



e-NAVIGATION Implementation in Asia Pacific region: New digital maritime service

2~4 September 2019

Millennium Seoul Hilton Hotel, Seoul, Republic of Korea

Conference Report (draft)

Conference Report

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E-Navigation Underway Conference 2019 Asia-Pacific

1. Introduction

The third e-Navigation Underway Asia-Pacific Conference was held from 2nd to 3rd of September, 2019 at Millennium Seoul Hilton hotel, Republic of Korea. It was organized by the Ministry of Oceans and Fisheries (MOF), R.O.K, International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and Danish Maritime Authorities (DMA). The sole exhibitor from the Korean SMART-navigation project team have interested the participants with the latest development of their own test project. Total 200 participants from 30 countries have attended the conference to share and gain the latest knowledge in the e-navigation in the Asia-Pacific Region.

The conference concentrated on prioritized e-Navigation issues in multiple sessions, including maritime autonomous surface ships (MASS), maritime digitalization and cyber security under the main theme of “e- Navigation: Implementing New Digital Maritime Services in Asia Pacific”

2. Opening of the conference

2.1. Opening and Welcome Speech: Yang-Soo Kim, Ministry of Oceans and Fisheries, Vice Minister

Mr. Yang-Soo Kim, Vice Minister of the MOF welcomed the distinguished guests from IALA and DMA, and as well as the guests from IMO, IHO, AMSA. In addition, he has mentioned that the 4th Asia-Pacific e- Navigation Underway Conference to be held next year would provide people with ample opportunities of observing Korea SMART–Navigation services. Furthermore, he voiced out that as part of promoting the

introduction of navigation, efforts should be made to verify the effectiveness of the in-place navigation service by applying it first to the safety and efficiency of coastal waters, including Non-SOLAS vessels such as fishing boats and coasting vessels, which are relatively vulnerable to accidents.

2.2. Congratulatory Speech: Francis Zachariae, IALA, Secretary General

Mr. Francis Zachariae, IALA, Secretary General, has expressed that he looks forward to hearing results from some of the major projects and testbeds. Furthermore, he voiced out that It is very important that we all share results, success and failures from testbeds. He emphasized that with the digital age we must of course cope with Cyber Security in the Maritime Sector

2.3. Congratulatory Speech: Javier Yasnikowski, IMO, Head Operational Safety

Javier Yasnikowski, IMO, Head of Operational Safety has emphasized that work on e-navigation is helping us to determine how best to enhance the collection, integration, exchange, presentation and analysis of marine information, both on board ships and ashore, by electronic means, keeping in mind present and future needs.

Moreover, he voiced out that E-navigation has gained particular significance in connection with the current work on Maritime Autonomous Surface Ships (MASS).

3. Themed sessions

3.1. Session 1 – Developing and Delivering Digital Maritime Services

Chair: **Michael Bergmann** (IPCDMC)

3.1.1. Testbed Cases or Products of e-Navigation Maritime Services (MS)

Presenter and Author

Michael Bergmann (IPCDMC)

Abstract

The e-Navigation initiative has been developed initiated by IMO and developed by IMO, IALA and other organizations over the last years. It has been validated in various testbeds around the globe.

The presentation will highlight the concept of “Maritime Services” (MS) as a key component to structure e-Navigation and how it helps to understand the implementation and availability of e-Navigation services

The presentation will further summarize the intention of the testbeds concept and why it has been selected to validate aspects of the e-Navigation initiative. It will further introduce a selection of testbeds and their association with MS as well as their results, with the intention to develop an understanding of the benefits of e-Navigation derived from those testbed results.

The presentation will finally look into the products, either already available on the market or in development, which have the goal to support e-Navigation and building the technical enabler for the implementation and execution of various aspects of e-Navigation.

3.1.2. Harmonization and Interoperability among different standards and platforms

Presenter and Author

Mikael Lind, Senior Strategic Research Advisor, Research Institutes of Sweden(RISE)

Abstract

As a lot of digital tools and services are becoming more and more introduced to the market of shipping, the need for securing inter-operability between digital means has never been larger. In this presentation some of the contemporary developments will be visited taking a holistic stance on how digital enablers, by the use of standards and platforms, can enable integrated performance of maritime transports in the global transport chain.

3.1.3. Benefits and Challenges in Implementing e-Navigation for Users and Administrators

Presenter and Author

Unggyu Kim, CEO of e-Marine Co., Ltd, Republic of Korea

Abstract

Funded by Korean government, KRISO(Korean Research Institute of Shipbuilding and Ocean) is leading SMART-Navigation project, Korean version of IMO e-Navigation. One of the major tasks by MOMAF's initiative to implement e-Navigation applications into the regional e-Navigation test bed is remote monitoring and controlling passenger ships for their coastal operation. Through IoT sensors real-time data from navigation, safety and other equipment are gathered and processed for the ship's own purpose and also transferred to shore station, GICOMS in this case. Control center watches the ship's navigation, motion, cargo, sea environment around, safety status against fire, accidents for their readiness of engagement in case of unplanned activities. This presentation includes the current status of development, stepwise outcome, user's benefit and challenges and next works to do.

3.1.4. Testbed cases or products of platforms that enable e-Navigation for users and Administrations

Presenter and Author

Jon Leon Ervik, Head of Department, Norwegian Coastal Administration, Norway

Abstract

Some of the maritime services have clear synergies. The presentation will look at some of the possibilities that will open up with future digital solutions. Look at

synergies in connection with the use of digital routes, the sharing of sensor information and the benefits of a Single Window concept. The presentation will show examples of testbed cases and use of platforms that enable e-Navigation for users and Administrations

3.1.5. Introduction to the SMART-Navigation project: focusing on maritime services

Presenter and Author

Jin Hyung PARK, Principal Researcher, Korea Research Institute of Ships and Ocean Engineering (KRISO),

Republic of Korea

Abstract

The SMART-Navigation project aims to implement e-Navigation waters to enhance maritime safety and efficiency in Korean waters. It focuses on providing small ships and domestic liners with maritime services. Six maritime services are under development following existing or upcoming international standards to make the services available for international voyage ships to Korean waters as well. The Maritime Messaging Service (MMS) is used as the gateway of the services leading to efficient and reliable service subscription. This presentation contains the latest progresses in the project focusing on maritime services for sharing experiences from the last three years.

3.2. Session 2.1 - Innovations in Marine Navigation and Communications

Chair: **Nick Lemon**, Manager Systems Safety, Australian Maritime Safety Authority

Australia

3.2.1. e-Navigation Maritime Services User Requirements

Presenter and Author

Nick Lemon, Manager Systems Safety, Australian Maritime Safety Authority

Australia

Abstract

Whatever type of e-navigation user we think of there are common needs and requirements they all share. Considerable efforts were made by the IMO to find out what users needed most to help them navigate better and more safely. These included automated reporting, providing a common and shared picture of key

information, robust communications, system integrity and human centred interfaces and information presentation. The IMO has started to deliver on some of these needs, with a key output being a guideline on Software Quality Assurance and Human Centred Design (MSC.1/ Circ.151). The recently agreed initial descriptions of e-navigation maritime services, also address several of the original user needs. However, like most complex projects, as they progress it is possible to see more clearly some of the detail, and even what might be some alternative and better ways of doing things. Some in the industry are starting to suggest that maritime navigation itself needs to be 'reconceptualised'. One way to do this is to start with a clean slate and build, from the ground up, fresh approaches on how to use modern tools to achieve safe, effective and efficient navigation. Certainly there are indications emerging from recent accident investigation reports suggesting that teaching navigation from a paper chart perspective and then 'bolting on an ECDIS course' is not giving seafarers the right skills to use ECDIS appropriately. As we consider the information in the following presentations we might also ponder whether any 'e-navigation course corrections' are needed as the e-navigation voyage progresses.

3.2.2. Intelligent Sea - Integrated digital services for efficient and safe maritime navigation

Presenter and Author

Thomas Erlund, Senior Vice President, Meritaito Ltd, Finland

Abstract

This Intelligent Sea project is aiming at increasing the safety and efficiency of navigational operations through the investments into the digitalisation of ports and fairways as well as the improvement of data transfers between the ship and shore.

Currently, there are multiple user interfaces and sources of information, each of which offer a fragmented view to the port and fairway operators; thereby resulting in the need to use multiple sources of information for their operational requirements. This Action aims at generating long-term benefits for the port and fairway users through the improvement of the infrastructure by implementing smart navigational

aids.

Moreover, the Action aims at contributing to the sustainable development of the maritime ports, through the development and piloting of alternative energy sources for the buoys as well as introducing emission monitoring technologies.

This will be accomplished through the piloting of several studies in the Scandinavian–Mediterranean Core Network Corridor, namely in the Ports of Naantali and Stockholm. The following initiatives will be piloted in both ports:

- A marine high-speed 5G broadband network - Digital service cloud and smart navigational aids in the form of smart buoys - Alternative energy sources for smart navigational aids - Sniffer buoys for monitoring of vessels SOX emissions

The results of these pilots, coupled with the introduction of these new technologies, will contribute to enhancing the security of navigational operations, promoting the environmental compliance of vessels as well as increasing the cost-efficiency of marine operations.

3.2.3. Shipborne Equipment for Implementing e-NAVIGATION; ECDIS, ECS, and Mobile App

Presenter and Author

Sewoong Oh, Principal research engineer, KRISO, Republic of Korea

Abstract

The SMART Navigation project has been developing to implement the concept of IMO e-NAVIGATION providing additional services for Non-SOLAS ships such as fishing boats, coastal vessels and ferries. There are 6 services including navigation assistance and nautical chart service. The main recipients of SMART navigation service will be the shipborne user and different levels of equipments were considered. ECDIS is an equipment for vessels following the SOLAS convention and ECS and mobile app will be the equipments for small vessels navigating a coastal water. This presentation focused the key features of shipborne

equipment considering the SMART Navigation Service.

3.2.4. Maritime Digital Communication Testbeds in SMART Navigation project

Presenter and Author

Kaemyoung Park, Korean Register, Republic of Korea

Abstract

This presentation introduces the overview of Maritime Communications testbed(i.g. VDES, Digital HF) in SMART Navigation project. SMART Navigation project teams will

be developed VDES prototype and digital HF prototype from 2016 to 2020. Also, we are planning to construct a testbed infrastructure in this year.

The Maritime Communications need to enhance frequency band efficiency and maritime safety. Especially, small fishing vessels operating on the sea more than 100km away from the land need to digitalize the current analogue MF/HF voice communication to manage ship's positioning for their safety.

VDES and digital HF need to collaborate with industrial members and each state members for ITU standardization.

3.2.5. LTE-Maritime: extending the radio coverage up to 100km from the coast and providing high-rate digital communication for e-NAVIGATION services

Presenter and Author

Woo-Seong Shim, Principal Researcher, Korea Research Institute of Ships & Ocean Engineering, Republic of Korea

Abstract

People on the maritime field are experiencing many difficulties due to the disconnection with their people caused by the poor wireless communication environment on the sea. We are developing LTE-Maritime to extend the LTE communication to a maximum of 100km from the coast, so that the considerable number of ships, as well as coastal people, can overcome slow-rate or expensive legacy wireless communication environment. As part of the SMART-Navigation project in the Republic of Korea, LTE (4G) service will be provided up to 100km around the Korean territory from 2021 primarily for the public e-Navigation and safety services. Considering the wide coverage, the communication quality will be ensured divided into the 0-30km and 30-100km area, respectively, DL/UL 6/3Mbps (95% success) and DL/UL 3/1Mbps (90% success). Several companies offer roaming service products that are available in more than 100 countries around the world about 40 to 50 km from the coast. LTE-Maritime offers the possibility of securing maximum coverage based on LTE standard and being used as a high-speed communication means at sea. Additionally, in areas where LTE services are not available, it is possible to combine with existing satellite communication to provide seamless maritime wireless communication services for global coverage.

3.2.6. The Evolution of Information Exchange - Why Do We Need the MCP?

Presenter and Author

Thomas Christensen, Secretary General, Maritime Connectivity Platform Consortium, Denmark

Abstract

The presentation will go through the evolution of information exchange. State the current evolutionary state in the maritime domain, and explain why this needs to be further evolved. The presenter will explain the possible role of the Maritime Connectivity Platform (MCP) as a solution to evolve the way in which information exchange is done in the maritime domain, in order to bring this on level with other domains. The presentation will explain how the different components of the MCP (identity register, service register, messaging service) will achieve this from a technical perspective, and how the MCP consortium could solve

the related governance issues.

3.3. Session 2.2 - Innovations in Marine Navigation and Communication

Chair: **Jon Leon Ervik**, Head of Department, Norwegian Coastal Administration, Norway

3.3.1. The work in IMO FAL/NCSR regarding further development on Maritime Services

Presenter and Author

Jon Leon Ervik, Head of Department, Norwegian Coastal Administration, Norway

Abstract

The presentation will inform about the work in FAL Correspondence Group to review the draft MSC circular on initial descriptions of maritime services in the context of e-navigation, based on ToR from FAL 43. What has been discussed so far, the development of relevant MS and the plans ahead. Some examples of how to achieve synergies between several MS will be presented.

3.3.2. SESAME II Innovation and Testbed in Norway and Singapore

Presenter and Author

Björn Coster, Managing Director, Kongsberg Norcontrol Pte, Singapore

Abstract

SESAME Solution II is an e-navigation testbed project, funded by the Research Council of Norway.

The objective is to develop and test the most complete e-navigation system currently possible, including services such as:

Automated vessel reporting

Just-in-time arrival

Route optimization

Marine Safety Information

VTS Information-Navigational alerts

Pilot route

And others

The testbed will be active from 2020 and includes shore stations in Norway, Singapore, and the UK. In addition, the project will develop a prototype Harmonized Display of Navigation Information Received via Communications Equipment, which we call HDNICE, which supports this Norwegian-led effort in IMO. This presentation will also address the similarities to the e-Nav test bed setup as part of Living Lab in Singapore.

3.3.3. Orchestrating IT, OT and Data Farming for Maritime Industry

Presenter and Author

Seojeong Lee, Professor, Marine IT division, Korea Maritime and Ocean University, Republic of Korea

Abstract

After defining Maritime Services for e-navigation, every single service should be provided seamlessly, safely and reliably. All of data also can be gathered to promote the trustness of the services. This presentation provides some useful software service architecture concepts and data farming concept to be able to introduce to implement the e-navigation. It also provides few more related concepts and possible examples.

3.3.4. New innovative services in NAVTOR

Presenter and Author

Borge Hetland, Chief Commercial Officer, NAVTOR AS, Norway

Abstract

NAVITOR is a leading force in the provision of innovative e-Navigation solutions, and a total supplier of navigational products for the maritime sector. Every day we strive to make life easier and safer for navigators, and clearer and more efficient for shipowners, ship managers and operators.

3.4. Session 3 - Cooperation and Capacity Building for e-Navigation

Chair : **Javier Yasnikouski**, Head Operational Safety, International Maritime Organization

3.4.1. Further developments of IMO Guidance on e-navigation maritime services and capacity building programmes

Presenter and Author

Javier Yasnikouski, Head Operational Safety, International Maritime Organization

Abstract

The need to harmonize the format and structure of Maritime Services, including the maritime information and data provided through them, has been recognized by IMO Member States and many international organizations. The aim is to enhance the safety and efficiency of shipping through better exchange of information and data in a harmonized and unified manner. This work requires the collaboration of all involved international organizations, IMO Member States and the whole shipping community.

Through its Technical Cooperation Programme (ITCP), IMO can assist Governments which lack the technical knowledge and resources that are needed to operate a shipping industry safely and efficiently, including enhancing their ability to comply with international maritime rules and standards, giving priority to

technical assistance programmes that focus on human resources development and institutional capacity-building.

The Strategy for resource mobilization for IMO's technical cooperation activities may also offer opportunities to seek necessary resources for longer-term, larger-sized and project-based resource mobilization activities.

3.4.2. Roles of Stakeholders (Administrators, Industries, Users, NGOs, and IGOs)

Presenter and Author

Omar Frits Eriksson, Deputy Secretary General, International Association of Marine Aids to Navigation Authorities, France

Abstract

e-Navigation has many stakeholders with different roles and responsibilities. While the development of e-navigation is making way, there is a kind of a chicken and egg problem between the development of e-Navigation services and the development of the appropriate infrastructure to deliver these services. Stakeholders have difficulties with investing in the establishment of the infrastructure before the services even exist, and there is a compelling need for developing a solid business case for developing, building and operating the infrastructure.

The presentation attempts to describe this problem and discusses what the different stakeholders can do to support and accelerate the implementation of e-Navigation.

3.4.3. Cooperation and Capacity Building

Presenter and Author

Weylin Tang, Deputy Director, Maritime and Port Authority of Singapore, Singapore

Abstract

Speaker will share Singapore's experience in multilateral and bilateral cooperation and capacity building. Cooperation spans across nations, industry, research institutes and port authorities, while Singapore, as a small economy, with limited resources, will do what it can to support capacity building programmes. Projects will be used as illustrations.

3.4.4. Web/Internet Based e-NAVIGATION Maritime Services

Presenter and Author

Sun-bae Hong, Director for Advanced Maritime Transportation Service Team, Ministry of Oceans and Fisheries, Korea

Abstract

- ① Asia-Pan-Pacific Web Portal (APPWeb) is a web-based platform for providing consolidated maritime safety information (MSI) of the region. It might be also used a web-based platform for any countries to provide their MSI information to the vessels being operated in their waters at no cost with only a computer and an internet browser.
- ② APPWeb has been developing jointly by Korea (MOF), Australia (AMSA) and U.S.A (USCG) since 2018, while the consolidating MSI of the region is to be continued. The future development is to be carried out to apply the internationally agreed standard, for example, S-124 in the context of e-NAVIGATION maritime service.
- ③ It is recommended that any countries in the region join this initiative.
- ④ In addition, e-NAVIGATION services are expected to be started from 2020, and the e-NAVIGATION infrastructures, including shore-based digital platform, digital maritime communication networks and ship-borne digital platform might be a stepping stone towards the world maritime Digitalization and the 4th Industrial Revolution in maritime sectors for MASS.
- ⑤ The world maritime digitalization and MASS are essential to be harmonized inter-operable, hyper-

connected, standardized and validated among regions. It is also essential to discuss the interface between e-Navigation, MASS and maritime digitalization. For the sake of achieving these goals, the concept and initiative of Global Maritime Digitalization Cluster (GMDC) is proposed. Shore-based digital platform, digital maritime communication networks test-bed ship and ship-borne digital platforms are to be provided as a infrastructure for GMDC, and combined with APPWeb, capacity building workshop and varies relevant test-bed projects.

- ⑥ It could be a mechanism to facilitate international cooperation when developing the maritime industry's response to the fourth industrial revolution, including e-Navigation, MASS and e-Maritime.

3.4.5. Implementing maritime services in the context of e-navigation in Australia

Presenter and Author

Mahesh Alimchandani, Head of Navigation Safety, Standards, Australian Maritime Safety Authority, Australia

Abstract

The presentation will outline the implementation of maritime services in the context of e-navigation in Australia.

For its part, Australia has recently finalised a strategy document called Navigation services in Australian waters–outlook to 2030 (available at www.amsa.gov.au). This forward-looking, perceptive work outlines the emerging trends and drivers that will influence navigation services in Australian waters. It also describes the anticipated impact these will have on the maritime industry and lists the Australian Maritime Safety Authority's (AMSA) policy response to these changes.

This work is timely, given the impending change in the way vessels will receive, integrate, display and exchange information and use this information to navigate.

Navigation services in Australian waters–outlook to 2030 also contains a set of guiding principles for AMSA's provision of navigational services. It articulates the authority's aspirations and provides a basis for

prioritizing activities.

Over the coming years, we anticipate much change in positioning, navigation and timing services, aids to navigation, digital maritime services, information exchange, vessel traffic services and single window reporting. These will impact AMSA's provision of navigation services. The presentation will also address some of the challenges with implementing such maritime services.

3.5. Session 4 - Cyber Security in the Maritime Sector

Chair: **Thomas Christensen**, Secretary General, Maritime Connectivity Platform Consortium, Denmark

3.5.1. Assurance of Maritime Autonomous Systems

Presenter and Author

Tristan Perez, Leader Assurance of Autonomy, Trusted Autonomous Systems Defence CRC, Australia

Abstract

This presentation discusses of a behavioural approach for the assurance of autonomy. The main objective is to provide a supporting view that a key factor affecting decision making about autonomy by different stakeholders (regulators, actuaries, defence, end users, and developers) is the uncertainty about system behaviours. These behaviours must adhere to standards deemed satisfactory by the requirements of a mission or operation. We review a framework for quantifying uncertainty about behaviours using a probabilistic approach. This can be viewed as an evolution of the standard procedures to compute ship operability in seakeeping analysis, which now aims to incorporate needs for the assessment of autonomous systems. We then highlight how extensions to current framework can be used to accommodate AI-enabled autonomy.

3.5.2. Danish Maritime Authority, Cyber-and Information Security

Presenter and Author

Anette Dybdal Fenger, Director, Department for It-Development, Danish Maritime Authority, Denmark

Abstract

A presentation on how the Danish Government has organized an ambitious Cyber Security and Information Strategy. One major point has been defining 7 central sectors each being responsible for the Cyber Security in their area, one of them being the maritime sector of which the Danish Maritime Authority is in charge of organizing a joint effort together with other government authorities and with the industry.

3.5.3. Cybersecurity Aspects of Common Shore-based System Architecture

Presenter and Author

Tai Hyo Kim, CEO of Formal Works Inc., Republic of Korea

Abstract

Cyber risk management to mitigate the potential safety, environmental and commercial consequences of a cyber incident is an essential process to provide dependable e-Navigation service. Its importance and urgency are well shown in adopt of resolution MSC.428(98) on Maritime Cyber Risk Management in Safety Management System (SMS) by International Maritime Organization (IMO).

Cyber risk management is a continuous and evolutionary process identifying threats, analyzing vulnerability, assessing risks, detecting and protecting cyber-attacks, and respond to and recover from cyber incidents. Through this process, providing safer and more reliable maritime services and systems are achievable in that establishment of cyber defense in depth is possible effectively and systematically.

This presentation discusses cybersecurity aspects of the Common Shore-based System Architecture (CSSA), a reference architecture and a best practice for e-Navigation services, mainly focusing on cyber risk

management in development phases. Consideration of preparedness for cyber threats from the early development phase makes cyber risk management of e-Navigation systems more practical as minimizing design changes after the production.

3.5.4. Onboard Cyber Security Activities

Presenter and Author

Kwangil Lee, Professor, Division of Control & Automation Engineering, Korea maritime and Ocean University, R. O. Korea

Abstract

Introduction of e-navigation and autonomous ship brings more onboard system to be interconnected each other and also to the shore-based system. This raises a issue of the cyber security for the safety and reliability of the onboard system. Many international maritime organization including IMO, ICS, IEC and ISO have worked on the development of the guideline and requirements for the security for the onboard system and equipment. This talk will address various activities for the cyber security for the onboard system.

3.5.5. Safeguarding certificates against cyber fraud

Presenter and Author

Yannis Pastellas, Business Development Manager, Safebridge GmbH, Cyprus / Germany

Abstract

The presentation will be focused on how the digital certificates that are issued on block Chain can prevent fraud from any cyberattack. In addition it will explain how block Chain can prevent fraud on digital certification and how the technology works.

3.6. Session 5 - Upcoming e-NAVIGATION Underway Conferences

Chair: **Omar Frits Eriksson**, Deputy Secretary General, International Association of Marine Aids to Navigation Authorities, France

3.6.1. Introduction to the Consolidated Website of ENUW Conference

Presenter and Author

Larry J. Yim, International Liaison Officer, KIMFT, USA

Abstract

This presentation will focus on the consolidated ENUW website. It is intended for participants, members and interested persons to view, share and provide information on past, current, and future events in the e-NAVIGATION space.

3.6.2. Introduction to ENUW NA 2019

Presenter and Author

Minsu Jeon, Technical Operations Manager, IALA, Korea

Abstract

Session

- . e-NAVIGATION Development and Infrastructure
- . North American Governmental Plans and Programs
- . New Technology and Tools
- . Conclusions and Recommendations

3.6.3. Introduction to e-NAVIGATION Underway International 2020

Presenter and Author

Linda Assel Hald, Project Lead Enavigation International Underway, Department for IT Development,
Danish Maritime Authority, Denmark

Abstract

A presentation on the major themes of the upcoming Conference.

3.6.4. Introduction to Workshop on e-Navigation 2019

Presenter and Author

Minsu Jeon, Technical Operations Manager, IALA, Korea

Abstract

This presentation will give brief information on the workshop on e-Navigation 2019 which will be followed by the ENUW AP. The workshop is intended for senior official shaving direct responsibility with developing and implementing safety of navigation policies. The programme will cover an introduction to e-Navigation, related activities, and sharing information and future cooperation.

3.6.5. VTS – ENAV SYMPOSIUM 2020 ROTTERDAM

Presenter and Author

Maarten Berrevoets, Dept. Head Maritime Affairs Department, Ministry of Infrastructure and Water
Management, The Netherlands

Abstract

The Netherlands Ministry of Infrastructure and Water Management together with IALA are the host organizations for the 14th IALA Symposium from 25 – 29 May 2020 in the WTC in Rotterdam, Netherlands. This event will be the first Symposium in its kind combining the topics modern Vessel Traffic Services (VTS) and the implementation of maritime services under the e-Navigation concept.

Hosting city Rotterdam, one of the largest and busiest ports in the world, is the location par excellence as the maritime capital of Europe, where these developments have become a reality and are progressing.

This IALA Symposium provides in a unique 5-day program full of opportunities for

organizational, operational, technical and industrial maritime managers and experts from all over the world to present, share knowledge and discuss innovative developments that contribute to the safe, efficient, secure navigation of shipping and to cooperation between various stakeholders in the maritime domain.

3.7. Session 6 - Panel Discussion and Wrap-up

3.7.1. Panel Discussion among Each Session Chairs in terms of Conference Highlights

(Session 1)

Minsu Jeon asked to Dr. Jin Hyeong Park whether some services with LTE-M use LTE-M only or not. Dr. Park replied that it won't kill VDES and LTE-M services would be used but VDES would be the used as the normal.

Mr. Sunbae Hong asked to Capt. Ervik if we use single window as a platform.

Capt. Ervik replied that we need to find common specifications and languages to satisfy 1,400-1,500 elements.

(Session 2)

Mr. Omar asked to Thomas Christensen how we are running unclear funding.

Mr. Thomas replied that principle is that basically operated voluntary work by members so far possibility having revenue stream in the future.

Capt. Chason Kang asked to Dr. Shim if there is any measure that LTE-M to be used by navigators on the bridge. Capt. Kang added that LTE-M would not contribute to maritime safety. Dr. Shim replied that LTE-M is only for safety purpose (public) and LTE frequency is located for each country's own purpose.

(Session 2-2)

Mr. Bjorn asked to Dr. Jinhyeong Park regarding needs to be tested on how well that would work and how it would be presented. Dr. Park replied that goal is to productivity solutions and deliver into market but currently in deliverance phase.

(Session 3)

Dr. Park asked to Mr. Weylin what experiences of VTS design was.

Mr. Weylin replied that VTS is set up to make up ergonomic and human center is taken into account, but to add next generation to see how they are more digitalized and set up for next generation.

(Session 4)

Mr. Chason Kang asked Ms. Annette Fenger to share experience any cases that was damaged to physical systems such as ECDIS or steering control systems.

Ms. Annette Fenger replied that only done exchange on only for about a year and no incidents related to this. Discussions are how to prevent and secure these systems in everyday work. But for no examples as of yet. Dr. Taihyo added that there were attacks on the turbine systems but nothing was actually damaged.

SG Francis Zachariae asked Ms. Annette Fenger to share info if there were any stories on why companies may be afraid" to disclose cyber crimes when actually been attacked.

Annette Fenger replied that she is understanding why we are not shameful in this business there are a high level of trust and forward this openness now. there are sharing of info between governments. 1 sector to another is very good to share openness. There is a platform to share between authorities and is possible to segregate levels, without giving access to all info. (name to be given) it is used internationally as well.

Mr. Minsu Jeon asked to Ms. Annette Fenger about developing strategies to prevent cyber-attacks.

Annette Fenger replied that there are a lot of prevention that can be done, but still people have to accept risks and look at contingency plans and doing simulated attacked under government and authority level.

3.7.2. Adoption of Conference Highlights

Mr. HONG Sunbae, Chair of session 6, led the conference highlights drawn from the conference proceedings.

The Conference Highlights were:

- It is important to continue to develop and implement harmonized maritime services in the context of e-navigation (or 'digital maritime services') for both SOLAS and non-SOLAS ships. In particular, such services have the potential to greatly enhance the safety of non-SOLAS ships, such as fishing vessels and domestic passenger ferries.
- It is important to contribute to the future development of IMO's description of maritime services in the context of e-navigation.
- There is need to describe existing and emerging e-navigation services in terms of data product specifications and technical service descriptions, for example, as outlined in IALA Guideline G1128 (on the specification of e-navigation technical services). This will assist with harmonization and interoperability of digital maritime services.

- LTE-M is a proven communications system for digital maritime services. 3GPP and IMO-ITU expert groups continue to enhance LTE-M and develop new standards for communications.
- More emphasis should be placed on capacity building in the context of e-navigation. International and regional cooperation initiatives, led by organizations like IMO and IALA, are vital in this regard.
- The idea of establishing a global maritime innovations cluster was raised. It can be a mechanism to facilitate international cooperation when developing the maritime industry's response to the fourth industrial revolution.
- It is essential to share information on cyber attacks, so that any lessons learnt can be incorporated into risk management plans. In order to facilitate secure information exchange, a framework to provide trusted identities is needed.
- Initiatives and projects, particularly test beds, should be more result oriented and, where practicable, be conducted in cooperation with users and industry. New test beds should build upon the results of previous test beds. The results of e-navigation test beds should be shared, using IMO and IALA reporting templates.

4. Closing of the Conference

Mr. Sunbae Hong, Director of Advanced Maritime Transportation Service Team, Ministry of Oceans and Fisheries, congratulated the Session chairs, speakers, supporting organizations for the outstanding performance and arrangements.

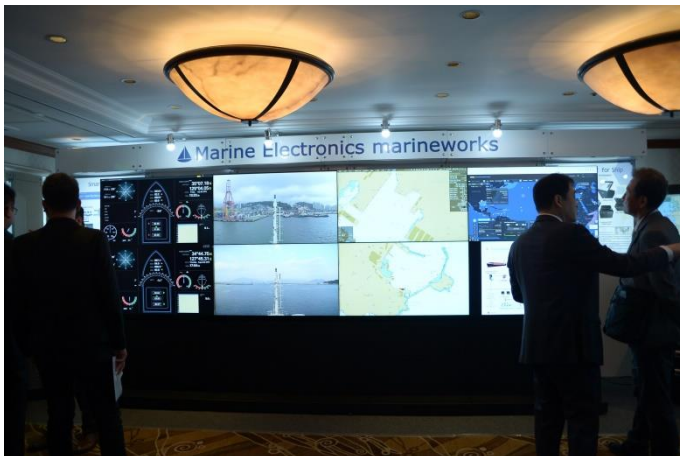
In particular, he emphasized the importance of the Fourth Industrial Revolution in the maritime sector through various post e-Navigation techniques such as maritime autonomous surface ship and smart marine logistics system.

Mr. Francis Zachariae, Secretary General of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), thanked the dignitaries and the special guests who made time in their busy schedule to be present at this conference. And he also thanked the speakers, session chairs, exhibitors and gracious host for this conference. He added specifically all the good and difficult questions and the discussion both in the plenary and in the breaks that made the conference really valuable.

5. Exhibition

Four exhibitors participated to show their products.

Marine electronics Marineworks : ECDIS and Software



KT : LTE-M



GMT : APP Web



MCP Consortium : Maritime Connectivity Platform



APEC SEN : Seafarers Excellence Network



6. Social Events

On the 1st of September, the pre-conference dinner in the Oak garden on Millennium Hilton hotel, was held. semi buffet course was served and the distinguished guests and participants greeted each other casually and openly manner.

On 2nd of September, the dinner started with a Korean traditional performance by the “Hanayeon”. The Farewell dinner was held on 3rd of September. The remaining attendees were served barbeque style with drinks in the terrace of the Atrium hall in the 3rd floor of the Millennium Seoul Hilton Hotel. And toasts were made by Mr. Sunbae Hong, director of Advanced Maritime Transportation Service Team, Ministry of Oceans and Fisheries.