



REPORT OF THE 18TH SESSION OF THE
IALA E-NAVIGATION (ENAV)
COMMITTEE

14 to 18 March 2016

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**Report of the 18th Session of the IALA
e-Navigation (ENAV) Committee
14 to 18 March, 2016
Executive Summary**

- The 18th meeting of the ENAV Committee (ENAV18) was held from 14 to 18 March in IALA HQ;
- 123 people from 23 countries and 4 sister organisations, attended the 18th session of the ENAV Committee, of which 17 participants were new and 7 were observers;
- The Committee considered 163 input papers and produced 32 output papers and 29 working papers;
- A road map for 2016 and beyond titled *IALA's activities concerning e-Navigation and related maritime domain developments* was further developed and shared with the other IALA Committees;
- Progress was made on the development of the VDES following the successful workshop in Tokyo with important decisions which will enable industry to commence prototyping VDES equipment;
- Progress was made on the development of product specification S-240 on DGNSS Station Almanac;
- A Joint VTS-ENAV Working Group has been established to coordinate the work of the Committees in relation to the development of e-navigation services;
- Work continues on correspondence with the IMO in relation to MSPs and the VDES;
- The ENAV Committee work plan for the work period 2014-2018 was updated in the light of emerging developments. 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	
1 TD#1 – Data modelling and message systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per current plan except Task 1.2.1 completion delayed 1 session
2 TD#2 - e-Navigation communications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per current plan
3 TD#3 - Shore technical infrastructure	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per current plan except Tasks 3.1.2 and 3.1.5 delayed 1 session
4 TD#4 - e-Navigation test beds	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per current plan except
5 TD#5 - Maritime Service Portfolios	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per current plan except Task 5.1.19 which is on-going

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Report of the 18th Session of the IALA

e-Navigation (ENAV) Committee

GENERAL

The 18th meeting of the ENAV Committee was held from 14 to 18 March 2016 at IALA HQ, with Omar Frits Eriksson as Chairman and Hideki Noguchi as Vice-Chairman. The Secretary for the meeting was Seamus Doyle.

1. OPENING

1.1 Administration & Safety Briefing

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

1.2 Approval of the agenda

The agenda (paper ENAV18-1.2) was adopted.

1.3 Introductions and apologies

Omar Frits Eriksson introduced himself and the WG chairs and welcomed both newcomers and those returning to IALA.

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



The meeting was attended by 123 people from 23 countries and 4 sister organisations, of which 17 participants were new and 7 were observers.

Because of the large number of participants, attendees were accommodated in the plenary room and in room 4 with video and audio links between rooms.

1.4 Programme for the week

Paper ENAV18-1.4 refers. The programme for the week was approved.

2. REVIEW OF ACTION ITEMS FROM ENAV17

Paper ENAV18-2.1 refers. It was noted that the action items from ENAV17 for the IALA Secretariat were complete with the following provisos:

- Output papers ENAV17-14.1.2 and ENAV17-14.2.3 were returned to the Committee for further work.

- The project for IALA to take over ownership and management of e-navigation.net and e-navigation.nl is on-going (Actions 14, 15, 16).

Actions for Committee Participants were referred to the Working Groups.

3. REVIEW OF INPUT PAPERS

3.1 Input papers

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. The Secretariat was requested to post papers earlier to provide adequate opportunity for participants to review them.

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. The use of the IALA Wiki for updating the Navguide was noted.

4. REPORTS FROM OTHER BODIES

4.1 IALA Council

The Committee noted the report of the 61th Session of the IALA Council in Dakar, Senegal, from 8 to 11 December 2015, presented by Michael Card. Paper ENAV18-4.1 refers. Issues relevant to ENAV Committee work were considered.

4.2 PAP30

The Committee noted the report of the 30th Session of the IALA Policy Advisory Panel (PAP30), from 12 to 13 November 2015 in IALA HQ, presented by Michael Card. Paper ENAV18-4.2 refers. Issues relevant to ENAV Committee work were considered. Thanks were expressed to Bob McIntosh for his many years of contribution to IALA in relation to heritage lighthouses.

It was noted that PAP31 is expected to provide mapping of IALA documents to the seven standards and to prepare a draft technical policy document to sit between the strategic vision and the work programme.

It was also noted that PAP31 will consider the task of developing maritime resource names.

4.3 Report on IALA Seminar on Maritime Digital Infrastructure and Testbeds Gothenburg 2015

The Committee noted the report on the IALA Seminar on Maritime Digital Infrastructure and Testbeds in Gothenburg from 30 November to 3 December 2015, presented by Anders Brojde. Paper ENAV18-4.3 refers.

4.4 Report e-Navigation Underway International 2016

The Committee noted the Report on the e-Navigation Underway International 2016 conference in Copenhagen and Oslo from 2 to 4 February 2016 presented by Omar Frits Eriksson. Paper ENAV18-4.4 refers. A similar conference e-Navigation Underway USA and a possible conference e-Navigation Asia Pacific were noted.

4.5 Report of ITU WRC-15 Geneva

Stefan Bober presented a report of ITU WRC-15 in Geneva from 2 to 27 November 2015, paper ENAV18-4.5 refers. Thanks were expressed to Christian Rissone for his support.

4.6 Report on IMO NCSR 3

Michael Card presented a verbal report on IMO NCSR3 from 29 February to 4 March 2016. The submission of an INF paper on VDES prepared after the VDES workshop in Tokyo to IMO MSC96 was noted. Thanks were expressed to Stefan Bober and Christian Rissone for their support.

4.7 Report IALA Workshop on Development of VHF Data Exchange System (VDES)

The Committee noted the Report on the IALA Workshop on the Development of the VHF Data Exchange System (VDES) presented by Hideki Noguchi, Paper ENAV18-4.10 refers.

5. REPORTS FROM RAPPORTEURS

5.1 IALA Bulletin

Hideki Noguchi noted that he will be providing a report on ENAV18 for the IALA Bulletin. He observed that more Bulletin articles regarding e-navigation were required and requested Committee Participants to submit articles for the Bulletin.

5.2 IALA Dictionary

Omar Frits Eriksson noted that the IALA Dictionary is available on the IALA web site and encouraged all Committee participants to use and update it.

The Committee noted the setting up of the Dictionary Working Group (DWG) and the DWG terms of reference, paper ENAV18-5.2.1 refers. The Committee also noted the procedure for adding, amending or removing Dictionary terms using the template in paper ENG18-5.2.2. The addition of acronyms to the Dictionary was noted.

Responding to a request for ENAV Members to assist IALA with translation of Dictionary terms to French and Spanish the following volunteered their services:

French - no volunteers

Spanish - Sebastian Espinar Cerrejo, Puerto del Estado.

5.3 GMDSS

Jean-Charles Cornillou presented an update on GMDSS, paper ENAV18-5.3 refers. He noted that the GMDSS review is at the end of the beginning of the process.

5.4 Report from VTS41

Jon Leon Ervik presented a report on e-Navigation work during VTS41, paper ENAV18-5.4.2 refers.

The Committee noted the Liaison Note from the joint VTS – ENAV meeting on digital interaction between ship and VTS, paper ENAV18-5.4.1 refers. Participants from ENAV were invited to attend, with approximately 10 participants from ENAV planning to attend the VTS Symposium. There are no plans for Committee structure changes prior to 2018.

With regard to the meeting of the Joint VTS – ENAV Working Group, the chair and vice-chair developed a liaison note, ENAV18-14.1.32, to propose possible agenda items for the joint meeting.

Action

The Secretariat is requested forward output paper ENAV18-14.1.32 to the Joint VTS – ENAV Working Group.

5.5 Ship-board developments re e-navigation services

Anders Brödje presented a verbal report on ship-board developments regarding e-navigation services. It was noted that a useful Intelsat report is available at https://issuu.com/futurenavautics/docs/research_whitepaper_maritime_satell?e=9412052/33964244.

5.6 IHO

Edward Hosken presented a report on IHO activities. Paper ENAV18-5.6 refers.

5.7 IALA Comment on input document MSC 96-23-7

Input paper ENAV18-12.17 was considered. An IALA comment on input document IMO MSC 96-23-7 was agreed for submission to MSC96. Paper ENAV18-14.1.11 refers

Action

The Secretariat is requested to submit output paper ENAV18-14.1.11, IALA Comment on input document MSC 96-23-7, to Council for approval by correspondence and submit to IMO MSC96 by 22 March 2016.

6. PRESENTATIONS

Nine presentations were made during the meeting and one was deferred for attention of the relevant Working Group. The presentations form part of the input to the meeting.

6.1 World-Wide Academy (WWA) report

Gerardine Delanoye, IALA WWA Programme Manager, presented the WWA report, input paper ENAV18-6.1 refers. She noted the success of the Academy in reducing the number of states targeted for capacity building for harmonisation of AtoN services and encouraged participants to achieve AtoN manager certification. Paper ENAV18-6.1 refers.

6.2 R&D of VHF transmitter monitoring device via AIS equipment

Paper ENAV18-6.2 refers. Young-Sup Kim from the Korean Coast Guard described the development of a system for automatically notifying shore authorities and VTS of the marine radio frequency being used by individual ships using AIS and including the capability to generate an on-board alert in the event that the ship transceiver is switched off. A practical demonstration was included.

6.3 VTS2016 Symposium

Hairizam Albukhari invited participants to the VTS 2016 Symposium from 8 to 12 August 2016 in Kuala Lumpur. Paper ENAV18-6.3 refers.

6.4. RTCM Annual Assembly 2016

Bill Cairns from American Pilots invited participants to the RTCM Annual Assembly and Conference from 15 to 20 May 2016 in Clearwater, Florida, USA. Papers ENAV18-6.4 and ENAV18-6.4.1 refer.

6.5 IALA file sharing web site and ftp server

Jeffrey van Gils from Netherlands Ministry of Infrastructure and the Environment described a new IALA file sharing web site and ftp server. Paper ENAV18-6.5 refers.

6.6 Cyber Security

Brendan Saunders from NCC Group described maritime cyber threats, areas of vulnerability, potential impact, reported incidents, solutions and guidance in relation to cyber security. The most important step in ensuring cyber security is to ensure staff are aware of cyber security threats through appropriate training so that threats can be identified and reported. Paper ENAV18-6.6 refers.

6.7 Usability Evaluation of e-Navigation MSP 2(NAS)

Yung Yu, Professor of Korea Maritime and Ocean University described an evaluation of the usability of route exchange service using IMO human centered design (HCD) criteria in relation to MSP2, the Navigation Assistance Service (NAS). Paper ENAV18-6.7 refers.

6.8 Identity management and Security

Thomas Christensen from the Danish Maritime Authority (DMA) provided an update on the development of the Maritime Cloud and an overview of various aspects of the Maritime Cloud. Paper ENV18-6.8 refers.

In discussion it was noted that there is a need for development of physical communications infrastructure as well as the digital component to enable digital systems.

6.9 Radar Trials in Singapore for resilient positioning

Takuo Kashiwa from Furuno Electric Co Ltd described the results of trials in Singapore to study various eRacon modulation parameters to evaluate the visual quality and effect of modulation on performance. He described a study of the accuracy and robustness of the positioning accuracy of eRadar/eRacon (both static and dynamic positioning) as compared to DGPS positioning (within +/- 2.5 meters). Paper ENAV18-6.9 refers.

7. REVIEW OF WORK PROGRAMME AND WORKING GROUP EXPECTATIONS

The Committee work plan and Committee work plan task register were updated, papers ENAV18-14.2.1, ENAV18-14.2.2 refer.

A plan for updating of the Navguide was developed, paper ENAV18-14.2.3 refers. Chapter 4 of the Navguide was reviewed by working groups, paper ENAV18-14.2.4 refers. The Secretariat is requested to update the Navguide on the IALA Wiki in accordance with ENAV18-14.2.4. A liaison note to the ARM Committee regarding updating of Chapter 4 of the Navguide was prepared, ENAV18-14.1.1 refers.

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

Action

The Secretariat is requested to forward papers ENAV18-14.2.23 to ENAV19.

The Secretariat is requested to update the Navguide on the IALA Wiki in accordance with ENAV18-14.2.4.

The Secretariat is requested to forward paper ENAV18-14.1.1 to ARM4.

The Secretariat is requested to submit a Word version of Chapter 4 of the Navguide to ENAV19.

8. ESTABLISH WORKING GROUPS

Five working groups were established, as outlined below:

Working Group		Working Group Chair	Working Group Vice Chair
WG 1	Harmonization	Edward Hosken	Peter Hooijmans
WG 2	Implementation	Mahesh Alimchandani	Anders Brødje
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)

9.1 S-200 Status report

Input paper ENAV18-9.9 ‘S-200 Status Report’ was presented by Dr Nick Ward. Further updates were provided by members of WG1, resulting in a revised S-200 Status Report being produced (working paper ENAV18-14.2.10), including references to proposed trials of S-201 within the EfficienSea2 project, and a statement that contributions to the next draft of S-201 (draft 0.0.3) be submitted to Dr Nick Ward by 30 April 2016.

Task 1.2.1 has been updated to show delivery of the first edition of S-201 at ENAV19.

Actions

The IALA Secretariat is requested to forward ENAV18-14.2.10 to ENAV19.

Any ENAV committee members with an interest in contributing to the next draft of S-201 should note that their input is requested to be submitted to Dr Nick Ward by 30 April 2016.

9.2 Develop Product Specification on AtoN Information (Task 1.2.1)

Further to the request in input paper ENAV18-9.1.1 (S-201 AtoN Information Product Specification covering note) the leader of the S-201 task group, Dr Nick Ward, outlined recent proposals for changes to the current draft S-201 product specification. It was agreed that the current version of S-201 should not include a portrayal section, as its initial use is for data transfer between authorities, rather than direct to a display system. More generally, it was acknowledged that portrayal definition is a current harmonisation gap that requires further consideration, particularly with respect to other IALA documentation such as IALA Guideline 1105 on Shore Side Portrayal and V-125 on Use and Presentation of Symbolology at a VTS Centre (including AIS).

Actions

Committee Members are requested to consider the scope of appropriate guidance on harmonised portrayal within IALA (in particular noting Guideline 1105 and V-125), together with proposals for future work in preparation for developing guidance during ENAV19.

The IALA Secretariat is requested to submit the files zipped as ENAV18-14.2.11 on S-201 AtoN Information Product Specification to ENAV19.

9.3 Revise Guideline 1106 (Task 1.3.1)

The current version of IALA Guideline 1106 on Producing an IALA S-200 Series Product Specification was reviewed and edited to remove unnecessary duplication with Guideline 1087 on Procedures for the Management of the IALA Domains under the IHO GI Registry.

Guideline 1087 has also been tidied up.

Actions

The IALA Secretariat is requested to submit paper ENAV18-14.1.16, IALA Guideline 1087 on Procedures for the Management of the IALA Domains under the IHO GI Registry to the IALA Council for approval.

The IALA Secretariat is requested to submit ENAV18-14.1.17, Guideline 1106 on Producing an IALA S-200 Series Product Specification, to the IALA Council for approval.

9.4 Amend S-100 for Service Orientation (Task 1.3.2)

Peter Hooijmans presented the outcome of intercessional work on Sessions Oriented Services (ENAV18-9.14) which stimulated detailed discussion, resulting in agreement of the Committee that the proposal from the intercessional expert group was appropriate and suitably mature to be forwarded to the IHO as a change request.

As part of the process of considering requirements for Session Oriented Services, a draft S-200 product specification was developed for the IVEF service. This is provided to the VTS Committee for further consideration.

Actions

The IALA Secretariat is requested to submit an S-100 change request to the IHO (adddt@iho.int) consisting of the following documents ENAV18-14.1.12 Change proposal S-100, ENAV18-14.1.13 CP Annex A Session Oriented Services, ENAV18-14.1.14 CP Annex B Change Matrix S-100, ENAV18-14.1.15 Annex C exercise output documents.

The IALA Secretariat is requested to forward to the VTS Committee ENAV18-14.1.18 Liaison note to VTS Committee on S-200 Product Specification for IVEF Service, Input paper ENAV18-9.16.2 IALA Draft Product Specification IVEF v0.0.4, Input paper ENAV18-9.16.3 IALA S-100 Gap analysis v0.1.1 20160104, Input paper ENAV18-9.16.4 IALA S-100 Recommendation on closing the gap between S-100 and IVEF v0.1.1 20160104

9.5 Risk assessment and management plan (Task 4.3.3)

Building upon previous work (ENAV18-9.3.1, Draft Risk Assessment Plan), a risk register table was compiled based on items within the draft e-navigation roadmap 2016, identifying mitigation measures.

This is still a draft to promote consideration of how the ENAV Committee should react to risk.

Actions

The IALA Secretariat is requested to forward paper ENAV18-14.2.12, ENAV Committee Risk Register to ENAV19.

Each ENAV Committee working group is requested to map their tasks to the documented risks and identify significant gaps which need addressing, and report back to WG1 during ENAV19.

Each ENAV Committee working group is requested to consider whether the Risk Register is suitably complete. Any additional entries are to be forwarded to WG1 during ENAV19.

9.6 Maritime Resource Names (Task 5.1.19)

The proposal for Maritime Resource Names (ENAV18-9.17) was presented by Jens K Jensen, and further modifications to the draft guideline were made.

The Committee is convinced of the need for the scheme, but recognises that use cases are needed to justify IALA commitment to it. A liaison note to PAP describes the importance of maritime resource names, with supporting uses cases, and asks for consideration of IALA's role in establishing an international scheme.

Task 5.1.19 has been updated to include work on MRNs.

Actions

The IALA Secretariat is requested to submit to PAP output papers ENAV18-14.1.19 - Liaison note on Maritime Resource Names and ENAV18-14.1.20 - Draft Guideline for Maritime Resource Names.

The IALA Secretariat is requested to forward draft Guideline for Maritime Resource Names, ENAV18-14.1.20, to ENAV19.

9.7 Identity Management (Task 5.1.19)

The Committee acknowledged that a global identity management solution is a prerequisite for efficient digitalisation of the maritime domain using contemporary technology. It was further acknowledged that a solution for this will be able to utilise existing standards for authentication. Two standards have been identified: a public key infrastructure based on X.509 (primarily for use in machine to machine communication), and a federated single-sign-on (SSO) mechanism based on OpenID Connect supporting the use of a single password across maritime systems for human users.

On behalf of the partners in the Maritime Cloud Development Forum, DMA will input a paper to ENAV 19 that will further explain the need for identity management, and outline a solution in greater detail.

The Committee noted paper ENAV18-11.10, Integrity modelling and authentication for VDES, as an example of the need for identity management.

Task 5.1.19 has been updated to include work on identity management.

Actions

Thomas Christensen is requested to produce an input paper to ENAV19 outlining requirements and potential solutions to identity management within the Maritime Cloud.

9.8 Navguide revision

The Committee reviewed sections within chapter 4 of the Navguide as assigned to it by the ENAV Committee Vice Chair. The existing text is largely correct but incomplete. Changes to existing text were proposed, plus proposed additional sections on the Maritime Cloud, S-200 domain management and guidance on S-200 product specification development.

Action

Committee members are requested to review Chapter 4 of the Navguide and submit proposals for amendments to ENAV19.

Committee members are requested to submit comments on the proposed restructuring of the Navguide Chapter 4 to ENAV19.

9.9 Display of Sector Lights

The Committee agreed with the concerns raised by the ARM Committee in ENAV18-9.11, Liaison note to ENAV on portrayal of sector lights. A liaison note to PAP was prepared describing the need for AtoN authorities to appropriately describe what needs to be portrayed (eg length of light sectors lines, display at different scale of ENC (ScaMin)), to support portrayal characteristics already defined within IHO standards. A response to ARM was also provided.

Actions

The IALA Secretariat is requested to submit liaison note on ENAV18-14.1.21, portrayal of sector lights, to the PAP.

The IALA Secretariat is requested to submit liaison note ENAV18-14.1.22, Response on sector lights, to the ARM Committee.

9.10 Use of Pictograms

With respect to ENAV18-9.10 (Liaison note to IALA members on use of Pictogram), WG1 asked Committee Members to comment on their experience of the use of pictograms. Without exception, nobody has any experience of their use, with many questioning their intended purpose. This is reported back to ARM in a liaison note.

Actions

The IALA Secretariat is requested to submit liaison note ENAV18-14.1.23, Use of Pictograms to the ARM Committee.

9.11 Machine to Machine (M2M) interfaces

Consideration of input papers ENAV18-9.6 and ENAV18-9.19 (response from VTS Committee) resulted in advice that IALA should, where possible, support the use of existing international standards for interface protocols between hardware. Acknowledging the desire of the VTS Committee for a workshop, it is suggested that this is discussed at the proposed joint VTS/ENAV meeting prior to the 2016 VTS Symposium.

Actions

The IALA Secretariat is requested to forward the proposal to discuss M2M interfaces at the Joint VTS/ENAV Working Group meeting prior to the 2016 VTS Symposium.

9.12 ACCSEAS Legacy

Considering ENAV18.10.1, ENAV18.10.2, Annex C -Plan for Sustainable Work after ACCSEAS Project ends, the following tasks were considered relevant for continued consideration within the Committee:

- i. FW-35 re: “ACCSEAS e-Navigation Architecture Report” ENAV18-10.8.2 to be considered at ENAV19.
- ii. FW-59 re: Service Registry is included within task 5.1.19 relating to the development of the Maritime Cloud.
- iii. FW-60 re: identity management is now included within task 5.1.19.

Actions

Committee Members are requested to review the relevance of the “ACCSEAS e-Navigation Architecture Report” with respect to planned architectures such as CSSA, at ENAV19.

The Secretariat is requested to forward ENAV18-10.8.2 to ENAV19.

10. WORKING GROUP 2 – IMPLEMENTATION (WG2)

10.1 Gather and present information on testbeds (including results) globally (Task 4.1.1)

The Committee considered information on testbeds provided by:

10.1.1 The ACCSEAS project (documents ENAV18-10.8.1-6, ENAV18-10.9.1-10.9.10, ENAV18-10.10, ENAV18-10.11, 10.13)

The Committee considered various future work items identified in ENAV18-10.11 (Future Work items for the ENAV Committee - liaison note related to the ACCSEAS Legacy Report). It identified:

- a. Future tasks to be included in the work plan 2014-2018 of the ENAV Committee;
- b. Tasks that could potentially be included in the work plans of the VTS and ARM Committees.

Due to time constraints, an update of the ENAV Committee’s work plan and task register (based on the above) will be done at ENAV19.

- a. The Working Group Chairs of the ENAV Committees are requested to consider the tasks identified in the annex of ENAV18-14.1.3 for inclusion in their work plans; and
- b. A liaison note to inform the VTS and ARM Committees of future work potentially for their committees was prepared (ENAV18-14.1.3 refers).

10.1.2 FAROS project (document ENAV18-10.6)

The Committee was of the view that as the FAROS project had focused on quantification of Human Factors associated with accidents, the information would be more relevant to the work of IMO on e-navigation. It was also felt that the work could be of interest to the VTS and ARM Committees. A liaison note was prepared in this regard (ENAV18-14.1.4 refers). As the report had been sent to Mahesh Alimchandani, he was requested to contact the project managers and suggest they forward the report to the IMO Secretariat. It was also felt that the project information be posted on e-navigation.net.

10.1.3 List of Projects and testbeds relevant to EfficienSea2.0 (document ENAV18-10.7)

The Committee noted with appreciation input paper ENAV18-10.7 submitted by Dr Nick Ward. This information will be posted on e-navigation.net.

Actions

ENAV Committee Working Group Chairs are requested to consider the content of the annex in the liaison note Future Work items identified in the ACCSEAS Legacy Report (ENAV18-14.1.3 refers) and consider identified work items to be included in their work programs.

The IALA Secretariat is requested to forward liaison note Future Work items identified in the ACCSEAS Legacy Report (ENAV18-14.1.3 refers) to both the VTS and the ARM Committees for their information and action as required.

Mahesh Alimchandani is requested to contact the project managers of the FAROS project and suggest that their report (ENAV18-10.6 refers) be provided to the IMO Secretariat.

The IALA Secretariat is requested to forward liaison note on the FAROS project Final Report (ENAV18-14.1.4 refers) including the FAROS report (ENAV18-10.6) to both VTS and ARM Committees for their information and action as required.

Mahesh Alimchandani is requested to contact the project managers of FAROS and request information in ENAV18-10.6 be provided in the IALA testbed reporting template for publication on e-navigation.net.

Mahesh Alimchandani is requested to arrange to publish the various project testbeds listed in ENAV18-10.7 (List of Projects and testbeds relevant to EfficienSea2.0) on e-navigation.net.

10.2 Maintain a global repository for testbed results (Task 4.1.2)

The Committee noted that IALA was in the process of establishing a new website. This website would include existing e-Navigation testbed websites (such as e-navigation.net and e-navigation.nl) and allow the IALA Secretariat to manage testbed information on the new website as required. It was noted that the new website would be available in the coming months.

Actions

The IALA Secretariat is requested to take over, as a matter of urgency, ownership and management of www.e-navigation.net and www.e-navigation.nl. The IALA Secretariat is requested to ensure that the new website includes the functionalities listed in section 10.2 of the ENAV17 report.

Marie-Helene Grillet, the IALA Technical Manager, is requested to consider ENAV16-10.2 (A discussion paper on effective communication of information concerning testbeds) when establishing a discussion forum on the IALA website.

The IALA Secretariat is requested to advise the ENAV Committee on the IALA policy and procedure to post information to the new IALA website.

10.3 Update IALA Guideline 1107 on the reporting of results of e-navigation testbeds (Task 4.1.4)

The Committee considered ENAV18-10.4 (Draft IALA Guideline on planning and reporting of e-Navigation testbeds). The Committee also considered ENAV18-10.4.1 and ENAV18-10.4.2 (comments from Dr Alan Grant).

A final draft guideline was prepared. Output paper ENAV18-14.1.2 refers (Draft IALA Guideline on planning and reporting of e-Navigation testbeds). A discussion took place on the need to develop a supporting recommendation for this Guideline (noting the new hierarchy of IALA documentation).

Actions

The IALA Secretariat is requested to submit ENAV18-14.1.2 (Draft IALA Guideline on planning and reporting of e-Navigation testbeds) to the IALA Council for approval.

If approved by Council the Secretariat is requested to forward ENAV18-14.1.2 to the IMO Secretariat.

Mahesh Alimchandani is requested to draft a liaison note to the IMO Secretariat to accompany ENAV18-14.1.2 (Draft IALA Guideline on planning and reporting of e-Navigation testbeds) to IMO.

Mahesh Alimchandani is requested to consider if a new IALA Recommendation is required to support ENAV18-14.1.2 (Draft IALA Guideline on planning and reporting of e-Navigation testbeds) so that the guideline can comply with the new hierarchy of IALA documentation.

10.4 Jointly (with WG 1) develop an IALA Seminar to include e-navigation testbeds in 2016/17 (Task 4.3.2)

In December 2015, an IALA Seminar on Maritime Digital Infrastructure and e-Navigation testbeds was conducted in Gothenburg, Sweden. This task has now been completed.

The Seminar identified nine conclusions. As some of these conclusions are of a strategic nature and involve other international organisations, they have been forwarded to the IALA Policy Advisory Panel (PAP), by the Deputy Secretary General Michael Card, for consideration.

10.5 Revise and maintain e-Navigation roadmap (Task 4.3.4)

Until recently, the ENAV Committee maintained a road map for e-navigation. This consisted of key milestones at international organisations such as IMO and ITU, presented on a couple of Microsoft PowerPoint slides.

The Committee considered input papers ENAV18-10.5, ENAV18-5.1 and ENAV18-5.2. The format of the road map has now been changed (presented in Microsoft Word format). The draft e-Navigation Road Map (ENAV18-14.1.24) provides a pan-IALA perspective on IALA's activities concerning e-navigation and related maritime domain developments.

This document is a high-level representation of how overarching concepts and strategies such as the former IMO's concept of a Sustainable Maritime Transportation System (SMTS), IMO's e-Navigation strategy and its implementation plan and IHO's Universal Hydrographic Data Model (UHDM; S-100) can be applied in a coordinated manner to contribute to IALA's vision.

The draft road map is to be sent to the VTS, ARM and ENG Committees, and PAP. The document will be accompanied by a cover note requesting substantial feedback and/or amendments from the Committees in time for ENAV19. PAP will be requested to use the road map to support the development of the IALA e-Navigation policy. The Committee aims to finalise the road map at ENAV19.

Actions

The IALA Secretariat is requested to forward output paper ENAV18-14.1.24 (Liaison note including the draft e-navigation road map) and ENAV18-14.1.30 to the VTS, ARM and ENG Committees for feedback.

The IALA Secretariat is requested to forward output paper ENAV18-14.1.24 (Liaison note including the draft e-navigation road map) and ENAV18-14.1.30 to PAP31 to support the development of the IALA e-Navigation policy.

ENAV Committee members are requested to review and comment on the content of ENAV18-14.1.30 in time for ENAV19 and send comments to the Chair and Vice Chair of WG2.

The IALA Secretariat is requested to forward the forward output paper ENAV18-14.1.30 to ENAV19.

10.6 Review and update of the IALA NAVGUIDE

Working Group 2 reviewed the assigned sections of chapter 4 of the NAVGUIDE. It became apparent that the structure of the e-navigation content in the NAVGUIDE was based on a legacy vision and scope of e-navigation. Furthermore, the chapter was cast along the lines of working groups of the ENAV Committee. The structure is not relevant to the current situation (which has been well defined in the draft IALA e-Navigation road map (ENAV18-14.1.30).

It is proposed that the e-navigation material in the NAVGUIDE be restructured in such a way that it is aligned with IALA policy on e-navigation. Until then, it is proposed that chapter 4 of the current NAVGUIDE will be aligned with ENAV18-14.1.30, IALA's activities concerning e-navigation and related maritime domain developments. The latter work will be continued at ENAV19.

Actions

The Chair of ENAV Committee is requested to inform the Chair of ARM Committee and the PAP of the need to restructure the NAVGUIDE in such a way that it is aligned with "IALA's activities concerning e-Navigation

and related maritime domain developments” (ENAV18-14.1.30 refers) in the short term, and with the IALA policy on e-Navigation under development in the long run.

The Secretariat is requested to forward ENAV18-14.1.1 to the ARM Committee.

Members of the Committee are invited to provide proposals to the Vice Chair of ENAV Committee in time for ENAV19 for restructuring chapter 4 of the current NAVGUIDE in alignment with “IALA’s activities concerning e-navigation and related maritime domain developments” (ENAV18-14.1.30 refers).

10.7 Review and update of the ENAV Committee-Work Plan 2014-2018

The Committee reviewed and updated the section of the Work Plan under TD#4-e-navigation testbeds.

Due to time constraints, the Committee task register will be updated at ENAV19.

11. WORKING GROUPS 3 - TELECOMMUNICATIONS (WG3)

11.1 Develop VDES Message Structures (Task 1.4.1)

11.2 Assist in the Development of Message Structures for E-Navigation (Task 1.4.2)

No input papers were received. Task 1.4.1 and 1.4.2 are very similar because the message structures defined for e-navigation by WG1 will need to be translated into VDES over-the-air message structures. Discussion between WG3 and WG1 began this week, with Dr. Lee, from Korea, offering to be the liaison between WG1 and WG3. With Dr. Lee’s support the Committee hopes to further progress this work at ENAV19.

11.3 Update the MRCP (Task 2.1.1)

Work will commence on this task during ENAV20.

11.4 Develop Recommendation on VDES, ITU-R M.2092 (Task 2.1.2)

Input papers: ENAV18-11.1.1, ENAV18-11.1.2, ENAV18-11.21, ENAV18-11.2, and ENAV18-11.16.1, ENAV18-11.16.2 refer.

The working group was able to reach conclusion on the following items:

- Defined the ASM transmission mask;
- Defined the VDE-TER and ASM training sequence with adequate robustness;
- Harmonised Channel Sounding inputs and will create a Channel Model for next meeting.

The current standard allows for the definition of 16 different modulation schemes and the Committee has had several inputs regarding modulations. This flexibility has somewhat paralysed the Committee because each modulation has its merits.

The Committee decided to define a base model for the VDES “box”, e.g. Class 1, which will use three defined and accepted coding schemes and the Committee will no longer accept suggestions for different modulation schemes. However, the Committee will leave open for future development different classes of boxes where new modulations can be defined.

Three liaison notes to ITU were generated. The first is requesting that ITU keep ITU-R M.2092 at Rev 0 for the standard two years, rather than require us to remove the VDE-SAT aspects now. The second provides ITU some input on the Report being prepared for WRC-19 showing the studies planned. The third requests that ITU continue to provide a rapporteur to IALA.

The Committee realises that the band is in use around the world (eg Japan) and the study will include investigation of the interference potential of the frequencies.

Action

The IALA Secretariat is requested to forward the liaison notes, ENAV18-14.1.25, ENAV18-14.1.26 and ENAV18-14.1.31 to Council for approval by correspondence.

In the event of approval, forward to ENAV18-14.1.25, ENAV18-14.1.26 and ENAV18-14.1.31 ITU for the WP5B meeting in May by 29 April 2016.

11.5 Organise a Workshop on VHF Data Exchange System (Task 2.1.3)

Complete. The Workshop on Development of VHF Data Exchange System (VDES) was held during the week of February 15, 2016. The workshop produced seven conclusions and three output documents. The Committee expressed thanks to the Japan Coast Guard and the Japan Aids to Navigation Authority for their splendid support of the workshop. Paper ENAV18-4.10 refers.

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

11.6.1 VDES Documentation

Input papers: ENAV18-11.3, ENAV18-11.4, ENAV18-11.4.1, ENAV 18-11.5, ENAV 18-11.6, ENAV 18-11.7, ENAV 18-11.8, ENAV 18-11.9.1, ENAV 18-11.9.2, ENAV 18-11.10, ENAV 18-11.12, ENAV 18-11.12 and ENAV 18-11.14 refer.

11.6.1.1 Liaison note from ENG to ENAV on VDES User Requirements

Input reviewed – no further feedback has been received from national administrations on the draft guidelines on VDES

11.6.1.2 Draft liaison note to IMO from Japan asking for the development of Performance Standards on VDES

The liaison note was reviewed and some editorial changes were made. The Annexes (ENAV18-11.4.1) to this document were also reviewed and accepted. The Committee endorsed the intention of ENAV18-14.1.29 in principal and the Member from Japan undertook to forward the paper to the IALA Council.

Action

Hideki Noguchi is requested to forward output paper ENAV18-14.1.29 incorporating the annex from ENAV18-14.1.33 to the IALA Council.

11.6.1.3 Draft FAQs on VDES

Not reviewed at this time. Steve Burrows agreed to take this input away, fill it in and submit it as an input for review at ENAV19.

Action

Steve Burrows is requested to fill in data in the draft FAQ's on the VDES, ENAV18-11.5.

11.6.1.4 Draft IALA Guideline on VDES User Requirements

This document was not reviewed in detail by the Committee. However the input from the SBAS experts (ENAV18-11.14) was reviewed and the relevant content incorporated into the draft guideline working paper.

11.6.1.5 Draft Guideline on VDES Technical Annex

Inputs from Ernie Battie and Finland were received and reviewed. Ernie's input was incorporated into the draft guideline body text and the Finnish input on integrity monitoring and authentication was added as an annex. The existing proposal on integrity was moved from the main document and also included as an annex to the document.

11.6.1.6 Structure of IALA Documentation on VDES

An input was received from Finland which suggests a possible approach that could be used when considering how the VDES documentation hierarchy be established. The suggestion was that the documentation be split into two parts, one part describing the actual communications technology and another part for describing the applications using the communication technology. The input was supported by an example (ENAV18-11.9.2) which took the draft IALA guideline on VDES user requirements and changed its focus to consider the related applications of VDES.

The group discussed this approach and possible methods of establishing a hierarchy of documents. It was decided that a review of existing AIS documentation would be a good idea, to take into account the existing hierarchy and to follow similar lines, where appropriate.

It was also suggested that the new documents should be built starting with the existing AIS documents, rather than trying to fit the AIS information into a VDES framework. This would ensure that none of the AIS information was lost in the process and also that the VDES documentation would start off as strong as AIS and grow from there.

This document should be kept as a working document so that its content can be included at a later date.

[11.6.1.7 Map to Compare VDES with AIS documentation.](#)

A further document was developed by Jeffrey Van Gils from the Netherlands providing an excellent overview of all of the documents that have been generated by IALA in support of AIS.

[11.6.1.8 INF Paper on VDES for MSC96](#)

This paper was reviewed and the final paragraph amended to provide a stronger link to the MSP driver for VDES. This is provided as an output for WG3 review.

[11.6.1.9 Proposal on Facilitation of VDES Testbeds](#)

This paper was presented to the group by Jens Jenson, and outlines the problem that will be experienced by current and potential testbeds that will use the newly allocated channels by WRC15. The issue is that many of these channels are used for voice communication and will interfere with the testbeds. It is proposed that WG2 design a form which can be used by potential testbeds to contact the local telecommunications regulator in the countries involved to advise them of the tests and ask that voice traffic be restricted for the duration of the test. WG3 will assist in the form design.

[11.6.2 AIS](#)

Input papers: ENAV18-11.1, ENAV18-11.12 and ENAV18-11.15 refers.

[11.6.2.1 Guideline on AIS](#)

This document was comprehensively reviewed and input from Ernie Battie and Takamasa Yauchi included. It is now considered mature enough for review by the Committee prior to being sent forward as an output from the Committee.

IALA Secretariat should note that publication of this document will drive the withdrawal of “Guideline 1059 On the Comparison of AIS Stations”.

[11.6.2.2 FATDMA Considerations effecting A-124](#)

The USA have discovered an issue with the current FATDMA reservation scheme as described in IALA A124 Annex 14. They have proposed a change to the global slot map to account for semaphore use at base stations, however the issue is being discussed with the experts to determine if the problem is a systematic one, or whether it is due to the manner in which the USA is reserving the slots.

[11.6.2.3 Transmission of SBAS Corrections over AIS](#)

This document was reviewed and will be placed in the working documents for possible future inclusion in the guidelines. The Committee recommends that WG5 prepare a liaison statement to ITU to amend ITU-R M.823, requesting station ID's for SBAS stations.

[Action](#)

The Chair of ENAV WG5 is requested to consider preparation of a liaison statement to ITU to amend ITU-R M.823, requesting station ID's for SBAS stations.

[11.6.2.4 Input from IEC TC80 on clarifications to 1371-5](#)

This document was reviewed and the first two points regarding the renaming of the LimitedBase Station as AIS ASM Coast Station (AACS), and the exclusion of semaphore mode for SAR AIS units, were accepted. The

third item considers the definition of IFMO using message 26 and will require more detailed analysis before a form of words can be crafted to accurately describe the functioning of the spare / padding bits. The draft Guideline includes the content of Guideline 1059.

Action

The IALA Secretariat is requested to forward the Output Paper, ENAV18-14.1.27 to Council for approval and subsequent publication.

The IALA Secretariat is requested to withdraw Guideline 1059.

11.6.3 Other

11.6.3.1 ENAV18 IALA Draft Roadmap

The WG3 chair met with WG2 and reviewed this document and provided input.

11.6.3.2 IALA Navguide Chapter 4

Reviewed and updated by the group, Steve Burrows volunteered to provide further updates intersessionally.

Action

Steve Burrows is requested to provide further updates for the Navguide Chapter 4.

11.6.3.3 VDES support for R-Mode

The chair of WG5 presented a mind map showing how VDES might support R-Mode. The group provided input and in fact see this as a very important step for VDES support at IMO. IMO have stated a requirement for a terrestrial back-up to GNSS, and VDES support for R-Mode would satisfy this requirement.

11.7 Manage regional ASM web catalogue (Task 2.3.1)

The current ASM Register is monitored on a continuous basis and its current structure is sufficient until the completion of tasks 1.4.1 and 1.4.2.

11.8 Monitor developments in GMDSS and liaise with IMO to coordinate the developments for communication in GMDSS and e-Navigation (Task 2.4.1)

No input papers were received. This work was not progressed.

11.9 Liaise with ARM re Virtual AtoN (Task 3.2.1)

No input papers were received. This work was not progressed.

This task should be closed as a liaison was created to the ARM Committee. The ARM Committee has responded that they will not review until their workshop in 2016.

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

12.1 Liaison note to IALA members on Use of Pictogram

Input paper ENAV18-9.10 (ARM3-11.1.2) refers. WG4 discussed the paper and it shares the same view as WG3.

12.2 20160210 Letter from IHB IALA-ENAV MSP final

Input paper ENAV18-12.1 refers. The IHO has defined the MSPs on hydrographic information which are under their domain. It has been noted that better harmonisation between organisations is needed especially between IALA, IHO and the WMO as many of their responsibilities are included in different MSPs. Both IHO and WMO have been invited to the upcoming IALA workshop in Lisbon. The workshop will also define responsible organisations for developing technical specifications. It was also agreed that the

preliminary IMO table of MSPs might be premature. The development of an IALA guideline will take this into account.

It was noted that in connection with the development of S-124, IHO realised that MSP5 could be divided into two areas:

- Navigation warning are the responsibility of IHO; and
- Weather warnings are the responsibility WMO.

A liaison note to IHO, ENAV18-14.1.5, was drafted indicating that close co-operation would be welcome.

Action

The Secretariat is requested to submit paper ENAV18-14.1.5 to Council for approval and subsequently to IHO if approved.

12.3 MSP11 Nautical Charts Service / Operational User Requirements (Task 5.1.12)

Input paper ENAV18-12.2 refers. The description of the MSP has been started and further progress is needed. This may be part of the IALA Guideline on MSP.

Input paper ENAV18-12.11 related to the MSP attributes has been noted and should be forwarded to the responsible organisations such as IHO and WMO in order to clarify further work that needs to be done based on the proposed attributes.

12.4 MSP15 Real-Time Hydrographic and Environmental Information Services / Operational User Requirements (Task 5.1.16)

Input paper ENAV18-12.3 refers. The description of the MSP has been started and further progress is needed. This may be part of the IALA Guideline on MSP.

Input paper ENAV18-12.10 refers. The description of the MSP has been started and further progress is needed. This may be part of the IALA Guideline on MSP.

12.5 MSP12 Nautical Publication Service / Operational User Requirements (Task 5.1.13)

Input paper ENAV18-12.4 refers. The description of the MSP has been started and further progress is needed. This may be part of the IALA Guideline on MSP.

12.6 MSP13 Ice Navigation Service / Operational User Requirements (Task 5.1.14)

Input paper ENAV18-12.5 refers. The description of the MSP has been started and further progress is needed. This may be part of the IALA Guideline on MSP.

12.7 MSP8 Vessel Shore Reporting Service / Operational User Requirements (Task 5.1.9)

Input paper ENAV18-12.6 refers. The description of the MSP has been started and further progress is needed. This may be part of the IALA Guideline on MSP.

12.8 MSP5 Maritime Safety Information Service / Operational User Requirements (Task 5.1.6)

Input paper ENAV18-12.7 refers. The description of the MSP has been started and further progress is needed. This may be part of the IALA Guideline on MSP.

12.9 Maritime Service Portfolios (MSP) descriptions

Input paper ENAV18-12.8 refers. The description of the MSP has been started and further progress is needed. This may be part of the IALA Guideline on MSP.

12.10 Progress on e-navigation Services including List of Relevant Organisations for MSPs ENAV17

Input paper ENAV18-12.9 refers. The Committee has further progressed the IALA Guideline on MSPs and the list of relevant Organisations and service providers will be updated after the IALA Workshop on MSP in Lisbon in May 2016.

12.11 Automated Ship Reporting

Input paper ENAV18-12.12 refers. A presentation about the VSRMS was made, outlining the data sharing App in ship to shore reporting architecture as well as the project road map. This ongoing project has been noted.

Action

Yung Yu from Korea is requested to provide additional attributes to MSP8 for ENAV19.

12.12 S-412 Weather Overlay Status update IALA v2016

Input paper ENAV18-12.13.1 refers. WG4 has taken note and appreciates the development of S-412. WG4 has looked at the attributes, and does not have any further comment at this time, other than the provision to allow scalability of symbology.

12.13 Designing a New Way to Deliver Marine Weather Data

Input paper ENAV18-12.13.2 refers. The Committee noted the information provided in the document and recognises the need for better coordination and harmonisation among international organisations with respect to the development and implementation of Maritime Service Portfolios (MSPs). The Committee also recognised that a formal coordination process should be established among the main international organisations to avoid duplication of efforts and ensure that the content of MSPs meets mariners' requirements. This coordination process will also benefit national authorities responsible of the provision of specific information.

In that regard, IALA is organising a workshop on MSPs in Lisbon, from May 24 to 26, 2016, to discuss this issue with members of other organisations and present works carried out to date.

12.14 Cyber threats

Input paper ENAV18-12.14.1, ENAV18-12.14.2, ENAV18-12.14.3, ENAV18-12.14.4, ENAV18-12.14.5 refer. All documents about cyber threats were noted by the Committee.

12.15 Draft IALA Guidelines on MSPs

Input paper ENAV18-12.15 refers. The draft IALA Guideline on MSPs has been further developed. The structure of the document and the introduction section was progressed. The content of the information services will be a subject for the workshop and the results will be taken into account in further development of the Guideline.

Action

The secretariat is requested to forward EAV18-14.2.5 to the Lisbon workshop.

12.16 MSC96-new input 6 (MSPs)-05feb-v15

Input paper ENAV18-12.16 refers. The Committee noted the document from IMO MSC96 work program on "New planned output on a MSC Resolution on harmonized Maritime Service Portfolios"

12.17 Presentation about STM; Maritime Cloud; EfficienSea

A presentation was made on the maritime cloud and WG4 noted the ongoing work in these projects.

13. WORKING GROUP 5 – PNT (WG5)

The Committee considered a number of input documents, as outlined in the sections below. The WG also reviewed the Navguide and provided comments to the Committee Vice Chair.

13.1 Develop Guidelines on eLoran, including data formats and ASF (Task 3.1.1)

Input papers ENAV18-13.1, ENAV18-13.2, ENAV18-13.11.1 and ENAV18-13.11.2 were considered. The draft Guideline developed by the task group was considered and refined into a final draft. The draft

Recommendation and Guideline have been considered by the WG and are ready for approval, however these will be held as a working documents until ENAV19 to enable the Committee time to review them.

Actions

IALA Secretariat is requested to include the working papers ENAV18-14.2.13 – Draft eLoran recommendation on eLoran Service Provision and ENAV18-14.2.6 – Draft Guideline on eLoran service provision to ENAV19.

Committee members are requested to review ENAV18-14.2.13 – Draft Recommendation on eLoran service provision and ENAV18-14.2.6 – Draft Guideline on eLoran service provision and to provide any comments to the WG5 Chair prior to ENAV19.

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

Input papers ENAV18-13.18.1, ENAV18-13.18.2, ENAV18-13.18.3, ENAV18-13.18.4 and ENAV18-13.19 were considered.

The Committee received a presentation from Dr Nick Ward on a few editorial changes needed to the S-240 Product Specification. These were reviewed and approved by the Committee, leading to a revised version of the S-240 product specification which is recommended to be updated to Draft status and posted to the website. The revised version is available with and without track changes as output documents ENAV18-14.1.8 and ENAV18-14.1.9 respectively, along with a comment document which summarises the changes (output paper ENAV18-14.1.10)

Yonghun Cho provided an update on the graphical implementation of the XML data on Google Earth, which was informative and lead to a discussion on further information exchange between neighbouring DGPS service providers.

It was noted that more could be done to inform neighbouring providers of routine maintenance periods and it was suggested that as the IALA Secretariat has recently updated the contact points for each provider, it seeks clarification as to whether those contacts would be happy to share their details with other service providers. If they are, then a simple list of contact details could then be stored in a restricted area of the IALA website.

Nick Ward was requested to liaise with the IALA Secretariat to capture the requirement in the new website design, which has been completed. Yonghun Cho is to contact the DGPS contact points and seek their permission to add their details to a list in this manner, and invite them to provide a generic email address if that is preferred.

eLoran product specifications were not discussed in this meeting and as such the work item will need to be extended to ENAV19.

Actions

The IALA Secretariat is requested to inform the S-200 AtoN Field Manager (Yonghun Cho) that the Committee considers that the amended S-240 product specification (ENAV18-14.1.8, ENAV18-14.1.9 and ENAV18-14.1.10) should be updated to draft status and uploaded to the website.

The IALA Secretariat is requested to seek clarification from the DGNSS beacon service providers as to whether they consent to their contact details being contained in a list, held in a restricted area of the IALA website, through with neighboring service providers can make contact regarding their planned maintenance periods.

Nick Ward is requested to liaise with the IALA Secretariat to capture the requirement in the new website design, which has been completed.

Yonghun Cho is requested to contact the DGPS contact points and seek their permission to add their details to a list in this manner, and invite them to provide a generic email address if that is preferred.

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

No work was carried out under this item during this meeting. The draft developed at ENAV16 (ENAV16-14.2.41, renamed to become working document ENAV18-14.2.14) will be reviewed at ENAV19.

Actions

IALA Secretariat is requested to forward ENAV18-14.2.14 – Draft Recommendation on PNT relevant services to ENAV19.

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

Input paper ENAV18-13.14.1 and ENAV18-13.14.2 were considered. The draft Guideline was started during this meeting and will be developed over the next two sessions. A change of title is requested, so that the amended title reads “*Guideline on systems for high accuracy positioning services in critical areas*”. This is requested to enable the Guideline to be more generic and applicable to a wider area.

Actions

IALA Secretariat is requested to forward “ENAV18-14.2.15 – Draft Guideline on systems for high accuracy positioning services in critical areas, to ENAV19.

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

Input documents ENAV18-13.6, ENAV18-13.16 and ENAV18-13.20 were considered by WG5 and WG3, where required. The Committee considered the provision of SBAS data over the AIS infrastructure and noted the approach as using existing AIS messages, although further work may be needed if the source of the correction data is required.

These technical approaches were used to inform the draft Guideline which remains under development.

The use of SBAS in maritime is still being developed and therefore it may not be possible to complete this work in the allocated time. Therefore an extension of one meeting is planned. In order to minimise the chance of overrun, Committee members interested in contributing to the development of this work, are invited to contact the Task leader, Prof. Manuel Lopez (Manuel.LOPEZMARTINEZ@gsa.europa.eu).

Actions

IALA Secretariat is requested to include the working paper ENAV18-14.2 Draft SBAS Guideline as an input paper to ENAV19.

Committee members are requested to provide Prof. Manuel Lopez (Manuel.LOPEZMARTINEZ@gsa.europa.eu) with their contact details should they wish to contribute to the development of the SBAS Guideline between meetings.

13.6 Techniques used for on-board PNT data processing (Task 3.1.7)

Input papers ENAV18-13.7, ENAV18-13.17.1 and ENAV18-13.17.2 were considered. The Committee considered the scope of this work in relation to on-going developments within the IMO. At NCSR3 a Correspondence Group was formed to complete the IMO Guidelines for shipborne position, navigation and timing (Data processing) unit. It was felt that the anticipated work of the IALA Guideline would be better placed within the IMO Guideline and that WG5 should support the development of that document.

Where appropriate, and within IALA’s remit, WG5 could provide comment for Council approval, which could be provided to the IMO Correspondence Group. The WG5 Chair will liaise with the ENAV Chair and IALA Deputy Secretary-General to clarify the way forward.

As this work has been overtaken by external events it is proposed to withdraw this work item from the ENAV task list.

Actions

WG5 Chair is requested to liaise with the ENAV Chair and IALA Deputy Secretary-General to clarify how the Committee can contribute to the IMO Correspondence Group on shipborne position, navigation and timing (Data processing) unit.

The ENAV Vice Chair is requested to note this amendment to the planned work register.

13.7 Update R-121 (Task 3.1.9)

Task complete.

Actions

13.8 DGNSS Radiobeacon coverage prediction (Task 3.1.10)

Input documents ENAV18-13.8 and ENAV18-13.9 were considered at this meeting. The draft Guideline was progressed at this meeting and will be further developed between sessions, in preparation for delivery at ENAV19.

Actions

IALA Secretariat is requested to include the working paper ENAV18-14.2.17 (draft Guideline on DGNSS radiobeacon coverage as an input paper to ENAV19.

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

The WG received a presentation on new eRacon and eRadar trials which took place in Singapore October 2015.

The Committee noted that NCSR3 recommended that Galileo be accepted as a component of the WWRNS at the next MSC meeting.

The Committee noted that the US Coast Guard had postponed its planned termination of 62 DGPS reference stations.

The Committee noted that development of a prototype ePelorus is on-going by the GLAs, with the aim of providing more detail in an input paper at the next meeting.

The Committee noted the situation regarding eLoran transmissions in Europe and the cessation of signals from most stations at the turn of the year.

13.10 Liaise with IMO on PNT matters (including revision of Res. A.915) (Task 3.1.13)

No work carried out under this item.

13.11 Maintain WG relevant Recommendations and Guidelines, e.g. WWRNP, R-135 (Task 3.1.14)

The WG considered the planned IALA standards and reviewed that there will be a need to consider where each of the WG managed documents fits within the document hierarchy. A review of the current document list was postponed until the standards, and their work areas, have been finalised.

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

A verbal update on the recent RTCM SC104 meeting was provided to the WG.

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

Input papers ENAV18-13.5 and ENAV18-13.12 were considered, along with the input documents from the R-mode intersessional meeting (included as late paper to this meeting).

The Committee considered the current position of R-mode and further developed the mind map which outlines the key processes and tasks required to develop R-Mode (MF & AIS) from the current status to

common use. The mind map was then further developed into a draft roadmap, although further clarification is required.

WG2 will act as the custodian of the AIS roadmap once complete. A single point of contact was discussed and is something that should be taken further in discussion with the IALA Secretariat.

The WG received an interesting presentation on AIS R-Mode (also included as a late paper) presented by colleagues from China. The AIS R-Mode test bed presentation provides promising results in the order of 10m within the trial area. The presentation authors were invited to participate further in the development of R-mode and the Committee discussions in general.

The Committee considered input document ENAV18-13.15 on a patent which may be considered to impact R-Mode via AIS. Following guidance provided by the Committee Chair, the WG5 Chairman will contact the company involved and seek clarification.

Actions

IALA Secretariat is requested to include the working papers “ENAV18-14.2.19 R-mode mindmap (PDF format)”, “ENAV18-14.2.20 R-Mode mindmap (Mindmap manager pro format)” and “ENAV18-14.2. draft R-Mode Roadmap” as an input paper to ENAV19.

Committee Participants are requested to review working papers “ENAV18-14.2.19 R-mode mindmap (PDF format)”, “ENAV18-14.2.20 R-Mode mindmap (Mindmap manager pro format)” and “ENAV18-14.2.18 draft R-Mode Roadmap” and provide comments to the WG5 Chair.

WG5 Chair is requested to contact TrueHeading to seek clarification on its patent with respect to AIS R-Mode.

Stefan Bober is requested to submit an input paper to ENAV19 on the need for interaction with ITU in relation to R-Mode.

WG5 chair is requested to provide input to ENAV19 regarding a Recommendation in relation to retention of DGNSS MF antennas for potential future services with a view to completion at ENAV19, taking into account the existing IALA Recommendation R-135 on the Future of DGNSS Ed 1 2006-12.

14. REVIEW OF OUTPUT AND WORKING PAPERS

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

15. ANY OTHER BUSINESS

Fred Pot advised the Committee that a Special Interest Group on vessel shore reporting has started.

The IALA workshop on Shore-based Maritime Services from Theory to Practical Use in Lisbon, Portugal, in May 2016 was noted.

Omar Frits Eriksson advised the Committee that an ex-Loran 200m monopole antenna at the Ejde Loran station in the Faroe Islands is available for use in testing of e-navigation services. A trial using this antenna is being arranged for Navdat. Committee members were invited to use the antenna for suitable projects.

Committee members were invited to advise the Committee of any patent or IPR issues arising from the work of the Committee. None were reported.

16. REVIEW OF SESSION REPORT

The report of the meeting (ENAV18-16.1) 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 ENAV18 report, paper ENAV18-16.1 post plenary, by 25th March 2016.

The Secretariat is requested to forward the report of ENAV18 (ENAV18-16.1) to the Council, to note.

17. DATE AND VENUE OF NEXT MEETING

The 19th Session of the ENAV Committee (ENAV19) is expected to meet from 19 to 23 September 2016 in IALA HQ.

18. CLOSING OF THE MEETING

The IALA Deputy Secretary General thanked all ENAV18 participants their extremely good work carried out during the session. He noted that the main objective of session 31 of the PAP is to finalise the work on document structure under the seven standards and preparation of a technical policy statement for committees. He noted that IHO and IMPA are attending the IALA workshop on Shore-based Maritime Services from Theory to Practical Use in Lisbon, adding to the strong team expected for the workshop.

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 ENAV19 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.

18th Meeting of the IALA ENAV Committee

The 18th meeting of the **IALA ENAV Committee** will be held from 14 – 18 March, 2016 at IALA, St Germain en Laye, France.

The opening plenary will commence at 1300 hours on Monday 14 March and the closing plenary will end at approximately 1300 on Friday 18 March.

Committee Chair, Vice-Chair and Working Group Chairs are requested to meet at 0900 hours on Monday 14 March.

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. Administration & safety briefing
 - 1.2. Approval of the agenda
 - 1.3. Introductions and apologies
 - 1.4. 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 61st Session of the IALA Council 2015-12-07
 - 4.2. Report of the 30th Session of the IALA Policy Advisory Panel
 - 4.3. Report on the Seminar on Maritime Digital Infrastructure and Testbeds, Gothenburg, 2015-11-30
 - 4.4. Report on e-Navigation Underway International 2016
 - 4.5. Report on ITU WRC15
 - 4.6. Report on IMO NCSR 3 (29 Feb to 4 March 2016)
 - 4.7. Report IALA Workshop on Development of VHF Data Exchange System (VDES)
5. Reports from Rapporteurs

<ol style="list-style-type: none"> 5.1. IALA Bulletin liaison 5.2. IALA Dictionary 5.3. GMDSS 5.4. Report from VTS41 5.5. Ship-board developments re e-Nav services 5.6. IHO 5.7. Testbeds 	<p>Hideki Noguchi</p> <p>Omar Frits Eriksson</p> <p>Jean-Charles Cornillou</p> <p>Jon Leon Ervik</p> <p>Anders Brodje</p> <p>Edward Hosken</p> <p>Mahesh Alimchandani</p>
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6. Presentations (15 minutes duration)

- | | | |
|------|--|---------------------|
| 6.1. | WWA report | Gerardine Delanoye |
| 6.2. | R&D of VHF transmitter monitoring device via AIS equipment | Young-Sup Kim |
| 6.3. | VTs2016 Symposium | Hairizam Al-Bukhari |
| 6.4. | RTCM Annual Assembly 2016 | Bill Cairns |
| 6.5. | IALA file sharing web site and ftp server | Jeffrey van Gils |
| 6.6. | Cyber Security | Brendan Saunders |
| 6.7. | Usability Evaluation of e-Navigation MSP 2(NAS) | Yung Yu |
| 6.8. | Identity management and Security | Thomas Christensen |
| 6.9. | Radar Trials in Singapore for resilient positioning | Takuo Kashiwa |
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

Country**Australia****Australian Maritime Safety Authority**

Mr Mahesh ALIMCHANDANI

GPO Box 2181

Canberra ACT 2601

AUSTRALIA

Phone:

+61 2 6279 5927

Fax:

+61 2 6279 5966

Mobile phone:

+61 419 668 264

e-mail:

mx@amsa.gov.au

e-mail (alternative):

mail2maheshu@gmail.com

Cameroon**Autorité Portuaire Nationale**

Mrs Nadine EPARA

BP-11691

Yaoundé

Cameroon

Phone:

+237 77 76 53 55

Fax:

+237 22 23 73 14

e-mail:

nadineepara@yahoo.fr

Autorité Portuaire Nationale

Mr Willie TSANGA

BP-11691

Yaoundé

Cameroon

Phone:

+937 99 93 95 39

Fax:

+937 22 23 73 14

e-mail:

tsangambawillie@yahoo.fr

Canada**Canadian Coast Guard**

Mr Pierre D'ARCY

200 Kent Street

Ottawa, ON

K1A 0E6

Canada

Phone:

+1 613 990 6016

Mobile phone:

+1 613 220 8069

e-mail:

pierre.Darcy@dfo-mpo.gc.ca

Canadian Coast Guard

Mr Marc-André MORIN

101 Boul. Champlain

Quebec City G1K7Y7

Canada

Phone:

+1 418 648 7448

e-mail:

marc-andre.morin@dfo-mpo.gc.ca

ExactEarth

Ms Peggy BROWNING
60 Struck Court
Cambridge, Ontario, N1R 8L2
Canada

Phone: +1 941 741 8030
Mobile phone: +1 941 405 9797
e-mail: peggy.browning@exactearth.com

ExactEarth

Mr Arunas MACIKUNAS

Canada
e-mail: arunas.macikunas@exactearth.com

ExactEarth

Mr Graham STICKLER
60 Struck Court
Cambridge
Ontario, N1R 8L2
Canada
e-mail:

graham.stickler@exactearth.com

China (People's

China Maritime Safety Administration

Mr Qiang SUN
47 building, N° 5555
GuiPing Road
Shanghai 200233
People's Republic of China
Phone:
Fax:

+86 21 6495 7925
+86 21 6495 6126

China Maritime Safety Administration

Mr Shijie YANG
47 building, N° 555
GuiPing Road
Shanghai 200233
People's Republic of China
Phone:
Fax:
e-mail:

+86 21 6495 1817
+86 21 6485 6126
yangshijie1971@sina.com

China Maritime Safety Administration

Mr Heping ZHENG
11 Jianguoment Nei Avenue
Dongcheng District
Beijing 100736
China (People's Republic of)
Phone:
Fax:
e-mail:

+86 10 6529 2887
+86 10 6529 2893
zhengheping@msa.gov.cn

China Maritime Safety Administration

Mr Yongqiang ZHU
34 Hei Niu Cheng Road
He Xi District
Tianjin
People's Republic of China
Phone: +86 022 588 73 192
Fax: +86 022 588 731 96
Mobile phone: +86 189 202 805 10
e-mail: 1094998989@qq.com

China Maritime Safety Administration

Mr Baohong WANG
11 Jianguomen Nei Avenue
100736 Beijing
People's Republic of China
e-mail: wangbaohong@msa.gov.cn

China Waterborne Transport Research Institute

Ms Lu DOU
China (People's Rep of)
e-mail: dldoulu@163.com

Hong Kong Marine Department

Mrs Ka-man CHAN
23/F Harbour Building 38 Pier Road
Central Hong Kong
852 Hong Kong
China (People's Republic of)
Phone: +852 2852 4847
e-mail: kmchan5@mardep.gov.hk

Dalian Maritime University

Prof Qing HU
No. 1 Linghai Road
Dalian, Liaoning
People's Republic of China
Phone: +86 411 84 72 31 18
Mobile phone: +86 13387889389
e-mail: hq0518@dlmu.edu.cn

CIRM

Comité International Radio Maritime - COBHAM

Mr Stefan PIELMEIER
Industrivej 30
9490 Pndrup
Denmark
Phone: +45 96 34 62 76
Mobile phone: +45 31 16 39 10
e-mail: stefan@symlinux.com

Denmark**Danish Maritime Authority**

Mr Ivan CARLSSON
Carl Jacobsens Vej 31
DK-2500 Valby
Denmark

Phone: +45 72 19 63 79
Mobile phone: +45 24 28 82 98
e-mail: imc@dma.dk

Danish Maritime Authority

Mr Thomas CHRISTENSEN
Carl Jacobsen Vej 31
DK-2500 Valby
Denmark

Phone: +45 91 37 60 00
Fax: +45 3257 4341
Mobile phone: +45 2511 1854
e-mail: thc@dma.dk

Danish Maritime Authority

Mr Omar Frits ERIKSSON
Carl Jacobsen Vej 31
DK-2500 Valby
Denmark

Phone: + 45 7219 6316
Mobile phone: + 45 2167 6644
e-mail: ofe@dma.dk

Danish Maritime Authority

Mr Jens Kristian JENSEN
Carl Jacobsen Vej 31
DK2500 Valby
Denmark

Phone: +45 72 19 63 18
Fax: +45 91 97 60 01
e-mail: jkj@dma.dk

Danish Maritime Authority

Mr Kasper NIELSEN
Carl Jacobsens Vej 31
2500 Valby
Denmark

Phone: +45 25111854
e-mail: kasperni@gmail.com

EfficienSea2**EfficienSea2 Project**

Dr Nick WARD
12 Mariners Drive
Swanage
Dorset BH19 2SJ
UK

Phone: + 44 1929 426 021
Fax:
Mobile phone: +44 7795 367050
e-mail: nick.ward@gla-rnav.org
e-mail (alternative): nick.ward@fsmail.net

National Institute of Telecommunications

Dr Krzysztof BRONK
Jaskowa Dolina 15
80-252 Gdansk
Poland

Phone: +48 58 341 71 12
Fax: +48 58 341 71 12
Mobile phone: +48 790 01 93 15
e-mail: K.Bronk@itl.waw.pl
e-mail (alternative): krzysztofbronk@wp.pl

ESA**European Space Agency**

Ms Alessandra FIUMARA
Italian Space Agency Representative
8 rue Mario Nikis
75015 Paris
France

Phone: +33 1 5369 73 66
Mobile phone: +33 6 77 13 20 90
e-mail: alessandra.fiumara@esa.int

Finland**Finnish Transport Agency**

Ms. Kaisu HEIKONEN
P. O. Box 33
FIN-00521 Helsinki
Finland

Phone: +358 29 534 3302
Fax: +358 2063 73700
Mobile phone: +358 40 573 4949
e-mail: kaisu.heikonen@fta.fi

Furuno Finland Oy

Mr Antti KUKKONEN

Niittyrinne 7

P O Box 74

FI-02271 Espoo

Finland

Phone:

+358 9 4355 670

Fax:

+358 9 4355 6710

Mobile phone:

+358 40 570 4767

e-mail:

antti.kukkonen@furuno.fi

e-mail (alternative):

antti.kukkonen@saunalahti.fi

France**Cerema / DtechEMF / DT**

Mr Michel IMART

151 Quai du Rancy

94381 Bonneuil-sur-Marne

France

Phone:

+33 1 45 13 52 93

Fax:

+33 1 45 13 53 59

Mobile phone:

+33 6 29 45 61 72

e-mail:

michel.imart@cerema.fr

e-mail (alternative):

michel.imart@developpement-durable.gouv.fr

Cerema/DtechEMF/DT

Mr Jean-Charles CORNILLLOU

155, rue Pierre Bouguer

BP5

29280 Plouzané

France

Phone:

+33 2 98 05 67 41

Fax:

+33 2 98 05 67 67

Mobile phone:

+33 6 61 94 26 70

e-mail:

jean-charles.cornillou@cerema.fr

Direction Inter-Régionale de la Mer

Mr Eric VASSOR

8 quai Commandant Malbert

29200 Brest

France

Phone:

+33 2 98 33 40 68

Fax:

+33 2 98 05 67 67

Mobile phone:

+33 6 20 67 22 28

e-mail:

eric.vassor@developpement-durable.gouv.fr

e-mail (alternative):

evprof@free.fr

IFN - MEDDE

Mr Yves DESNOËS

IFN chez SSBAIF

82 rue des Pyrénées

75020 Paris

France

Phone:

+33 1 43 48 53 98

Fax:

+33 1 43 48 53 98

Mobile phone:

+33 6 50 43 65 31

e-mail:

desnoesyauj@gmail.com

KENTA Electronic

Mr Manuel BILLOT
Le Rouillen
Route de Stargala
F29500 Ergué Gabéric
France

Phone: +33 299 146 332
e-mail: manuel.billot@kenta.fr

KENTA Electronic

Mr Pascal OLIVIER
Le Rouillen
Route de Stargala
F29500 Ergué-Gabéric
France

Phone: +33 2 98 52 16 02
e-mail: pascal.olivier@kenta.fr

SIGNALIS

Mr Joao CALADO
9 rue Louis Rameau
BP 70101
Bezons 95873
France

Phone: +33 1 39 96 44 44
e-mail: joao.calado@signalis.com

Thales Air System

Mr Vincent VERBEQUE
20 rue Grange Dame Rose
78141 Velizy Cedex
France

Phone: +33 (0)2 98 31 25 72
Mobile phone: +33 6 08 18 54 87
e-mail: vincent.verbeque@fr.thalesgroup.com

Germany**Federal Waterways & Shipping Administration**

Mr Michael HOPPE
Traffic Technologies Centre
Am Berg 3
56070 Koblenz
Germany

Phone: + 49 261 9819 2221
Fax: + 49 261 9819 2155
Mobile phone: +49 151 264 2222 3
e-mail: michael.hoppe@wsv.bund.de

Federal Waterways & Shipping Administration

Mr Jan-Hendrik OLTMANN

Northern Region Office

Kiellinie 247

24106 Kiel

Germany

Phone: + 49 431 3394 5701

Fax: + 49 431 3394 6399

Mobile phone: +49 172 152 6928

e-mail: jan-hendrik.oltmann@wsv.bund.de

Federal Waterways & Shipping Administration, FVT-Traffic Technologies

Mr Stefan BOBER

Am Berg 3

56070 Koblenz

Germany

Phone: +49 261 9819 2231

Fax: +49 261 9819 2151

Mobile phone: +49 151 264 222 25

e-mail: stefan.bober@wsv.bund.de

German Aerospace Center

Dr Stefan GEWIES

Kalkhorstweg 53

17235 Neustrelitz

Germany

Phone: +49 398 1480 187

Fax: +49 398 1480 123

e-mail: stefan.gewies@dlr.de

German Aerospace Center

Mr Simon PLASS

Kalkhorstweg 53

D-17235 Neustrelitz

Germany

Phone: +49 8153 282874

Mobile phone: +49 172 2911 473

e-mail: simon.plass@dlr.de

German Aerospace Center

Mr Ronald RAULEFS

Muenchnerstrasse 20

Wessling 82234

Germany

Phone: +49 8153282803

e-mail: ronald.raulefs@dlr.de

German Aerospace Center - Department of Navigation

Dr Evelin ENGLER

DLR e.V.

KN-NAS

Kalkhorstweg 53

Germany

Phone: +49 3981 480-147

Fax: +49 3981 480-123

e-mail: evelin.engler@dlr.de

German Aerospace Center (DLR)

Mr Francisco LAZARO BLASCO

Deutsches Zentrum für Luft-und Komm.und Nav.

Oberpfaffenhofen

Wessling 82234

Germany

Phone: +49 81 53 282 815

e-mail: francisco.lazaroblasco@dlr.de

OFFIS e.V.

Mr Axel HAHN

Escherweg 2

Oldenburg 26121

Germany

Mobile phone: +49 163 781 85 88

e-mail: hahn@wi-ol.de

Trimble Germany GmbH

Mr Goran JEDREJCIC

Haringstr. 19

85635 Höhenkirchen-Siegertsbrunn

Germany

Phone: +49 8102 7433 352

Mobile phone: +49 175 279 0712

e-mail: goran_jedrejic@trimble.com

GSA**European Global Navigation Satellite Systems Agency (GSA)**

Prof. Manuel LOPEZ MARTINEZ

Janovského 438/2

170 00 Prague

Czech Republic

Phone: +420 234 766 659

Mobile phone: +420 602 619 994

e-mail: manuel.lopezmartinez@gsa.europa.eu

e-mail (alternative): m.lopez.martinez@gmail.com

IMO**International Maritime Organisation**

Mr Javier YASNIKOUSKI

4, Albert Embankment

London SE1 7SR

UK

Phone: +44 207 463 4190

e-mail: jyasniko@imo.org

IMPA	International Maritime Pilots' Association
	<p>Captain Jean-Daniel GILLES Station de Pilotage Maritime Dunkerque Avenue des Bancs de Flanders 59140 Dunkerque France</p> <p>Mobile phone: +33 6 77 50 39 81 e-mail: jdanielgil@numericable.fr</p>
Ireland	Commissioners of Irish Lights
	<p>Mr Steve BURROWS Harbour Road Dun Laoghaire Co. Dublin Ireland</p> <p>Phone: +353 1 271 5453 Fax: +353 1 271 5566 Mobile phone: +353 87 244 9422 e-mail: steve.burrows@cil.ie e-mail (alternative): steve.burrows803@gmail.com</p>
Italy	ELMAN S.r.l.
	<p>Mr Francesco BORGHESE Via di Valle Caia, 37 Pomezia - Roma Italy</p> <p>Phone: +39 06 919 4405 Fax: +39 06 919 4306 Mobile phone: +39 339 708 7107 e-mail: f.borghese@elmansrl.it</p>
	Italian Coast Guard
	<p>Lt Paolo RENZI Viale dell'Arte, 16 00144 Roma Italy</p> <p>Phone: +39 0659084255 Fax: +39 0659084515 Mobile phone: +39 3396647750 e-mail: paolo.renzi@mit.gov.it</p>
	Italian Coast Guard
	<p>Mr Antonio VOLLERO Italian Coast Guard Headquarters Viale Dell' Arte N° 16 00144 Rome Italy</p> <p>Phone: +39 06 59 08 40 88 Fax: +39 06 59 08 44 40 Mobile phone: +39 320 3124422 e-mail: antonio.vollero@mit.gov.it e-mail (alternative): antonio.vollero@gmail.com</p>

ITU**International Telecommunications Union**

Mr Christian RISSONE
ANFR Pôle technique de Brest - Technopôle Brest-Iroise
265 rue Pierre Rivoalon, CS 13829
29238 Brest Cedex 3
France
Phone: +33 2 98 34 12 35
Fax: +33 2 98 34 12 20
Mobile phone: +33 6 83 81 23 03
e-mail: christian.rissone@anfr.fr

Japan**Furuno Electric Co. Ltd**

Mr Hiroyasu NAKAGAWA
9-52 Ashihara-cho
Nishinomiya, 662-8580
Hyogo
Japan
Phone: +81 798 63 1152
Fax: +81 798 63 1142
Mobile phone: +81 90 16 70 34 01
e-mail: hiroyasu.nakagawa@furuno.co.jp
e-mail (alternative): yass3rdvn@gmail.com

Furuno Electric Co. Ltd.

Mr Akira YAMAMOTO
Section 2, Products Planning and Marketing Department
9-52 Ashihara-cho
Nishinomiya, 662-8580
Japan
Phone: +81 798 72 1216
Fax: +81 798 631095
e-mail: akira.yamamoto@furuno.co.jp

Furuno Electric Co.Ltd

Dr Takuo KASHIWA
9-52 Ashihara-cho
Nishinomiya 662-8580
Japan
Phone: +81 798 63 1172
Fax: +81 7998 64 6302
Mobile phone: +81 80 2468 9329
e-mail: takuo.kashiwa@furuno.co.jp

Japan Coast Guard, Maritime Traffic Department, Administration and Planning

CDR Hideki NOGUCHI
2-1-3 Kasumigaseki
Chiyoda-ku
Tokyo 100-8918
Japan
Phone: +81 3 3591 6361 (ext.
Fax: +81 3 3591 3590
Mobile phone: +81 80 3468 1198
e-mail: jcghkotsukikaku7-6r9i@mlit.go.jp
e-mail (alternative): hideki.noguchi@gmail.com

Japan Radio Co. Ltd.

Mr Masayuki TAKAHASHI
1-1 Shimorenjaku 5 chome
Mitaka-Shi
Tokyo 181-8510
Japan
Phone: +81 422 45 9380
Mobile phone: +81 90 981 25 642
e-mail: takahashi.masayuki@jrc.co.jp

Oki Consulting Solutions Co., Ltd.

Mr Takamasa YAUCHI
4-11-15 Shibaura
Minato-ku
Tokyo 108-8551
Japan
Phone: + 81 3 5445 6017
Fax: + 81 3 3452 7814
Mobile phone: +81 90 8315 9999
e-mail: yauchi427@oki.com
e-mail (alternative): yauchi73@viola.ocm.ne.jp

Japan Coast Guard - Maritime Traffic Department

Mr Yuta TAKAGI
1-3 Kasmigaseki 2-chome
Chiyoda
Tokyo 100-8976
Japan
Phone: +81 33 59 16 361
e-mail: jcghkotsuseibi3-8q4z@mlit.go.jp

**Korea (Rep
of)****Ministry of Ocean and Fisheries**

Mr Jong -Guk CHAE
Korea (Rep of)
e-mail: ohmiri@korea.kr

Ministry of Ocean and Fisheries - Dongseo University

Mr Dae-Won PARK
Korea (Rep of)
Mobile phone: +82 10 9914 5323

Ministry of Ocean and Fisheries - Korean Register

Mr Gum Jun SON
Korea (Rep of)
Mobile phone: +82 10 2909 3338
e-mail: gjson@krs.co.kr

CyberLogitec

Mr Won-ki (Jacob) BYUN
Korea (Republic of)
Phone: +82 2 6350 2351
e-mail: jacob@cyberlogitec.com

CyberLogitec

Mr Tae Hyuk (Tony) KWON
16th Fl. Nuritcum Square R&D Tower
World cup Buk-ro 396
Mapo-Gu 121-795
Korea (Republic of)
Phone: +82 2 6350 2350
Mobile phone: +82 10 9140 7333
e-mail: tkwon@cyberlogitec.com

Electronics and Telecommunications Research Institute (ETRI)

Mr Daeho KIM
218 Gajeongno
Yuseong-gu
Daejeon, 305-700
Korea (Republic of)
Phone: +82 42 860 4931
Fax: +82 42 860 6789
Mobile phone: +82 10 5451 2373
e-mail: daeho@etri.re.kr

Electronics and Telecommunications Research Institute (ETRI)

Mr Kwangil LEE
218 Gajeong-ro, Yuseung Gu
Daejeon 305-700
Korea (Rep of)
Phone: +82 42 860 5025
Fax: +82 10 4455 0533
e-mail: leeki@etri.re.kr

Global Control Systems Corporation

Mr ChunSoo KIM
858-5 Yeonsan-dong
Yeonje-gu
Busan 611-840
Republic of Korea
e-mail: cskim@gcsc.co.kr

Global Control Systems Corporation

Mr Jae Bong LEE
858-5, Yeonsan-dong
Yeonje-gu
Busan 611-840
Korea (Rep of)
Phone: +82 51 850 5723
Fax: +82 51 637 8938
Mobile phone: +82 10 5690 4444
e-mail: jblee@gcsc.co.kr
e-mail (alternative): sdqba@naver.com

Global Control Systems Corporation

Mr Gyeongtae NAM
858-5, Yeonsan-dong
Yeonje-gu
Busan
Republic of Korea
Phone: +82 51 850 5750
Fax: +82 51 637 8938
Mobile phone: +82 10 6524 2343
e-mail: gtnam@gcsc.co.kr
e-mail (alternative): jazzyman@gmail.com

Korea Coast Guard

Mr Young Sup KIM
#130 Headoji-ro
Yeonsu-gu
Incheon
Korea (Republic of)
Fax: +82 32 835 2949
Mobile phone: +82 10 9100 7863
e-mail: epysk1045@hanmail.net
e-mail (alternative): epysk1045@korea.kr

Korea Institute of Maritime and Fisheries Technology under MOF

Dr Min JUNG
367 Haeyano-ro, Yeondo-gu
Busan
Republic of Korea
Phone: +82 51 620 5740
Fax: +82 51 620 5774
Mobile phone: +10 9953 04 00
e-mail: seamini@naver.com
e-mail (alternative): star@seaman.or.kr

Korea Maritime & Ocean University

Prof. Yung-Ho YU
#245, Engineering College, KMOU
#1, Dongsamdong Youngdoku
Youngdoku
Republic of Korea
Phone: +82 51 410 4345
Mobile phone: +82 10 4026 4345
e-mail: yungyu@kmou.ac.kr
e-mail (alternative): yungyu10@gmail.com

Korea Research Institute of Ships & Ocean Engineering (KRISO)

Dr Deuk Jae CHO
32 Yuseong-daero, 1312 beon-gil
Yuseong-gu, Daejeon 305-343
Republic of Korea
Phone: +82 42 866 3683
Fax: +82 42866 3689
Mobile phone: +82 10 8808 0928
e-mail: djcho@kriso.re.kr
e-mail (alternative): deukjae.cho@gmail.com

Korean Coast Guard

Mr Pyong Che CHON
Yeonsu-gu
Incheon
Republic of Korea

Ministry of Oceans and Fisheries

Mr Gye Jeong JEON
94 Dasom 2-ro
Sejong-si
Sejong City
Korea (Republic of)
Phone: +82 10 9241 4379
e-mail: gjjeon@krs.co.kr

Ministry of Oceans and Fisheries

Mr Kang-On KIM
Government Complex
Sejong, 94, Dasom 2-ro
Sejong Special Self-governing City
Korea (Republic of)
Phone: +82 2 2110 6788
Fax: +82 2 504 4676
Mobile phone: +82 10 5184 8271
e-mail: ohmiri@korea.kr
e-mail (alternative): ohmiri@mltm.go.kr

Ministry of Oceans and Fisheries

Mr Chi-Kyoung LEE
Government Complex
Sejong, 94, building 5-Dong
94, Dasom 2-Ro Sejong-Si 339-012
Korea (Rep of)
Phone: +82 44 200 5826
Fax: +82 44 200 5889
Mobile phone: +82 10 4757 7715
e-mail: ndkyoung@korea.kr
e-mail (alternative): snavigation2013@gmail.com

Malaysia**Malaysia Marine Department**

Mr Hairizam ALBUKHARI
Marine Department Headquarters
PO BOX 12 JALAN LIMBUNGAN
42007 PELABUHAN KELANG SELANGUR
Malaysia
Phone: +60 331695233
Fax: +60331671334
e-mail: hairizam@marine.gov.my

Netherlands**Ministry of Infrastructure and the Environment**

Mr Peter HOOIJMANS
Rijkswaterstaat National Vessel Traffic Management Centre
P O Box 5023
2600 GA Delft
Netherlands
Phone:
Fax:
Mobile phone: +31 6 539 451 56
e-mail: peter.hooijmans@rws.nl
e-mail (alternative): pjwhooijmans@yahoo.com

Ministry of Infrastructure and the Environment

Mr Pieter PAAP
Schoemakerstraat 97
Delft 2628 VK
Netherlands
Phone: +31 64 663 6190
Mobile phone: +31 6 466 36 190
e-mail: pieter.paap@rws.nl
e-mail (alternative): pieter.l.paap@quicknet.nl

Ministry of Infrastructure and the Environment

Mr Jeffrey VAN GILS
Centre for Transport and Navigation
Lange Kleiweg 34
2288 GK Rijswijk
Netherlands
Mobile phone: +31 6 514 2 70 66
e-mail: jeffrey.van.gils@rws.nl
e-mail (alternative): jvgils71@gmail.com

Norway**Kongsberg Norcontrol IT AS**

Mr Steve GUEST
PO Box 1024
Bromsvn. 17
N-3194 Horten
Norway
Phone: +44 1454 774466
Fax: +44 1454 774488
Mobile phone: +44 777 3328 929
e-mail: steve.guest@kongsberg.com

Kongsberg Norcontrol IT AS

Mr Todd SCHUETT

P.O. Box 1024

Bromsveien 17

3194 Horten

Norway

Phone: +47 33 08 48 47

Fax: +47 33 04 57 35

Mobile phone: +47 930 10246

e-mail: todd.schuett@kongsberg.com

e-mail (alternative): toddschuett@msn.com

Kongsberg Seatex AS

Mr Stig Erik CHRISTIANSEN

Pirsenteret

N-7462 Trondheim

Norway

Phone: +47 73 54 55 77

Fax: +47 73 51 50 20

Mobile phone: +47 95 022 819

e-mail: stig.erik@kongsberg.com

Norwegian Coastal Administration

Mr Michael RAMBAUT

UK

Phone: +44 207 587 1245

Fax: +44 207 587 1436

Mobile phone: +44 7798 850 626

e-mail: michael.rambaut@btinternet.com

Norwegian Coastal Administration

Mr Hans Christian HAUGLI

Space Norway

Norway

Phone: +47 993 50010

e-mail: hans.christian.haugli@spacenorway.no

Norwegian Coastal Administration

Mr Harald AASHEIM

Postboks 1502

6025 Alesund

Norway

Fax: +47 52 73 32 01

Mobile phone: +47 95805757

e-mail: harald.aasheim@kystverket.no

Norwegian Coastal Administration

Mr Jon Leon ERVIK

Service Box 2

6002 Alesund

Norway

Phone: + 47 52 73 33 12

Fax: + 47 52 73 32 01

Mobile phone: +47 91 68 15 38

e-mail: jon.leon.ervik@kystverket.no

Norwegian Coastal Administration

Mr Lars LOGE

Statsat AS

Drammnesveien 165

Box 66 Skooyen

Norway

Phone: +47 996 99 101

Fax: +47 99 69 91 01

Mobile phone: +47 22 51 00 25

e-mail: lars.loge@statsat.no

Norwegian Coastal Administration

Mr Svein David MEDHAUG

Norway

e-mail: sdm@sdir.no

Norwegian Coastal Administration

Prof Thomas PORATHE

Norwegian University of Science & Technology

Kolbjørn Hejes vei 2b

NO-7491 Trondheim

Norway

Mobile phone: +46 70 668 1819

e-mail: thomas.porathe@ntnu.no

Norwegian Coastal Administration

Mr Ulrich TAGNE

Service Box 2

Aalesund 6002

Norway

Phone: +47 52 733 235

Mobile phone: +47 45 804422

e-mail: ulrich.tagne@kystverket.no

Poland	Sprint S.A Mr Janusz HAJDEL 80-298 Gdansk Budowlanych 64E Poland Phone: +48 58 340 70 00 Fax: +48 58 340 70 01 Mobile phone: +48 600 955 431 e-mail: janusz.hajdel@sprint.pl
Portugal	Direcção de Faróis CDR Jorge TELES Estrada Marginal 2720-210 Paço de Arcos Portugal Phone: +351 21 446 1666 Mobile phone: +351 9166 30653 e-mail: santos.teles@marinha.pt
Russia	Principal Department of Navigation & Oceanography Captain Andrey OLEJNIKOV Russia Mobile phone: +7 81 232 84 632 e-mail: unio_main@mil.ru e-mail (alternative): oas-73@mail.ru
Scotland	Northern Lighthouse Board Mr Peter DOUGLAS 84 George Street Edinburgh EH2 3DA Scotland Phone: + 44 131 473 3196 Mobile phone: +44 7836 787 898 e-mail: peterd@nlb.org.uk e-mail (alternative): petali@talk21.com
Spain	ESSP SAS Mr Jorge MORAN ATC Center Carretera de la base Km.8 Torrejon Madrid 28850 Spain Phone: +34 636 85 36 75 e-mail: jorge.moran@essp-sas.eu

ESSP SAS

Ms Maria MOTA
ATC Center Madrid
Carretera de la Base km 0,8
28850 Torrejón de Ardoz, Madrid
Spain

Phone: +34 91826 2170
Mobile phone: +34 638 965 619
e-mail: maria.mota@external.essp-sas.eu
e-mail (alternative): mmmota@telespazio.es

GMV

Mr Marcos LOPEZ CABECEIRA
PYB Parcela 101
Beocillo
47151 Valladolid
Spain

Phone: +34 983546554
Fax: +34 983546553
Mobile phone: +34 619128940
e-mail: malopez@gmv.com
e-mail (alternative): lopezcabeceira@gmail.com

Puertos del Estado

Mr Sebastian ESPINAR CERREJON
Avenida del Partenon 10
28042
Madrid

Spain
Phone: +34 91 524 55 34
Fax: +34 91 524 55 03
Mobile phone: +34 91 628 269 538
e-mail: sebas@puertos.es

Sweden**Swedish Maritime Administration - Viktoria Swedish ICT**

Mr Almir ZEREM

Sweden
e-mail: almir.zerem@viktoria.se

Swedish Maritime Administration

Mr Anders BRODJE
Lindholmspiren 5
SE41756 Gothenburg
Sweden

Phone: +46 10 478 60 53
Mobile phone: +46 72 724 60 53
e-mail: anders.brodje@sjofartsverket.se

Swedish Maritime Administration

Mr Mikael HAGG
Lindholmspiren 5
SE41756 Gothenburg
Sweden

Phone:
Fax:
Mobile phone: +46 761 257 090
e-mail: mikael.hagg@sjofartsverket.se
e-mail (alternative): mikael.hagg@chalmers.se

Swedish Maritime Administration

Mr Fredrik KARLSSON
Innovation and Development
Lindholmspiren 5
SE-417 56, Gothenburg
Sweden

Phone: +46 10 47 84 632
e-mail: fredrik.karlsson@sjofartsverket.se

Swedish Transport Agency

Mr Sebastian IRONS
SE-60 173 Norrköping
Sweden

Phone: +46 10 49 53 331
Mobile phone: +46 76 721 1045
e-mail: sebastian.irons@transportstyrelsen.se

UK**General Lighthouse Authorities R&RNAV for UK & Ireland**

Dr Alan GRANT
GLA-RRNAV
Trinity House, The Quay, Harwich
Essex, CO12 3JW
UK

Phone: +44 1255 245 141
Fax: +44 1255 245038
Mobile phone: +44 7747 768445
e-mail: alan.grant@gla-rrnav.org

General Lighthouse Authorities R&RNAV for UK & Ireland

Mr Jan SAFAR
Trinity House, The Quay
Harwich, Essex, CO12 3JN
UK

Phone: +44 1255 245 145
Mobile phone: +44 755 441 5527
e-mail: jan.safar@gla-rrnav.org

General Lighthouse Authorities R&RNAV for UK & Ireland

Dr Alwyn WILLIAMS
c/o Trinity House
The Quay
Harwich
UK

Phone: +44 1255 245 134
Mobile phone: +44 7739 151253
e-mail: alwyn.williams@gla-rrnav.org

NCC Group

Mr Brendan SAUNDERS

UK

e-mail: brendan.saunders@nccgroup.trust

UK Hydrographic Office

Dr Edward HOSKEN
Admiralty Way
Taunton
Somerset TA1 2DN
UK

Phone: +44 1823 337 900 x5010
Mobile phone: +44 7824 408 173
e-mail: edward.hosken@ukho.gov.uk

USA**American Pilot's Association**

Mr William CAIRNS
499 South Capitol St. SW
Suite 409
Washington, DC 20003
USA

Phone: +1 202 484 0700
Fax: +1 202 484 9320
Mobile phone: +1 240 495 0785
e-mail: bcairns@americanpilots.org
e-mail (alternative): william_cairns@comcast.net

NGA

Ms LeeAnne GORDON
7501 Heller Road
Springfield
VA 22150
USA

Phone: +1 571 558-0524
Mobile phone: +1 314 365 1831
e-mail: LeeAnne.E.Gordon@nga.mil

Open Interconnect Consortium (OIC)

Mr Fred W. POT
3855 SW 153rd Drive
Beaverton OR 97003
USA

Phone: +1 503 619 5223
Mobile phone: +1 206 850 7664
e-mail: fpot@enavsolutions.org
e-mail (alternative): fpot@comcast.net

Shine Micro Inc.

Mrs Judith JOHNSON
9405 Oak Bay Road
Suite A
Port Ludlow, WA 98365
USA

e-mail: judy@shinemicro.com

Shine Micro, Inc.

Mr Mark JOHNSON
9405 Oak Bay Road
Suite A
Port Ludlow, WA 98365
USA

Phone: +1 360 437 2503
Fax: +1 360 437 2483
Mobile phone: +1 360 643 3176
e-mail: classbais@gmail.com
e-mail (alternative): mark@shinemicro.com

Tideland Signal Corporation

Mr Paul MUELLER
4310 Director's Row
Houston, Texas 77092
USA

Phone: + 1 713 425 1425
Fax: + 1 713 682 4635
Mobile phone: +1 713 851 6426
e-mail: paulm@tidelandsignal.com
e-mail (alternative): paulfmueller@sbcglobal.net

US Coast Guard

Mr Jorge ARROYO
2703 Martin Luther King Ave
SE Stop 7418 Washington 205-7418
USA

Phone: +1 202 372 1563
Fax: +1 202 372 1990
Mobile phone: +1 202 257 8865
e-mail: jorge.arroyo@uscg.mil

US Coast Guard

Mr Bradford BENBOW
2703 Martin Luther King Jr. Ave.
Mail Stop 7710 Washington D.C.
20593-7710
USA

Phone: +1 202 475 3481
e-mail: brad.benbow@uscg.mil

US Coast Guard

Mr Dave LEWALD
Commandant (CG-NAV-3)
2703 Martin Luther King Ave SE Stop 7418
Washington DC 20593-7418
USA

Phone: +1 202 372 1549
Mobile phone: +1 228 342 3917
e-mail: Robert.D.Lewald@uscg.mil
e-mail (alternative): Lewald555@live.com

US Coast Guard

Mr Johnny SCHULTZ
93, Arnoni Drive
Dunedin, FL34698
USA

Mobile phone: +1 727 403 4029
e-mail: johnnyschultz@odysseyconsult.com
e-mail (alternative):

Apologies

Apologies were received from:

Name	Organisation	Country
Matthew Williams	International Chamber of Shipping	UK
Thoralf Noack	German Aerospace Center	Germany
Johan Lindborg	SAAB TransponderTech	Sweden
Yves Maekelberg	Flemish Government	Netherlands
Hakan Heurlin	SMA	Sweden
Jochen Ritterbusch	BSH	Germany
Armando Zorzoni	Hydrographic Naval Service	Argentina
Marek Dziewicki,	Maritime Office Gdynia	Poland
Rainer Droste	OFFIS	Germany
Jillian-Carson Jackson	JCJ Consulting	Australia
Yves Le Franc	SHOM	France
Johan Lindborg	SAAB Group	Sweden

Working Group 1**Harmonisation**

	Name	Organisation / Country
1	Edward Hosken (Chair)	UK Hydrographic Office / UK
2	Peter Hooijmans (Vice Chair)	Ministry of Infrastructure and the Environment / Netherlands
3	Lee-Anne Gordon	National Geospatial Intelligence Agency/ USA
4	Dae-won Park	Dangseo University/ Republic of Korea
5	Tsanga Willie	National Port Authority/ Cameroon
6	Yves Desnoes	French Institute of Navigation / France
7	Kaisu Heikonen	Finnish Transport Agency / Finland
8	Kwangil Lee	ETRI / Korea
9	Thomas Christensen	Danish Maritime Authority/ Denmark
10	Kasper Nielsen	Danish Maritime Authority / Denmark
11	Jens K Jensen	Danish Maritime Authority/ Denmark
12	R David Lewald	US Coast Guard/ USA
13	Graham Stickler	ExactEarth / Canada
14	Jean-Charles Cornillou	CEREMA/ France
15	Marc-Andre Morin	Canadian Coast Guard/ Canada
16	Gum-Jun Son	Korea Register/ Republic of Korea
17	Nick Ward	GLA R&RNAV/ UK & Ireland
18	Almir Zerem	Viktoria Swedish ICT & SMA/ Sweden
19	Epara Nadine	National Port Authority/ Cameroon

	Name	Organisation / Country
1	Maresh Alimchandani (Chair)	AMSA / Australia
2	Anders Brödje (Vice Chair)	Swedish Maritime Administration/ Sweden
3	Lee, Chi-Kyoung	Ministry of Oceans and Fisheries/ Republic of Korea
4	Zhu YoungQiang	China MSA/ China
5	Alwyn Williams	GLA R&RNAV/ UK & Ireland
6	Jan-Hendrik Oltmann	German Federal Waterways and Shipping Administration/ Germany
7	João Calado	Signalis SAS/ France
8	Todd Schuett	SESAME Straits Project/ Norway
9	Janusz Hajdel	Sprint S.A./ Poland
10	Pieter Paap	Rijkswaaterstaat/ The Netherlands
11	Hairizam Bin Albukhari	Malaysia Ministry of Transport/ Malaysia

Working Group 3 Telecommunications

	Participants	Organisation / Country
1	Peggy Browning (Chair)	Exact Earth / Canada
2	Stefan Bober (Vice Chair)	WSV/ Germany
3	Steve Burrows	Commissioners of Irish Lights / Ireland
4	Johnny Shultz	Odyssey / USCG/ USA
5	Jan Safar	GLA R&RNAV/ UK & Ireland
6	Mark Johnson	Shine Micro/ USA
7	Judy Johnson	Shine Micro/ USA
8	Daeho Kim	ETRI / Korea
9	Hairizam Albukhari	Marine Dept/ Malaysia
10	Harald Asheim	NCA / Norway
11	Hiroyasu Nakagawa	Furuno Electric Co / Japan
12	Antti Kukkonen	Furuno Finland / Finland
13	Takamasa Yauchi	OKI Consulting Solutions Co. / Japan
14	Manuel Billot	Kenta, France
15	Ronald Rauels	DLR/ Germany
16	Stefan Pielmeier	EFFICIENSEA 2 / COBHAM/ Denmark
17	Lars Loge	Space Norway / Norway
18	Jorge Arroyo	USCG / USA
19	Jeffrey van Gils	Ministry of Infrastructure & Environment/ Netherlands
20	Francesco Borghese	ELMAN SRL / Italy
21	Antonio Vollero	Italian Coast Guard / Italy
22	Michel Imart	CEREMA/ France
23	Maria Mota	ESSP/ Spain
24	Takagi Yuta	Japan Coast Guard/ Japan
25	Hans Haugli	Space Norway/ Norway
26	Masayuki Takahashi	Japan Radio Co/ Japan
27	Francisco Lazaro	DLR/ Germany
28	Brad Benbow	USCG/ USA
29	Arunas Macikunas	ExactEarth/ Canada

	Participants	Organisation / Country
30	Vincent Verbeque	Thales Air System/ France
31	Hu Qung	DLMU/ China
32	Krzysztof Bronk	NIT/ Poland

Working Group 4

e-Nav Services

	Participants	Organisation / Country
1	Jon Leon Ervik (Chair)	Norwegian Coastal Administration / Norway
2	Thomas Porathe (Vice Chair)	Norwegian University of Science and Technology / Norway
3	Mikael Hägg	Swedish Maritime Administration/Sweden
4	Fredrik Karlsson	Swedish Maritime Administration/Sweden
5	Steve Guest	Kongsberg/UK
6	Almir Zerem	Viktoria Institute, Swedish Maritime Administration /Sweden
7	Deuk Jae Cho	KRISO/Korea
8	Min Jung	KIMFT/Korea
9	Bill Cairns	American Pilot's Association/USA
10	Sebastian Irons	Swedish Transport Agency/Sweden
11	Pierre D'Arcy	Canadian Coast Guard/Canada
12	J. D. Gilles	IMPA/France
13	Sebastian Espinar	Puertos del Estado/Spain
14	Pascal Oliver	KENTA Electronic/France
15	Jorge Teles	Portuguese Lighthouse Authority/Portugal
16	Svein David Medhaug	Norwegian Maritime Authority/Norway
17	Fred Pot	Marine Management Consulting/USA
18	Yung Ho Yu	Korean Maritime and Ocean University/Korea
19	Eric Vassor	Interregional Directorate for Maritime Safety and Fishery (DIRM)/France
20	Paolo Renzi	Italian Coast Guard/Italy
21	Ulrich Tagne	Norwegian Coastal Administration/Norway
22	Michael Rambaut	Norwegian Coastal Administration/Norway
23	Chan Ka Man	Marine Department HKSAR/Hong Kong

	Participants	Organisation / Country
24	Axel Hahn	OFFIS/Germany

Working Group 5

PNT

	Participants	Organisation / Country
1	Alan Grant (Chair)	General Lighthouse Authorities of UK and Ireland / UK
2	Michael Hoppe (Vice Chair)	WSV / Germany
3	Hu Qing	Dalian Maritime University / China
4	Sun Qiang	MSA / China
5	Dou Lu	China Waterborne Transport Research Institute
6	Paul F Mueller	Tideland Signal / USA
7	Marcos Lopez	GMV /Spain
8	Jorge Moran	ESSP /Spain
9	Manuel Lopez	GSA
10	Akira Yamamoto	Furuno / Japan
11	Takuo Kashiwa	Furuno / Japan
12	Goran Jedrejic	Trimble Navigation / Germany
13	Peter Douglas	NLB
14	Kaisu Heikonen	Finnish Transport Agency
15	Stefan Gewies	DLR / Germany
16	Ivan M. Carlsson	DMA / Denmark
17	Simon Plass	DLR / Germany
18	Chae Jong-Guk	MOF/ Korea
19	Kim Kang On	MOF/ Korea
20	Andrey Oleynikov	Department of Navigation and Oceanography, Ministry of Defense of Russian Federation
21	Alessandra Fiumara	European Space Agency
22	Evelin Engler	DLR/Germany
23	Stig Eric Christiansen	Kongsberg / Norway
24	Maria Mota	ESSP / Spain

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
ENAV18-	1.2	draft Agenda ENAV18 20160309	IALA Secretariat	Omar Frits Eriksson
ENAV18-	1.4	Programme for the week 20160111	IALA Secretariat	Omar Frits Eriksson
ENAV18-	2.1	ENAV18-2.1 Action items from ENAV17 20160214	IALA Secretariat	Seamus Doyle
ENAV18-	3.1	Input paper Committee template January 2016	IALA Secretariat	Omar Frits Eriksson
ENAV18-	4.1	(C61-22.1) Final Report	IALA Secretariat	Seamus Doyle
ENAV18-	4.2	(PAP30-18.1) Report PAP30	IALA Secretariat	Michael Card
ENAV18-	4.3	Report on IALA Seminar on Maritime Digital Infrastructure and Testbeds Gothenburg 2015	IALA Secretariat	Omar Frits Eriksson
ENAV18-	4.4	Report e-Navigation Underway International 2016 Final	IALA Secretariat	Omar Frits Eriksson
ENAV18-	4.5	Report of ITU WRC-15 Geneva 2nd to 27th November 2015	Stefan Bober	Stefan Bober
ENAV18-	4.6	Report on IMO NCSR 3 (29 Feb to 4 March 2016)	Mahdi Al Mosawi	Michael Card
ENAV18-	4.10	Report IALA Workshop on Development of VHF Data Exchange System (VDES) final	IALA Secretariat	WG3
ENAV18-	5.2.1	(DWG2-2.2) IALA Dictionary Working Group for Committees 20160301	DWG	Omar Frits Eriksson
ENAV18-	5.2.2	Dictionary amendment proposal form	DWG	Omar Frits Eriksson
ENAV18-	5.3	Report from Rapporteur on GMDSS january 2016	Jean Charles Cornillou	Jean-Charles Cornillou
ENAV18-	5.4.1	Liasion note on joint ENAV & VTS meeting	Tuncay Cehrel	Omar Frits Eriksson
ENAV18-	5.4.2	Rapporteur Report from VTS41	Jon Leon Ervik	Jon Leon Ervik
ENAV18-	5.6	ENAV18-5.6 IHO Rapporteur report to IALA ENAV18	Edward Hosken	Edward Hosken
ENAV18-	6.1	WWA brief to ENAV18 March 2016	Gerardine Delanoye	Gerardine Delanoye
ENAV18-	6.2	Presentation R&D of Automatic VHF Operation Status Identification Feature in AIS	Young Sup Kim	Young Sup Kim
ENAV18-	6.3	ENAV18-6.3 VTS Symposium 2016 Website - Registration Flow - A	Hairizam Albukhari	Hairizam Albukhari
ENAV18-	6.4	Presentation - RTCM Annual Assembly 2016	Bill Cairns	Bill Cairns
ENAV18-	6.4.1	Presentation - RTCM Annual Assembly 2016	Bill Cairns	Bill Cairns
ENAV18-	6.5	IALA file sharing web site and ftp server 20160314a	Jeffrey van Gils	Jeffrey van Gils
ENAV18-	6.6	Maritime Cyber Security Threats and Opportunities	Brendan Saunders	Brendan Saunders
ENAV18-	6.7	Presentation - Usability Evaluation of e-Navigation MSP 2(NAS)	Yung Ho YU	Yung Ho YU
ENAV18-	6.9	Radar Trials in Singapore for resilient	Takuo Kashiwa	Takuo Kashiwa

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
		positioning draft3		
ENAV18-	7.1	(ENAV17-14.2.24) ENAV Work Plan revised at ENAV17	ENAV17	Omar Frits Eriksson
ENAV18-	7.2	ENAV Work Programme Task Register revised at ENAV17	ENAV17	Omar Frits Eriksson
ENAV18-	8.1	ENAV Terms of Reference revised at ENAV17	ENAV17	Omar Frits Eriksson
ENAV18-	9.1.1	S-201 AtoN Information Product Specification Covering note	Nick Ward	WG1
ENAV18-	9.1.2	ENAV18-9.1.2 S-201 AtoN Information Product Specification - draft 0.0.1	Nick Ward	WG1
ENAV18-	9.2	WG1 Streaming Data Service draft 4	ENAV17	WG1
ENAV18-	9.3	(ENAV17-14.2.4) WG1 Draft Risk Assessment Plan	ENAV17	WG1
ENAV18-	9.3.1	(ENAV17-14.2.4) WG1 draft Risk Assessment Plan 1 revised	Yves Desnoës	WG1
ENAV18-	9.4	WG1 draft IALA Guideline on the Application Note on Support of CSSA for MSPs + maritime cloud 20150423	ENAV17	WG1
ENAV18-	9.5	WG1 Questions on a Digital Infrastructure Framework for e-navigation (rev3)	ENAV17	WG1
ENAV18-	9.6	ENAV18-9.6 (ENAV17-14.2.7) WG1 International Standard for M2M Interfaces v1.1	ENAV17	WG1
ENAV18-	9.7	(ENAV17-14.1.2) Guideline 1087 on Procedures for the Management of the IALA Domains under the IHO GI Registry rev2 QC	ENAV17	WG1
ENAV18-	9.8	(ENAV17-14.1.3) Guideline 1106 on Producing an IALA S-200 series Product Specification rev2 QC	ENAV17	WG1
ENAV18-	9.9	S-200 Status Report	Nick Ward	WG1
ENAV18-	9.10	(ARM3-11.1.2) Liaison note to IALA members on Use of Pictogram	ARM3	WG1, WG4
ENAV18-	9.11	(ARM3-11.1.3) Liaison note to ENAV on portrayal of sector lights	ARM3	WG1, WG4
ENAV18-	9.13	WG1 work programme	Edward Hosken	WG1
ENAV18-	9.14	Report of Inter-Sessional meeting of WG1 Sub Group on S-100	Peter Hooijmans	WG1
ENAV18-	9.15.1	IHO S100 Change Proposal form and Annexes	Peter Hooijmans	WG1
ENAV18-	9.15.2	Change Proposal S100	Peter Hooijmans	WG1
ENAV18-	9.15.3	CP Annex A Session Oriented Services	Peter Hooijmans	WG1
ENAV18-	9.15.4	CP Annex B Change Matrix S100	Peter Hooijmans	WG1
ENAV18-	9.15.5	CP Annex C exercise output documents	Peter Hooijmans	WG1

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV18-	9.16.1	Exercise on the dev of S-100 PS for stream data service infDoc IVEF DraftPS GA RC	Peter Hooijmans	WG1
ENAV18-	9.16.2	IALA Draft Product Specification IVEF v0.0.4 20160104	Peter Hooijmans	WG1
ENAV18-	9.16.3	IALA S100 Gap Analyse v0.1.1 20160104	Peter Hooijmans	WG1
ENAV18-	9.16.4	IALA S100 Recommendation Gap v0.1.1 20160104	Peter Hooijmans	WG1
ENAV18-	9.17	Comments on ENAV17-14.1.5 on MRN Unique Identifiers	Omar Frits Eriksson	WG1
ENAV18-	9.18	Proposed action on establishing maritime resource namespace v0.0	Omar Frits Eriksson	WG1
ENAV18-	9.19	(VTS41-12.1.10) Liaison to ENAV on M2M interfaces	VTS41	WG1
ENAV18-	10.1	ACCSEAS Legacy Report for IALA Committees ENAV17 and VTS40 and ARM3	Pieter Paap	WG1, WG2, WG3, WG4, WG5
ENAV18-	10.2	ACCSEAS Legacy Report, including a sustainable plan for future Work, final version 1.8, issued 13th May 2015	Pieter Paap	WG1, WG2, WG3, WG4, WG5
ENAV18-	10.3	ACCSEAS Baseline and Priorities Report v3.0	Alwyn Williams	WG2
ENAV18-	10.4	(ENAV17-14.2.1) WG2 Draft guidelines on planning testbeds and reporting of testbed results - MA work as on 14 Jan 2016	Mahesh Alimchandani	WG2
ENAV18-	10.4.1	Alan Grant comments on draft e-navigation testbed guideline (covernote)	Alan Grant	WG2
ENAV18-	10.4.2	(ENAV17-14.2.1) WG2 draft Guidelines on Planning Testbeds and Reporting of Testbed Results - ajg	Alan Grant	WG2
ENAV18-	10.5	(ENAV17-14.2.2) WG2 Roadmap for e-navigation	ENAV17	WG2
ENAV18-	10.5.1	Alan Grant comments on draft e-navigation roadmap (covernote)	Alan Grant	WG2
ENAV18-	10.5.2	(ENAV17-14.2.2) WG2 roadmap for e-navigation -ajg	Alan Grant	WG2
ENAV18-	10.6	Final public summary of FAROS Project	Mahesh Alimchandani	WG2
ENAV18-	10.7	20160129 Projects and testbeds relevant to EfficienSea2 v16	Nick Ward	WG2
ENAV18-	10.8.1	(ENAV17-10.4.1) ACCSEAS Documents for IALA Committees ENAV17 and VTS40 and ARM3.	ENAV17	WG2
ENAV18-	10.8.2	(ENAV17-10.4.2) ACCSEAS e-Navigation Architecture Report v1	ENAV17	WG2
ENAV18-	10.8.3	(ENAV17-10.4.3) ACCSEAS Route Topology Model Report.	ENAV17	WG2
ENAV18-	10.8.4	(ENAV17-10.4.4) ACCSEAS Training Needs Analysis Report	ENAV17	WG2
ENAV18-	10.8.5	(ENAV17-10.4.5) ACCSEAS Final Report v1	ENAV17	WG2

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV18-	10.8.6	(ENAV17-10.4.6) ACCSEAS Final Conference Report	ENAV17	WG2
ENAV18-	10.9.1	(ENAV17-10.5.1) ACCSEAS Service Description Documents for ENAV17	ENAV17	WG2
ENAV18-	10.9.2	(ENAV17-10.5.2) ACCSEAS S-100 Product Description - MSI-NM Maritime Safety Information - Notice to Mariners v1	ENAV17	WG2
ENAV18-	10.9.3	(ENAV17-10.5.3) ACCSEAS Service Description - IVEF Inter-VTS Exchange Format v1	ENAV17	WG2
ENAV18-	10.9.4	(ENAV17-10.5.4) ACCSEAS Service Description - Maritime Cloud v1	ENAV17	WG2
ENAV18-	10.9.5	(ENAV17-10.5.5) ACCSEAS Service Description - MSI-NM Maritime Safety Information - Notice to Mariners v1	ENAV17	WG2
ENAV18-	10.9.6	(ENAV17-10.5.6) ACCSEAS Service Description - MSPS Multi-source Positioning System v1	ENAV17	WG2
ENAV18-	10.9.7	(ENAV17-10.5.7) ACCSEAS Service Description - No-Go Area v1	ENAV17	WG2
ENAV18-	10.9.8	(ENAV17-10.5.8) ACCSEAS Service Description - Tactical Exchange of Intended Routes v1	ENAV17	WG2
ENAV18-	10.9.9	(ENAV17-10.5.9) ACCSEAS Service Description - Tactical Route Suggestion v1	ENAV17	WG2
ENAV18-	10.9.10	(ENAV17-10.5.10) ACCSEAS Service Description - VOCT Vessel Operations Coordination Tool v1	ENAV17	WG2
ENAV18-	10.10	(ENAV17-10.7) ACCSEAS Legacy Report v1	ENAV17	WG2
ENAV18-	10.11	(ENAV17-10.8) Liaison Note on Outcomes of the ACCSEAS Legacy Report.	ENAV17	WG2
ENAV18-	10.12	Draft e-NAV Road Map 2016025 MA	Mahesh Alimchandani	WG2
ENAV18-	10.13	Future Work Items from ACCSEAS for ENAV Committee	Mahesh Alimchandani	WG2
ENAV18-	11.1	IEC WG15 MTG19-O-011 Liason to IALA on certain clarifications to ITU-R-M1371-5-2016-01-1	Stefan Bober	WG3
ENAV18-	11.1.1	ITU WRC-15 Provisional Final Acts R-ACT-WRC.11-2015-PDF-E	Stefan Bober	WG3
ENAV18-	11.1.2	R15-WRC15-C-0347!!MSW-E - VDES Appendix 18	Stefan Bober	WG3
ENAV18-	11.2	R-REC-M.2092-0-201510-I!!PDF-E	Stefan Bober	WG3
ENAV18-	11.3	(ENG3-11.1.11) Liaison note ENG to ENAV on VDES user requirements	ENG3	WG3
ENAV18-	11.4	(VDES1-12.1.1) draft input to IMO - New planned output on development of performance standards standards for VDES -	VDES WS	WG3

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
		post plenary		
ENAV18-	11.4.1	Annexes of the draft input to IMO – New planned output on development of performance standards for VDES.	Hideki Noguchi	WG3
ENAV18-	11.5	(VDES1-12.2.1) Draft FAQ regarding VDES 20160218 post plenary	VDES WS	WG3
ENAV18-	11.6	(VDES1-12.3.1) Draft IALA Guideline on VDES - User Requirements - post plenary	VDES WS	WG3
ENAV18-	11.7	(VDES1-12.3.2) draft Guideline on VDES - Technical Annex - post plenary	VDES WS	WG3
ENAV18-	11.8	INF Paper on VDES for MSC96	Hideki Noguchi	WG3
ENAV18-	11.9.1	Structure of IALA Documentation on VDES	Antti Kukkonen	WG3
ENAV18-	11.9.2	Draft IALA Guideline on VDES related applications-2016-03-01	Antti Kukkonen	WG3
ENAV18-	11.10	Integrity monitoring and authentication for VDES	Antti Kukkonen	WG3
ENAV18-	11.11	Report from Dublin 2016 Intersessional Meeting of ENAV WG3	Peggy Browning	WG3
ENAV18-	11.12	Draft revision Guideline 1082 AIS Overview Ed2 WD160121	Peggy Browning	WG3
ENAV18-	11.13	Proposal on Facilitation of VDES testbeds	Jens K Jensen	WG3
ENAV18-	11.14	SBAS experts revision of Draft Guidelines on User Requirements for VDES	Maria Mota	WG3
ENAV18-	11.15	IALA A-124 Appendix 14 Ed 2 FATDMA Start Slot Corrections 20160111	Peggy Browning	WG3
ENAV18-	11.16.1	GLA-ITR VDES Waveform Technical Requirements Study input	Jan Safar	WG3
ENAV18-	11.16.2	GLA & ITR, 'VDES Waveform Technical Requirements', Technical report no. RPT-02-JSa-16, January 2016	Jan Safar	WG3
ENAV18-	12.1	20160210 letter IHB IALA-ENAV MSP fina	IHO Giles Bessero	WG4
ENAV18-	12.2	WG4 MSP11 Nautical Charts Service	Ulrich Tagne	WG4
ENAV18-	12.3	MSP15 Real-Time Hydrographic and Environmental Information Services	Ulrich Tagne	WG4
ENAV18-	12.4	WG4 MSP12 Nautical Publication Service	Ulrich Tagne	WG4
ENAV18-	12.5	WG4 MSP13 Ice Navigation Service	Ulrich Tagne	WG4
ENAV18-	12.6	WG4 MSP8 Vessel Shore Reporting Service	Ulrich Tagne	WG4
ENAV18-	12.7	WG4 MSP5 Maritime Safety Information Service	Ulrich Tagne	WG4
ENAV18-	12.8	(ENAV17-14.2.26) Maritime Service Portfolios (MSP) descriptions v2 151102	ENAV17	WG4
ENAV18-	12.9	(ENAV17-14.2.27) Progress on e-navigation Services incl List of Relevant Organisations for MSPs	ENAV17	WG4

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV18-	12.10	(ENAV17-12.2) WG4 MSP15 Real-Time Hydrographic and Environmental Information Services vf1 wp2	ENAV17	WG4
ENAV18-	12.11	(ENAV17-12.3) WG4 MSP11 Nautical Chart Service wp3	ENAV17	WG4
ENAV18-	12.12	Automated Ship Reporting v1.1.	Fred Pot	WG4
ENAV18-	12.13.1	S412 Weather Overlay Status update IALA v2016	Mahesh Alimchandani	WG4/ WG1
ENAV18-	12.13.2	Designing A New Way To Deliver Marine Weather Data	Mahesh Alimchandani	WG4/ WG1
ENAV18-	12.14.1	ENAV18-12.14.1 Cyber threats	Alan Grant	WG4
ENAV18-	12.14.2	ABS Cyber Security v1 GN e	Alan Grant	WG4
ENAV18-	12.14.3	Guidelines on cyber security onboard ships version 1-0	Alan Grant	WG4
ENAV18-	12.14.4	USCG Cyber strategy - ref1	Alan Grant	WG4
ENAV18-	12.14.5	2011 ENISA Analysis of cyber security aspects in the maritime sector 1 0 - Ref2	Alan Grant	WG4
ENAV18-	12.15	Draft IALA Guidelines on MSPs	Ulrich Tagne	WG4
ENAV18-	12.16	MSC96-new input 6 (MSPs)-05feb-v15	Jon Leon Ervik	WG4
ENAV18-	12.17	IALA Comment on input document MSC 96-23-xx New planned output on harmonized Maritime Service Portfolios	IALA Secretariat	WG4
ENAV18-	13.1	(ENAV17-14.2.8) WG5 Draft Recommendation on eLoran service provision	ENAV17	WG5
ENAV18-	13.2	(ENAV17-14.2.9) WG5 Draft Guideline on eLoran service provision (rev.291015)	ENAV17	WG5
ENAV18-	13.3	(ENAV17-14.2.10) WG5 eLoran Almanac format (V1.0)	ENAV17	WG5
ENAV18-	13.4	(ENAV17-14.2.11) WG5 Coordination of PNT Development Activities	ENAV17	WG5
ENAV18-	13.5	(ENAV17-14.2.12) WG5 R-Mode Intersessional aims and objectives	ENAV17	WG5
ENAV18-	13.6	(ENAV17-14.2.13) WG5 Draft Guideline on Use of SBAS (rev.291015)	ENAV17	WG5
ENAV18-	13.7	(ENAV17-14.2.14) WG5 Draft Guideline on Techniques Used for on-board PNT data processing (rev.291015)	ENAV17	WG5
ENAV18-	13.8	(ENAV17-14.2.15) WG5 Draft contents of a coverage prediction guideline - mindmap	ENAV17	WG5
ENAV18-	13.9	(ENAV17-14.2.15) WG5 Draft contents of a coverage prediction guideline	ENAV17	WG5
ENAV18-	13.10	(ENAV17-14.2.22) WG5 Draft Maritime Operational Requirements (rev.291015)	ENAV17	WG5
ENAV18-	13.11.1	Status of the development of the guideline on eLoran service provision	Jiwon Seo	WG5

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV18-	13.11.2	(ENAV17_13_15_3) draft Guideline on eLoran Service Provision-V0.7	Jiwon Seo	WG5
ENAV18-	13.12	R-Mode intersessional report	Alan Grant	WG5
ENAV18-	13.13	WG5 plan for ENAV18.	Alan Grant	WG5
ENAV18-	13.14.1	WG5 Cover note for Draft Guideline on Port and Harbour High Accuracy Systems.	Thoralf Noack	WG5
ENAV18-	13.14.2	WG5 Draft Guideline on High Accuracy Systems and Services in Ports and Harbours	Thoralf Noack	WG5
ENAV18-	13.15	True Heading patent on positioning using AIS data	Jesper Bäcksted	WG5
ENAV18-	13.16	Transmission of SBAS corrections over AIS	Maria Mota	WG5
ENAV18-	13.17.1	Status Update PNT Guideline development f	Evelin Engler	WG5
ENAV18-	13.17.2	NCSR 3-8 - Draft guidelines for shipborne Position, Navigation and Timing (data processing) unit (Finland and Germany)	Evelin Engler	WG5
ENAV18-	13.18.1	S-240 DGNSS Station Almanac Product Specification - Working Draft 0.0.2	Yonghun Cho	WG5
ENAV18-	13.18.2	S-240 comment form 20160201	Yonghun Cho	WG5
ENAV18-	13.18.3	S-240 DGNSS Station Almanac Product Specification - Working Draft 0.0.1	Yonghun Cho	WG5
ENAV18-	13.18.4	S-240 DGNSS Station Almanac Product Specification - Working Draft 0.0.1_Nick Ward comments.	Yonghun Cho	WG5
ENAV18-	13.19	Update of S-240 DGNSS Station Almanac	Yonghun Cho	WG5
ENAV18-	13.20	Transmission of SBAS corrections over IALA beacons	Maria Mota	WG5
ENAV18-	13.21	160209 Development Status of Korea eLoran	WG5	WG5
ENAV18-	13.22	eLoran and Resilient PNT Update 160209-IALA-V0.1	WG5	WG5
ENAV18-	13.23	PSD-R-Mode-WG5-Interference Considerations	WG5	WG5
ENAV18-	13.24	R-Mode-Baltic proposal project preparation INTERREG DLR	WG5	WG5
ENAV18-	13.25	R-Mode-Status-WG5-IM	WG5	WG5
ENAV18-	13.26	Testbed of AIS R-mode in China	HU Qing	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.

Meeting	Agenda Item	OUTPUT PAPERS Title / Author (if required)	Action
ENAV18-	14.1.1	Liaison note to the ARM Committee on Navguide Chapter 4 amendments	To ARM
ENAV18-	14.1.2	Guidelines on Planning Testbeds and Reporting of Testbed Results - Final Draft (with liaison note from Mahesh Alimchandani)	To Council To IMO Secretariat
ENAV18-	14.1.3	Liaison note to VTS and ARM Committees on potential future work from the ACCSEAS project	To ARM To VTS
ENAV18-	14.1.4	Liaison note to VTS and ARM Committees on the FAROS project version 2	To ARM To VTS
ENAV18-	14.1.5	Liaison note to IHO	To Council To IHO
ENAV18-	14.1.8	S-240 DGNSS Station Almanac Product Specification Draft 002 track changes	To Yonghun Cho
ENAV18-	14.1.9	S-240 DGNSS Station Almanac Product Specification Draft 002	To Yonghun Cho
ENAV18-	14.1.10	S-240 Comments Form (NW)	To Yonghun Cho
ENAV18-	14.1.11	IALA Comment on input document MSC 96-23-7	To Council by correspondence To IMO
ENAV18-	14.1.12	Change Proposal S-100	To Council To IHO
ENAV18-	14.1.13	CP annex A Session Oriented Services	To Council To IHO
ENAV18-	14.1.14	CP annex B change matrix S-100	To Council To IHO
ENAV18-	14.1.15	CP annex C exercise output documents	To Council To IHO
ENAV18-	14.1.16	draft Guideline 1087	To Council
ENAV18-	14.1.17	Draft IALA Guideline 1106	To Council
ENAV18-	14.1.18	Liaison note to VTS Committee on S-200 product specification for the IVEF service	To VTS42
ENAV18-	14.1.19	Liaison note to the PAP on maritime resource names	To PAP31
ENAV18-	14.1.20	Draft Guideline on Unique Identifiers for Maritime Resources (with ENAV14.1.19)	To PAP31 To ENAV19
ENAV18-	14.1.21	Liaison note to the PAP on portrayal of sector lights	To PAP31
ENAV18-	14.1.22	Liaison note to the ARM Committee on portrayal of sector lights	To ARM4
ENAV18-	14.1.23	Liaison note to the ARM Committee on pictograms	To ARM4
ENAV18-	14.1.24	Liaison note on draft e-navigation roadmap (with ENAV18-14.1.30)	To VTS42 To ARM4 To ENG4 To PAP31
ENAV18-	14.1.25	Liaison to ITU from IALA concerning revision to ITU-R M.2092	To Council by correspondence To ITU
ENAV18-	14.1.26	Liaison to ITU from IALA for AI 1.9.2	To Council by correspondence

Meeting	Agenda Item	OUTPUT PAPERS Title / Author (if required)	Action
			To ITU
ENAV18-	14.1.27	Guideline 1082 AIS Overview ed2	To Council
ENAV18-	14.1.28	Information paper on VDES to IMO for MSC96	To IMO already
ENAV18-	14.1.29	Draft input to IMO new planned output on development of performance standards for VDES	To Council via JCG To IMO
ENAV18-	14.1.30	draft e-Navigation Roadmap	To VTS42 To ARM4 To ENG4 To PAP31
ENAV18-	14.1.31	Liaison note to ITU-R regarding cooperation with IALA	To Council To ITU
ENAV18-	14.1.32	Liaison Note to Joint VTS-ENAV Working Group on Digital Interaction between Ship and VTS	Joint VTS-ENAV Working Group
ENAV18-	14.1.33	Annexes of the draft input to IMO new planned output on development of performance standards for VDES	To Council via JCG To ITU as annex to ENAV18-14.1.29
ENAV18-	16.1	Report 18th Session IALA ENAV Committee	To Council

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

Number	WORKING PAPERS Title / Author (if required)	Action
ENAV18- 14.2.1	ENAV Work Plan revised at ENAV18	To ENAV19
ENAV18- 14.2.2	ENAV Work Programme Task Register revised at ENAV18	To ENAV19
ENAV18- 14.2.4	Revised Navguide updated at EANV18	To Secretariat
ENAV18- 14.2.5	Draft IALA Guideline on MSPs v-4	To Lisbon WS
ENAV18- 14.2.6	Draft Guideline on eLoran service	To ENAV19
ENAV18- 14.2.10	S-200 status report	To ENAV19
ENAV18- 14.2.11	S-201 product specification (zip file)	To ENAV19
ENAV18- 14.2.12	ENAV Committee risk register	To ENAV19
ENAV18- 14.2.13	Draft Recommendation on eLoran Service Provision	To ENAV19
ENAV18- 14.2.14	Draft Recommendation on PNT Services	To ENAV19
ENAV18- 14.2.15	Draft Guideline on High Accuracy Systems	To ENAV19
ENAV18- 14.2.16	Draft Guideline on SBAS	To ENAV19
ENAV18- 14.2.17	Draft Guideline on DGNSS Radiobeacon coverage	To ENAV19
ENAV18- 14.2.18	Draft R-Mode Roadmap	To ENAV19
ENAV18- 14.2.19	R-Mode mindmap (pdf format)	To ENAV19
ENAV18- 14.2.20	R-Mode mindmap (mindmap pro format)	To ENAV19
ENAV18- 14.2.21	WG3 R-REC-M.2092	To ENAV19
ENAV18- 14.2.22	WG3 Draft IALA guideline on VDES operational	To ENAV19
ENAV18- 14.2.23	WG3 ITU Draft Report on VDE-SAT	To ENAV19
ENAV18- 14.2.24	WG3 Draft IALA guideline on VDES technical	To ENAV19
ENAV18- 14.2.25	WG3 Map to compare VDES with AIS documentation Structure	To ENAV19
ENAV18- 14.2.26	WG3 Draft IALA road map WG3	To ENAV19

Number	WORKING PAPERS Title / Author (if required)	Action
ENAV18- 14.2.27	WG3 Transmission of sbas corrections over AIS	To ENAV19
ENAV18- 14.2.28	WG3 USCG input on FATDMA issue	To ENAV19
ENAV18- 14.2.29	WG3 Comms interference on new VDES Channels - Testbed Issue	To ENAV19
ENAV18- 14.2.30	WG3 Finland Input - Structure of IALA documentation on VDES	To ENAV19
ENAV18- 14.2.31	WG3 Draft FAQ regarding VDES.	To ENAV19
ENAV18- 14.2.32	WG3 Liason to IALA on certain clarifications to ITU R M1371-5	To ENAV19
ENAV18- 14.2.33	WG3 Finland Input Draft IALA guideline on VDES related applications	To ENAV19

Task		Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
					Green	Yellow	Red	
WG1 – Operations								
1.2.1.	Develop Product Specification on AtoN Information	15	17	19	☒	☒	☐	Delayed to Session 19
1.3.1.	Revise Guideline 1106	15	16	17	☒	☐	☐	Task Completed
1.3.2.	S-100 Service Orientation	16	17	18	☒	☐	☐	Task Completed
4.3.3.	e-Navigation Risk Assessment	16		☒	☐	☐	On going
5.1.18.	CSSA draft documentation	15	21		☒	☒	☐	Task on hold
5.1.19	e-Navigation infrastructure and governance	15	20	21	☐	☒	☐	Replanned
WG2 Implementation								
4.1.1	Gather and present information testbeds (including results) globally	15	On going		☒	☐	☐	Commenced ENAV15
4.1.2	Maintain a global repository for test-bed results.	15	On going		☒	☐	☐	Commenced ENAV15
4.1.3	Encourage testbed project managers to provide information and results to IALA for posting at www.e-Navigation.net .	After 15	On going		☒	☐	☐	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		☒	☐	☐	Completed ENAV 18
4.2.1	Evaluate / analyse testbed outcomes (lessons learnt) and provide guidance.	15	ongoing		☒	☐	☐	Commenced ENAV15
4.3.1	Assist the IALA membership to shape, at a high level, the scope of their testbeds.	15	ongoing		☒	☐	☐	Commenced ENAV15
4.3.2	Coordinate an IALA Seminar on e-Navigation testbed results in 2016/17.	16	19		☒	☐	☐	Completed ENAV17
4.3.4	Develop and maintain e-Navigation Roadmap	17	20		☒	☐	☐	Aim for completion at ENAV19
4.4.1	Develop and progress an online discussion forum on testbeds.	15	16		☒	☐	☐	Task removed ENAV16
4.4.2	Maintain fora to discuss testbed-related issues.	15	16		☒	☐	☐	Commenced ENAV15

Task	Start	Planned	Revised	Progress Indicator			Status
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"/>			To commence ENAV19
WG3 Telecommunications							
1.4.1 Develop VDES Message Structures	18	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV18
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"/>	Commence ENAV18 provided WG1 is ready
2.1.1 Update the Marine Radio Communication Plan	20	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV20
2.1.2 Develop Recommendation on VDES	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On-going
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"/>	On-going

Task		Start	Planned	Revised	Progress Indicator			Status
2.3.1	Manage Application Specific Message (ASM) catalogue	20	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete until ENAV20
3.2.1	Liaise with ARM regarding Virtual AtoN	17	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
WG4 e-Nav Services								
5.1.1	Develop Guideline/ Recommendation on Maritime Service Portfolios	18	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV18
5.1.2	MSP1 VTS Information Service (IS) / Operational User Needs	16	16		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.3	MSP2 Navigational Assistance Service (NAS) / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.4	MSP3 Traffic Organisation Service (TOS) / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.5	MSP4 Local Port Service (LPS) / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.6	MSP5 Maritime Safety Information (MSI) Service / Operational User Needs	15	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	First draft Complete
5.1.7	MSP6 Pilotage Service / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.8	MSP7 Tugs Service / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.9	MSP8 Vessel Shore Reporting / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	First draft Complete
5.1.10	MSP9 Telemedical Maritime Assistance Service / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.11	MSP10 Maritime Assistance Service (MAS) / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.12	MSP11 Nautical Chart Service / Operational User Needs	16	16		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	First draft Complete
5.1.13	MSP12 Nautical Publications Service / Operational User Needs	16	16		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.14	MSP13 Ice Navigation Service / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16

Task		Start	Planned	Revised	Progress Indicator			Status
5.1.15	MSP14 Meteorological Information Service / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.16	MSP15 Real-Time Hydrographic and Environmental Information Services / Operational User Needs	16	16		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	First draft complete
5.1.17	MSP16 Search and Rescue (SAR) Service / Operational User Needs	16	17		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commence ENAV16
5.1.20	Organise a Workshop on Shore Based Maritime Services	16	19		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
WG5 PNT								
3.1.1.	eLoran Guideline	15	18	19	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Duration extended to Session 19 at ENAV16
3.1.2.	PNT Product Specification	15	17	18	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Extend to ENAV18 .
3.1.3.	PNT services & Systems	16	18		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.1.4.	High accuracy systems	18	20		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.1.5.	Use of SBAS	17	19	20	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Extend to ENAV20
3.1.7.	PNT data processing	18	20		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Withdrawn ENAV18
3.1.8.	PNT performance message	18	20		<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	19	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.1.11.	Updates on PNT developments	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.1.12.	RTCM/ITU liaison re M823	18	18		<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"/>	
3.1.14.	WG5 Document maintenance	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.1.15.	Liaison with related bodies	15	21		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.1.16.	R-mode Guideline	18	20	21	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Delayed start by 1 session

Action Items for Secretariat

1. The Secretariat is requested forward output paper ENAV18-14.1.32 to the Joint VTS – ENAV Working Group. 8
2. The Secretariat is requested to submit output paper ENAV18-14.1.11, IALA Comment on input document MSC 96-23-7, to Council for approval by correspondence and submit to IMO MSC96 by 22 March 2016. 9
3. The Secretariat is requested to forward papers ENAV18-14.2.23 to ENAV19. 10
4. The Secretariat is requested to update the Navguide on the IALA Wiki in accordance with ENAV18-14.2.4. 10
5. The Secretariat is requested to forward paper ENAV18-14.1.1 to ARM4. 10
6. The Secretariat is requested to submit a Word version of Chapter 4 of the Navguide to ENAV19. 10
7. The IALA Secretariat is requested to forward ENAV18-14.2.10 to ENAV19. 11
8. The IALA Secretariat is requested to submit the files zipped as ENAV18-14.2.11 on S-201 AtoN Information Product Specification to ENAV19. 11
9. The IALA Secretariat is requested to submit paper ENAV18-14.1.16, IALA Guideline 1087 on Procedures for the Management of the IALA Domains under the IHO GI Registry to the IALA Council for approval. 11
10. The IALA Secretariat is requested to submit ENAV18-14.1.17, Guideline 1106 on Producing an IALA S-200 Series Product Specification, to the IALA Council for approval. 11
11. The IALA Secretariat is requested to submit an S-100 change request to the IHO (addt@iho.int) consisting of the following documents ENAV18-14.1.12 Change proposal S-100, ENAV18-14.1.13 CP Annex A Session Oriented Services, ENAV18-14.1.14 CP Annex B Change Matrix S-100, ENAV18-14.1.15 Annex C exercise output documents. 12
12. The IALA Secretariat is requested to forward to the VTS Committee ENAV18-14.1.18 Liaison note to VTS Committee on S-200 Product Specification for IVEF Service, Input paper ENAV18-9.16.2 IALA Draft Product Specification IVEF v0.0.4, Input paper ENAV18-9.16.3 IALA S-100 Gap analysis v0.1.1 20160104, Input paper ENAV18-9.16.4 IALA S-100 Recommendation on closing the gap between S-100 and IVEF v0.1.1 20160104 12
13. The IALA Secretariat is requested to forward paper ENAV18-14.2.12, ENAV Committee Risk Register to ENAV19. 12
14. The IALA Secretariat is requested to submit to PAP output papers ENAV18-14.1.19 - Liaison note on Maritime Resource Names and ENAV18-14.1.20 - Draft Guideline for Maritime Resource Names. 12
15. The IALA Secretariat is requested to forward draft Guideline for Maritime Resource Names, ENAV18-14.1.20, to ENAV19. 12
16. The IALA Secretariat is requested to submit liaison note on ENAV18-14.1.21, portrayal of sector lights, to the PAP. 13
17. The IALA Secretariat is requested to submit liaison note ENAV18-14.1.22, Response on sector lights, to the ARM Committee. 13
18. The IALA Secretariat is requested to submit liaison note ENAV18-14.1.23, Use of Pictograms to the ARM Committee. 13
19. The IALA Secretariat is requested to forward the proposal to discuss M2M interfaces at the Joint VTS/ENAV Working Group meeting prior to the 2016 VTS Symposium. 13
20. The Secretariat is requested to forward ENAV18-10.8.2 to ENAV19. 14

21. The IALA Secretariat is requested to forward liaison note Future Work items identified in the ACCSEAS Legacy Report (ENAV18-14.1.3 refers) to both the VTS and the ARM Committees for their information and action as required. 15
22. The IALA Secretariat is requested to forward liaison note on the FAROS project Final Report (ENAV18-14.1.4 refers) including the FAROS report (ENAV18-10.6) to both VTS and ARM Committees for their information and action as required. 15
23. The IALA Secretariat is requested to take over, as a matter of urgency, ownership and management of www.e-navigation.net and www.e-navigation.nl. The IALA Secretariat is requested to ensure that the new website includes the functionalities listed in section 10.2 of the ENAV17 report. 15
24. Marie-Helene Grillet, the IALA Technical Manager, is requested to consider ENAV16-10.2 (A discussion paper on effective communication of information concerning testbeds) when establishing a discussion forum on the IALA website. 15
25. The IALA Secretariat is requested to advise the ENAV Committee on the IALA policy and procedure to post information to the new IALA website. 15
26. The IALA Secretariat is requested to submit ENAV18-14.1.2 (Draft IALA Guideline on planning and reporting of e-Navigation testbeds) to the IALA Council for approval. 15
27. If approved by Council the Secretariat is requested to forward ENAV18-14.1.2 to the IMO Secretariat. 15
28. The IALA Secretariat is requested to forward output paper ENAV18-14.1.24 (Liaison note including the draft e-navigation road map) and ENAV18-14.1.30 to the VTS, ARM and ENG Committees for feedback. 16
29. The IALA Secretariat is requested to forward output paper ENAV18-14.1.24 (Liaison note including the draft e-navigation road map) and ENAV18-14.1.30 to PAP31 to support the development of the IALA e-Navigation policy. 16
30. The Secretariat is requested to forward ENAV18-14.1.1 to the ARM Committee. 17
31. The IALA Secretariat is requested to forward the liaison notes, ENAV18-14.1.25, ENAV18-14.1.26 and ENAV18-14.1.31 to Council for approval by correspondence. 17
32. In the event of approval, forward to ENAV18-14.1.25, ENAV18-14.1.26 and ENAV18-14.1.31 ITU for the WP5B meeting in May by 29 April 2016. 18
33. The Secretariat is requested to submit paper ENAV18-14.1.5 to Council for approval and subsequently to IHO if approved. 21
34. The secretariat is requested to forward EAV18-14.2.5 to the Lisbon workshop. 22
35. IALA Secretariat is requested to include the working papers ENAV18-14.2.13 – Draft eLoran recommendation on eLoran Service Provision and ENAV18-14.2.6 – Draft Guideline on eLoran service provision to ENAV19. 23
36. The IALA Secretariat is requested to inform the S-200 AtoN Field Manager (Yonghun Cho) that the Committee considers that the amended S-240 product specification (ENAV18-14.1.8, ENAV18-14.1.9 and ENAV18-14.1.10) should be updated to draft status and uploaded to the website. 23
37. The IALA Secretariat is requested to seek clarification from the DGNSS beacon service providers as to whether they consent to their contact details being contained in a list, held in a restricted area of the IALA website, through with neighboring service providers can make contact regarding their planned maintenance periods. 23
38. Yonghun Cho is requested to contact the DGPS contact points and seek their permission to add their details to a list in this manner, and invite them to provide a generic email address if that is preferred. 23
39. IALA Secretariat is requested to forward ENAV18-14.2.14 – Draft Recommendation on PNT relevant services to ENAV19. 24
40. IALA Secretariat is requested to forward “ENAV18-14.2.15 – Draft Guideline on systems for high accuracy positioning services in critical areas, to ENAV19. 24

41.	IALA Secretariat is requested to include the working paper ENAV18-14.2 Draft SBAS Guideline as an input paper to ENAV19.	24
42.	IALA Secretariat is requested to include the working paper ENAV18-14.2.17 (draft Guideline on DGNSS radiobeacon coverage as an input paper to ENAV19.	25
43.	IALA Secretariat is requested to include the working papers “ENAV18-14.2.19 R-mode mindmap (PDF format)”, “ENAV18-14.2.20 R-Mode mindmap (Mindmap manager pro format)” and “ENAV18-14.2. draft R-Mode Roadmap” as an input paper to ENAV19.	26
44.	The Secretariat is requested to forward the report of ENAV18 (ENAV18-16.1) to the Council, to note.	27

Action Items for Members

45.	Committee Members are requested to consider the scope of appropriate guidance on harmonised portrayal within IALA (in particular noting Guideline 1105 and V-125), together with proposals for future work in preparation for developing guidance during ENAV19.	11
46.	Each ENAV Committee working group is requested to map their tasks to the documented risks and identify significant gaps which need addressing, and report back to WG1 during ENAV19.	12
47.	Each ENAV Committee working group is requested to consider whether the Risk Register is suitably complete. Any additional entries are to be forwarded to WG1 during ENAV19.	12
48.	Thomas Christensen is requested to produce an input paper to ENAV19 outlining requirements and potential solutions to identity management within the Maritime Cloud.	13
49.	Committee members are requested to review Chapter 4 of the Navguide and submit proposals for amendments to ENAV19.	13
50.	Committee members are requested to submit comments on the proposed restructuring of the Navguide Chapter 4 to ENAV19.	13
51.	Committee Members are requested to review the relevance of the “ACCSEAS e-Navigation Architecture Report” with respect to planned architectures such as CSSA, at ENAV19.	14
52.	ENAV Committee Working Group Chairs are requested to consider the content of the annex in the liaison note Future Work items identified in the ACCSEAS Legacy Report (ENAV18-14.1.3 refers) and consider identified work items to be included in their work programs.	14
53.	Mahesh Alimchandani is requested to contact the project managers of the FAROS project and suggest that their report (ENAV18-10.6 refers) be provided to the IMO Secretariat.	15
54.	Mahesh Alimchandani is requested to contact the project managers of FAROS and request information in ENAV18-10.6 be provided in the IALA testbed reporting template for publication on e-navigation.net.	15
55.	Mahesh Alimchandani is requested to arrange to publish the various project testbeds listed in ENAV18-10.7 (List of Projects and testbeds relevant to EfficienSea2.0) on e-navigation.net.	15
56.	Mahesh Alimchandani is requested to draft a liaison note to the IMO Secretariat to accompany ENAV18-14.1.2 (Draft IALA Guideline on planning and reporting of e-Navigation testbeds) to IMO.	15
57.	Mahesh Alimchandani is requested to consider if a new IALA Recommendation is required to support ENAV18-14.1.2 (Draft IALA Guideline on planning and reporting of e-Navigation testbeds) so that the guideline can comply with the new hierarchy of IALA documentation.	15
58.	ENAV Committee members are requested to review and comment on the content of ENAV18-14.1.30 in time for ENAV19 and send comments to the Chair and Vice Chair of WG2.	16
59.	The Chair of ENAV Committee is requested to inform the Chair of ARM Committee and the PAP of the need to restructure the NAVGUIDE in such a way that it is aligned with “IALA’s activities concerning e-Navigation and related maritime domain developments” (ENAV18-14.1.30 refers) in the short term, and with the IALA policy on e-Navigation under development in the long run.	16

60. Members of the Committee are invited to provide proposals to the Vice Chair of ENAV Committee in time for ENAV19 for restructuring chapter 4 of the current NAVGUIDE in alignment with “IALA’s activities concerning e-navigation and related maritime domain developments” (ENAV18-14.1.30 refers).	17
61. Hideki Noguchi is requested to forward output paper ENAV18-14.1.29 incorporating the annex from ENAV18-14.1.33 to the IALA Council.	18
62. Steve Burrows is requested to fill in data in the draft FAQ’s on the VDES, ENAV18-11.5.	18
63. The Chair of ENAV WG5 is requested to consider preparation of a liaison statement to ITU to amend ITU-R M.823, requesting station ID’s for SBAS stations.	19
64. Steve Burrows is requested to provide further updates for the Navguide Chapter 4.	20
65. Yung Yu from Korea is requested to provide additional attributes to MSP8 for ENAV19.	22
66. Committee members are requested to review ENAV18-14.2.13 – Draft Recommendation on eLoran service provision and ENAV18-14.2.6 – Draft Guideline on eLoran service provision and to provide any comments to the WG5 Chair prior to ENAV19.	23
67. Nick Ward is requested to liaise with the IALA Secretariat to capture the requirement in the new website design, which has been completed.	23
68. Committee members are requested to provide Prof. Manuel Lopez (Manuel.LOPEZMARTINEZ@gsa.europa.eu) with their contact details should they wish to contribute to the development of the SBAS Guideline between meetings.	24
69. WG5 Chair is requested to liaise with the ENAV Chair and IALA Deputy Secretary-General to clarify how the Committee can contribute to the IMO Correspondence Group on shipborne position, navigation and timing (Data processing) unit.	25
70. The ENAV Vice Chair is requested to note this amendment to the planned work register.	25
71. Committee Participants are requested to review working papers “ENAV18-14.2.19 R-mode mindmap (PDF format)”, “ENAV18-14.2.20 R-Mode mindmap (Mindmap manager pro format)” and “ENAV18-14.2.18 draft R-Mode Roadmap” and provide comments to the WG5 Chair.	26
72. WG5 Chair is requested to contact TrueHeading to seek clarification on its patent with respect to AIS R-Mode.	26
73. Stefan Bober is requested to submit an input paper to ENAV19 on the need for interaction with ITU in relation to R-Mode.	26
74. WG5 chair is requested to provide input to ENAV19 regarding a Recommendation in relation to retention of DGNSS MF antennas for potential future services with a view to completion at ENAV19, taking into account the existing IALA Recommendation R-135 on the Future of DGNSS Ed 1 2006-12.	26
75. Committee participants are requested to advise any corrections / amendments to the draft ENAV18 report, paper ENAV18-16.1 post plenary, by 25 th March 2016.	27



10, rue des Gaudines - 78100 Saint Germain en Laye, France
Tél. +33 (0)1 34 51 70 01- Fax +33 (0)1 34 51 82 05 - contact@iala-aism.org
www.iala-aism.org

International Association of Marine Aids to Navigation and Lighthouse Authorities
Association Internationale de Signalisation Maritime