Prof. Edmund **Wittbrodt**, Gdańsk University of Technology, Gdańsk, Poland
 Prof. Willi **Wittig**, Bremen University of Applied Sciences, Bremen, Germany
 Prof. Krystyna **Wojewódzka-Król**, Gdańsk University, Gdańsk, Poland
 Prof. François-Charles **Wolff**, University of Nantes, France
 Prof. Adam **Wolski**, Polish Naval Academy, Gdynia, Poland
 Prof. Jia-Jang **Wu**, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan
 Prof. Yuanxin **Wu**, 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**, Tokyo University of Marine Science and Technology, Tokyo, Japan
 Prof. Xinping **Yan**, Wuhan University of Technology, Wuhan, China
 Director of National Engineering Research Center for Water Transport Safety (WTS), Wuhan, China
 Prof. Dongkai **Yang**, Beihang University, Beijing, China
 Prof. Byeong-Deok **Yea**, Korea Maritime and Ocean University, Busan, Korea
 Prof. Hüseyin **Yilmaz**, Yildiz Technical University, Yildiz, Turkey
 Prof. Tsz Leung **Yip**, The Hong Kong Polytechnic University, Hong Kong
 Prof. Hyeon Kyu **Yoon**, Changwon National University, Korea
 Prof. Homayoun **Yousefi**, Chabahar Maritime University, Chabahar, Iran
 Prof. Janusz **Zalewski**, Florida Gulf Coast University Ft. Myers, Florida, The United States
 Prof. Paweł **Zalewski**, Maritime University of Szczecin, Poland
 Prof. Elzbieta **Zaloga**, West Pomeranian University of Technology, Szczecin, Poland
 Prof. Kefei **Zhang**, SPACE research Centre, RMIT University, Melbourne, Australia
 Prof. Renping **Zhang**, Dalian Maritime University, Dalian, China
 Prof. Minghua **Zhao**, School of Maritime Science and Engineering, Solent University, Southampton, UK
 Prof. Qile **Zhao**, Wuhan University, Wuhan, China
 Prof. Paweł **Ziegler**, Flensburg University of Applied Sciences, Flensburg, Germany
 Prof. Francesco **Zirilli**, University of Roma "La Sapienza", Roma, Italy

Honorary Committee:

Capt. Nick **Nash** FNI – President of The Nautical Institute, London
 Prof. Janusz **Zarębski** – Rector of Gdynia Maritime University

Special Guests:

Capt. Duncan **McKelvie**, Vice President of The Nautical Institute, United Kingdom
 Capt. Simon **Gaskin**, Secretary General - International Association of Institutes of Navigation (IAIN)
 Prof. Tadeusz **Kaczorek** – Doctor Honoris Causa of our Alma Mater

Conference Hosts:

Prof. Leszek **Smolarek** – Dean of the Faculty of Navigation, Gdynia Maritime University
 Prof. Jacek **Januszewski** – 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

Organising Committee:

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

Secretary: Dr. Tomasz Neumann

Members: Mr. Andrzej Bomba, MSc, Head of Technical Committee
Dr. Piotr Kopacz
Mr. Dariusz Krucki, BSc
Mrs. Maria Łozińska, MA
Mrs. Magdalena Zuzelska, MSc
Mrs. Dorota Rajmańska

Conference Co-Organizers:

Faculty of Navigation, Gdynia Maritime University

<http://transnav2019.am.gdynia.pl>; <http://wn.umg.edu.pl> <http://www.transnav.eu>

The Nautical Institute

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

Partners:

Poland Branch of The Nautical Institute
Polish Academy of Science, Committee of Transport
Maritime Office in Gdynia
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Polish Nautological Society
Polish Association of Transport Telematics
Polish Association of Master Mariners
Student Scientific Club "Navigator", Gdynia Maritime University, Department of Navigation

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TransNav - The International Journal on Marine Navigation and Safety of Sea Transportation

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InsideGNSS

Archives of Transport System Telematics

Geodeta, Geoforum

Namiary na Morze i Handel

<http://oficynamorska.pl> - Foundation for the Promotion of Maritime Industry

Wednesday 12th June 2019

TransNav 2019



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

Opening Address for TransNav 2019

Message from Conference Chairman

Ladies and Gentlemen, Distinguished Guests, Dear Participants of TransNav 2019,

It is my pleasure and honour to welcome you to TransNav 2019, the 13th 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 Gdynia. I am glad to see such a wide range of stakeholders today ready to debate and exchange views. Thank you all for coming.

The delegates are from over hundred institutions from many countries around the world (66): Australia, Austria, Azerbaijan, Bangladesh, Belgium, Brazil, Bulgaria, Canada, Chile, China, Croatia, Cuba, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Ghana, Greece, Hong Kong, Hungary, India, Indonesia, Iran, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Korea, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Mexico, Montenegro, Netherlands, Nigeria, Norway, Pakistan, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Turkey, Ukraine, United Kingdom, United States, Venezuela and Vietnam.

As you can see more than 60 countries are involved in TransNav 2019 as the Scientific Committee members, reviewers, authors of papers, presenters, attenders, partners, exhibitors and sponsors. Among us are presidents and rectors of 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. This time our special guest is Capt Duncan McKelvie, Vice-President of The Nautical Institute, who represents the President of The Nautical Institute, Capt. Nick Nash. Welcome to Capt. Simon Gaskin, Secretary General of the International Association of Institutes of Navigation (IAIN), Prof. Krzysztof Czaplewski, Chairman of the European Group of Institutes of Navigation (EUGIN), President of Polish Navigation Forum (PNF) and Prof. Tadeusz Kaczorek, doctor honoris causa of our Alma Mater. Welcome to branch chairmen of The Nautical Institute from Philippines, Japan, Ukraine and Poland, presidents of the national navigation institutes, and many other excellent guests joined our Conference, especially members of the Scientific Programme Committee.

To conclude, I believe that the 13th TransNav 2019 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 visit to Gdynia. I wish all participants fruitful discussions! Special thanks to our partners, sponsors, volunteers and members of the Organising Committee for their hard work, especially Dr. Tomasz Neumann, Executive Chair of TransNav Conference.

With kindest regards

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

Wednesday 12th June 2019

TransNav 2019



Captain **Nick Nash**, MNM, CMMar, FRGS, FRIN, FNI,
President of The Nautical Institute

Welcome by President The Nautical Institute

Dear Conference Colleagues,

As President of The Nautical Institute it is my pleasure to welcome delegates, speakers and panellists to the 13th International Conference on Marine Navigation and Safety of sea transportation here in Gdynia.

It is a great honour and my pleasure to write this introduction to your 13th Conference and I would like to thank the Rector Prof. Dr. Janusz Zarebski and the Faculty of Navigation of the Gdynia Maritime University.

The Nautical Institute represents over 7000 maritime professionals from over 120 countries in 50 branches. We work constantly within our industry to ensure the highest levels of professional standards and competency in those who go down to the sea in ships and do their business on the great oceans of this world.

Our members contribute across these oceans in forums such as this to ensure the ongoing safety of Navigation.

With an impressive list of speakers and panellists you have a fine collaborative chance to share your knowledge and experience to enhance navigation and safety across these oceans.

The panel discussions and round tables are a vital part of this conference and allow us all to participate and gain the most from your excellent speakers and I do encourage you all take full advantage of these. Through this and other such conferences I do hope that we can influence all those 'Who go down to the sea' to ensure that they are well trained and competent.

Unfortunately, due to the fact that I am also a serving shipmaster with Princess Cruises (part Carnival Corp.), I will be Navigating my ship – the 'Royal Princess' hopefully Safely through Alaska - during your conference dates, however I would again like to thank the organizers of this annual event to once again invite The Nautical Institute to participate and wish you all well.

I would like to leave you with a great quote I recently saw while on my travels at a small nautical school on the Greek Island of Chios:

"Never fear to move with the times, but never lose touch with the past"

Captain Panagiotis N Tsakos

Captain Nick Nash, MNM, CMMar, FRGS, FRIN, FNI



Prof. Dr. Janusz Zarębski
Rector of Gdynia Maritime University

Message from the Rector of Gdynia Maritime University

Distinguished Guests, Ladies and Gentlemen,

It is with greatest pleasure that I address these words to conference participants of the 13th International Conference on Marine Navigation and Safety of Sea Transportation organized jointly by the Faculty of Navigation of Gdynia Maritime University and The Nautical Institute.

For over a quarter-century Transnav has continued a notable tradition of bringing together researchers, scientists, academic teachers and experts in navigation, marine engineering, marine transportation and marine economy from all over the world. The number of submitted papers clearly shows the sustainable conference development. The contributions contained in the proceedings touch the most recent scientific achievements, on-going research and ever-lasting development integrating Nautical Science, Marine Navigation, Maritime Economy, Safety and Security of Maritime Shipping, Coastal Zone Management, Off-shore Industry and many other marine-related fields. I trust that these Proceedings will contribute to the world of science and become an excellent reference book and a stimulus for further study and research in all these areas.

The 13th Edition aims at finding solutions to challenges in waterborne transportation, navigation and shipping, mobility of people and goods with respect to energy, infrastructure, environment, safety and security as well as to the economic issues.

The conference offers a great opportunity to present and discuss planned and current work, meet distant friends, make new contacts between developing academics and the more established academic community, establish interinstitutional cooperation, update and extend knowledge and all that in formal and informal setting. I wish everyone meeting all set goals and expectations related to the conference and academic career.

It is with deepest satisfaction that my colleagues and I have the opportunity to host a conference that is recognized worldwide. Many thanks to everyone involved in preparation of the conference and the final delivery of these proceedings.

I would like to express a special note of gratitude to prof. Adam Weintrit for keeping the conference on the cutting edge for all those years.

I thank and congratulate all authors and participants for their contributions and wish everyone best of luck today, tomorrow and beyond.

Ladies and Gentlemen,

I declare that the 13th International TransNav Conference 2019 on maritime and maritime transport security is opened.”

*Prof. Janusz Zarębski
Rector of Gdynia Maritime University*

Conference Programme

Note: All timing and papers are subject to change - please consult the 'News' and 'Program' pages of our website <http://transnav2019.am.gdynia.pl> for the most up to date timetable.

13TH INTERNATIONAL CONFERENCE ON MARINE NAVIGATION AND SAFETY OF SEA TRANSPORTATION

TRANSNAV 2019

12-14 June 2019, Gdynia, Poland

PROGRAMME OVERVIEW

Wednesday 12th June 2019	
0900-1000	Registration in the Main Hall of the Gdynia Maritime University, Młocznia Str. 81-83
0900-1000	Main Aisle of GAUC (Hall in the name of Tadeusz Mielon) Opening Ceremony (Sections A0)
1000-1100	Main Aisle of GAUC Primary Session A1 Advances in Marine Navigation and Safety of Sea Transportation
1100-1130	Coffee Break
1130-1300	Parallel Spacial Sessions Room A13 Section G1 Safety at Sea Room A14 Section G2 Transportation Room A15 Section G3 Main Engine Room A16 Section G4 GNSS Room A9 Section G5 MET1
1300-1330	Break Transfer to Sławków Kóciuszki
1330-1445	Lunch in „Rota Wiatrow” Restaurant
1400-1530	Registration in the Hall of the GAUC Faculty of Navigation, Al. Jana Pawła II 113
1445-1615	Parallel Spacial Sessions Room P1 Section C1 Communications Room P1 Section E1 MET2 Room P104 Section F1 Human Factor
1615-1630	Coffee Break
1630-1730	Parallel Spacial Sessions Room P1 Section F1 Room P104 Section F2 Port Practices
1730-2000	Free Time Banquet Room on Ground Floor of Hotel Mercury Gdynia Gdynia, Hotel Mercury Gdynia Centrum Gdynia Dinner MerCure Gdynia

Thursday 13th June 2019	
0900-1000	Registration in the Hall of the GAUC Faculty of Navigation, Al. Jana Pawła II, Ays. 3
0900-1000	Auditorium Maximum - Primary Session A2 Main Aisle: Avionics Stand on Ships (MASS)
1000-1045	Coffee Break
1045-1145	Auditorium M Section B3 MASS - Part 2 Aula Section C3 Route Planning Room P104 Section E3 Passenger Ship Room P104 Section F3 Island Navig.
1145-1200	Coffee Break
1200-1330	Parallel Spacial Sessions Aula Section C4 Port Operations Room P1 Section D4 Miscellaneous Room P104 Section F4 Algorithms
1330-1445	Lunch in „Rota Wiatrow” Restaurant
1445-1615	Parallel Spacial Sessions Aula Section C5 Ship Handling Room P104 Section E5 Economi Room P104 Section F5 Radio Navigation
1615-1630	Coffee Break
1630-1730	Parallel Spacial Sessions Aula Section C6 Safety/Security Room P104 Section E6 Drones/Autonomy Room P104 Section F6 Hydrodynamic
1730-2000	Free Time You can either walk along the Gdynia seaside Boulevard and this group Kamiesz Gora Hill or by rail cable or mini-bus
2000-2300	Restaurant "Panorama" Gdynia, Kamiesz Gora Friends Evening

Friday 14th June 2019	
0900	Technical and Sightseeing Tour by Bus Departure from The Faculty of Navigation
0930-1000	Open - walk along the largest wood in the Europe, Common Photos of the tour participants.
1000-1115	In case of rain organ concert in Orlina Cathedral Gdańsk - European Solidarity Centre (ESC) Polish: Europe of the Centrum Solidarnosc) is a museum and library in Gdańsk, devoted to the history of solidarity, the Polish trade union and civil resistance movement, and other opposition movements of Communist Eastern Europe. It was opened on 31 August 2014. We will visit also BHP Room and Monument to communist shipyard workers - Three Crosses
1115-1400	Group 1 1115-1300 1115-1300 Group 2 1300-1400 1300-1400 Group 3 1415-1500 1415-1500
1400-1500	A farewell dinner in Hotel Radisson Restaurant in Gdańsk, Old Town
1500-1600	Closing Ceremony (Section K1)
1700-1800	Returns to Gdynia by Bus

Dear Participant, during the TransNav Conference 2019 the Faculty Reading Room (Room No 013) with access to Internet will be open.

Note: All sessions are open for students

Wednesday 12th June 2019

0800 - 1000 Registration in the Main Hall of the Gdynia Maritime University, Morska Str. 81

Plenary Session A0 - Opening Ceremony

0900 - 0945 **Place:** Main Lecture Hall (Aula) of the Gdynia Maritime University, Morska Str. 81
Chairmen: *Duncan McKelvie* (Nautical Institute), *Adam Weintrit* (Poland)

Welcome Address

Adam Weintrit, Chairman of the Conference

Opening Address for TransNav 2019

Duncan McKelvie, Vice President of The Nautical Institute

Opening Address, containing the words of the official opening of the Conference

Janusz Zarębski, Rector of Gdynia Maritime University

Overview of the 13th International Conference on Marine Navigation and Safety of Sea Transportation TransNav 2019

Adam Weintrit, Chairman of the Conference

Establishment of the Ulysses and Hevelius Awards and presentation of their first winners

Adam Weintrit, Chairman of the Conference

0945 - 1000 Short Performance of Gdynia Maritime University's Choir under the direction of *Karol Hilla*

Plenary Session A1 – Advances in Marine Navigation and Safety of Sea Transportation

1000 - 1100 **Place:** Main Lecture Hall (Aula) of the Gdynia Maritime University, Morska Str. 81
Chairmen: *Duncan McKelvie* (United Kingdom), *Mirosław Jurdziński* (Poland)



Fleet Operations Solution, Improving Safe and Efficient Navigation, Operational Monitoring, Decision Support, Navigational Compliance and Training.
van Knotsenborg Alex (Netherlands), *Wärtsilä Transas*

Position Navigation and Timing – Resilience or Chaos?

Gaskin Simon (United Kingdom), *Secretary General - International Association of Institutes of Navigation (IAIN)*

The Main Challenges and Barriers to the Successful “Smart Shipping”

Alop Anatoli (Estonia)

1100 - 1130 Coffee Break

1100 - 1105 Official family photo in front of the main building of the University
Photographer: Radosław Czaja



0830 – 1130 Interviews and a short film about the Conference
TV Redactor: Marek Kański



PARALLEL SPECIALIST SESSIONS

Session G1 – Maritime Safety and Security

- 1130 - 1300 **Place:** Lecture Hall A13, Basement of Mechanical Faculty, Gdynia Maritime University
Chairmen: *Masao Furusho (Japan), Mirosław Jurdziński (Poland)*
- Overview of Definitions of Maritime Safety, Safety at Sea, Navigational Safety and Safety in General
Formela Kamil (Poland), Neumann Tomasz (Poland), Weintrit Adam (Poland)
- ISM Code & Good Sea Practice
Durka Alicja (Poland), Śniegocki Henryk (Poland), Wilczyński Przemysław (Poland)
- Ship Recognition and Tracking System for Intelligent Ship Based on Deep Learning Framework
Liu Bo (China), Wang ShengZheng (China), Hsieh Tsung-Hsuan (Taiwan), Zhao JianSen (China), Li MingFeng (China)
- Maritime Security and Threat Assessments
Eidnes Ingrid Marie (Norway), Batalden Bjørn-Morten (Norway), Sydnes Are Kristoffer (Norway)
- Implementation of Marine Spatial Planning Instruments for Sustainable Marine Governance in Poland
Pyć Dorota (Poland)

1300 - 1330 **Break:** Transfer by Bus to Skwer Kościuszki, Gdynia

1330 - 1445 **Lunch** in “Róża Wiatrów” Restaurant

Session G2 – Maritime Transport Development

- 1130 - 1300 **Place:** Lecture Hall A14, Basement of Mechanical Faculty, Gdynia Maritime University
Chairmen: *Sauli Ahvenjärvi (Finlandia), Andrzej Grzelakowski (Poland)*
- On the Future of Maritime Transport – Discussing Terminology and Timeframes
Hult Carl (Sweden), Praetorius Gesa (Sweden), Sandberg Carl (Sweden)
- A Review on the National Culture and Its Effects on the Transportation Safety Perspectives
Kwon Youngsub (Korea)
- Smart Port as a Key to the Future Development
Karaś Adrianna (Poland)
- Theoretical Research on Mass Exchange Between an Autonomous Transport Module and the Environment in the Process of Transport from the Seabed
Filipek Wiktor (Poland), Broda Krzysztof (Poland)
- Short Sea Shipping for Maritime Transport Development
Baylon Angelica (Philippines), Dragomir Cristina (Romania)
- 1300 - 1330 **Break:** Transfer by Bus to Skwer Kościuszki, Gdynia
- 1330 - 1445 **Lunch** in “Róża Wiatrów” Restaurant

Session G3 – Main Engine

- 1130 - 1300 **Place:** Lecture Hall A15, Basement of Mechanical Faculty, Gdynia Maritime University
Chairmen: *Mariana Panaitescu (Romania), Lech Murawski (Poland)*
- Data Analysis to Evaluate Reliability of a Main Engine
Anantharaman Mohan (Australia), Islam Rabiul (Australia), Khan Faisal (Australia), Garaniya Vikram (Australia), Lewarn Barrie (Australia)
- LNG Carrier Main Steam Turbine Reliability in the Exploation Period of Time
Poljak Igor (Croatia), Orović Josip (Croatia), Knežević Vlatko (Croatia), Mrzljak Vedran (Croatia)
- Reliability Assessment of a Main Propulsion Engine Fuel Oil System - What are the Failure-prone Components?
Islam Rabiul (Australia), Anantharaman Mohan (Australia), Khan Faisal (Australia), Garaniya Vikram (Australia)
- Study on Applying Numeric Modeling CFD for Fuel Injection Process of Common Rail System in Marine Diesel Engine
Phan Van Quan (Vietnam), Tran Vu Hai Dang (Vietnam)
- A Review of Human Error in Marine Engine Maintenance
Islam Rabiul (Australia), Anantharaman Mohan (Australia), Khan Faisal (Australia), Garaniya Vikram (Australia)
- 1300 - 1330 **Break:** Transfer by Bus to Skwer Kościuszki, Gdynia
- 1330 - 1445 **Lunch** in “Róża Wiatrów” Restaurant

Session G4 – Global Navigation Satellite Systems (GNSS)

- 1130 - 1300 **Place:** Lecture Hall A16, Basement of Mechanical Faculty, Gdynia Maritime University
Chairmen: *Simon Gaskin (United Kingdom), Jacek Januszewski (Poland)*
- GNSS Positioning Error Change-point Detection in GNSS Positioning Performance Modelling
Filić Mia (Slovenia), Filjar Renato (Croatia)
- Let Us Prepare the Officer of the Watch on Jamming and Spoofing
Felski Andrzej (Poland)
- Logistic Map-encrypted Chaotic Ranging Code as a Proposed Alternative to GNSS PRN Pseudorange Code
Filić Mia (Slovenia), Dime Franc (Slovenia)
- Polish DGPS System: 1995-2018 – Studies of Reference Station Operating Zones
Specht Cezary (Poland), Specht Mariusz (Poland), Dąbrowski Paweł (Poland)
- Determination of Seabed Heights in the Area of Polish Territorial Waters in the Official Vertical Reference System
Rogowski Jerzy B. (Poland), Kłęk Magdalena (Poland), Galas Roman (Germany)
- 1300 - 1330 **Break:** Transfer by Bus to Skwer Kościuszki, Gdynia
- 1330 - 1445 **Lunch** in “Róża Wiatrów” Restaurant

Session G5 – Maritime Education and Training (MET) – Part 1

- 1130 - 1300 **Place:** Lecture Hall A9, Basement of Mechanical Faculty, Gdynia Maritime University
Chairmen: *Yoshiaki Kunieda (Japan), Ireneusz Czarnowski (Poland)*
- Analyzing the Factors Affecting the Safe Maritime Navigation for Training Apprentice Officers
Lee Myoungki (Korea), Park Sangwon (Korea), Park Youngsoo (Korea), Park Minjeong (Korea), Lee E.K. (Korea)
- Ship as a Social Space for Adaptation: Perception of the Phenomenon by Young Seafarers
Kalvaitienė Genutė (Lithuania), Senčila Viktoras (Lithuania)
- A Suggestion of an Application of Blended Learning in MET Through a Harmonized STCW Model
Pipchenko Oleksandr (Ukraine), Kovtunenkov Dmitry (Kazakhstan)
- The Role of Maritime Education and Youth Training in Creating a Strategic Model of Managing a Public Diplomacy Project
Czarnecka Agnieszka (Poland), Muszyńska Katarzyna (Poland)
- Translation Theories and Pragmatics – Analysis of Maritime and Legalese Language Based Examples
Denc Maciej (Poland), Denc Jowita (Poland)
- 1300 - 1330 **Break:** Transfer by Bus to Skwer Kościuszki, Gdynia
- 1330 - 1445 **Lunch** in “Róża Wiatrów” Restaurant
- 1430 - 1530 Registration in the Main Hall of Faculty of Navigation, GMU, Jana Pawła II Ave. 3

PARALLEL SPECIALIST SESSIONS

Session B1 – Electronic Chart Display and Information System (ECDIS)

- 1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Auditorium Maximum
Chairmen: *Thomas Porathe (Norway), Przemysław Dziula (Poland)*
- Clarification, Systematization and General Classification of Electronic Chart Systems and Electronic Navigational Charts Used in Marine Navigation
Weintrit Adam (Poland)
- Raising Awareness on Cyber Security of ECDIS
Svilicic Boris (Croatia), Brčić David (Croatia), Žuškin Srđan (Croatia), Kalebić David (Croatia)
- NaAVIC, a Free Downloadable ECS App that Runs on ENC Data Streamed Directly from a Cloud-based Infrastructure Specifically Designed for Marine Navigation
Peyton Derrick (Canada), Kuwalek Edward (United States), Alla Abhishek (United States)
- Analysis of Primary Position Validation in ECDIS System
Šakan Davor (Croatia), Žuškin Srđan (Croatia), Brčić David (Croatia), Valčić Sanjin (Croatia)
- A Critical Analysis of IMO S-Mode Guidelines
Zalewski Paweł (Poland)
- 1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session C1 – Collision Avoidance - Part 1

- 1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Lecture Hall (Aula)
Chairmen: *Eamonn Doyle (Ireland), Ryszard Wawruch (Poland)*
- Measuring Ship Collision Risk in a Dense Traffic Environment
Huang Yamin (Netherlands), van Gelder Pieter (Netherlands)
- DSSA+: Distributed Collision Avoidance Algorithm in an Environment where Both Course and Speed Changes are Allowed
Hirayama Katsutoshi (Japan), Miyake Koki (Japan), Shiota Tomohiro (Japan), Okimoto Tenda (Japan)
- Integration of Elliptical Ship Domains and Velocity Obstacles for Ship Collision Candidate Detection
Chen Pengfei (China), Mou Junmin (China), van Gelder Pieter (Netherlands)
- Development of Automatic Collision Avoidance System and Quantitative Evaluation of the Manoeuvring Results
Nakamura Shinya (Japan), Okada Naoki (Japan)
- Use of Association Rules for Cause-effects Relationships Analysis of Collision Accidents in the Yangtze River
Wu Bing (China), Zhang Junhui (China), Yan Xinping (China), Yip Tsz Leung (Hong Kong)
- 1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session D1 – Communication Networks and Information Exchange

- 1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Room No. 110
Chairmen: *Mihaela Bukljaš (Croatia), Andrzej Fellner (Poland)*
- Safe Information Exchange on Board of the Ship
Ahvenjärvi Sauli (Finland), Czarnowski Ireneusz (Poland), Kåla Jimmy (Finland), Kyster Andreas (Denmark), Meyer Ireneusz (Poland), Mogensen Johan (Denmark), Szyman Pawel (Denmark)
- Consideration of a General Model of Stochastic Service Curve for Communication Networks
Wasielawska Katarzyna (Poland), Borys Andrzej (Poland)
- Standardization of Interface for VHF, MF/HF Communication Using DSC within Its Integration with INS in the Framework of e-Navigation Concept
Koshevyy Vitaliy (Ukraine), Shyshkin Oleksandr (Ukraine)
- The Issues of Maritime Radiocommunication on the WRC-19
Korcz Karol (Poland)
- Detained Vessels Under Paris MoU: Implementation of GMDSS
Rey-Charlo Raquel-Esther (Spain), Piniella Francisco (Spain), Alcaide Juan Ignacio (Spain)
- 1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session E1 – Maritime Education and Training (MET) – Part 2

- 1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P1
Chairmen: *Carl Hult (Sweden), Henryk Śniegocki (Poland)*
- Difficulties in Understanding the COLREGs among the Students from Different Systems of Education for Seafarers
Ivanišević Dalibor (Croatia), Gundić Ana (Croatia), Mohović Đani (Croatia)

Developing Generative Adversarial Nets to Extend Training Sets and Optimize Discrete Actions

Zhang Ruolan (China), Furusho Masao (Japan)

Certifying Navigational Skills: A Video-based Study on Assessments in Simulated Environments

Sellberg Charlott (Sweden), Lindmark Olle (Sweden), Lundin Mona (Sweden)

Study on Effective Maritime Training through the Anchoring Training

Kunieda Yoshiaki (Japan), Murai Koji (Japan), Kashima Hideyuki (Japan), Sugawara Masashi (Japan)

Intellectual Technologies in the Field of Fundamental Education of Navigators

Bondarev Vitaly (Russia), Volkogon Vladimir (Russia), Nechaev Yuri (Russia), Kovalishin Pavel (Russia)

1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session F1 – Human Factor

1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P104

Chairmen: *Gisela Müller-Plath (Germany), Teresa Abramowicz-Gerigk (Poland)*

Validation of a Behavioral Marker System for Rating Cadet's Non-Technical Skills

Conceição, Victor Fernando Plácido da (Portugal), Mendes João (Portugal), Teodoro M. Filomena (Portugal), Dahlman Joakim (Sweden)

The Importance of Reporting All the Occurred Near Misses on Board: The Seafarers' Perception

Georgoulis Georgios (Greece), Nikitakos Nikitas (Greece)

Impact of Simulation Fidelity on Student Self-efficacy and Perceived Skill Development in Maritime Training

Renganayagalu Sathiya Kumar (India), Mallam Steven (Canada), Nazir Salman (Norway), Ernstsén Jorgen (Norway), Haavardtun Per (Norway)

Saving Migrants From The Sea: Improving Training for Search and Rescue Operations

Radojević Slobodan (Serbia), Kresojević Milan (Serbia)

A Novel Algorithm for Modeling Human Decision Making of Inbound Merchant Ships – A Case Study of the Shanghai Waigaoqiao Phase IV Port

Xue Jie (Netherlands), Wu Chaozhong (China), van Gelder Pieter (Netherlands)

1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session B2 – Cargo Handling

1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Auditorium Maximum

Chairmen: *Alexander Kuznetsov (Russia), Bogumił Łaczyński (Poland)*

Estimation of Shipment Size in Seaborne Iron Ore Trade

Zhou Xinyue (China), Hu Qinyou (China)

Analysis of Accidents During Maritime Transportation of Cargo Fumigated by Phosphine: Causes, Consequences, Prevention

Belobrov Eugene (Ukraine), Torskiy Vladimir (Ukraine), Rangayeva Ganna (Ukraine)

Supply Chains for the Oil & Gas Sector. Identification and Location of the Oilfield Service Operators in the Contemporary Geopolitical System

Rutowicz Mariusz (Poland)

1730 - 2000 Free Time

Session C2 – Marine Traffic

1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Lecture Hall (Aula)
Chairmen: *Fancun Kong (China), Tadeusz Stupak (Poland)*

The IHO S-100 Standard for the Safety of Human Activities at Sea - the Requirements and Possibilities of Use for the Support of Marine Traffic
Nitner Henryk (Poland)

Assessing Maritime Safety Effects of Maritime Digitization with the European Maritime Simulator Network EMSN: The Sea Traffic Management Case

Burmeister Hans-Christoph (Germany), Scheidweiler Tina (Germany), Reimann M. (Germany), Jahn Carlos (Germany)

Maritime Green Solution for Traffic Congestion

Petković Miro (Croatia), Zubčić Marko (Croatia), Krčum Maja (Croatia), Vujović Igor (Croatia)

1730 - 2000 Free Time

Session D2 – Offshore Operations

1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Room No. 110
Chairmen: *David Brčić (Croatia), (Russia), Paweł Zalewski (Poland)*

Distributed Situation Awareness in a Demanding Maritime Operation: A Case Study of the Subsea Segment

Norstein Erlend (Norway), Sharma Amit (Norway), Jungfeldt Sophie (Norway), Nazir Salman (Norway)

A Comparison Between Conventional Buoy Mooring CBM, Single Point Mooring SPM and Single Anchor Loading SAL Systems Considering the Hydro-meteorological Condition Limits for Safe Ship's Operation Offshore

Rutkowski Grzegorz (Poland)

A Comparison Between DP Offshore Loading Operation on Submerged Turret Loading System STL, Submerged Single Anchor Loading System SAL and Offshore Loading System OLS Considering the Hydro-meteorological Condition Limits for the Safe Ship's Operation Offshore

Rutkowski Grzegorz (Poland)

1730 - 2000 Free Time

Session E2 – Hydrology and Oceanology

1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P1
Chairmen: *José Carlos Bernardino (Brazil), Jerzy Rogowski (Poland)*

Fluid Mud and Nautical Bottom – Concept and Application in Itajaí Port Complex (Brazil)
Pion Lucas Martins (Brazil), Alfredini Paolo (Brazil)

Estimation of Sea Level Rise in Santos Port (Brazil)
Alfredini Emilia (Brazil), Alfredini Paolo (Brazil)

Hydrology of Tidal Waters at the Glacier Terminus and Their Impact on Hydrographical Surveys and Navigation Safety

Pastusiak Tadeusz (Poland)

1730 - 2000 Free Time

Session F2 – Port Practices

1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P104
Chairmen: *Sanja Bauk (Montenegro), Adam Przybyłowski (Poland)*

Assessment of the Possibility of Entry of Oversized Ships to the North Port in Gdansk
Piotrkowski Wiesław (Poland), Śniegocki Henryk (Poland), Wilczyński Przemysław (Poland)

Measurements and Numerical Modelling of Surface Waves in Front of the Port of Split
Leder Nenad (Croatia), Lončar Goran (Croatia), Duplančić Leder Tea (Croatia)

Comparative Analysis of Ports Practices and Activities in the Tri-City and China
Ziemska Monika (Poland), Płodzik Emilia (Poland), Falkowska Michalina (Poland)

1730 - 2000 Free Time

2000 - 2300 **Gala Dinner** – Banquet Room on Ground Floor of Hotel Mercure Gdynia Centrum,
 Address: Armii Krajowej Str. 22, Gdynia

(Evening dress)



During the Gala, nominations for **Honorary Fellowship of TransNav** will be announced.



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').

Hotel Mercure Gdynia Centrum offers views of the sea, Kościuszko Square and Dar Pomorza and ORP Błyskawica Museum Ships. They are all within a 5-minute walk, as well as a sandy beach and a large beach playground.

Mercure Gdynia Centrum is situated in a quiet area, 300 m from the Batory shopping centre and 150 m from Świętojańska Street with several coffee houses, restaurants and shops. The Gdynia Oceanarium is 500 m away. Lech Walesa Airport in Gdańsk is within 20 km and it is 3 km to Railway Station Gdynia Główna. The hotel has a large, fenced car park.

The City center is a great choice for travellers interested in food, restaurants and harbours. This is our guests' favourite part of Gdynia, according to independent reviews.



Thursday 13th June 2019

0800 - 1000 Registration in the Main Hall of Faculty of Navigation, GMU, Jana Pawła II Ave. 3

PLENARY SESSION

Plenary Session A2 – Maritime Autonomous Surface Vessels (MASS) - Part 1

0900 - 1030 **Place:** Gdynia Maritime University, Faculty of Navigation, Auditorium Maximum
Chairmen: *Qinyou Hu (China), Adam Weintrit (Poland)*

Addressing the Accidental Risks of Maritime Transportation: Could Autonomous Shipping Technology Improve the Statistics?

Hoem Åsa (Norway), Fjørtoft Kay (Norway), Rødseth Ørnulf Jan (Norway)

Merging conventionally navigating Ships and MASS - Merging VTS, FOC and SCC?

Baldauf Michael (Germany), Fischer Sandro (Germany), Kitada Momoko (Japan), Mehdi Raza (Pakistan), Al-Quhali Maher (Jordan), Fiorini Michele (Italy)

Intelligent Autonomous Ship Navigation using Multi-Sensor Modalities

Wright Glenn (United States)

Maritime Autonomous Surface Ships (MASS) and the COLREGS: Do We Need Quantified Rules Or Is “the Ordinary Practice of Seamen” Specific Enough?

Porathe Thomas (Norway)

Challenges Related to the Introduction of Autonomous Vessels into the Shipping Industry

Pawelski Jan (Poland)

1030 - 1045 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

PARALLEL SPECIALIST SESSIONS

Session B3 – Maritime Autonomous Surface Vessels (MASS) - Part 2

1045 - 1145 **Place:** Gdynia Maritime University, Faculty of Navigation, Auditorium Maximum
Chairmen: *Michael Baldauf (Germany), Zbigniew Burciu (Poland)*

Collision Avoidance for MASS: Centralized vs Decentralized Approach

Szlapczyńska Joanna (Poland), Szlapczyński Rafal (Poland)

Is Full-autonomy the Way to Go Towards Maximizing the Ocean Potentials?

Zghyer Rami (Norway), Ostnes Runar (Norway), Halse Karl Henning (Norway)

Preliminary Results of a System-theoretic Assessment of Maritime Autonomous Surface Ships' Safety

Wróbel Krzysztof (Poland), Krata Przemysław (Poland), Montewka Jakub (Poland)

1145 - 1200 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session C3 – Route Planning

1045 - 1145 **Place:** Gdynia Maritime University, Faculty of Navigation, Lecture Hall (Aula)
Chairmen: *Shwu-Jing Chang (Taiwan), Witold Kazimierski (Poland)*

Ship Route Planning Using Historical Trajectories Derived from AIS Data
He YanKang (China), Zhang Di (China), Zhang Jinfen (China), Zhang M.Y. (China), Li T.W. (China)

Optimal Route Planning Algorithm for Coastal Ships Considering Ocean Environment and Grounding
Lee Wonhee (Korea), Yoo Wonchul (Korea), Ham Seung-Ho (Korea), Kim Tae-Wan (Korea)

Verification of Ship's Trajectory Planning Algorithms Using Real Navigational Data
Lazarowska Agnieszka (Poland)

1145 - 1200 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session D3 – Distress and Emergency

1045 - 1145 **Place:** Gdynia Maritime University, Faculty of Navigation, Room No 110
Chairmen: *Pieter van Gelder (Netherlands), Krzysztof Kołowrocki (Poland)*

Places of Refuge for Ships in Distress: The South African Approach and Challenges
Seti Sibulelo (South Africa)

Development of a Small Tsunami Shelter and Its Sea Experiment of Towing and Drifting
Watanabe Keisuke (Japan), Mizuno Shigeru (Japan)

Norwegian Emergency Towing Service – Past – Present and Future
Berg Tor Einar (Norway), Selvik Ørjan (Norway), Jordheim Ola (Norway)

1145 - 1200 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session E3 – Cruises and Passenger Vessels

1045 - 1145 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P1
Chairmen: *Stasys Paulauskas (Lithuania), Marek Szymoński (Poland)*

New Passenger Maritime Transport System for Gulf of Cadiz (ESPOMAR PROJECT)
Alcaide Juan Ignacio (Spain), Garcia LLave Ruth (Spain), Piniella Francisco (Spain), Querol Sahagún Antonio (Spain)

Initial Approach to Safety on Cruises Ships: Structure of the Sector
Arranz Alfonso (Spain), Piniella Francisco (Spain), Cerbán Jiménez M^a del Mar (Spain)

Safe Navigation of Cruise Ships in Greenlandic Waters - Legal Frame and Practical Challenges
Rasmussen Hanna B. (Denmark), Feldtmann Birgit (Denmark)

1145 - 1200 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session F3 – Inland Navigation

1045 – 1145 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P104
Chairmen: *Kezhong Liu (China), Andrzej Bujak (Poland)*

Implementation of e-Navigation Strategies for RIS Centres Supporting Inland Navigation
Lisaj Andrzej (Poland)

The Analysis of Offenses in Inland Navigation in Poland 2013-2017
Skupień Emilia (Poland), Tubis Agnieszka (Poland), Rydlewski Mateusz (Poland)

Best Practices in Competency-based Education in Maritime and Inland Navigation
Martes Liliana (Romania)

1145 - 1200 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

PARALLEL SPECIALIST SESSIONS

Session B4 – AIS Assisted Services

1200 - 1330 **Place:** Gdynia Maritime University, Faculty of Navigation, Auditorium Maximum
Chairmen: *Tae-Gweon Jeong (Korea)*, *Joanna Szlapczyńska (Poland)*

Preliminary Inter-Comparison of AIS Data and Optimal Ship Tracks
Mannarini Gianandrea (Italy), *Carelli Lorenzo (Italy)*, *Zissis Dimitris (Greece)*, *Spiliopoulos Giannis (Greece)*, *Chatzikokolakis Konstantinos (Greece)*

AIS Based Shipping Routes Using the Dijkstra Algorithm
Silveira Pedro (Portugal), *Teixeira Ângelo (Portugal)*, *Guedes Soares Carlos (Portugal)*

AIS-Assisted Service Provision and Crowdsourcing of Marine Meteorological Information
Chang Shwu-Jing (Taiwan), *Huang Chun-Hao (Taiwan)*, *Chang Shih-Ming (Taiwan)*

Comparison of Master's Route Selection Criteria of Vehicle Carriers in North Pacific and North Atlantic Using Satellite AIS and Ocean Wave Data
Fujii Michio (Japan), *Hashimoto Hirotada (Japan)*, *Taniguchi Yuuki (Japan)*

Sharing Ships' Weather Data via AIS
Tetreault Brian (United States), *Johnson Gregory W. (United States)*

1330 - 1445 **Lunch** in "Róża Wiatrów" Restaurant

Session C4 – Port Operations

1200 - 1330 **Place:** Gdynia Maritime University, Faculty of Navigation, Lecture Hall (Aula)
Chairmen: *Anatoli Alop (Estonia)*, *Przemysław Krata (Poland)*

Next Generation of Physics-based System for Port Planning and Efficient Operation
Mortensen Simon Brandi (Australia), *Harkin Alex (Australia)*, *Kofoed-Hansen Henrik (Denmark)*, *Mlaś Waldemar (Poland)*

Developing the City, Developing the Port: Comparison of the Governance in Medium-size Port-cities in Europe
Serry Arnaud (France), *Loubet Lilian (France)*

A Simplified Forecasting Model for the Estimation of Maritime Container Demand at a National Level – the Case of Poland
Mateczak Maciej (Poland)

Evaluation of Sinking Effect in Container Stack
Kuznetsov Alexander L. (Russia), *Kirichenko Alexander V. (Russia)*, *Semenov Anton D. (Russia)*

Definition of Mooring Plans for Vessels at Port Terminals Using Physical Models
Bernardino José Carlos (Brazil), *Pion Lucas Martins (Brazil)*, *Esferra Rafael (Brazil)*, *de Oliveira Bezerra Roberto (Brazil)*

1330 - 1445 **Lunch** in "Róża Wiatrów" Restaurant

Session D4 – Miscellaneous

- 1200 - 1330 **Place:** Gdynia Maritime University, Faculty of Navigation, Room No. 110
Chairmen: *Vladimir Torskiy (Ukraine), Dorota Pyć (Poland)*
- Integrated Maintenance Decision Making Platform for Offshore Wind Farm with Optimal Vessel Feet Size Support System
Szpytko Janusz (Poland), Salgado Duarte Yorlandys (Cuba)
- Hull Inscription Recognition in Video Surveillance for Automatic Identification of Ships
Wawrzyniak Natalia (Poland), Hyla Tomasz (Poland), Bodus-Olkowska Izabela (Poland)
- The Process of Target Extraction for the Needs of an Unmanned Submarine Anti-collision System Using Scanning Sonar
Kazimierski Witold (Poland), Zaniewicz Grzegorz (Poland)
- Analysis of Tropospheric Contribution to GPS Positioning Error During Tropospheric Cyclone Marcus in 2017
Sikirica Nenad (Croatia), Horvat Marko (Croatia), Špoljar Darko (Croatia), Rumora Ivan (Croatia)
- Study of Inline-slot Ejector Diffuser Under Varying Ambient Conditions: A Passive Infrared Suppression Device for Ships
Singh Lakhvinder (India), Singh Sidh Nath (India), Sinha Sawan Suman (India)
- 1330 - 1445 **Lunch** in “Róża Wiatrów” Restaurant

Session E4 – Oil Spill

- 1200 - 1330 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P1
Chairmen: *Mohan Anantharaman (Australia), Jakub Montewka (Poland)*
- End-user and Stakeholder Views on Selected Risk Assessment Tools for Marine Oil Spill Preparedness and Response, Including Future Research and Development Need
Goerlandt Floris (Belgium), Laine Valtteri (Finland), Bal Beşikçi Elif (Sweden), Baldauf Michael (Germany), Al-Quhali Maher (Sweden), Koldenhof Yvonne (Netherlands)
- Efficiency of Maritime Simulator Training in Oil Spill Response Competence Development
Halonen Justiina (Finland), Lanki Antti (Finland)
- Probabilistic Approach to Determination of Oil Spill Domains at Port and Sea Water Areas
Dąbrowska Ewa (Poland), Kołowrocki Krzysztof (Poland)
- Improving Preparedness for Shipborne Oil Pollution – Highlights of Tabletop Exercises at Saimaa Inland Waters
Halonen Justiina (Finland), Altarriba Elias (Finland)
- Monte Carlo Simulation Approach to Determination of Oil Spill Domains at Port and Sea Water Areas
Dąbrowska Ewa (Poland), Kołowrocki Krzysztof (Poland)
- 1330 - 1445 **Lunch** in “Róża Wiatrów” Restaurant

Session F4 – Algorithms and Methods

- 1200 - 1330 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P104
Chairmen: *Katsutoshi Hirayama (Japan), Andrzej Lenart (Poland)*
- Efficiency of a Voluntary Speed Reduction Algorithm for a Ship’s Great Circle Sailing
Wang Helong (China), Mao Wengang (Sweden), Eriksson Leif (Sweden)

Computation of Positive Realizations for Descriptor Linear Discrete-time Systems
Kaczorek Tadeusz (Poland)

Derivation of Formulas in Spherical Trigonometry Based on Rotation Matrix
Hsieh Tsung-Hsuan (Taiwan), Wang ShengZheng (China), Liu Wei (China), Zhao JianSen (China), Chen Chih-Li (Taiwan),

Derivative Free Optimal Thrust Allocation in Ship Dynamic Positioning Based on Direct Search Algorithms
Valčić Marko (Croatia), Prpić-Oršić Jasna (Croatia)

Topological Issues Related with Sampling Theorem and Reconstruction Formula
Borys Andrzej (Poland)

1330 - 1445 **Lunch** in “Róża Wiatrów” Restaurant

Panel Session M1 – Meeting of the Waterborne Transport Section of the Committee of Transport, Polish Academy of Sciences (STW KT PAN)

1200 - 1330 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P103
Chairman: *Adam Weintrit (Poland)*

This is closed meeting. Program distributed to STW KT PAN members.

1330 - 1445 **Lunch** in “Róża Wiatrów” Restaurant

POSTER SESSION

Session P1 - Miscellaneous Problems of Navigation

1200 - 1330 **Place:** Gdynia Maritime University, Faculty of Navigation, Lower Hall under Planetarium
Chairmen: *Antonio Querol Sahagún (Spain), Andrzej Felski (Poland)*

- N1** - The Impact of the New Panama Canal on Cost-savings in the Shipping Industry
Županović Dino (Croatia), Grbić Luka (Croatia), Barić Mate (Croatia)
- N2** - Operations of Maritime Autonomous Surface Ships
Pietrzykowski Zbigniew (Poland), Hajduk Jerzy (Poland)
- N3** - Statistical Analysis of the Real Surface Currents and Wind Parameters for the Szczecin Lagoon
Kasyk Lech (Poland), Kijewska Monika (Poland), Pleskacz Krzysztof (Poland)
- N4** - A New Intelligent Approach in Predictive Maintenance of Separation System
Marichal Nicolás (Spain), Ávila Prats Deivis (Spain), Hernández Ángela (Spain), Padrón Isidro (Spain)
- N5** - Kinematic Method of Determining Safe Fairway Bend Widths
Gucma Stanislaw (Poland), Dzwonkowski Jan (Poland), Przywarty Marcin (Poland)
- N6** - Use of a Multiple Regression Model to Determine the Parameters of Vessel Traffic Flow in Port Areas
Nowy Agnieszka (Poland), Gućma Lucjan (Poland)
- N7** - Impact of Chart Data Accuracy on the Safety of Navigation
Acomi Nicoleta (Romania)
- N8** - How to Improve Safety on the Offshore Installations
Mrozowska Alicja (Poland), Mrozowski Piotr (Poland)
- N9** - Time Server Based on NMEA and SNTP Protocols
Łukasik Zbigniew (Poland), Nowakowski Waldemar (Poland), Ciszewski Tomasz (Poland)

- N10** - Reconstruction of Geomagnetic Event as Observed in Northern Adriatic Region and Its Correlation with GPS Single-frequency Positioning Deviations
Brčić David (Croatia), Čelić Jasmin (Croatia), Valčić Sanjin (Croatia)
- N11** - On Analysis of LitPOS Stations Time Series and Velocities
Puškorius Vytautas (Lithuania), Paršeliūnas Eimuntas (Lithuania), Baniulis Rimvydas (Lithuania), Galinauskas Karolis (Lithuania), Valotka Simonas (Lithuania)
- N12** - Analysis of the Vessels' Service Time in the Port of Gdańsk, Based on the Time Registration of Ships Entries and Departures, as a Proposition of Multi-aspect Method of Port Monitoring
Myszka Agata (Poland), Kaizer Adam (Poland)
- N13** - Waypoint Path Controller for Ships
Tomera Mirosław (Poland), Alfuth Łukasz (Poland)
- N14** - A Review of NAVDAT and VDES as Upgrades of Maritime Communication Systems
Bauk Sanja (Montenegro)
- N15** - VDES Satellite Segment Definition in Context of World Radio Conference 2019 Work
Waraksa Marcin (Poland), Żurek Jerzy (Poland)
- N16** - Mobile Radio Beacons in Coastal Reserved Navigation System for Ships
Kelner Jan (Poland), Ziolkowski Cezary (Poland)
- N17** - Multi-criteria Optimization of Multi-step Matrix Game in Collision Avoidance of Ships
Lisowski Józef (Poland)
- N18** - Prediction Control Systems in Marine Applications
Gierusz Witold (Poland), Miller Anna (Poland)
- N19** - Prototyping and Simulation Environment of Ship Motion Control System
Rybczak Monika (Poland), Rak Andrzej (Poland)
- N20** - Smart System to Coordination of the Available Response Resources in an Oil Spill Leakage
Panaiteescu Mariana (Romania), Panaiteescu Fanel-Viorel (Romania)
- N21** - Environmental Impact of Oil Spill Caused by Leakage of Fix Pipelines in Port Północny
Aps Robert (Estonia), Fetissoy Mihhail (Estonia), Guze Sambor (Poland), Gil Mateusz (Poland), Wilczyński Przemysław (Poland)
- N22** - Recognition and Identification of Nonconventional Vessels in Video Monitoring of Traffic Services.
Wawrzyniak Natalia (Poland)

1330 - 1445 **Lunch** in "Róża Wiatrów" Restaurant

Session B5 – Ship Handling

1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Auditorium Maximum
Chairmen: *Nikitas Nikitakos (Greece), Mirosław Gerigk (Poland)*

Comparison between Simulator Modelled and Empirical Ship Squat Prediction
Barić Mate (Croatia), Mohović Robert (Croatia), Mohović Dani (Croatia), Grbić Luka (Croatia)

Environmental Impact of New Maritime Routes Cadiz-Huelva-Algarve: Preliminary Study
Marin Fabregat David (Spain), Nebot Sanz Enrique (Spain), Fdez-Güelfo Alberto (Spain), Sales Márquez Diego (Spain), Querol Sahagún Antonio (Spain)

Polar Plot Capability of a Tug in Indirect and Direct Mode of Escort Towing
Artyszuk Jarosław (Poland)

Simulation Study on the Influence of EEDI Requirements to Shiphandling in Heavy Weather
Nishizaki Chihiro (Japan), Okazaki Tadatsugi (Japan), Yabuki Hideo (Japan), Yoshimura Yasuo (Japan)

Features of an Ultra-large Container Ship Mathematical Model Adjustment Based on the Results of Sea Trials
Pipchenko Oleksandr (Ukraine), Tsymbal Mykola (Ukraine), Shevchenko Valeriy (Ukraine)

1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session C5 – Collision Avoidance - Part 2

1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Lecture Hall (Aula)
Chairmen: *Tsz Leung Yip (Hong Kong), Tadeusz Pastusiak (Poland)*

Critical Distance Evaluation for Collision Evasive Action for Ships in the High Seas
Montewka Jakub (Poland)

Ship Collision Avoidance Decision Model and Simulation Based on Collision Circle
Zhang Jifeng (China), Hu Qinyou (China), Liao Bingjun (China)

Comparative Study of the Accuracy of AIS and ARPA Indications
Wawruch Ryszard (Poland)

The Core of MTCAS: Manoeuvre-Simulation-based Model for Situation-adapted Decision Making to Avoid Collision
Baldauf Michael (Germany)

Neuroevolutionary Approach to COLREGs Ship Maneuvers
Łacki Mirosław (Poland)

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1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session D5 – Ship Manoeuvring

1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Room No. 110
Chairmen: *Vytautas Paulauskas (Lithuania), Przemysław Wilczyński (Poland)*

Probabilistic Modeling of Ship-bank Contacts Based on Manoeuvring Performance under Environmental Loads
Liu Han (China), Ma Ning (China), Gu Xiechong (China), Wu L.P. (China)

Analysis of the Impact of Exemption from Pilotage for 75 m and 90 m Long Vessels on the Fairway Świnoujście-Szczecin
Gucma Lucjan (Poland), Łazuga Kinga (Poland)

Optimization of a Ship Turning Basin Using Real Time Simulations – A Case Study for the Quai Des Trois Fontaines (Chooz, France)
Mansuy Marc (Belgium), Candries Maxim (Belgium), Eloit Katrien (Belgium), Wéry Bernard (Belgium)

Some Effects of Wind on Ship's Manoeuvrability
Szymoński Marek (Poland)

The Support of Port Regulation Creation and Update by Real-time Ship Manoeuvring Simulation Studies Exemplified by Port of Kołobrzeg
Gucma Lucjan (Poland), Łazuga Kinga (Poland)

1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session E5 – Maritime Economics and Logistics (MEL)

- 1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P1
Chairmen: *Arnaud Serry (France), Maciej Matczak (Poland)*
- Blue Growth Circular Innovation
Paulauskas Stasys (Lithuania)
- Global Container Shipping Market Development and Its Impact on Mega Logistics System
Grzelakowski Andrzej (Poland)
- Global Trends Shaping Life Quality in Agglomerations with Particular Emphasis on Mobility in Seaport Agglomerations
Przybyłowski Adam (Poland)
- Box Selectivity in Different Container Cargo-handling Systems
Kuznetsov Alexander L. (Russia), Kirichenko Alexander V. (Russia), Semenov Anton D. (Russia)
- Global Supply Chain, New Determinants and Directions of Changes in its Functioning in the Assessment of Lower Silesia's Business
Bujak Andrzej (Poland)
- 1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session F5 – Radio Navigation

- 1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P104
Chairmen: *Henning Heiselberg (Denmark), Krzysztof Czaplewski (Poland)*
- Availability of Maritime Radio Beacon Signals for R-Mode in the Southern Baltic Sea
Gewies Stefan (Germany), Grundhöfer Lars (Germany), Hehenkamp Niklas (Germany)
- Antenna for Marine Radar with Supperdirectivity Properties
Koshevyy Vitaliy (Ukraine), Shevchenko Anna (Ukraine)
- Research on Radiation Characteristics of Plasma Yagi Antenna Based on AIS Base Station in Ships' Routeing Waters
Sun Yang (China), Chen Yuli (China), Kong Fancun (China), Wei Yuhan (China), Zhan Fei (China), Zhao JianSen (China)
- Radar Observation of Wind Farms in Various Weather Conditions
Stupak Tadeusz (Poland), Świerczyński Sławomir (Poland), Wąż Mariusz (Poland)
- Edge Element Calculation of Radar Cross Section of Small Maritime Targets with Respect to Height of Radar Antenna
Dodig Hrvoje (Croatia), Vukša Srđan (Croatia), Bukljaš Mihaela (Croatia), Vidan Pero (Croatia)
- 1614 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Panel Session M2 – Annual General Meeting of the Poland Branch of The Nautical Institute

- 1500 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P103
Chairmen: *Duncan McKelvie (United Kingdom), Adam Weintrit (Poland)*
- This is an open meeting. Program distributed to members of the Poland Branch of the NI.
- 1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

POSTER SESSION

Session P2 - Miscellaneous Problems of Transport

- 1445 - 1615 **Place:** Gdynia Maritime University, Faculty of Navigation, Lower Hall under Planetarium
Chairmen: *Angelica Baylon (Philippines)*, *Sambor Guze (Poland)*
- T1** - Application of the BPMN Models in Maritime Transport
Dramski Mariusz (Poland)
 - T2** - Methodological Problems of Modern Transportation Logistics
Kuznetsov Alexander (Russia), *Kirichenko Alexander (Russia)*
 - T3** - Sea Transportation of Coal Liable to Liquefaction
Poppek Marzenna (Poland)
 - T4** - The Dynamic of Oxidative Changes in Rapeseed Oil During Maritime Transport Determined by Storage Conditions
Ocieczek Aneta (Poland), *Kaizer Adam (Poland)*, *Zischke Alicja (Poland)*
 - T5** - Simulation Model of Container Land Terminals
Kuznetsov Alexander (Russia), *Kirichenko Alexander (Russia)*, *Eglit J.J. (Russia)*
 - T6** - Requirements Regarding Safety Maritime Transport of Explosives Materials
Chmieliński Mirosław (Poland)
 - T7** - Variable Rotational Speed Control System of Sewage Pumping Station
Szycha Elżbieta (Poland), *Szycha Leszek (Poland)*
 - T8** - Ro-Ro and Ro-Pax Ships Arrival in to the Port Accuracy Evaluation
Paulauskas Vytautas (Lithuania), *Paulauskas Donatas (Lithuania)*
 - T9** - Expert Survey Method as a Technique to Support the Decision-making Process During Dredging Activity at the Harbour
Kaizer Adam (Poland)
 - T10** - Mathematical Models of a Pneumatic Cascade and Pneumatic Membrane Actuator Described with a Fractional Calculus
Luft Mirosław (Poland), *Łukasik Zbigniew (Poland)*, *Pietruszczak Daniel (Poland)*
 - T11** - Methodology of Selection of KPI's Taken in Consideration According to Specific Character of Ship-management Company
Łączyński Tomasz (Poland)
 - T12** - A Study of Correlation between Fishing Activity and AIS Data by Deep Learning
Shen Kuan-Yu (Taiwan), *Chu Ying-Jui (Taiwan)*, *Chang Shwu-Jing (Taiwan)*, *Chang Shih-Ming (Taiwan)*
 - T13** - Multicriteria Optimization Method of LNG Distribution
Chłopińska Ewelina (Poland), *Gucma Maciej (Poland)*
 - T14** - Safety and Resilience Indicators of Critical Infrastructure Impacted by Operation Application to Port Oil Terminal Examination
Kołowrocki Krzysztof (Poland), *Soszyńska-Budny Joanna (Poland)*
 - T15** - Consequences of Maritime Critical Infrastructure Accidents with Chemical Releases
Bogalecka Magda (Poland)
 - T16** - Hydrodynamics of DARPA SUBOFF Submarine at Shallowly Immersion Conditions
Efremov Dobrin (Bulgaria), *Milanov Evgeni (Bulgaria)*
 - T17** - The Impact of Quality Air in The Engine Room on the Crew
Panaïtescu Mariana (Romania), *Dumitrescu Marius (Romania)*, *Panaïtescu Fanel-Viorel (Romania)*, *Panaïtescu Valeriu Nicolae (Romania)*
 - T18** - Determination of Flying Objects Position
Dzunda Milan (Slovakia), *Dzurovcin Peter (Slovakia)*, *Melniková Lucia (Slovakia)*

- T19** - Errors of UAV Autonomous Landing System for Different Radio Beacon Configurations
Kelner Jan (Poland), Ziolkowski Cezary (Poland)
- T20** - Analysis of Electrical Parameters of an Internal Combustion Engine to Determine the State of Its Efficiency and Ecological Level
Olszowiec Pawel (Poland), Luft Mirosław (Poland), Łukasik Zbigniew (Poland)
- T21** - The Need for Unification and Harmonization in a Maritime Licensing Standard for Recreational Craft
Alonso Enriquez Jose Luis (Spain), Piniella Francisco (Spain), Alcaide Juan Ignacio (Spain)
- T22** - Consolidation as a Key to Success – an European Transport Enterprise Case Study
Kuśmińska-Fijałkowska Aldona (Poland), Łukasik Zbigniew (Poland), Kozyra Jacek (Poland)
- T23** - The Degree of Wage Differentiation as an Indicator of the Balance Between Demand and Labor Supply at Sea
Skrzeszewska Katarzyna (Poland)
- T24** - Limitation for Inland Ships in the Area of Planned Multimodal Port on Vistula River
Schoeneich Marta (Poland), Habel Michał (Poland), Szatten Dawid (Poland)
- T25** - Challenges Facing the Cruise Seaports Resulting from Introduction of Giant Cruise Vessels to the Market
Kizielewicz Joanna (Poland)

1615 - 1630 Coffee Break – Main Hall, Lower Hall, Room P105 & Outside Terrace

Session B6 – Bridge Simulators

- 1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Auditorium Maximum
Chairmen: *Vitaliy Kosheyyy (Ukraine), Jan Pawelski (Poland)*
- Problems that Occur in a Team: Learning from Maritime Accidents via Simulation Training
Barić Mate (Croatia), Culin Jelena (Croatia), Bielic Toni (Croatia)
- The Use of a Full Mission Bridge Simulator Ensuring Navigational Safety during the Klaipeda Seaport Development
Senčila Viktoras (Lithuania), Zažeskis Ričardas (Lithuania), Jankauskas Arvydas (Lithuania), Eitutis Rimvydas (Lithuania)
- Evaluation of the Probability of a Ship Handling Error Using Full Mission Bridge Simulator
Hejmlich Andrzej (Poland), Abramowicz-Gerigk Teresa (Poland), Burciu Zbigniew (Poland)

1730 - 2000 Free Time

Session C6 – Safety and Security at Sea

- 1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Lecture Hall (Aula)
Chairmen: *Carlos Jahn (Germany), Rafal Szlapczyński (Poland)*
- Safety Analysis of Interconnected and Interdependent Critical Infrastructure Networks
Blokus Agnieszka (Poland), Dziula Przemysław (Poland)
- Ensuring Cybersecurity in Shipping: Reference to Estonian Shipowners
Heering Dan (Estonia)
- How Does Digital Navigation on Sailboats Affect Spatial Abilities at Sea?
Müller-Plath Gisela (Germany)

1730 - 2000 Free Time

Session D6 – Drones and Aviation

1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Room No. 110
Chairmen: *Renato Filjar (Croatia), Piotr Zakrzewski (Poland)*

Safety Case Activities in SHERPA Project
Fellner Andrzej (Poland)

Assessment of the Potential Effectiveness of the WIG Craft in Search Action at Sea Using SARMAP Software
Malyszko Marzena (Poland)

An Investigation of Ship Airwakes by Scale-Adaptive Simulation
Shukla Shrish (India), Singh Sidh Nath (India), Sinha Sawan Suman (India), Vijayakumar R. (India)

1730 - 2000 Free Time

Session E6 – Arctic Shipping

1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P1
Chairmen: *Floris Goerlandt (Belgium), Jaroslaw Artyszuk (Poland)*

Use of Simulator Training to Mitigate Risks in Arctic Shipping Operations
Røds Johan-Fredrik (Norway), Gudmestad Øve T (Norway)

Navigating a Vessel Without an Ice Class on the NSR Close to the Front of Ice-free Zone During Ice Melting and Ice Growth Period
Pastusiak Tadeusz (Poland)

Ship-Iceberg Detection & Classification in Sentinel-1 SAR Images
Heiselberg Henning (Denmark)

1730 - 2000 Free Time

Session F6 – Stability and Hydrodynamics

1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P104
Chairmen: *Tor Einar Berg (Norway), Waldemar Mironiuk (Poland)*

Mathematical Model of Hydrodynamic Characteristics on the Ship's Hull for Any Drift Angles
Kryvyi Olexandr (Ukraine), Miyusov Mykhaylo (Ukraine)

Ship Design Challenges for ESPOMAR Project: A Review of Available Methods
Legaz Mariajose (Spain), Querol Sahagún Antonio (Spain), Flethes Begoña (Spain)

A Hybrid Model of Flooding of the Ro-Ro Ships in Damaged Conditions
Gerigk Mirosław (Poland), Jachowski Jacek (Poland), Sargun Julita (Poland)

1730 - 2000 Free Time

Session G6 – Sea Operations

1630 - 1730 **Place:** Gdynia Maritime University, Faculty of Navigation, Room P103
Chairmen: *Nicoleta Acomi (Romania), Grzegorz Rutkowski (Poland)*

Innovative Project of Propellers and Thrusters Jet Loads Monitoring System during Ship Berthing
Abramowicz-Gerigk Teresa (Poland), Burciu Zbigniew (Poland), Hapke Lukasz (Poland)

An Expert Elicitation Analysis for Vessel Allision Risk Near the Offshore Wind Farm by Using Fuzzy Rule-Based Bayesian Network
Yu Qing (China), Liu Kezhong (China)

The International Convention for the Control and Management of Ships' Ballast Water and Sediments: A Respectful Way to Tackle the Problem of Aquatic Biodiversity in Maritime Transport
Garcia LLave Ruth (Spain), Alcaide Juan Ignacio (Spain)

1730 - 2000 Free Time

1930 - 2000 Option 1 – walk along the Seaside Boulevard and then climb on the Kamienna Góra Hill
1930 - 2000 Option 2 – go by the rail cabin to the Kamienna Góra Hill
1930 - 2000 Option 3 – go by mini-bus from Hotel Mercury to the Restaurant “Panorama”

2000 - 2300 **Friends Evening in Restaurant "Panorama"**
Gdynia, Kamienna Góra Hill
(casual clothes)



“Panorama” Restaurant

One of the most attractive venues opened in Gdynia. Located on the top of Kamienna Góra Hill, Panorama Restaurant can boast of one from the most beautiful views in whole Gdynia. From the windows and numerous terraces decorated with the taste of the restaurant, you can admire the Gdynia marina and sea horizon, while enjoying the exquisite meal of our own kitchen. The menu is heavily influenced by the Mediterranean region and you'll find a mouth-watering menu of salads, pastas, seafood and meat dishes. During our Friends Evening you will be able to taste grilled dishes as well as delicious Polish and international meals. Professional and friendly service adds extra points. Panorama has the chance to become one of the favorite places of entertainment for visitors.



Friday 14th June 2019

- 0900 - 1800 Technical and Sightseeing Tour by bus to Gdańsk,
- 0845 - 0900 Meeting point – Car Park in front of the Faculty of Navigation, Address: Jana Pawła II Ave. 3
- 0900 Departure of buses from the building of the Faculty of Navigation
- 0930 -1030 Sopot - walk along the longest wooden pier (molo) in Europe. Photo of the participants.
In case of rain organ concert in Oliva Cathedral

- 1115 - 1400 Technical and Sightseeing Tour by bus to the thousand-year-old Hanseatic town Gdańsk with a lot of memorable tourist attractions, including Old Town and new European Solidarity Centre building (ECS) in Gdańsk.

The European Solidarity Centre (Polish: Europejskie Centrum Solidarności) is a museum and library in Gdańsk, Poland, devoted to the history of Solidarity, the Polish trade union and civil resistance movement, and other opposition movements of Communist Eastern Europe. It was opened on 31 August 2014. The ECS is a state-of-the-art cultural institution that honours our greatest civic success - the victorious Solidarity movement.



It is a museum that commemorates the revolution of Solidarity and the fall of communism in Europe, but it is also an educational, research and academic centre, an archive, library and multimedia library. Last but not least, it is a public meeting space for citizens who feel responsible for the development of democracy: a place where solidarity and citizenship are put into practice.

The design of the building, by Polish firm FORT Architects, was the winner of an international competition held in 2007. The walls evoke the hulls of ships built at the Gdańsk Shipyard. Construction started in 2010. It was completed at a cost of 229 million złoty, of which 113 million złoty (38.4 million euro) was provided by the European Union, and the rest locally.

The opening ceremony took place on 31 August 2014, on the anniversary of the signing of the Gdańsk Agreement, the 1980 victory for striking shipyard workers which led to Solidarity's foundation. The ceremony was attended by Lech Wałęsa, the co-founder of Solidarity and later President of Poland, the President of Poland Bronisław Komorowski and the Chairman of Solidarity Piotr Duda. The preceding day was celebrated as a Citizens' Day in which over 12,000 former Solidarity members and others took part.

We believe that the experience of the Polish August 1980 gives us civic energy even today and that the heritage of Solidarity is still a source of invigorating ideas for Europe. We are happy that we can be together this day: Europe, Poland, Pomerania and all those of you who feel a connection to the ethos of Solidarity.

The thousand-year-old **Gdańsk** is considered to be the most monument-packed city of "Baltic Europe". Gdańsk is a Hanseatic (a town belonging to the Hanseatic League - a medieval league of towns in Northern Germany and adjacent countries for the promotion and protection of commerce). Most of the monuments in Gdańsk are located near the heart of its Old Town



District, around Długa Street, streets parallel to it, and the quayside (Długie Pobrzeże). The best place to start our trip would be the Upland Gate (Brama Wyżynna) and the King's Road stretching beyond it. Having crossed The Upland Gate, we will find the Torture Chamber (Katownia), which is planned to house a museum of amber soon. Next in line is the Golden Gate (Złota Brama) and, next to it, The Court of the Society of St. George (Dwór Bractwa Świętego Jerzego). Długa Street is the main track of the town, where you'll be enchanted by the beautiful renovated XVI - XVII century houses, one of them being Uphagen's House (Dom Uphagena) - which houses the Museum of the History of Gdańsk. All these magnificent buildings are overshadowed by the beautiful and monumental Main Town Hall (Ratusz Głównego Miasta). Walk inside, and you are in for a treat - the splendid interior was renovated not so long ago. Nearby, on the Market Square (Długi Targ) you'll find the symbol of Gdańsk - Neptune fountain. Behind it is the beautiful Court of Artus (Dwór Artusa) and the New House of the Court with The Lady from the Window and the amazing Golden House (Złota Kamieniczka). Tip: There is a place on the Market Square from which you can see three Neptune statues - try to find it! If you would like to feel like you are here now - take a look at the Panoramic View Długi Targ. At the end of Długi Targ, you'll find the Green Gate (Zielona Brama), with the picturesque quayside (Długie Pobrzeże) stretching beyond it and Granary Island (Wyspa Spichrzów - unfortunately still in ruins) opposite the quayside. The Central Maritime Museum (Centralne Muzeum Morskie) is located on the quay with Ołowianka island facing it (during summertime the Baltic Philharmonic gives concerts there).



1500 - 1700 A farewell dinner in "Hotel Radisson Restaurant" in Gdańsk

Plenary Session K1 – Closing Ceremony

- 1500 - 1700 **Place:** Hotel Radisson Restaurant" in Gdańsk,
Chairmen: *Adam Weintrit (Poland), Tomasz Neumann (Poland)*
- 1600 - 1630 Handing out prizes: the Best Paper Award, the Best Presentation Award, and the Best Poster Award
- 1630 - 1700 Closing Speech
Adam Weintrit, Chairman of the Conference
Duncan McKelvie, Vice President of The Nautical Institute
- 1700 - 1800 Return to the hotels in Gdynia (Final bus stop in front of the Faculty of Navigation)

Thursday 13th June 2019

**PRELIMINARY
ACCOMPANYING PERSONS' PROGRAMME**

0800 - 0900 Registration in the Main Hall of the Faculty of Navigation, GMU, Jana Pawła II Ave. 3

Touristic Trip

0930 - 1700 **Round Trip:** Gdynia – Gdynia Oksywie – Rewa – Mechelinki – Gdynia
Responsible Person: *Maria Łozińska (Poland)*

0930 Meeting Point – Faculty of Navigation

1000 - 1300 Immigration Museum opened in May, 2015, this fascinating look at how, why and to where millions of Poles have emigrated over the centuries.

The museum does an excellent job explaining various situations, political and economic, which made people leave Poland, to places such as the USA, Australia and even Brazil.

The building of the museum is also particularly noteworthy; located on the French Quay in the Port of Gdynia, the beautifully renovated Dworzec Morski (Marine Station) dates back to the 1930s and is a wonderful example of the architecture that was in fashion as Gdynia expanded rapidly after WWI. The building became the main gateway to the world for Polish emigrants in the between war period.

1330 - 1400 The oldest church in Gdynia. St. Michael Archangel Church is the oldest building in Gdynia. Originally built by nuns of the Norbertine Order, it replaced a pagan temple in 1224. The church was ruined during the war with Sweden in 17th century. After its restoration it served the Catholics until the last days of World War II when the tower was hit by a Soviet cannon ball, fired for fun. Yet again did the Kashubians have to rebuild their temple. The church is located on the Kępa Oksywska over 40 m above the sea level, surrounded by a cemetery. A lot of honourable people from Gdynia and Pomerania rest there; it also makes a Pantheon of the Navy: the walls of this historic church are lined with commemorating plates honouring the II World War Polish warships, graves of the outstanding navy commanders and the September 1939 defenders of the Polish Coast.

1400 - 1500 Car excursion to Rewa - a glimpse at the Puck Bay and the beach

1500 - 1630 Lunch in Mechelinki – “Winnica Nawrot”

1630 - 1700 Return to hotels



(In case of bad weather alternative attractions will be proposed)

**Papers not included in the Conference Program
which will not be presented due to the declared absence of the authors:**

Mercury in the Bottom Sediments of the Ship Channel and River Mouths: the Vistula Lagoon

Bogdanov Nikolay (Russia), Bass O.V. (Russia), Paranina Alina (Russia), Pararin Roman (Russia)

Method for Analyzing AIS Data and Determination of Simultaneously Ships Passage via Strait of Split

Bukljaš Mihaela (Croatia), Vukša Srđan (Croatia), Pavić Ivan (Croatia)

Simulator Based Training as a Driver in the Offshore Maritime Industry

Chitnis Ajay (India)

Integration of Management Systems in Sea Transport

Chruzik Katarzyna (Poland)

Information Flow in Maritime Safety Management Systems

Graboń-Chalupeczak Marzena (Poland)

Vessel Traffic Services: Innovation, Adaptation, and Continued Relevance

Hanchrow Gregory (United States)

The Machine Learning Method of PIDVCA

Li Lina (China), Wang Xinghua (China), Chen Guoquan (China)

Analysis of Longitudinal Strength of a Bulk Carrier in Waves

Nagarajan Vishwanath (India), Prabu C Sree Krishna (India), Sha Om Prakash (India)

Development of Evaluation Procedures for Watchkeeping Officers Using Bridge Simulator

Solmaz Murat Selçuk (Turkey), Özsever Barış (Turkey), Güllü A. (Turkey), Meşe C. (Turkey)

The Effect of High Ship Speed Ratio on Collision Avoidance Behavior of COLREGs

Wang Xinghua (China), Li Lina (China), Chen Guoquan (China)

Navigation Capacity Improvement of Yangtze River Estuary Deepwater Channel Based on Real Ship Test

Xiao Yingjie (China), Li Yun (China), Yan Huaran (China), Wu Shangang (China)





Plan of Gdynia

Main Areas of 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
- Global Shipping Industry; Recent Trends and Future Perspectives for Maritime Shipping; Emerging Technologies; Civil Protection and Disaster Management
- 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
- Geodetic, Hydrographic and Navigational Support of Human Activity at Sea; Human Impacts on the Ocean; Safety of Life at Sea; Human Element in Shipping
- Marine Cartography; Chart Projections; Chart Datum; Coastal and Ocean Mapping; Hydrographic Survey Map; Marine Navigation Charts; OpenSeaMap
- 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; Routeing of Ships and Associated Protected Measures; Ship Reporting; Traffic Separation Schemes (TSS); Waterways Design;
- Route Planning and Route Monitoring; Voyage (Passage) Planning; Ship's Routeing; 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, UUV, 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; DeepSpace 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
- Enabling Technologies for 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; Risks Posed by, or to, Tracking or Sensing Systems and Platforms; 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; Maritime Energy Management
- Automation, Robotics, Underwater Technology and Offshore Constructions; Fundamentals of Marine and Offshore Systems Design and Construction
- New Marine Technology, Vehicles, Constructions, Fixtures, 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, VTMIS; 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; ECDISNavy; 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-Machine Interface; 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; Numerical Modelling; Mathematical Models; 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; Route Optimization
- 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 Routeing 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 and Mobile Technology; Mobile and Wireless Networks; Network Management, Privacy and Security; e-Technology
- 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
- 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
- Dynamic Positioning (DP); Intelligent Control System of Ships Dynamic Positioning; DP Technology; Position Reference Systems; Georeferencing
- Autonomous Vehicles: Modelling, Control Design, and Simulation; Autonomous Navigation Technology; Maritime Autonomous Surface Ships (MASS)
- Acoustic Remote Sensing; Hydroacoustics; Sonars; Multibeam Echo Sounders (MBES); Acoustic Doppler Current Profiler (ADCP); SeaFloor 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, Inference & Probability; 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



NOTES

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Nationalities involved in the Conference TransNav 2019



Nationalities of Scientific Committee members



Nationalities of authors of submitted papers



Nationalities of the Conference participants:



TransNav 2019 Chairmen List

Slot 0			
Time	Plenary Session		Name
Wednesday 12th June 2019 0900 - 1000	A0	Opening Ceremony	Adam Weintrit
			Duncan McKelvie

Slot 1			
Time	Plenary Session		Name
Wednesday 12th June 2019 1000 - 1100	A1	Advances in Marine Navigation and Safety of Sea Transportation	Mirosław Jurdziński Duncan McKelvie

Slot 2			
Time	Specialist Sessions		Name
Wednesday 12th June 2019 1130 - 1300	G1	Maritime Safety and Security	Mirosław Jurdziński Masao Furusho
	G2	Maritime Transport Development	Andrzej Grzelakowski Sauli Ahvenjärvi
	G3	Main Engine	Lech Murawski Mariana Panaitescu
	G4	Global Navigation Satellite Systems (GNSS)	Jacek Januszewski Simon Gaskin
	G5	Maritime Education and Training (MET) – Part 1	Ireneusz Czarnowski Yoshiaki Kunieda

Slot 3			
Time	Specialist Sessions		Name
Wednesday 12th June 2019 1445 - 1615	B1	Electronic Chart Display and Information System (ECDIS)	Przemysław Dziula Thomas Porathe
	C1	Session C1 – Collision Avoidance - Part 1	Ryszard Wawruch Eamonn Doyle
	D1	Communication Networks and Information Exchange	Andrzej Fellner Mihaela Bukljaš
	E1	Maritime Education and Training (MET) – Part 2	Henryk Śniegocki Carl Hult
	F1	Human Factor	Teresa Abramowicz-Gerigk Gisela Müller-Plath

Slot 4			
Time	Specialist Sessions		Name
Wednesday 12th June 2019 1630 - 1730	B2	Cargo Handling	Bogumił Laczyński Alexander Kuznetsov
	C2	Collision Avoidance - Part 2	Tadeusz Stupak Fancun Kong
	D2	Offshore Operations	Paweł Zalewski David Brčić
	E2	Hydrology and Oceanology	Jerzy Rogowski José Carlos Bernardino
	F2	Port Practices	Adam Przybyłowski Sanja Bauk

Slot 5			
Time	Plenary Session		Name
Thursday 13th June 2019 0900 - 1030	A2	Maritime Autonomous Surface Vessels (MASS) - Part 1	Adam Weintrit Qinyou Hu

Slot 6			
Time	Specialist Sessions		Name
Thursday 13th June 2019 1045 - 1145	B3	Maritime Autonomous Surface Vessels (MASS) - Part 2	Zbigniew Burciu Michael Baldauf
	C3	Route Planning	Witold Kazimierski Shwu-Jing Chang
	D3	Distress and Emergency	Krzysztof Kolowrocki Pieter van Gelder
	E3	Cruises nad Passenger Vessels	Marek Szymoński Statys Paulauskas
	F3	Inland Navigation	Andrzej Bujak Kezhong Liu

Slot 7			
Time	Specialist Sessions		Name
Thursday 13th June 2019 1200 - 1330	B4	AIS Assisted Services	Joanna Szlapczyńska Tae-Gweon Jeong
	C4	Port Operations	Przemysław Krata Anatoli Alop
	D4	Miscellaneous	Dorota Pyć Vladimir Torskiy
	E4	Oil Spill	Jakub Montewka Mohan Anantharaman
	F4	Algorithms and Methods	Andrzej Lenart Katsutoshi Hirayama
Time	Expert Panel Session (Meeting in Polish)		Name
Thursday 13th June 2019 1200 - 1330	M1	Meeting of the Waterborne Transport Section of the Committee of Transport, Polish Academy of Sciences (STW KT PAN)	Adam Weintrit
Time	Poster Sessions		Name
Thursday 13th June 2019 1200 - 1330	P1	Miscellaneous Problems of Navigation	Andrzej Felski Antonio Querol Sahagún

Slot 8			
Time	Specialist Sessions		Name
Thursday 13th June 2019 1445 - 1615	B5	Ship Handling	Mirosław Gerigk Nikitas Nikitakos
	C5	Collision Avoidance - Part 2	Tadeusz Pastusiak Tsz Leung Yip
	D5	Ship Manoeuvring	Przemysław Wilczyński Vytautas Paulauskas
	E5	Maritime Economics and Logistics (MEL)	Maciej Mateczak Arnaud Serry
	F5	Radio Navigation	Krzysztof Czaplewski Henning Heiselberg
Time	Expert Panel Session (Meeting in Polish/English)		Name
Thursday 13th June 2019 1445 - 1615	M2	Annual General Meeting of the Poland Branch of the Nautical Institute	Adam Weintrit Duncan McKelvie
Time	Poster Sessions		Name
Thursday 13th June 2019 1500 - 1630	P2	Miscellaneous Problems of Transport	Sambor Guze Angelica Baylon

Slot 9			
Time	Specialist Sessions		Name
Thursday 13th June 2019 1630 - 1730	B6	Bridge Simulators	Jan Pawelski Vitaliy Koshevyy
	C6	Safety and Security at Sea	Rafał Szlapczyński Carlos Jahn
	D6	Drones and Aviation	Piotr Zakrzewski Renato Filjar
	E6	Arctic Shipping	Jarosław Artyszuk Floris Goerlandt
	F6	Stability and Hydrodynamics	Waldemar Mironiuk Tor Einar Berg
	G6	Sea Operations	Grzegorz Rutkowski Nicoleta Acomi

Slot 10			
Time	Technical and Sightseeing Tour to Gdańsk by Bus		Name
Friday 14th June 2019 0900 - 1800			
1600 - 1700	K1	Closing Ceremony	Adam Weintrit Tomasz Neumann