



IALA ARM COMMITTEE

REPORT OF THE 16TH SESSION OF THE IALA ATON REQUIREMENTS AND MANAGEMENT (ARM) COMMITTEE

24 October to 4 November 2022

Thomas Southall
Committee Secretary

4 November 2022

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

www.iala-aism.org

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

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**Report of the 16th Session of the IALA
AtoN Requirements and Management (ARM) Committee
24 October to 4 November 2022
Executive Summary**

The 16th Session of the ARM Committee was held from 24 October to 4 November 2022 with Phil Day as Chair and Dave Lewald as Vice-Chair. The Secretary for the meeting was Thomas Southall.

91 Participants from 27 countries participated in ARM16. 33 participants attended for the first time.

The Committee continued the work for the 2018 - 2023 work period. Working in three working groups, the Committee considered 60 input papers and produced 25 output documents.

Key outputs completed included:

- Future Task Plan 2023 - 2027
- Draft Recommendation on Cyber Security
- Draft Guideline Gxxxxx Marking of Bridges
- Draft Guideline Gxxxx on AtoN Training and Awareness for Mariners
- Revised Guideline G1105
- Guideline G1159 Ship Reporting from Shore Based Perspective
- Revised Guideline G1138 The Use of the Simplified IALA Risk Assessment Method (SIRA)
- Draft Maritime Service 17
- Workshop proposal on the Second Joint IALA/IHO
- S-201 Test bed document for website
- Draft IMO SN Circular on the IALA Risk Toolbox
- OPRA EXCEL Workbook and Word document version
- S-125 ed.0.0.3
- S-201 ed.1.1
- Dictionary items

The following liaison notes were prepared:

- LN to ENG on Navigational Requirements and Considerations for Establishment of Buoyage
- LN to ENG on dictionary updates
- LN to PAP on the way forward with AIS documentation
- Draft Annex IALA AIS related documents
- LN to PAP on Cyber Security
- LN to all committees on the progress of the Cyber Security tasks
- Attachment draft Cyber Security Guideline
- LN to IHO NIPWG on S-125

Overall status of the ARM Committee 2018-2022 Work Programme after ARM16:

Task		Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
					Green	Yellow	Red	
WG#1 – Navigational Requirements								
1.1.1	Develop guidance on regulatory/legal framework for Aton Authorities							Task deleted following LAP advice
1.1.2	Revise G1054 Preparing for a Voluntary IMO Audit on Aids to Navigation Service Delivery (Nov 2006)	10	13	14				Complete at ARM14
1.4.1	Revised Guideline G1052 Quality Management in [Marine] Aids to Navigation Service Delivery (Dec 2013), removing ISO copied text.	10	12					To be completed at ARM17
1.5.1	Reformat and review the IALA MBS incorporating MAtoN. Needs General Assembly approval.	8	12	14				Complete at ARM15
1.5.2	Assist ENAV with development of radio aspects of MAtoN and AMRD with IEC and ITU	8	11	12				Complete
1.5.3	Undertake gap analysis of IALA guidance associated with the MBS, including 1078 The Use of AtoN in the Design of Fairways (June 2011), identify further work to add to the task plan at ARM8. Includes SIGNI buoyage and submerged breakwaters.	8	12	14				Complete at ARM14
1.5.4	Develop guidance for navigators on the use of AtoN	13	14					Completed at ARM16
1.5.5	Review G1096 Anticipated User e-Navigation Requirements from Berth to Berth, for AtoN Authorities (May 2013)	10	11					Deleted
1.5.6	Develop guidance on AtoN provision in polar regions (winter conditions; possibly complete following liaison with ENG)							Complete
1.5.7	Develop guidance on the provision of AtoN for autonomous vehicle/vessel operations (Maritime Autonomous Surface Ship, MASS)	14	16					Ongoing
1.5.8	Review and update Recommendation R-0139 on the Marking of Man-Made Offshore Structures to reflect trends in the proliferation of wind farms and other offshore platforms.	10	12	14				Complete at ARM14
1.5.9	Identify options for the future use of DGNSS stations in conjunction with ENG review of Recommendation R0150.	10	12					ENG Completed
1.5.10	Develop Guideline on the Use of MAtoN	8	10					Complete at ARM12, update of A-126 complete at ARM14
1.6.1	Review R0143 Provision of virtual aids to navigation and G1081 Virtual AtoN to reflect developments	8	11	13				Completed at ARM13
2.1.1	In association with ENG review G1116 Selection of Rhythmic Characters and Synchronisation of Lights for [Marine] Aids to Navigation (Dec 2015)							Complete
5.3.1	Develop guidance on the symbology and portrayal of AtoN for charting	9	14					Postponed until 2022.
3.2.1	Review relevant sections of NAVGUIDE as requested by Secretariat	8	14					Ongoing
	Review IALA AtoN questionnaire							Complete
WG#2 – Information Services and Portrayal								
2.2.1	Review G1084 Procedure of the Authorization of AIS AtoN	10	11					Incorporated in review of AIS documentation

Task		Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
					Green	Yellow	Red	
2.2.2	Provide guidance on the management of requirements and requirements traceability							Completed at ARM9
4.1.1	Review G1050 Management and Monitoring of AIS Information (Dec 2005)	9	11					Incorporated in review of AIS documentation
4.2.1	Maritime Connectivity, Define User Requirements for Maritime Connectivity, Define User Requirements for the Maritime Internet of Things (Define Requirements for MRN Addressing) and Contribute to IALA submission to IMO	9	14					Ongoing
5.1.1	Develop guidance on Maritime Services including the production of an 'e-Navigation Operational Service Description'	9	14					Completed at ARM12
5.1.2	New Guideline on Operational considerations for S-200 (S-201 AtoN information and S-230 Application Specific Messages)	9	11					Ongoing
5.1.3	Continue to Develop Product Specification S-201 in the Task Group already assigned							
5.1.4	Develop Annex C to S-201	9	11					Ongoing
5.1.5	Develop Requirements for S-125	8	14					Ongoing
5.1.6	Coordination with IHO/WMO for S-100, S-200, and MRN management (S-100/S-200 message coordination with other Committees on S-2xx development)	8	14					Ongoing
5.1.7	Develop guidance on MRN for users	8	14					Complete at ARM13
5.1.8	Develop MRN Registry Submission & Maintenance Guideline for IALA Secretariat	8	14					Completed at ARM14
5.1.9	Develop Recommendation to cover MRN Guidelines	9	10					
5.1.10	Coordinate Committee support for IALA representation at IHO working groups in cooperation with Secretariat (HSSC, S-100WG, NIPWG)	8	14					Ongoing
5.1.11	Monitor the development of S-201 Testbed	8	14					Ongoing
5.2.1	Review G1105 shore side portrayal ensuring harmonisation with e-Navigation related information	9	14					Complete at ARM17
5.2.2	Develop Guideline on ship reporting from the shore-side perspective							Completed at ARM13
5.3.1	Develop guidance on the symbology and portrayal of AtoN for charting	9	14					Ongoing (with 5.2.1)
6.2.1	Joint IMO IHO IALA Workshop regarding the management of S-100 PS	9						Complete
6.2.2	Participate in ARM led joint workshop on cyber security	8	14					Complete
WG#3 – Risk Management								
1.2.1	Review G1018 Risk Management to ensure compatibility with risk toolbox. Includes full review of underlying Risk Toolbox documentation G1123, G1124, G1138	8	13					Completed at ARM15
1.2.2	Review R0142 Maritime Data Sharing IALA Net to reflect new title "Maritime data sharing" and the storage and use of historical [AIS and other] data for risk analysis. New Guideline incorporating a Conceptual framework for data sharing, capture and analysis	10	14					Delayed due to developments in IALANET
1.2.3	Review G1086 Global Sharing of Maritime Data (June 2012) in collaboration with task 1.2.2 (R0142 review)	9	14					Delayed due to developments in IALANET

Task		Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
					Green	Yellow	Red	
1.2.4	In cooperation with ENG (task 1.2.1) revise R0138 and G1058 and G1097 on simulation use by AtoN authorities	8	12					
1.2.5	Develop Recommendation for marine data sharing for risk assessment analysis or incorporate with R0142 task 1.2.2							Task merged with 1.2.2
1.2.7	Develop document to promulgate IALA risk management toolbox to IMO (SN circular)	13						Complete at ARM16
3.1.1	Review G1020 Training Related to [Marine] Aids to Navigation (Dec 2005)	8	14					Complete
6.1.1	Cooperate with WWA in providing Risk Seminar(s)	8	14					Ongoing

Legend:

Green – progress as planned
Yellow – task needs more time, target time prolonged
Red – task delayed due to external issue
Grey - task completed / deleted
Blank – task not started

Table of Contents

1.	Introduction	8
2.	Review of action items	10
3.	Reports from other bodies	10
4.	Presentations	13
5.	Work Programme management	13
6.	Review of input papers	14
7.	Establish Working Groups	14
8.	Working Group 1 – Navigational Requirements (WG1)	14
9.	Working Group 2 – Information Services and Portrayal (WG2)	16
10.	Working group 3 – Risk Management (WG3)	21
11.	Any other business	24
12.	Review of output and working papers	24
13.	Date and venue of next meeting	24
14.	Closing of the Meeting	24
15.	List of Annexes	25

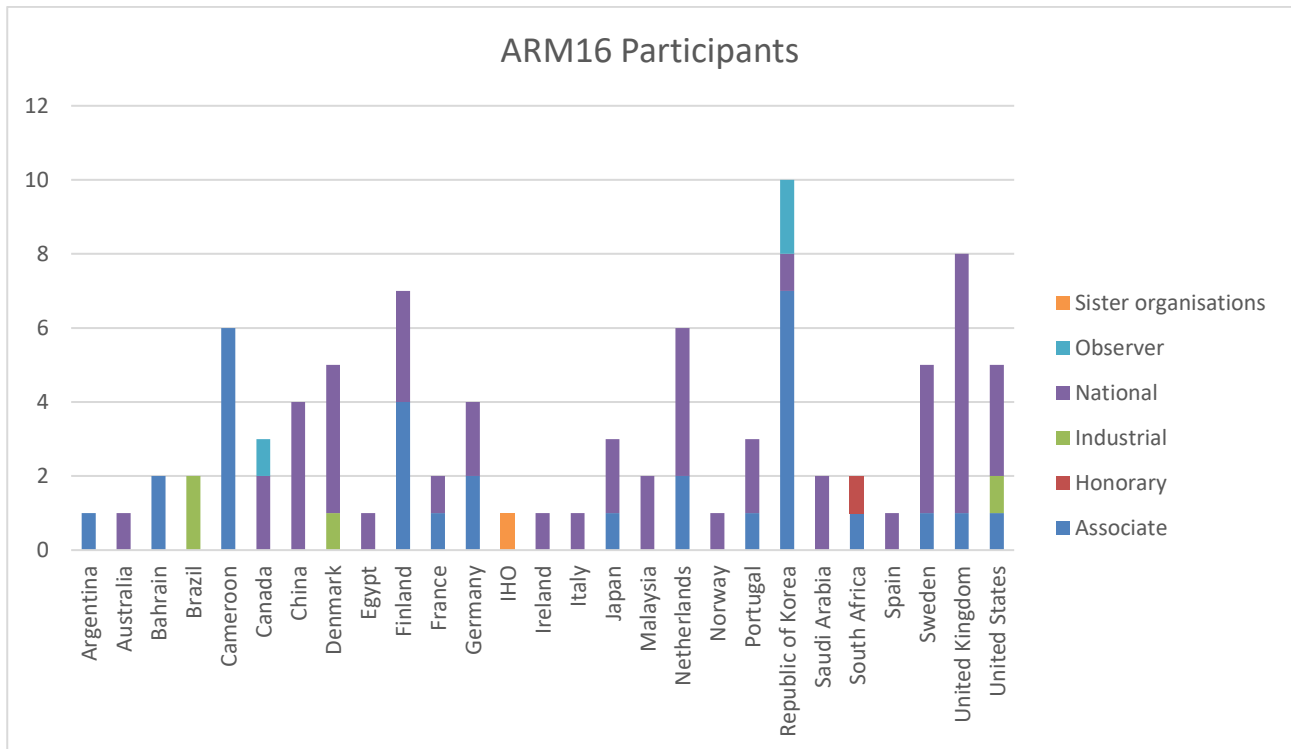
Report of the 16th Session of the IALA

AtoN Requirements and Management (ARM) Committee

1. INTRODUCTION

The 16th Session of the ARM Committee was held from 24 October to 4 November 2022 with Phil Day as Chair and Dave Lewald as Vice-Chair. The Secretary for the meeting was Thomas Southall.

91 Participants from 27 countries participated in ARM16. 33 Participants attended for the first time and 17 participants participated online.



1.1 Welcome from the Chair of the ARM Committee

The Committee Chair, Phil Day, welcomed the Committee to the sixteenth session of the ARM Committee (ARM16). The Chair introduced Dave Lewald, Vice-chair of the ARM Committee and Thomas Southall who served as the Committee Secretary.

1.2 Welcome from the Secretary-General

Francis Zachariae, Secretary-General welcomed all participants to ARM16; he stated:

“On behalf of the whole Secretariat, I would like to welcome you all to ARM 16 physical here in St. Germain. We are extremely happy to have you back as the last of the four committees and at your final committee meeting before the Conference and General Assembly in Rio de Janeiro next year.

I must say that the work during the pandemic has been very successful and with excellent results thanks to an extraordinary effort from the Chair/Vice Chair, WG and TF Chairs and all the participants. I was a bit concerned, I must say, but everything worked well. Much better than in many other international organizations thanks to the well-known IALA spirit and corporation. I would really like that thank you all for your contribution. Much more than could be expected.

The physical meetings have been without problems. A few cases of COVID have been reported, but nothing serious. I guess we are now in a face where COVID is treated like the flu and the world can go back to normal routines – I hope!!

You have more or less a standard week, but a busy one. Much to work on and finalize and many interesting input papers. Interesting to see how MASS – and VTS have taken more space on the agenda. I like our approach to MASS, balanced and result oriented. Digital solutions need to solve problems for shipping and mariners with good business cases and respect for the people who in one way or another shall handle the systems. There remains a huge work for the MASS TF, the Committees and the Secretariat to take the conclusions and the ideas from all the input and condense it into consolidated IALA guidance, perhaps in the MASS guideline. Not an easy task, but fortunately we have some time to finalize it.

Just a few words on the status of IALA. We are still growing. Actually, we have not lost members during the pandemic as many of our sister organizations. We have more members than ever in our history. 334 in total. I take this as a sign of the professionalism from the Committees and the Secretariat and the many activities we made during the long pandemic period.

The important and complicated process of transforming IALA into an Intergovernmental Organization is also going well. As you probably know, 50 States have now signed the Convention and 10 States have ratified/accepted or acceded to it. More will follow soon. I know that Albania has ratified, and France will do so next week. When 30 States have ratified, IALA will automatically become an IGO. I guess this will happen during the next work period.

On Friday you will hear more about the Conference in Rio de Janeiro. I am sure this will very successful, and I sense a lot of interest to participate also from our Industrial members. We have just issued an Exhibition manual and registration will soon open on the dedicated web site.

With this I wish you a successful meeting and I look forward to hearing all the results on Friday.”

1.3 Approval of the agenda

The agenda was reviewed and approved (ARM16-1.2.1).

1.4 Introductions and Apologies

The Chair welcomed the new participants of the Committee. No apologies were received.

A list of participants and their contact details can be found in Annex B.



1.5 Working Arrangements

The following statement on the IALA General Data Protection Policy was made by the Committee Secretary:

IALA complies with the General Data Protection Regulations of the European Union. IALA will include a list of participants with their contact information in the report of this meeting. Any participant who wishes to

remove their contact details from the participants list should advise the Committee Secretary as soon as possible.

The following question was asked by the Committee Secretary:

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

No patents were noted.

The Committee Secretary provided all participants with a briefing on the updated Committee Working Arrangements document and tools available to them. This brief included an overview of the ARM16 Action Plan that had been agreed by the ARM Committee Management Team to be progressed during ARM16 through Task Groups (TG). Each task had a deadline for expressions of interest to participate to the specified Task Group Leader by a certain date.

Task items that were worked on at ARM16 were displayed in the Action Plan, which can be found on IALA Dashboard for ARM.

The deadline for submitting documents to the silent approval procedure was set to 2 November 2022 at 17:00 UTC.

2. REVIEW OF ACTION ITEMS

Input paper ARM16-2.1 refers.

The Committee Secretary confirmed that all Secretariat actions from ARM15 were completed.

3. REPORTS FROM OTHER BODIES

3.1 IALA

3.1.1 Report on IALA Council

Minsu Jeon, IALA Technical Operations Manager, reported the results from Council 75. In addition to new recommendations and guidelines these results included:

- Revision of the Current drivers and trends document.
- The Council approved the revised Committee work programme for 2018-2023.
- Council approved the workshop proposal on Digital Maritime Radio Communication Infrastructure to be held in 20-24 Feb 2023 in Tokyo, Japan.
- The Council approved the change of the heritage lighthouse of the year selection process and agreed to apply it for the heritage lighthouse of the year 2023. As a result, the Council will choose the Lighthouse of the Year 2023 in December 2022.
- The Council approved Homigot Lighthouse, the Republic of Korea, as the Heritage Lighthouse of the Year 2022.

Council 76 will be held 12 – 16 December 2022 in Brazil.

3.1.2 Report of the IALA Policy Advisory Panel

Minsu Jeon, IALA Technical Operations Manager, reported that the 47th session of PAP was held between 13 - 15 September 2022.

Many items were discussed and key outcomes included:

- The revised IALA standards were approved at PAP and will be forwarded to Council.
- A draft input to IMO regarding IALAs activities regarding MASS.

- Discussion on Maritime Services in the context of e-Navigation.
- A review of entries in the IALA Dictionary.
- A update on the *Committee Work Programme 2023-2027*, for which the VTS Committee proposals had to be finalized at ARM16.

3.1.3 MASS Task Force

Minsu Jeon reported that the recent MASS TF had met and received updates on committee work and reports from other external organizations. The MASS TF agreed the IALA MASS Roadmap and the framework for IALA MASS documentation.

3.2 IMO

Minsu Jeon, IALA Technical Operations Manager, reported that the ninth session of the IMO NCSR Sub-Committee was held virtually from 21 to 30 June 2022, chaired by Mr. Nigel Clifford (New Zealand), supported by the vice-chair, Mr. A. Schwarz (Germany).

IALA had submitted four papers to this meeting:

- NCSR 9-7-2 - Development of Maritime Services descriptions (IALA)
- NCSR 9-12-9 - Proposal on WRC-23 agenda item 10 (IALA)
- NCSR 9-INF.12 - Report of the trial on digital voice communication in the maritime VHF band (IALA)
- NCSR 9-INF.13 - VDES ranging mode (R-Mode) (IALA)

Navigation WG matters

- **Development of Maritime Services descriptions**

NCSR noted the input paper from IALA (NCSR 9/7/2) concerning the update of Maritime Services 1 (VTS Information service (INS)), 2 (VTS Navigational assistance service (NAS)) and 3 (Traffic organization service (TOS)) into a new Maritime Service description for vessel traffic service (VTS) in accordance with the revised Guidelines for vessel traffic services (resolution A.1158(32)), and the development of a new Maritime Service description for aids to navigation (AtoN).

Noting that further work on the descriptions of Maritime Services was required, the Sub-Committee invited the Committee to extend the target completion year of output 2.11 "Consideration of descriptions of Maritime Services in the context of e-navigation" to 2023.

The Sub-Committee also invited interested Member States and international organizations to submit relevant proposals to NCSR 10 in order to update the description of Maritime Services in the context of e-navigation and finalize the revision of MSC.1/Circ.1610.

- **Revision of ECDIS Guidance and performance standards**

The Sub-Committee finalized a revision of the ECDIS Guidance for good practice (MSC.1/Circ.1503/Rev.1) for submission to MSC for approval. The draft updated guidance includes, in particular, a new section on onboard ECDIS updates.

The updates to the performance standards introduce, in particular, the application of new IHO Data Standards and product specifications (S-98, S-100 and S-101) with regard to ECDIS equipment installed on or after 1 January 2029 and, optionally, for equipment installed after 1 January 2026 and before 1 January 2029.

- **Unlawful practices associated with fraudulent registration and registries of ships**

The Sub-Committee noted that LEG 109 had invited MSC 105 to consider whether to investigate how ships without proper registration were able to obtain Maritime Mobile Service Identity (MMSI) numbers, in particular to manipulate Automatic Information System (AIS) data transmissions, and that, taking into account the technical nature of the issue, the Committee had agreed to refer the matter to the NCSR Sub-Committee for consideration and advice, as appropriate, and invited Member States and international

organizations to submit relevant comments and proposals to the Sub-Committee (MSC 105/20, paragraph 2.7).

In this context, noting that MSC 105 was held after the deadline for submission of documents to NCSR 9, the Sub-Committee agreed to refer the matter to the Working Group on Communications for preliminary consideration and to advise the Sub-Committee, as appropriate.

Communications WG matters

- ITU WRC 23

In connection with the draft IMO position on WRC-23 agenda item 10, NCSR had for its consideration on the three documents from IALA.

The draft IMO position on relevant agenda items of ITU WRC-23 concerning matters relating to maritime services was finalized, for approval by MSC 106 and submission to the ITU's Conference Preparatory Meeting for WRC-23. However, regarding the agenda item 10, NCSR instructed the IMO/ITU EG 18 to develop the IMO position and to advise NCSR 10 as appropriate.

The next World Radiocommunication Conference ([WRC-23](#)) will be held in the United Arab Emirates from 20 November to 15 December 2023.

Draft liaison statements to ITU on maritime radiocommunication matters were also approved. However, the liaison statements on the revision of Recommendation ITU-R M.1371-5, NCSR established a Correspondence Group coordinated by Mr. Stefan Bober (Germany) to submit a report, including a draft liaison statement to ITU-R Working Party 5B for consideration at NCSR 10.

Other matters

- IMO Member State Audit Scheme (IMSAS)

NCSR noted that MSC 104 had instructed the NCSR to consider the proposal contained in documents MSC 102/22/3 (WMO) and MSC 103/20/9 (IALA), taking into account related mandatory requirements contained in IMO instruments, and advise the Committee accordingly, so that their inclusion in the appropriate IMSAS guidance materials could be considered (MSC 104/18, paragraph 17.17).

The Sub-Committee referred the document from IALA (MSC 103/20/9) for consideration at NCSR 10 and invited interested Member States and international organizations to submit relevant proposals, as appropriate.

The VTS Chair recalled the recent submission to IMO on the IMSAS manual. The Committee noted that the appendix relating to VTS needed updating to be in line with the new IMO VTS resolution. The CMT undertook this task and the update will be submitted to Council to be sent to IMO NCSR10, see agenda item 12.

3.3 Digital@Sea

Minsu Jeon reported that the 2022 Digital@Sea North America conference was held 11-12 May 2022 at the Florida Aquarium, Tampa, Florida. The report from this event can be found in input document VTS53-3.3.1.

The Committee noted that Digital@Sea Asia-Pacific had just come to a close and that the dates for the upcoming Digital@Sea conferences were as follows:

- Digital@Sea International in 1Q 2023
- Digital@Sea North-America May 2023 in Canada

3.4 IHO/IALA liaison

Minsu Jeon, reported that NCSR9 endorsed an implementation phase (depicted below) for a new resolution, including S-100, a transition period was agreed upon:

- S-100 ECDIS will be legal to use after 1 January 2026 and
- from 1 January 2029 new systems must comply with the new IMO Resolution on ECDIS PS.

This gives IALA a time indication for when the ECDIS related elements of S-200 and S-201 should be ready.

3.5 ITU

Minsu Jeon informed the Committee on IALA / ITU matters highlighting that there is currently liaison between the two organizations on ITU Recommendation M.1371: Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile frequency band and these discussions will continue.

3.6 Joint IHO/IALA workshop on S100/S200

Minsu Jeon and the Chair, Phil Day, reported the highlights from the recent joint IHO/IALA workshop on S100/S200. They recommend that ARM participants download the report from the IALA website and highlighted that it was seen as the first of many workshops with the IHO and would be added to the future work programme.

4. PRESENTATIONS

All recordings of the presentations given at ARM16 can be found at the IALA Dashboard for “All Committees” under “Resources / Committee Presentations” (login necessary). The following presentations were given at ARM16:

- IALA World-Wide Academy update
- The Open Digital Incubator Initiative MCP Consortium
- AtoN terms and definitions Minsu Jeon
- Guidance on the use of drone for AtoN maintenance KAtON
- IALA Conference in Rio! Alberto Piovesana

5. WORK PROGRAMME MANAGEMENT

5.1 Work Programme (2018 – 2023), Task Plan, Task Register

The updated Task Plan (ARM16-5.1.1) was noted by ARM16 participants.

5.2 Action Plan

The ARM16 Action Plan, which can be found [here](#), was noted by the Committee. The Secretary reminded participants that all meetings during the session would be posted on the ARM16 dashboard.

5.3 ARM tasks for work programme 2023 – 2027

At ARM16 the new Task plan for the next Work Programme (WP) was finalized by the CMT having taken into account tasks to be carried over from the current 2018 – 2022 work programme and task proposals from ARM participants. The ARM 2023 -2027 Task Plan and Register will now be forwarded to the Secretariat to collate with the other committees proposals before being submitted to PAP.

Action item:

The Secretariat is requested to collate the future task plan period 2023 – 2027 (ARM16-11.1.1) with the other committee's submission and forward them to PAP for further consideration.

5.4 IALA MBS

The Committee reviewed the draft Recommendation on the IALA MBS and found no amendments to be made to the document.

6. REVIEW OF INPUT PAPERS

6.1 Input papers

The input papers for ARM16 consisted of new input papers as well as working papers from the previous session. The input paper list (ARM16-6.1.1) did not include the working papers from ARM15. The working paper list (ARM16-6.1.2) was a separate input document.

6.2 Input papers not related to an existing task

The Chair highlighted the following papers that were received late to the session:

- ARM16-5.4.1 Revised R1001 Ed2.0 The IALA Maritime Buoyage System June 2022 rev1
- ARM16-8.4.7 DRAFT Liaison note to ARM on Maritime Services (ENG16-12.3.7)
- ARM16-8.4.7.1 draft Maritime Service 17 AtoN v.0.2 (ENG16-12.3.7.1)
- ARM16-6.2.6 and 6.2.6.1 on Liaison note to ARM on Navigational Requirements and Considerations for Establishment of Buoyage (ENG16-12.2.3)
- ENG15-12.1.3 Liaison note to ARM on definition of nominal range_v0.1 (this was not included in the ARM16 papers but will be submitted formally to ARM17).

7. ESTABLISH WORKING GROUPS

Three working groups were established, with their respective Chairs and Vice-Chairs as outlined below.

Working Group (WG)	Working Group Chair / Vice Chair
WG1 – Navigational Requirements	Guttorm Tomren / Johan Westerlund
WG2 – Information Services and Portrayal	Dave Lewald
WG3 – Risk Management	Roger Barker / Sarah Robinson

8. WORKING GROUP 1 – NAVIGATIONAL REQUIREMENTS (WG1)

ARM16 has been an exciting last session of the work period, several documents have been processed by the various WG1 task groups with three documents submitted for IALA Council approval. The work period has come to an end, and nearly all planned activities have been accomplished. The working group has made huge contributions during COVID, and was finally able to get together in Paris for ARM16.

8.1 Response to input papers

WG1 received an input from the VTS Committee (ARM16-7.2.2) regarding the draft guideline G1052. The ARM Committee notes the input and will revise the guideline further before finalising the document, more about this under 8.2.

WG1 also received a proposal from China MSA to revise Recommendation R0132 to align it with changes in guidelines G1052 and 1054. This has been added as a new task in the draft work program for next working period.

WG1 also received a liaison note from ENG15 regarding changes to definitions to ranges of AtoN lights and the term “sea mile” which ought not to appear in IALA documentation since the term is no longer used but replaced with “nautical mile”. This liaison note had not been sent previously and WG1 considered that the remaining time of ARM16 was insufficient to appropriately consider the input. For that reason the note will be forwarded to ARM17 for further consideration.

ARM16 also responded to ENG from their liaison note on *Navigational Requirements and Considerations for Establishment of Buoyage*.

Action items:

The Secretariat is requested to forward ARM16-11.2.4 Liaison note to ENG on update of dictionary to the ENG Committee for their consideration.

The Secretariat is requested to forward ARM16-11.2.3 Liaison note to ENG on Navigational Requirements and Considerations for Establishment of Buoyage.

8.2 Revise Guideline G1052 Quality Management in [Marine] Aids to Navigation Service Delivery (Task 1.4.1)

Task group leader: Johan Westerlund

ARM received liaison note ARM16-7.2.2 from VTS Committee which contained substantial comments on the contents of the guideline. The task group had originally set out to mostly make necessary changes to references and quotations from the ISO9000 standard. The comments from VTS highlighted that the contents of the guideline does not read well nor does it reflect current best practice in Quality Management. The task group started work on revising the text but will need one or more further sessions to finalize the guideline.

Action items:

The Secretariat is requested to forward ARM16-11.5.2.1 WP draft Guideline G1052 Quality-Management-Systems-for-AtoN-Service and ARM16-11.5.2.2 WP Liaison Note from VTS52 to PAP and ARM on Guideline 1052 Quality Management Systems for AtoN Service Delivery to ARM17 as working papers.

8.3 Task 1.5.4 Develop guidance for navigators on the use of AtoN and revise IALA dictionary with new and amended definitions.

Task group leader: James Collocott/Sophie Platten

This task group had previously been led by James Collocott and developed over the last couple of years including intersessional work, therefore it was possible for this task to be completed during ARM16.

The task group conducted three hybrid meetings during ARM16 to conduct a final review of the document paragraph by paragraph, a small number of amendments were made. WG1 reviewed final amendments at Plenary before submission for silent approval.

Action items:

The Secretariat is requested to forward ARM16-11.2.2 Guideline Guidance on Marine Aids to Navigation (AtoN) awareness and training for mariners to Council for approval.

The Secretariat is requested to progress ARM16-11.2.6 IALA Dictionary_ New and amended definitions.

8.4 Develop guidance on the provision of AtoN for autonomous vehicle/vessel operations (Maritime Autonomous Surface Ship, MASS)

Task group leader: Guttorm Tomren

The task group spent a number of sessions reviewing the document and various discussions were held on the level of detail required at this stage. The regulations for MASS are still not in place /continuously developing and will need to be frequently reviewed to provide further input to the guidance document. A joint working group meeting was held between members of WG1, WG2 & WG3 on content of sections 4.4 (Risk management) and section 4.6 (Portrayal) and of section 8 (looking ahead). Further work will be required.

Task group leader will forward a clean version of the document independently to the Task Group Leader in ENAV.

Action items:

The Secretariat is requested to forward ARM16-11.5.2.3 WP MASS Guideline as a working paper to ARM17.

That Committee participants are invited to join the intersessional task group working on ARM's work on MASS, after the MASS TF meeting in January 2023, and to express their interest to Guttorm Tomren (guttorm.tomren@kystverket.no). Details of intersessional meetings will be published on the Committee Dashboard.

8.5 Revise R0113 Marking of Bridges to become a guideline positioned under R0139 (Task 1.5.8.1)

Task group leader: Trevor Harris

The task group continued the revision of R0113 to turn this into a guideline under R0139.

This session saw us add the section on opening bridges and tunnels that were not in the original Recommendation and remove some of the graphics that were put in at ARM15. These graphics were removed as they were confusing being only from China and the UK and the marking of bridges differs so much globally.

The document was discussed at WG1 plenary and some alterations were made prior to the document being sent forward for approval.

If this document is approved by IALA Council, Recommendation R0113 must be revoked.

Action items:

The Secretariat is requested to forward document ARM16-11.2.1 Draft Guideline Gxxxx Marking of Bridges to Council for approval and then subsequently revoke R0113.

8.6 A full review of all IALA AIS documents (Task 2.2.1a)

Task group leader: Natasha McMahon

The Task Group had in depth discussions on how best to move forward with this task. Based on an inventory of AIS related documents, there are approximately 40 different recommendations and guidelines, most are dated between 2005 and 2011.

The goal of this task over the next 4-year work program is to consolidate, eliminate the duplication and reduce the number of documents making it easier for the reader to find reference information. This will facilitate updates and incorporate evolving technology.

The Task Group is proposing a single Recommendation on the use of AIS in marine aids to navigation. The Task Group will also be looking at significantly minimizing the number of guidelines.

For ARM17, the Group will pull all existing AIS documentation into one document in order to capture and eliminate duplication and distribute information into the appropriate documents.

The Task Group will consider having intersessional meetings to discuss and identify documents that need to be considered.

Action items:

The Secretariat is requested to forward ARM16-11.2.5 LN to the PAP Committee in order to seek comments on the proposed way forward, including an overview in excel format of AIS documents ARM16-11.2.5.1 for their consideration.

The Secretariat is requested to forward all AIS task related documents on fileshare to ARM17 as working papers.

9. WORKING GROUP 2 – INFORMATION SERVICES AND PORTRAYAL (WG2)

WG2 attendance was hybrid with 25 participants. The focus of the session was mainly to complete the remaining open tasks of the current work programme. The workgroup also developed a mature task item list for the 2023-2027 work programme.

A review of the following input papers & Liaison Notes were conducted by the WG Plenary:

- ARM16-8.4.1 Description Maritime Service for VTS - Cover Note
- ARM16-8.4.1.1 Description of Maritime Service 1- VTS (VTS52-13.1.1.4)
- ARM16-8.4.2 PAP46 Draft input to IMO on IALAs contribution to the development of the description of the maritime services
- ARM16-8.4.3 Work on a technical service for provisioning of AtoN information
- ARM16-8.4.4 Liaison note from VTS52 to PAP and ARM on Draft description of Maritime Service 1- VTS
- ARM16-8.4.4.1 Attachment - draft description of Maritime Service 1- VTS
- ARM16-8.4.5 NIPWG Recommendations for S-125 development
- ARM16-8.5.1 Liaison Note to ARM on Guideline G1105
- ARM16-8.5.1.1 Revised Recommendation R0125 VTS Portrayal
- ARM16-8.5.1.2 draft Guideline Gnnnn Portrayal of VTS information
- ARM16-8.6.1 Possible update of S101 AtoN portrayal
- ARM16-8.7.1 Liaison note from ENAV to ARM on cyber security (ENAV30-12.1.4)
- ARM16-8.7.1.1 DRAFT Recommendation - Cyber Security within the IALA domains - post ENAV30 (ENAV30-12.1.4.1)

9.1 ARM16-8.6.1 Possible update of S101 AtoN portrayal

There was a joint WG1, WG2 and IHO meeting to discuss the content of the input paper. The meeting led to the following conclusions:

- IALA should take a more active role in the development of AtoN portrayal.
- IALA should align AtoN portrayal development with IHO implementation plan of S-100
- That this work should be captured in the 2023-2027 IALA workplan
- That IALA must provide input on the development progress to IHO HSSC and relevant working groups.
- That IALA should coordinate with Republic of Korea to learn from their experience

ARM Session	Task	Output	Comment
17	Draft input paper to IHO HSSC16	IALA intention and request for cooperation	Delivered to Council 79
17	Review the Republic of Korea shared experience	Formulate a project plan and timeline for the relevant task	
18	S-201 portrayal improvements and execution of the task from the workplan	Mature portrayal test set	Delivered to S-201 testbed.

Initial plan for AtoN portrayal development.

Action items:

That the Secretariat is requested to inform IHO HSSC15 of IALA intentions of having an more active role in supporting the development of AtoN portrayal as the community progresses into the new S-100 world.

IALA Secretariat to invite Republic of Korea to share their experience with AtoN portrayal development at ARM17.

9.2 Technical service to AtoN description joint ARM-ENAV task group

The group discussed the use cases and made some updates to background documentation necessary to support the identification and description of the technical service specifications.

The TS Task Group held a joint meeting with the S-125 Task Group to discuss the product specification and technical service specification. The current GLA project “Implementing an AtoN service using S-100 and SECOM” was reviewed and will be incorporated into the Digital Incubator Initiative (ARM16-3.1.2.0).

In support of the Digital Incubator Initiative 2 meetings will be held on:

- 25 and 26 January 2023 12:00 - 14:00 UTC
- 14 and 15 June 2023 12:00 - 14:00 UTC

The group also prepared a task item for the 2023-2027 work programme.

Action items:

That Committee participants are invited to join the intersessional task group working on Technical service to AtoN description in January and June 2023, and to express their interest to Thomas Christensen (thomas@dmc.international). Details of intersessional meetings will be published on the Committee Dashboard.

9.3 Develop guidance on cyber security for AtoN authorities in collaboration with all other Committees. (Task 1.2.6.)

Task group leader: Martijn Ebben

In WG plenary a review of the cyber security draft recommendation was conducted. Liaison notes from ENAV and ENG were considered and added to the draft recommendation as appropriate. Upon conclusion of the working group review, the recommendation was forwarded for silent approval.

Recommendations from the ENAV and ENG committees were included into the draft guideline on cyber security. During the session a draft paragraph for the VTS section in the guideline was developed. The revised draft guideline will be sent to all committees via liaison for their consideration.

Action items:

The Secretariat is requested to forward ARM16-11.3.2 Draft Recommendation on Cyber Security to Council for approval.

The Secretariat is requested to forward ARM16-11.3.4 the liaison note to all technical committees on the progress on cyber security tasks and ARM16-11.3.4.1 the draft guideline as an annex of the liaison note to all technical committees for their consideration.

The Secretariat is requested to forward ARM16-11.3.3 the liaison note to PAP introducing cyber considerations while drafting recommendations and guidelines for their consideration.

9.4 Maritime Connectivity (Task 4.2.1)

Task group leader: David Lewald

No action taken in ARM16, the task will be revised and submitted for 2023-2027 work period.

9.5 Develop guidance on Maritime Services including the production of an 'e-Navigation Service Description (Task 5.1.1)

Task group leader: Michael Strandberg

This task evolved over the work programme. At ARM16 the final draft of the AtoN maritime service description (MS17) was completed.

Action items:

The Secretariat is requested to forward ARM16-11.3.5 MS17 document to PAP for their consideration and possible inclusion into the draft IMO NCSR10 contribution.

9.6 New Guideline on Operational considerations for S-200 (S-201 AtoN information and S-230 Application Specific Messages) (Task 5.1.2)

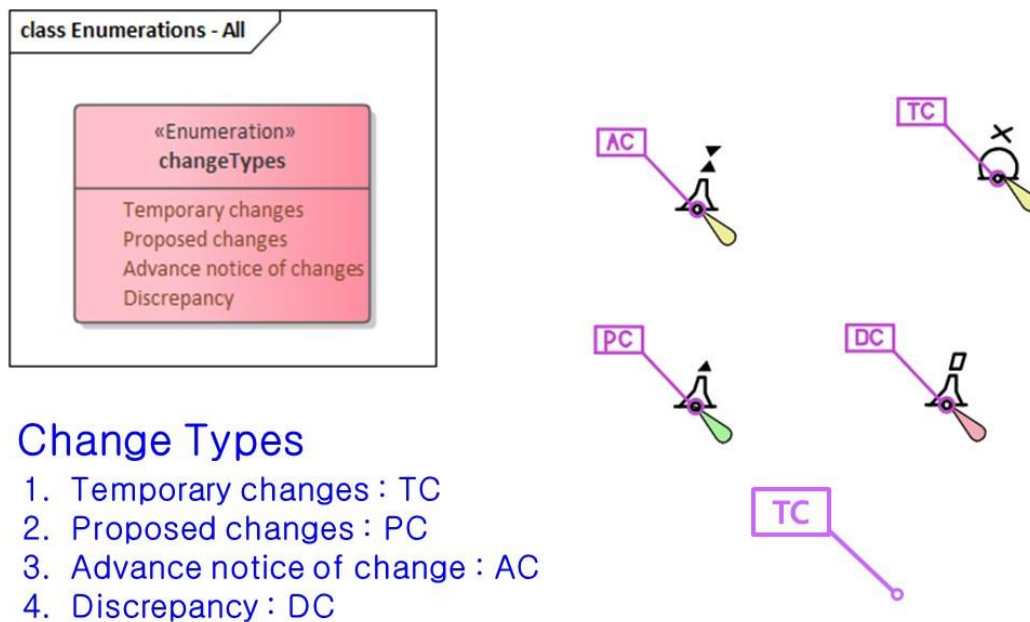
Task group leader: David Lewald

No action taken in ARM16, the task will be revised and submitted for 2023-2027 work period.

9.7 Develop a Product Specification S-201 (Task 5.1.3) & Develop Requirements for S-125 (Task 5.1.5)

Task Group Leader: Dr. Sewoong Oh

In a joint workshop held in Alesund, Norway in September 2022, the purpose and scope of the S-125 Marine Aton product specification were discussed, and in particular, a method for indicating the symbol of the Aton status was reviewed. In the workshop in Norway, the AtoN status was indicated by a red circle and two letters, but there was an opinion that it could overlap with the circle symbol of virtual AIS AtoN. Accordingly, referring to the additional navigation information symbol as magenta box in current ENC, new AtoN status symbols were proposed.



Change Types

1. Temporary changes : TC
2. Proposed changes : PC
3. Advance notice of change : AC
4. Discrepancy : DC

Fig. 1. Proposed symbol of Aton status in S-125

Action item:

That the secretariat is requested to forward ARM16-11.3.6 liaison note and ARM16-11.3.6.1 requesting a review of the draft S-125 Marine AtoN product specification to Council before being sent to IHO NIPWG.

That the Secretariat progress ARM16-11.3.7 S-201 ed.1.1 and ARM16-11.3.8 S-125 ed.0.0.3as necessary.

9.8 Develop Annex C to S-201 (Task 5.1.4)

Task group leader: Dr. Sewoong Oh

The S-201 task group has conducted the revision of the S-201 standard since 2019, and completed the revision of the S-201 Aton information product specification in consideration of the results of the S-100/S-200 workshop held in Alesund, Norway in September 22. The version of the S-201 standard was changed to version 1.1.0 and submitted to ARM committee for approval of new version. Annex C of the S-201–Implementation guidance has not been discussed.

The work on Annex C will be carried over to the 2023 - 2027 work programme.

9.9 Coordination with IHO/WMO for S-100, S-200, and MRN management (S-100/S-200 message coordination with other Committees on S-2xx development) (Task 5.1.6)

Task group leader: David Lewald

Due to the enormous success of the Joint IHO-IALA workshop on portrayal and product specification development the workgroup will submit a proposal for a second workshop to be held in the fall of 2024. The

workgroup suggests these joint workshops will continue as a biennial event. To facilitate continuance a task item for the 2023-2027 workplan has been submitted.

Action items:

The Secretariat is requested to forward ARM16-11.3.9 proposal for a second IHO / IALA workshop to Council for approval.

9.10 Develop MRN Registry Submission & Maintenance Guideline for IALA Secretariat (Task 5.1.8)

Task group leader: LeeAnne Gordon

Task completed at ARM15.

9.11 Develop Recommendation to cover MRN Guidelines (Task 5.1.9)

Task group leader: LeeAnne Gordon

The Task Group discussed the progress during this work period and concluded that a new task should be forwarded to the 2023 - 2027 workplan.

9.12 Coordinate Committee support for IALA representation at IHO working groups in cooperation with Secretariat (HSSC, S-100WG, NIPWG) (Task 5.1.10)

Task group leader: David Lewald

Work is ongoing.

9.13 Monitor the development of S-201 Testbed (Task 5.1.11)

Task group leader: Dr. Sewoong Oh

The group noted the updates on the S-201 testbed by the secretariat, Korea MOF and KRISO. The update includes some of interface improvement and new functions such as validation and creation of S-201 dataset by the user.

In addition, the group discussed how to promote the use of testbed by stakeholders and developed a document for the testbed website.

The task group meeting discussed the need for a standard form for applying the AtoN data of IALA member countries to the S-201 test bed, and agreed to survey the spreadsheet-based standard form and sample data.

Action items:

The Secretariat is requested to update the IALA website with the testbed template held within output document ARM16-11.3.10.

9.14 Review G1105 shore side portrayal ensuring harmonisation with e-Navigation related information inc. (Task 5.3.1)

Task group leader: David Lewald

During the revision of G1105 it was discovered that there is a larger issue at hand regarding portrayal. There is a general consensus that portrayal should be more standardized. This mainly to reduce ambiguity and with that reducing the risks and to support harmonization for data exchange.

The working group amended G1105 as requested by the VTS committee by removing all references to VTS turning document into a more general purpose document with respect to portrayal. Details on portrayal will be a part of the relevant maritime service documentation such as the product specification.

With this it was concluded that the task was completed as described in the work programme.

Action item:

The Secretariat is requested to forward ARM16-11.3.1 reviewed Guideline G1105 to Council for approval.

9.15 Develop Guideline on ship reporting from the shore-side perspective (Task 5.2.2)

Task group leader: Fred Pot

Draft Edition 2.0 of the Guideline of Ship Reporting from a Shore-based perspective

The Ship Reporting Task Group (SRTG) submitted a draft of Edition 2.0 of the Guideline of Ship Reporting from a Shore-based perspective to WG2.

This edition reflects the 2022 amendments (FAL.14(46)) 1 January 2024 to the FAL Convention that requires Contracting Member States to make use of the “single window” concept to enable all the information required by public authorities in connection with the arrival, stay and departure of ships, persons and cargo to be submitted through a single portal.

Task Proposals

SRTG also submitted two proposals for tasks to be included in the 2023-2027 Work Program:

1. Guideline for Coastal States on implementing a Maritime Single Window (MSW)
 - as required by the 2022 amendments (FAL.14(46)) 1 January 2024 to the FAL Convention/ Many Coastal States are expected to face significant hurdles to implement an MSW, especially by January 1st, 2024.
2. Develop Technical Services for MSW
 - The technical service specifications will enable IALA members that will be hosting MSW systems as well as related stakeholders such as developers of MSW systems to implement technical services and thus enable them to facilitate exchange Ship Reporting information securely and reliably, while ensuring that ships will be able to exchange such information with all MSW systems world-wide.

Action item:

The Secretariat is requested to forward ARM16-11.3.11 Guideline G1159 ed. 2 for approval to Council for approval.

10. WORKING GROUP 3 – RISK MANAGEMENT (WG3)

It was anticipated that WG3 would be a rather small working group and it was therefore decided by the Chair to complete most meetings, as a rolling working group plenary. The group at its largest contained approximately 20 members with a core of about 15 participants who remained in WG3 for the week.

The group worked as a hybrid meeting with several virtual participants attending for a large part of the week.

Mahesh Alimchandani and Jakob Bang worked separately from WG3 on occasion in order to expedite review of certain work items, including work items to be forwarded for the 2023-2027 work plan, and then brought these back to the group for final discussion.

Several new participants attended WG3, hence, the WG Chair started by introducing the week's work and emphasized the importance of the work carried out by the participants within the field of risk management, with the aim of improving safety at sea for all mariners.

Thereafter there was an introduction of participants and their backgrounds:

- Chair: Roger Barker
- Vice-chair: Sarah Robinson
- Working Group Participants (V = virtual): Mahesh Alimchandani, Niels Arndal, Jakob Bang, Ernst Bolt, Joseph Daly, Raul Escalante, Floris Goerlandt, Tamotsu Ikeda, Yvonne Koldenhof, Joerg Kuchta, Valtteri Laine, Se Uk Lee, Mohamed Mostafa (V), Edinilson Nascimento, Frederico Sawabini Pereira,

Filipe Vieira, Naehyuk Yoo, Dawn Seepersad (V), PC Blom(V), Ji Yongbin (V), Ke Ranxuan (V), Omar Frits Eriksson, Latifa Omouzoune

The WG commenced its work by agreeing on an agenda based on Task Plan 2018 - 2022:

- 1.2.1.1 Review of Risk Toolbox documentation, including:
 - *G1138 The Use of The Simplified IALA Risk Assessment Method (SIRA)* (part of task 1.2.1).
 - Review of definitions within the Risk Management Toolbox
 - Review Recommendation *R1002 Risk Management* to update, if necessary, following review of associated guidelines.
 - Review Excel and Word formats of IRMAS/OPRA forms.
- Liaison with IALA World-Wide Academy to identify location on website for Risk Management Toolbox tools.
- 1.2.7. - Develop document to promulgate IALA risk management toolbox to IMO (SN Circular 296).
- Consider the overarching IALA risk management framework and future strategy for identification of risk management tools and guidance.
- Identify work items for work plan ARM 2023 - 2027

10.1 Review of G1138 The Simplified IALA Risk Assessment Method (SIRA) (part of task 1.2.1)

A WG3 task group consisting of Ed Rogers, Ernst Bolt, Dawn Seepersad, Roger Barker, Omar Frits Eriksson and Sarah Robinson had worked intersessionally since ARM 15 to review Guideline *G1138* and ensure its alignment with reference to Guideline *G1018 Risk Management*, and to review common definitions (see 1.2 for the WG3 work on definitions).

The majority of the WG3's time was spent undertaking a thorough review and read through of Guideline *G1138* and a revised edition of the Guideline was completed. The output document has been drafted for submission to Council as a revised Guideline version.

Dawn Seepersad and Sarah Robinson also provided a World-Wide Academy (WWA) perspective on the content of training materials and how these align to the current and proposed editions of *Guideline G1138*. WG3 was also pleased to welcome Latifa Omouzoune, the new IALA WWA Training and Education Manager.

Action item:

The Secretariat is requested to forward ARM16-11.4.1 Guideline G1138 The Simplified IALA Risk Assessment Method (SIRA) for approval.

Review of definitions within the IALA Risk Management Toolbox

As mentioned in section 1.1, an intersessional task group had been asked by the WG3 chair to compare definitions across the IALA Risk Management toolbox and other relevant sources including the IMO Formal Safety Assessment (FSA) and WWA training materials.

WG3 discussed the definitions and agreed a set of new or revised definitions to be forwarded to the Secretariat for consideration and inclusion in the IALA dictionary.

Action item:

The Secretariat is requested to progress ARM16-11.4.4 new and revised dictionary items.

10.3 Review of Recommendation R1002 Risk Management

WG3 reviewed Recommendation *R1002 Risk Management* further to the finalization of revised draft Guideline *G1138* and the previous updates to the remaining associated risk guidelines. The group agreed that

Recommendation *R1002* (last reviewed in 2017) was still appropriate with its current wording and did not currently require further update.

10.4 Review of IMRAS/OPRA Excel workbook and Word document

Ernst Bolt presented the work he had undertaken intersessionally since ARM15 to translate section 2.3 and Annex A of Guideline G1018 into an Excel workbook template record for potential use in Marine Aids to Navigation (AtoN) management. Ernst also presented a Word document that could be generated and printed as a summary of the Excel workbook contents.

WG3 thanked Ernst and agreed that the work he had undertaken is for AtoN management and risk assessment record keeping. It was also suggested that IALA could hold a copy of this Excel workbook template, together with other Risk Management Toolbox tools, on their website. Previous discussions with the Dean and the IALA WWA suggested that this would be acceptable (see section 1.5 for further information).

Action item:

The Secretariat is requested to incorporate ARM16-11.4.3 IRMAS/OPRA Excel workbook and Word documents into the suite of available IALA Risk Management Toolbox tools and make them available on the IALA website.

10.5 Liaison with IALA World-Wide Academy to identify location on website for Risk Management Toolbox tools.

WG3 raised the matter of storage and accessibility of the IALA Risk Management Tools including:

- The SIRA Excel workbook template
- The PAWSA manual and template forms
- Item ARM16-11.4.3 - IRMAS/OPRA Excel workbook and Word documents

WG3 are hopeful that these items can be placed in an appropriate location on the IALA website to facilitate easy access by those using the IALA recommended risk management tools.

Action item:

The Secretariat is requested to identify a location on the IALA website where the IALA Risk Management tools listed above can be easily accessed by those using the relevant methodologies

10.6 Review of 1.2.7. - Develop document to promulgate IALA risk management toolbox to IMO (SN Circular 296)

To facilitate completion of the WG3 ARM16 work items, Mahesh Alimchandani and Jakob Bang worked together to produce a draft version of a revised circular on the IALA risk management tools, that could receive endorsement from the IMO. The revision includes reference to SIRA and updates the relevant risk management guidelines sitting under Recommendation *R1002* in the IALA technical framework. WG3 reviewed the initial draft and agreed a final version to be sent for approval.

Action item:

The Secretariat is requested to forward ARM16-11.4.2 draft IMO Circular to replace SN 296 on the IALA Risk Management Toolbox for approval.

10.7 Other discussion of interest

WG3 discussed the future of risk management within the IALA ARM Committee and WWA and how the activities related. The Chair asked members to consider new tools that may be of use and to consider those that are the subject of current academic research and those that have been identified as gaps in the toolbox by industry and AtoN professionals.

Ji Yongbin presented an excellent paper (input paper ARM16-6.2.2) on the use of risk assessment tools in assisting creation of a traffic separation scheme. WG3 congratulated him on his work and for his interesting presentation.

Omar Frits Eriksson kindly made time to present an example of the application of the use of SIRA and how scales of impact could be developed for specific navigational areas of interest. WG3 were able to use this work directly in their review of Guideline *G1138*. Omar also discussed the potential revival of IALANet as a potential repository for AIS, and other vessel information data, that IALA could “clean” such that it could be used for research and training purposes.

Raul Escalante raised a suggestion for a repository of IALA documents including publications and all historical committee input papers and output documents. This is to ensure useful information that may have initiated an IALA publication can be traced to its origins. Raul also asked the WG3 and the wider ARM committee to consider the application of artificial intelligence in the development of AtoN design and assessment tools.

The Chair, Raul Escalante and Jakob Bang and Valtteri Laine participated in the cross-working group session on MASS. WG3 undertook to participate and contribute to all future MASS related activities raised in the ARM Committee.

10.8 Items raised by the group for inclusion in the 2023 -2027 work plan

Items raised by the group for inclusion in the 2023 -2027 work plan include (in summary – see work plan for detail):

- Review of required and available risk management tools.
- Development of a method to combine vessel traffic patterns and AtoN options.
- Review IALANet and how AIS data may be gathered and held by IALA for research and education.
- Monitor the use of the IRMAS/OPRA reporting tool.
- Ensure long term supportability for IWRAP software.
- Develop guidance on safety of navigation around offshore installations

11. ANY OTHER BUSINESS

No matters arising.

12. REVIEW OF OUTPUT AND WORKING PAPERS

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

The output from ARM16 was approved by the Committee using the silent approval procedure. The output documents are listed in Annex D.

The Committee Chair then thanked the Working Group Chairs, Vice-Chairs, and participants of the working groups for all their efforts during the ARM16 session.

13. DATE AND VENUE OF NEXT MEETING

ARM17 is planned to be held between 23 - 27 October 2023 at IALA Headquarters, Saint Germain-en-Laye, France.

Other IALA events will be publicised on the IALA website.

14. CLOSING OF THE MEETING

The Committee Chair thanked the Committee and working group chairs for their hard work and effective output during the session. This was Roger Barker’s, Chair WG3, last Committee session and the Chair and all

participants wholeheartedly thanked him for his service and dedication, always accompanied by good humour and a friendly wink. The Secretary-General thanked Roger for all he had done for IALA and stated how much IALA would miss him, especially his promotion of the mariners view. Roger was presented with a farewell card and French wine a bottle of port.

Francis Zachariae congratulated the Committee on what they had achieved during the 2018 – 2023 Work Programme. He personally thanked Phil Day, who would now step down as ARM Chair after 13 years of stewardship, for his inspirational leadership. Phil Day thanked the Committee for the assistance, cooperation and friendship received throughout the years and wished everyone the very best for the future.

15. LIST OF ANNEXES

- 1 Agenda
 A copy of the agenda is in Annex A.
- 2 Participants
 A list of participants is in Annex B.
- 3 Input Papers
 A list of input papers is in Annex C.
- 4 Output and Working papers
 A list of output and working papers is in Annex D.
- 5 Action items
 A list of action items is in Annex E.



16th Meeting of the AtoN Requirements and Management Committee (ARM16)

The opening plenary of the 16th meeting of the ARM Committee will commence at 09:30 local time on Monday 24 October 2022, and the closing plenary will be held online at 10:00 – 12:00 UTC on Friday 4 November 2022.

Agenda

1. Introduction
 - 1.1. Welcome address from the Secretary-General
 - 1.2. Approval of agenda
 - 1.3. Apologies and introductions
 - 1.4. Working arrangements
 - 1.4.1. ARM Social Programme
2. Review of action items
3. Reports from other bodies Minsu Jeon
 - 3.1. IALA
 - 3.1.1. IALA Council
 - 3.1.2. IALA Policy Advisory Panel (PAP)
 - 3.1.2.1. MASS Task Force
 - 3.2. IMO
 - 3.3. Digital@Sea
 - 3.4. IHO/ITU/IALA liaison
 - 3.5. Joint IHO/IALA workshop on S100/S200
4. Presentations
 - 4.1. IALA World Wide Academy update
 - 4.2. MANTIS Project GRAD / Emu Analytics
 - 4.3. The Open Digital Incubator Initiative MCP Consortium
 - 4.4. AtoN terms and definitions Minsu Jeon
 - 4.5. Guidance on the use of drone for AtoN maintenance KAtoN
 - 4.6. IALA Conference in Rio! (to be delivered on Friday) Alberto Piovesana
5. Work Programme management
 - 5.1. Work Programme (2018 – 2023), Task Plan, Task Register
 - 5.2. Action plan
 - 5.3. ARM tasks for work programme 2023 – 2027
 - 5.4. IALA MBS

6. Review of input papers
 - 6.1. Input papers
 - 6.2. Input papers not related to an existing task
7. Establish WG1 - Navigational requirements
 - 7.1. Obligations and regulatory compliance
 - 7.2. Quality management
 - 7.3. AtoN planning
 - 7.4. Virtual marking
 - 7.5. Visual signalling
 - 7.6. Capacity building (NAVGUIDE)
 - 7.7. Additional tasks/work
8. Establish WG2 - Information services and portrayal
 - 8.1. Design, implementation and maintenance
 - 8.2. Wide/Medium bandwidth systems (AIS & VDES)
 - 8.3. Harmonised maritime connectivity framework (CMDS) Maritime IoT (Intelligent sensors, Aton monitoring)
 - 8.4. Data models and data encoding (IVEF, S-100, S-200, ASM)
 - 8.5. Data exchange systems (Traffic Information)
 - 8.6. Terminology, symbology, and portrayal
 - 8.7. Additional tasks/work
9. Establish WG3 - Risk management
 - 9.1. Risk management
 - 9.2. Training and certification
 - 9.3. Seminar
 - 9.4. Additional tasks/work
10. Any other business
11. Summary of output and working papers
 - 11.1. Committee wide
 - 11.2. WG1 output
 - 11.3. WG2 output
 - 11.4. WG3 output
 - 11.5. Working papers
12. Review of session report
13. Date and venue of next meeting
14. Close of the meeting

ANNEX B

LIST OF PARTICIPANTS

The following list of participants is grouped by their organization in alphabetical order:

First name	Last name	Member type	Organisation	Member Country	Email
W. Christian	Adams	National	US Coast Guard	United States	william.c.adams@uscg.mil
Joonatan	Ahlroos	National	Finnish Transport Infrastructure Agency	Finland	joonatan.ahlroos@ftia.fi
Mahdi	Al Mosawi	Associate	Middle East Navigation Aids Services	Bahrain	mahdi@menas.com.bh
Mahesh	Alimchandani	National	Australian Maritime Safety Authority	Australia	mx@amsa.gov.au
Hattan	Aljohani	National	Saudi Ports Authority	Saudi Arabia	H.ALALWANI@MAWANI.GOV.SA
Niels	Arndal	Industrial	FORCE Technology	Denmark	nia@forcetechnology.com
Yong	Baek	Sister organisations	IHO		addt@iho.int
Jakob	Bang	National	Danish Maritime Authority	Denmark	cjb@dma.dk
Roger	Barker	National	Trinity House	United Kingdom	roger.barker@trinityhouse.co.uk
Maarten	Berrevoets	National	Ministry of Infrastructure and Water Management	Netherlands	Maarten.Berrevoets@minienw.nl
Babeth Delyse	Bilo'o Bi Nkoum	Associate	Autorité Portuaire Nationale	Cameroon	babethbiloo@gmail.com
Henrika	Björkell-Virta	Associate	Finish Transport and Communication Agency	Finland	henrika.bjorkell-virta@traficom.fi
Ulla	Bjørndal Møller	National	Danish Maritime Authority	Denmark	ubm@dma.dk
Pieter-Chris	Blom	Associate	South African Maritime	South Africa	pblom@samsa.org.za

First name	Last name	Member type	Organisation	Member Country	Email
			Safety Authority		
Ernst	Bolt	National	Ministry of Infrastructure and Water Management	Netherlands	ernst.bolt@rws.nl
Isabel	Bué	Associate	Portuguese Hydrographic Institute	Portugal	isabel.maria.bue@marinha.pt
Peng	Chang	National	China Maritime Safety Administration	China	295454928@qq.com
Thomas	Christensen	Associate	German Aerospace Center	Germany	thomas@dmc.international
James	Collocott	Honorary	N/A	South Africa	james@collocott.co.za
Alison	Contreras	Associate	UK Hydrographic Office	United Kingdom	alison.contreras@ukho.gov.uk
Joseph	Daly	National	Commissioners of Irish Lights	Ireland	joseph.daly@irishlights.ie
Peter	Dam	National	Danish Maritime Authority	Denmark	ped@dma.dk
Phillip	Day	ARM Chair	Northern Lighthouse Board	United Kingdom	phild@nlb.org.uk
Peter	Douglas	National	Northern Lighthouse Board	United Kingdom	peterd@nlb.org.uk
Martijn	Ebben	Associate	Port of Rotterdam Authority	Netherlands	m.ebben@portofrotterdam.com
Stefan	Engström	Associate	Finnish Transport and Communications Agency	Finland	stefan.engstrom@traficom.fi
Nicolas Romuald	Enoah Fouda	Associate	Autorité Portuaire Nationale	Cameroon	nicolasenoah@apn.cm
Raul	Escalante	Associate	Hidrovia S.A.	Argentina	rescalante@gba-hidrovia.com.ar

First name	Last name	Member type	Organisation	Member Country	Email
Sebastian	Espinar	National	Puertos del Estado	Spain	sebas@puertos.es
Khaled	Faden	National	Saudi Ports Authority	Saudi Arabia	k.faden@mawani.gov.sa
Floris	Goerlandt	Observer	Dalhousie University	Canada	fl921855@dal.ca
LeeAnne	Gordon	Associate	National Geospatial-Intelligence Agency	United States	LeeAnne.E.Gordon@nga.mil
ChangSeung	Han	National	Ministry of Oceans and Fisheries	Republic of Korea	cshan0824@korea.kr
Peng	Hao	National	China Maritime Safety Administration	China	xyph7758521@126.com
Miyuki	Haraguchi	National	Japan Coast Guard	Japan	c121078r@gmail.com
Nigel	Hare	National	Trinity House	United Kingdom	nigel.hare@trinityhouse.co.uk
Trevor	Harris	National	Trinity House	United Kingdom	trevor.harris@trinityhouse.co.uk
Kimmo	Heiskari	National	Finnish Transport Infrastructure Agency	Finland	kimmo.heiskari@vayla.fi
Xavier	Hernoe	National	Direction des affaires maritimes	France	xavier.hernoe@developpement-durable.gouv.fr
Peter	Hooijmans	National	Ministry of Infrastructure and Water Management	Netherlands	peter.hooijmans@rws.nl
Simon	Hulterstam	National	Swedish Maritime Administration	Sweden	simon.hulterstam@sjofartsverket.se
Tamotsu	Ikeda	Associate	Japan Aids to Navigation Association	Japan	ikedat@jana.or.jp
Jun Hyuk	Jang	Associate	Korea Research	Republic of Korea	jang@kriso.re.kr

First name	Last name	Member type	Organisation	Member Country	Email
			Institute of Ships and Ocean Engineering		
Kjell	Johansson	National	Swedish Maritime Administration	Sweden	kjell.johansson@sjofartsverket.se
Fredrik	Karlsson	National	Swedish Maritime Administration	Sweden	fredrik.karlsson@sjofartsverket.se
Moahmed	Khurshid	Associate	Middle East Navigation Aids Services	Bahrain	m.khurshid@menas.com.bh
Kidam	Kim	Associate	The Korea Institute of Aids to Navigation	Republic of Korea	kidam@katon.or.kr
Yunjee	Kim	Associate	Korea Research Institute of Ships and Ocean Engineering	Republic of Korea	yunjee0531@kriso.re.kr
Taehee	Kim	Observer	Bluemap	Republic of Korea	thkim@bluemap.kr
Yvonne	Koldenhof	Associate	MARIN	Netherlands	y.koldenhof@marin.nl
Joerg	Kuchta	National	Federal Waterways and Shipping Administration	Germany	joerg.kuchta@wsv.bund.de
Valtteri	Laine	Associate	Finnish Transport and Communications Agency	Finland	valtteri.laine@traficom.fi
Se Uk	Lee	Associate	Ministry of Oceans and Fisheries	Republic of Korea	ace0311@korea.kr
Chungjin	Lee	Associate	The Korea Institute of Aids to Navigation	Republic of Korea	sn1883@naver.com

First name	Last name	Member type	Organisation	Member Country	Email
Mika	Lehtola	National	Finnish Transport Infrastructure Agency	Finland	mika.lehtola@ftia.fi
Salvatore	Lettieri	National	Italian Navy	Italy	salvatore.lettieri@marina.difesa.it
R. Dave	Lewald	ARM Vice-Chair	US Coast Guard	United States	Robert.D.Lewald@uscg.mil
Jiangna	Liu	National	China Maritime Safety Administration	China	
Alain Serge	Mbene Koah	Associate	Port Authority of Kribi	Cameroon	serge.mbene@pak.cm
Natasha	McMahon	National	Canadian Coast Guard	Canada	natasha.mcmahon@dfo-mpo.gc.ca
David	Merrill	National	US Coast Guard	United States	david.merrill@uscg.mil
Julius	Möller	Associate	German Aerospace Center	Germany	-
Eivind	Mong	National	Canadian Coast Guard	Canada	eivind.mong@dfo-mpo.gc.ca
Mohamed	Mostafa	National	Egyptian Authority for Maritime Safety	Egypt	mohamed-meceng@yahoo.com
Mats	Hörström	Associate	Swedish Transport Agency	Sweden	mats.horstrom@transportstyrelsen.se
Edinilson	Nascimento	Industrial	AWS Service	Brazil	ed@awsservice.com.br
Gaëlle	Nassif	Associate	Cerema	France	gaelle.nassif@cerema.fr
Ferderick	Ngu Ndimongo	Associate	Autorité Portuaire Nationale	Cameroon	ferderick.ngu@apn.cm
Hideki	Noguchi	National	Japan Coast Guard	Japan	hideki.noguchi@gmail.com
Sewoong	Oh	Associate	Korea Research Institute of Ships and	Republic of Korea	osw@kriso.re.kr

First name	Last name	Member type	Organisation	Member Country	Email
			Ocean Engineering		
Jan-Hendrik	Oltmann	National	Federal Waterways and Shipping Administration	Germany	Jan-Hendrik.Oltmann@wsv.bund.de
Gérard	Ondoua	Associate	Autorité Portuaire Nationale	Cameroon	gerard.ondoua@apn.cm
Johan	Pettersson	Associate	Swedish Transport Agency	Sweden	johan.pettersson@transportstyrelsen.se
Sophie	Platten	National	Trinity House	United Kingdom	sophie.platten@trinityhouse.co.uk
Fred	Pot	Industrial	BM Bergmann-Marine	United States	fred.pot@bergmann-marine.com
Ke	Ranxuan	Associate	Navigation Institute of JiMei University	China	keranxuan@126.com
Sarah	Robinson	IALA	Consultant		sarah@hawkshillconsulting.co.uk
Mohd Hisham	Rubani	National	Light Dues Board Peninsular Malaysia Marine Department	Malaysia	mhisham@marine.gov.my
Arlindo	Santos	National	Portuguese Lighthouse Authority	Portugal	
Frederico	Sawabini Pereira	Industrial	AWS Service	Brazil	frederico.sawabini@awsservice.com.br
Dawn	Seepersad	IALA	Consultant		dawn@seepersad.org
Laura	Snoep	National	Ministry of Infrastructure and Water Management	Netherlands	laura.snoep@rws.nl
Michael	Strandberg	National	Danish Maritime Authority	Denmark	mst@dma.dk

First name	Last name	Member type	Organisation	Member Country	Email
Janina	Tapia Cotrino	Associate	Finnish Transport and Communications Agency	Finland	janina.tapiacotrino@traficom.fi
Guttorm	Tomren	National	Norwegian Coastal Administration	Norway	guttorm.tomren@kystverket.no
Nikolaos	Vastardis	National	Trinity House	United Kingdom	Nikolaos.Vastardis@gla-rad.org
Filipe	Vieira	National	Portuguese Lighthouse Authority	Portugal	
Shuo	Wang	National	China Maritime Safety Administration	China	Hailey722@163.com
Johan	Westerlund	National	Swedish Maritime Administration	Sweden	
Naehyuk	Yoo	Associate	The Korea Institute of Aids to Navigation	Republic of Korea	nhyoo@katon.or.kr
Yung	Yu	Observer	MEIPA	Republic of Korea	yungyu@kmou.ac.kr
Khairin Azmi	Za'aba	National	Light Dues Board Peninsular Malaysia Marine Department	Malaysia	hairin@marine.gov.my
Lovely	Ze Eya	Associate	Autorité Portuaire Nationale	Cameroon	lovelyze@gmail.com

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

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM16-	1.2.1	Provisional Agenda	Secretariat	All
ARM16-	2.1	Action Items from ARM15	Secretariat	All
ARM16-	1.4.0	Programme of the physical week	Secretariat	All
ARM16-	3.1.2.0	The Open Digital Incubator Initiative	Secretariat and PAP47	All
ARM16-	3.1.2.1.1	Draft Report 4th session MASS Task Force Meeting (MTF04-11.1)	MASS Task Force	All
ARM16-	3.1.2.1.2	Draft guideline on developments and implications of maritime autonomous surface ships for coastal authorities	MASS Task Force	All
ARM16-	3.1.2.1.3	MASS roadmap (MTF04-8.2)	MASS Task Force	All
ARM16-	3.3.1	2022 Final Report Digital@Sea NA	Secretariat	All
ARM16-	3.5.1	Report on the Joint IHO IALA Workshop S-100 S-200 Product Specification Development & Portrayal	Workshop	All
ARM16-	5.1.1	Updated ARM Task Plan post ARM15	ARM15	All
ARM16-	5.3.1	Task proposal 2023-2027_Incorporate all references re. AtoN Availability Info in 1 doc.V1	SAMSA	CMT
ARM16-	5.3.2	Task proposal 2023-2027_Training material for AtoN awareness for Mariners.V1	SAMSA	CMT
ARM16-	5.3.3	Task Proposal on Registration of Drone in IALA Dictionary and Establishing WWA Model Course	Korea Institute of Aids to Navigation	CMT
ARM16-	5.3.4	WP Draft ARM Task Plan 2023 - 2027	CMT	CMT
ARM16-	5.4.1	Revised R1001 Ed2.0 The IALA Maritime Buoyage System June 2022 rev1	Secretariat	All
ARM16-	6	Input paper committee meeting template	Secretariat	All
ARM16-	6.1.1	Input paper list	Secretariat	All
ARM16-	6.1.2	Working papers from ARM15 list	Secretariat	All
ARM16-	6.2.1	Developments in International Mobile Telecommunications (IMT) related to termination of 2G and 3G services in selected countries	ENAV	All
ARM16-	6.2.2	Experience Sharing on the AtoNs Adjustment for Ship Routing System of Qiongzhou Strait	China MSA	WG3
ARM16-	6.2.3	Tidal current chart drawing test by using multi-functional buoy in Shanghai port	China MSA	All WGs
ARM16-	6.2.4	Liaison Note from VTS52 to all committees re Task 1.4.3 Future VTS	VTS52	All
ARM16-	6.2.4.1	WP Task 1.4.3 Future VTS Discussion Paper (Output from VTS52)	VTS52	All
ARM16-	6.2.4.2	WG1 - Report from TG1.2.5 and TG1.4.3 Joint Session	VTS52	All

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM16-	6.2.5	Liaison note to all Committees on New Technology Review	ENAV30	All
ARM16-	6.2.6	DRAFT Liaison note to ARM on Navigational Requirements and Considerations for Establishment of Buoyage (ENG16-12.2.3)	ENG16	WG1 + 3
ARM16-	6.2.6.1	WP IALA_Guideline on buoy characteristics (ENG16-12.2.4)	ENG16	WG1 + 3
ARM16-	7.2.1	Proposal for Draft Revised R0132 on Quality Management for Aids to Navigation Authorities	China MSA	WG1
ARM16-	7.2.1.1	Annex : Draft Revised R0132 Quality Management for Aids to Navigation Authorities	China MSA	WG1
ARM16-	7.2.2	Liaison Note from VTS52 to PAP and ARM on Guideline 1052 Quality Management Systems for AtoN Service Delivery	VTS52	WG1
ARM16-	7.3.1	AtoN Classification Applicable to Maritime Surface Autonomous Ships (MASS) Guideline	China MSA	WG1
ARM16-	7.3.2	Liaison note from VTS52 to PAP, MTF and all committees on MASS	VTS53	WG1
ARM16-	7.3.2.1	Discussion paper - Implications of MASS from a VTS Perspective	VTS53	WG1
ARM16-	7.3.3	Liaison Note to re Task 1.2.5 Implications of MASS from a VTS Perspective	VTS52	WG1
ARM16-	7.3.3.1	WP TG.1.2.5 Discussion paper - Implications of MASS from a VTS Perspective (as at VTS52)	VTS52	WG1
ARM16-	7.3.3.2	WG1 - Report from TG1.2.5 and TG1.4.3 Joint Session	VTS52	WG1
ARM16-	7.3.4	MSC106-INF6 Development of a Goal-Based Instrument for MASS	IMO MSC	WG1
ARM16-	7.3.5	20220811 - IALA MASS Guideline ARM16 input clean version	WG1 Chair	WG1
ARM16-	7.3.6	MASS Guideline_Comparison_20220323(TG) vs 20220811(JCJ)	WG1 Chair	WG1
ARM16-	7.3.7	Input Paper Task 1.5.4 Guidance on AtoN Training and Awareness for Mariners	TG-1.5.4	WG1
ARM16-	7.3.7.1	Task 1.5.4 Guidance on AtoN Training and Awareness for Mariners_V5	TG-1.5.4	WG1
ARM16-	7.3.8	Input paper_TG 1.5.4_Dictionary contributions	TG-1.5.4	WG1
ARM16-	7.3.8.1	Task 1.5.4 IALA Dictionary_New and amended definitions_V3	TG-1.5.4	WG1
ARM16-	8.4.1	Description Maritime Service for VTS - Cover Note	VTS52	WG2
ARM16-	8.4.1.1	Description of Maritime Service 1- VTS (VTS52-13.1.1.4)	VTS52	WG2
ARM16-	8.4.2	PAP46 Draft input to IMO on IALAs contribution to the development of the description of the maritime services	PAP47	WG2
ARM16-	8.4.3	Work on a technical service for provisioning of AtoN information	DLR, KRISO, FTIA	WG2

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM16-	8.4.4	Liaison note from VTS52 to PAP and ARM on Draft description of Maritime Service 1- VTS	VTS53	WG2
ARM16-	8.4.4.1	Attachment - draft description of Maritime Service 1- VTS	VTS53	WG2
ARM16-	8.4.5	NIPWG Recommendations for S-125 development	IHO-NIPWG	WG2
ARM16-	8.4.6	Information on an upcoming S-125 testbed at the IHO S-100 Lab v2	IHO-NIPWG Chair, KRISO and IHO-Singapore Lab	WG2
ARM16-	8.4.7	DRAFT Liaison note to ARM on Maritime Services (ENG16-12.3.7)	ENG16	WG2
ARM16-	8.4.7.1	draft Maritime Service 17 AtoN v.0.2 (ENG16-12.3.7.1)	ENG16	WG2
ARM16-	8.5.1	Liaison Note to ARM on Guideline G1105	VTS53	WG2
ARM16-	8.5.1.1	Revised Recommendation R0125 VTS Portrayal	VTS53	WG2
ARM16-	8.5.1.2	draft Guideline Gnnnn Portrayal of VTS information	VTS53	WG2
ARM16-	8.6.1	Possible update of S101 AtoN portrayal	NCA	WG1 and 2
ARM16-	8.7.1	Liaison note from ENAV to ARM on cyber security (ENAV30-12.1.4)	ENAV30	WG2
ARM16-	8.7.1.1	DRAFT Recommendation - Cyber Security within the IALA domains - post ENAV30 (ENAV30-12.1.4.1)	ENAV30	WG2
ARM16-	8.7.2	Liaison note to ARM on cyber security (documents embedded) (ENG16-12.3.8)	ENG16	WG2

ANNEX D

LIST OF OUTPUT DOCUMENTS AND WORKING PAPERS

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

Meeting	Paper Number	Output Paper Title	Source	Action
ARM16-	11.1.1	Future Task Plan 2023 - 2027	CMT	To Secretariat
ARM16-	11.2.1	Draft Guideline Gxxxxx Marking of Bridges	WG1	Council
ARM16-	11.2.2	Draft Guideline Gxxxx on AtoN Training and Awareness for Mariners	WG1	Council
ARM16-	11.2.3	Draft LN to ENG on Navigational Requirements and Considerations for Establishment of Buoyage	WG1	ENG
ARM16-	11.2.4	LN to ENG on dictionary updates	WG1	ENG
ARM16-	11.2.5	LN to PAP on the way forward with AIS documentation	WG1	PAP
ARM16-	11.2.5.1	Draft Annex IALA AIS related documents	WG1	PAP
ARM16-	11.2.6	Dictionary items	WG1	Secretariat
ARM16-	11.3.1	Revised Guideline G1105	WG2	Council
ARM16-	11.3.2	Draft Recommendation on Cyber Security	WG2	Council
ARM16-	11.3.3	LN to PAP on Cyber Security	WG2	PAP
ARM16-	11.3.4	LN to all committees on the progress of the Cyber Security tasks	WG2	All Committees
ARM16-	11.3.4.1	Attachment draft Cyber Security Guideline	WG2	All Committees
ARM16-	11.3.5	Draft MS17	WG2	PAP
ARM16-	11.3.6	LN to IHO NIPWG on S-125	WG2	Council
ARM16-	11.3.6.1	S-125 ed.0.0.3	WG2	Council
ARM16-	11.3.7	S-201 ed.1.1	WG2	Secretariat
ARM16-	11.3.8	S-125 ed.0.0.3	WG2	Secretariat
ARM16-	11.3.9	Workshop proposal on the Second Joint IALA/IHO	WG2	Council
ARM16-	11.3.10	S-201 Test bed document for website	WG2	Secretariat
ARM16-	11.3.11	Guideline G1159 Ship Reporting from Shore Based Perspective	WG2	Council
ARM16-	11.4.1	Revised Guideline G1138 The Use of the Simplified IALA Risk Assessment Method (SIRA)	WG3	Council
ARM16-	11.4.2	Draft IMO SN Circular	WG3	Council
ARM16-	11.4.3	OPRA EXCEL Workbook and Word document version	WG3	Secretariat
ARM16-	11.4.4	Dictionary items	WG3	Secretariat

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

Meeting	Paper Number	Output Paper Title	Source	Action
ARM16-	11.5.2.1	WP draft Guideline G1052 Quality-Management-Systems-for-AtoN-Service	WG1	To ARM17
ARM16-	11.5.2.2	WP Liaison Note from VTS52 to PAP and ARM on Guideline 1052 Quality Management Systems for AtoN Service Delivery	WG1	To ARM17
ARM16-	11.5.2.3	WP MASS Guideline	WG1	To ARM17
ARM16-	11.5.2.4	Various MASS documents file	WG1	To ARM17
ARM16-	11.5.2.5	Various AIS documents file	WG1	To ARM17

ANNEX E ACTION ITEMS

Action Items for Secretariat

1. The Secretariat is requested to collate the future task plan period 2023 – 2027 (ARM16-11.1.1) with the other committee's submission and forward them to PAP for further consideration. 13
2. The Secretariat is requested to forward ARM16-11.2.4 Liaison note to ENG on update of dictionary to the ENG Committee for their consideration. 15
3. The Secretariat is requested to forward ARM16-11.2.3 Liaison note to ENG on Navigational Requirements and Considerations for Establishment of Buoyage. 15
4. The Secretariat is requested to forward ARM16-11.5.2.1 WP draft Guideline G1052 Quality-Management-Systems-for-AtoN-Service and ARM16-11.5.2.2 WP Liaison Note from VTS52 to PAP and ARM on Guideline 1052 Quality Management Systems for AtoN Service Delivery to ARM17 as working papers. 15
5. The Secretariat is requested to forward ARM16-11.2.2 Guideline Guidance on Marine Aids to Navigation (AtoN) awareness and training for mariners to Council for approval. 15
6. The Secretariat is requested to progress ARM16-11.2.6 IALA Dictionary_New and amended definitions. 15
7. The Secretariat is requested to forward ARM16-11.5.2.3 WP MASS Guideline as a working paper to ARM17. 15
8. The Secretariat is requested to forward document ARM16-11.2.1 Draft Guideline Gxxxx Marking of Bridges to Council for approval and then subsequently revoke R0113. 16
9. The Secretariat is requested to forward ARM16-11.2.5 LN to the PAP Committee in order to seek comments on the proposed way forward, including an overview in excel format of AIS documents ARM16-11.2.5.1 for their consideration. 16
10. The Secretariat is requested to forward all AIS task related documents on files share to ARM17 as working papers. 16
11. That the Secretariat is requested to inform IHO HSSC15 of IALA intentions of having an more active role in supporting the development of AtoN portrayal as the community progresses into the new S-100 world. 17
12. IALA Secretariat to invite Republic of Korea to share their experience with AtoN portrayal development at ARM17. 17
13. The Secretariat is requested to forward ARM16-11.3.2 Draft Recommendation on Cyber Security to Council for approval. 18
14. The Secretariat is requested to forward ARM16-11.3.4 the liaison note to all technical committees on the progress on cyber security tasks and ARM16-11.3.4.1 the draft guideline as an annex of the liaison note to all technical committees for their consideration. 18
15. The Secretariat is requested to forward ARM16-11.3.3 the liaison note to PAP introducing cyber considerations while drafting recommendations and guidelines for their consideration. 18
16. The Secretariat is requested to forward ARM16-11.3.5 MS17 document to PAP for their consideration and possible inclusion into the draft IMO NCSR10 contribution. 18
17. That the secretariat is requested to forward ARM16-11.3.6 liaison note and ARM16-11.3.6.1 requesting a review of the draft S-125 Marine AtoN product specification to Council before being sent to IHO NIPWG. 19
18. That the Secretariat progress ARM16-11.3.7 S-201 ed.1.1 and ARM16-11.3.8 S-125 ed.0.0.3as necessary. 19
19. The Secretariat is requested to forward ARM16-11.3.9 proposal for a second IHO / IALA workshop to Council for approval. 20
20. The Secretariat is requested to update the IALA website with the testbed template held within output document ARM16-11.3.10. 20

21. The Secretariat is requested to forward ARM16-11.3.1 reviewed Guideline G1105 to Council for approval. 21
22. The Secretariat is requested to forward ARM16-11.3.11 Guideline G1159 ed. 2 for approval to Council for approval. 21
23. The Secretariat is requested to forward ARM16-11.4.1 Guideline G1138 The Simplified IALA Risk Assessment Method (SIRA) for approval. 22
24. The Secretariat is requested to progress ARM16-11.4.4 new and revised dictionary items. 22
25. The Secretariat is requested to incorporate ARM16-11.4.3 IRMAS/OPRA Excel workbook and Word documents into the suite of available IALA Risk Management Toolbox tools and make them available on the IALA website. 23
26. The Secretariat is requested to identify a location on the IALA website where the IALA Risk Management tools listed above can be easily accessed by those using the relevant methodologies 23
27. The Secretariat is requested to forward ARM16-11.4.2 draft IMO Circular to replace SN 296 on the IALA Risk Management Toolbox for approval. 23

Action Items for Participants

28. That Committee participants are invited to join the intersessional task group working on ARM's work on MASS, after the MASS TF meeting in January 2023, and to express their interest to Guttorm Tomren (guttorm.tomren@kystverket.no). Details of intersessional meetings will be published on the Committee Dashboard. 16
29. That Committee participants are invited to join the intersessional task group working on Technical service to AtoN description in January and June 2023, and to express their interest to Thomas Christensen (thomas@dmc.international). Details of intersessional meetings will be published on the Committee Dashboard. 18



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

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