



IALA ENAV COMMITTEE

REPORT OF THE 26TH SESSION OF THE IALA E-NAVIGATION INFORMATION SERVICES AND COMMUNICATIONS (ENAV) COMMITTEE

29 September to 23 October 2020

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Committee Secretary

23 October 2020

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International Association of Marine Aids to Navigation and Lighthouse Authorities
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Report of the 26th Session of the IALA e-Navigation Information Services and Communications (ENAV) Committee Executive Summary

The 26th meeting of the ENAV Committee was held for first time in virtually from 29 September to 23 October 2020; chaired by. Hideki Noguchi and vice-chaired by Jorge Arroyo. The Secretary for the meeting was Jaime Alvarez.

There were 136 participants from 28 countries and four Sister organisations, 9 for the first time. There were four observers.

This was the 4th meeting for the 2018-2022 Work Programme and the Committee considered 68 input papers and produced output papers from three Working Groups.

Key highlights:

Continued progress on the 2018 – 2022 Work Programme as noted in the ENAV Task Plan; and denoted a few task items not likely to be completed in this programme cycle because of the disruption of Covid-19,

- The completion of a new Guideline on Web Services-based S-100 Data Exchange,
- The completion of a new Guideline on VDES R-Mode,
- The completion of the 4th edition of Guideline 1139 on Technical Specifications of VDES,
- A Liaison Note to all Committees on the Work on Cyber Security within IALA,

Intersessional work:

- ARM and ENAV agreement to progress a Liaison Note to IEC MT5 on IEC62288, intersessionally (virtually)
- ENAV WG2 is willing to meet virtually to progress on:
 - 3GPP
 - MASS
 - the deprecation and update of the MRCP

ENAV Participants are invited to join the group, and further information related to the meetings and tasks will be provided through the secretariat.

- ENAV WG3 will progress intersessionally, and further information will be provided through the secretariat.
- A liaison note from VTS Committee on S-212 Referencing to other S-100 Product Specifications was developed and will be sent to the ENAV Committee asking for assistance. The work will be conducted intersessionally and will include how to use the data model of S-212 Product Specification, based on G1128 create Technical Service Description, and do a further development on S-212 Product Specification.

The intersessional group will be led by Wim Smets (wim.smets@mow.vlaanderen.be), and further information will be provided through the secretariat.

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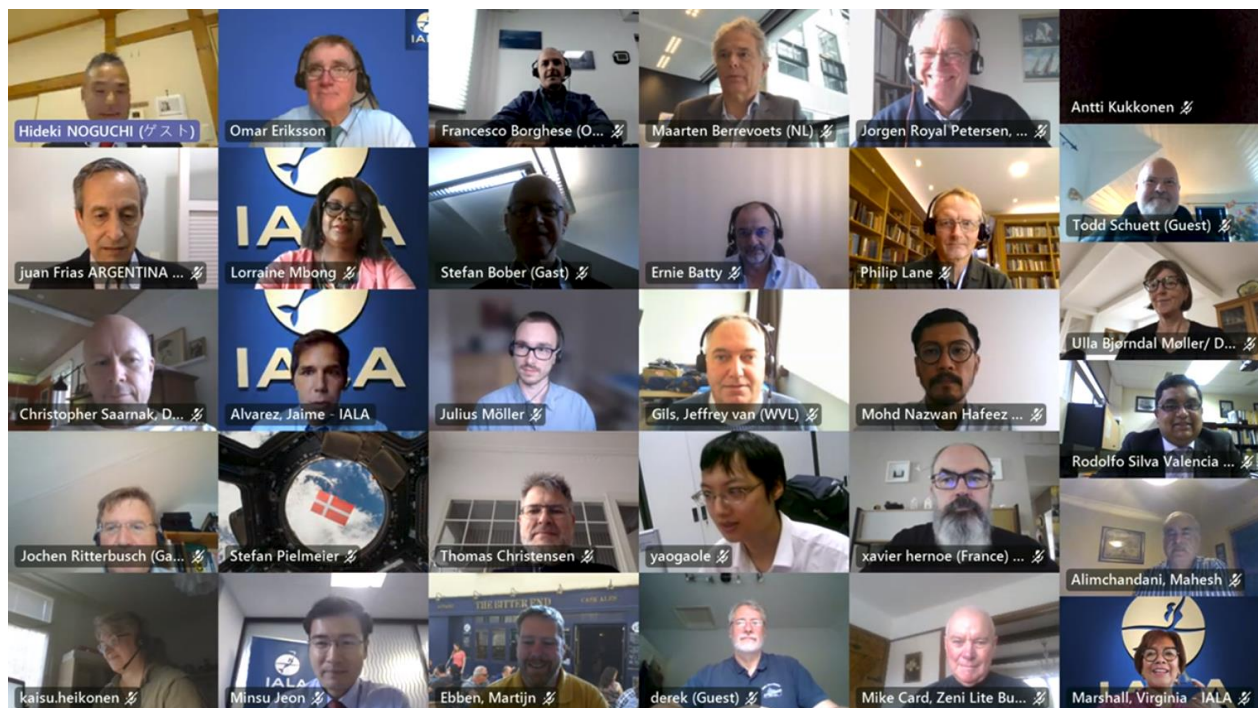
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Report of the 26th Session of the IALA e-Navigation Information Services and Communications (ENAV) Committee

GENERAL

The 26th session of the IALA e-Navigation Information Services and Communications (ENAV) Committee was held virtually for the first time from 29 September to 23 October 2020; chaired by Hideki Noguchi and vice-chaired by Jorge Arroyo, and the Secretary for the meeting was Jaime Alvarez.



The arrangements to coordinate the Committee workflows (considering the various documents: inputs, working papers, presentations and outcomes), running simultaneous meetings and ensuring the communications between the whole Committee, set a challenge and an important milestone for the IALA secretariat. Through the existing platforms listed below, IALA settled the basis of the working arrangements for the virtual period.

- MS Teams (for conducting meetings)
- Outlook Groups (to communicate with the Committee participants, sharing and seeking for document approval)
- Nextcloud Platform (to support the collaborative work of the committees, sharing documents, uploading and downloading and make them available to all the Committees at any time)

These Platforms were supported by the IALA Dashboard developed (<https://www.iala-aism.org/committee-dashboards/enav26-dashboard/>) and maintained by the secretariat that is designed to enhance the user experience of members and provide situational awareness regarding committee activity.

136 members from 28 countries and four Sister organisations participated in ENAV26, 9 for the first time. There were four observers.

The Committee Chair, Hideki Noguchi, welcomed both the new participants and those returning to the Committee meeting. The Chair introduced Jorge Arroyo, Vice Chair of the ENAV Committee and Jaime Alvarez who served as the Committee secretary.

An analysis of the attendance at ENAV26 is shown in Figure 1.

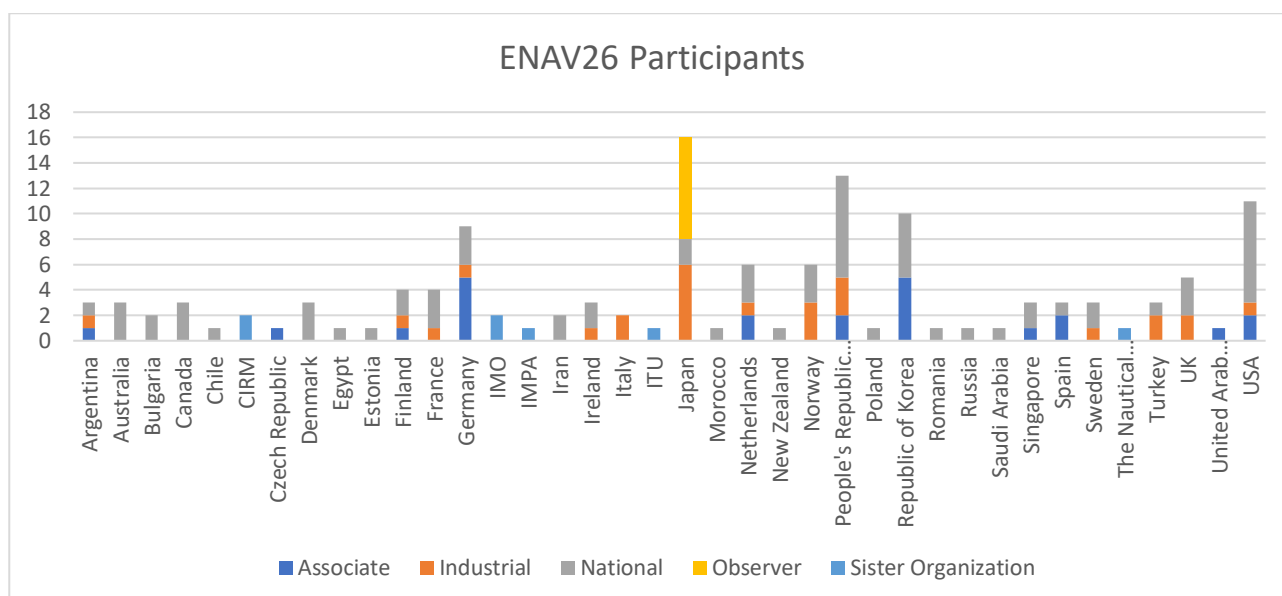


Figure 1 - Number of Participants per Country

1. INTRODUCTION

1.1 Welcome from the Secretary-General

The Secretary-General welcomed all participants and was very glad to see them all even if it is on a Computer screen. The Secretary-General expressed his wish to come back to normal again and thanked the Chair and Vice Chair of the Committee for their hard work in preparing for this meeting and for facilitating the friendly and hardworking atmosphere for which the Committee is known.

Since the successful Diplomatic Conference to adopt the Convention on the International Organization for Marine Aids to Navigation took place in Kuala Lumpur in February 2020, the world has been in the grip of the COVID-19 pandemic. Faced with this unprecedented challenge in our lifetime and following the advice provided by the Authorities and actions taken by sister organizations, IALA has implemented several protective measures. These have involved the cancellation or postponement, as appropriate, of Committee and other meetings, and halting the World-Wide Academy staff's travel for the purpose of conducting missions.

The Secretary-General recalled that the decision was taken to postpone the four-yearly Symposium in Rotterdam, and the Dutch Ministry of Infrastructure and Water Management has just decided to host the Symposium as a virtual event in the period from 19 to 23 April 2021.

Sadly, the celebration of the main event for this year's celebration of World Marine Aids to Navigation Day, on 1 July, in Burgas, Bulgaria, also had to be cancelled.

The Secretary-General took the opportunity to thank all who participated in celebration of the WAtON day on social media.

All the meetings during the second half of this year can be viewed on the web site and will all be virtual.

The virtual meetings also include the important Mid-Term Assembly of the Industrial Members' Committee, due to take place on 6 October 2020.

The IALA Secretariat will continue to monitor COVID-19 related developments and make decisions on activities on a case-by-case basis, updating our website with any further news that may affect members and our activities. Secretary-General is closely engaged for the support of all concerned, not least the Committee chairs, vice-chairs and working group Chairs, in minimizing the impact on the work programme and in advancing the work on important items, through e-mail correspondence and online meetings.

The main event was the Diplomatic Conference hosted so professionally by the Malaysian Delegation. The successful Conference now needs to be followed up by concrete action on the part of coastal State

Governments to sign the Convention so that they may commence the national ratification process as early as possible. The signature ceremony is planned here in Paris 11-13 November this year.

In relation with the outcomes from the Council, one of the important decisions was the nomination of the IALA candidate for the Lighthouse of the Year – the Santo Antonio da Barra lighthouse. The MOF from Korea has produced a beautiful trophy.

The Secretary-General introduced Jaime Alvarez as technical advisor and Secretary to the ENAV and ENG Committees. He has a strong technical background, knows IALA very well, and he is fluent in Spanish, French and English. Tom and Jaime will take care of two Committees each and the related seminars, workshops etc. This will also give the needed resources for improved necessary quality assurance of the guidance documents before they are submitted to Council and on the web site.

Marie-Helene has taken her retirement after almost 38 excellent years with IALA. She is replaced by Audrey Guinault who has been in IALA for some years.

The Secretary-General wished all participants a fruitful week and reminded everyone that the secretariat was ready to help in any way possible.

1.2 Approval of the agenda

The agenda was reviewed and adopted (ENAV26-1.2.1).

1.3 Introductions and apologies

The Chair welcomed all participants, especially the new participants of the Committee.

See ANNEX B for the list of attendees and new participants.

No apology was received.

1.4 Working arrangements

The following statements were read to Committee members:

IALA is required to comply with the General Data Protection Regulations of the European Union. In the report of this meeting, IALA will include a list of participants with their contact information. Any participant who wishes to remove their personal information from the participants' list should advise the Committee Secretary as soon as possible.

If anyone present has knowledge of any patents, including pending Patents, held either by themselves or by other organisations or individuals, the use of which may be required to practice or implement the content of IALA Documents being developed or worked on in this Committee to inform the IALA Secretariat.

Jaime Alvarez introduced the working arrangements for the Committee working period presenting the main documents distributed to the Committee and aiming at defining the working procedures:

- IALA Virtual Committee Working arrangements
- IALA Committee Tools

The secretariat presented the IALA Dashboard developed by IALA staff and is destined to be the One-Stop-Shop for conducting the IALA Committees and centralised all the information, status and meeting needs for the IALA member during the Committee working period. The Dashboard includes the following information:

- Bulletin board
- Committee Action Plan
- Meeting calendar
- Presentations scheduled
- Information related to the process of Document Silent Approval

- Link to the file share platform
- Link to the Meeting Documents

2. REVIEW OF ACTION ITEMS FROM ENAV24

Input paper ENAV26-2.1.1 refers.

2.1 Action Items – IALA Secretariat

The Secretary informed that action items allocated to the IALA Secretariat had been completed and the following actions have recently closed or are under development:

- ENAV24 Action item 10 and 12: through the IALA website, the secretariat updated the relevant areas and especially the IPR page. IPR area is available in the introduction part of the Committee including the IALA patent policy, associated procedures and the link to IPR wiki.
- ENAV24 Action item 13 on adding QPSK point files to the Guideline 1139. It was resolved that this action item is more than editorial changes adding annex to the G.1139. The secretariat will work together WG3 to make available these QPSK points files.

2.2 Action Items – ENAV Committee Participants

The Chair reviewed the progress of the action items allocated to Committee Participants and noted that some input papers had been received associated with them, which will be considered in the respective Working Groups.

3. REPORTS FROM OTHER BODIES

3.1 IALA

3.1.1 IALA Council

Refer to the Input ENAV26 3.1.1: Council 71 was held in June 2020. The meeting noted in particular that:

- The Council approved the Revocation of Guideline 1072 - AtoN Information Exchange and Presentation. As part of this work, VTS Committee will lead (in cooperation with other Committees) the revision of G1105 on Shore side Portrayal will include the general Portrayal topic and some content from 1072.
- New VTS Manual 2020 Ed.7 approved
- New IALA Technical document Catalogue was noted.
- The Council approved the document Workshop Proposal on Marine Aids to Navigation in the Autonomous World (C71-8.2.2).
- The Council agreed to send NL Paper on the Impact of MASS on VTS to all Committees.

3.1.2 IALA Policy Advisory Panel

Refer to the Input ENAV26 3.1.2. PAP 40 was held virtually from 31 August to 3 September 2020.

PAP started looking at the next four years work program 2022-2026 and the Inter Committee papers were submitted to the PAP. Spreadsheet referred in the input ENAV26-5.1.14 gathers the Liaison Note and tasks between different Committees.

3.1.3 IALA World-Wide Academy

A presentation from Kevin Gregory was provided during the presentation sessions. Please refer to chapter 4.8 of the report.

3.1.4 Update on IALA ENAV-VTS 14th Symposium

On behalf of the Symposium hosts, Maarten Berrevoets provided ENAV26 with a brief update. The Symposium has now been postponed to 19 - 23 April 2021. It is now proposed that the event will be organized as a virtual Symposium. The programme for the event will be shortly discussed and advertised on the Symposium [website](#).

3.2 E-Navigation Underway and Digital@Sea

The 4th Navigation Underway Asia-Pacific Conference was held in September 2020, in Sejong City, Korea, as a hybrid type meeting using an online conference platform. About 700 participants, from more than 50 countries, participated in the event online. The quality of the presentations was high, with good discussions on a variety of topics under the conference theme – which was “Collaborating to Harmonize Maritime Digitization”.

It was the last event under the “e-Navigation Underway” banner, which hereafter will be called “Digital@Sea” (D@S) and broaden beyond the e-Navigation Underway concept.

D@S will now include:

- Conferences series / international, Asia Pacific, North America
- D@S Clusters which would / include and test / various national initiatives
- And the Capacity building programme.

Digital@Sea International, the first of the D@S conferences, will be held (most likely virtually) in January or Feb next year from Copenhagen, Denmark. Further details will be provided in due course.

Digital@Sea North America, being organized by RTCM and the U.S.Coast Guard, will most likely be held in conjunction with the RTCM Annual Assembly in September 2021. Further details will be provided at least six months ahead of time.

3.3 IMO

The Chair, Hideki Noguchi briefed about IMO, all the meetings of the first half of the year have been postponed or the cancelled due to the pandemic situation. IMO NCSR7 met in January and approved the draft revision of resolution A.857(20) regarding the VTS Guideline that will now be considered at MSC102; to be held virtually on 4 - 11 November 2020.

IMO NCSR8 is planned for next February 2021, but, yet to be confirmed. Its Communications Working Group is currently concentrated on GMDSS modernisation with the inclusion of the Iridium satellite system and other GMDSS satellite services. The Navigation Working Group is tasked to complete work on e-Navigation Maritime Services by NCSR9, expected to be held in early 2022.

3.4 IHO

IALA Secretariat is keeping communications with IHO. Regular IALA IHO Technical Cooperation meeting was held on 14 October 2020 virtually and discussed the following points of the agenda:

- Update on S-100
- IHO testbed activities
- General developments of S-200 including
- IALA Guideline on web service based S-100 data exchange
- Definition of S-201 features and MRN

3.5 IHO

3.5.1 ITU-R WP5B

Stefan Bober provided participants with an update on ITU-R WP5B matters. He recalled the important milestone reached last year in ITU-R:

- With the approval of the VDES Satellite frequencies assignment during the ITU-R Conference in 2019 through the ITU-R M.2092 Recommendation which provides the availability of these frequencies for the unique use of VDES satellite.
- Automatic Maritime Radio Device (AMRD) frequencies grouped:
 - Group A (that enhance the safety of navigation) two devices allowed: Mobile AtoN (IALA) allowed to transmit in AIS 1 and AIS 2 and Man overboard device class M.
 - Group B (that do not enhance the safety of navigation): allocated in AIS channel 26
- Modernisation of GMDSS will be an agenda item (1.11) in 2023 in ITU-R
- Preliminary Agenda items of 2027 Conference: R-Mode

A report of the ITU-R WP5B meeting held in June 2020 is available in the file share ENAV26-3.5.1 providing the status and topics of different matters of IALA interest:

- Revision on VDES ITU-R 2092-0 will not take place this year but at the end of 2021.
- Process through the IALA ITU Correspondence Group to prepare inputs and understanding to this revision.

3.5.2 IMO-ITU Joint Experts Group

The Vice-Chair, Jorge Arroyo, provided participants with an update on IMO-ITU Joint Experts Group. The 16th session of the EG meeting met from 3 to 18 September 2020 via correspondence. Main topics were:

- WRC23
- GMDSS Modernization
- HF direct exchange

A draft report of the session is available in the input ENAV26-3.5.2

3.6 RTCM

Jorge Arroyo continued with the update on RTCM and the Annual Assembly held in September 2020, matters addressed:

- Cyber security
- Satellite communications
- EPIRB
- PNT
- ASM

More information available in the document ENAV26-3.5.3.

3.7 IEC

Jorge Arroyo briefed about the progress on IEC. Jorge recalled that Stephan Bober is also the Chairman on WG15 related to AIS. Both will meet promptly to advance on VDES ASM stations and other topics. Jorge informed about the work on IEC 62288 Navigation Presentation Standard has extensively revolved around AIS AtoN, Mobil AIS AtoN and AIS Application Specific Messages. This standard is now open for National Members comment till 17 November 2020, and, its voting draft expected to be circulated by Spring 2021.

3.8 ETSI

Derek Love provided an overview of the progress of ETSI concerning the update of standards on Radio equipment directive (last meeting on July 2020, next meeting on October 2020). DMC Remote control, dPMR, radar standardization is also working ongoing within ETSI.

3.9 3GPP

Minsu Jeon, Technical Operations Manager, updated the latest news on 3GPP and the IALA position on it. 3GPP finalised the release 16 at its 88th Technical Assembly in July 2020 which includes the phase 1 of the satellite component. IMO requested to IALA to report on the status of 3GPP developments and ENAV WG2 is handling this workstream.

4. PRESENTATIONS

Below presentations were provided during the Opening Plenary and working period and the links are available in the [dashboard](#):

4.1 VDES / Stefan Pielmeier

Stefan Pielmeier presented the Status of VDES through the satellite network. Video [link](#)

4.2 Proposals on the use of satellite VDES / Junji Fukuto

Dr. Junji Fukuto presented proposals on the use of satellite VDES - Mutually Coordinated Navigation, and VDES International Operation Center. Video [link](#)

4.3 dPMR Trial Port of Rotterdam / Martijn Ebben

Martijn Ebben and Derek Love presented the results of the dPMR trial done at the Port of Rotterdam from a user and technical perspective. Video [link](#)

4.4 Blockchain for maritime Use / Anjaney Borwanker

Anjaney (Anjan) provides the introduction course into blockchain for Maritime through The Nautical Institute short course series. He has managed to identify a 30 min slot to be with us before he begins his next course. Video [link](#)

4.5 Big data analytics – Vessel Density Analysis / Prof. Waldo Kleynhans and Jillian Carson-Jackson

Presentation on the work done to provide data to support risk assessment activities – specifically the SIRA workshops. Video [link](#)

4.6 Using artificial intelligence and big data to address risk / Robert Marshy

GSTS (Canada) – as part of a Development and Demonstration contract with the Government of Canada OCIANA Risk Assessment and Management tool to support the effective operational use of big data to address different risks, including visual presentation of the data for maritime situational awareness. Video [link](#)

4.7 Construction and Testing of VDES Project in North China Sea / Gaole Yao

Presentation of the testing of VDES in the North China Sea. Video [link](#)

4.8 IALA World-Wide Academy Update / Kevin Gregory

Update on the activities of the Academy during the period of COVID-19. Video [link](#)

4.9 IALA's Role and Strategy for the S-200 product specifications / Minsu Jeon

Update on IALA's Role and Strategy for the S-200 product specifications. Video [link](#)

5. REVIEW OF INPUT PAPERS

Input papers were numbered in line with the agenda and allocated to the relevant Working Group.

The Committee had no comments on the list input papers as presented by the Secretary. All papers are available on the IALA website.

6. ESTABLISH WORKING GROUPS AND TASK GROUPS

The Chair invited all Working Group Chairs to introduce the work planned for ENAV26.

Working Group (WG)	Working Group Chair / Vice Chair
WG1 – Digital Information System	Axel Hahn Jin Park
WG2 – Emerging Digital Technology	Jillian Carson-Jackson Ernie Batty
WG3 – Digital Communication System	Stefan Pielmeier Stefan Bober

7. WORKING GROUP 1 – DIGITAL INFORMATION SYSTEM (WG1)

The following activities were addressed during the WG1 at ENAV26.

7.1 Maritime Resource Names (MRN)

ARM, in cooperation with ENAV, worked and polished the draft G1143 on the unique identifiers for maritime resources edition 2.0, incorporating comments on the definition of "uniqueness," clarification of the responsibility for ensuring uniqueness and giving several examples of MRN applicability to real-world scenarios, was produced and circulated for comment. This document is forwarding from ARM to IALA Council 72.

7.2 Maritime Services / Operational Service Description

Referencing Documents: ENAV26-7.2.4.

In the output document ARM11-13.3.1 / ENAV26-7.2.4, ARM committee requested ENAV to review the Draft guideline on producing an e-Navigation Operational Service Description (OSD) and provide feedback to ARM. An inter-committee meeting between ENAV and ARM was conducted and reviewed the document. Some members of the WG1 participated in the meetings. The fruitful discussions and comments led to changes to the document and resulted in the revised and renamed draft Guideline "On the development of a description of a maritime service in the context of e-navigation." This document is forwarding from ARM to IALA Council 72.

7.3 Cybersecurity

Task Group Leader: Martijn Ebben

Referencing Document(s): ENAV26-7.3.1 Revised Introduction of Cybersecurity Standards applicable to Maritime Digital Devices

During the introductory session of WG1, it was clarified that the input document ENAV26-7.3.1 has already been discussed on an earlier ARM meeting and was planned to also be discussed in the upcoming IALA Cyber Security workshop. However, as this workshop was postponed due to COVID-19, a Task Group in cooperation with members from ARM was established to discuss further processing of the document. Outcomes of the discussions have been the following:

- The proposed programme for the Cyber Security workshop in Quebec, Canada, tentatively in October 2021 was reviewed by the TG.

Output: Liaison note on Work on Cyber Security within IALA (ENAV26-12.1.2).

Action Item:

The IALA Secretariat is requested to submit the liaison note on Work on Cyber Security within IALA (ENAV26-12.1.2) to all IALA technical committees.

7.4 Task Group on draft Guideline on Platforms to support the provision of maritime services in the context of e-Navigation

Task Group Leader: Thomas Christensen

Referencing Document(s): Draft Guideline on Platforms to support the Provision of Maritime Services in the Context of e-Navigation (ENAV26-7.2.1)

During the revision of the document, some weaknesses and gaps were identified, which have been worked out in the TG meetings. Firstly, in the Introduction section (1.1.) of the document, it was clarified that this guideline should be used to assist in the selection of a suitable platform for maritime services. It is not their purpose to provide guidance in the implementation of such a platform. Secondly, the "National Members" were identified as one of the main target groups of this document. Therefore, they are now addressed by name in the introduction of the document. In addition, a subchapter 2.9 "Platforms vs. Platform - The need for a decentralization" was added to the document. This chapter describes why a decentralized approach is essential for the acceptance and success of a platform in the maritime domain. Furthermore, the relevance of interoperability and harmonization between the individual instances is especially considered in this section. Finally, some requirements (2.4., 2.6. and 2.8) have been slightly revised and the Maritime Connectivity Platform section of the annex has been extended by a chapter about the decentralized approach of the MCP.

The draft Guideline had been finalized and submitted to the silent approval but having the comment made by Jean François COUTU, it was decided to further develop the draft Guideline at ENAV27. It was planned to consider the existing IALA input document from the ACCSEAS project in the further development of this guideline.

Output: the draft Guideline on Platforms to support the Provision of Maritime Services in the Context of e-Navigation (ENAV26-12.1.4).

Action Item

*That **Committee Participants** are encouraged to contribute to the draft Guideline on Platforms to support the Provision of Maritime Services in the Context of e-Navigation (ENAV26-12.1.4).*

The IALA Secretariat is requested to submit the draft Guideline on Platforms to support the Provision of Maritime Services in the Context of e-Navigation (ENAV26-12.1.4) as an input working paper to ENAV 27.

7.5 Task Group on Guideline on web service-based S-100 data exchange

Task Group Leader: Julius Möller

Referencing Document(s): ENAV26-7.1.2 Draft Guideline on Web Service based S-100 Data Exchange

The task started from ENAV24, the WG has been working on developing the Guideline on Web Service based S-100 Data Exchange. While ENAV26, the TG was established to finalize the document in the first version for approval. Last changes regarding formatting and orthography have been made, and clarification of provided example in the Annex was added to the Guideline.

Output: ENAV26-12.1.1 Guideline on Web Service based S-100 Data Exchange

Action Item

The IALA Secretariat is requested to submit the draft Guideline on Web Service based S-100 Data Exchange (ENAV26-12.1.1) to the Council for approval.

7.6 IALA Conference 2022

The committee chair asked the WGs for proposal for topics of the IALA Conference 2022 in Brazil. It was discussed, that WG2 proposed the topic of “digital infrastructures” which could be extended to “digitalisation”. It was also proposed to put “Traffic Management” on the agenda.

7.7 Task Lists

Referencing Document(s): ENAV26-3.1.2 Report of PAP40 (PAP40-8.1), ENAV26-5.1.14 Inter-committee Work July 2020 (for the Committees second half 2020)

The WG acknowledged the report of PAP40 and the Inter-committee Work document. As could already be seen in sections 7.2 and 7.3, it was noticed that there is a recognized overlap with the tasks of the ARM committee.

This WG work will work on a technical service specification for the provision of S-125 and S-201 following G 1128 together with ARM.

Action item:

The IALA Secretariat is requested to add the work on a technical service specification for S-125 and S-201 on the task plan of ENAV.

8. WORKING GROUP 2 – EMERGING DIGITAL TECHNOLOGY (WG2)

The Chair of the Working Group thanked all participants for their hard work during the working period.

A number of Working Group sessions, were held over the course of the ENAV26 online meeting. The Working Group focused on the following tasks:

- 1.1.5 – Review of Emerging Technologies
- 2.2.10 - Develop a Recommendation on the Maritime Internet of Things (IoT) (intelligent sensors, AtoN monitoring) (related to tasks 1.1.5 and 3.4.2)
- 3.1.2 - Develop a Recommendation on the Maritime Radio Communication Plan (MRCP) (deprecate the MRCP).
- 3.4 - Monitor developments in 3GPP, liaise with IMO NCSR regarding 3GPP activities
- 3.4.2 - Develop a Recommendation on digital information services in coastal area via public correspondence
- 4.1.1/4.1.2/4.2.1 – Related to MASS (liaise with IMO; Monitor and report on emerging technologies to support and develop IALA position paper on MASS)

In addition, the WG received several presentations on emerging and developing technologies:

- Report on trials of dPMR – Port of Rotterdam

These were successful and indicated that the dPMR is a viable technology within the maritime communications domain.

- Use of AIS data for trend analysis – IMIS Global / JCJ Consulting

This built on the existing Vessel Density Charts and indicated that the use of 10-meter grids using vessel trajectories gave an accurate view for various risks analysis methods.

- Development of risk assessment tool OCIANA – GSTS

This indicated that the use of Big Data has an expanding capability for determining risk in the maritime domain.

8.1 Candidate technologies

ENAV26-8.4.10 was reviewed (formerly ENAV25-10.4.1). The document presented those technologies identified as possible candidate technologies for review between ENAV24 and ENAV 25. These include:

- LoRA / LoRaWAN – a low power-wide area network (LP-WAN) system
- LEO constellation developments, noting the growth in digital communications capabilities from different low earth orbiting satellites.
- NAVDAT – noting developments as presented at IMO, including the recent input to NCSR, this technology may be reviewed if expertise and input is received
- LiFi – LiFi, or light fidelity, is a communications capability based on Visual Light Communication (VLC) that uses LEDs to network a wireless system.

During the GoToMeetings held between ENAV24 and ENAV26 presentations on LoRA / LoRaWAN and LEO Constellations had been provided. In addition, an initial review of the Template for review of Emerging Technologies for LoRA / LoRaWAN had been completed.

At ENAV26 the WG finalised the review of the LoRA / LoRaWAN template. Based on the review, the WG agreed that LoRaWAN has potential to address specific use cases for AtoN Authorities. Concerns about technology and brand names including IPR concerns to be considered.

Action item:

*The **IALA secretariat** is requested to send the WG2 Technology Review for LoRA / LoRaWAN forward as an input to ENAV27.*

8.2 Task 3.4, 3.4.2 – Developments in 3GPP / Digital Information Services

The WG noted developments in 3GPP, including a detailed review of the draft recommendation and guideline on 3GPP.

The WG noted the specific technology reference in the work, and the more general task item 3.4.1 (develop a recommendation on digital information services in coastal areas via public correspondence). It was agreed that the draft documents that specifically refer to 3GPP should be made more generic to reflect the overarching terminology:

- IMT-Advanced (aka “4G”)
- IMT-2020

The review of the existing document to revise and reflect the outcomes of the discussion will be done by the Vice-Chair, E. Batty, intersessionally with a revised document to be provided as input to ENAV27.

Action Item

*That **E Batty** is requested to carry out a review of the existing draft Recommendation and Guideline on 3GPP and amend to reflect generic terminology of IMT-Advanced and IMT-2020 and provide as input to ENAV27.*

*That **Committee Participants** who wish to participate in intersessional activity on 3GPP will be further informed through the secretariat in the coming weeks.*

8.3 Task 4.2.2 – IALA Position Paper on Digital Voice over VHF

During ENAV24 the WG had completed the template for review of emerging technologies for dPMR. The WG also provided input to support the IALA proposal for an agenda item on digital voice over VHF radio at the ITU WRC-2019.

The WG noted that the proposal was not accepted at WRC-2019. The WG also noted the presentation on trials using dPMR held in the Port of Rotterdam, as presented during the GoToMeetings held between ENAV24 and ENAV26.

The WG agreed that the review of this technology was complete and that the use of digital voice over VHF could be of use to IALA members for some use cases (result category 3) and inclusion in the revised MRCP (Task 3.1.2 refers).

WG2 will place all documentation and presentations into a repository for future reference as and when this detail is required by IALA. This will be completed at ENAV27.

8.4 Task 4.1.2, 4.2.1 - Discussion on Maritime Autonomous Surface Ships (MASS)

Noting the cancellation of ENAV25, and the correspondence group activity carried out work on the development of a Recommendation and Guideline on MASS. Noting the input from the IALA Secretariat on the fact that MASS activity is being viewed holistically across all aspects of IALA, the WG reviewed the relevant input documents and prepared a revised Recommendation and Guideline.

The Guideline was updated to reflect the overlap between the 4 Degrees of Autonomy used by the IMO and the 10 levels of Autonomy reflected in academic literature. This is available to be shared as is.

Action Item:

*That **Committee Participants** are invited to participate in an intersessional session on MASS and will be further informed through the secretariat in the coming weeks.*

*The **IALA secretariat** was asked to consider holding a virtual workshop on MASS if the physical workshop is not possible.*

8.5 Task 3.1.2 – Deprecated MRCP

The WG reviewed the action item and identified initial actions for the split of the MRCP into a Recommendation and a Guideline. The Working Group agreed to progress this work further through intersessional meetings between ENAV26 and ENAV27.

Action item

*That **Committee participants** are invited to participate in the intersessional meetings on the MRCP deprecation and will be further informed through the secretariat in the coming weeks.*

8.6 IALA Conference 2022

WG2 Chairs discussed about the topic and agreed on the title of the conference could be:

From Digitisation to Digitalisation of Maritime Aids to Navigation

Below listed topics were proposed:

- The role of digital broadband technologies
 - ASM
 - VDE
 - 3GPP - 4G / LTE / 5G / NB-IOT / CAT-M
- IoT technologies in the maritime domain
 - Use cases
 - Technologies
 - Shore side
 - Ship side
 - Integration of ship and shore side
- The role of maritime AtoN and VTS in the MASS environment
 - eAtoN
 - Secure communications
 - How MASS works in a VTS environment
 - MASS and PNT systems

- Level of automation and what they mean for decision making
- The future of AtoN in an increasingly virtual world
 - Sharing AtoN with higher risk fishing and leisure craft
 - Sharing the AtoN and MetHydro sensors with the maritime domain with low latency and supporting the virtual and augmented reality capability
 - Update on MASS and the interaction with VTS
 - The role of virtual and augmented reality on the ship and on the shore
 - How cloud-based service are impacting on the AToN and VTS environments
- Concerns
 - How to deal with Cyber Security on the ship and the shore
 - How does the maritime AtoN and VTS domain deal with the rapid development of AI and communication technologies
 - Does blockchain have a place in AtoN and VTS systems
 - How new technologies are used to satisfy new demands:
 - Adopt
 - Adapt
 - Extend
 - Develop

9. WORKING GROUP 3 – DIGITAL COMMUNICATION SYSTEM (WG3)

9.1 Report and actions from previous meetings

The Working Group reviewed the action items from ENAV24 and August 2019 intersessional. All actions were found to be completed:

9.1.1 Aug19/ Action3: Availability of superseded documents for reference.

Action item (closed): The IALA Secretary is asked to place a message on the relevant IALA web page stating that the IALA secretary can be contacted for copies of superseded documents..

The secretariat updated the website and placed a message on the relevant IALA web page regarding the availability of superseded documents.

9.1.2 Aug19/Action7: Coordination of ITU introduction to changes for ITU-R M.2092

This was an action raised during ENAV26. Christian Rissone joined WG3 to assist with coordination activities(see 9.4.) and the action item is now closed.

9.1.3 Aug19/Action9: QPSK point specifications publishing

The group received a proper IPR statement from ESA on the QPSK point files. G1139 will subsequently refer to G1139-1 for the QPSK/CDMA sequence in G1139 edition 4 onwards.

Action Item (closed): The IALA Secretary is asked to add the OUTPUT/G1139-1_QPSK_points.zip file to the edition (3) of G1139 on the IALA web page as document G1139-1.

The secretariat informed WG Chairs that WG3 shall provide the point files with the newest update of G1139 to committee level and after approval, the files will be attached correctly.

9.1.4 Aug19/no number: QPSK/CDMA incorporating point files into ITU-R M.2092

Nader sent a letter to the ITU BR (Radiocommunication Bureau ITU) on the QPSK/CDMA sequence. No IPR is involved, it is only a question of the technicalities of how to share the files.

Stefan P. asked BR at WP5B meeting in July, and connected with ESA to find a solution for how to add these files to ITU-R M.2092-1 when it is published.

Stefan P and Nader received the following from ITU BR:

“Contributions to ITU Study Group meetings imply that permission* to use the material of third parties, is secured by the contributing party. If ESA is directly contributing those data files, it is assumed that the permission* for use is implicitly included.

* permission granted to ITU must be for worldwide, perpetual, royalty-free use of this material, in print and digital formats.

The data files can be embedded into the Word document of the PDR, and they will be included in the final version of the Recommendation.”

A The point files are royalty-free, no patents are in place and the algorithms are published for free use, so all issues with ITU seem to have been resolved. This action item is now closed.

9.1.5 Aug19/Action10: MASS guideline draft

WG2 has that as an eNAV26 action item. Action item closed.

9.1.6 Aug19/Action12: No response on registering VDES trademark, yet.

The secretariat informed that IALA has not registered any technology as a trademark according to the IALA file depository. The secretariat updated the IPR area of the IALA Wiki, and no further legal action on this is necessary. This action item is closed.

9.1.7 Aug19/Action13: VDE-SAT channelization and transmission structure published in Wikipedia

Action Item (closed) : *The **IALA Secretary** is requested to ensure that the IALA IPR Wiki page is published and linked from the IALA web and IALA Wikipedia pages.*

The secretariat updated the website, see <https://www.iala-aism.org/about-iala/committees/>.

9.1.8 Feb20/Action14: R-mode into WRC-23

Action Item:

*That **Ronald Raulefs** please ensure preparation of a communication plan towards ITU-R and IMO for R-mode with the goal to include it in WRC-23. Ronald to coordinate with Christian Rissone to promote the topic on the joint IMO/ITU expert group in July 2020.*

Status at eNAV26: Communication with German ITU delegation has been undertaken by Ronald. An international communication plan is required and Ronald Raulefs continues the coordination.

Christian Rissone highlights during eNAV26: R-mode is currently not on the agenda for the next NCSR meeting, a plan how to recover from that situation during 2021 will be provided by Ronald/Christian.

9.1.9 Feb20/Action15: IMO support Japanese proposal to have VDES into SOLAS

Action Item:

*That **Committee Participants** are asked to provide or seek support to Japan's input to IMO MSC 102 (Nov 4-11, 2020) regarding the inclusion of VDES in SOLAS; IMO delegates can contact Yoshio for further information and clarification;*

9.2 Input for this meeting

The group reviewed the list of input papers and assigned them to the following work topics.

The unofficial input documents:

- Some inputs to G1139, see below

The group reviewed the task list and decided to work with the following items during this meeting, see chapters below.

The group discussed which items require interaction with WG1 and/or WG2 :

- MRCP (WG2);
- G-1117(WG2)

9.3 IMO Matters

A new work plan is proposed to IMO by Japan, to include VDES in SOLAS Chapter V. IMO has not yet held a meeting and MSC102 meeting (high level committee) is 4th-11th November, 2020. However, IMO is considering postponing this proposal to MSC103 (expected in Q1 2021) and hopefully early enough to enter NCSR-8.

NCSR has a communication working group that could be of interest to IALA members, they plan to meet in June 2021. Participating members are asked to ensure that the output of the NCSR communication working group is sent as an input to the following WP5B meeting in 2021.

Action Items:

*That **IALA members** are asked to follow NCSR and support inclusion of R-mode into e-Navigation such that ITU will accept R-mode as part of WRC-23.*

Ross reminded us that R-mode was forwarded to WRC-27 by ITU because it was considered to be immature at the time of WRC-19.

Currently, R-mode is possible with the VDES we have proposed to ITU but there is no description of how it is used.

Hans/Johan proposes to see R-mode simply as an application of VDES. It might be the “killer-app” of VDES. It doesn’t require a change to ITU-R M.2092 as proposed to ITU per se, because ITU-R M.2092 as currently proposed does define the proper framework for R-mode.

It is proposed:

- to use IMO to include R-mode as “GNSS contingency system” in WRC-23 through e-Navigation due to the following aspects:
 - facilitating AIS continued operation, and
 - navigational safety;
- to consider preparation of an ITU report on R-mode, aligned with IMO;
- to consider the addition of a maritime radionavigation designation (non-exclusive) on the VDES frequencies in the ITU Radio Regulations at WRC-23;
- to subsequently adding R-mode to ITU-R M.2092, as the preferred method of introducing R-mode.

Alternatively, we might consider an IEC standard that describes how to use ITU VDES standard for positioning.

9.4 ITU Matters [Stefan B.]

Stefan Bober presented the report on ITU matters, to be found in INPUT/ ENAV26-3.5.1 Report of ITU-R WP5B meeting 20 June to 30 July 2021.docx.

9.5 Call for papers on International Journal of Satellite Communications and Networking

Please see the following links:

- https://onlinelibrary.wiley.com/page/journal/15420981/homepage/special_issues.htm

- https://onlinelibrary.wiley.com/pb-assets/assets/15420981/IJSCN_Special_issue_VDES_v2-1600785989787.pdf

Deadline is January 2021 papers will be peer reviewed.

9.6 ARM Liaison [Stefan B.]

Stefan Bober presented the liaison notes received from ARM. The group decided the issues should be further discussed in a sub group between ENAV WG3 and ARM during the meeting.

The ARM/ENAV sub group meeting on Liaison notes to ITU held a virtual meeting on 14. October 2020 as follows:

ENAV26-9.3.1/ARM11-13.0.1: Liaison Note from IALA to ITU on working document towards a preliminary draft revision of Recommendation ITU-R M.1371-5:

This liaison note was intended to provide information to ITU on new proposed Message 29 “Singel slot AIS AtoN Report”, i.e. Table “Nature or Type of AtoN”. Due to concern regarding the content of the table, it appears to be for inland waterway features though there are some cross over with the IALA MBS, IALA Council rejected the liaison note.

ENAV response:

The primary purpose for message 28 is to provide for a 1-slotted AtoN Report vice the 2-slotted message 21 AtoN Report; thus using 50% less bandwidth and would allow for CSTDMA transmissions (broadcasting only when a free slot is available) vice FATDMA which requires shore-side base stations to reserve its slots or operating in RATDMA mode which can step on 2 vessel transmissions each time it transmits. Regarding its AtoN Type descriptions, as drafted we see how IALA MBS AtoN could be confused with non-MBS AtoN. ENAV will draft a new table that mirrors the current message 21 table and clearly labels 4-30 as IALA MBS aids and labels the other aids accordingly. We recommend that IALA not oppose its creation, for the same message can be used for IALA MBS and for Inland Navigation, which is the desire of some ITU members, i.e. USA.

Further work:

A revised proposal for Message 28 was discussed. Due to the amount of new aspects in proposed Message 28 further work is required and will be discussed during next ARM and ENAV meeting.

Amendments to Message 21 Table 74 “Type of AtoN” are proposed as follows:

Code 1: amend to read, “Reference point such as RACON.

Code 2: amend to read, “MAtoN”, delete RACON;

Code 3: amend to read, “Structure off-shore, such as an oil platform, rig, wind farm, etc.

NOTE 1 – This code should identify a structure that is fitted with an AtoN AIS station”;

Code 31: amend to read, “Large Major Aid, i.e lightvessel, light float, large navigational buoy (LANBY).

It is proposed to send an appropriate liaison note to ITU after next ARN and ENAV meeting.

Liaison with VTS is required.

ENAV26-9.3.2/ARM11-13.0.2: Liaison note to ENAV - Assignment and use of identities in the maritime mobile service for AMRD Group B

This liaison note address the proposed unique identities for AMRD Group B, which is 979YYYYY.

Further it addresses the display of AMRD Group B and the need to clearly distinguish the display of AMRD Group B from other symbols in a possible common display of AIS and AMRD..

ENAV response:

IALA has sent a liaison to ITU on the unique identity for AMRD Group B agreeing with the proposed number 979YYYYY in June 2020. -> issue solved.

The presentation/portrayal of AMRD Group B on SOLAS navigation presentation systems (i.e. radar, ECDIS, or INS) is not foreseen. This would require IMO amending their respective performance standard; and, defining their symbols in IMO SN.1/Circ.243--Guidelines For The Presentation Of Navigational-Related Symbols, Terms and Abbreviations.

However, display manufacturers could develop a common display AIS and AMRD Group B. This would require an extra receiver on channel 2006 for AMRD Group B.

Further work:

Preliminary draft revision of Rec. ITU-R M.585-8 includes unique identity 979YYYYY for AMRD Group B. No further work on this issue is needed.

ENAV26-9.5.1/ARM11-13.2.6: Liaison note to ENAV on Assigning MMSI to AIS AtoN

This liaison note addressed the coding of the MMSI for AIS AtoN to distinguish in the MMSI between physical, virtual and Mobil AtoN. Rec ITU-R M.585.8 proposes using 99MID1xxx for physical AIS AtoN, 99MID6xxx for virtual AIS AtoN and 99MID8xxx for Mobile AtoN (MAtoN).

Further is requests to have a new “Type of AtoN” for MATON included in ITU-R M.1371-5, Table-74 avoiding potential conflict with existing “Type of AtoN” in that table.

The correct portrayal of MAtoN on ECDIS and Radar is required. Filtering/displaying MAtoN should be manageable by ECDIS/radar thereafter.

ENAV response:

Coding of MMSI: The 6th digit designation of an AIS AtoN MMSI is only a recommendation, not a requirement. The distinction between physical and virtual AtoN is provided in Message 21 “Virtual AtoN flag”.

MAtoN is identified in Message 21 in “Typ of AtoN”, according ITU-R M.1371-5, Table-74, and in Message 21 “Status Bits”, as described in [IALA A-126] AtoN status page.

IEC CD 62288(ed.3) standard “Presentation of navigation related information on shipborne displays” define the source of an AIS AtoN as AIS message 21, Typ of AtoN, Virtual AtoN Flag and AIS AtoN Status Bits. Symbols for physical, virtual and Mobile AtoN are provided.

IHO standards are not applicable, as a MAtoN is not part of an electronic navigational chart (ENC)

Further work:

A revision of IALA A-126 to provide the definition of the Message 21 “Status Bits pages” is required prior the IEC 62288 Ed3 comment resolution in November 2020.

As the task has already been coordinated with ARM, as mentioned above, no liaison with ARM was needed.

9.7 Report from MCC [Stefan P.]

Stefan briefly reported the progress on the Maritime Connectivity Consortium with the integration of VDES into MCP.

9.8 Presentations

All presentations were recorded and can be accessed through the IALA ENAV 26 home page. The slides can be found in the IALA Next cloud folder Presentations:

Committees → ENAV → WG3 → 20200928_ENAV26 → Presentations.

9.8.1 AIS + [DLR]

Armin Damman of DLR presented the standard compatible error protection for GMSK (recorded).

9.8.2 R-mode [DLR/NIT]

Krzysztof of NIT presented the R-mode measurement campaign in Poland (recorded).

Ronald of DLR presented the R-mode measurement campaign in Germany (recorded).

Ronald also presented the draft VDES R-mode guideline.

Action Item:

The IALA Secretariat is requested to forward ENAV26-12.3.1, Draft Guideline on VDES R-Mode to Council for approval.

9.8.3 VDE-SAT with Norsat-2 [Space Norway]

Hans Christian and Lars Loge provided an update on VDE-SAT activities in Norway namely, NorSat-2 downlink and uplink measurements and the NorSat-TD, a PNT experiment.

9.8.4 On VDES Testing [TUV]

Nic Forsyth presented the capabilities of TUV to test VDES. Unfortunately, the chairman of WG3 forgot to start the recording.

9.8.5 2x VDES Test Bed status & field testing [Korean Register]

- 2020 Field testing results for VDES Testbed equipment in the Smart-Navigation Project
- Test bed setup measurements by the Korean Register

9.8.6 VDES in China

Refer to chapter 4.7.

9.8.7 Way forward to embed VDES in MCP [Stefan P.]

Stefan Pielmeier presented the Maritime Messaging Service for VDES.

9.8.8 VDES Alliance [Stefan P.]

The Alliance is aiming at being a non-profit alliance of stakeholders interested in making VDES a success.

9.9 Update of the NAVGUIDE

The group shortly had a look at the IALA NAVGUIDE and decided to propose an update during the Closing plenary.

Process:

- Stefan to inform Secretary (CC Jeffrey + JF) + WG2 that the group has started a review.
- Ask, if anybody else works on IALA NAVGUIDE, and ensure coordination happens
- JF/Jeffrey to send detail of what parts will be worked on in WG3, i.e. AIS & VDES

JF/Jeffrey to send a proposed change to the group through the mailing list for “silent approval”, and then forwards the changes to Mahesh, at the end of October 2020.

9.10 Revision of the MRCP

WG3 liaised with WG2 clarifying the responsibility of MRCP update. WG2 Chair agrees that the responsibility to create an initial version lies with WG2, and WG3 will be included in the review and finalization process.

Members of WG3 are asked to provide inputs to eNAV27 on the topic of updating MRCP consequentially to WRC-19. These inputs will then be processed by WG2.

9.11 Revision of the G-1117

Peter (Saab), Jeffrey and Juntae (Korea) were looking at the G-1117 in a sub working group to identify on a high level first screening what is incorrect and requires alteration from a WG3 point of view. The group identified that the document requires correction. The result is stored in ENAV25/INPUT/1117-Ed.2-VHF-Data-Exchange-System-VDES-Overview_Dec2017-1 JvG.pdf.

The group agreed to ask WG2 to take on the changes proposed in the “results” document.

9.12 VDE-ASM Harmonization [Jeffrey]

Jeffrey presented the available lists of ASMs on [IALAs homepage](#) and <http://e-navigation.nl> pages.

With the imminent arrival of VDES ASM channels, compatibility is an issue to be addressed by defining compatibility of ASM content with the following three transport types for ASM

- VDE-ASM (using ASM 1 and ASM 2 channels) and VDE-ASM-FEC (using ASM 1 and ASM 2 channels with FEC)
- AIS-ASM (using AIS channel)

Jorge reminds the group that it is important that the use of new VDES channels must be standardized together with the data structures that shall support the required data exchange.

Action Item:

The **IALA Secretariat** is asked in cooperation with Jeffrey van Gils to add a column in the ASM list to indicate compatibility of ASM messages with the 3 types of ASM transports above.

That **VDE-ASM Harmonization Workgroup Participants** are asked to report new messages by the process indicated on the IALA homepage <http://iala-aism.org/asm>.

9.13 Consider changes proposed by WP5B to preliminary draft revision ITU-R M.1371-5 [subgroup wk41, 3h, October 6th 1100 UTC – 1600 UTC]

WG3 reviewed the official working paper from WP5B and the draft input for the next WP5B meeting, see INPUT/ITU-R M.1371-5.

The subgroup worked on the topic on Tuesday 6th October, and needs more time to continue.

A meeting with ARM is planned Wednesday 14th October. Refer to ENAV-ARM group folder: Inter Committees joint tasks → AIS AtoN MAtON.

9.14 Revise G1139 – Technical Specification of VDES

9.14.1 Process

As decided by the August 2020 intersessional meeting, the following process applies in regard to VDES work progress, as illustrated in Figure 2:

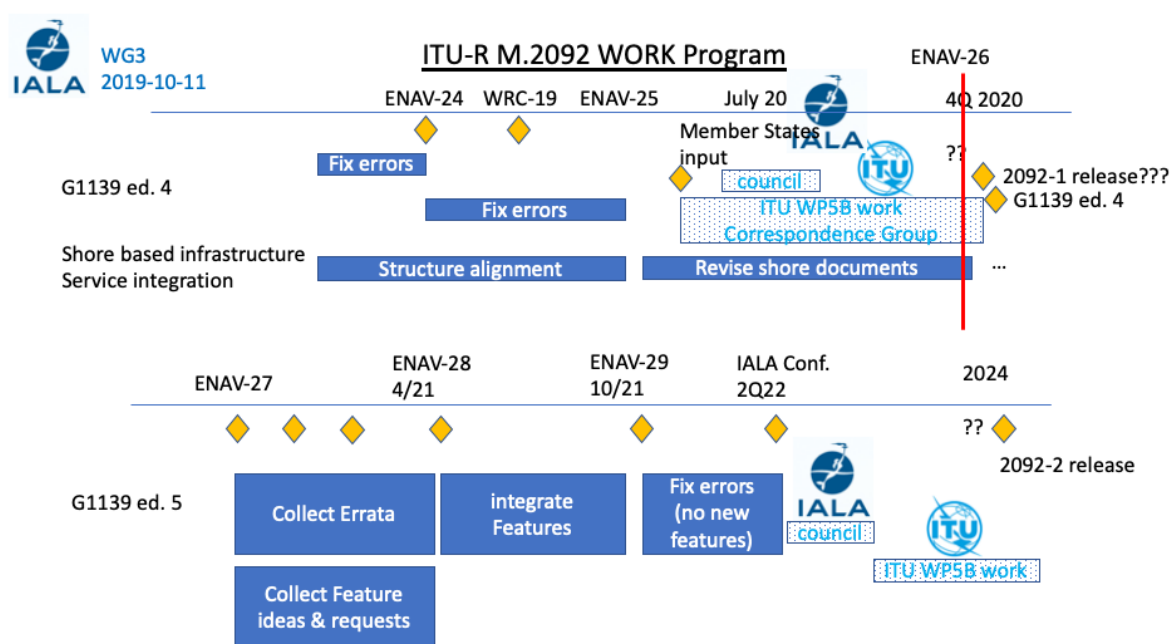


Figure 2 – ITU-R M.2092 Work Program (source WORKING/20201012_2092_WG3_phases_ver3.pptx)

9.14.2 Changes to G1139 done by 2092

The group discussed the future of G-1139 and agreed to create a new edition 4, based on the current state of the document at ITU (attached to the chairman's report of the July WP5B meeting), to reflect its status to the members and allow it to be used as a baseline in test beds, testing and product development.

Action Item:

The **IALA Secretariat** is requested to forward the draft guideline G-1139 edition 4 (ENAV26-12.3.2) to the Council for approval (Filename INPUT/G1139/20200806_Revisions to G1139 Rev_3.docx).

9.14.3 Communication Strategy with CG2092

The correspondence group is working on inputs to 2092 up to the deadline for the next WP5B meeting, which is the 2 November 2020.

The group agreed that Stefan Bober leads a group from IALA to represent the IALA position in the correspondence group.

Members are asked to join the ITU CG2092. For members who are not able to get a TIES account to join ITU CG2092, Stefan Bober will relay questions and answers using the WG3 mailing list ialaenavcomms@e-navigation.nl.

9.14.4 Input papers

The following input papers were reviewed by the group (all files in folder INPUT/G1139/):

- Yu presented a presentation covering input 5.1.10.4. The group recognized the possibility of using a payload header in VDES as proposed, no changes to G1139 were considered, however.
- 5.10.1 (Zhe) on Monday and Wednesday, we aligned on all issues and proposed Zhe to send the revised change proposal to WG3 by email for reinspection and to submit the proposal to the ITU CG2092 by Tuesday 13th of October, 12UTC.
- File INPUT/G1139/CR4_G1139_Yi_Li (1).zip was presented by Yi and discussed by the group. The group gave feedback to each of the 5 items and proposed Yi to continue to CG2092 in order to enter process with ITU for the items the group agreed to pursue. Proposed deadline is 13/10-2020 12UTC.
- Jean Francois presented the proposal INPUT/G1139/ CR5_20201007_JF_comments_on_2092.docx on improved definition of the protection of AIS by ASM and VDE. The group provided feedback and it became clear that the topic is relevant but needs more feedback. A sub-working group to provide help to JF for preparing an input to WP5B will be organized by IALA.
- The group reviewed the input INPUT/G1139/ WG15_MTG35_O_004_Liasison_note_to_IALA_on_G1139_2020-08-28.docx from IEC and recognized the need for IEC to input it to WP5B.
- The group reviewed input:
INPUT/G1139/ CR2_ENAV26-5.1.11.2_updated_20200915_G1139_CP_Sternula.docx
and gave feedback to Sternula on what to propose to CG2092.

Action Item:

That **Committee Participants** are asked to note the development process for G1139 on Technical Specification for VDES and provide input to ENAV27.

9.15 Administrative

The group reviewed this report and approved it.

The group has a virtual meeting to coordinate actions in response to the November WP5B meeting at January 12th, 2021, 1100-1500 UTC.

The group plans to meet for ENAV27.

Action Item:

That **Committee Participants** wishing to participate in the virtual meeting are invited to join the group and will be further informed through the secretariat in the coming weeks.

9.16 IALA Conference 2022

WG3 will propose a list of topics that they would like to be covered during the IALA Conference 2022.

10. ANY OTHER BUSINESS

The VTS49 liaise with ENAV26 Committee Chair and Vice Chair to ask for assistance on the development of Product Specification 212. An intersessional group will further develop the work from VTS49, and produce an input to VTS50. The work of this intersessional group will include how to use the data model of S-212 Product Specification, based on G1128 create Technical Service Description, and do further development on S-212 Product Specification.

A liaison note from VTS Committee on S-212 Referencing to other S-100 Product Specifications was developed and will be sent to the ENAV Committee.

The intersessional group will be led by Wim Smets (wim.smets@mow.vlaanderen.be).

Action Item:

*That **Committee Participants** wishing to join the intersessional group working on VTS Committee task 2.3.1 Develop a data model for digital information services for VTS should contact Wim Smets (wim.smets@mow.vlaanderen.be) by 16 November 2020.*

It was also noted that WG Chairs and specially Jillian would like to take advantage of the Dashboard set for this working period and use it during the intersessional work. The secretariat also noted the desire of providing a registration place for intersessional work in the Dashboard in order to avoid the amount of mails received.

Action Item:

*The **IALA Secretariat** is requested to set arrangements for the ENAV Intersessional work.*

11. WORK PROGRAMME AND TASK LIST (2018 - 2022)

From the Council approved work programme, a detailed Task Plan for the work period 2018 – 2022 was reviewed. It will be used as working document for future ENAV Committee meetings. As such it is not needed to get Council approval for updates of the Task Plan.

Action item

*The **IALA Secretariat** is requested to forward the Task Plan 2018 – 2022 to ENAV27 (ENAV26-12.0.0).*

12. REVIEW OF OUTPUT AND WORKING PAPERS

The Working Group Chairs reported on the work carried out by their Working Groups.

The output documents listed at Annex E were reviewed and agreed.

The Committee Chair then thanked the Working Group Chairs, Vice Chairs and participants of the working groups for all their efforts during the week.

13. REVIEW OF SESSION REPORT

The report of the meeting (ENAV26-12.1) was reviewed and approved by the Committee.

Action Item:

*The **IALA Secretariat** is requested to send the report of ENAV26 (ENAV26-13.1) to the IALA Council to note.*

14. DATE AND VENUE OF NEXT MEETINGS

ENAV27 is planned to be held between 22 February and 26 February 2021 at Tokyo, Japan. The secretariat will continue to monitor global events of the COVID-19 pandemic and advise its Members of any changes that may be instigated.

Other IALA events will be publicised on the IALA website.

15. CLOSING OF THE MEETING

The Committee Chair thanked the Committee and Working Group chairs for their hard work and effective output during the session.

He also hoped that everyone could take the IALA survey that is sent out after every Committee session in order to receive feedback for continuous improvements.

The Chair hoped to see all participants at ENAV27.

16. LIST OF ANNEXES

1 Agenda

A copy of the agenda is at Annex A.

2 Participants

A list of participants is at Annex B.

3 Working Group Participants

A list of working group participants is at Annex C.

4 Input Papers

A list of input papers is at Annex D.

5 Output and Working papers

A list of output and working papers is at Annex E.

6 Action Items

A list of action items is at Annex F.



26th Meeting of the e-Navigation Information Services and Communications Committee (ENAV26)

The 26th meeting of the **ENAV Committee** will be held from 29 September – 23 October 2020 virtually.

The opening plenary will commence at 1000 – 1200 UTC on Tuesday 29 September 2020, and the closing plenary will begin at 1000 – 1200 UTC on Friday 23 October.

Agenda

1. Introduction
 - 1.1. Welcome from the Secretary-General/Deputy Secretary-General
 - 1.2. Approval of agenda
 - 1.3. Apologies and introductions
 - 1.4. Working arrangements
2. Review of action items from last meeting
 - 2.1. Review of action items from ENAV24
3. Reports from other bodies:
 - 3.1. IALA
 - 3.1.1. IALA Council Minsu Jeon
 - 3.1.2. Policy Advisory Panel (PAP) Minsu Jeon
 - 3.1.3. IALA World-Wide Academy Kevin Gregory
 - 3.1.4. Update on IALA ENAV-VTS 14th Symposium Maarten Berrevoets
 - 3.2. E-Navigation Underway Minsu Jeon
 - 3.2.1. International
 - 3.2.2. North America
 - 3.2.3. Asia Pacific
 - 3.3. IMO Hideki Noguchi
 - 3.4. IHO Minsu Jeon
 - 3.5. ITU
 - 3.5.1. ITU-R WP5B Stefan Bober
 - 3.5.2. IMO-ITU Joint Experts Group Jorge Arroyo
 - 3.6. RTCM Jorge Arroyo
 - 3.7. ETSI Derek Love
 - 3.8. 3GPP Omar Frits Erikson
4. Online Presentations
 - 4.1. VDES Stefan Pielmeier
 - 4.2. Proposals on the use of satellite VDES Junji Fukuto
 - 4.3. dPMR Trial Port of Rotterdam Jeffrey van Gils
5. Review of input papers

- 5.1. Introduction of input papers to ENAV26
- 5.2. Allocation of input papers
- 6. Establish Working Groups and task groups
 - 6.1. WG1 Working program and arrangements presentation Axel Hahn
 - 6.2. WG2 Working program and arrangements presentation Jillian Carson-Jackson
 - 6.3. WG3 Working program and arrangements presentation Stefan Pielmeier
- 7. WG1 – Digital Information System
 - 7.1. S-100 & S-200
 - 7.2. Maritime Services
 - 7.3. Cyber security
 - 7.4. Maritime Resource Name
 - 7.5. Rapporteurs
- 8. WG2 – Emerging Digital Technology
 - 8.1. Maritime Autonomous Surface Ship
 - 8.2. Digital Voice Communications
 - 8.3. Single Window Data Exchange
 - 8.4. Rapporteurs
- 9. WG3 – Digital Communication System
 - 9.1. Maritime Radio Communication Plan
 - 9.2. VHF Data Exchange System (VDES) applications
 - 9.3. Autonomous Maritime Radio Device (AMRD)
 - 9.4. Maritime Services
 - 9.5. Automatic Identification Systems
 - 9.6. Other digital communication technology
 - 9.7. Rapporteurs
- 10. Any Other Business
- 11. Work Programme and task list (2018 - 2022)
- 12. Review of output and working papers
 - 12.1. Working Group reports
 - 12.2. Working papers
 - 12.3. Output papers
- 13. Review of session report
- 14. Date and venue of next meeting
- 15. Close of the meeting

ANNEX B

LIST OF PARTICIPANTS

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Jia LIU	China Maritime Safety Administration
Minchol JI	Ministry of Oceans and Fisheries - Republic of Korea
Nicholas BONSER	Australian Maritime Safety Authority
Nikolaos VASTARDIS	Trinity House
Rodolfo SILVA	Armada de Chile, Dirección General del Territorio Marítimo y Marina Mercante - DIRECTEMAR

Working Group 1

Digital Information System

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3.	Dennis Jankowski	OFFIS EV / Germany
4.	Hideki Noguchi	Japan Coast Guard
5.	JaeMyoung, Kim	ETRI Electronics and Telecommunications Research Institute
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15.	Mahesh Alimchandani	Australian Maritime Safety Authority
16.	Majed Al-Barakati	Saudi Ports Authority
17.	Martjin Ebben	Port of Rotterdam Authority
18.	Mike Card	Zeni Lite Buoy Co Ltd
19.	Minchol Ji	Ministry of Oceans and Fisheries - Republic of Korea
20.	Nick Bonser	Australian Maritime Safety Authority
21.	Nikola Kirov	Bulgarian Ports Infrastructure Company
22.	Nikolaos Vastardis	Trinity House
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25.	Rene Hogendoorn	SAAB AB Transpondertech
26.	Sohee Lee	
27.	Thomas Christensen	Maritime Connectivity Platform Consortium
28.	Todd Schuett	Kongsberg Norcontrol AS
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30.	Ulla Bjørndal Møller	Danish Maritime Authority
31.	Yao Gaole	China Maritime Safety Administration
32.	Yu Jin Chao	China Maritime Safety Administration

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4.	Jinho Yoo	Korean Register
5.	Jeoug Kyu Lim	Korean Register
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10.	Zulkifly Ariffin	Greenfinder / Malaysia
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12.	Sebastian Espinar	Ports of Spain
13.	Philip Lane	CIRM
14.	Michael Card	Zeni Lite Buoy Co. Ltd / Japan
15.	Woo-Seong Shim	Korea Research Institute of Ships & Ocean Engineering
16.	Geir Jegstad	IALA Voluntary Consultant

Working Group 3**Digital Communication System**

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17.	Hans Haugli	Space Norway

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36.	Jeonghyeon Kim	Korean Register
37.	Deuk Kae Cho	KRISO / Korea
38.	Jeffrey Van Gils	Ministry of Infrastructure / The Netherlands
39.	Henroe Xavier	DAM / France
40.	Cato Giil Eliassen	Kongsberg Seatex / Norway
41.	Kaisu Heikonen	Finnish Transport Infrastructure Agency

ANNEX D LIST OF INPUT PAPERS

All papers are posted on the Committee section of the IALA website

Meeting	Agenda Item	Input Paper Title	Source	Presented by / WG
ENAV26-	1.2.1	Draft Agenda ENAV26	IALA Secretariat	All
ENAV26-	1.4.1	Virtual Committee Working Arrangem	IALA Secretariat	All
ENAV26-	1.4.2	Virtual Committees Platform Training	IALA Secretariat	All
ENAV26-	2.1.1	ENAV24 Action Items	IALA Secretariat	All
ENAV26-	2.1.2	Report of ENAV24	IALA Secretariat	All
ENAV26-	3.1	Technical documents Catalogue	IALA Secretariat	All
ENAV26-	3.1.1	Report Council 71 Final	IALA Secretariat	All
ENAV26-	3.1.2	Report of PAP40	IALA Secretariat	All
ENAV26-	3.5.1	Report of ITU-R WP5B meeting 20th June to 30th July 2021	Stefan Bobber	All
ENAV26-	3.5.2	IMO-ITU EG 16-WP.1 - Draft Report To The Ncsr Sub-Committee And Itu (Secretariat)	IMO-ITU Secretariat	All
ENAV26-	3.5.3	RTCM report 2020 Virtual Assembly	RTCM	All
ENAV26-	4.1	VDES Sternula eNAV	Stefan Pielmeier	All
ENAV26-	4.2	Presentation: Proposals on the Use of Satellite VDES 20200929_Fin	OPRI	All
ENAV26-	4.3	dPMR test Rotterdam results 20200928	Port of Rotterdam / CML	All
ENAV26-	4.4	Construction and Testing of VDES Project in North China Sea	China MSA	All
ENAV26-	5.1.1.1	Information paper to IALA technical committee JCG meeting	JCG	All
ENAV26-	5.1.1.2	Report of international meeting for MASS infrastructure	International meeting for MASS infrastructure	All
ENAV26-	5.1.1.3	Impact of MASS on VTS (Rev.1) (C71-8.5)	IALA Secretariat	All
ENAV26-	5.1.1.4	NL Paper on the Impact of MASS on VTS(C71-8.5.1)	The Netherlands	All
ENAV26-	5.1.1.5	Draft MASS Recommendation-vs1-GtM rev	WG2	WG2
ENAV26-	5.1.1.6	Draft MASS Guideline-vs1_02-GtM rev	WG2	WG2
ENAV26-	5.1.2	Draft 3GPP recommendation - vs2_ja	WG2	WG2
ENAV26-	5.1.3	ENAV26-5.1.3 Draft 3GPP Guideline - vs2_ja	WG2	WG2
ENAV26-	5.1.4	ENAV26-5.1.4 Note on IALA-3GPP way forward_v0.0	IALA Secretariat	WG2
ENAV26-	5.1.5	ENAV26-5.1.5 DLR_AIS_Plus	DLR	WG3
ENAV26-	5.1.5.1	Annex AISplus_ENAV26	DLR	WG3
ENAV26-	5.1.6	Workshop proposal on Marine AtoN in the autonomous world (C71-8.2.2_PAP39-8.4)	Council 71	All
ENAV26-	5.1.7	Report of the e-Navigation Underway Asia-Pacific Conference MOF	MOF	All

ENAV26-	5.1.10.0	Construction and Testing of VDES Project in North China Sea	China MSA	WG3
ENAV26-	5.1.10.1	Preliminary Draft Revision of Recommendation G1139	China MSA	WG3
ENAV26-	5.1.10.2	Introduction of Test Results and Technical Services Architecture on Yangtze Estuary e-Navigation	China MSA	WG1
ENAV26-	5.1.10.3	Report on e-Navigation Implementation in South China Sea	China MSA	WG1
ENAV26-	5.1.10.4	VDES network layer protocol header design	China MSA	WG3
ENAV26-	5.1.11.0	Field testing results for VDES testbed equipment in the Smart-Navigation Project-rev.2	Korean Register	WG3
ENAV26-	5.1.11.1	VDES field testing results at sea in the Smart-Navigation (Korean Register)	Korean Register	WG3
ENAV26-	5.1.11.2	G1139 Change Proposal	Sternula	WG3
ENAV26-	5.1.12	NAVGUIDE 2022 draft chapter on e-nav - version of 31 Aug 2020	Australian MSA	WG1
ENAV26-	5.1.13	Inter-committee Work July 2020 (for the Committees second half 2020)	IALA Secretariat	All
ENAV26-	6.0.0	Input paper template	IALA Secretariat	All
ENAV26-	6.0.1	WP IALA-ENAV-22 Task Plan (From ENAV24-7.2)	IALA Secretariat	All
ENAV26-	6.0.2	IALA-ENAV_Task_List_20-09-07	IALA Secretariat	All
ENAV26-	7.1.1	Service spec S124 - with annexes - From ENAV25	From ENAV25	WG1
ENAV26-	7.1.2	WP Draft Guideline Web Services based S-100 data exchange (ENAV24-12.3.3.1) From ENAV25	From ENAV25	WG1
ENAV26-	7.1.3	Input on Web Services based S-100 data exchange From ENAV-25	From ENAV25	WG1
ENAV26-	7.1.3.1	Draft Guideline IP Web Services based S-100 data exchange From ENAV25	From ENAV25	WG1
ENAV26-	7.2.1	WP Draft Guideline on platforms for MS (ENAV24-12.2.1) From ENAV25	From ENAV25	WG1
ENAV26-	7.2.2	WP A lay-persons description of e-Navigation (ENAV24-12.2.2) From ENAV25	From ENAV25	WG1
ENAV26-	7.2.3	MCP on platforms to support the implementation of maritime services in the context of ENAV ENAV25	From ENAV25	WG1
ENAV26-	7.2.3.1	Draft Guideline on platforms for MS 2 From ENAV25	From ENAV25	WG1
ENAV26-	7.2.4	Liaison Note ARM to ENAV on draft guideline OSD_final post plenary (ARM11-13.3.1)	From ENAV25	WG1
ENAV26-	8.1	Draft Guideline-Template review new technologies-vs1 ENAV24-12.3.4	From ENAV25	WG2
ENAV26-	8.1.1	INF MASS Workshop Proposal PAP39 comments (PAP39-8.4)	From ENAV25	WG2
ENAV26-	8.1.2	ENAV26-8.1.2 Template review new technologies LoRaWAN-GTM04	From ENAV25	WG2
ENAV26-	8.2.1	WP-Initial review of 3GPP 4G (ENAV24-12.2.5) From ENAV25	From ENAV25	WG2
ENAV26-	8.2.2	CIRM response on vocoders for digital voice channels over VHF From ENAV25	From ENAV25	WG2

ENAV26-	8.2.2.1	CML response on vocoders for digital voice channels in VHF...	From ENAV25	WG2
ENAV26-	8.2.3	Input paper dPMR Trial Rotterdam From ENAV25	From ENAV25	WG2
ENAV26-	8.2.3.1	dPMR Trial Port of Rotterdam 10th December 2019 Final From ENAV25	From ENAV25	WG2
ENAV26-	8.4.1	Candidate Technologies -WG2 From ENAV25	From ENAV25	WG2
ENAV26-	9.2.1	2020-01_WG3_Intersessional_Report From ENAV25	From ENAV25	WG3
ENAV26-	9.2.2	VDE-TER R-Mode Measurements and Analysis From ENAV25	From ENAV25	WG3
ENAV26-	9.2.3	Liaison notes to ITU From ENAV25	From ENAV25	WG3
ENAV26-	9.2.3.1	Input Paper to ITU on AMRD (C70-11.2.4) From ENAV25	From ENAV25	WG3
ENAV26-	9.2.3.2	Input Paper to ITU preliminary draft revision of ITU-R M.1371-5 (C70-11.2.5) From ENAV25	From ENAV25	WG3
ENAV26-	9.3.1	Liaison Note ARM to ENAV on statement from IALA to ITU Rec ITU-R M.1371-5 post plenary (ARM11-13.0.1)	From ENAV25	WG3
ENAV26-	9.3.2	Liaison Note ARM to ENAV regarding AMRD Group B post plenary (ARM11-13.0.2)	From ENAV25	WG3
ENAV26-	9.5.1	Liaison Note ARM to ENAV regarding assigning MMSI to AIS AtoN post plenary (ARM11-13.2.6)	From ENAV25	WG3
ENAV26-	11.1	ENAV WG Terms of Reference	IALA Secretariat	All

Output documents are submitted for review/action by a body other than the Committee initiating the document.

Meeting	Agenda Item	Output Paper Title	Source	Action
ENAV26-	12.1.1	Draft Guideline on Web Service based S-100 Data Exchange	WG1	To Council
ENAV26-	12.1.2	Liaison Note to all Committees on Work on Cyber Security within IALA	WG1	All Committees
ENAV26-	12.3.1	Draft Guideline on VDES R-Mode	WG3	To Council
ENAV26-	12.3.2	Draft Guideline 1139 Edition 4 on Technical Specification of VDES	WG3	To Council

Working papers will remain within the Committee for further review during ENAV27.

Meeting	Agenda Item	Output Paper Title	Source	Action
ENAV26-	12.0.0	Task Plan 2018 – 2022	Vice Chair	To ENAV27
ENAV26-	12.1.3	Draft Technical Programme IALA WS on Cyber Security v1.2	WG1	To WS Steering Committee and ENAV27
ENAV26-	12.1.4	Draft Guideline on Platforms for MS (v10_ENAV26-9.2.3.1)	WG1	To ENAV27
ENAV26-	12.2.1	Draft Recommendation on 3GPP	WG2	To ENAV27
ENAV26-	12.2.2	Draft Guideline on 3GPP	WG2	To ENAV27
ENAV26-	12.2.3	Draft Recommendation on MASS	WG2	To ENAV27
ENAV26-	12.2.4	Draft Guideline on MASS	WG2	To ENAV27
ENAV26-	12.2.5	Technology Review for LoRA / LoRaWAN	WG2	To ENAV27
ENAV26-	12.3.3	IALA G1139 VDES Change Log	WG3	To ENAV27
ENAV26-	12.3.4	IALA G1139 VDES Change Proposal template	WG3	To ENAV27

Action Items for the Secretariat

1. The **IALA Secretariat** is requested to submit the liaison note on Work on Cyber Security within IALA (ENAV26-12.1.2) to all IALA technical committees. 15
2. The **IALA Secretariat** is requested to submit the draft Guideline on Platforms to support the Provision of Maritime Services in the Context of e-Navigation (ENAV26-12.1.4) as an input working paper to ENAV 27. 15
3. The **IALA Secretariat** is requested to submit the draft Guideline on Web Service based S-100 Data Exchange (ENAV26-12.1.1) to the Council for approval. 15
4. The **IALA Secretariat** is requested to add the work on a technical service specification for S-125 and S-201 on the task plan of ENAV. 16
5. The **IALA secretariat** is requested to send the WG2 Technology Review for LoRA / LoRaWAN forward as an input to ENAV27. 17
6. The **IALA secretariat** was asked to consider holding a virtual workshop on MASS if the physical workshop is not possible. 18
7. The **IALA Secretariat** is requested to forward ENAV26-12.3.1, Draft Guideline on VDES R-Mode to Council for approval. 23
8. The **IALA Secretariat** is asked in cooperation with Jeffrey van Gils to add a column in the ASM list to indicate compatibility of ASM messages with the 3 types of ASM transports above. 25
9. The **IALA Secretariat** is requested to forward the draft guideline G-1139 edition 4 (ENAV26-12.3.2) to the Council for approval (Filename INPUT/G1139/20200806_Revisions to G1139 Rev_3.docx). 25
10. The **IALA Secretariat** is requested to set arrangements for the ENAV Intersessional work. 27
11. The **IALA Secretariat** is requested to forward the Task Plan 2018 – 2022 to ENAV27 (ENAV26-12.0.0). 27
12. The **IALA Secretariat** is requested to send the report of ENAV26 (ENAV26-13.1) to the IALA Council to note. 27

Action Items for Participants

13. That **Committee Participants** are encouraged to contribute to the draft Guideline on Platforms to support the Provision of Maritime Services in the Context of e-Navigation (ENAV26-12.1.4). 15
14. That **E Batty** is requested to carry out a review of the existing draft Recommendation and Guideline on 3GPP and amend to reflect generic terminology of IMT-Advanced and IMT-2020 and provide as input to ENAV27. 17
15. That **Committee Participants** who wish to participate in intersessional activity on 3GPP will be further informed through the secretariat in the coming weeks. 17
16. That **Committee Participants** are invited to participate in an intersessional session on MASS and will be further informed through the secretariat in the coming weeks. 18
17. That **Committee participants** are invited to participate in the intersessional meetings on the deprecation and will be further informed through the secretariat in the coming weeks. 18
18. That **Ronald Raulefs** please ensure preparation of a communication plan towards ITU-R and IMO for R-mode with the goal to include it in WRC-23. Ronald to coordinate with Christian Rissone to promote the topic on the joint IMO/ITU expert group in July 2020. 20

19. That **Committee Participants** are asked to provide or seek support to Japan's input to IMO MSC 102 (Nov 4-11, 2020) regarding the inclusion of VDES in SOLAS; IMO delegates can contact Yoshio for further information and clarification; 20
20. That **IALA members** are asked to follow NCSR and support inclusion of R-mode into e-Navigation such that ITU will accept R-mode as part of WRC-23. 21
21. That **VDE-ASM Harmonization Workgroup Participants** are asked to report new messages by the process indicated on the IALA homepage <http://iala-aism.org/asm>. 25
22. That **Committee Participants** are asked to note the development process for G1139 on Technical Specification for VDES and provide input to ENAV27. 26
23. That **Committee Participants** wishing to participate in the virtual meeting are invited to join the group and will be further informed through the secretariat in the coming weeks. 26
24. That **Committee Participants** wishing to join the intersessional group working on VTS Committee task 2.3.1 Develop a data model for digital information services for VTS should contact Wim Smets (wim.smets@mow.vlaanderen.be) by 16 November 2020. 27



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Association Internationale de Signalisation Maritime