



international



e-Navigation Underway International 2016

The coordinated approach

Copenhagen – Oslo – Copenhagen

2-4 February 2016







WELCOME FROM OMAR FRITS ERIKSSON

As Head of Maritime Technology it is my pleasure to welcome delegates from around the world to the 6th International e-Navigation Underway Conference between Copenhagen and Oslo and hope you enjoy the culture and scenery of two of Scandinavia's capitals whilst aboard MS Pearl Seaways.

Since 2011 the conference has attracted hundreds of delegates from 45 countries on 6 continents and provided access to a worldwide group, prominent in their field.

This year we are delighted to welcome onboard the Secretary-General of the International Maritime Organisation, Kitack Lim

This year's theme is 'The Coordinated Approach', focusing on 'the physical and logical e-Navigation communication framework' that will be the deciding factor for the e-Navigation concept. Once again we have worked on bringing the most knowledgeable speakers from all over the world, as well as leaders in the industry to explore this important topic and you will enjoy not only three full days of technical sessions on cutting edge issues related to our industry but a fantastic social programme.

Bon Voyage

Omar Frits Eriksson

Chairman

IALA e-Navigation Committee

DAY ONE

2nd February 2016

11.00	Check in and welcome in the terminal
12.00	Lunch – Sandwiches in the Conference area
13.00	Conference opening / Welcome address Francis Zachariae, Secretary-General IALA
13.10	Keynote Kitack Lim, Secretary-General IMO Andreas Nordseth, Director General Danish Maritime Authority
13.50	Status of needed governmental actions of implementing the e-Navigation solutions John Erik Hagen, Director Norwegian Coastal Administration
14.10	Setting the scene, IALA's work on the physical and logical e-Navigation communication framework Omar Frits Eriksson, Chairman IALA e-Navigation Committee Remaining presentations all answer the central questions: 1. How will your organisation utilise this framework in creating value to your customers? 2. How will your organisation assist in progressing e-Navigation?

... DAY ONE ...

2nd February 2016

14.30	Robert Ward, President IHO
14.50	Coffee break & luggage to rooms
15.30	Simon Pelletier, President IMPA
15.50	David Patraiko, Director of Projects The Nautical Institute
16.10	Frances Baskerville, Secretary-General CIRM
16.30	Coffee Break & Ship departs Copenhagen
17.00	Lars Robert Pedersen, Deputy Secretary-General BIMCO
17.20	Capt. Johan Gahnström, Senior Manager, Marine INTERTANKO
17.40	Conference ends
19.15	Pre dinner champagne in Columbus Club
20.30	Dinner buffet in the 7 Seas Restaurant

DAY TWO

3rd February 2016

07.00 Breakfast Buffet

08.30 Conference in the Auditorium

Presentations related to e-Navigation, test beds, infrastructure, communication technologies, e-Navigation and non-SOLAS vessels, specific e-Navigation services, standardisation and other relevant topics

Technical solutions and implementations

08.30 Communication gateway for e-Navigation

Feixiang Zhu, Associate Professor Dalian Maritime University

08.50 Field test of pilot small sea area ship information system using Maritime Cloud and smart phones

Yasuyuki Niwa, Senior Researcher National Maritime Research Institute

09.10 Dissemination of enhanced Marine Safety Information (eMSI) via AIS

Brian Tetreault, Navigation Systems Specialist Army Corps of Engineers

09.30 Coffee break & Ship arrives in Oslo

10.00 S-100 based e-Navigation application prototype development

JJ Unggyu Kim, CE0 E-Marine

10.20 'Data supply chain certification', quality monitoring and indication for e-Navigation solution reliability

Michael Bergmann, Director Maritime Industry, Jeppesen

... DAY TWO ...

3rd February 2016

10.40	Proposal for a roadmap for roll-out of automated ship reporting Fred W. Pot, Principal Marine Management Consulting
11.00	A case study: e-Navigation trials on APPS project Kilyong Kim, Senior Research Engineer Global Maritime Technology
11.20	The concepts of the Maritime Cloud Axel Hahn, Professor OFFIS
11.40	Coffee break
12.00	GNSS Evolutions for Maritime Alessandra Fiumara, Liaison Officer European Space Agency
12.20	E-Navigation and risk management. The insurance industry perspective Jorge Pecci, Executive Vice President and Head of Global Marine AIG
12.40	Lunch served in the 7 Seas Restaurant
	Conference Continues
13.35	e-Navigation Underway North America Fred W. Pot, Principal Marine Management Consulting

13.45

Group Photo – Auditorium

... DAY TWO ...

3rd February 2016

Concepts, training aspects and the human element

14.00	What is information overload? Human factors in presentation of data Thomas Porathe, Professor Norwegian University of Science and Technology
14.20	May e-Navigation mandate new training courses? Mads Friis Sørensen, Branch Manager FURUNO
14.40	A study of the mental models of ship masters and VTS officers regarding traffic situations in the Straits of Malacca and Singapore Marius Imset, Associate Professor Buskerud and Vestfold University College
15.00	An enhancement method for impact assessment of e-Navigation applications – the SMART case Michael Baldauf, Associate Professor World Maritime University
15.20	Coffee break
15.50	The STM Concept – the MONALISA 2.0 outcomes and the Validation Project Per Setterberg, Operational Project Manager Swedish Maritime Administration
16.10	Developing IMO S-Mode for e-Navigation David Patraiko, Director of Projects The Nautical Institute
16.30	End of day 2 & Ship departs Oslo
19.30	Photo and welcome drink – Blue Riband Restaurant
20.30	3 course set menu – Blue Riband Restaurant incl. beer & wine ad libitum
23.00	Reserved seating in Columbus Lounge - live music

DAY THREE

4th February 2016

07.00 Break	fast
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Continued presentations

09.10 Integrating IEC and ISO information models into the S-100 Common Maritime Data Structure

Ørnulf Jan Rødseth, Senior Scientist MARINTEK

09.30 Coffee break & check out

(secure baggage in luggage room)

10.00 Announcing the launch of 'CIRM User Feedback Forum'

Richard Doherty, CTO/Deputy Secretary-General CIRM

David Patraiko, Director of Projects The Nautical Institute

10.10 Ship connectivity – how current developments in communication technologies may impact shipping

Steinar Låg, Principal Researcher DNV GL

10.30 Coffee Break

11.00 Panel discussion

Facilitator, Omar Frits Eriksson, Chairman IALA e-Navigation Committee

12.00 Conclusions

12.30 Closing remarks

Francis Zachariae, Secretary-General IALA

12.40 Lunch – Snacks in the Conference area

13.00 Conference closes



Kitack Lim Secretary-General International Maritime Organization (IMO)

Mr. Kitack Lim was elected Secretary-General of the International Maritime Organization with effect from 1 January 2016.

Born in Masan, one of the major port cities in the Republic of Korea, he majored in nautical science at the Korea Maritime and Ocean University and worked on ships as a Korean naval officer and for Sanko Shipping Co. He joined the Korea Maritime and Port Administration in 1985, while continuing with further studies at the Graduate School of Administration, Yonsei University, obtaining a Master's Degree in 1990. He then studied maritime administration with a major in navigation at the World Maritime University, graduating with a master's degree. Since 1995 he has attended a doctoral programme for international law at KMOU.

Mr. Lim began attending IMO meetings as part of the delegation from the Republic of Korea in 1986, actively participating in maritime safety and environmental protection issues. From 1992, he engaged in activities to promote maritime safety through effective implementation of IMO conventions in his country and other IMO Member States in the Asian region. He was elected Chairman of the Tokyo Memorandum on Port State Control in 2004.

In 2006, Mr. Lim was appointed as Maritime Attaché, minister-counselor at the Embassy of the Republic of Korea in London and led all IMO work for the Republic of Korea, serving as Deputy Permanent Representative to IMO up to August 2009.

Mr Lim was then appointed as Director General for Maritime Safety Policy Bureau at the Headquarters of the Ministry of Land, Transport and Maritime Affairs. He led the delegation of the Republic of Korea to the IMO Assembly in 2009.

In March 2011, Mr. Lim was appointed Commissioner of the Korean Maritime Safety Tribunal. In July 2012, he assumed the position of President of Busan Port Authority.



Andreas Nordseth
Director-General
Danish Maritime Authority

Andreas Nordseth began the work as Director-General in the Danish Maritime Authority (DMA) in January 2009. The DMA sets the direction for future quality shipping and its field of responsibility is based on the shipping industry and its

framework conditions, the ship and its crew. In addition, DMA is responsible for aids to navigation in the waters surrounding the Kingdom of Denmark and ashore.

Andreas Nordseth is a 1982 graduate of the Copenhagen Nautical College. After awarding his Shipmaster's Diploma, he went to sea. First as a Deck Officer at the East Asiatic Company, then as a Training Officer at the Danish training ship "DANMARK" and finally as a 2nd Lieutenant of the Reserve in the Royal Danish Navy in 1986.

Subsequently, Andreas Nordseth studied at Danish Technical University, whilst holding the position as assisting maritime lecturer at Copenhagen Nautical College from 1986-1989. After having graduated, he continued teaching as a Maritime Lecturer, before joining the Danish Maritime authority. His areas of responsibility – besides the maritime educations – included operational issues related to safety of navigation and the like as well as internal functions such as HR and internal service.

Andreas Nordseth holds numerous positions. He is chairman of Consultative Shipping Group; a position he has held since 2009. He is Governor at the World Maritime University and board member of the Maritime Development Centre of Europe (MDCE), the Danish Maritime Fund, the European Maritime Safety Agency, the Association for Promoting of Danish Shipping and the Advisory Board for Executive MBA in Shipping & Logistics at Copenhagen Business School.



Francis Zachariae Secretary-General International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)

Francis Zachariae began the work as Secretary-General of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) February 2015.

After leaving high school Francis Zachariae joined the Danish Naval Academy, followed in 1983 by service aboard several naval ships. From 1988 to 1990 he was Aide-de-camp to the Minister of Defence. Francis Zachariae went back to sea in 1990 on patrol vessel "Havkatten" which was one of new project "Standardflex" vessels. Two years later he became responsible for the procurement of such vessels as Project Manager at the Naval Material Command. At the same time as he was working with the Danish Ministry of Defence, Francis Zachariae completed a Master of Science, Public Administration, following which he was promoted to Captain (N) and appointed to Brussels to become Branch Chief and Advisor of the EU Council Secretariat.

Appointed Deputy Director General of the Danish Maritime Safety Administration (DaMSA) in 2007 he was responsible for navigational information, aids to navigation, coastal rescue, pilotage and regulatory tasks, until the merging of DaMSA with the Danish Maritime Authority in 2011 when Francis became Deputy Directors General. His main tasks were related to maritime regulation, safety of navigation and pilotage in the Danish, Greenland and Faroese waters.



Omar Frits Eriksson Director of Maritime Technology Danish Maritime Authority (DMA)

Omar Frits Eriksson is Director of Maritime Technology at the Danish Maritime Authority (DMA) and was previously head of the Innovation division of DMA and head of the Aids to Navigation division of the Royal Danish Administration of Navigation and

Hydrography. He is currently responsible for e-Navigation in DMA and is on the DMA delegation to the International Maritime Organization (IMO).

Omar is active in the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) where he chairs the IALA ENAV committee and manages the IALA Risk Management Toolbox as well as the further development of IALA-NET, the IALA Global Maritime Data Sharing concept. Omar also serves on the governing board of the IALA World Wide Academy where he is dedicated to training and education in developing countries.

Omar has been involved in numerous international projects. He chaired the first EfficienSea project, was on the management board of the first Mona Lisa project and is now chair of the EfficienSea 2 project which is instrumental in the development of the Maritime Cloud. He has a degree in telecommunications as well as an Executive MBA degree, and is Master in Management of Technology and Innovation from the Technical University of Denmark.



Michael Baldauf Associate Professor World Maritime University

Michael Baldauf graduated with an M.Sc. in Transport Engineering and a diploma in business management from the University of Rostock. He holds a Certificate of Competence (Deck Officer) and has served as a navigation officer on several cargo

and container vessels. In 1992 he transitioned to the scientific field and completed work at various universities and research institutes. He obtained his Ph.D. (Dr.-Ing.) in Safety Science from Bergische Universität Wuppertal, Germany in 1999.

In 2009 Dr. Baldauf joined the World Maritime University (WMU), Sweden, where he is presently an Associate Professor in Maritime Safety and Environmental Administration. At WMU he is involved in several projects for research and technical development, namely studies into enhanced integration of new navigational equipment for enhanced applications contributing to safe navigation and particularly enhanced alert management onboard seagoing vessels.

Dr. Baldauf actively works in IMO and is the chairman of the international Correspondence Group developing Performance Standards for Maritime Voyage Data Recorders. He is also presently involved in the work of the IMO's Correspondence Group for INS/IBS and Bridge Alert Management. He is a member of the Nautical Institute, the German Association of Transport Sciences (DVWG), and the Society of Risk Analysis.



Frances Baskerville Secretary-General CIRM

Frances has been with CIRM since 2004 and brings a wealth of experience from previous careers in marketing, PR, Architecture, Music and Investment worldwide. In 2007 she became Deputy Secretary-General and worked hard to increase

CIRM's exposure within the maritime industry. Her investment has resulted in many important new relationships worldwide and an increased profile for CIRM and its membership.

In July 2013 she was appointed Secretary-General and turned her focus to expanding CIRM's membership, scope of interest and technical engagement. Since that time, CIRM has enjoyed broader exposure worldwide and currently has the highest number of companies ever recorded. As well as supporting the membership she speaks on behalf of CIRM at UN agencies and on conference platforms around the world to maintain focus and sustain CIRM's sound relationships within the maritime industry.

She recently accepted an invitation to join the well-established (male only!) 'Tuesday Shipping Society' as the first woman member worldwide and consequently has expanded her maritime knowledge and vocabulary considerably.



Michael Bergmann Director of Maritime Industry Jeppesen

Michael Bergmann is Director of Maritime Industry-Affairs & Services at Jeppesen and President of CIRM. He began his career with Jeppesen in 1990 as a Software Engineer and in 2004 he was asked to build up the Jeppesen Marine Business

Unit, progressing to Director Maritime Industry, Affairs and Services working with governments, governmental organizations and industry to change the market in support of advanced navigation and efficiency. In this role he is also responsible to negotiate and maintain all data usage agreements for the Jeppesen Marine business unit.

He is an observer at IMO and a member of the IMO e-Navigation sub-committee. He is appointed to the advisory group for the German IMO delegation and also actively participates in IALA, especially on e-Navigation as an Industry Member.



Richard Doherty
Chief Technical Officer and Deputy Secretary-General
CIRM

Richard Doherty joined CIRM in 2013 as Chief Technical Officer and Deputy Secretary-General.

His background is in product and business development and he previously spent 6 years working for Pole Star Space Applications, a leading provider of software solutions to the shipping industry.

Richard is responsible for coordinating the technical work of CIRM and he chairs the organisation's various working groups. He is a member of the Royal Institute of Navigation.



Alessandra Fiumara Liaison Officer on GNSS Evolution Programme European Space Agency

Alessandra Fiumara has worked in the space sector for over 25 years acquiring a deep knowledge of the related political, strategic and financial aspects as well as programmes and regulations. As an electronic engineer, she started with technical

and scientific roles in the radar application domain and moved to strategic and financial control responsibilities and international relations development, as part of the Italian Delegation to the European Space Agency.

In 2009, Alessandra moved from Rome to Paris to join the Navigation and Galileo related activities Directorate at the European Space Agency. In particular she is involved in the analysis and studies on the possible role of current and future GNSS technologies in the maritime security domain. In this framework she chairs an international technical Working Group of National Maritime Service Providers and participate to the most important related international meetings at IALA (e-NAV Committee), EMRF, IMO (NSCR) and RTCM.



Mads Friis Sørensen
Branch Manager
FURUNO European Branch Office and FURUNO INS Training Centre

Mads Friis Sørensen has managed FURUNO's European Branch Office and INS Training Centre since 2005. He has a background as system/project manager in Thrane & Thrane and FURUNO. The branch office and training centre is responsible

for the Development and provision of FURUNO's global end user training and training solution including FURUNO's Network of training centres and FURUNO's cloud based distant learning system CAT. The Branch office is also involved in FURUNO's business development and e-Navigation activities.



Johan Gahnström Senior Marine Manager INTERTANKO

Captain Johan Gahnström is a Senior Marine Manager with INTERTANKO and is issue manager for, among others, Navigation, Ports & Terminals and Port State Control.

Johan has a background as a maritime pilot in Sweden and Qatar and has worked as Harbour Master and VTS manager.



John Erik Hagen Regional Director Norwegian Coastal Administration

John Erik Hagen has been Regional Director for the Norwegian Coastal Administration for 23 years. He pursued a career in the Norwegian Navy, attending officers' training school and the Norwegian Defence College. During his 10 year

military career he also achieved a University Degree in Law, Social Science, Economics and Business Administration.

He spent several years in management positions in the offshore industry and transportation services and John Erik has functioned as acting Director General of the Norwegian Coastal Administration on behalf of the Royal Norwegian Ministry of Fisheries and Coastal Affairs.

Today he serves in many national and international boards and advisory boards such as Coordinator of the IMO Correspondence Group on e-Navigation. He has also been the Norwegian Chairman of the Working Group established by the Royal Norwegian Ministry of Fisheries and Coastal Affairs and the Ministry of Transport of the Russian Federation, for the cooperation between Russia and Norway on maritime safety in the Barents area.



Axel Hahn Professor OFFIS

Axel Hahn is full professor and leading the Working Group System Analysis and Optimization at the Carl von Ossietzky University Oldenburg, Germany.

He is a board member of the research group Transportation at the research institute OFFIS – Institute for Informatics. At OFFIS he is coordinating the research activities for maritime transportation systems. His research addresses design, simulation and analysis of critical social technical systems in maritime transportation.



Marius Imset Associate professor in product design University College of Southeast Norway

After finishing the officer cadet school in the Norwegian Navy, Marius Imset undertook a Master's Degree in product design engineering. He then worked for several years with R&D and marketing in the Norwegian industry, with maritime

instrumentation and interface design, mobile telecom units and subsea equipment. In 2004 he started his academic career at the University College of Southeast Norway, in Engineering and Maritime Sciences. As well as teaching design and innovation courses at bachelor and master level, he is involved in various development projects, such as cluster development of the regional maritime industry and maritime education.

His research activities focus on maritime human-technology systems, and he believes strongly in the importance and value of user centred design. He is currently participating in the SESAME Straits project, contributing with studies of various human factor aspects of sea-shore cooperation.



Kilyong Kim Senior Research Engineer GMT Co., Ltd

Kilyong Kim has been the Senior Research Engineer with the Research Planning & Development Team at GMT Co., Ltd. in The Republic of Korea since 2009.

He has a degree in Computer Information Engineering and has participated in MEH (Marine Electronic Highway) Demonstration Project as well as Participating in the 'Installing for Vessel Traffic Management System at Port of Gothenburg, Sweden' project.



Dr. JJ Unggyu Kim Founder and CEO e-Marine Co., Ltd

Dr. JJ Unggyu Kim is the founder and CEO of e-Marine Co., Ltd, which develops e-Navigation and Smartship solutions including ECDIS and other EN C based shipboard navigation systems and has been supplying them to Navy, Coast Guard,

Commercial shipping lines and Ship Yards. After graduating from the Korea Maritime University, he worked as ships' navigation officer then started his IT carrier with Hanjin Shipping.

For 34 years he has been devoted to maritime IT convergence. He is at present directing the e-Navigation application project, funded by the Ministry for Industry in the Republic of Korea.



Steinar Låg Principal Researcher DNV GL

Steinar Låg has an M.Sc in Electronics and Signal processing from the Norwegian University of Science and Technology (NTNU) in Trondheim, Norway.

He has worked in the satellite communications industry for 13 years (including Telenor Satellite Services and Inmarsat) within research, specification, testing and operation of maritime satcom products.

Steinar is a Principal Researcher for DNV GL and has been with them for 9 years. He joined DNV GL's unit for Strategic Research and Innovation, Program for Maritime Transport in 2014, and is currently working on different research projects with focus on connectivity and digitalisation aspects. His previous work includes approval of navigation and communication equipment in classification services.



Yasuyuki Niwa Senior researcher National Maritime Research Institute (NMRI)

Yasuyuki Niwa is a senior researcher at National Maritime Research Institute (NMRI). He has been working at NMRI, formerly Ship Research Institute, Ministry of Transport in Japan since 1997. In 1997, he completed a Master of Engineering from Graduate

School of Science and Engineering, Tokyo Institute of Technology. His research field includes the following areas, maritime radio communication, AIS, ship handling simulator, maritime traffic analysis, e-navigation, GMDSS. He is a participant in IMO COMSAR, NAV and NCSR Sub-Committees.



David J. Patraiko, BSc, MBA, FNI Director of Projects The Nautical Institute

David Patraiko is the Director of Projects for The Nautical Institute, and coordinates its Technical, Professional Development and IMO Committees. He is responsible for developing and managing major Institute projects and he represents the professional

interests of members in general shipping, training and technical forums. Much of this work is aimed at assisting members of the Institute with continuous professional development. He has led research and produced many papers and articles on training, electronic navigation, the associated 'Human Element' effects created by technology, and Marine Spatial Planning.

He is currently involved with the international debate on e-Navigation and served as Chairman of the IALA e-navigation working group for Strategy and Operations (2006-2014), Chaired the Industry ECDIS Training Group, and is Chairman of the Green Awards Board of Experts.



Jorge Pecci
Executive Vice President and Head of Global Marine

Mr. Pecci began his career in insurance with AIG in 1993, working in a variety of property and marine claims-related positions in Latin America.

In 1997, Mr. Pecci was appointed Regional Marine Manager for Latin America. In 2001, he was relocated to New York and promoted to Worldwide Manager of AIG Marine Loss Control Engineering. In 2009, Mr. Pecci was named Executive Vice President and Chief Operating Officer of Global Marine. In this role, Mr. Pecci oversaw the Global Marine Operations for AIG International and was later appointed to Executive VP Marine for the Americas.

Mr. Pecci holds an LLM in Maritime Law from the Metropolitan University of London/Lloyd's Maritime Academy (UK), a Post Graduate Diploma in Marine Surveying (DipMarSur) from the University of Greenwich (UK) and a Major in Maritime Transportation & Deck officer License from the World Maritime University (Argentine branch). Before his career in insurance he served at sea in the Merchant Marine for over 10 years ending his oceangoing career as Master Mariner.



Lars Robert Pedersen
Deputy Secretary-General
BIMCO

Lars Robert Pedersen joined BIMCO as Deputy Secretary-General in early 2010. He is responsible for BIMCO's technical, security and operational activities involving membership services and regulatory developments related to ship operation at

international, regional and national levels. Before joining BIMCO he had a career at A.P. Moller-Maersk involving technical management of the Maersk fleet of container ships and prior to that as seagoing officer. Lars Robert holds an unlimited Chief Engineers license.



Simon Pelletier
President
International Maritime Pilots Association

Captain Simon Pelletier has a keen interest in international affairs affecting marine pilotage. First elected as Vice-President of the International Maritime Pilots Association (IMPA) in 2008, Capt. Pelletier was elected IMPA President in 2014 for

a four-year term. As President, he is responsible for ensuring that pilots from six continents speak with one voice on global issues affecting pilotage and for ensuring that they play a constructive role in discussions with their partners in the international maritime sector and, in particular, with the International Maritime Organization.



Fred W. Pot Principal Marine Management Consulting

Fred Pot has a Master's Degree in Naval Architecture and Marine Engineering from the Technical University at Delft in The Netherlands and an MBA from Stanford. He worked for Oceanroutes, a ship weather routing company, and spent 20 years in

management positions at Matson Navigation Company in San Francisco and Honolulu. He has also held senior positions at Holland America Line in Seattle, P&O Princess Cruises in Los Angeles, Cornerstone Systems in Seattle, SeaCAS and MeteorComm in Kent, Washington

Mr. Pot acted as technical advisor to the US Delegation to IEC workgroups that formulated performance standards for AIS-B and for Task-oriented Display of Navigation Information (INS). He wrote several articles about AIS and e-Navigation for Compuship and The Digital Ship, is Program Co-Chair for the e-Navigation Underway (North America) Conferences.



Thomas Porathe
Professor of Interaction Design
Norwegian University of Science and Technology

Thomas Porathe is professor of Interaction Design at Norwegian University of Science and Technology in Trondheim.

He specialises in maritime human factors and information design for the maritime domain. He has participated in several e-Navigation projects like EflicienSea, MONALISA, ACCEAS and MUNIN.



Ørnulf Jan Rødseth Senior Scientist MARINTEK

Ørnulf Jan Rødseth has a Master's Degree in electronic engineering and worked in Norwegian research institutes, as well as four years in the maritime electronic equipment industry. He has worked with integrated ship control, emergency

management, digital information and communication technology and unmanned ships and is currently a senior scientist in the Maritime Transport Systems group at MARINTEK, Norway.

In addition to national research projects, he has participated and managed several large EU research initiatives in cooperation with South Korea and Singapore. He is active in international maritime standardisation through ISO and IEC and also participates in IMO projects in the areas of trade facilitation and administrative simplification.



Brian Tetreault Navigation Systems Specialist Army Corps of Engineers

Brian Tetreault is the e-Navigation team leader for the U. S. Army Corps of Engineers Research and Development Center, Coastal and Hydraulics Laboratory. His projects include developing navigation systems to improve safety, efficiency and reliability of

inland and coastal waterways. He is a US representative to national and international e-Navigation-related bodies, including the World Association for Waterborne Transport Infrastructure (PIANC), International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), International Electrotechnical Commission (IEC), the Radio Technical Commission for Maritime Services (RTCM), and the US Committee on the Marine Transportation System (CMTS). He is a graduate of the United States Coast Guard Academy, served in the Coast Guard for 22 years at sea and ashore, and holds an Unlimited 2nd Mate and a 1600 Ton Master license.



Robert Ward President International Hydrographic Bureau

Robert Ward is the President of the International Hydrographic Bureau, which is the Secretariat of the IHO, based in Monaco. He is a mariner and hydrographic surveyor by profession and has conducted surveys in ships in all corners of the world. As well

as command at sea, he has a long history of involvement in national and international hydrographic relations with particular emphasis on the implementation and development of policies associated with electronic chart navigation and digital hydrographic data.

He has a wide experience of inter-governmental organisations including the UN, dealing with hydrographic data and standards and their relationship to navigation safety, the sustainable use of the seas and oceans and protection of the marine environment.



Feixiang Zhu Associate Professor Dalian Maritime University

Zhu Feixiang became associate professor in Dalian Maritime University, China in 2008.

He earned a bachelor's degree in major of ocean-going ship maneuvering from Dalian Maritime University, China in 1998 and a doctor's degree in major of traffic information engineering & control from Dalian Maritime University, China in 2008.

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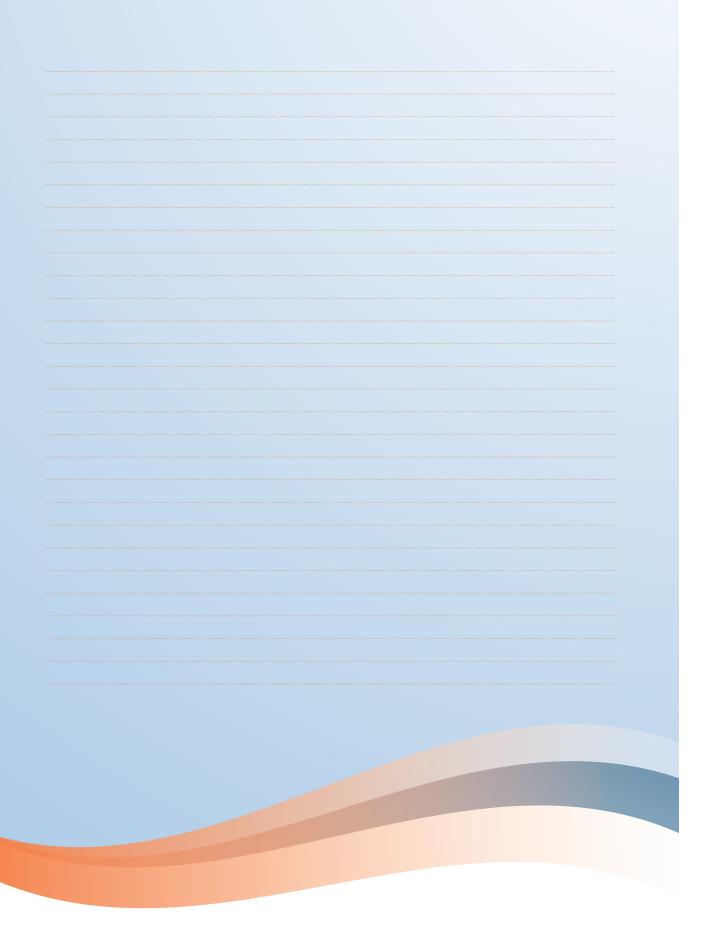
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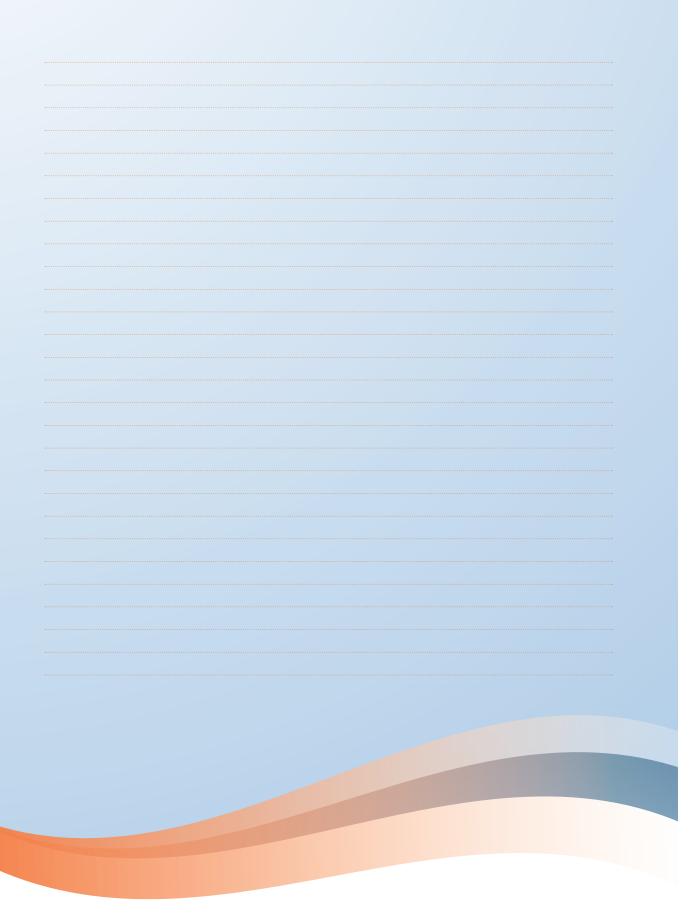
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