



Report of the 17th Meeting of the ENAV Committee

26 - 30 October, 2015

Executive Summary

- The 17th meeting of the ENAV Committee was held from 26 to 30 October 2015 in Le Quartz Conference Centre, Brest, France, in association with the Safer Seas conference, and hosted by CEREMA;
- 141 people from 28 countries and 5 sister organisations, attended the 17th session of the ENAV Committee, of which 23 participants were new and 6 were observers;
- The Committee considered 115 input papers and produced 11 output papers and 29 working papers;
- A concept of unique identifiers for maritime resources was developed, the principle of which facilitates global harmonisation of information flow in e-navigation which may potentially be adopted by the whole maritime community including IHO and IMO. This will be considered at PAP with a view to coordinating the adoption of this principle;
- The principle of harmonised implementation of e-navigation through the use of international standards and inter-regional coordination was agreed and a recommendation was prepared;
- To progress close coordination between international organisations involved in e-navigation, liaison notes to IHO and WMO were developed;
- The development of VDES is actively progressing on a number of fronts and the Committee contributed successfully during ENAV17 to the ITU Radio Assembly decision regarding adoption of the ITU Recommendation ITU-R M.[VDES] which is fundamental to the future development of e-navigation communications;
- The ENAV Committee work plan for the work period 2014-2018 was updated in the light of emerging developments. The following table shows a summary progress 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per current plan
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per current plan
4 TD#4 - e-Navigation test beds	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per current plan except Task 4.3.4 commencement delayed to ENAV17
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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ENAV Committee

17th Session

30 October, 2015

Report of the 17th Session of the IALA ENAV Committee

GENERAL

The 17th meeting of the ENAV Committee was held from 26 to 30 October 2015 in Le Quartz Conference Centre, Brest, France, in association with the Safer Seas conference, with Omar Frits Eriksson as Chairman and Hideki Noguchi as Vice-Chairman. The meeting was hosted by CEREMA. The Secretary for the meeting was Seamus Doyle.

1 OPENING

1.1 Opening address

Francis Zachariae, IALA Secretary General, opened the meeting, welcoming all participants to ENAV17 and noting a record attendance. He thanked CEREMA and Michel Cousquer for their tremendous help and for hosting the meeting. He recalled the extensive maritime history of Brest and the consequent suitability of Brest as a venue for the ENAV session. He provided an update on progress in IALA's transition from NGO to IGO, noting that a draft convention text will be considered by Council at their session 61, as well as consideration of good governance. Voting rights will be limited to Contracting Governments while Industrial Membership and Associate Membership will be unaffected under the IGO structure. Resourcing of the IALA Secretariat has commenced and rebranding IALA for the future is in hand. IGO status will be established at a diplomatic conference in 2018.

1.2 Administration & Safety Briefing

Seamus Doyle provided a Safety and Administrative briefing. Attention was drawn to the Committee website and ftp working arrangements on e-navigation.nl for documents, with thanks expressed to Jeffrey van Gils.

1.3 Approval of the agenda

The agenda (paper ENAV17-1.2) was adopted.

1.4 Introductions and apologies

Omar Frits Eriksson introduced himself and the WG chairs.

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



Omar Frits Eriksson added his welcome to both newcomers and those returning to IALA.

1.5 Programme for the week

Paper ENAV17-1.4.1 refers. The programme for the week was approved.

2 REVIEW OF ACTION ITEMS FROM ENAV16

Paper ENAV17-2.1 refers. It was noted that the action items from e-NAV16 for the IALA Secretariat were complete with the following provisos:

- The Council requested that the ENAV Committee should check the Recommendation e-Nav140 (CSSA), Guideline 1113 and Guideline 1114 against the outcomes of the Workshop on Shore-based Maritime Services (Lisbon May 2016)
- The management of external web sites by IALA (actions 14 and 15) is on-going.
- The communication of e-navigation test bed information is under active consideration in IALA (actions 20 and 40);

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 following question was asked of all attendees:

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 use the IALA Wiki as a repository of 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.

It was noted that the ACCSEAS web site will only be available for a few months following completion of the project and an alternative source is required if website access to the ACCSEAS reports is required long term. E-navigation.net was suggested as a possible domain.

It was agreed that input paper ENAV17-13.8.2 should be uploaded to the IALA Wiki.

Action

The IALA Secretariat is requested to upload input paper ENAV17-13.8.2, Guidelines for the coordinated enhancement of the maritime PNT system, to the IALA Wiki.

4 REPORTS FROM OTHER BODIES

4.1 IALA Council

The Committee noted the report of the 60th Session of the IALA Council, Kuala Lumpur, Malaysia, 26-29 May 2015. Paper ENAV17-4.1 refers. Issues relevant to ENAV Committee work were considered.

4.2 PAP29

The Committee noted the report of the 29th Session of the IALA Policy Advisory Panel (PAP29), 15-17 June 2015 in IALA HQ. Paper ENAV17-4.2 refers. Issues relevant to ENAV Committee work were considered.

Omar Frits Eriksson reported that an action plan is being drawn up to align and coordinate work between the ENAV and VTS Committees.

Opinions were divided regarding changing the name of the ENAV Committee.

4.3 ITU-R WP5B meeting Bucharest, 6th to 17 July 2015

The Committee noted the report of the meeting of ITU-R WP5B meeting in Bucharest from 6th to 17 July 2015 presented by Johnny Schultz. Paper ENAV17-4.3 refers. Issues relevant to ENAV Committee work were considered. Difficulties regarding reservation of frequencies for VDES at ITU WRC were considered.

4.4 ITU SG 5 chairman record, meeting 27 Aug 2015 R12-SG05-C-0270!!MSW-E

The Committee noted the ITU SG 5 chairman record of the meeting on 27 August 2015, R12-SG05-C-0270!!MSW-E. Paper ENAV17-4.4 refers.

4.5 LAP15-20.1 Final report

The Committee noted the report of the 15th Session of the IALA Legal Advisory Panel (LAP15), 14-16 September 2015 in IALA HQ. Paper ENAV17-4.5 refers. Issues relevant to ENAV Committee work were considered.

5 REPORTS FROM RAPPORTEURS

5.1 IALA Bulletin

Hideki Noguchi noted that he will be providing a report on ENAV17 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.

5.3 GMDSS

Jean-Charles Cornillou presented an update on GMDSS, paper ENAV17-1.25 and annexes refer. He advocated that ENAV VDES should take account of GMDSS modernisation.

Action

WG3 Chair is requested to consider how ENAV VDES can take account of GMDSS modernisation.

5.4 Report from VTS40

Jon Leon Ervik presented a report on e-Navigation work during VTS40, paper ENAV17-5.4 refers.

5.5 Ship-board developments re e-navigation services

Anders Brødje presented a report on ship-board developments regarding e-navigation services.

5.6 IHO

Edward Hosken presented a report on IHO activities. Paper ENAV17-5.6 refers. He noted that a limited number of experts are involved in S-100, since people are unsure of what S-100 will deliver and he advocated greater involvement.

6 PRESENTATIONS

Four presentations were made during the meeting and two were 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 ENAV17-6.1 refers. She noted the success of the Academy in reducing the number of states targeted for capacity building for harmonisation of AtoN services.

6.2 ENAV Committee Risk Register

Paper ENAV17-6.2 refers. Yves Desnoës noted that managing risk is a very big task for the ENAV Committee. He advocated the benefits of breaking down the task of implementing e-navigation into achievable parts. After discussion of the approach to risks, it was agreed that the management of risk is necessary but it should not become a major task.

6.3 Status of IALA S-200

The presentation from Yonghun Cho the status of IALA S-200 was cancelled due to insufficient time but the presentation is included in the input papers as ENAV17-6.3 refers.

6.4 Seattle e-Navigation Conference

Bill Cairns invited ENAV Committee participants to attend eNavigation 2015 in Seattle, 2-3 December 2015. Paper ENAV17-6.4 refers.

6.5 The Arctic Test Bed for EGNOS improvements

The presentation on the Arctic Test Bed for EGNOS improvements by Alessandra Fiumara was referred to the Working Group due to lack of time. Paper ENAV17-6.5 refers.

6.6 Status of AMSA/DHI large vessel drift project

Jillian Carson-Jackson made a presentation on the AMSA/ DHI large vessel drift project. Paper ENAV17-6.6 refers. The algorithms from the project are available to Committee Participants and Participants were invited to share their algorithms. It was suggested that the project be added to e-navigation.net as a testbed.

Action

Jillian Carson-Jackson is invited to submit the AMSA / DHI large vessel drift project as a testbed on e-navigation.net.

7 REVIEW OF WORK PROGRAMME AND WORKING GROUP EXPECTATIONS

The Committee work plan, terms of reference for the Working Groups and Committee work plan task register were updated, papers ENAV17-14.2.24, ENAV17-14.2.25, ENAV17-14.2.23 refer.

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

Action

The Secretariat is requested to forward papers ENAV17-14.2.23, ENAV17-14.2.24, ENAV17-14.2.25 to ENAV18.

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	Jillian Carson-Jackson
WG 4	ENAV Services	Jon Leon Ervik	Thomas Porathe
WG5	PNT	Alan Grant	Michael Hoppe

The Chairman welcomed Anders Brødje as the new Vice Chair of WG2 and thanked the outgoing Vice Chair Bill Cairns for his years of service to the Committee.

9 WORKING GROUP 1 – HARMONISATION (WG1)**9.1 Clarify the terminology used in IHO S-100 and the Common Marine Data Structure (CMDS)**

Input paper ENAV17-9.1 is considered to be of no further value. This is because it is mostly extracts from other texts, particularly S-100, and the on-going maintenance task to ensure it remains aligned to the source texts is an unnecessary overhead. Those seeking such definitions should refer to the source documents.

9.2 Develop Product Specification on AtoN Information (Task 1.2.1)

Input paper ENAV17-9.13 was noted, and the recommendation from the development team that S-201 is mature enough for wider review was endorsed.

Actions

The IALA Secretariat is requested to inform the S-200 AtoN Field Manager (Mr Cho) that the Committee considers S-201 to be ready for review and recommends that its status be changed to 'Draft'.

The AtoN Field manager (Mr Cho) is requested to manage the review of S-201 in accordance with section 6.3 of Guideline 1087 (edition 2).

9.3 Revise Guidelines 1087 and 1106 (Task 1.3.1)

Proposed amendments within papers ENAV17-9.2 and ENAV17-9.10 were considered and minor changes made to:

- (i) Guideline 1087 'Procedures for the Management of the IALA Domains under the IHO GI Registry', ENAV17-14.1.2 and
- (ii) Guideline 1106 'Producing an IALA S-200 Series Product Specification' (ENAV17-9.2), ENAV17-14.1.3.

Following post-ENAV17 review papers ENAV17-14.1.2 and ENAV17-14.1.3, were returned to ENAV18 for further work.

Actions

The IALA Secretariat is requested to submit ENAV17-14.1.2 'Guideline 1087 (rev 2) on Procedures for the Management of the IALA Domains under the IHO GI Registry' to ENAV18.

The IALA Secretariat is requested to submit ENAV17-14.1.3 'Guideline 1106 'Producing an IALA S-200 Series Product Specification' to ENAV18.

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

Input paper ENAV17-9.3 is considered to be of no further value.

Input paper ENAV17-9.9 is noted as a useful summary. The request for assistance from appropriate expertise should be re-iterated. It is retained as a working paper.

Given the lack of expertise present, work was not progressed in this session, but requirements for intercessional work agreed. The Netherlands is thanked for offering to host this in February 2016, and to provide additional technical expertise at this time.

Actions

The IALA Secretariat is requested to carry forward working paper ENAV17-14.2.3 (Streaming data service draft4) to ENAV18.

Participants are requested to consider whether they have the required expertise to contribute to the definition of IALA's requirements for data streaming services within the context of defining necessary changes to S-100. Volunteers who are available to contribute to intercessional work in February 2016 are requested to identify themselves to WG1 chair.

9.5 Risk assessment and management plan (Task 4.3.3)

The opening plenary presentation/discussion, subsequent collection of input from each WG and lively discussion in WG1 has appropriately raised the issue of risk management. Acknowledging the importance of identifying risks to the wider implementation of e-navigation, the current aim of ENAV17-9.4 is to capture risks relating to the delivery of the ENAV Committee's defined tasks (ENAV17-7.1 Work Programme Task Register). ENAV17-9.4 has been developed to include the main risks from each WG and remains a working document for ENAV Committee reference.

Actions

The IALA Secretariat is requested to carry forward ENAV17-14.2.4 (e-navigation risk assessment plan) to ENAV18 as a working document.

9.6 Develop Recommendation on Common Shore based System Architecture (Task 5.1.18)

Paper ENAV17-9.7 was considered to be a useful example of an Application Note. No development was progressed. It is retained as a working paper for consideration within the context of future Maritime Cloud developments.

Noting approval by Council of the following IALA documents was accompanied by a note stating that the ENAV Committee should check these documents against the outcomes of the Shore-based Maritime Services Workshop (May 2016) to 'assess the continued validity' of these documents, it was decided that it would be premature to revise task 5.1.18 (as recorded in action 48 from ENAV16) until ENAV19.

- (i) Recommendation e-NAV-140 on the Architecture for Shore-based Infrastructure 'Fit for e-Navigation'
- (ii) Guideline 1113 on Design and Implementation Principles for Harmonised System Architecture of Shore-based Infrastructure
- (iii) Guideline 1114 on A Technical Specification for the Common Shore-based System Architecture (CSSA),

Actions

The IALA Secretariat is requested carry forward ENAV17-14.2.5 (Draft IALA Guideline on the Application Note on Support of CSSA for MSPs + Maritime Cloud) as working paper to ENAV18.

ENAV16 action 48 "Edward Hosken is requested to cease further work on the CSSA (Task 5.1.18) in WG1, and revise, together with WG1, the work task 5.1.18 at a future session, proposing the way forward to the Committee" is carried forward to ENAV19.

Jon Leon Ervik (WG4 chair) is requested to consider Recommendation 140 and Guidelines 1113 and 1114 within the Shore-based Maritime Services Workshop (May 2016) to consider requirements from an operational perspective, and report back to ENAV19.

9.7 e-Navigation infrastructure and its governance (Task 5.1.19)

The existing list of questions (ENAV17-9.5) was expanded to provide material for group discussion at the Seminar on Maritime Digital Infrastructures and Testbeds (Nov 2015). The paper is retained as a working document.

ENAV17-9.15 was noted as an information paper. No further work on this paper is planned by the Committee as the Maritime Cloud Development Forum will continue work on this and will update the Committee on its progress.

Actions

The IALA Secretariat is requested to forward working paper ENAV17-14.2.6 (Questions on a digital infrastructure framework for e-navigation) to the steering group planning the Seminar on Maritime Digital Infrastructures and Testbeds (Nov 2015).

9.8 Persistent Unique Identifiers and Maritime Resource Names

It was recognised that the ENAV16 proposal for Navigation Unique Identifiers (NUID) within ENAV17-9.6 and the new input on Maritime Resource Names (ENAV17-9.14) were broadly compatible. These inputs were combined together with other knowledge to produce a draft Guideline on unique identifiers for maritime resources.

Acknowledging that this work was originally driven by the need for unique AtoN numbering, but also recognising a requirement from those developing the Maritime Cloud, the draft guideline addresses AtoN numbering within the context of a schema that will have wider use within e-navigation. The syntax

proposed depends on the recognition of a Maritime Resource Name (MRN) namespace, within the Universal Resource Name (URN) standard. It is hoped that other marine stakeholders and domains within the maritime realm will adopt the MRN.

Thus, acknowledging that other IALA Committees and other organisations have an interest in the proposed schema, a liaison note has been written to PAP seeking approval of the creation of an inter-Committee Task Group to coordinate with all IALA committees and liaise with external organisations to further develop the proposed schema.

Actions

The IALA Secretariat is requested to forward liaison note 14.1.6 (ENAV Proposal on Unique Identifiers for Maritime Resources), together with output paper ENAV17-14.1.5 'Draft Guideline on unique identifiers for Maritime Resources', to PAP.

9.9 Machine to Machine (M2M) interfaces

Input paper ENAV17-9.11 refers.

It was agreed that development of M2M interfaces requires joint working of ENAV and VTS Committees. A liaison note was drafted inviting the VTS committee to review paper ENAV17-9.11, to consider any relevant actions and to advise the ENAV committee on future joint working.

The relevance of this paper to the Maritime Cloud was noted and further liaison will be necessary.

Actions

The IALA Secretariat is requested to forward liaison note ENAV17-14.1.4 (on M2M joint working) to the VTS Committee.

The IALA Secretariat is requested to forward ENAV17-9.11 to ENAV18.

9.10 S-200 Status Report

Input paper ENAV17-9.8 was reviewed and it was noted that the developments reported are dealt with as separate Committee work items.

Concern was expressed that S-220 (MSI) is no longer included within the table of IALA product specification development. A report on S-124 development was received from the chair of the IHO S-124 Correspondence Group. It was accepted that IHO development of S-124 is focused on Navigational Warnings only. Work is therefore required to identify the gap between wider IALA MSI requirements and S-124. User and service requirement definition is required to enable a decision on further product specification development.

Reference to the IALA cloud in this status report was considered to be confusing without further description of the scope, intention and development plans. Any intention to develop an IALA cloud concept should be provided as a future input paper to ENAV.

Actions

Jon Leon Ervik is requested to identify the gap between S-124 and IALA requirements for MSI services.

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 testbed work provided by:

1. United States Coast Guard (on US Western Rivers Electronic Aids to Navigation Joint Technical Capabilities Demonstration (JCTD)).
2. Australian Maritime Safety Authority (on VDES trials).
3. ACCSEAS Project.

Information on the first two named projects was reviewed and posted on e-navigation.net. Alwyn Williams undertook to review and update information on the ACCSEAS project posted at e-navigation.net.

Actions

The IALA Secretariat is requested to advise on the IALA policy and procedure to post information to e-navigation.net.

Alwyn Williams is requested to review and update information on the ACCSEAS project, adding summary information as required, at e-navigation.net by 31 December 2015.

10.2 Maintain a global repository for test-bed results (Task 4.1.2)

A discussion on the ownership and management of e-navigation.net took place in the lead-up to and at ENAV 17.

The Committee reiterated its earlier view, that there was an urgent need to ensure IALA took ownership and management of e-navigation.net. The Committee also requested that the new website's functionality include the following:

1. Form-based data entry, based on the reporting template in the Annex to Guideline 1107.
2. IALA to be able to generate various reports, including number of visits and popular searches carried out.
3. Options to display searched testbed information to include, for example:
 - a. the default view (overview information);
 - b. e-navigation solution view.
4. The content manager for a testbed should be able to:
 - a. add key words (but not new fields) to their pages, that will aid searches;
 - b. set reminders, that will automatically prompt for managers to check currency of information;
 - c. generate reports on the number of visits to their page/s, geographic region visited from and fields searched on;
 - d. generate a message to the IALA membership, alerting them to new or revised content;
 - e. add any media-rich content (key documents, short video, photo gallery etc.).
5. The IALA Secretariat to act as the first point of contact for project managers wishing to post information on new testbeds.
6. A message inviting testbed managers to provide additional information (e.g., the MSP involved) if they wish to do so.
7. A web-based discussion forum, similar to the LinkedIn discussion forum that currently exists.

The IALA Secretariat assured the Committee that ownership and management of e-navigation.net would be taken over from Denmark, as a matter of priority.

Actions

The IALA Secretariat is requested to, as a matter of urgency, take over ownership and management of www.e-navigation.net and e-navigation.nl. The IALA Secretariat is requested to ensure that the new website includes the functionalities listed in section 10.7 of the ENAV17 report.

Mahesh Alimchandani is requested to prepare an article for the Bulletin on e-navigation.net and test bed information sharing.

Marie-Helene Grillet, IALA Technical Operations 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.

10.3 Encourage testbed project managers to provide information and results to IALA for posting at www.e-navigation.net (Task 4.1.3)

IALA is requested to write to its membership, encouraging testbed project managers to provide testbed information and results to IALA for posting to the IALA website.

Actions

The IALA Secretariat is requested to encourage testbed project managers in its membership to provide testbed information and results to IALA for posting to the IALA website.

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

The Committee considered ENAV17-10.1rev2 (Draft IALA Guideline on Planning an e-Navigation testbed) and formed the view that the information contained therein could be merged into the existing IALA Guideline on reporting of testbed results (Guideline 1107). Although as per the committee's 2014-18 work programme, a review of the reporting guideline is due to commence at ENAV19, work was commenced at this session to create a new, expanded guideline. It was recognised that the reporting guideline was now also an IMO instrument and that any changes to the reporting template would need to be captured in the IMO document as well. This would not be easy to achieve, as such a task was not on the IMO work programme in the short / medium term.

A working paper ENAV17-14.2.1 was developed.

Actions

The IALA Secretariat is requested forward working paper ENAV17-14.2.1 (draft guideline on planning testbeds and reporting of testbed results) to ENAV18 for further work.

ENAV Participants are requested to review and comment on ENAV17-14.2.1 (draft guideline on planning testbeds and reporting of testbed results) prior ENAV18.

10.5 Evaluate / analyse testbed outcomes (lessons learnt) and provide guidance (Task 4.2.1)

The Committee noted input paper ENAV17-10.7 (ACCSEAS Legacy Report) and the associated liaison note provided by Pieter Paap (ENAV17-10.8), which were made available to the Committee only after the meeting had started. The Committee had no time to consider the comprehensive suggestions contained in the liaison note in conjunction with other ACCSEAS reports (ENAV17-10.4.1 to ENAV17-10.5.10) and the work required to address the suggestions contained in the liaison note.

Actions

IALA Secretariat is requested to forward all ACCSEAS papers input to ENAV 17 (ENAV17-10.4.1 to ENAV17-10.5.10, ENAV17-10.7 and ENAV17-10.8), to ENAV 18.

Committee Participants and Working Group Chairs are requested to review the work items identified in the legacy report (ENAV17-10.7) and the liaison note (ENAV17-10.8) and identify tasks relevant for the Committee to progress

Alwyn Williams is request to submit the ACCSEAS Baseline and Priorities Report V.3 to ENAV 18

Jan-Hendrik Oltmann introduced those outcomes of the recently-concluded ACCSEAS project that are relevant for the implementation of e-navigation solutions. He drew particular attention to Section 2.8 and Annex B of the ACCSEAS legacy report (ENAV17-10.7). Here, the ACCSEAS project has outlined a vision for how e-navigation solutions investigated during the project can be implemented in a coordinated way by adjacent countries in a region (the North Sea Region, in the case of ACCSEAS).

The Committee noted that there is a growing number of regional solutions being implemented around the world. The Committee was of the view that a recommendation ought to be made to the IALA membership, urging international harmonisation of regional solutions. A draft IALA Recommendation on the need to implement regional e-navigation solutions based on international standards was developed (ENAV17-14.1.7 refers). It was noted that similar work is underway in WG4 on harmonisation of solutions.

Actions

The IALA Secretariat is requested to forward ENAV17-14.1.7 (draft Recommendation on the need to implement regional e-navigation solutions based on international standards) to the IALA Council for approval.

10.6 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 format of the road map has now been changed. The e-navigation road map provides a ‘bird’s eye view’ of the major issues (and some associated risks) that lie ahead in the development of e-navigation. A working paper (ENAV17-14.2.2) captures the Committee’s initial efforts.

Actions

The IALA Secretariat is requested to forward working paper ENAV17-14.2.2 (IALA e-navigation road map) to ENAV 18 for further development

ENAV Participants are requested to review and comment on ENAV17-14.2.2 (IALA e-navigation road map), in particular the format for presenting the road map

10.7 Maintain fora to discuss testbed-related issues (Task 4.4.2)

The issue of establishing a discussion forum to discuss testbed matters is linked with the ownership and management of the IALA testbed website. Section 10.2 above and ENAV16-10.2 refer.

10.8 Monitor ship board developments in order to provide appropriate e-Navigation services (Task 4.5.6)

Anders Brödje provided an update on ECDIS-related developments with respect to route exchange functionality.

10.9 Review and update of the IALA NAVGUIDE

The Committee assigned the review and update of different chapters of the NAVGUIDE to various working groups within the Committee.

The overall coordination of the work of the ENAV Committee in this regard resides with the Committee Vice Chair.

Actions

The IALA Secretariat is requested to forward liaison note ENAV17-14.1.1, Liaison note to ARM Committee regarding updating the IALA NAVGUIDE, to the ARM Committee

ENAV Working Group Chairs are requested to note the chapters of the NAVGUIDE assigned to their groups for review and update.

10.10 Developing Maritime Service Portfolios at IALA – an outline

The Committee commenced work on a paper that outlines development of relevant IMO Maritime Service Portfolios at IALA.

10.11 Presentation on e-Navigation testbeds

Steve Guest of Kongsberg Norcontrol IT presented the current status of the SESAME Straits (Secure, Efficient and Safe maritime traffic Management in the Straits of Malacca and Singapore) testbed. The objective of the SESAME Straits testbed is to develop and validate a revolutionary concept for a next generation Ship Traffic Management System (STMS) in the Straits of Malacca and Singapore (SOMS).

Partly funded by Norway, through its Marine and Offshore (MAROFF) fund, the SESAME Straits testbed will be delivered under the international Straits E-Navigation Alliance (SENA) that includes governmental members from Singapore, Norway, Malaysia and Indonesia and experts from important maritime organisations such as IMO, IHO, IALA, ICS, BIMCO, CIRM, IEC, and the Research Council of Norway.

SESAME Straits will provide for shared situational awareness and cooperative decision making between the ship's bridge team and shore personnel for Just-In-Time arrival thereby minimising congestion and reducing vessel traffic hot spots.

Alessandra Fiumara, from the European Space Agency (ESA) presented the Arctic Test Bed (ATB), a European Tool developed by ESA with 9 contractual partners. ATB is conceived to test solutions to overcome the current limitations of EGNOS performance at latitudes higher than 70°. It computes its own corrections based on measurements from EGNOS RIMS but also from other reference stations and tests extension of coverage by transmitting the corrections via AIS and Iridium. The comparative results (EGNOS vs ATB corrections, GEO coverage vs AIS or Iridium) will be available mid-2016. Being very flexible, the tool offers other opportunities such testing at any latitude, transmission via IALA beacon, simulation of DCDF based corrections.

11 WORKING GROUPS 3 - TELECOMMUNICATIONS (WG3)

11.1 Develop VDES Message Structures (Task 1.4.1)

Work will progress on this task beginning ENAV18.

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

Work will progress on this task beginning ENAV18.

11.3 Update the MRCP (Task 2.1.1)

Work will commence on this task beginning ENAV20.

11.4 Develop Recommendation on VDES (Task 2.1.2)

Input papers ENAV17-11.1 – 7, ENAV17-11.13, ENAV17-11.21, ENAV17-11.22, and ENAV17-11.26 refer.

Work was not progressed as decisions are required from WRC 15. However several presentations were provided on simulations and studies that had been done. A summary of each of the presentations was provided by the presenters with pros and cons as appropriate, which are shown in ANNEX G.

Work will begin on of Cognitive Networked HF (CNHF) (2.1.2) at ENAV18

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

Input paper ENAV17-11.24 refers.

A workshop on the VDES will be held in Tokyo from 15 to 19 February 2016. Mr Noguchi presented the input paper to the group on Thursday and it is hoped that the majority of ENAV participants will attend.

It was noted that, regardless of the decisions at WRC15, this workshop will provide an excellent forum to develop the communications for e-Navigation.

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

11.6.1 User Requirements for VDES

Input papers ENAV17-11.12, ENAV17-11.15; ENAV17-11.20; and ENAV 17-11.23 refer.

The Committee reviewed the input papers, as well as the draft working document created through the WG3 intersessional meetings on user requirements for VDES. The Committee also took into consideration a number of presentations on test beds and use cases for the VDES.

A draft Guideline on user requirements for VDES was developed. The draft Guideline identifies use cases for VDES, links these to the Maritime Service Portfolio (MSP) and then sets out a number of narratives to support each use case.

It was agreed that the draft Guideline on user requirements for VDES be forwarded to other committees for comment.

11.6.2 Update IALA Recommendation A-126

Input paper ENAV17-11.16 refers.

Work is deferred until the ARM Committee provides appropriate feedback.

11.6.3 Update IALA Guideline 1082

Input paper ENAV17-11.17 refers.

The Guideline was updated and a Recommendation was created to provide an executive summary recommending establishment of AIS and referring to Guideline 1082. There was insufficient time for a thorough review of these documents and publication will be deferred until ENAV18.

11.6.4 Create a new Guideline for VDES, based on existing working documents

Input papers ENAV17-11.8-11, ENAV17-11.14, ENAV17-11.18 refers.

An archive was created and work will begin on this task at ENAV18.

Action

The Secretariat is requested to forward paper ENAV17-14.1.11, Liaison Note re draft Guideline on VDES User Requirements, to ENG, ARM and VTS Committees.

11.7 Manage regional ASM web catalogue (Task 2.3.1)

The current ASM Register 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)

Input papers ENAV17-11.19 and ENAV17-11.25 refer.

A breakout group was formed to review these documents and a risk analysis for the current GMDSS and future GMDSS was created and sent to WG1.

11.9 Liaise with ARM re Virtual AtoN (Task 3.2.1)

Input paper ENAV17-11.16 refers.

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 Working Group coordination meeting**

At a meeting between the Working Group Chairs, it was agreed that WG4 would develop a broader description of each MSP to facilitate further technical development.

12.2 Develop Guideline/Recommendation on Maritime Service Portfolios (Task 5.1.1)

The Committee prepared a short description for each MSP based on the description in IMO NAV59-6, Annex 3, paper ENAV17-14.2.26 refers. The description will be the basis for further interpretation of MSPs as they may evolve with time. Results and findings from testbeds evaluated by the Committee will be incorporated as appropriate.

The Committee updated the list of relevant organisations, which will be the basis for further coordination and cooperation between IALA and these Organisations. Working paper ENV17-14.2.27 refers.

Action

The Secretariat is requested to forward ENAV17-14.2.27 to ENAV18.

12.3 MSP1 VTS Information Service (IS) / Operational User Requirements (Task 5.1.2)

The Committee reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development.

The Committee produced a liaison note to the VTS committee, seeking their cooperation in further developing MSP 1 along the lines of the template developed for MSP 5.

12.4 MSP2 Navigational Assistance Service (NAS) / Operational User Requirements (Task 5.1.3)

The Committee reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development.

The Committee produced a liaison note to the VTS committee, seeking their cooperation in further developing MSP 2 along the lines of the template developed for MSP 5.

Actions

The Secretariat is requested to forward Output 17-14.1.8.1 and ENAV17-14.1.8.2 (liaison note to VTS with annex) to the VTS Committee.

12.5 MSP3 Traffic Organisation Service (TOS) / Operational User Requirements (Task 5.1.4)

The Committee reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development.

WG 4 produced a liaison note to the VTS committee, seeking their cooperation in further developing MSP 3 along the lines of the template developed for MSP 5.

12.6 MSP4 Local Port Service (LPS) / Operational User Requirements (Task 5.1.5)

The WG reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development.

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

Yves Le Franc (chairman for IHO s-124 WG) attended the meeting, presented the work on IHO s-124, which contributed to the template / methodology and content on the description on MSP5 (Maritime Safety Information). MSP5 was selected as the basis upon which to develop a template that could be used for the remaining MSPs.

The ENAV Committee is proceeding with the review of the content of the Maritime Service Portfolios (MSPs) in accordance with the IMO e-navigation strategy implementation plan. The ENAV Committee has also identified that the final output and format of the MSPs will benefit from a coordinated work between all Organisations with responsibilities in their development.

During the work of the committee, a proposal of content for MPS 5 (Maritime Safety Information) has been developed, encompassing the user needs as identified by IALA, and taking into account the ongoing work of other Organisations such as IHO S-124-WG.

It was also considered that the methodology for the approval and implementation of MSPs, would benefit from a close coordination with responsible Organisations such as IHO and WMO, to provide a common position on the MSP and its definition.

The ENAV Committee also considers that IALA could contribute to the coordination role in the harmonization process of the development of MSPs, in order to allow the approval by the three Organisations (IALA, IHO and WMO) of the MSP 5 definition.

The development and approval process proposed to MSP 5 could serve as a common model for the future development of the remaining MSPs.

Based on the work of WG4, the Committee produced an output liaison note to IHO and WMO for approval by the Council.

Actions

The Secretariat is requested to forward Output ENAV17-14.1.9.1 (liaison note and annex to IHO and WMO) to the Council for approval, with annex ENAV17-14.1.9.2.

The Secretariat is requested to forward the working paper 17-14.2.16 (description of MSPs) to ENAV 18.

Participants are requested to give feedback to WG4 chair intersessionally on work paper 17-14.2.16 (description of MSPs).

The Secretariat is requested to forward the work paper ENAV17.12.2 WG4 MSP15 Real Time Hydrographic and Environmental Information Services vf1 WP2 to ENAV 18.

The Secretariat is requested to forward working papers ENAV17-12.3, WG44 MSP11 Nautical Chart Service wp3 to ENAV18.

The Secretariat is requested to forward Output 17-14.1.9.1, ENAV17-1.9.2 to IHO and WMO after approval of Council.

12.8 MSP6 Pilotage Service / Operational User Requirements (Task 5.1.7)

The WG reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development. Jean-Daniel Gilles requested that information on pilotage from IMPA be considered.

12.9 MSP7 Tugs Service / Operational User Requirements (Task 5.1.8)

The WG reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development.

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

The WG reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development.

The input paper ENAV 17.12.6 concerning attributes for MSP 8 was not worked on during this session 17.

Actions

The Secretariat is requested to forward ENAV17-14.2.21 to ENAV18.

12.11 MSP9 Telemedical Maritime Assistance Service / Operational User Requirements (Task 5.1.10)

The Committee reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development.

12.12 MSP10 Maritime Assistance Service (MAS) / Operational User Requirements (Task 5.1.11)

The WG reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development.

12.13 MSP11 Nautical Chart Service / Operational User Requirements (Task 5.1.12)

The WG reviewed the short description of the MSPs based on the IMO NAV 59-6, Annex 3, and left it for further development.

Actions

The Secretariat is requested to forward ENAV17-14.2.17, MSP11 Nautical Charts Service, to ENAV18

12.14 MSP12 Nautical Publications Service / Operational User Requirements (Task 5.1.13)

The development of MSP12 (Nautical Publication Service) was discussed during the meeting. A preliminary list of relevant publications was considered. The committee acknowledged that the catalogue of nautical publications being considered as part of this task can extend beyond the IMO definition. The USCG is already in a process to develop guidance for use of on-board electronic publications, and will contribute to this task.

Actions

The Secretariat is requested to forward the working paper ENAV17-14.2.19, MSP12 Nautical Publication Service, to ENAV18.

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

The Committee reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development. The Committee acknowledged that the WMO International Ice Charts WG has developed product specifications S-411, which has been approved by IHO.

Actions

The Secretariat is requested to forward the working paper ENAV17-14.2.20, MSP13 Ice Navigation Service, to ENAV18.

12.16 MSP14 Meteorological Information Service / Operational User Requirements (Task 5.1.15)

The Committee edited the short description of the MSP based on the IMO NAV 59-6, Annex 3. See Task 5.1.1.

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

The Committee edited the short description of the MSP based on the IMO NAV 59-6, Annex 3. See Task 5.1.1.

Actions

The Secretariat is requested to forward the working paper ENAV17-14.2.18, MSP15 Hydrographic Service, to ENAV18

12.18 MSP16 Search and Rescue (SAR) Service / Operational User Requirements (Task 5.1.17)

The Committee reviewed the short description of the MSP based on the IMO NAV 59-6, Annex 3, and left it for further development.

12.19 Organise a Workshop on Shore Based Maritime Services (Task 5.1.20)

The preliminary programme for the planned Workshop on “Shore-based Maritime Services from Theory to Practical Use: Who Will Do What When” was discussed. The Committee considered the workshop as an essential step to continue its work, and this is in line with the proposed liaison note to IHO and WMO. As a result, the Committee endorsed the preliminary program. The Committee noted the comments from Council 60 with respect to Recommendation e-Nav140, Guideline 1113 and Guideline 1114.

13 WORKING GROUP 5 – PNT (WG5)

In addition to the work items listed below, the Committee considered the need for Unique Identifiers in relation to ENAV16-14.2.16 and concluded that such identification was necessary and considered that such a system should work alongside MMSI information where provided. This information was provided to WG1 for inclusion in its discussions on the topic.

The Committee also discussed the forthcoming update to the IALA NAVGUIDE, the ARM Committee Liaison Note regarding its involvement in e-Navigation and the ARM Committee request for disaster recovery information and experiences.

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

Input papers ENAV17-13.15.1, ENAV17-13.15.2 and ENAV17-13.15.3 were considered under this work item. The draft Recommendation was considered and will be held as a working document until the Guideline is developed. The Guideline was updated and further work will take place intersessionally by members of the task group.

Actions

IALA Secretariat is requested to include the working papers ENAV17-14.2.9 – Draft Guideline on eLoran service provision (rev.291015) and ENAV17-14.2.8 – Draft Recommendation on eLoran service provision as input papers to ENAV18.

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

Input papers ENAV17-13.13.1, ENAV17-13.13.2 and a late input on eLoran almanac data were considered.

The Working Group received a presentation from KRISO on the development of S-240. It was agreed that the S-240 documentation should be passed to the IALA Field Manager (Mr Cho) for registering as “draft” status and testing. WG1 will forward this documentation.

The data content for eLoran almanacs, consisting of ASF propagation data (S-245), eLoran transmitter almanac data (S-246) and a new section on Differential Loran reference station almanac data were reviewed. The Committee requests a new S-200 number, (S-247 if available), for the Differential Loran reference station almanac and will liaise with the IALA Domain Administrator.

KRISO will work with the General Lighthouse Authorities, to develop with the eLoran product specifications.

Actions

IALA Secretariat is requested to include the working paper (ENAV17-14.2.10 – eLoran almanac data) as an input paper to ENAV18.

WG5 Chair is requested to apply for a new S-200 number, preferably S-247, from the IALA Domain Administrator.

The IALA Secretariat is requested to inform the S-200 AtoN Field Manager (Mr Cho) that the Committee considers S-240 to be ready for review and recommends that its status be changed to ‘Draft’.

The AtoN Field manager (Mr Cho) is requested to manage the review of S-240 in accordance with section 6.3 of Guideline 1087 (edition 2).

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

Input paper ENAV17-13.14 provided an overview of how international work on PNT could be coordinated across different organisations. The Committee felt that the paper was informative and helpful when developing its Recommendations and Guidelines. It was noted that similar coordination is being carried out in the EfficienSea2 project.

The paper will be forwarded to ENAV18 as a working paper and Committee participants are encouraged to review it.

Actions

The IALA Secretariat is requested to include the working paper ENAV17-14.2.11 (coordination of PNT development activities) as an input paper to the next meeting.

ENAV Committee Participants are requested to review working paper ENAV17-14.2.11 coordination of PNT development activities, and to provide any comments to the WG5 Chair, Alan Grant.

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

Input papers ENAV17-13.3 and ENAV17-13.4 captured the comments on SBAS use from the previous meeting and the latest draft of the Guideline.

A number of possible SBAS architectures and the Guideline was further developed during the week.

Actions

IALA Secretariat is requested to include the working paper ENAV17-14.2.13 (draft SBAS Guideline (rev.291015)) as an input paper to ENAV18.

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

Input papers ENAV17-13.5, ENAV17-13.8.1 and ENAV17-13.8.2 were considered under this work item. The draft Guideline was further developed during this session.

Actions

IALA Secretariat is requested to include the working paper ENAV17-14.2.14 (draft Guideline on techniques for on-board PNT data processing (rev.291015)) as an input paper to ENAV18.

13.6 Update R-121 (Task 3.1.9)

The work on Recommendation R-121 and Guideline 1112 was completed at ENAV16. However, it has been noted that an abbreviation is used within Annex B, which provides example settings which is not explained. The Secretariat is invited amend the abbreviation list on page 27 to define “FI” as “For Information”. The Secretariat is also invited to remove the highlighted text in the header of Annexes D & E.

Actions

IALA Secretariat is requested to amend the abbreviation list within Guideline 1112 (add FI as For Information) and to remove highlighted text in two of the annexes as minor editorial changes.

13.7 DGNSS Radiobeacon coverage prediction (Task 3.1.10)

Work on a new draft Guideline was started during this meeting.

Actions

IALA Secretariat is requested to include the working paper ENAV17-14.2.15 (draft Guideline on DGNSS radiobeacon coverage (rev.291015)) as an input paper to ENAV18.

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

Input paper ENAV17-13.16 was considered. The WG received a presentation on new eRacon and eRadar trials taking place in Singapore. A verbal update on RTCM SC104 was given and the WG discussed the expected timeline for RTCM broadcast standard Version 2.4.

The Committee received an update on the United States Coast Guard plans to close 62 DGPS stations. The Committee noted that while most of the stations due to be closed affect inland areas, it expressed its reservations about whether the remaining stations will be sufficient to meet the availability requirements as set out in R-121 and G-1112.

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

Input paper ENAV17-13.10 was considered. The Committee discussed the best method for the revision of A.915 and supported the development of a new document which captures maritime operational requirements. A draft of this document was considered and will be further developed and provided as an input paper to ENAV18.

Actions

IALA Secretariat is requested to include the working paper ENAV17-14.2.22 (draft maritime operational requirements (rev.291015)) as an input paper to the next meeting.

13.10 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.

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

Input paper ENAV17-13.9 and the ACCSEAS legacy report were considered and provided an update on R-mode developments. The need for a clear way forward and coordinated development of R-mode was recognised and an intersessional meeting was arranged for February 9th to 11th 2016 at IALA HQ. The intersessional meeting will draft the roadmap, actions and key timelines required to further develop R-mode. Participants volunteering to attend are invited to let the WG5 Vice Chair, Michael Hoppe, know if they plan to attend.

A brief covering the aims and objectives of the intersessional meeting was prepared and will be carried forward as a working document.

Actions

IALA Secretariat is requested to include the working paper ENAV17-14.2.12 (R-mode intersessional aims and objectives) as an input paper to ENAV18.

Committee Participants are invited to inform the WG5 Vice Chair (Michael Hoppe) if they plan to attend the R-mode intersessional meeting, due to be held at IALA HQ, 9-11th February 2016.

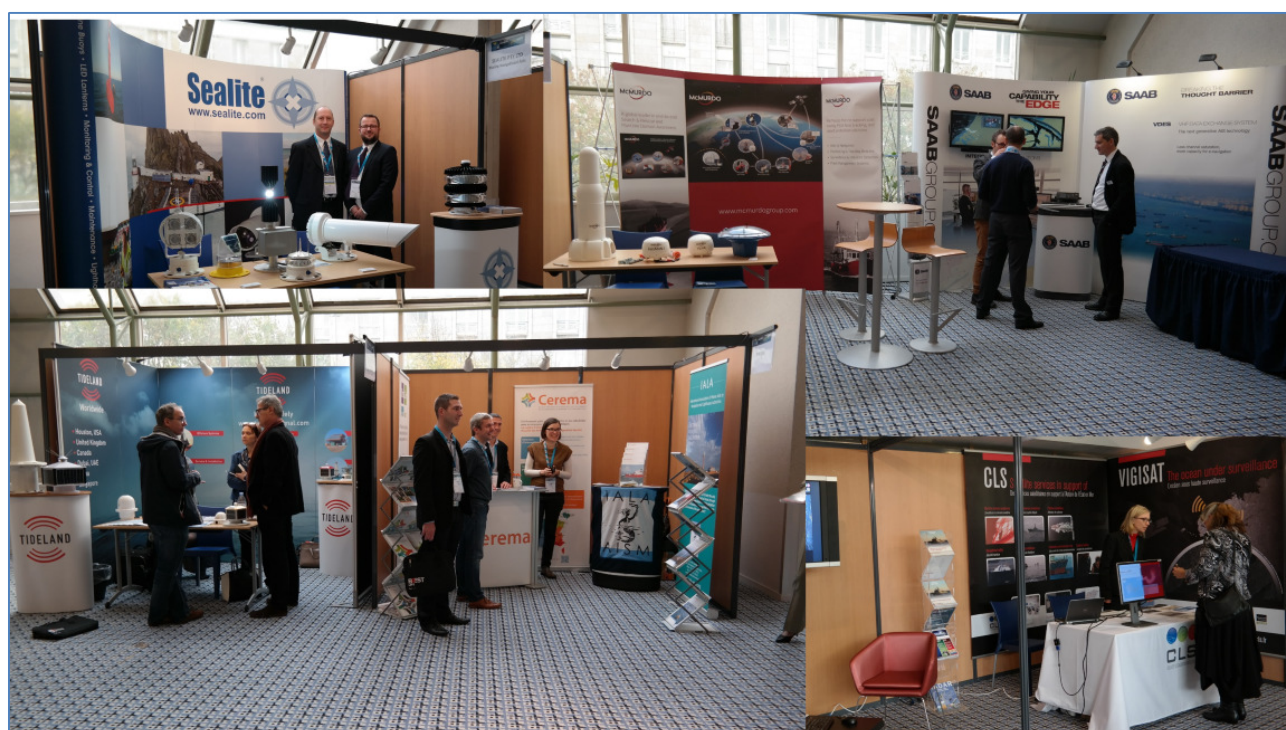
14 REVIEW OF OUTPUT AND WORKING PAPERS

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

15 INDUSTRIAL EXHIBITION

An industrial exhibition by 6 Industrial Members showed the latest developments in AtoN equipment.

Name of Exhibitor	Products
Sealite PTY Ltd	Design and manufacture of technologically advanced aids to navigation equipment including lights, buoys, mooring systems and turn-key project solutions.
Saab	Provides solutions for VTS, port management, AIS, hydrography and precision navigation.



Tideland Signal	Specialist in marine aids to navigation (AtoN). Design and manufacture of buoys, offshore systems, racons & lanterns, as well as navigation and AtoN surveillance equipment. Services offered include consultancy, equipment supply and qualified engineering support.
McMurdo-Orolia SAS	Search & rescue and marine domain awareness, aids to navigation, positioning and tracking beacons, surveillance and intrusion detection, fleet management systems.
CLS	Satellite services provider for operational maritime safety and security.
Cerema	Cerema acts in support of the definition, implementation and evaluation of public policies, carried by national and local authorities in France, including the provision of technical AtoN services.

16 SAFER SEAS

The 4th International Conference on Maritime Safety and Security (Safer Seas) ran in parallel with ENAV17, with the theme of Blue Growth and climate change. The drive towards safer and cleaner seas is in line with the process and issues underlying the World Climate Summit, and COP21 to be held in Paris in December 2015.

The IALA Secretary General was the keynote speaker in session 4 of the Safer Seas conference, about future routes and ships in extreme zones. He mentioned among other things, the work of IALA in this field; the workshop held in Greenland resulting in a Guideline on AtoN in Polar Regions and the coming workshop on AtoN in extremely hot areas. With the ENAV Committee meeting in the same building he also mentioned new ENAV tools such as the Arctic Web.

On Tuesday 27th October ENAV participants attended the opening ceremony of Safer Seas dealing with ocean, climate and maritime security. Several speakers talked about maritime safety and security in the context of the economic development at sea, and presented the scientific approach to global warming.

Vice-Admiral Emmanuel de Oliveira, Maritime Prefect, spoke on the impacts of the economic developments at sea on safety, security, and maritime environment. Although ships are less in number, they are larger in size and tonnage, including passenger ships. Such larger ships call for more port infrastructure and rescue craft and facilities, thus increasing the cost. Maritime accidents have an increased impact on the environment. Another concern was security, with the development of cyber-attacks that could allow cyber-criminals to take control of the ship remotely, terrorism, illegal trade of drugs and other prohibited goods, smuggling.

Michel Aymeric, the French Secretary-General to the Sea, reported on measures taken by the Inter-Ministerial Committee on the Sea to enhance security at sea and in ports, and ensure that safety and security measures are compatible. The Inter-Ministerial Committee ensures that there are no conflicts between the measures taken to promote renewable energy (wind farm deployment, for example) and the safety of navigation.

The session concluded with a detailed presentation on global warming by Jean Jouzel, Vice-President of the UN Intergovernmental Panel on Climate Change (IPCC). Mr Jouzel, a world renowned paleo climatologist gave a scientific presentation of the statement made by the IPCC that global warming is unequivocal and unprecedented. Mitigation measures are however technically possible, aiming at keeping global warming within a limit of 2°C and ensuring an equitable adaptation. Mr Jouzel was awarded the EURASC Leonardo da Vinci award at the end of the opening session.

17 ANY OTHER BUSINESS

The Committee were delighted to hear of the birth of Jeffrey van Gils' daughter, Isa, and recorded their congratulations to Jeffrey and his wife.

18 REVIEW OF SESSION REPORT

The report of the meeting (ENAV17-16.1) was considered. Committee Participants were requested to advise any corrections / amendments within two weeks, 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 ENAV17 report, paper ENAV17-16.1 post plenary, by 12th November 2015.

The Secretariat is requested to forward the report of ENAV17 (ENAV17-16.1) to the Council, to note.

19 DATE AND VENUE OF NEXT MEETING

The 18th Session of the ENAV Committee (ENAV18) is expected to meet on 14 – 18 March 2016 in IALA HQ.

20 CLOSING OF THE MEETING

The Chairman expressed his thanks to all Committee Participants for what the Committee had achieved during the week and for planned intersessional work. He thanked the exhibitors and hoped that they had found their participation worthwhile. He also thanked the Working Group Chairs, the Vice Chair and the IALA Secretariat for their support. He thanked CEREMA and Le Quartz for a wonderful venue. A presentation was made to Michel Cousquer in appreciation of his great contribution. He invited all participants to attend ENAV18 and wished everyone a safe journey home. He then declared the meeting closed.

21 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 Presentations to WG3

Presentations to WG3 are at ANNEX G

8 Action Items

A list of action items is at ANNEX H.

ANNEX A AGENDA**17th Meeting of the IALA ENAV Committee**

The 17th meeting of the **IALA ENAV Committee** will be held from 26 – 30 October, 2015 at Centre de Congrès du Quartz, Brest, France.

The opening plenary will commence at 1400 hours on Monday 26 October and the closing plenary will end at approximately 1300 on Friday 30 October.

Committee Chair, Vice-Chair and Working Group Chairs are requested to meet at 0900 hours on Monday 26 October.

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 60th Session of the IALA Council 2015-05-25
 - 4.2. Report of the 29th Session of the IALA Policy Advisory Panel
 - 4.3. Report from ITU-R WP 5B Bucharest 6th to 17th July 2015
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 VTS40 5.5. Ship-board developments re e-Nav services 5.6. IHO 	Hideki Noguchi Omar Frits Eriksson Jean-Charles Cornillou Jon Leon Ervik Anders Brødje Edward Hosken
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6. Presentations (15 minutes duration)

<ol style="list-style-type: none"> 6.1. WWA report 6.2. ENAV Committee Risk Register 6.3. Status of IALA S-200 6.4. Seattle e-Navigation Conference 	Gerardine Delanoye Yves Desnoës Yonghun CHO Bill Cairns
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6.5. The Arctic Test Bed for EGNOS improvements

Alessandra Fiumara

6.6. Status of AMSA/DHI large vessel drift project

Jillian Carson-Jackson

7. Review of Work Programme and Working Group expectations
8. Establish Working Groups
9. WG 1 - Harmonization
10. WG 2 - Implementation
11. WG 3 - Telecommunication
12. WG 4 - ENAV Services
13. WG 5 - PNT
14. Review of output and working papers
15. Any Other Business
16. Review of session report
17. Date and venue of next meeting
18. Close of meeting

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Apologies were received from:

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ANNEX C WORKING GROUP PARTICIPANTS**Working Group 1****Harmonisation**

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ANNEX D LIST OF INPUT PAPERS

All papers are posted on the IALA Committee website

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV17-	1.2	draft Agenda ENAV17 20151016	IALA Sec	Omar Frits Eriksson
ENAV17-	1.4.1	Programme for the week 2015105	IALA Sec	Omar Frits Eriksson
ENAV17-	2.1	Action items from ENAV16	ENAV16	Seamus Doyle
ENAV17-	3.1.1	Input paper Committee template July 2014	IALA Sec	Omar Frits Eriksson
ENAV17-	3.1.2	(ARM2-11.1.5) Liaison Note to IALA members on Disaster Recovery planning Rev 1	ARM2	Omar Frits Eriksson/ WG5
ENAV17-	3.1.3	(ARM2-11.2.1) WG1 WP1 disaster recovery	ARM2	Omar Frits Eriksson
ENAV17-	4.1	Report of 60th Session of the IALA Council C60 2015-05 Kuala Lumpur	C60	Omar Frits Eriksson
ENAV17-	4.2	PAP29-10 1 Report of PAP29	PAP29	Omar Frits Eriksson
ENAV17-	4.3	Report of ITU-R WP5B meeting Bucharest 6th to 17 July 2015	Stefan Bober	Stefan Bober
ENAV17-	4.4	ITU SG 5 chairman record meeting 27 Aug 2015 R12-SG05-C-0270!!MSW-E	Stefan Bober	Stefan Bober
ENAV17-	4.5	LAP15-20.1 Final report	IALA Sec	Seamus Doyle
ENAV17-	5.4	Rapporteur Report from VTS40	Jon Leon Ervik	Jon Leon Ervik
ENAV17-	5.6	IHO Rapporteur	Edward Hosken	Edward Hosken
ENAV17-	6.1	WWA report	Gerardine Delanoye	Gerardine Delanoye
ENAV17-	6.2	Presentation ENAV Committee Risk Register	Yves Desnoës	Yves Desnoës
ENAV17-	6.3	Presentation on Status of IALA S-200	Nick Ward	Yonghun Cho
ENAV17-	6.4	Presentation Seattle eNavigation Conference	Bill Cairns	Bill Cairns
ENAV17-	6.5	Presentation The Arctic Test Bed for EGNOS improvements	Alessandra Fiumara	Alessandra Fiumara
ENAV17-	6.6	Presentation Status of AMSA/DHI large vessel drift project	Jillian Carson-Jackson	Jillian Carson-Jackson
ENAV17-	7.1	(ENAV16-14.1.20) ENAV_Work Programme Task Register - revised at ENAV16	ENAV16	Hideki Noguchi
ENAV17-	7.2	(ENAV16-14.1.19) ENAV Work Plan revised at ENAV16 rev	ENAV16	Hideki Noguchi

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV17-	8.1	(ENAV16-14.1.21) ENAV Terms of Reference - revised at ENAV16	ENAV16	Omar Frits Eriksson
ENAV17-	9.1	(ENAV16-14.2.6) WG1 S-100 and CMDS Definitions	ENAV16	WG1
ENAV17-	9.2	(ENAV16-14.2.7) WG1 Draft revision Guideline on producing IALA S100 PS	ENAV16	WG1
ENAV17-	9.3	(ENAV16-14.2.8) WG1 S-100 Appendix 4a - Service Orientation	ENAV16	WG1
ENAV17-	9.4	(ENAV16-14.2.9) WG1 draft Risk Assessment Plan	ENAV16	WG1
ENAV17-	9.5	(ENAV16-14.2.15) WG1 Questions on a digital infrastructure framework for e-navigation	ENAV16	WG1
ENAV17-	9.6	(ENAV16-14.2.16) WG1 draft IALA Recommendation for NUID	ENAV16	WG1
ENAV17-	9.7	(ENAV16-14.2.10) WG1 Draft IALA Guideline on the Application Note on Support of CSSA for MSPs+Maritime Cloud 20150423	ENAV16	WG1
ENAV17-	9.8	S-200 Status Report rev 1	Nick Ward	WG1
ENAV17-	9.9	Streaming data service draft4	Eivind Mong	WG1
ENAV17-	9.10	Draft revision of Guideline 1087	Nick Ward	WG1
ENAV17-	9.11	Submission re International Standard for M2M Interfaces v1.1	Fred Pot	WG1
ENAV17-	9.12	WG1 work programme	Edward Hosken	WG1
ENAV17-	9.13	Report on S-201 work rev2	Eivind Mong	WG1
ENAV17-	9.14	Maritime Resource Name v3	Thomas Christensen	WG1
ENAV17-	9.15	Identification and Messaging Structure for Maritime Cloud.docx	Jin Park	WG1
ENAV17-	9.18	S-201 IALA AtoN Product Specification - draft 0.0.1 (<i>zip file with S201 and 7 annexes</i>)	Eivind Mong	WG1
ENAV17-	10.1	(ENAV16-14.2.1) WG2 draft Guideline on Planning an e-Navigation Testbed v0.1 Replaced with ENAV17-10.1 (ENAV16-14.2.1) WG2 draft Guideline on Planning an eNavigation Testbed v0 14	ENAV16 Mahesh Alimchandani	WG2
ENAV17-	10.3	(ARM2-11.1.7) Liaison Note to all committees on navguide update	ARM2	WG2
ENAV17-	10.4.1	ACCSEAS Documents for IALA Committees ENAV17 and VTS40 and ARM3	Alwyn Williams	WG2 / WG4
ENAV17-	10.4.2	ACCSEAS e-Navigation Architecture Report v1	Alwyn Williams	WG2 / WG4
ENAV17-	10.4.3	ACCSEAS Route Topology Model Report	Alwyn Williams	WG2 / WG4
ENAV17-	10.4.4	ACCSEAS Training Needs Analysis Report	Alwyn Williams	WG2 / WG4
ENAV17-	10.4.5	ACCSEAS Final Report v1	Alwyn Williams	WG2 / WG4

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV17-	10.4.6	ACCSEAS Final Conference Report	Alwyn Williams	WG2 / WG4
ENAV17-	10.5.1	ACCSEAS Service Description Documents for ENAV17	Alwyn Williams	WG2
ENAV17-	10.5.2	ACCSEAS S-100 Product Description - MSI-NM Maritime Safety Information - Notice to Mariners v1	Alwyn Williams	WG2 / WG1
ENAV17-	10.5.3	ACCSEAS Service Description - IVEF Inter-VTS Exchange Format v1	Alwyn Williams	WG2 / WG4
ENAV17-	10.5.4	ACCSEAS Service Description - Maritime Cloud v1	Alwyn Williams	WG2 / WG4
ENAV17-	10.5.5	ACCSEAS Service Description - MSI-NM Maritime Safety Information - Notice to Mariners v1	Alwyn Williams	WG2 / WG1
ENAV17-	10.5.6	ACCSEAS Service Description - MSPS Multi-source Positioning System v1	Alwyn Williams	WG2 / WG5
ENAV17-	10.5.7	ACCSEAS Service Description - No-Go Area v1	Alwyn Williams	WG2 / WG4
ENAV17-	10.5.8	ACCSEAS Service Description - Tactical Exchange of Intended Routes v1.	Alwyn Williams	WG2 / WG4
ENAV17-	10.5.9	ACCSEAS Service Description - Tactical Route Suggestion v1	Alwyn Williams	WG2 / WG3 / WG4
ENAV17-	10.5.10	ACCSEAS Service Description - VOCT Vessel Operations Coordination Tool v1	Alwyn Williams	WG2 / WG4
ENAV17-	10.6	FTA-ENSI testbed in Gulf of Finland	Tuomas Martikainen	WG2
ENAV17-	10.7	ACCSEAS Legacy Report v1	Alan Grant	WG2
ENAV17-	11.1	(ENAV16-14.2.17) WG3 PDNR with Annexes 2 - 6 added 2015-04-23	ENAV16	WG3
ENAV17-	11.2	(ENAV16-14.2.18) WG3 PDNR Annex 2 v5	ENAV16	WG3
ENAV17-	11.3	(ENAV16-14.2.19) WG3 PDNR Annex 3 WD v0.2	ENAV16	WG3
ENAV17-	11.4	(ENAV16-14.2.20) WG3 PDNR Annex 4 Satellite downlink	ENAV16	WG3
ENAV17-	11.5	(ENAV16-14.2.21) WG3 PDNR Annex 5 Satellite uplink	ENAV16	WG3
ENAV17-	11.6	(ENAV16-14.2.22) WG3 PDNR Annex 6 v0	ENAV16	WG3
ENAV17-	11.7	(ENAV16-14.2.23) WG3 CPM 1 16 output v2 rev1	ENAV16	WG3
ENAV17-	11.8	(ENAV16-14.2.24) WG3 Information paper on vdes v1	ENAV16	WG3
ENAV17-	11.9	(ENAV16-14.2.25) WG3 Info paper on tech guidelines for impenetation of vdes v1	ENAV16	WG3
ENAV17-	11.10	(ENAV16-14.2.26) WG3 Design considerations for vdes	ENAV16	WG3
ENAV17-	11.11	(ENAV16-14.2.27) WG3 Demonstration objectives for vdes	ENAV16	WG3
ENAV17-	11.12	(ENAV16-14.2.28) WG3 VDES user reqs to technical requirements template v2	ENAV16	WG3
ENAV17-	11.13	(ENAV16-14.2.29) WG3 VDES waveform study	ENAV16	WG3

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV17-	11.14	(ENAV16-14.2.30) WG3 Guidance on AIS vulnerability	ENAV16	WG3
ENAV17-	11.15	(ENAV16-14.2.31) WG3 Innovative use of AIS St Germain sep 2014 wd 05	ENAV16	WG3
ENAV17-	11.16	(ENAV16-14.2.32) WG3 IALA A-126 Status bits edited 20150423	ENAV16	WG3
ENAV17-	11.17	(ENAV16-14.2.33) WG3 IALA 1082 AIS Overview Ed2 WD150422	ENAV16	WG3
ENAV17-	11.18	(ENAV16-14.2.34) WG3 AIS17-FAQ update 2015-04-23	ENAV16	WG3
ENAV17-	11.19	(ENAV16-14.2.35) WG3 Report on GMDSS enav16	ENAV16	WG3
ENAV17-	11.20	ENAV17-11.20 e-Nav Comms Study.docx	Nick Ward	WG3
ENAV17-	11.21	VDES Waveform Technical Requirements Study	Jan Safar	WG3
ENAV17-	11.22	Cognitive Networked HF Radio	Jan Safar	WG3
ENAV17-	11.23	PNT-relevant topics to VDES 20151008	Michael Hoppe	WG3/ WG5
ENAV17-	11.24	VDES workshop Tokyo flyer final	VDES WS SG	WG3/ All WG
ENAV17-	11.25.1	GMDSS Report from Rapporteur	Jean-Charles Cornillou	WG3
ENAV17-	11.25.2	Annex 1_discussion document on the outcome of the detailed review	Jean-Charles Cornillou	WG3
ENAV17-	11.25.3	Annex 2_draft revised text of SOLAS Chapter IV	Jean-Charles Cornillou	WG3
ENAV17-	11.25.4	Annex 3_additional information to WRC-15	Jean-Charles Cornillou	WG3
ENAV17-	11.25.5	Annex 4_IMO-ITU EG 11-4-6 -(France)	Jean-Charles Cornillou	WG3
ENAV17-	11.26	Technical consideration for future revision of Rec. ITU-R M.[VDES] re ASM	Ross Norsworthy	WG3
ENAV17-	12.1	(ENAV16-14.2.3) WG4 MSP5 Maritime Safety Information Service wp1	ENAV16	WG4
ENAV17-	12.2	(ENAV16-14.2.4) WG4 MSP15 Real-Time Hydrographic and Environmental Information Services vf1 wp2	ENAV16	WG4
ENAV17-	12.3	ENAV17-12.3 (ENAV16-14.2.5) WG4 MSP11 Nautical Chart Service wp3	ENAV16	WG4
ENAV17-	12.4	ARM2-11.1.4 Liaison Note to ENAV on e-Navigation developments	ARM2	WG4
ENAV17-	12.5	Progress on E-navigation Services	Jon-Leon Ervik	WG4
ENAV17-	12.6	MSP8 Vessel Shore Reporting	Jon-Leon Ervik	WG4
ENAV17-	12.7	MSP12 Nautical Publications Service	Jon-Leon Ervik	WG4
ENAV17-	12.8	MSP13 Ice Navigation Service	Jon-Leon Ervik	WG4

Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
ENAV17-	12.9	WG4 Task Register on MSP update	Jon-Leon Ervik	WG4
ENAV17-	13.2	(ENAV16-14.2.41) WG5 Draft Recommendation on PNT relevant services and systems	ENAV16	WG5
ENAV17-	13.3	(ENAV16-14.2.42) WG5 SBAS discussion comments from ENAV16	ENAV16	WG5
ENAV17-	13.4	(ENAV16-14.2.43) WG5 Draft Guideline on use of SBAS	ENAV16	WG5
ENAV17-	13.5	(ENAV16-14.2.44) WG5 Draft Guideline on techniques used for on-board PNT data processing Replaced with (ENAV16-14.2.44) WG5 Draft Guideline on techniques used for on-board PNT data processing v1	ENAV16 Evelin Engler	WG5
ENAV17-	13.6	(ENAV16-14.2.2) WG5 Task Group statement of work to develop a Guideline on eLoran service provision	ENAV16	WG5
ENAV17-	13.7	WG5 plan for ENAV17	Alan Grant	WG5
ENAV17-	13.8.1	INF Status PNT Guideline Development(F)	Evelin Engler	WG5
ENAV17-	13.8.2	INF Status PNT Guideline Development Annex	Evelin Engler	WG5
ENAV17-	13.9	R-Mode-Status Update 20151007	Michael Hoppe	WG5
ENAV17-	13.10	Revision of IMO Res A.915(22) - a possible approach 20151019	Alessandra Fiumara	WG5
ENAV17-	13.11	(ENG2-11.1.6) Liaison note ENG to ENAV Committee on WWA Model Course on GNSS and e-Navigation post plenary	ENG2	WG5
ENAV17-	13.12	Draft Guideline on eLoran service provision	ENAV15	WG5
ENAV17-	13.13.1	Progress on the development of S-240 DGNSS Station Almanac	Yonghun Cho	WG5
ENAV17-	13.13.2	S-240 DGNSS Station Almanac Product Specification	Yonghun Cho	WG5
ENAV17-	13.14	Coordination of PNT Development Activities	Alan Grant	WG5
ENAV17-	13.15.1	Input paper - eLoran Recommendation & Guideline	Jiwon Seo	WG5
ENAV17-	13.15.2	Draft recommendation on eLoran service provision- WG5	Jiwon Seo	WG5
ENAV17-	13.15.3	Draft guideline on eLoran service provision - WG5	Jiwon Seo	WG5
ENAV17-	13.16	Singapore eRadar eRacon Trial 20151019 inf	Paul Mueller	WG5

ANNEX E LIST OF OUTPUT AND WORKING PAPERS

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

Number	Title (Output paper)	Status
ENAV17- 14.1.1	Liaison note to ARM Committee regarding updating the IALA NAVGUIDE	To ARM3
ENAV17- 14.1.4	Liaison note from ENAV to VTS on M2M joint working	To VTS committee
ENAV17- 14.1.5	Draft Guideline on Unique identifiers for Maritime Resources	To PAP
ENAV17- 14.1.6	Liaison note to PAP on ENAV proposal on Unique Identifiers for Maritime Resources	To PAP
ENAV17- 14.1.7	Draft Recommendation on the need to develop regional solutions based on international standards	To Council for approval
ENAV17- 14.1.8.1	Liaison note to VTS committee re Development of MSPs 1-3 for VTS	To VTS committee
ENAV17- 14.1.8.2	Annex to Liaison note to VTS committee	To VTS committee
ENAV17- 14.1.9.1	Liaison note to IHO and WMO re Methodology to develop and harmonize the content of MSP #5 (MSI)	To Council for approval
ENAV17- 14.1.9.2	Annex to Liaison note to IHO	To Council for approval
ENAV17- 14.1.11	Liaison Note re draft Guideline on VDES User Requirements	To ENG, VTS & ARM Committees
ENAV17- 16.1	Report ENAV17 Final	To Council for noting

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

Number	Title (Working Paper)	Status
ENAV17- 14.1.2	Draft Guideline 1087 (rev 2) on Procedures for the Management of the IALA Domains under the IHO GI Registry	To ENAV18
ENAV17- 14.1.3	Draft Guideline 1106 (edition 2) Producing an IALA S-200 series Product Specification	To ENAV18
ENAV17- 14.2.1	Draft Guideline on the planning of testbeds and reporting testbed results	To ENAV18
ENAV17- 14.2.2	WG2 Roadmap for e-navigation	To ENAV18
ENAV17- 14.2.3	WG1 (ENAV17-9.9) Streaming data service draft4	To ENAV18
ENAV17- 14.2.4	WG1 (ENAV17-9.4) e- Navigation risk assessment plan (draft)	To ENAV18
ENAV17- 14.2.5	WG1 (ENAV17-9.7) Draft IALA Guideline on the Application Note on Support of CSSA for MSPs + Maritime Cloud	To ENAV18
ENAV17- 14.2.6	WG1 (ENAV17-9.5) Questions on a digital infrastructure framework for e-navigation Rev 3	To ENAV18 To Seminar on Maritime Digital Infrastructure
ENAV17- 14.2.7	WG1 (ENAV17-9.11) Would an international standard for machine-to-machine (M2M) interfaces benefit IALA National Members?	To ENAV18
ENAV17- 14.2.8	Draft Recommendation on eLoran service provision	To ENAV18
ENAV17- 14.2.9	Draft Guideline on eLoran service provision (rev.291015)	To ENAV18
ENAV17- 14.2.10	eLoran Almanac format (V1.0)	To ENAV18
ENAV17- 14.2.11	Coordination of PNT Development Activities	To ENAV18
ENAV17- 14.2.12	R-Mode Intersessional aims and objectives	To ENAV18
ENAV17- 14.2.13	Draft Guideline on Use of SBAS (rev.291015)	To ENAV18
ENAV17- 14.2.14	Draft Guideline on Techniques Used for on-board PNT data processing (rev.291015)	To ENAV18
ENAV17- 14.2.15	Draft contents of a coverage prediction guideline	To ENAV18
ENAV17- 14.2.16	WG4 MSP5 Maritime Safety Information Service	To ENAV18
ENAV17- 14.2.17	WG4 MSP11 Nautical Charts Service	To ENAV18
ENAV17- 14.2.18	WG4 MSP15 Hydrographic Service	To ENAV18
ENAV17- 14.2.19	WG4 MSP12 Nautical Publication Service	To ENAV18
ENAV17- 14.2.20	WG4 MSP13 Ice Navigation Service	To ENAV18
ENAV17- 14.2.21	WG4 MSP8 Vessel Sore Reporting Service	To ENAV18
ENAV17- 14.2.22	WG5 Draft Maritime Operational Requirements (rev.291015)	To ENAV18
ENAV17- 14.2.23	ENAV Work Programme Task Register revised at ENAV17	To ENAV18
ENAV17- 14.2.24	ENAV Work Plan revised at ENAV17.	To ENAV18
ENAV17- 14.2.25	ENAV Terms of Reference revised at ENAV17	To ENAV18
ENAV17- 14.2.26	Maritime Service Portfolios (MSP) descriptions v2 151102	To ENAV18
ENAV17- 14.2.27	(ENAV17-12.5) Progress on e-navigation Services incl List of Relevant Organisations for MSPs	To ENAV18

ANNEX F WORK PROGRAMME - REVIEW OF PROGRESS WITH DELIVERABLES AT ENAV 17

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		☒	☐	☐	Draft completed
1.3.1. Revise Guideline 1106	15	16	17	☒	☐	☐	Task Completed
1.3.2. S-100 Service Orientation	16	17	18	☒	☐	☐	On-going
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		☐	☒	☐	on going
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		☒	☒	☐	commenced at ENAV 17
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
4.3.4 Develop and maintain e-Navigation Roadmap	17	20		☐	☒	☐	Start Session 17
4.4.1 Develop and progress an online discussion forum on testbeds.	15	16		☒	☐	☐	Task removed ENAV16

Task	Start	Planned	Revised	Progress Indicator			Status
4.4.2 Maintain fora to discuss testbed-related issues.	15	16		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENAV15
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 at ENAV 15
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 at ENAV 15
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 at 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"/>	Not commenced
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
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

Task		Start	Planned	Revised	Progress Indicator			Status
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
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"/>	On-going
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"/>	Commence ENAV16
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"/>	Commence ENAV16

Task		Start	Planned	Revised	Progress Indicator			Status
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
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"/>	Commence ENAV16
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"/>	Commenced ENAV16
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S-240 draft, eLoran work ongoing.
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		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.1.7.	PNT data processing	18	20		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.1.8.	PNT performance message	18	20		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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"/>	

Task	Start	Planned	Revised	Progress Indicator			Status
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

ANNEX G PRESENTATIONS TO WG3

21.1.1 Review of Progress at ITU on the draft PDNR – Johnny Schultz

21.1.2 Overview of AMSA VDES Trial – Ernie Batty, Jillian Carson-Jackson, Attie Labuschagne

Clarifications to VDES specification

The VDES specification, ITU-R M.[VDES], was used for the development of the VDES prototype. There are some sections in the specification that do not ensure a clear unambiguous interpretation.

Comments re ITU Recommendation: *It is recommended that the following sections require some consideration and refinement:*

- *AIS channel management*
 - *Annex 1: Section 2.1.1: AIS 1 (channel 2087) and AIS 2 (channel 2088) are the default AIS channels. If channel management is still supported, AIS can be moved to alternative frequencies as defined in ITU-R M.1371.*
 - *For a multi-channel VDES solution to support all of these channels, as well as variable AIS channels places additional constraints on the system*
 - *At least it should be clearly stated if channel management is supported or not.*
- *VDE terrestrial physical layer specifications*
 - *Annex 3 Section 3: Various physical characteristics have not been defined yet including adjacent channel selectivity, intermodulation response rejection, spurious response rejection and blocking handling.*
- *VDE sensitivity:*
 - *Annex 3 Section 3.5: VDE sensitivity is defined as a required input signal level vs Channel Interference Ration (CIR).*
 - *Recommended that a BER, PER or something similar is defined that includes the complete receive chain (including FEC decoder), as this is also part of the true sensitivity of the system.*
- *Pi/4 QPSK rotation*
 - *Annex 2 Section 2.3.1 and Annex 3 Section 3.4.2: The implementation of the phase rotation in Pi/4 QPSK is not defined clearly. The Pi/4 phase rotation could either be implemented in a continuous rotation with a positive phase increment (anti-clockwise) or a negative phase (anti-clockwise), alternatively it could be implemented as alternating between a positive and negative rotation (two constellations).*
- *Training sequence & signal info bit mapping:*
 - *Annex 3 Section 3.9.4: The training sequence and signal information bit mapping is defined as using QPSK, but it refers to the Pi/4 QPSK diagram. Clarification is needed if Pi/4 phase rotation is present or not.*
- *Scrambling*
 - *Annex 3 Section 3.9.7: The scrambling method has not been defined.*

Intermodulation

As VDES consists of multiple channels, separated into evenly spaced channels, various VDES transmission combinations could result in intermodulation products on other VDES channels. For example concurrent reception of strong transmissions on ASM2 and AIS2 will result in an intermodulation product on AIS1, thus desensitising the receiver's performance at AIS1.

Comments re ITU Recommendation: *It should be considered that the intermodulation specification deal with this use case with cognisance of the actual use, available technology and cost / benefit evaluation of using this technology.*

Further testing

The Brisbane VDES field trials were from a VDES transmitter on the shore to the vessel. This used vessels of opportunity and did not take into account the electrical noise floor on the vessels used for the VDES trial.

From anecdotal evidence gathered from operators that often send short Addressed Binary Messages (ABM) AIS messages to vessels from an AIS Physical Shore Station that is located on an electrically quiet site, the AIS data from vessels can be received before the vessel will respond to a single slot ABM. The 'ABM range' to vessels in this environment differs from vessel to vessel.

The noise floor was measured on a typical work vessel (buoy tender) and this was in the region of -90dBm on AIS1 and AIS2 channels (this measurement was part of an apparent AIS transponder fault finding exercise and not part of vessel qualification exercise and was thus not pursued further at the time). The AIS transmissions received by this particular vessel had to be 5 to 8 dB above the measured noise floor to be reliably received.

Both examples above indicate that the Ship to Shore and Shore to Ship radio communication links are not reciprocal.

The noise floor of a vessel on the VDES channels will have a significant effect on the reception of VDES transmissions from both terrestrial and satellite VDES transmitters.

Comments re ITU Recommendation: *It is recommended that existing vessel electrical noise floor data be gathered from existing sources and / or a significant number of existing and working vessels (not new builds or refits) be tested on the VDES channels to gain an understanding of the worst case, the best case and thus determine a working norm so that this detail can become part of the Satellite to Ship, Shore to Ship and Ship to Ship VDES link budget calculations.*

21.1.3 VDE – TER Simulator – Krzysztof Bronk

21.1.4 VDES – Potential waveforms and simulator parameters to synchronise – Ronald Raulefs

The need was emphasised for common channel models, network scenarios with number and route of ships (or in general radio nodes) distributions and a common power amplifier characteristic to synchronize the outcome of simulation results coming from different contributors to assess which is the best waveform, coding scheme, interleaver length and access method. For this a set of applications should be defined to use them as input to define the parameters, such bit/packet error rate, latency, transmit power, needed receive power, allowed interfering power from satellite or neighbouring ships (in the downlink) or shore stations (downlink and uplink).

The use of multiple antennas is strongly encouraged by simulation results for various channel models. The proposal is to implement transmit diversity that could also be exploited as receive diversity with maximum ratio-combining to enhance the performance. With this it will be possible to either extend the range or to reduce the overall transmit power and therefore use the radio system more efficiently. The transmit power of each antenna will be reduced by the 1/N antennas used and could motivate to reduce the noise floor on the ship. However, this needs to be assessed more carefully. The conclusion emphasised to identify VDES as a cellular system to enhance the overall network output. Multicarrier systems are proposed to distribute the resources in time and frequency more flexible than a pure time-division access scheme can do.

However, it is mandatory to identify and describe (=model them properly) the impact of other radio sources (noise or interference to VDES) to understand how to cope with them best.

In discussion it was stated that the proposed transmit diversity scheme is like introducing artificial multipath to create diversity without harming channel estimation or guard bands.

The benefit of 16-APSK vs 16-QAM for a multicarrier system to reduce PAPR depends on the number of carriers if there could be a benefit for the APSK constellation otherwise QAM has a performance benefit.

It is essential to cover multiple scenarios such as in-harbour, close to the shore and open sea for the analysis. A single model will not suit the analysis. There is a need for common channel models to fairly compare the different proposed waveforms.

21.1.5 Transmission methods for ASM – Ross Norsworthy

Discussion about multicarrier (MC) 20151029 Ross, Krzysztof, Ronald & Stefan

There is a reluctance to use the Maritime Cloud (MC) due to high ratio of PAPR (peak to average power ratio); searched for power amplifiers for MC that could reduce that obstacle; Mitsubishi power amp RA60H1317M1B could be the solution; price: roughly 35-50\$ (ebay single part); would allow for ~5 Watt average power with MC and 25W For single carrier $\pi/4$ QPSK.

In reply to a question regarding ITU maximum of 25W to be understood as peak or average power, It was stated that there is a need to interpret that power level as caloric power = average => no problem to provide MC 5 Watt average and 50 Watt peak power (very seldom);

For interference it is necessary to consider average power, as peak power is seldom and very short duration.

The advantage of MC to cover issues with non-flat channel, which Ross argues will help in multipath cases, Krzysztof objects that our bandwidth is too small.

Summarising MC advantages for ASM (16QAM(X5)/ temporary conclusions:

- better performance in non-line of sight: sensitivity is less important than reflections at the "end" of the range; goal should be to achieve roughly the same range as AIS with the very robust GMSK;
- high multipath environments (harbours, cities, inland waterways) and high density of ships: because the waveform structure is more robust for notch fades due to coding;
- 16QAM(X5) would be able to compress an ASM message into 1 slot due to 2.5 times throughput;
- subcarrier FDMA is possible; desirable in urban/high density areas due to the possibility to have one channel shared between multiple users at the same time, 1 subcarrier per user => long transmission time => less probable loss of data error rate;
- single frequency network design is possible in the future (DRM standard).

Disadvantages of 16QAM(X5) MC proposal (ITU-R1842)

- 11dB less on MC link budget compared to $\pi/4$ QPSK; 90/120km range with 75m base station and 10m ship station => "only" 90km range compared to 120 with 120km $\pi/4$ QPSK; 40km ship-ship with 10m antenna height; it needs to be seen if that has a practical impact as MC is expected to perform better in bad conditions (sea trial is necessary);
- PAPR 10dB versus 3dB for $\pi/4$ QPSK single carrier (more expensive PA amp) with threshold 10.5 dB for higher MC schemes;

- higher complexity in implementation.

Conclusion

- ITU-R1842 Annex 4, coding scheme for 25,50 and 100kHz was put into the MCS of VDE-Terr. (Annex 3) for the EfficienSea2 sea trial in order to get measurement numbers onto MC coding schemes to compare against;
- it is necessary to consider specifying multi carrier coding schemes into ITU-R [VDES] for
- future revisions, especially for the urban/shore areas;
- the default data rate is an open issue: highest possible to save resources or most robust to ensure that 1st transmission always goes through?
- It was agreed to peer review each other's inputs in the future as much as possible.

21.1.6 VDES Impact on GMDSS VHF Comms – Stefan Pielmeier

Exec. Summary:

- assumptions and calculations, see report ENAV17-11.28;
- VDES transmit operation interferes with VHF receive operations;
- The major interference impact comes from VDES TX noise floor;
- VDES TX Noise Floor reduces the telephony range to < 20NM if antenna separation is < 35 dB (14NM @30dB);
- VDES TX Noise Floor reduces the DSC range to < 20NM if antenna separation is < 35 dB (17NM @30dB);
- A 10 dB improved spurious of $\lesssim -46$ dBm leads to > 20NM communication range for DSC and telephony at antenna separations $\gtrsim 25$ dB;
- Practical measured antenna separations are ~30-46dB on a typical cruise ship installation; down to 17dB on a small ship with only 1m distance between 2 antennas, based on VDES Use Cases 2.7/4

Observations:

- Permanent VDES TX does not open the SAILOR 6222 GMDSS VHF squelch unintended;
- simultaneous VDES TX, DSC and telephony are possible in our Lab setup;
- A VHF Transceiver on the same ship can generate same interference;
- VDES is mostly automatic transmission;
- VDES transmit noise floor is -52dBm (16-QAM) at 1MHz offset;
- VDES transmit noise floor is -58dBm (QPSK, 8-PSK) at 1MHz offset;
- Therefore, strengthening of the spurious requirement from -36dBm to -46dBm seems possible.

The proposed change to ITU-R[VDES]:

- change spurious emissions requirement from -36 to -46 dBm in all affected annexes; this should be achievable with 12bit dual DAC (we measure -82 dBc with our setup);

- Alternative to 1: VDES transmit spurious noise on VHF GMDSS channels 16 and 70 shall be less or equal to 132dBc@15kHz bandwidth;
- Recommend antenna attenuation between VDES TRX and GMDSS VHF of at least 25 dB (if not already in GMDSS recommendation?);
- Reduce the maximum VDES transmit power, if the link budgets for SAT and TER allow;
- Automatic transmissions: shall we consider low-power mode and "transmit inhibit"? for Gas & Oil, to allow stop of all VDES transmit operation via external NMEA command?
- It is recommended to improve description of the $\pi/4$ QPSK implementation (VDE-Terr.);
- It is recommended to explicitly state that squared root raised cosine filtering is implemented on the transmitter and receiver end.

Feedback during presentation:

- Coastal stations (primary VHF Distress communication partner acc. to SOLAS chap. 4) might use more effective filtering on VDES TX and GMDSS VHF RX side to avoid the shown problems at all;
- Alternative solution of the problem is to only allow VDES to transmit for a limited amount of time slots at a time and require a transmit gap afterwards;
- Alternatively, sense on Channel 16 and 70 before VDES transmit

21.1.7 NORSAT2 and VDES-SAT downlink verification – Lars Loge

21.1.8 Ad-hoc networks to increase VDE Capacity – Robert Tremlett

21.1.9 VDES Waveform Study – Jan Safar

Relevant Input Papers: ENAV17-11.21

A progress update was provided on the second phase of the VDES Waveform Study conducted by the GLA and ITR. This on-going work considers technical requirements for ASM and VDE-TER waveforms based on the set of VDES user requirements that have been identified to date. The existing base of user requirements is being mapped onto the waveform descriptions from the current draft VDES recommendation. Results from a recent maritime VDES channel sounding study have also been used to derive statistical maritime channel models. The models are being used to analyse waveform operating requirements and expected performance.

It was noted in discussions that WG3 participants have used a great number of different channel models and some new models are being developed. It is considered that it would be beneficial for the group to develop a Common Maritime VHF Channel Model that could serve as a framework for evaluating different VDES waveform and access scheme proposals.

ANNEX H ACTION ITEMS*Action Items for the IALA Secretariat*

1. The IALA Secretariat is requested to upload input paper ENAV17-13.8.2, Guidelines for the coordinated enhancement of the maritime PNT system, to the IALA Wiki. 9
2. The Secretariat is requested to forward papers ENAV17-14.2.23, ENAV17-14.2.24, ENAV17-14.2.25 to ENAV18. 11
3. The IALA Secretariat is requested to inform the S-200 AtoN Field Manager (Mr Cho) that the Committee considers S-201 to be ready for review and recommends that its status be changed to 'Draft'. 11
4. The AtoN Field manager (Mr Cho) is requested to manage the review of S-201 in accordance with section 6.3 of Guideline 1087 (edition 2). 11
5. The IALA Secretariat is requested to submit ENAV17-14.1.2 'Guideline 1087 (rev 2) on Procedures for the Management of the IALA Domains under the IHO GI Registry' to ENAV18. 12
6. The IALA Secretariat is requested to submit ENAV17-14.1.3 'Guideline 1106 'Producing an IALA S-200 Series Product Specification' to ENAV18. 12
7. The IALA Secretariat is requested to carry forward working paper ENAV17-14.2.3 (Streaming data service draft4) to ENAV18. 12
8. The IALA Secretariat is requested to carry forward ENAV17-14.2.4 (e-navigation risk assessment plan) to ENAV18 as a working document. 12
9. The IALA Secretariat is requested carry forward ENAV17-14.2.5 (Draft IALA Guideline on the Application Note on Support of CSSA for MSPs + Maritime Cloud) as working paper to ENAV18. 13
10. The IALA Secretariat is requested to forward working paper ENAV17-14.2.6 (Questions on a digital infrastructure framework for e-navigation) to the steering group planning the Seminar on Maritime Digital Infrastructures and Testbeds (Nov 2015). 13
11. The IALA Secretariat is requested to forward liaison note 14.1.6 (ENAV Proposal on Unique Identifiers for Maritime Resources), together with output paper ENAV17-14.1.5 'Draft Guideline on unique identifiers for Maritime Resources', to PAP. 14
12. The IALA Secretariat is requested to forward liaison note ENAV17-14.1.4 (on M2M joint working) to the VTS Committee. 14
13. The IALA Secretariat is requested to forward ENAV17-9.11 to ENAV18. 14
14. The IALA Secretariat is requested to advise on the IALA policy and procedure to post information to e-navigation.net. 15
15. The IALA Secretariat is requested to, as a matter of urgency, take over ownership and management of www.e-navigation.net and e-navigation.nl. The IALA Secretariat is requested to ensure that the new website includes the functionalities listed in section 10.7 of the ENAV17 report. 16
16. Marie-Helene Grillet, IALA Technical Operations 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. 16
17. The IALA Secretariat is requested to encourage testbed project managers in its membership to provide testbed information and results to IALA for posting to the IALA website. 16
18. The IALA Secretariat is requested forward working paper ENAV17-14.2.1 (draft guideline on planning testbeds and reporting of testbed results) to ENAV18 for further work. 16
19. IALA Secretariat is requested to forward all ACCSEAS papers input to ENAV 17 (ENAV17-10.4.1 to ENAV17-10.5.10, ENAV17-10.7 and ENAV17-10.8), to ENAV 18. 16

20. The IALA Secretariat is requested to forward ENAV17-14.1.7 (draft Recommendation on the need to implement regional e-navigation solutions based on international standards) to the IALA Council for approval. 17
21. The IALA Secretariat is requested to forward working paper ENAV17-14.2.2 (IALA e-navigation road map) to ENAV 18 for further development 17
22. The IALA Secretariat is requested to forward liaison note ENAV17-14.1.1, Liaison note to ARM Committee regarding updating the IALA NAVGUIDE, to the ARM Committee 18
23. The Secretariat is requested to forward paper ENAV17-14.1.11, Liaison Note re draft Guideline on VDES User Requirements, to ENG, ARM and VTS Committees. 19
24. The Secretariat is requested to forward ENAV17-14.2.27 to ENAV18. 20
25. The Secretariat is requested to forward Output 17-14.1.8.1 and ENAV17-14.1.8.2 (liaison note to VTS with annex) to the VTS Committee. 20
26. The Secretariat is requested to forward Output ENAV17-14.1.9.1 (liaison note and annex to IHO and WMO) to the Council for approval, with annex ENAV17-14.1.9.2. 21
27. The Secretariat is requested to forward the working paper 17-14.2.16 (description of MSPs) to ENAV 18.21
28. The Secretariat is requested to forward the work paper ENAV17.12.2 WG4 MSP15 Real Time Hydrographic and Environmental Information Services vf1 WP2 to ENAV 18. 21
29. The Secretariat is requested to forward working papers ENAV17-12.3, WG44 MSP11 Nautical Chart Service wp3 to ENAV18. 21
30. The Secretariat is requested to forward Output 17-14.1.9.1, ENAV17-1.9.2 to IHO and WMO after approval of Council. 21
31. The Secretariat is requested to forward ENAV17-14.2.21 to ENAV18. 22
32. The Secretariat is requested to forward ENAV17-14.2.17, MSP11 Nautical Charts Service, to ENAV18 22
33. The Secretariat is requested to forward the working paper ENAV17-14.2.19, MSP12 Nautical Publication Service, to ENAV18. 22
34. The Secretariat is requested to forward the working paper ENAV17-14.2.20, MSP13 Ice Navigation Service, to ENAV18. 23
35. The Secretariat is requested to forward the working paper ENAV17-14.2.18, MSP15 Hydrographic Service, to ENAV18 23
36. IALA Secretariat is requested to include the working papers ENAV17-14.2.9 – Draft Guideline on eLoran service provision (rev.291015) and ENAV17-14.2.8 – Draft Recommendation on eLoran service provision as input papers to ENAV18. 23
37. IALA Secretariat is requested to include the working paper (ENAV17-14.2.10 – eLoran almanac data) as an input paper to ENAV18. 24
38. The IALA Secretariat is requested to inform the S-200 AtoN Field Manager (Mr Cho) that the Committee considers S-240 to be ready for review and recommends that its status be changed to 'Draft'. 24
39. The AtoN Field manager (Mr Cho) is requested to manage the review of S-240 in accordance with section 6.3 of Guideline 1087 (edition 2). 24
40. The IALA Secretariat is requested to include the working paper ENAV17-14.2.11 (coordination of PNT development activities) as an input paper to the next meeting. 24
41. IALA Secretariat is requested to include the working paper ENAV17-14.2.13 (draft SBAS Guideline (rev.291015)) as an input paper to ENAV18. 24

42. IALA Secretariat is requested to include the working paper ENAV17-14.2.14 (draft Guideline on techniques for on-board PNT data processing (rev.291015)) as an input paper to ENAV18. 25
43. IALA Secretariat is requested to amend the abbreviation list within Guideline 1112 (add FI as For Information) and to remove highlighted text in two of the annexes as minor editorial changes. 25
44. IALA Secretariat is requested to include the working paper ENAV17-14.2.15 (draft Guideline on DGNSS radiobeacon coverage (rev.291015)) as an input paper to ENAV18. 25
45. IALA Secretariat is requested to include the working paper ENAV17-14.2.22 (draft maritime operational requirements (rev.291015)) as an input paper to the next meeting. 25
46. IALA Secretariat is requested to include the working paper ENAV17-14.2.12 (R-mode intersessional aims and objectives) as an input paper to ENAV18. 26
47. The Secretariat is requested to forward the report of ENAV17 (ENAV17-16.1) to the Council, to note. 28

Action items for members

48. WG3 Chair is requested to consider how ENAV VDES can take account of GMDSS modernisation. 10
49. Jillian Carson-Jackson is invited to submit the AMSA / DHI large vessel drift project as a testbed on e-navigation.net. 11
50. Participants are requested to consider whether they have the required expertise to contribute to the definition of IALA's requirements for data streaming services within the context of defining necessary changes to S-100. Volunteers who are available to contribute to intersessional work in February 2016 are requested to identify themselves to WG1 chair. 12
51. ENAV16 action 48 "Edward Hosken is requested to cease further work on the CSSA (Task 5.1.18) in WG1, and revise, together with WG1, the work task 5.1.18 at a future session, proposing the way forward to the Committee" is carried forward to ENAV19. 13
52. Jon Leon Ervik (WG4 chair) is requested to consider Recommendation 140 and Guidelines 1113 and 1114 within the Shore-based Maritime Services Workshop (May 2016) to consider requirements from an operational perspective, and report back to ENAV19. 13
53. Jon Leon Ervik is requested to identify the gap between S-124 and IALA requirements for MSI services. 14
54. Alwyn Williams is requested to review and update information on the ACCSEAS project, adding summary information as required, at e-navigation.net by 31 December 2015. 15
55. Mahesh Alimchandani is requested to prepare an article for the Bulletin on e-navigation.net and test bed information sharing. 16
56. ENAV Participants are requested to review and comment on ENAV17-14.2.1 (draft guideline on planning testbeds and reporting of testbed results) prior ENAV18. 16
57. Committee Participants and Working Group Chairs are requested to review the work items identified in the legacy report (ENAV17-10.7) and the liaison note (ENAV17-10.8) and identify tasks relevant for the Committee to progress 17
58. Alwyn Williams is request to submit the ACCSEAS Baseline and Priorities Report V.3 to ENAV 18 17
59. ENAV Participants are requested to review and comment on ENAV17-14.2.2 (IALA e-navigation road map), in particular the format for presenting the road map 17
60. ENAV Working Group Chairs are requested to note the chapters of the NAVGUIDE assigned to their groups for review and update. 18
61. Participants are requested to give feedback to WG4 chair intersessionally on work paper 17-14.2.16 (description of MSPs). 21

62. WG5 Chair is requested to apply for a new S-200 number, preferably S-247, from the IALA Domain Administrator. 24
63. ENAV Committee Participants are requested to review working paper ENAV17-14.2.11 coordination of PNT development activities, and to provide any comments to the WG5 Chair, Alan Grant. 24
64. Committee Participants are invited to inform the WG5 Vice Chair (Michael Hoppe) if they plan to attend the R-mode intersessional meeting, due to be held at IALA HQ, 9-11th February 2016. 26
65. Committee participants are requested to advise any corrections / amendments to the draft ENAV17 report, paper ENAV17-16.1 post plenary, by 12th November 2015. 28