



# REPORT OF THE 21<sup>ST</sup> SESSION OF THE IALA E-NAVIGATION (ENAV) COMMITTEE

18 to 22 September 2017

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**Report of the 21<sup>st</sup> Session of the IALA  
e-Navigation (ENAV) Committee  
18 to 22 September, 2017  
Executive Summary**

The 21<sup>st</sup> meeting of the ENAV Committee (ENAV21) was held in IALA Headquarters from 18<sup>th</sup> to 22<sup>nd</sup> September 2017.

137 people from 27 countries and 7 sister organisations, attended the 21<sup>st</sup> session of the ENAV Committee, of which 36 participants were new and 5 were observers.

The Committee considered 133 input papers including presentations and produced 26 output papers and 5 working papers.

The Committee noted that various members present would be engaged with the IMO-IHO Harmonisation Group for Data Modelling (HDGM) in relation to IALA work on MSPs and data modelling.

A new draft Guideline on Systems and Services for High-accuracy Positioning and Ranging Service was prepared.

A new draft Guideline on the Transmission of SBAS Corrections using MF Radiobeacons and AIS was prepared.

A new draft Guideline on the Specification of e-Navigation Technical Services was prepared.

A revision of Guideline 1117 on VDES overview was completed.

The Maritime Radio Communications Plan (MRCP) was revised.

A major revision of Chapter 4 of the NAVGUIDE dealing with e-navigation was completed.

Work progressed on the development of a draft Guideline on MSPs and requests for input from other organisations was drafted.

Submissions to the ITU WP 5B regarding VDE-SAT and AIS were prepared.

The e-navigation and VDES FAQ for the IALA website were reviewed and updated.

A procedure for management of the Maritime Resource Name (MRN) registry was prepared.

The ENAV Committee work plan for the work period 2014-2018 was updated. A number of tasks could not be completed in this work period and will be submitted for the 2018-2022 work period. The following table shows a progress summary while progress on each work task to date is shown in ANNEX F of the meeting report.

Task	Progress Indicator			Status Overview
	Green	Yellow	Red	
<b>1 TD#1 – Data modelling and message systems</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks complete except task 1.2.1 which will be carried forward to the 2018-2022 work period
<b>2 TD#2 - e-Navigation communications</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks complete
<b>3 TD#3 - Shore technical infrastructure</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks complete except 4 tasks which are carried forward to the 2018-2022 work period
<b>4 TD#4 - e-Navigation test beds</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks complete
<b>5 TD#5 - Maritime Service Portfolios</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks complete except task 5.1.1 which is carried forward to the 2018-2022 work period. MSP tasks not in the IALA Domain were withdrawn.

## Table of Contents

1.	Opening.....	6
2.	Review of Action Items from ENAV20 .....	7
3.	Review of input papers .....	7
4.	Reports from other bodies .....	7
5.	Reports from rapporteurs .....	9
6.	Presentations .....	9
7.	Review of work programme and Working Group expectations .....	10
8.	Establish Working Groups .....	11
9.	Working Group 1 – Harmonisation (WG1) .....	11
10.	Working Group 2 – Implementation (WG2) .....	13
11.	Working Groups 3 - Telecommunications (WG3) .....	15
12.	Working group 4 - e-Nav Services (WG4) .....	19
13.	Working Group 5 – PNT (WG5) .....	21
14.	Review of output and working papers .....	22
15.	Any Other Business .....	22
16.	Review of session report .....	22
17.	Date and venue of next meeting .....	23
18.	Closing of the meeting .....	23
19.	List of Annexes to the report.....	23
ANNEX A	Agenda .....	25
ANNEX B	List of Participants .....	27
ANNEX C	Working Group Participants .....	52
ANNEX D	List of Input Papers .....	57
ANNEX E	List of Output and Working Papers.....	63
ANNEX F	Work programme - Review of Progress with Deliverables .....	65
ANNEX G	Action Items .....	70

# Report of the 21<sup>st</sup> Session of the IALA e-Navigation (ENAV) Committee

## GENERAL

The 21<sup>st</sup> meeting of the ENAV Committee was held from 18<sup>th</sup> to 22<sup>nd</sup> March 2017 at IALA Headquarters, with Hideki Noguchi as Chairman and Jorge Arroyo as Vice-Chairman. The Secretary for the meeting was Seamus Doyle.

### 1. OPENING

#### 1.1 Approval of the agenda

The agenda (paper ENAV21-1.2) was adopted.

#### 1.2 Welcome address

Francis Zachariae, IALA Secretary-General, welcomed all participants to the 21<sup>st</sup> session of the ENAV Committee. Paper ENAV21-1.2 refers. Mr Zachariae noted that IALA is growing with many new members.

The project for IALA transition from NGO to IGO status is progressing well. A preparatory diplomatic conference is planned for February 2018 in Morocco and it is anticipated that the convention can be signed at a diplomatic conference in 2019.

IALA has prepared a statement of core values which provide guidance for the IALA family. A new post of Technical Operations Manager will be filled by Minsu Jeon, starting on 15<sup>th</sup> November 2017. Minsu will provide co-ordination for the IALA Committees.

#### 1.3 Administration & Safety Briefing

Seamus Doyle provided a Safety and Administrative briefing. Attention was drawn to the Committee website and file sharing working arrangements.

#### 1.4 Introductions and apologies

Hideki Noguchi introduced himself and the working group (WG) chairs and welcomed both newcomers and those returning to IALA ENAV. Apologies were noted.

A list of attendees and apologies is provided at ANNEX B.



137 people from 27 countries and 7 sister organisations, attended the 21st session of the ENAV Committee, of which 36 participants were new and 5 were observers.

#### 1.5 Programme for the week

Paper ENAV21-1.4 refers. The programme for the week was approved, noting that the plenary session to review output documents would commence on Thursday afternoon.

## 2. REVIEW OF ACTION ITEMS FROM ENAV20

Paper ENAV21-2.1 refers. It was noted that the action items from ENAV20 for the IALA Secretariat were complete with the following provisos:

- Actions 27 is a task for the new Technical Operations Manager and is in progress.
- Action 41 is in progress.
- The IALA Council referred ENAV20-14.1.14 and associated liaison notes (actions 46 to 50) back to the ENAV Committee.

Actions for Committee Participants were referred to the Working Groups.

It was stated that the DGNSS list on the IALA website is out of date.

### *Actions*

*The IALA Secretariat is requested to complete ENAV20 actions 27 and 41.*

*The IALA Secretariat is requested to review and update the DGNSS list of stations on the website.*

## 3. REVIEW OF INPUT PAPERS

### 3.1 Input papers

The Committee considered 133 input papers, including presentations. It was noted that all input papers were available on the IALA website. The input papers for each Working Group (WG) were identifiable from the document number.

It was stated that the development of R-Mode is promising and MF DGPS stations or at least the antenna infrastructure should be retained for future use.

The following question was asked of all attendees and no patents were noted:

*Does anyone present have the 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?*

### 3.2 Identify input papers suitable for uploading to the IALA Wiki

ENAV Committee participants were encouraged to suggest input papers that should be included on the IALA Wiki which can be used as a repository for input papers and information that would be of long term benefit to IALA participants.

## 4. REPORTS FROM OTHER BODIES

### 4.1 IALA Council

The Committee noted the report of the 64<sup>th</sup> Session of the IALA Council held in Incheon, Republic of Korea, from 13<sup>th</sup> to 16<sup>th</sup> June 2017, presented by Seamus Doyle. Paper ENAV21-4.1 refers. Issues relevant to ENAV Committee work were highlighted in the input paper.

### 4.2 PAP32

The Committee noted the report of the 33<sup>rd</sup> Session of the IALA Policy Advisory Panel (PAP33), from 5 to 7 April 2017 in IALA Headquarters, presented by Michael Card. Papers ENAV21-4.2 refers. Issues relevant to ENAV Committee work were highlighted in the input paper.

Mr Card explained the links between the IALA strategy and Committee structure using the figure from section 4 of report C64-8.1.3.1. The Standards and document structure will be approved by General Assembly in May 2018.

Four Committees are envisaged for the 2018-2022 work period with the main change being transfer of ENAV WG5 to the ENG Committee. This will enable a greater focus on information services and communications in the ENAV Committee.

Considering the Joint VTS-ENAV working group, it was stated that, although questions for the working group were sought from the Committee, there is no feedback from the working group.

Considering the IMO-IHO HGDM, it was stated that the VTS Committee are in a good position to progress MSPs 1, 2, 3 but it was not clear how the ENAV and VTS Committees will interact with the HGDM. It was also stated that the ARM and ENG Committees should also input to the development of MSPs.

Questions were raised regarding submission of the draft Guideline on MSPs to the IMO-IHO HGDM. Papers ENAV21-4.9 and ENAV21-4.12 clarify the request for feedback regarding the draft Guideline.

It was noted that the function of the PAP is co-ordination which the VTS-ENAV working group focus is deeper.

#### **4.3 Report on IALA work in EfficienSea2**

The Committee noted the report of IALA work in the EfficienSea2 project, presented by Michael Card. Paper ENAV21-4.3 refers.

#### **4.4 ENAV21-4.4 Report on IMO NCSR 4 March 2017**

The Committee noted the report of the fourth session of the IMO NCSR committee meeting held from 6<sup>th</sup> to 10<sup>th</sup> March 2017, presented by Michael Card. Paper ENAV21-4.4 refers.

#### **4.5 Report e-Navigation Forum 26 April 2017 Singapore**

The Committee noted the report of the e-Navigation Forum meeting held in Singapore on 26<sup>th</sup> April 2017, presented by Mahesh Alimchandani. Paper ENAV21-4.5 refers.

#### **4.6 Report on Report 13th Joint IMO-ITU Expert group 10th to 14th July 2017**

The Committee noted the report of the 13<sup>th</sup> Joint IMO-ITU Expert group held from 10<sup>th</sup> to 14<sup>th</sup> July 2017, presented by Stefan Bober. Papers ENAV21-4.6 and ENAV21-4.6.1 refer.

#### **4.7 Report of ITU-R WP5B meeting 22 May to 2nd June 2017**

The Committee noted the report of the third meeting of the ITU-R WP5B from 22<sup>nd</sup> May to 2<sup>nd</sup> June 2017, presented by Stefan Bober. Paper ENAV21-4.7 refers.

#### **4.8 Report of the 41<sup>st</sup> IMO Facilitation Committee (FAL)**

The Committee noted the report of the forty first meeting of the IMO Facilitation Committee (FAL) from 4<sup>th</sup> to 7<sup>th</sup> April 2017, presented by Hideki Noguchi. Paper ENAV21-4.8 refers. Mr Noguchi drew the attention of the Committee to section 5.38 on page 39 of the report. It was noted that there is a need for future communication with the FAL Committee. It was also noted that ENAV21-12.4 and ENAV21-12.8 are relevant to the FAL work.

#### **4.9 Report of the IALA-IHO Coordination Meeting, 18 July 2017**

The Committee noted the report of the IALA-IHO Coordination Meeting, held on 18<sup>th</sup> July, presented by Michael Card. Paper ENAV21-4.9 refers. The draft Guideline on MSPs has been submitted to IMO as a combined IALA-IHO input. Axel Hahn and Dave Lewald were thanked for representing IALA at the HGDM. See further comments in section 4.12 below.

#### **4.10 IALA Patent Policy**

The Committee noted the report on information on patents and the IALA Patent Policy from the IALA Legal Advisory Panel (LAP), presented by Michael Card. Papers ENAV21-4.10.1 and ENAV21-4.10.2 refer.

#### **4.11 Report on e-Navigation Underway Asia-Pacific 2017-06**

The Committee noted the report of the e-Navigation Underway Asia-Pacific conference held in Jeju Island, Republic of Korea from 18<sup>th</sup> to 20<sup>th</sup> June 2017, presented by Sunbae Hong. Paper ENAV21-4.11 refers.

#### **4.12 IALA Input regarding MSPs to IMO-IHO HGDM**

The Committee noted the joint IHO-IALA submission on the draft IALA Guideline on MSPs to the IMO-IHO HGDM. Paper ENAV21-4.12 refers.

Concern was expressed that the submission of the draft Guideline on MSPs to the HGDM indicated that the Guideline is de-facto complete, although it is still very much under consideration in the Committees. Hence there may be a need to look at the process. However, it was pointed out that the submission indicated no decisions in IALA as the submission is clearly a draft and is so recognised by the HGDM. The work on the draft Guideline will continue in IALA.

It was noted that further inputs to the development of the Guideline on MSPs are expected and the draft Guideline will be further developed at ENAV21.

### **5. REPORTS FROM RAPPORTEURS**

#### **5.1 IALA Bulletin**

Hideki Noguchi noted that IALA are now providing eBulletins at frequent intervals which are posted on the IALA website. He invited participants to submit articles for either the twice yearly Bulletin or the eBulletin magazine.

#### **5.2 IALA Dictionary**

Seamus Doyle noted that the IALA Dictionary is available on the IALA website and encouraged all Committee participants to use and update it. A list of acronyms has been added. The Committee was asked particularly to ensure that all definitions used in IALA documents are consistent with the definitions in the Dictionary.

#### **5.3 GMDSS**

Jean-Charles Cornillou submitted an update on GMDSS, paper ENAV21-5.3 refers. It was noted that a GMDSS modernisation plan is being drafted in IMO.

#### **5.4 Testbeds**

Mahesh Alimchandani presented a report on testbeds, paper ENAV21-5.4 refers. He noted that the website usage statistics indicated an improving level of usage.

#### **5.5 IHO Report**

Dave Lewald reported on recent activity in the IHO. He noted a planned meeting of the IHO NIPWG in Italy from 12<sup>th</sup> to 16<sup>th</sup> March 2018 and a further meeting of the S-100 WG in Singapore from 10<sup>th</sup> to 13<sup>th</sup> April 2018. Paper ENAV21-5.5 refers.

#### **5.6 RTCM Report**

Bill Cairns, American Pilots' Association and Chair of the RTCM eNav Steering Committee, reported on the status of several RTCM special committees. Paper ENAV21-5.6 refers.

### **6. PRESENTATIONS**

Eight presentations were made to plenary. The presentations form part of the input to the meeting.

#### **6.1 Invitation to 19<sup>th</sup> IALA Conference in Korea 2018**

Seung Cheol Lee invited participants to attend the 19<sup>th</sup> IALA conference to be held in Incheon, Korea, from 27<sup>th</sup> May 2018 to 2<sup>nd</sup> June 2018. Paper ENAV21-6.1 refers.

## **6.2 European GNSS Agency pilot project for the transmission of SBAS corrections via IALA beacons and AIS**

Manuel Lopez-Martinez presented a report on the European GNSS Agency pilot project for the transmission of SBAS corrections via IALA beacons and AIS. Paper ENAV21-6.2 refers. He invited participants to join the AB board and working groups.

## **6.3 Global e-Navigation VDE M2M component**

George Best presented a report on global e-navigation VDE machine-to-machine component from ORBCOMM. Paper ENAV21-6.3 refers. He invited other interested parties to demonstrate VDE using its AIS / VDE and M2M satellite payloads as detailed in ENAV21-6.3.

## **6.4 China VDES Testbed System Report**

Jie Wen presented a report on a VDES testbed set up by the Tianjin Communication Center, together with the Beijing Caton Global, which is aimed at verifying the feasibility of this system, and solving the relevant technical issues. Tests were done in fixed locations and mobile tests will be held from September to October 2017. Paper ENAV21-6.4 refers.

## **6.5 Modernization of RBN-DGNSS in China**

Liang Yang presented an introduction to the modernisation of radiobeacon DGNSS in China. He described the project to modernize 23 DGNSS stations to provide DGPS and DBDS (differential Beidou) using positioning signals from BDS, GPS, and GLONASS, with 14 stations complete. Paper ENAV21-6.5 refers.

## **6.6 STM Validation project update**

On behalf of Fredrik Karlsson, Jin Park presented a report on the STM Validation project focussing on the need for standardised APIs to provide interoperability. Paper ENAV21-6.6 refers.

## **6.7 Maritime Connectivity Platform (MCP) / Maritime Cloud update**

Thomas Christensen presented a report on the Maritime Connectivity Platform (MCP), formerly known as the Maritime Cloud. Paper ENAV20-6.7 refers. He noted that BIMCO has been invited to join IALA and CIRM on the MCP Advisory Board.

## **6.8 World-Wide Academy (WWA) report**

Omar Frits Eriksson, IALA WWA Dean, presented the WWA report, input paper ENAV21-6.8 refers.

# **7. REVIEW OF WORK PROGRAMME AND WORKING GROUP EXPECTATIONS**

The Committee work plan was updated, paper ENAV21-7.1 refers.

Progress in carrying out the ENAV Committee work programme is shown in ANNEX F.

## **7.1 Future work programme 2018-2022**

The Committee noted the Report on Review of IALA documentation related to VHF Data Exchange System v3, EfficienSea2 deliverable D1.12, ENAV21-7.3 refers.

The Committee noted paper ENAV21-7.4 (PAP33-18.10) Strategic Vision 2018-2026 presented by Michael Card.

The Committee noted the Proposal for IALA Guidance on GNSS Augmentation Services, presented by Alan Grant. Paper ENAV21-7.5 refers.

The ENAV Chair and Vice-Chair will use these reports as part of the input to define the work programme for the 2018-2022 work period.

## **Action**

*The ENAV Chair and Vice-Chair are requested to consider input papers ENAV21-7.3, ENAV21-7.4, ENAV21-7.5 when preparing the work plan for the next work period 2018-2022.*

## **8. ESTABLISH WORKING GROUPS**

Five working groups were established, as outlined below:

<b>Working Group</b>		<b>Working Group Chair</b>	<b>Working Group Vice Chair</b>
WG 1	Harmonization	Axel Hahn	Jin Park
WG 2	Implementation	Mahesh Alimchandani	
WG 3	Telecommunication	Peggy Browning	Stefan Bober
WG 4	ENAV Services	Jon Leon Ervik	Thomas Porathe
WG5	PNT	Alan Grant	Michael Hoppe

## **9. WORKING GROUP 1 – HARMONISATION (WG1)**

The Committee received 15 input papers to be considered during ENAV21.

### **9.1 Review and update NAVGUIDE (Task 1.1.1)**

Input document ENAV21-10.1.1 refers.

The WG revised their sections of the NAVGUIDE.

#### *Actions*

### **9.2 Maritime Connectivity Platform (MCP)**

The change of the name of the Maritime Cloud into the Maritime Connectivity Platform (MCP) was noted.

### **9.3 Risk Management Plan**

Input document ENAV21-9.1 refers.

The Committee noted the status of the document and did not identify a need for an extension at this time.

### **9.4 Specification Technical Services**

Input documents ENAV21-9.2, ENAV21-9.4, ENAV21-9.4.1 refer.

The Committee reviewed the input document, draft IALA Guideline on the Specification of e-Navigation Technical Services, and revised it to be compliant with S-100.

#### *Actions*

*The IALA Secretariat is requested to forward output document ENAV21-14.1.6 to Council for approval.*

### **9.5 MRN Management**

Input document ENAV21-9.5 refers.

The Committee reviewed the input document and adopted the processes used for domain management (Guideline 1087) and made a liaison note to Secretary, ENAV21-14.1.8 refers.

#### *Actions*

*The IALA Secretariat is requested to note and implement liaison note ENAV21-14.1.8.*

*The IALA Secretariat is requested to publish the MRN procedures from ENAV21-14.1.8 on the IALA website.*

### **9.6 Report on Maritime Cloud Activities by China**

Input document ENAV21-9.10 refers.

The Committee noted the activities on the Maritime Connectivity Platform (MCP) in China.

#### *Actions*

*MCPDF is requested to coordinate future works on the Maritime Connectivity Platform with China.*

### **9.7 Proposed example for Service Specification for Messages under MSI**

Input document ENAV21-9.6 refers.

The Committee reviewed the information paper and proposed modifications for the specification to be compliant with S-100. The document will be adapted according to the Draft Guideline (ENAV21-9.4). Denmark plans to send this document as comment (update) to the HGDM.

### **9.8 Draft Technical Service Specification AtoN Information, S200 Status and Research on S201 ATON by ROK**

Input Documents ENAV21-9.3, ENAV21-9.3.1, ENAV21-9.7, ENAV21-9.9, ENAV21-9.11 refer.

A web app has been developed for using S-201. The URL and a presentation explaining its use should be made available on the IALA website. Important further developments had been identified: a) Datasets should have an 'owner' and security will be needed to prevent unauthorised changes. b) AtoN authorities already have their AtoN data in other applications. Arrangements need to be made for transfer of data to S-201 without the need to enter it again (both these points will be addressed in the near future).

S-201 should be expanded to include serviceability status of AtoNs, including real-time information on faults, but this would be a later phase of development. Other useful additions at that stage would be occasional AtoNs and deployment schedules for buoys affected by ice.

Adding data needed for creation of the list of lights to S-201, would ensure that S-125 (Navigation Services) is covered in full by S-201.

The development of S-201, S-101 and S-125 should be harmonized. S-125 could carry limited data and be the public-facing specification, whereas S-201 would be used for comprehensive data exchange between AtoN authorities.

Some organisations consider that S-125 and/or S-201 might be used for direct data exchange with the end-user, but this would have major quality assurance implications for AtoN authorities, particularly for M2M applications. Such a development could only be undertaken in full cooperation with hydrographic offices.

Proposals on the implementation strategy for datasets, both short and long-term could be considered in a future IALA/IHO joint meeting. Harmonisation should be pursued through liaison with IHO S-100WG/NIPWG.

There was general agreement with the work program proposed by the ROK, but it was considered that guidance on portrayal, in particular of sector and port entry lights could be provided through an additional section in S-201, based on existing advice.

The need for a conversion tool from S-201 to S-57 was also questioned. It was suggested that organisations willing to adopt S-201 would be better to move straight to an S-201 database. In that case, a conversion tool would be needed to ensure backwards compatibility with existing systems based on S-57.

Further clarification was needed from the ARM Committee on their proposed changes and additions, in particular on sectors and on pictograms.

These matters should be taken into account when formulating proposals for the next committee work program.

#### *Actions*

*Nick Ward is requested to consider reflecting the progress in the latest AtoN S-201 specification.*

### **9.9 S-100 Streaming**

Input Documents ENAV21-9.8, ENAV21-9.8.1 refer.

The Committee reviewed input documents ENAV21-9.8, ENAV21-9.8.1 and reworked them to output paper ENAV21-14.1.6.

#### *Actions*

*The IALA Secretariat is requested to forward liaison note ENAV21-14.1.6 to Council for approval.*

*The IALA Secretariat is requested to forward liaison note ENAV21-14.1.7 to Council for approval for forwarding to the IHO S-100 WG.*

## **10. WORKING GROUP 2 – IMPLEMENTATION (WG2)**

### **10.1 Review and update Chapter 4 (on e-navigation) of the IALA NAVGUIDE (Task 1.1)**

The Committee considered input papers ENAV21-10.1, ENAV21-10.1.1, ENAV21-10.2 and ENAV21-10.3 (input papers for Chapter 4 (on e-navigation) for the 2018 Edition of the IALA NAVGUIDE.

Building on the work that had taken place intersessionally (mainly, input from all other WG Chairs), the Committee conducted a final review and update of Chapter 4 of the NAVGUIDE. An output paper ENAV21-14.1.1 was produced.

#### *Actions*

*The IALA Secretariat is requested to forward the final draft of the chapter on e-navigation for the 2018 Edition of the IALA NAVGUIDE (ENAV21-14.1.1) to the ARM Committee (ARM 7).*

### **10.2 Gather and present information on testbeds (including results) globally (Task 4.1.1)**

No work was done on this task at ENAV 21, although the IALA Secretariat did do some work intersessionally to post new information and in general, keep the website up-to-date.

### **10.3 Maintain a global repository for test-bed results (Task 4.1.2)**

The Committee noted that Redwire of UK (redwire.co.uk), IALA's Content Management System provider, had generated statistics for the testbed portion of the IALA website for period 1<sup>st</sup> March 2017 to 31<sup>st</sup> August 2017 (ENAV21-10.5 refers). Additionally, the IALA Secretariat has run a Google Analytics report on the testbed portion of the IALA website (ENAV21-10.6 refers). The Committee noted that:

1. Over a period of six months (1<sup>st</sup> March to 31<sup>st</sup> August 2017), a total of 6090 page views were recorded in 182 days. This translates to over 33 page views per day. Statistics for the early part of 2017 indicate 30 page views per day. Hence there is evidence of some growth in the number of page views. Given the nature of the subject, 30 page views a day seems to be a healthy number.
2. The statistics indicate that there is potential to grow the number of page views by referrals (links to IALA provided by other websites) and social media access methods. To achieve this, the IALA Secretariat can request the IALA members to link their organisation sites to the IALA website. And if the organisation has an e-navigation content on their site, then that page(s) should link to the e-navigation testbed site of IALA.
3. It was observed that access to the IALA testbed website via social media channels (Twitter, Facebook, Instagram etc.) was extremely low. If IALA were to consider establishing a social media presence, then one can expect this low % to increase.
4. The over 30 % bounce rate (*Bounce rate is the percentage of people who arrived on that page and then left the IALA site*) for both the main landing page and the IALA guideline indicates that the majority of visitors stayed on the IALA website. This suggests they found the information useful.
5. The high bounce rate on each of the individual project pages suggests that people found what they were looking for and did not want to visit any other testbed pages at IALA.

Either that, or this was not the information on the IALA website they were looking for (e.g. they were looking for a marketing aspect of a project, but instead they found a technical description of the test).

6. The Google Analytics report does not indicate which were the main search words used by visitors that led them to the IALA testbed website. Google does not provide this information, probably because it considers this to be valuable. However, if one Googles 'e-navigation testbeds', 'e-navigation projects' or similar words, the IALA-AISM website comes up at or near the top of the search list. No further action on strengthening key words is required for now.

#### **Actions**

*The IALA Secretariat is requested to generate statistics for the testbeds portion of the IALA website, (similar to those provided in ENAV21-10.5) and for a Google Analytic report (similar to that provided in ENAV 21-10.5.1) for a twelve month period i.e. 1<sup>st</sup> September 2017 to 31<sup>st</sup> August 2018 for the next session.*

*To increase the number of page views by referrals (links to IALA provided by other websites), the IALA Secretariat is requested to invite IALA members to link their organisation's sites to the IALA website. If the organisation has an e-navigation content on their site, then that page(s) should link to the e-navigation testbed site of IALA.*

*The IALA Secretariat is requested to contact the manager of each testbed (listed on the testbed webpage) and invite them to link their testbed website to the IALA testbed website.*

*The IALA Secretariat is requested use the contents of liaison note ENAV21-14.1.3 to guide its discussion with Redwire regarding the IALA testbed website.*

#### **10.4 Encourage testbed project managers to provide information and results to IALA for posting on the IALA website, through a marketing plan to inform and to attract consumers (Task 4.1.3)**

The Committee recalled that a communications strategy to encourage and influence testbed managers to report testbed results to IALA had been completed at ENAV 20. The strategy identifies target audiences, communication channels and articulates key messages (ENAV20-14.1.2 refers).

#### **Actions**

*The IALA Secretariat is requested to act on the items listed in section 9 of ENAV20-14.1.2 (IALA communications strategy – promoting the sharing of e-navigation testbed results).*

#### **10.5 Develop and maintain answers to Frequently Asked Questions on e-navigation**

The Committee noted that this task per se was not on its work program, although, owing to the relative newness of VDES concept, the committee had developed answers to some FAQs on VDES (this is still a work in progress). The Committee decided to review and update answers to FAQs on e-navigation in general (this was last updated in 2013 and is therefore out-of-date). Working paper ENAV21-14.2.3 refers.

A discussion took place on the pros and cons of developing answers to FAQs for topics being dealt with by all other IALA Committees.

Points were made to support and oppose the case for developing and maintaining answers to FAQs for all of IALA's work. There was consensus that IALA ought to have answers to FAQs for emerging areas such as VDES, S-100 and MSPs. However, the issue of FAQs for all topics being dealt with by other IALA Committees resulted in a proposal for PAP to consider and decide as appropriate. A liaison note was prepared in this regard (ENAV21-14.1.2 refers).

#### **Actions**

*The IALA Secretariat is requested to forward liaison note ENAV21-14.1.2 (note to PAP on answers to FAQs) to the PAP.*

WG2 is requested to further develop, review and update ENAV21-14.2.3. (Working paper on answers to e-navigation FAQs) intersessionally by correspondence, with a view to finalising this work at the next session in September 2018.

## **11. WORKING GROUPS 3 - TELECOMMUNICATIONS (WG3)**

It was noted that Peggy Browning is stepping down as Chair of WG3. The Committee expressed its thanks to her for her outstanding leadership and achievement during the work period and looked forward to her continued work in the Committee in the next work period.

### **11.1 Review and update NAVGUIDE Chapter4, section 4.10 - 4.12 (Task 1.1.3)**

Input papers ENAV21-10.1, ENAV21-10.1.1, ENAV21-10.2 and ENAV21-10.3 were reviewed.

The communications section of the NAVGUIDE (section 7) was reviewed, noting comments received from Australia and the developments on digital maritime communications, including VDES. Revisions were included and a clean version forwarded to WG2 for inclusion in the overall response from the ENAV Committee.

### **11.2 Develop VDES Message Structures (Task 1.4.1)**

Task 1.4.1 is complete as the bit structures of the messages are defined within the working doc ENAV21-14.7.2.

### **11.3 Assist in the Development of Message Structures for E-Navigation (Task 1.4.2)**

Task 1.4.2 should remain an on-going task and be taken into the next IALA work plan.

### **11.4 Update the MRCP (Task 2.1.1)**

Input paper ENAV20-11.26 refers.

This input document provided an updated version of the MRCP with track changes and comments and is now ready to send to ITU as a reference document. The committee was asked to look at the status of the Maritime Radio Communications Plan (MRCP) and the World Wide Radionavigation Plan (WWRNP). It was agreed that it would be appropriate to make the MRCP document a Guideline. There was insufficient time to fully review the WWRNP, so the committee was unable to recommend on the document status. In discussing this matter, it was also identified that it may be appropriate for IALA to identify, within the revised document structure, a category of paper for reports or information papers. This proposed category would be for papers that provide valuable information to influence discussions, but do not fit within the structure of Standard, Recommendation, or Guideline.

#### **Action**

*The ENAV Chairman is requested to forward Task 1.4.2 to the next work period.*

*The IALA Secretariat is requested to forward ENAV21-14.1.22 to Council for approval by the IALA Council and in the event of approval, forward it to the ITU WP 5B.*

*The IALA Secretariat is further requested to publish ENAV21-14.1.22 in an appropriate template.*

*The IALA Secretariat is requested to forward ENAV21-14.1.22 to the Chair of the IMO Correspondence Group on Modernisation of GMDSS (Bob Markle in RTCM).*

*The IALA Secretariat is requested to submit an inf paper to IMO NCSR informing them of the updating of the MRCP.*

### **11.5 Develop Recommendation on VDES, VDE-SAT Report and ITU-R M.2092 (Task 2.1.2)**

#### **11.5.1 VDE SAT Report**

Input papers ENAV21-11.13.2, ENAV21-11.13.3, ENAV21-11.15, ENAV21-11.16, ENAV21-11.22, ENAV21-11.23.

The Committee reviewed the output from the ENAV WG3 Intersessional meeting in June related to, and in preparation for, IALA input to the next to ITU-R WP 5B meeting in November on the Working Document towards a Preliminary Draft New Report ITU-R M.[VDES-SAT]. The review resulted in one new task for the task list from previous meetings, in addition to the seven tasks already on the task list, as well as reopening of one task closed during the WG3 Intersessional meeting in June.

The open tasks were addressed and proposals to resolve them were reviewed and discussed.

Six of the proposals were approved and the tasks closed and one was found to be obsolete.

The remaining open task is intended as a reminder to add results from VDE-SAT test and measurement campaigns as that become available. Thus, it will remain open as input to the report and will be considered by ITU-R WP 5B. ENAV21-14.1.20 refers.

A brief draft Liaison Statement to ITU-R WP 5B was also prepared to serve as a cover letter for the input from IALA to the Working Document towards a Preliminary Draft New Report ITU-R M.[VDES-SAT].

Input paper ENAV21-11.13.2 is the current version of the VDE-SAT report and was used as the baseline for Committee work at ENAV21.

Input paper ENAV21-11.13.3 is the ITU version of the VDE-SAT report.

Input paper ENAV11.15 provides a VDES-SAT synchronisation word design. The proposed sync word not only possesses better autocorrelation properties but has better PAPR than the current sync word design in M.2092 as well.

Input paper ENAV21-11.16 is an input paper from ORBCOMM describing how their system might be able to support VDES. However it is unclear what the cost of this would be and it would not allow for other satellite providers. The Committee invites ORBCOMM to provide a detailed proposal for consideration.

Input paper ENAV21-11.22 paper describes VDES experimental satellite which has been built by Shanghai Spaceflight Institute of TT&C and Telecommunication and Zhejiang Space-Iching Science and Technology Co., Ltd. The Committee is looking forward to the launch of this satellite and requested that, if possible, this satellite test operates on channel plan 2 in the VDE-SAT report (500kHz).

Input paper ENAV21-11.23 paper provides the current availability in China. The VDE-SAT downlink frequency alternative 1 (161.800-161.925MHz) is available in China but needs co-ordination with land mobile services. Frequency alternative 2 (160.9625-161.4875MHz) and 162-164MHz are not currently available for maritime mobile services in China. Some technical measures can be adopted to mitigate the interference of satellite downlink transmission to other services within the frequency band. It also suggested that the report on the submission to ITU-R WP 5B after the ENAV21 meeting will be fully communicated with the Chinese WP5B ITU representatives ahead of November so that the November co-ordination meeting can make progress.

The ENAV Committee agreed that WG3 should continue the work on VDE-SAT intersessionally and, with Council approval, to forward its work to the ITU-R WP5B.

#### **Action**

*The IALA Secretariat is requested to forward ENAV 21-14.1.19, the ITU Liaison note and ENAV21-14.1.20 the Preliminary Draft New Report ITU-R M.[VDES-SAT], to Council for urgent approval by the IALA Council by correspondence and, in the event of approval, forward it to the ITU WP 5B meeting by the deadline of 27 October 2017.*

*ENAV WG3 is requested to continue the work on VDE-SAT intersessionally and, with Council approval, to forward its work to the ITU-R WP 5B.*

#### **11.5.2 Recommendation ITU-R M.2092**

Input papers ENAV21-11.4.1, ENAV21-11.17, ENAV21-11.18, ENAV21-11.19, ENAV21-11.20, ENAV21-11.24, and ENAV21-11.24-1 refer.

Input paper ENAV20-11.4.1 is the current Recommendation of ITU-R M.2092-0. This document was reviewed and further amended. There was a long discussion on whether ITU-R M.2092-1 should be submitted to ITU prior to WRC19. IALA would be required to remove the VDE satellite aspects if the document were to go to ITU, which could undermine the IALA argument at WRC19 to gain the frequencies to support VDE-SAT. However, it was recognised that the IEC could not begin working on the test standard for the document until it was an official submittal. The Committee agreed to send the current version of this document to IEC as an IALA liaison note with the document as an annex. This will allow IEC to begin working on the test standard.

Input paper ENAV21-11.17 defines a method for classifying and processing AIS, ASM, and VDE messages at the VDES station for messages generated by an external application service provider or a terminal user. Especially, when exchanging messages with TCP / IP protocol through wired Ethernet, AIS, ASM, and VDE, messages are sorted for each port as a server/client model to mitigate the complexity of presentation interface, and it can be made possible to allocate to the designated radio channel without any additional identified information of each message. The Committee would like to keep this document as a working document for inclusion into ITU-R M.2092-1.

Input paper ENAV21-11.18 examined the signal structure for the VDES modem and AGC function as a synchronisation function that should be applied first to the receiver for said signal structure. Simulations have shown that some of the signals for training sequence are used until the AGC output is stabilised and as a result, the number of valid symbols available in the signal detector is reduced. The paper recommends that the AGC output should be stabilised before the training sequence, and valid symbols transmission in the Ramp-Up period is suggested as a method for securing symbols necessary for AGC within the range of the recommendation. The group has implemented the suggested changes in the current version.

Input paper ENAV21-11.19 provides analysis on possible spectrum masks to ensure that the energy is kept within a given channel. The Committee discussed this paper and different methods of testing, in the end it was agreed to continue to use a spectrum mask for testing and the suggested changes to the current spectrum mask were accepted.

Input paper ENAV21-11.20 provides a possible alternative to the current synch word for VDE-SAT. This was noted by the Committee.

The ENAV Committee agreed that WG3 should continue the work on 2092 intersessionally and with Council approval to forward its work to the IEC so that IEC can continue developing the IEC test standard.

### **Action**

*The IALA Secretariat is requested to forward ENAV21-14.1.21 liaison note with ENAV21-14.2.7 to IEC to Council for approval by the IALA Council and, in the event of approval, forward it to the IEC WG15 for consideration.*

*The IALA Secretariat is requested to forward ENAV21-11.17 to the next ENAV session.*

*WG3 is requested to continue the work on 11.5.2 Recommendation ITU-R M.2092 intersessionally and, with Council approval, to forward its work to the IEC so that IEC can continue developing the IEC test standard.*

## **11.6 Update IALA Recommendations and Guidelines on AIS and VDES (Task 2.2.1)**

### **11.6.1 IALA Guideline 1117 VHF Data Exchange System [VDES] Overview**

Input papers ENAV21-11.5, ENAV21-11.6, ENAV21-11.11, ENAV21-11.12, ENAV21-11.27, and ENAV21-11.28.

The draft revision to IALA Guideline 1117 on Overview of VDES (ENAV21-11.12) was reviewed. It was noted that the intention for the publication of the initial Guideline 1117 in December 2016 was to include technical information for an updated version in December 2017. The review also took into account related input documents, noting ENAV21-11.1, ENAV21-11.2, ENAV21-11.27 and ENAV21-11.28 which provide technical information that was merged into the revision of Guideline 1117 (output paper ENAV21-14.1.22). In particular, the output from the IALA AIS AtoN workshop in Seoul, South Korea (ENAV21-11.11) was noted as being very useful. Although there was no time to integrate this into the revised Guideline

1117, the Committee noted that this document should be forwarded to the next meeting of this Committee, with the expectation of integrating a table based on the document into a future revision of 1117.

The Committee also noted the output from EfficienSea 2 (ENAV21-11.5 and ENAV21-11.6), and integrated information related to the overview of digital data systems in the maritime environment into the revision of Guideline 1117.

#### *Action*

*The IALA Secretariat is forward ENAV21-14.1.23 IALA Guideline 1117 VHF Data Exchange System [VDES] Overview to Council and, if approved, post to the website.*

#### 11.6.2 ITU-R M.1371 Revisions

Input papers ENAV21-11.14.1, ENAV21-11.14.2, ENAV21-11.21, and ENAV21-11.25 were considered.

The Committee has been collecting inputs for a revision to ITU-R M.1371-5 for the past couple of meetings, and, given ITU timetables, has now integrated all of the suggested changes. A liaison note for ITU WP 5B was drafted (ENAV21-14.1.24) and Incorporated into paper ENAV21-14.1.28.

#### 11.6.3 Autonomous Maritime Radio Devices (AMRD)

Input papers ENAV21-11.7 (ARM6-12.1.23), ENAV21-11.9, 11.9.1, ENAV21-4.6 (report of IMO-ITU Experts Group) were considered.

The liaison note from ARM was reviewed, noting the request for innovative solutions to mark MAtoN. Discussion highlighted the work on AMRD at ITU, and the definition identified by ITU in their liaison note (ENAV21-11.9 and ENAV21-11.9.1). The Committee noted that there could be an opportunity to propose a new AIS message to address MAtoN. However this could not be developed until such time as the IALA recommendation and guideline on AMRD is complete. A liaison note to ARM (ENAV21-14.1.25), noting the outcome of the discussion, was developed.

#### 11.6.4 VDES FAQ

Input papers ENAV21-11.3, ENAV21-10.4 (e-nav FAQ) were considered.

It was noted that there could be benefit to having a wider range of Frequently Asked Questions for the IALA website, including those for S-XXX series and further development of revised ENAV FAQ. VDES FAQ were reviewed, and additional responses developed (ENAV21-14.1.27). Presentation of the FAQ on the website was reviewed. The IALA Secretariat is requested to revise the presentation to a format that is more user friendly. The preferred suggestion from the Committee is that a list of FAQ (numbered 1...n) be presented with a hot link to the response later in the page. After each FAQ response, a hot link to the list of FAQ be provided. It was felt that this could facilitate navigation on the website.

#### 11.6.5 AtoN Model Course

Input paper ENAV21-11.10, 11.10.1.

The Committee reviewed the AIS AtoN Model course and provided comments as requested to ENG (ENAV-21-14.1.26).

#### 11.6.6 Other Items

Input paper ENAV21-11.8 was considered.

The Committee noted the liaison from the VTS Committee regarding the status of IALA documents. The Committee agreed with the proposal that the results of the review of IALA documents relevant to the introduction of VDES be identified as a task for both the VTS and ENAV committees work program for 2018-2022.

#### *Action*

*The IALA Secretariat is requested to forward ENAV21-14.1.22 (updated MRCP) to IALA Council for approval and, if approved, post to the IALA website and forward to ITU WP 5B for information.*

*The IALA Secretariat is requested to forward liaison note ENAV21-14.1.28 (proposed changes to ITU-R M.1371-5) and the Base 1371 document ENAV21-14.1.29 to Council for urgent approval by the IALA Council by correspondence and, in the event of approval, forward it to the ITU WP 5B meeting by the deadline of 27 October 2017.*

*The IALA Secretariat is requested to forward ENAV21-14.1.25 liaison to the ARM committee.*

*The IALA Secretariat is requested to forward ENAV21-14.1.26 (track changes to the IALA AIS AtoN model course) to the ENG committee.*

*The IALA Secretariat is requested to forward ENAV21-14.1.27 (VDES FAQ) to Council for review and if approved post it to the IALA website.*

*The IALA Secretariat is further requested to update the FAQ on the IALA website with Hotlink and add numbers.*

## **12. WORKING GROUP 4 - E-NAV SERVICES (WG4)**

### **12.1 Review and update NAVGUIDE Chapter5, section 5.1 and 5.2 (Task 1.1.4)**

The text on Maritime Service Portfolios as part of the IALA NAVGUIDE was delivered during ENAV20. Further revision was considered to not be necessary.

### **12.2 Provide guidance on the implementation of MSPs and associated infrastructure to IALA membership (Task 4.6.2)**

To be included in the working programme of the Committee for the next work period.

#### **Action:**

*The Committee Chair and Vice Chair are requested to propose task 4.6.2 as ongoing in the work programme in the next work period.*

### **12.3 Develop Guideline/Recommendation on Maritime Service Portfolios (Task 5.1.1)**

During ENAV20, several members of the working group volunteered to work on the guideline via correspondence with a goal to complete a draft guideline at ENAV21.

The Committee noted that the liaison note to the other organisations from ENAV20 was rejected in Council. Regardless of this, the guideline has been developed intersessionally with contribution from several organisations and members as well as members of the VTS Committee.

The Committee also noted that the IMO HGDM has been established and that a common paper from IHO and IALA has been submitted to the IMO-IHO Harmonization Group on Data Modelling (HGDM), containing a draft Guideline on MSPs.

The Committee considers the contribution and cooperation with IHO on this Guideline as an important step towards a harmonised understanding of MSPs. This will contribute to the process that has to be done by the IMO-IHO Harmonization Group on Data Modelling.

During ENAV21, the Guideline on MSPs was revised and further developed. The Committee agreed on Sections 1 to 3. The diagrams and text will be further developed to be more comprehensive. User requirements and more examples will be included. The MSP on MAS has been adjusted in line with IMO res A.950(23).

The annexes regarding definition of the attributes will be coordinated with WG1 and deleted from the Guidelines on MSPs. It is possible that the attributes could be made available and maintained on-line.

A presentation on Anti-Piracy was made by the representative of the US (NGA) showing the possibilities to monitor and analyse the trends of dangerous activities around the world against ships using a database registry which can be shared.

The proposed additional MSP on Piracy has been changed to Activities Hostile to Shipping and the main objective of the MSP would be to share critical information with the ship.

A number of liaison notes were prepared to IHO, IMPA, WMO, IMRF and IHMA requesting assistance with the preparation of various MSPs. Papers ENAV21-14.1.10 to ENAV21-14.1.14 refer.

It must be emphasised that completion of the Guideline is dependent on prioritisation and delivery from other Committees and Organisations as well as the work on technical services by this Committee.

The Guideline will be finalised during the first two years of the 2018 – 2022 work period. This will include the cooperation with other groups and organisations and will reflect the results of the work on technical services and the IMO-IHO HGDM.

An input paper, ENAV21-14.1.15, to the IMO-IHO HGDM was prepared updating the information already submitted to the first session.

#### 12.3.1 Ship reporting

IMO FAL (FAL 41/17, para 5.53) has invited interested organisations to take part in the work of developing a Maritime Single Window (MSW). Solution 2 of the IMO e-navigation strategy implementation plan calls for a “means for standardised and automated reporting”. This solution has not yet been addressed.

The Committee suggests a new work item on this subject and prepared a liaison note to PAP in this respect

The further development of the Guideline will be conducted intersessionally by correspondence. The development will take into account results from a survey among IALA members. This will be completed at the beginning of next year. Furthermore, the Committee will focus on the MSPs that have not yet been developed. In the light of the long gap between ENAV21 and ENAV22 ( 1 Year ), the Republic of Korea will arrange a workshop on MSPs. The aim is to update the guidelines to incorporate the new information.

#### *Actions:*

*The Secretariat to forward the draft Guideline on MSPs, ENAV21-14.2.5, to ENAV22.*

*The WG 4 Chair is requested to forward a further version of the draft Guideline on MSPs after intersessional work to ENAV22.*

*The Secretariat is requested to forward the IMO input paper ENAV21-14.1.15 to the IMO/IHO HGDM to the Council for early approval and if approved on to the HGDM by the due deadline of 6<sup>th</sup> October.*

*The Secretariat is requested to forward the Liaison note ENAV21-14.1.10 to IHO to the Council for approval and if approved forward on to IHO.*

*The Secretariat is requested to forward the Liaison note ENAV21-14.1.11 to IMPA to the Council for approval and if approved forward on to IMPA.*

*The Secretariat is to forward the Liaison note ENAV21-14.1.12 to WMO to the Council for approval and if approved forward on to WMO.*

*The Secretariat is requested to forward the Liaison note ENAV21-14.1.13 to IMRF to the Council for approval and if approved forward on to IMRF.*

*The Secretariat is requested to forward the Liaison note ENAV21-14.1.14 to IHMA to the Council for approval and if approved forward on to IHMA.*

*The Secretariat is requested to forward the Liaison note ENAV21-14.1.16 to the PAP Committee.*

*The Secretariat is requested to forward the draft Guideline on MSPs, ENAV21-14.2.5, to the VTS Committee.*

#### 12.4 Task Registry

The task registry has been updated.

The attributes and product specifications for the services will be developed by others.

### 13. WORKING GROUP 5 – PNT (WG5)

A number of work items to be considered under the new 2018-2022 work period were proposed and provided information to the ENAV Committee Chair and Vice Chair.

#### 13.1 Review and update NAVGUIDE Chapter 4, section 4.8 – 4.9 (Task 1.1.5)

The WG provided minor updates to WG3 for inclusion in the latest version of the NAVGUIDE.

#### 13.2 Develop a Product Specification on eLoran data, beacon corrections, and data exchange (Task 3.1.2)

Input paper ENAV21-13.11 on eLoran Product specifications was considered and the Committee offered to provide example data to support further work. This work item will be carried over to the 2018-2022 work period.

#### 13.3 PNT relevant services & systems that can contribute to Resilient PNT (Task 3.1.3)

Input paper ENAV21-13.1 was considered and the Committee deferred completion of the Recommendation until the new work period.

##### *Actions*

*IALA Secretariat is requested to forward ENAV21-14.2.6, Draft Recommendation on PNT relevant services, to the next ENG meeting in the new work period.*

#### 13.4 Develop a Guideline on port and harbour high accuracy systems and services (Task 3.1.4)

Input papers ENAV21-13.3, ENAV21-13.3.1, ENAV-21-13.3.2 and ENAV21-13.3.3 were considered. The report on the intersessional meeting held to progress this Guideline was received and the draft Guideline reviewed and editorial amendments made. The draft Guideline is complete and ready to be sent to Council for approval.

##### *Actions*

*IALA Secretariat is requested to forward paper ENAV12-14.1.5, Draft Guideline on systems and services for high accuracy positioning and ranging, to Council for approval.*

#### 13.5 Develop a Guideline on the use of SBAS (Task 3.1.5)

Input papers ENAV21-13.2, ENAV21-13.2.1, ENAV21-13.5 and ENAV21-13.6 were considered. The report on the intersessional meeting held to progress this Guideline was received and the draft Guideline reviewed.

The draft Guideline is complete and ready to be sent to Council for approval.

Input paper ENAV21-13.8 was also considered under this work item and the Committee noted the pilot project being prepared within Europe to consider the re-broadcast of EGNOS corrections over AIS and radiobeacon infrastructure.

Input paper ENAV21-7.5 was considered. The Committee agreed to the need for IALA to provide guidance to its members on the status and performance of GNSS augmentation systems. The Committee agreed to add this item to the 2018-2022 work plan.

##### *Actions*

*IALA Secretariat is requested to include the working paper ENAV21-14.1.18, Draft Guideline on the retransmission of SBAS corrections using MF-Radio beacon and AIS, to Council for approval.*

### **13.6 Monitor developments in GNSS, DGNSS, radar, resilient PNT, e-Pelorus, terrestrial systems, inertial and any other relevant areas etc. (Task 3.1.11)**

The Committee reviewed input paper ENAV20-13.10 on eRacon and eRadar trials within Singapore harbour. The Committee considered the need for standardisation of eRacon and eRadar and agreed to add this topic as a future work item.

The Committee received an update from France on its trial marine beacon DGNSS site, which makes use of SBAS information.

The Committee received an update on the work of the GLA in developing e-Pelorus, and discussed the UK Economic Impact of GNSS disruption study.

### **13.7 Liaison with IEC, ITU, CIRM, RTCM and other bodies on PNT matters (Task 3.1.15)**

The Committee received an update on activities occurring within RTCM, including the latest draft SBAS receiver guidelines, the current status of the 2.4 broadcast standard and the current position of the multi-system receiver standardisation progressed by RTCM SC131.

### **13.8 Develop a Guideline on the provision and use of marine beacon R-mode (Task 3.1.16)**

Input papers ENAV21-13.4, ENAV21-13.4.1, ENAV21-9 and ENAV21-9.1 were considered.

The Committee noted the work of Germany progressing the R-Mode system concept, noting the results of trials as presented. The Committee also noted the results of an interference study conducted by the GLA. Further, DLR provided a short introduction to the R-Mode Baltic Sea project which is due to commence in October 2017.

A Guideline on R-Mode will be required in due course and this work item will be carried over to the 2018-2022 work period.

## **14. REVIEW OF OUTPUT AND WORKING PAPERS**

Output papers were reviewed and their disposition agreed as indicated in ANNEX E.

The Committee produced 26 output papers and 5 working papers.

## **15. ANY OTHER BUSINESS**

It was noted that China MSA are hosting a WWA course on AIS in the future and are considering hosting a VDES workshop or intersessional meeting focussing on VDE-SAT at the beginning of April 2018.

### **Action**

*The Member from China MSA is requested to advise if China MSA will host an intersessional meeting of ENAV WG3 in early April 2018.*

## **16. REVIEW OF SESSION REPORT**

The report of the meeting (ENAV21-16.1) was considered. Committee Participants were requested to advise any corrections / amendments within one week, following which the final version will be issued via the IALA web site.

### **Action item**

*Committee participants are requested to advise any corrections / amendments to the draft ENAV21 report, paper ENAV21-16.1 post plenary, by 29 September 2017.*

*The Secretariat is requested to forward the report of ENAV21 (ENAV21-16.1) to the Council, to note.*

## **17. DATE AND VENUE OF NEXT MEETING**

The next session of the Committee is expected in September, 2018 at IALA Headquarters. Date will be advertised on the web site.

Intersessional meetings of WG4 (after the IALA Conference) in Korea and WG3 are planned. The proposed plan for WG3 intersessional meetings is:

1. February 2018: intersessional meeting in IALA HQ focussing on the ITU-R M.2092.
2. Early April 2018: intersessional meeting in China focussing on VDE-SAT.

## **18. CLOSING OF THE MEETING**

The Deputy Secretary-General thanked all participants for the good work over the week. He noted that it has been a good four year work period with a lot of high quality work completed, for which he congratulated the Committee. He invited everyone to continue the work in the next work period starting in 2018. The Council will consider the IALA strategic vision at its meeting in December 2017 and will consider the number and function of Committees for the 2018-2022 work period. He noted that the structure of working groups within Committees is a matter for the Chairs and Vice-Chairs of the Committees. The present Committee Chairs and Vice-Chairs will continue in their roles until 29 May and nominations are sought for Chairs and Vice-Chairs for the next work period.

Mr Card outlined the coming meetings including VTS, ENG, ARM, FERNS in China, PAP in October, Maritime Connectivity Platform workshop in IALA in November, Arctic group, e-Navigation Underway North America in October, and e-Navigation Underway International in January 2018. He invited everyone to the IALA conference in May 2018 in Korea.

He concluded by thanking all participants for the superb output and high volume of work. He thanked the Chair and Vice-Chair for their leadership and the Secretary for the good organisation.

The Chairman expressed his thanks to all Committee Participants for what the Committee had achieved during the week and for planned intersessional work. He also thanked the Working Group Chairs, the Vice Chair and the IALA Secretariat for their support. He invited all participants to attend the next meeting in 2018 and wished everyone a safe journey home. He then declared the meeting closed.

## **19. LIST OF ANNEXES TO THE REPORT**

### **1 Agenda**

A copy of the agenda is at ANNEX A.

### **2 Participants**

A list of participants and apologies is at ANNEX B.

### **3 Working Groups – List of 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 Work programme progress**

A summary of progress in completing the work programme and progress with deliverables is at ANNEX F.

## 7 Action Items

A list of action items is at ANNEX G.

## 21<sup>st</sup> Meeting of the IALA e-Navigation Committee (ENAV21)

The 21<sup>st</sup> meeting of the **IALA ENAV Committee** will be held from 18 – 22 September, 2017 at IALA, St Germain en Laye, France.

The opening plenary will commence at 1300 hours on Monday 18 September and the closing plenary will end at approximately 1300 on Friday 22 September.

Committee Chair, Vice-Chair and Working Group Chairs are requested to meet at 0900 hours on Monday 18 September.

Work items / Tasks being addressed during this meeting are listed in the ENAV Committee Workplan 2014-2018 which will be provided on the IALA website.

## AGENDA

1. Opening
  - 1.1. Approval of the agenda
  - 1.2. Welcome address from the Secretary-General/Deputy Secretary-General
  - 1.3. Administration & safety briefing
  - 1.4. Introductions and apologies
  - 1.5. Programme for the week
2. Review of action items from last meeting
3. Review of input papers
  - 3.1. Input papers
  - 3.2. Identify input papers suitable for uploading to the IALA Wiki
4. Reports from other bodies
  - 4.1. Report on 64<sup>th</sup> Session of the IALA Council 2017-06
  - 4.2. Report of the 33<sup>rd</sup> Session of the IALA Policy Advisory Panel
  - 4.3. Report on IALA work in EfficienSea2
  - 4.4. Report on IMO NCSR4 March 2017
  - 4.5. Report e-Navigation Forum 26 April 2017 Singapore Final Report
  - 4.6. Report 13<sup>th</sup> Joint IMO-ITU Expert group 10th to 14th July 2017
  - 4.7. Report of ITU-R WP5B meeting 22 May to 2nd June 2017 20170612
  - 4.8. FAL41/17 Report of the IMO Facilitation Committee (FAL)
  - 4.9. 2017-07-18 IALA-IHO Coordination Meeting - Final Report
  - 4.10. Patent documents from IALA LAP
  - 4.11. Report on e-Navigation Underway Asia-Pacific 2017-06
  - 4.12. IALA input to IMO-IHO HGDM re MSPs
5. Reports from Rapporteurs
 

<ol style="list-style-type: none"> <li>5.1. IALA Bulletin liaison</li> <li>5.2. IALA Dictionary</li> <li>5.3. GMDSS</li> </ol>	Hideki Noguchi Seamus Doyle Jean-Charles Cornillou
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5.4.	Testbeds	Mahesh Alimchandani
5.5.	IHO report	Dave Lewald
5.6.	RTCM activity	Bill Cairns
6.	Presentations (15 minutes duration)	
6.1.	19th IALA Conference 2018	Seungcheol Lee
6.2.	European GNSS Agency pilot project for the transmission of SBAS corrections via IALA beacons and AIS	Manuel Lopez-Martinez
6.3.	Global eNavigation VDE M2M component	George Best
6.4.	China VDES Testbed System Report	Jie Wen
6.5.	Modernization of RBN-DGNSS in China	Liang Yang
6.6.	STM Validation project update	Fredrik Karlsson/ Jin Park
6.7.	Maritime Connectivity Platform (Maritime Cloud) update	Thomas Christensen
6.8.	WWA report	Omar Frits Eriksson
7.	Review of Work Programme and Working Group expectations	
8.	Establish Working Groups	
9.	WG 1 - Harmonisation	
10.	WG 2 - Implementation	
11.	WG 3 - Telecommunication	
12.	WG 4 - ENAV Services	
13.	WG 5 - PNT	
14.	Review of output and working papers	
15.	Any Other Business	
16.	Review of session report	
17.	Date and venue of next meeting	
18.	Close of meeting	

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**ANNEX D LIST OF INPUT PAPERS**  
**All papers are posted on the IALA Committee website**

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV21-	1.1	Draft Agenda ENAV21 20170918	IALA Secretariat	Hideki Noguchi
ENAV21-	1.2	Welcome IALA S-G	IALA Secretariat	Francis Zachariae
ENAV21-	1.3	Admin Safety Briefing 2017-08-25	IALA Secretariat	Seamus Doyle
ENAV21-	1.5	Programme for the week 20170606	IALA Secretariat	Hideki Noguchi
ENAV21-	2.1	Action items from ENAV20 20170327	IALA Secretariat	Seamus Doyle
ENAV21-	3.1	Input paper Committee template February 2017	IALA Secretariat	Hideki Noguchi
ENAV21-	4.1	Report of the 64th session of the IALA Council	IALA Secretariat	Seamus Doyle
ENAV21-	4.2	(PAP33-17.1) Report PAP33	IALA Secretariat	Michael Card
ENAV21-	4.3	EfficienSea2 Progress Report v1	Nick Ward	Nick Ward
ENAV21-	4.4	Report on IMO NCSR4 March 2017	IALA Secretariat	Mahdi Al Mosawi
ENAV21-	4.5	Report e-Navigation Forum 26 April 2017 Singapore Final Report	e-Navigation Forum Singapore	Mahesh Alimchandani
ENAV21-	4.6	IALA Report 13th Joint IMO-ITU Expert group 10th to 14th July 2017 20170715	Stefan Bober	Stefan Bober / WG3
ENAV21-	4.6.1	Flow diagram preparation draft IMO position WRC-19 20170712	Stefan Bober	Stefan Bober / WG3
ENAV21-	4.7	Report of ITU-R WP5B meeting 22 May to 2nd June 2017 20170612	Stefan Bober	Stefan Bober
ENAV21-	4.8	FAL41/17 Report of the IMO Facilitation Committee (FAL)	IMO website	Hideki Noguchi
ENAV21-	4.9	2017-07-18 IALA-IHO Coordination Meeting - Final Report1	Nick Ward	WG1, WG4
ENAV21-	4.10.1	(LAP18-22.3) Information on patents	LAP18	Michael Card
ENAV21-	4.10.2	(LAP17-23.5) IALA Patent Policy approved by LAP	LAP17	Michael Card
ENAV21-	4.11	Report on e-Navigation Underway Asia-Pacific 2017-06	HyeJin Lee	HyeJin Lee
ENAV21-	4.12	2017-09-15 IMO-IHO HGDM1-IHO-IALA Input 20170912-1	IMO-IHO HGDM	Michael Card
ENAV21-	5.3	Report from rapporteur on GMDSS	Jean-Charles Cornillou	Jean-Charles Cornillou
ENAV21-	5.4	Rapporteur report on Testbeds	Mahesh Alimchandani	Mahesh Alimchandani
ENAV21-	5.6	ENAV21-5.6 RTCM Rapporteur report	Bill Cairns	Bill Cairns
ENAV21-	6.1	19th IALA Conference 2018	Seung-Cheol Lee	Seungcheol Lee
ENAV21-	6.2	European GNSS Agency pilot project for the transmission of SBAS corrections via IALA beacons and AIS	Manuel Lopez-Martinez	Manuel Lopez-Martinez
ENAV21-	6.3	Global e-Navigation VDE M2M component	Robert Tremlett	George Best
ENAV21-	6.4	China VDES Testbed System Report	Liang Yang	Jie Wen
ENAV21-	6.5	Modernization of RBN-DGNSS in China	Liang Yang	Liang Yang
ENAV21-	6.6	STM Validation project update	Per Setterberg	Jin Park
ENAV21-	6.7	Maritime Connectivity Platform (Maritime	Thomas	Thomas

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
		Cloud) update	Christensen	Christensen
ENAV21-	6.8	WWA Report	Omar Frits Eriksson	Omar Frits Eriksson
ENAV21-	7.1	(ENAV20-14.2.1) ENAV Work Plan revised at ENAV20	ENAV20	Hideki Noguchi
ENAV21-	7.3	(D1.12) Report on Review of IALA documentation related to VHF Data Exchange System v3	EfficienSea2 / Jillian Carson-Jackson	Hideki Noguchi / WG3
ENAV21-	7.4	(PAP33-18.10) Strategic Vision 2018-2026	IALA Secretariat	Michael Card
ENAV21-	7.5	Proposal for IALA Guidance on GNSS Augmentation Services rev 1	Nick Ward/ Alan Grant	Alan Grant / WG5
ENAV21-	9.1	(ENAV20-14.2.11) WG1 Draft Risk Assessment Plan	ENAV20 WG1	WG1
ENAV21-	9.2	(ENAV20-14.1.11 C64-11.4.7.2) Draft Guideline on specification of e-navigation Technical Services	ENAV20 WG1	WG1
ENAV21-	9.3	Draft Technical Service Specification – AtoN Information -cover note	Nick Ward	WG1
ENAV21-	9.3.1	ATON Information - Service Specification 20170503 v6	Nick Ward	WG1
ENAV21-	9.4	Proposed changes to draft IALA guideline on specification of e-Navigation technical services	MCDF	WG1
ENAV21-	9.4.1	(Amended ENAV21-9.2) Draft Guideline on specification of e-navigation Technical Services	MCDF	WG1
ENAV21-	9.5	Proposal for MRN Management	Kasper Nielsen	WG1
ENAV21-	9.6	Proposed Service Specification for Nav Warnings & Notice to Mariners	DMA	WG1
ENAV21-	9.7	Information paper on Research progress of S-201 AtoN	Younghoon Han	WG1
ENAV21-	9.8	Cover note for Session Oriented Communication and Streaming	Axel Hahn	WG1
ENAV21-	9.8.1	IALA S100 Session Streaming Data	Axel Hahn	WG1
ENAV21-	9.9	S-200 Status Report	Nick Ward	WG1
ENAV21-	9.10	Maritime Cloud and China e-Navigation implement plan V3.0	Liang Yang	WG1
ENAV21-	9.11	Revision of AtoN Information Product Specification S-201	Nick Ward	WG1
ENAV21-	9.12	WG1 Work Program 20170914	Axel Hahn	WG1
ENAV21-	10.1	(ENAV20-14.2.3) draft NAVGUIDE Chapter 4 on e-navigation - Working paper v1	ENAV20 WG2	WG2
ENAV21-	10.1.1	Draft Chapter 4 (on e-navigation) for the 2018 Edition of the IALA NAVGUIDE	Mahesh Alimchandani	WG2, WG1, WG3, WG4, WG5
ENAV21-	10.2	(ARM6-12.1.18) WG2-navguide 2015 tracking table 02	ARM6	WG2, WG1, WG3, WG4, WG5
ENAV21-	10.3	(ARM6-12.1.17) Liaison to all committees and Secretariat - reminder on the NAVGUIDE 02	ARM6	WG2, WG1, WG3, WG4, WG5
ENAV21-	10.4	(e-NAV14-17.1.1.3) e-Navigation FAQs final	IALA Secretariat	WG2

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
		v1.8 r1		
ENAV21-	10.5	IALA testbed usage statistics for period 20170301-20170831	IALA Secretariat	WG2
ENAV21-	10.5.1	IALA Testbed user statistics analysis	IALA Secretariat	WG2
ENAV21-	10.6	IALA Testbed website user functionality	IALA Secretariat	WG2
ENAV21-	11.1	(ENAV20-14.1.28) Liaison to IEC on draft VDES performance test standard plenary	ENAV20 WG3	WG3
ENAV21-	11.2	(ENAV20-14.1.32) Draft IEC Technical Specification for VDES plenary	ENAV20 WG3	WG3
ENAV21-	11.3	(ENAV20-11.5) VDES FAQ	ENAV20 WG3	WG3
ENAV21-	11.4	(ENAV20-14.2.6) ITU-R M.2092-0 Draft revision 20170310_WD_WG3_Item_112_REC-M.2092	ENAV20 WG3	WG3
ENAV21-	11.4.1	Draft ITU-R Rec-M.2092 Tech char for a VHF data exchange system in the VHF mar mob band 20170816-JCJ review	Jillian Carson-Jackson	WG3
ENAV21-	11.5	D1.10 Strategy for Future Digital Communications v2.0.	EfficienSea2	WG3
ENAV21-	11.6	D1.11 Report on Future Digital Communications - Strategy supporting document	EfficienSea2	WG3
ENAV21-	11.7	(ARM6-12.1.23) Liaison ARM to all Committees on mobile AtoN	ARM6	WG3
ENAV21-	11.8	(VTS43-12.1.6) Liaison to Council-Secretariat-ENAV re VDES	VTS43	WG3
ENAV21-	11.9	R15-WP5B-170522-TD-0117!!MSW-E Liaison statement to IMO and IALA on AMRD Superceded by ENAV21-11.9.1	ITU-WP 5B	WG3
ENAV21-	11.9.1	WP5B-TD-117E Liaison statement to IMO & IALA on AMRD	ITU-WP 5B	WG3
ENAV21-	11.10	ENAV21-11.10 (ENG6-11.1.8) IALA Model Course L2 Module 8.1 AIS AtoN Operations Ed.2 December 2017	WWA	WG3
ENAV21-	11.10.1	WWA Documents for review at ENAV-21	WWA	WG3
ENAV21-	11.11	(ENAV20-11.4) AIS AtoN Workshop - Seoul - Oct 2016 - WG2-rev1	IALA Workshop on AIS AtoN developments, Seoul	WG3
ENAV21-	11.12	Draft Guideline 1117 Ed.2 VDES Overview Dec 2017-Proposed amendments	Jillian Carson-Jackson	WG3
ENAV21-	11.13	ENAV WG3 intersessional meeting and progress on ITU PDNR	Peggy Browning	WG3
ENAV21-	11.13.1	Report on ENAV WG3 Comms Intersessional June 2017	Peggy Browning	WG3
ENAV21-	11.13.2	PDNR ITU-R M VDES-SAT WG32017-06 output	Peggy Browning	WG3
ENAV21-	11.13.3	R15-WP5B-C-0305!N24!MSW-E Annex 24 to the Working Party 5B Chairman's Report	Peggy Browning	WG3
ENAV21-	11.14.1	Workshop on Revision-1371-5 Liaison to IALA on clarifications to ITU-R-M1371-5 2017-08-23	Stefan Bober	WG3

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV21-	11.14.2	Annex-to-liaison-note-to-IALA-on-technical-clarifications-to-ITU-R-M1371-5--2017-08-23	Stefan Bober	WG3
ENAV21-	11.15	VDE-SAT Synchronization Waveform Design 20170831	Michael Wang	WG3
ENAV21-	11.16	ORBCOMM VDE Demonstration and Cooperation	Robert Tremlett	WG3, WG2
ENAV21-	11.17	Classification of VDES Message (Korean Register of Shipping)	Jun-tae Kim	WG3
ENAV21-	11.18	Symbol Transmission in Ramp-up period for Receiver AGC settling (Korean Register of Shipping)	Jun-tae Kim	WG3
ENAV21-	11.19	VDE Spectrum Mask Analysis (Korean Register of Shipping)	Jun-tae Kim	WG3
ENAV21-	11.20	Synchronization Waveform Design 20170830	Michael Wang	WG3
ENAV21-	11.21	Proposal for the Revision on the Recommendation ITU-R M.1371-5	Qing Hu, Jiang Yi, Bo Hu, Liang Yang	WG3
ENAV21-	11.22	Developing Progress of VDES Experimental Satellite	Hongxing Li, Liang Yang	WG3
ENAV21-	11.23	VDE-SAT Downlink Frequency Division Analysis and Liaison to ITU-R WP 5B Chinese Representative	Wenquan Wu	WG3
ENAV21-	11.24	Cover note for Guidance for Operation of Maritime VHF Channels in CEPT	Jan Šafář	WG3
ENAV21-	11.24.1	MARFG(17)025 Proposal for a draft CEPT ECC REC on the use of maritime VHF channels	Jan Šafář	WG3
ENAV21-	11.25	Review of the EPFD Types in Rec ITU-R M 1371	Jan Šafář	WG3
ENAV21-	11.26	Revision of MRCP IALA - Ed 3 - draft - JCJ	Jillian Carson-Jackson	WG3
ENAV21-	11.27	D1.13 VDES Technical Guideline_07 20170304 draft	EfficienSea2	WG3
ENAV21-	11.28	D1.14 VDES Overview WG15 MTG25 O 003 WD Technical Specification for VDES 2017	Stefan Bober	WG3
ENAV21-	12.1	(ENAV20-14.2.5) Draft IALA Guidelines on MSPs v8	ENAV20 WG4	WG4
ENAV21-	12.1.1	Draft IALA Guidelines on MSPs v11-C+NL	IALA Secretariat	WG4
ENAV21-	12.2	(ARM6-12.1.14) Liaison ARM to ENAV on MSP guideline	ARM6	WG4
ENAV21-	12.3	Input paper on the Draft IALA Guideline for MSP8 Vessel Shore Reporting v1.2	ENAV20 WG4	WG4 & WG1
ENAV21-	12.4	Draft IALA Guideline on MSP8 Vessel Shore Reporting v3.1	ENAV20 WG4	WG4 & WG1
ENAV21-	12.4.1	Annex 1 VSRS Draft S-2XX Product Specifications - Ship Report Template V1.1	ENAV20 WG4	WG4 & WG1
ENAV21-	12.4.2	Annex 1 VSRS Draft S-2XX Product Specifications - CMDS Sources for Ship Report Types	ENAV20 WG4	WG4 & WG1
ENAV21-	12.4.3	Annex 1 VSRS Draft S-2XX Product Specifications - CMDS v1.1	ENAV20 WG4	WG4 & WG1

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV21-	12.4.4	Annex 1 VSRS Draft S-2XX Product Specifications - Ship Reporting Data Model Attribute Specification v2.0.1Complete	ENAV20 WG4	WG4 & WG1
ENAV21-	12.5	(VTS43-12.1.16) Liaison to ENAV on MSPs	VTS43	WG4
ENAV21-	12.5.1	(VTS43-12.1.17) Draft IALA Guidelines on MSPs v8.	VTS43	WG4
ENAV21-	12.5.2	(VTS43-12.1.18) Annex 1, MSP 1, Information Service Template	VTS43	WG4
ENAV21-	12.5.3	(VTS43-12.1.19) Annex 2, MSP 2, Navigational Assistance Service Template	VTS43	WG4
ENAV21-	12.5.4	(VTS43-12.1.20) Annex 3, Draft MSP 3, Traffic Organisation Service Template 170321	VTS43	WG4
ENAV21-	12.6.1	MSP Guidelines ENAV21 input paper WP4	Michael Rambaut	WG4
ENAV21-	12.6.2	Draft IALA Guideline on MSPs v12	Michael Rambaut	WG4
ENAV21-	12.7	Information paper on MSI service of SMART Navigation project	Sewoong Oh	WG4
ENAV21-	12.8	Input paper on the Draft IALA Guideline for MSP8 Vessel Shore Reporting v1.4	Yung-Ho Yu	WG4
ENAV21-	12.8.1	Draft IALA Guideline on MSP8 Vessel Shore Reporting v4.2 (Guideline Format)	Yung-Ho Yu	WG4
ENAV21-	12.8.2	Ship Report Template V1.2	Yung-Ho Yu	WG4
ENAV21-	12.8.3	Ship Reporting Data Model Attribute Specification v3.0	Yung-Ho Yu	WG4
ENAV21-	12.8.4	CMDSShipReport-DGUpdated-20thJune17	Yung-Ho Yu	WG4 File Share & .zip
ENAV21-	12.8.5	ShipReportFeaturesXSD_2017	Yung-Ho Yu	WG4 File Share & .zip
ENAV21-	12.8.6	CMD5 v1.1	Fred Pot	WG4 .zip
ENAV21-	13.1	(ENAV20-14.2.9) Draft IALA Recommendation Ed.1 on PNT relevant services and systems.	ENAV20 WG5	WG5
ENAV21-	13.2	(ENAV20-14.2.7) Draft IALA Guideline Ed.1 Use of SBAS ENAV20 v0.1	ENAV20 WG5	WG5
ENAV21-	13.2.1	Draft IALA Guideline Ed 1 Use of SBAS ENAV-20 v0 64 Clean version FINAL	Alan Grant	WG5
ENAV21-	13.3	(ENAV20-14.2.8) Draft Guideline on High accuracy systems V7.0	ENAV20 WG5	WG5
ENAV21-	13.3.1	Draft Guideline on Systems and services for high-accuracy positioning and ranging V11.1	Stefan Gewies	WG5
ENAV21-	13.3.2	Report on Intersessional meeting re draft Guideline on High-Accuracy Intersessional systems	Stefan Gewies	WG5
ENAV21-	13.3.3	Draft Guideline on Systems and services for high-accuracy positioning and ranging V10 (end of Intersessional)	Stefan Gewies	WG5
ENAV21-	13.4	R-Mode interference study report (cover)	Alan Grant	WG5
ENAV21-	13.4.1	R-Mode Interference Study - Final report	Alan Grant	WG5
ENAV21-	13.5	Maritime use of SBAS Intersessional Report	Alan Grant	WG5
ENAV21-	13.6	Report on WG5 Intersessional meeting re Maritime use of SBAS	José Manuel Álvarez	WG5

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV21-	13.7	WG5 plan for ENAV21	Alan Grant	WG5
ENAV21-	13.8	Pilot project for the transmission of SBAS corrections	Manuel Lopez-Martinez	WG5, WG2
ENAV21-	13.9	Cover note MF R-Mode 2-Channel Receiver and Skywave Report	Michael Hoppe	WG5
ENAV21-	13.9.1	MF R-Mode 2-Channel Receiver and Skywave Report.	Michael Hoppe	WG5
ENAV21-	13.10	Singapore eRadar and eRacon Sea Trials August 2017 Final	Paul Mueller	WG5
ENAV21-	13.11	Information paper on Progress and Plan of eLoran S-2XX Product Specification	Younghoon Han	WG5

## ANNEX E LIST OF OUTPUT AND WORKING PAPERS

Output papers are submitted for review by a body other than the Committee initiating the paper.

Number	OUTPUT PAPERS Title / Author (if required)	Source	Action
ENAV21- 14.1.1	Navguide 2018 Chapter 4 (e-Navigation)	WG2	To ARM7
ENAV21- 14.1.2	Liaison note to the PAP on IALA FAQs	WG2	To PAP34
ENAV21- 14.1.3	Liaison to IALA Secretariat on IALA testbed website	WG2	To IALA Secretariat
ENAV21- 14.1.5	Draft Guideline on Systems and services for high-accuracy positioning and ranging V13	WG5	To Council 65
ENAV21- 14.1.6	Draft Guideline for Specification of Technical Services	WG1	To Council 65
ENAV21- 14.1.7	Liaison note to the IHO WG S-100 re S-100 on-line data exchange	WG1	To Council 65 To IHO WG S-100
ENAV21- 14.1.8	Liaison note to the IALA Secretariat re management of MRN	WG1	To IALA Secretariat
ENAV21- 14.1.10	Liaison note to IHO re draft Guideline on MSPs	WG4	To Council 65 To IHO
ENAV21- 14.1.11	Liaison note to IMPA re draft Guideline on MSPs	WG4	To Council 65 To IMPA
ENAV21- 14.1.12	Liaison note to WMO re draft Guideline on MSPs	WG4	To Council 65 To WMO
ENAV21- 14.1.13	Liaison note to IMRF re draft Guideline on MSPs	WG4	To Council 65 To IMRF
ENAV21- 14.1.14	Liaison note to IHMA re draft Guideline on MSPs	WG4	To Council 65 To IHMA
ENAV21- 14.1.15	IMO input to HGDM on recent updates to MSPs	WG4	To Council early To HGDM by 6 Oct
ENAV21- 14.1.16	Liaison note to PAP re new work item on ship reporting	WG4	PAP34
ENAV21- 14.1.18	Draft Guideline on the retransmission of SBAS corrections using MF RB and AIS	WG5	To Council 65
ENAV21- 14.1.19	Liaison note to ITU-R WP5B for the VDESAT report	WG3	To Council early ITU-R WP5B by 27 October
ENAV21- 14.1.20	PDNR ITU-R M VDES-SAT WG3 2017-09 output	WG3	To Council early ITU-R WP5B by 27 October
ENAV21- 14.1.21	Liaison note to IEC re specification for VDES	WG3	To Council 65 To IEC
ENAV21- 14.1.22	Draft Revision of MRCP IALA - Ed 3	WG3	To Council 65
ENAV21- 14.1.23	Draft Guideline 1117 Ed.2 VDES Overview Dec 2017-Proposed amendments-WG 3 review 21092017	WG3	To Council 65
ENAV21- 14.1.24	Proposed ITU-R M.1371-5 revisions	WG3	Incorporated into ENAV21-14.1.28
ENAV21- 14.1.25	Liaison note to ARM on New Mobile AtoN (MAtoN) Character.	WG3	ARM7
ENAV21- 14.1.26	Draft Model Course L2.8.1 AIS AtoN Operations	WG3	ENG7

Number	OUTPUT PAPERS Title / Author (if required)	Source	Action
ENAV21- 14.1.27	VDES FAQ revision	WG3	To Council 65 To Secretariat
ENAV21- 14.1.28	Liaison note to ITU-R WP5B for the Recommendation ITU-R M.1371 post plenary -rev 1	WG3	To Council early ITU WP5B
ENAV21- 14.1.29	R-REC-M.1371-5-201402-I revised by IALA	WG3	To Council early ITU WP5B
ENAV21- 16.1	Report 21st Session IALA ENAV Committee - ENAV21	IALA Sec	To Council

Working Papers are papers that will remain within the Committee for further review.

Number	WORKING PAPERS Title / Author (if required)	Source	Action
ENAV21- 14.2.1	Workplan revised at ENAV21	VC	To Council 65
ENAV21- 14.2.3	draft e-navigation FAQs revised v2.0 r1 at ENAV21	WG2	To ENAV22
ENAV21- 14.2.5	Draft Guideline on MSPs v13	WG4	To VTS44
ENAV21- 14.2.6	Draft Recommendation on PNT relevant services and systems	WG5	To ENG8
ENAV21- 14.2.7	20170921-1246 WD item182 SPI REC-M.2092	WG3	To Council 65 To IEC To ENAV22

Task		Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
					Green	Yellow	Red	
WG1 – Operations								
1.1.1.	Review and update NAVGUIDE Chapter 4, section 4.5.2 -4.5.5	18		21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Task Completed
1.2.1.	Develop Product Specification on AtoN Information	15	17	21	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	To be considered as a task in 2018-2022 work period
1.3.1.	Revise Guideline 1106	15	16	17	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Task Completed
1.3.2.	S-100 Service Orientation	16	17	21	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Task Completed
4.3.3.	e-Navigation Risk Assessment	16	... ..		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Task Completed
5.1.18.	CSSA draft documentation	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Task completed
5.1.19	e-Navigation infrastructure and governance	15	20	21	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Task Completed
WG2 Implementation								
4.1.1	Gather and present information testbeds (including results) globally	15	On going		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
4.1.2	Maintain a global repository for test-bed results.	15	On going		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
4.1.3	Encourage testbed project managers to provide information and results to IALA for posting at <a href="http://www.e-Navigation.net">www.e-Navigation.net</a> .	After 15	On going		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
4.1.4	Update IALA Guideline 1107 on the reporting of results of e-Navigation testbeds and include guidance on the planning of testbeds.	17	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Completed ENAV18
4.2.1	Evaluate / analyse testbed outcomes (lessons learnt) and provide guidance.	15	ongoing		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
4.3.1	Assist the IALA membership to shape, at a high level, the scope of their testbeds.	15	ongoing		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
4.3.2	Coordinate an IALA Seminar on e-Navigation testbed results in 2016/17.	16	19		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Completed ENAV17

Task	Start	Planned	Revised	Progress Indicator			Status
4.3.4 Develop and maintain e-Navigation Roadmap	17	20		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Completed at ENAV19
<del>4.4.1 Develop and progress an online discussion forum on testbeds.</del>	<del>15</del>	<del>16</del>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Task removed ENAV16
<del>4.4.2 Maintain fora to discuss testbed-related issues.</del>	<del>15</del>	<del>16</del>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Task removed ENAV19
4.5.1 Liaise with IMO on e-Navigation implementation and related regulatory matters	15	ongoing		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
4.5.2 Monitor and analyse the execution of relevant tasks, in particular those in the IMO e-Navigation strategy implementation plan.	15	Ongoing		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
4.5.3 Provide implementation guidance on developments in the e-Navigation domain, in cooperation with other IGO/NGOs.	15	On going		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
4.5.4 Provide guidance and support to the decision-making process related to the implementation of e-Navigation.	15	On going		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
4.5.5 Support IMO with the future development and implementation of e-Navigation and contribute to related tasks.	17	On going		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not due
4.5.6 Monitor ship board developments in order to provide appropriate e-Navigation services.	16	On going		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV16
4.5.7 Inform IALA's Legal Advisory Panel (LAP) of any apparent legal implications of emerging implementation issues.	16	On going		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On-going
4.6.1 Evaluate developments and identify potential impacts on authorities.	16	On going		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On-going
4.6.2 Provide guidance on the implementation of MSPs and associated infrastructure to the IALA membership.	19	20		<input checked="" type="checkbox"/>			On-going
<b>WG3 Telecommunications</b>							
1.4.1 Develop VDES Message Structures	18	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
1.4.2 Assist in the Development of Message Structures for e-Nav	18	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On-going
2.1.1 Update the Marine Radio Communication Plan	20	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete

Task		Start	Planned	Revised	Progress Indicator			Status
2.1.2	Develop Recommendation on VDES	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
2.1.3	Organise a Workshop on VHF Data Exchange System	17	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
2.2.1	Update IALA Recommendations and Guidelines for AIS and VDES	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
2.3.1	Manage Application Specific Message (ASM) catalogue	20	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On-going
2.4.2.	Develop a timeline for submission of VDES documents to ITU with a view to seeking delegated authority to submit from Council	21	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
3.2.1	Liaise with ARM regarding Virtual AtoN	17	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
<b>WG4 e-Nav Services</b>								
1.1.4.	Review and update NAVGUIDE Chapter4, section 4.5.1	18			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
5.1.1	Develop Guideline/ Recommendation on Maritime Service Portfolios	18	21		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	To be completed in 2018-22 work period
5.1.2	MSP1 VTS Information Service (IS) / Operational User Needs	16	16	20	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Deferred to VTS Ctte
<del>5.1.3</del>	<del>MSP2 Navigational Assistance Service (NAS) / Operational User Needs</del>	16	17	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.4</del>	<del>MSP3 Traffic Organisation Service (TOS) / Operational User Needs</del>	16	17	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.5</del>	<del>MSP4 Local Port Service (LPS) / Operational User Needs</del>	16	17	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.6</del>	<del>MSP5 Maritime Safety Information (MSI) Service / Operational User Needs</del>	15	17	21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.7</del>	<del>MSP6 Pilotage Service / Operational User Needs</del>	16	17	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.8</del>	<del>MSP7 Tugs Service / Operational User Needs</del>	16	17	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.9</del>	<del>MSP8 Vessel Shore Reporting / Operational User Needs</del>	16	17	21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn

Task	Start	Planned	Revised	Progress Indicator			Status
<del>5.1.10</del> <del>MSP9 Telemedical Maritime Assistance Service / Operational User Needs</del>	16	17	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.11</del> <del>MSP10 Maritime Assistance Service (MAS) / Operational User Needs</del>	16	17	21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.12</del> <del>MSP11 Nautical Chart Service / Operational User Needs</del>	16	16	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.13</del> <del>MSP12 Nautical Publications Service / Operational User Needs</del>	16	16	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.14</del> <del>MSP13 Ice Navigation Service / Operational User Needs</del>	16	17	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.15</del> <del>MSP14 Meteorological Information Service / Operational User Needs</del>	16	17	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.16</del> <del>MSP15 Real-Time Hydrographic and Environmental Information Services / Operational User Needs</del>	16	16	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
<del>5.1.17</del> <del>MSP16 Search and Rescue (SAR) Service / Operational User Needs</del>	16	17	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
5.1.18. Develop Recommendation on Common Shore based System Architecture	19	20		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
5.1.19. Advice IALA on appropriate ways forward in contributing to establishing an internationally agreed e-navigation infrastructure and its governance	15	19		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
5.1.20 Organise a Workshop on Shore Based Maritime Services	16	19		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
<b>WG5 PNT</b>							
1.1.5. Review and update NAVGUIDE Chapter 4, section 4.8 – 4.9	18			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
3.1.1. eLoran Guideline	15	18	20	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
3.1.2. PNT Product Specification	15	17	21	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Work to continue in 2018-2022.
3.1.3. PNT services & Systems	16	18	21	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Work to continue in 2018-2022.
3.1.4. High accuracy systems	18	20	21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete

Task	Start	Planned	Revised	Progress Indicator			Status
3.1.5. Use of SBAS	17	19	21	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
<del>3.1.7. PNT data processing</del>	<del>18</del>	<del>20</del>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn ENAV18
<del>3.1.8. PNT performance message</del>	<del>18</del>	<del>20</del>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
3.1.9. R-121 update	15	16		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
3.1.10. DGNSS Coverage prediction	17	18	20	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
3.1.11. Updates on PNT developments	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
<del>3.1.12. RTCM/ITU liaison re M823</del>	<del>18</del>	<del>18</del>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn
3.1.13. IMO Liaison	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
3.1.14. WG5 Document maintenance	15	21		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Work to continue in 2018-2022.
3.1.15. Liaison with related bodies	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
3.1.16. R-mode Guideline	18	20	21	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Work to continue in 2018-2022.

*Action Items for Secretariat*

1.	The IALA Secretariat is requested to complete ENAV20 actions 27 and 41.	7
2.	The IALA Secretariat is requested to review and update the DGNSS list of stations on the website.	7
3.	The IALA Secretariat is requested to forward output document ENAV21-14.1.6 to Council for approval.	11
4.	The IALA Secretariat is requested to note and implement liaison note ENAV21-14.1.8.	11
5.	The IALA Secretariat is requested to publish the MRN procedures from ENAV21-14.1.8 on the IALA website.	11
6.	The IALA Secretariat is requested to forward liaison note ENAV21-14.1.6 to Council for approval.	13
7.	The IALA Secretariat is requested to forward liaison note ENAV21-14.1.7 to Council for approval for forwarding to the IHO S-100 WG.	13
8.	The IALA Secretariat is requested to forward the final draft of the chapter on e-navigation for the 2018 Edition of the IALA NAVGUIDE (ENAV21-14.1.1) to the ARM Committee (ARM 7).	13
9.	The IALA Secretariat is requested to generate statistics for the testbeds portion of the IALA website, (similar to those provided in ENAV21-10.5) and for a Google Analytic report (similar to that provided in ENAV 21-10.5.1) for a twelve month period i.e. 1 <sup>st</sup> September 2017 to 31 <sup>st</sup> August 2018 for the next session.	14
10.	To increase the number of page views by referrals (links to IALA provided by other websites), the IALA Secretariat is requested to invite IALA members to link their organisation's sites to the IALA website. If the organisation has an e-navigation content on their site, then that page(s) should link to the e-navigation testbed site of IALA.	14
11.	The IALA Secretariat is requested to contact the manager of each testbed (listed on the testbed webpage) and invite them to link their testbed website to the IALA testbed website.	14
12.	The IALA Secretariat is requested use the contents of liaison note ENAV21-14.1.3 to guide its discussion with Redwire regarding the IALA testbed website.	14
13.	The IALA Secretariat is requested to act on the items listed in section 9 of ENAV20-14.1.2 (IALA communications strategy – promoting the sharing of e-navigation testbed results).	14
14.	The IALA Secretariat is requested to forward liaison note ENAV21-14.1.2 (note to PAP on answers to FAQs) to the PAP.	14
15.	The IALA Secretariat is requested to forward ENAV21-14.1.22 to Council for approval by the IALA Council and in the event of approval, forward it to the ITU WP 5B.	15
16.	The IALA Secretariat is further requested to publish ENAV21-14.1.22 in an appropriate template.	15
17.	The IALA Secretariat is requested to forward ENAV21-14.1.22 to the Chair of the IMO Correspondence Group on Modernisation of GMDSS (Bob Markle in RTCM).	15
18.	The IALA Secretariat is requested to submit an inf paper to IMO NCSR informing them of the updating of the MRCP.	15
19.	The IALA Secretariat is requested to forward ENAV 21-14.1.19, the ITU Liaison note and ENAV21-14.1.20 the Preliminary Draft New Report ITU-R M.[VDES-SAT], to Council for urgent approval by the IALA Council by correspondence and, in the event of approval, forward it to the ITU WP 5B meeting by the deadline of 27 October 2017.	16
20.	The IALA Secretariat is requested to forward ENAV21-14.1.21 liaison note with ENAV21-14.2.7 to IEC to Council for approval by the IALA Council and, in the event of approval, forward it to the IEC WG15 for consideration.	17
21.	The IALA Secretariat is requested to forward ENAV21-11.17 to the next ENAV session.	17
22.	The IALA Secretariat is forward ENAV21-14.1.23 IALA Guideline 1117 VHF Data Exchange System [VDES] Overview to Council and, if approved, post to the website.	18

23.	The IALA Secretariat is requested to forward ENAV21-14.1.22 (updated MRCP) to IALA Council for approval and, if approved, post to the IALA website and forward to ITU WP 5B for information.	18
24.	The IALA Secretariat is requested to forward liaison note ENAV21-14.1.28 (proposed changes to ITU-R M.1371-5) and the Base 1371 document ENAV21-14.1.29 to Council for urgent approval by the IALA Council by correspondence and, in the event of approval, forward it to the ITU WP 5B meeting by the deadline of 27 October 2017.	19
25.	The IALA Secretariat is requested to forward ENAV21-14.1.25 liaison to the ARM committee.	19
26.	The IALA Secretariat is requested to forward ENAV21-14.1.26 (track changes to the IALA AIS AtoN model course) to the ENG committee.	19
27.	The IALA Secretariat is requested to forward ENAV21-14.1.27 (VDES FAQ) to Council for review and if approved post it to the IALA website.	19
28.	The IALA Secretariat is further requested to update the FAQ on the IALA website with Hotlink and add numbers.	19
29.	The Secretariat to forward the draft Guideline on MSPs, ENAV21-14.2.5, to ENAV22.	20
30.	The Secretariat is requested to forward the IMO input paper ENAV21-14.1.15 to the IMO/IHO HGDM to the Council for early approval and if approved on to the HGDM by the due deadline of 6 <sup>th</sup> October.	20
31.	The Secretariat is requested to forward the Liaison note ENAV21-14.1.10 to IHO to the Council for approval and if approved forward on to IHO.	20
32.	The Secretariat is requested to forward the Liaison note ENAV21-14.1.11 to IMPA to the Council for approval and if approved forward on to IMPA.	20
33.	The Secretariat is to forward the Liaison note ENAV21-14.1.12 to WMO to the Council for approval and if approved forward on to WMO.	20
34.	The Secretariat is requested to forward the Liaison note ENAV21-14.1.13 to IMRF to the Council for approval and if approved forward on to IMRF.	20
35.	The Secretariat is requested to forward the Liaison note ENAV21-14.1.14 to IHMA to the Council for approval and if approved forward on to IHMA.	20
36.	The Secretariat is requested to forward the Liaison note ENAV21-14.1.16 to the PAP Committee.	20
37.	The Secretariat is requested to forward the draft Guideline on MSPs, ENAV21-14.2.5, to the VTS Committee.	20
38.	IALA Secretariat is requested to forward ENAV21-14.2.6, Draft Recommendation on PNT relevant services, to the next ENG meeting in the new work period.	21
39.	IALA Secretariat is requested to forward paper ENAV12-14.1.5, Draft Guideline on systems and services for high accuracy positioning and ranging, to Council for approval.	21
40.	IALA Secretariat is requested to include the working paper ENAV21-14.1.18, Draft Guideline on the retransmission of SBAS corrections using MF-Radio beacon and AIS, to Council for approval.	21
41.	The Secretariat is requested to forward the report of ENAV21 (ENAV21-16.1) to the Council, to note.	22

#### *Action Items for Participant*

42.	The ENAV Chair and Vice-Chair are requested to consider input papers ENAV21-7.3, ENAV21-7.4, ENAV21-7.5 when preparing the work plan for the next work period 2018-2022.	11
43.	MCPDF is requested to coordinate future works on the Maritime Connectivity Platform with China.	12
44.	Nick Ward is requested to consider reflecting the progress in the latest AtoN S-201 specification.	12

45.	WG2 is requested to further develop, review and update ENAV21-14.2.3. (Working paper on answers to e-navigation FAQs) intersessionally by correspondence, with a view to finalising this work at the next session in September 2018.	15
46.	The ENAV Chairman is requested to forward Task 1.4.2 to the next work period.	15
47.	ENAV WG3 is requested to continue the work on VDE-SAT intersessionally and, with Council approval, to forward its work to the ITU-R WP 5B.	16
48.	WG3 is requested to continue the work on 11.5.2 Recommendation ITU-R M.2092 intersessionally and, with Council approval, to forward its work to the IEC so that IEC can continue developing the IEC test standard.	17
49.	The Committee Chair and Vice Chair are requested to propose task 4.6.2 as ongoing in the work programme in the next work period.	19
50.	The WG 4 Chair is requested to forward a further version of the draft Guideline on MSPs after intersessional work to ENAV22.	20
51.	The Member from China MSA is requested to advise if China MSA will host an intersessional meeting of ENAV WG3 in early April 2018.	22
52.	Committee participants are requested to advise any corrections / amendments to the draft ENAV21 report, paper ENAV21-16.1 post plenary, by 29 September 2017.	22



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Association Internationale de Signalisation Maritime