



IALA ARM COMMITTEE

REPORT OF THE 21st SESSION OF THE IALA ATON REQUIREMENTS AND MANAGEMENT (ARM) COMMITTEE

20 – 30 October 2025

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30 October 2025

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International Organization for Marine Aids to Navigation

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Report of the 21st session of the IALA

IALA AtoN Requirements and Management (ARM) Committee Executive Summary

The 21st session of the IALA AtoN Requirements and Management (ARM) Committee was held from 20 – 30 October 2025, including the physical week at IALA HQ between 20 – 24 October, with Guttorm Tomren as Chair and Natasha McMahon as Vice-Chair. The Secretary for the meeting was Thomas Southall.

99 participants from 29 countries participated in ARM21. 25 participants attended for the first time.

The ARM Committee considered 42 input papers and produced 21 output papers from three Working Groups.

The meeting was carried out in accordance with the *Committee Arrangements*.

Key outputs completed included:

- ARM21- 11.1.1 Draft Recommendation on Digitalization of AtoN and Services for Vessels of Varying Levels of Autonomy
- ARM21- 11.1.3 Draft Guideline on Drone Operation for Marine Aids to Navigation and VTS Infrastructure Management
- ARM21- 11.2.6 Reviewed G1087 Procedures for the Management of the IALA Domain under the IHO GI Registry
- ARM21- 11.4.2 Workshop proposal on the third joint IHO IALA workshop on S-100 and 200

The following liaison notes were approved:

- ARM21- 11.1.2 LN from ARM to all committees on NAVGUIDE 2027
- ARM21- 11.1.4 LN from ARM to VTS on the revision of G1185 relating to OREI
- ARM21- 11.1.4.1 Reviewed Guideline G1185 Enhancing the safety around OREI V3
- ARM21- 11.1.5 Task Proposal Revision of G1054 Preparing for An IMO Audit on AtoN Service Delivery
- ARM21- 11.1.6 AtoN for SIDS Task Description
- ARM21- 11.2.1 LN from ARM to DTEC on establishing MCP instance
- ARM21- 11.2.2 LN from ARM to DTEC on Discussion Paper On IALA Vision Towards Digitalization
- ARM21- 11.2.3 LN from ARM to DTEC on digitalization waterways
- ARM21- 11.2.4 LN from ARM to DTEC on G1178
- ARM21- 11.2.5 LN from ARM to all committees on MSAtoN
- ARM21- 11.2.5.1 Draft_Guideline_IALA_ms2_maritime_service
- ARM21- 11.2.8 LN from ARM to PAP and all committees on MRN
- ARM21- 11.2.8.1 Draft G1143 Ed3.1 Unique Identifiers For Maritime Resources – post ARM21
- ARM21- 11.2.8.2 Draft G1164 Ed1.1 Management of Maritime Resource Name Organisation Identifiers – post ARM21
- ARM21- 11.2.8.3 Draft Gxxx Management of the IALA MRN namespace – post ARM21
- ARM21- 11.3.1 Task Proposal on AIS Model Course
- ARM21- 11.4.1 LN from ARM to PAP on Cyber Security Tasks

1.	Introduction	6
1.1	Welcome from the Deputy Secretary-General	6
1.2	Approval of the agenda	6
1.3	Apologies	6
1.4	Working Arrangements	7
2.	Review of Action Items from ARM20	7
3.	Reports from other bodies	8
3.1	IALA	8
3.2	IMO	9
3.3	IHO	10
3.4	ITU	10
3.5	IEC	10
3.6	Digital@Sea	11
4.	Presentations	11
5.	Work Programme Management	11
5.1	Work Programme, Task Plan, Task Register	11
6.	Review of input papers	11
7.	Establish Working Groups	11
8.	Working Group 1 – Navigational Requirements (WG1)	12
8.1	Task 1.1.1 – Monitor IMO work on STCW and develop IMO submissions and supporting advice on amendments to STCW in respect of IALAs inclusion within the Convention to cover AtoN training for navigators	12
8.2	Task 1.2.1 Compile new Guideline on AtoN Buoy Tender requirements and specification	12
8.3	Task 1.2.2 Draft new Guideline on Buoy Tender Activities	13
8.4	Task 1.2.5 Guidance on the use of simple IOT sensors on physical aids	13
8.5	1.2.8 Develop guidance on the provision of AtoN and risk management for autonomous vehicle/vessel operations (Maritime Autonomous Surface Ship, MASS)	14
8.6	Task 1.2.9 – Review relevant sections of NAVGUIDE in cooperation with the Secretariat	14
8.7	Task 1.2.10 – Update IALA Dictionary	15
8.8	Task 1.4.1 – Develop comprehensive guidance that will assist members enhance the safety of navigation and environmental protection in / around offshore renewable energy installations (OREI). (VTS57-12.2.2)	15
8.9	Task 1.5.1 – Develop a recommendation and guideline consolidating content from G1030, G1035 and G1004.	16
8.10	Task 2.1.1 - Develop guidance on the marking of different restrictions areas	16
8.11	Task 2.2.1 – Develop Recommendation and Guideline on the use of Drones for AtoN Management	17

8.12	Task 2.2.2 – Full review of A-126, G1084 and other AIS associated documents (now incorporating tasks 6.3.1 and 6.1.1)	18
8.13	Other input papers	19
8.14	Other tasks	19
9.	Working Group 2 – Information Services and Portrayal (WG2)	20
9.1	Task 7.1.3 New Guideline on Operational considerations for S-200 (S-201 AtoN information and S-230 Application Specific Messages)	20
9.2	Task 7.1.4 Continue development on S-201, specifically on Maintenance, data validation, and harmonization with S-125, S-124, and S-101	21
9.3	Task 7.1.6 Continue development on S-125 in coordination with IHO NIPWG	21
9.4	Task 7.1.7 Continue development on MRN documentation, considering inputs from IALA Secretariat, other committees, or others as needed	22
9.5	Task 7.1.9 Coordinate Committee support and submissions for IALA representation at IHO working groups in cooperation with Secretariat (HSSC, S-100WG, NIPWG)	23
9.6	Task 7.1.11 Develop, implement and execute procedures for IALA to add, maintain and harmonize items to the IHO S-100 Feature Concept Dictionary (FCD)	23
9.7	Task 7.1.12 Create S-200 Implementation Plan, following similar S-100 Implementation Strategy and/or Roadmap	24
9.8	Task 7.1.13 Develop guidance on the symbology and portrayal of AtoN for charting	24
9.9	Task 7.1.14 Development of technical service specifications for the provision of AtoN information	25
9.10	Responses to Input papers not relating to any task	26
10.	WORKING GROUP 3 – Risk Management (WG3)	27
11.	Any other Business	31
12.	Summary of output and working papers	32
13.	Review of session report	32
14.	Date and venue of next meetings	32
15.	Closing of the Meeting	32
16.	List of Annexes	33
ANNEX A	ARM21 Committee Agenda	34
ANNEX B	List of participants	36
ANNEX C	List of input papers	44
ANNEX D	List of Output Documents and Working Papers	47
ANNEX E	Action Items	49
ANNEX F	Working Group Participants Lists	52

Report of the 21st session of the IALA AtoN Requirements and Management (ARM) Committee

1. INTRODUCTION

The 21st session of the ARM Committee was held from 20 – 30 October 2025 with Guttorm Tomren as Chair and Natasha McMahon as Vice-chair. The Secretary for the meeting was Thomas Southall.

The physical week began on Monday 20 October with the opening plenary and continued until Friday 24 October, followed by an approval period and the virtual closing plenary on 30 October. The Chair welcomed everybody, both old as well as new participants to the meeting.

99 participants from 29 countries participated in ARM21. 25 participants attended for the first time.

1.1 Welcome from the Deputy Secretary-General

Deputy Secretary-General Omar Eriksson welcomed the Committee to Saint Germain-en-Laye and acknowledged all online participants. Apologies were conveyed on behalf of the Secretary-General, who was attending Korea Maritime Week.

The agenda was described as substantial, with many important papers. The Deputy Secretary-General acknowledged the contributions from intersessional working groups, which demonstrated the effort made between Committee meetings. Appreciation was expressed for the commitment shown by members outside formal sessions.

Digitalisation was identified as a key topic across all four Committees. It was noted that digitalisation should be treated as a tool, not necessarily a goal.

Updates were provided on the Maritime Hydro-Meteo Fusion Index and the SID's project. IALA was reported to be in a strong position, with 42 Member States and more expected. Total membership had reached 350, the highest to date.

The transition from the Association to the Organisation had been completed. All assets and liabilities were transferred, and the Association is scheduled to be formally dissolved by the old Council at an extraordinary meeting on 20 November. This event was described as a moment to recognise years of work and achievement.

An agreement with the French Government had been finalised, enabling the purchase of new headquarters nearby. The contract was expected to be signed soon, though the delivery timeline remained unconfirmed. Once confirmed, planning for Committee and Council meetings outside the headquarters could begin, possibly from September next year or spring 2027.

The next Conference was confirmed for Mumbai, India, from 1–5 November 2027. The Steering Group had already begun preparations. The Council would meet in December to review the facilities and plans. The next Symposium, likely a VTS Symposium, was tentatively scheduled for January 2029. An invitation to host would be issued after the Council confirmed the dates.

The Deputy Secretary-General concluded by stating that he looked forward to engaging with participants during the week and wished everyone a productive meeting.

1.2 Approval of the agenda

The agenda was reviewed and approved (ARM21-1.2.1).

1.3 Apologies

A list of participants who attended ARM21 can be found on IALA Dashboard for ARM and in Annex B.



1.4 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 *Committee Working Arrangements* document and Alisa Nechyporuk gave a briefing on the tools available to them. These briefs included an overview of the ARM20 Action Plan that had been agreed by the ARM Committee Management Team (CMT) to be progressed during ARM20 through Task Groups (TG). Each task had a deadline for expressions of interest to participate to the specified Task Group Leader (TGL) by a certain date.

2. REVIEW OF ACTION ITEMS FROM ARM20

The Committee Secretary confirmed that all Secretariat actions from ARM20 were completed (input paper ARM21-2.1.1).

3. REPORTS FROM OTHER BODIES

3.1 IALA

3.1.1 IALA Council

Minsu Jeon, Technical Director, provided a summary of key outcomes from the 2nd session of the Council, held from 9 – 13 June 2025 in Nice, France, alongside the UN Ocean Conference. This marked the first full Council meeting since the Organisation's transition to intergovernmental status.

The Council formally approved the revised Committee work programme.

One notable decision was the establishment of a drafting group tasked with preparing a policy on co-sponsoring documents with other intergovernmental organisations. This initiative aims to improve clarity and consistency in how external papers are shared and supported.

The Council also approved a wide range of technical documents submitted by the committees. Highlights included:

ARM Committee

- G1052, Edition 3.2 – Quality management for Aids to Navigation service delivery
- G1106, Edition 3.0 – Producing S-200 series Product Specifications
- S-201 Product Specification, Edition 2.0.0 – Approved as a major milestone in navigation data harmonisation

ENG Committee

- R1005, Edition 3.0 – Conserving and promoting heritage Marine Aids to Navigation
- G1050, Edition 1.2 – Management of transfer of surplus lighthouse property
- G1189, Edition 1.0 – Measurement of marine light performance
- G1190, Edition 1.0 – Harmonised Internet of Things protocol for visual Marine AtoN

VTs Committee

- G1111, Edition 2.1 – Functional and performance requirements for VTS systems and equipment
- G1111-1, Edition 1.1 – Core VTS system requirements
- G1027, Edition 2.0 – Simulation in VTS training

DTEC Committee

- G1128, Edition 1.7 – Specification of electronic Navigation Technical Services
- G1190, Edition 1.0 – Maritime Service Registry Technical Specification
- G1192, Edition 1.0 – VHF Data Exchange System authentication
- G1193, Edition 1.0 – VHF Data Exchange System signal measurement

In addition to approving these documents, the Council noted progress reports on future developments of the S-200 Product Specifications and associated technical services.

A further proposal from the ENG Committee was accepted regarding the Heritage Lighthouse of the Year award. Given the growing number of nominations, the revised process now limits Member States to one nomination per year. The period will run from 1 October to 30 September, with structured criteria covering heritage significance, conservation, public access and global promotion. Nominations will be reviewed by the ENG Working Group, then the ENG Committee, before final approval by Council.

Finally, the Council approved several liaison arrangements with external bodies, including:

- To IHO on S-125 Product Specification.
- To RTCM on Standard 10402.n.
- To IEC on S-421 schema and SECOM OpenAPI redistribution.
- Information paper to IMO MSC on VHF Data Exchange System for shore infrastructure.

3.1.2 IALA Policy Advisory Panel

The Technical Director provided an update on PAP58, which was held from 9 - 12 September 2025 at Headquarters.

The Panel had agreed that the strategic vision and its underlying drivers and trends required revision to better reflect evolving operations and technology. A dedicated one day workshop would be held during PAP60 in February 2026 to review these elements.

Regarding the 2027 - 2030 work programme, the panel confirmed the timeline: committees would prepare draft contributions throughout 2026 and the Secretariat would consolidate these into a PAP review in early 2027.

On technical services and product specifications, the panel reviewed developments including guidance on S-200, S-201.

For the S-230 ASM product specification, the panel concluded that inter-committee leadership was required to advance the work.

Finally, the Panel welcomed the further development of the Work Programme Management Tool, formerly known as the Online Task Register. This change was expected to improve delivery timelines and enhance transparency.

3.2 IMO

Minsu Jeon briefed the Committee on recent developments at the IMO, focusing on outcomes from NCSR12 and MSC110.

Starting with the NCSR12, held in May 2025, he noted that the session delivered a comprehensive set of outcomes directly relevant to the Committee's work. A key highlight was the advancement of the S-100 framework, including guidance on establishing global IP-based connectivity to enable real-time exchange of S-100 digital products between shore facilities and ships. The guidance was designed to be technology-neutral, with the MCP and the Second Protocol cited as practical examples. A correspondence group led by Australia had been formed to deliver a final report to NCSR13 in 2026.

On VDES matters, NCSR agreed a draft amendment to SOLAS introducing VDES as a mandatory carriage requirement.

The sub-committee also progressed communications-related amendments to SOLAS, which would require MSI broadcasters to use satellite providers recognised by IMO by the end of 2026. This measure aims to ensure global coverage for navigation warnings and safety messages.

Turning to the MSC, the Technical Director reported on MSC110, held from 18 - 27 June. One of the most significant outcomes was the approval of the draft SOLAS amendment introducing VDES as a carriage requirement alongside AIS. This marked a major milestone, with VDES adaptation expected to be finalised at MSC111 and the new requirements entering into force on 1 January 2028.

The Committee also made substantial progress on the MASS Code, finalising chapters on design, survey, operations and system management. The human element chapter remained under review, with an intersessional group tasked to address it specifically.

MSC endorsed the intersessional work on global IP-based connectivity for S-100 products, noted developments in cybersecurity and software management and introduced standardised procedures for updates and risk mitigation in navigation and communication systems.

Finally, MSC agreed to expand the Worldwide Radio Navigation System to include augmentation technologies such as SBAS and launched a new output on performance standards for R-mode, with completion targeted for 2027.

3.3 IHO

Minsu Jeon outlined recent developments in IALA's collaboration with the IHO, particularly in relation to the S-100 and S-200 frameworks. He structured the update around key areas of joint activity.

First, on product specification development, he highlighted S-125 on AtoN as positive. This specification is being developed jointly by the ARM Committee and IHO. In May, the Technical Director attended the IHO HSSC meeting in Stavanger, where he provided an update on IALA's progress. He noted that the IHO Secretariat was also seeking to participate in future IALA meetings, which was welcomed.

Second, regarding the GI Registry, concept proposals from the S-200 Testbed had been submitted to IHO and were all approved. In parallel, the ARM Committee had submitted additional proposals, which received minor feedback from IHO.

Third, in the area of training, IHO had kindly agreed to provide lecturers for selected IALA training courses. Finally, the Technical Director reported that a joint IHO–IALA workshop had been discussed by both the Council and PAP. A formal proposal for the workshop would be prepared by the ARM Committee and submitted for Council approval at the December meeting.

3.4 ITU

The Technical Director reported on recent collaboration between IALA and the ITU, specifically through ITU-R Working Party 5B, which met in Geneva from 29 April to 8 May 2025. Several topics of direct relevance to IALA were addressed during the session.

Work continued on the revision of Recommendation ITU-R M.2092 concerning VDES. Updates included technical clarifications based on prototype testing, new message definitions and the introduction of a simplified VDES concept tailored for smaller vessels.

Recommendation ITU-R M.1371 on AIS was also revised, with additions covering AMRD messages and updated reporting intervals. A proposal concerning cruise status parameters remained open and was linked to ongoing developments in the IMO MASS Code.

On maritime identities, Recommendation ITU-R M.585 was updated to include a new freeform identity scheme, supplemental manufacturer identifiers and an extended 12-character format. These changes aim to ensure sufficient identity capacity for AI-enabled space safety devices.

A major new initiative was the development of a report on VDES R-mode, examining the technical implications of introducing R-mode into the VDES framework. This work covers aspects at both the physical and link layers and includes efforts to integrate authentication mechanisms for resilient PNT.

IALA had been invited to review the draft revisions of Recommendations M.2092, M.1371 and M.585 and to contribute its expertise to the new R-mode report.

3.5 IEC

The Technical Director, Minsu Jeon, noted that while IEC matters remained a standing agenda item, there were no substantive updates to report at this time. He indicated that developments were expected in relation to active tester standards and further information would be provided to the Committee once available.

3.6 Digital@Sea

Minsu Jeon reported that the Digital@Sea initiatives next event is Digital@Sea Asia-Pacific, will take place alongside a capacity-building seminar from 20 – 24 October 2025 in Seoul, Republic of Korea.

4. PRESENTATIONS

All presentations given at ARM21 can be found on the fileshare (login necessary). The following presentations were given:

- | | |
|----------------------------------|--|
| • The Grand Faw Port Breakwaters | General Company for Ports of Iraq (GCPI) |
| • SMART Project | KRISO |
| • S-100 data validation | Teledyne |
| • OREI and safety incidents | Dutch Safety Board |
| • AtoN for SIDS project | Royal College of Art, UK |
| • IALA World Wide Academy update | WWA |

5. WORK PROGRAMME MANAGEMENT

5.1 Work Programme, Task Plan, Task Register

The Task Plan was updated to reflect the 2025 – 2027 Work Programme and throughout the session, the document and the Task Registers were updated by the Vice-Chair and the Working Group Chairs, these were noted by the Committee. The new online tool is updated to reflect the task registers and statuses.

A proposal to PAP for consolidating the cross committee tasks on cyber security was finalised in ARM21-11.4.1 LN from ARM to PAP on Cyber Security Tasks .

Action item:

The Secretariat is requested to forward the Liaison Note on consolidating cross-committee tasks on cyber security (ARM21-11.4.1) to PAP for their consideration.

6. REVIEW OF INPUT PAPERS

The input papers for ARM21 consisted of new input papers as well as working papers from the previous session. The input paper list (ARM21-6.1.1) did not include the working papers from ARM20. The working paper list (ARM21-6.1.2) was a separate input document.

7. ESTABLISH WORKING GROUPS

The Chair outlined the procedure to be followed by working groups, after which three working groups were established and their tasks outlined. The Working Group chairs and vice-chairs were introduced. Full lists of working group participants can be found in Annex F.

Working Group (WG)	Working Group Chair / Vice-Chair
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WG1 – Navigational Requirements	Johan Westerlund (Chair), Trevor Harris (Vice-Chair)
WG2 – Information Services and Portrayal	Peter Hooijmans (Chair), Alison Contreras (Vice-Chair)
WG3 – Risk Management	Kevin Gregory (Chair)

8. WORKING GROUP 1 – NAVIGATIONAL REQUIREMENTS (WG1)

With Johan Westerlund as acting Chair due to the absence of the usual WG1 Chair Dave Lewald, WG1 used the time to work on numerous tasks and input papers. The Chair and Vice Chair thank the participants of WG1 for their work and support over the week.

8.1 Task 1.1.1 – Monitor IMO work on STCW and develop IMO submissions and supporting advice on amendments to STCW in respect of IALAs inclusion within the Convention to cover AtoN training for navigators

Task leader:

Jiangna Liu

Input Papers:

ARM21-7.1.1 Proposal on the update of IMO Model Course 7.03 on Officer In Charge of a Navigational Watch

Comments:

The group discussed the input paper from China MSA. The EU submission to IMO HTW Committee which contains an updated definition of AtoN proposed by Finland was also discussed.

The group welcomed, and agreed, with the definition change suggested and asks that committee participants communicate our position to their national IMO representatives on this matter.

The group agreed that a revision of parts of the IMO Model Course 7.03 relating to AtoN should be undertaken to be ready for submission when the IMO complete the review of the STCW Convention. The review work will start at the next ARM session and all interested parties are invited to join and submit suggestions.

The group recognised this work will likely cross all committees but will start within the ARM domain until a suitable time in the process to expand across IALA.

The Secretariat and WWA have agreed to support this work.

Key outcomes include:

1. Noted the EU submission to IMO HTW containing an updated definition of AtoN proposed by Finland was also discussed.

Output:

None

Action items:

That ARM Committee participants note the EU proposal to IMO HTW in February 2026 regarding the definition change of AtoN.

8.2 Task 1.2.1 Compile new Guideline on AtoN Buoy Tender requirements and specification

Task group leader:

Peter Dam

Comments:

The Task Group started up work and initial thoughts on the Guideline on AtoN Buoy Tender requirements and specification.

Key outcomes include:

1. The work was progressed.

Output:

None

Action item:

The Secretariat is requested to forward the WP draft guideline on AtoN Buoy Tender requirements and specifications (ARM21-11.5.1.1) as a working paper to ARM22 for further development.

8.3 Task 1.2.2 Draft new Guideline on Buoy Tender Activities

Task group leader:

Peter Dam

Input papers:

None

Comments:

The Task Group went through the additional editing and comments on both the Recommendation and the Guideline. Several pictures were added into the guideline to illustrate examples on Buoy Tender activities. The Guideline still needs some explanatory text with the pictures, therefore the documents should be forwarded to ARM22 for finalisation.

Key outcomes include:

1. The work was progressed.

Output:

None

Action item:

The Secretariat is requested to forward the WP draft recommendation on Buoy Tender Operations (ARM21-11.5.1.2) and the WP draft guideline on Buoy Tender Activities (ARM21-11.5.1.3) as working papers to ARM22 for further development.

8.4 Task 1.2.5 Guidance on the use of simple IOT sensors on physical aids

Task leader: Naehyuk Yoo**Input papers:**

None

Comments:

During the session, the Task Group fully developed Chapter 3, which defines the technical requirements for IoT sensors and communication modules on physical AtoN.

The chapter now includes eight subsections covering power management, lighting monitoring and control, position monitoring, structural condition detection, environmental data acquisition, communication and data transmission, device integration, and enclosure requirements.

This work establishes Chapter 3 as the core technical foundation of the new guideline, providing practical implementation guidance for IoT sensor application on AtoN.

The group also reviewed and compared the draft against relevant IALA documents (R1024, G1008, G1179, G1182, G1190) and ensured consistency with international standards such as IEC 60529.

Key outcomes include:

1. The work was progressed.

Output:

None

Action items:

The Secretariat is requested to forward the WP draft guideline on the Use of Simple IoT Sensors on Physical AtoN (ARM21-11.5.1.4) as a working paper to ARM22 for further development.

8.5 1.2.8 Develop guidance on the provision of AtoN and risk management for autonomous vehicle/vessel operations (Maritime Autonomous Surface Ship, MASS)

Task group leader:

Maarten Berrevoets

Input papers:

ARM21-7.3.1 Liaison note to ARM on MASS Recommendation (ENG20-9.2.2.2)

ARM21-7.3.2 LN to DTEC & ARM draft Rec on digitalization of Marine AtoN (VTS58-12.1.5)

ARM21-7.3.4 LN from DTEC to ARM Digitalization of Marine AtoN and Services for vessels of varying levels of autonomy

Comments:

The task group considered the above input papers and amended the draft recommendation “Digitalization of Marine AtoN and Services for Vessels of Varying Levels of Autonomy” where appropriate. The draft recommendation was circulated to PAP members for comments and the Chairs from the VTS- and ENG Committees responded with relevant input. Finally, the draft Recommendation was reviewed by the Secretariat in order to align the text with the Convention etc.

Key outcomes include:

1. The draft recommendation was finalised and prepared for submission to Council.

Output:

ARM21-11.1.1 Draft Recommendation on Digitalization of AtoN and Services for Vessels of Varying Levels of Autonomy

Action item:

The Secretariat is requested to forward the draft recommendation on Digitalization of AtoN and Services for Vessels of Varying Levels of Autonomy (ARM21-11.1.1) to Council for approval.

8.6 Task 1.2.9 – Review relevant sections of NAVGUIDE in cooperation with the Secretariat

Task group leader:

Natasha McMahon

Input papers:

None

Comments:

The review of the NAVGUIDE continues. A liaison note was sent to all committees as a reminder to submit changes by ARM 22.

Key outcomes:

1. A liaison note to all committees reminding of revision submissions by ARM22.

Output:

ARM21-11.1.2 LN to all committees on the NAVGUIDE review

See comments in IALA Dictionary Task 1.2.10 regarding conflicts between the Navguide and Dictionary.

Action item:

The Secretariat is requested to forward the Liaison Note from ARM to all Committees on NAVGUIDE 2027 (ARM21-11.1.2) to other IALA Committees for their consideration.

8.7 Task 1.2.10 – Update IALA Dictionary

Task group leader:

Jiangna Liu

Input papers:

ARM21-7.3.3 Proposal on the Consistency of definitions of terms between the NAVGUIDE (Chapter 5 and 6) and the IALA Dictionary

Comments:

The task group met and discussed the task along with work currently being undertaken by China MSA to identify inconsistencies in the IALA Dictionary, and also any conflicts between the IALA Dictionary and the NAVGUIDE. At this stage it was decided to wait until this work is completed and discuss at ARM22, when all identified changes can be made. Where conflicts are identified between the Dictionary and NAVGUIDE, a discussion will be required at ARM22 and outcomes will likely involve notes to other committees.

Key outcomes include:

1. The proposal was acknowledged and deferred for further discussion at ARM22 following completion of related work by China MSA.

Output:

None

Action item:

The Secretariat is requested to forward the WP draft proposal on the Consistency of Definitions between the NAVGUIDE and the IALA Dictionary (ARM21-11.5.1.5) as a working paper to ARM22 for further development.

8.8 Task 1.4.1 – Develop comprehensive guidance that will assist members enhance the safety of navigation and environmental protection in / around offshore renewable energy installations (OREI). (VTS57-12.2.2)

Task group leader:

Trevor Harris

Input papers:

ARM21-7.7.1.1 Draft G1185 Enhancing the safety around OREI (VTS58-12.1.4)

ARM21-7.7.1 Liaison Note to ARM on G1185 OREI (VTS58-12.1.3)

Comments:

A task group meeting was held which was also attended by the Chair of the VTS Committee and the liaison note and track changed document were assessed and changes made. A clean version of the document was sent to attendees and other members of the VTS Committee for comment. Further discussions were held around the purpose and content of the document. A decision was taken to forward the document to the VTS Committee with an appropriate Liaison Note, to be finalised.

Key outcomes include:

1. The guideline was reviewed and updated, and a Liaison Note was prepared for submission to the VTS Committee for their consideration.

Output:

ARM21-11.1.4 LN from ARM to VTS on the revision of G1185 relating to OREI

ARM21-11.1.4.1 Reviewed Guideline G1185 Enhancing the safety around OREI V3

Action items:

The Secretariat is requested to forward the Liaison Note on the revision of G1185 relating to OREI (ARM21-11.1.4) and the reviewed Guideline G1185 Enhancing the Safety around OREI V3 (ARM21-11.1.4.1) to VTS59 for their consideration.

8.9 Task 1.5.1 – Develop a recommendation and guideline consolidating content from G1030, G1035 and G1004.

Task group leader:

Trevor Harris

Comment:

No work was done on this task this session. ENG Committee to be contacted as this task includes documents controlled by them.

8.10 Task 2.1.1 - Develop guidance on the marking of different restrictions areas

Task group leader:

Mats Hörström

Input papers:

ARM21-7.5.1 Chapter on marking types of area for marking different restricted areas

Comments:

The task group assembled to resume work started from ARM20. The meeting was opened by the task leader with a presentation to explain the current status of the task and expectations during ARM21 of each subtask. The task has been expanded according to a proposal from ARM20 to also include marking of prohibited areas. The planned intersessional meeting before ARM21 was cancelled due to too few participant registrations.

During ARM21, the chair of the ARM committee expressed a wish that the guidance should not be subordinated to R1001 IALA MBS as was the intent from ARM20, but, for example, below R1010 Marine Spatial Planning.

Furthermore, there was some discussion regarding the need of guidance on the marking of events areas. The decision was made that work on the guideline proceed as planned, and once the guideline is more developed, the committee will discuss further whether parts of the content may be more appropriate to put in the IALA Navguide.

The task group also request that the task title is changed to “The marking of different restricted areas” to better reflect how its content is developing.

The task group reviewed the input paper from China MSA during ARM21 and noted that it provides valuable and comprehensive input covering the requirements for test areas, marking, information release, safety management, and coordination.

The Working Group expressed its appreciation to China MSA for the work undertaken.

Key outcomes include:

1. The guideline was further developed and the scope of the task expanded to include prohibited areas. The task title was updated to reflect this broader scope.

Output:

None

Action item:

The Secretariat is requested to forward the WP draft guideline on the marking of different restricted areas (ARM21-11.5.1.7) as a working paper to ARM22 for further development.

8.11 Task 2.2.1 – Develop Recommendation and Guideline on the use of Drones for AtoN Management

Task group leader:

Naehyuk Yoo

Input paper:

ARM21-7.7.2 Liaison Note to ARM – VTS response on Drone Guideline (VTS58-12.2.1)

Comments:

The task group reviewed the liaison note from VTS58 and revised the title to “Drone Operation for Marine Aids to Navigation and VTS Infrastructure Management” to reflect inclusion of VTS infrastructure. The Introduction was updated to reference both AtoN and VTS infrastructure and the challenges of on-site inspections.

Clarification on LOS and BVLOS was added, specifying that the guideline applies only to LOS operations. In addition, a statement was included noting that certain VTS sensors may be classified as critical national infrastructure and may require approval from national authorities.

The guideline ensures a minimum level of operational, personnel, and maintenance procedures to maintain consistency among member states. To accommodate national requirements, phrases have been added in Chapters 6, 7 and 9 to ensure compliance with relevant national regulations.

Reference: VTS58-12.2.1 Liaison Note to ARM – VTS response on Drone Guideline

Key outcomes include:

1. The guideline was revised to reflect VTS infrastructure considerations and prepared for submission to Council.

Output:

ARM21-11.1.3 Draft Guideline on Drone Operation for Marine Aids to Navigation and VTS Infrastructure Management

Action item:

The Secretariat is requested to forward the draft guideline on Drone Operation for Marine Aids to Navigation and VTS Infrastructure Management (ARM21-11.1.3) to Council for approval.

8.12 Task 2.2.2 – Full review of A-126, G1084 and other AIS associated documents (now incorporating tasks 6.3.1 and 6.1.1)

Task group leader:

Peter Douglas

Input papers:

None

Comments:

The group continued work on the new Recommendation R0126 on AIS as an AtoN, and the supporting Guideline. These documents are now substantially complete, and it is proposed that these documents are forwarded as Input documents to ARM22, thus allowing the wider Committee to have greater input and oversight before finalising these documents as Outputs from ARM22.

The current status of all existing and previous IALA AIS documentation can be summarised as follows:

- IALA Recommendation R0126 the Use of the AIS in Marine Aids to Navigation Service – will be replaced by the new summary Recommendation.
- A new IALA Guideline GXXXX has been drafted based primarily on the content of the existing R0126.
- Recommendation R0143 – Provision of virtual aids to navigation and Guideline G1081 – Virtual aids to Navigation have been incorporated within the new Guideline as an Annex C, allowing these documents to be retired on approval of the new Recommendation and Guideline.
- The existing Guideline G1050 – The management and monitoring of AIS information was ultimately scoped out of this work and will require future review.
- Relevant sections of the existing Guideline G1062 – The establishment of AIS as an aid to navigation have been incorporated within the new Guideline, allowing this document to be retired on approval of the new Recommendation and Guideline.
- Relevant sections of the existing Guideline G1084 – Authorisation of AIS AtoN have been incorporated within the new Guideline, allowing this document to be retired on approval of the new Recommendation and Guideline.
- Guideline G1095 – Harmonized implementation of application-specific messages was ultimately scoped out of this work and will require future review.
- Relevant sections of the existing Guideline G1098 – The application of AIS – AtoN on buoys have been incorporated within the new Guideline as Annex D, allowing this document to be retired on approval of the new Recommendation and Guideline.
- Recommendation R0124 – The AIS Service. This series of technical documents (with numerous appendices) is the largest single body of IALA AIS material. It contains much useful information but is no longer being actively developed or maintained. We recommend that these documents should be archived so as to still be available for reference purposes in the medium term.

- Recommendation R0123 – the Provision of Shore-based AIS. This document has not been substantially updated since 2007 and is largely duplicated in the new VTS document G1111-4 – Producing requirements for AIS. We recommend that R0123 be retired.
- Recommendation R0144 – Harmonized Implementation of Application Specific Messages has been retired.
- Guideline G1082 – An overview of AIS. This document is a good introduction to AIS in general but not specific to AtoN. We recommend that G1082 be retained in the short term; this could form the basis of an AIS Manual, as discussed at ARM18.
- Recommendation R1007 - The VHF DATA exchange system (VDES) for shore infrastructure and Guideline G1117 – VDES Overview were excluded from this review.

Key outcomes include:

The new Recommendation and supporting Guideline were finalised and prepared for submission to ARM22 as input documents for wider committee review.

Output:

None

Action item:

The Secretariat is requested to forward the WP draft Recommendation on the Use of the Automatic Identification System (AIS) in Marine Aids to Navigation (ARM21-11.5.1.6) and the WP draft Guideline on the Use of the AIS in Marine Aids to Navigation Services (ARM21-11.5.1.8) as working papers and input documents to the full Committee at ARM22.

8.13 Other input papers

ARM21-6.2.8 LN to all committees on AI Guideline G1178 (DTEC5-15.3.5)

ARM21-6.2.8.1 Revised G1178 An introduction to AI in IALA Domain (DTEC5-15.3.5.1)

WG1 Noted the liaison note and accompanying document from DTEC. The ARM WG1 have been informed of the papers and the upcoming intersessional meeting. The Committee have been informed that any interested parties should provide feedback direct to DTEC at the intersessional meeting on 11th February 2026.

ARM21-6.2.9 LN to all committees on Digitalisation of Waterways Guideline (DTEC5-15.3.7)

ARM21-6.2.9.1 Draft Guideline on Digitalization of waterways (DTEC5-15.3.7.1)

WG1 Noted the liaison note and accompanying document from DTEC. The ARM WG1 have been informed of the papers and the upcoming intersessional meeting. The Committee have been informed that any interested parties should provide feedback direct to DTEC at the intersessional meeting on 6th November.

ARM21-6.2.11 LN from ENG to ARM on AtoN for SIDS project (ENG21-9.2.1.1)

The AtoN for SIDS project was discussed in WG1. Ashley Hall and Sarah Robinson presented the input paper from the ENG Committee and agreed to make AtoN system requirement as well as the AtoN product requirement explicit in the task description. They clarified that the research in year 1 would hope to focus on an optimal AtoN product solution(s) that transfers to various locations, irrespective of the specific navigational requirements. Subject to amendment of the Task Description, WG1 recommends that the task should be added to the Work Plan and forwarded to Council for approval.

Action item:

The Secretariat is requested to bring to the attention of Council the Task Proposal AtoN for SIDS Task Description (ARM21-11.1.6) for inclusion in the current work programme.

8.14 Other tasks

IALA Guideline G1054 and inconsistencies found with IMO documentation

The working group identified inconsistencies found with IMO documentation in Guideline G1054, therefore it will be suggested that ARM work on this as a new task.

Action item:

The Secretariat is requested to bring to the attention of Council the Task Proposal Revision of G1054 Preparing for an IMO Audit on AtoN Service Delivery (ARM21-11.1.5) for inclusion in the current work programme.

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

There were 17 participants in person and 5 participants online.

During ARM21, WG2 continued the work items planned for the session which was based on the work programme 2023 - 2027. The group started the work reviewing all the input papers to the group and work in plenary for most of the session.

9.1 Task 7.1.3 New Guideline on Operational considerations for S-200 (S-201 AtoN information and S-230 Application Specific Messages)

Task group leader:

Dr. Sewoong Oh

Input papers:

ARM21-8.4.5 Supporting Production of Basic Data for S-201 Transition Assistance

Comments:

It was agreed that this guideline would focus on developing new guidance concerning the implementation and operational aspects of the S-200 Product Specifications. In line with the task title, there was discussion on the possibility of including general content applicable to all S-200 Product Specifications in the main body, while incorporating details specific to each S-2XX Product Specification in the Annex. However, given concerns that the scope of work might become too extensive, it was agreed that this task would specifically address implementation and operational aspects from the perspective of S-201. It was decided to review and discuss the draft prepared by the task group leader during the intersessional meeting, which is tentatively scheduled for early 2026. The group also reviewed Korea's input regarding support for IALA member States in transitioning to S-201 through the provision of basic S-201 data. It was recognized that such support activities for S-201 base data production would greatly contribute to promoting the wider adoption of the S-201 standard developed by IALA. The meeting requested the IALA Secretariat to assist in and promote activities related to S-201 base data production support.

Intersessional VTC required to setup a guideline document. The Task leader invites ARM members to participate on this task and will pro-actively contact task- or workgroup leaders from VTS, DTEC and ENG for participation. Please kindly indicate your desire to participate by sending an email to: osw@kriso.re.kr

Regarding S-230 it was agreed to transfer the product specification and related services from DTEC to ARM. Since there is little communalities between the 2 product specifications task 7.1.3 will need to be split into a separate task for S-230 work.

Key outcomes include:

The scope of the guideline was confirmed to focus on S-201 implementation and operational aspects. An intersessional meeting was scheduled, and coordination with other committees was initiated.

Output:

None

Action item:

Committee participants interested in the physical intersessional meeting on Task 7.1.3 (S-125/201) are invited to join. The exact meeting date will be announced in due course and published on the IALA calendar. To register interest, participants are requested to notify Dr. Sewoong Oh (osw@kriso.re.kr) by 15 November 2025.

The Intersessional Task Group Leader is requested to provide input on the intersessional work on Task 7.1.3 to ARM22.

9.2 Task 7.1.4 Continue development on S-201, specifically on Maintenance, data validation, and harmonization with S-125, S-124, and S-101

Task group leader:

Dr. Sewoong Oh

Input papers:

ARM21-8.4.1 The Alignment and Compatibility between S-201 and S-125

Comments:

The input submitted by the China MSA was reviewed, and the need to revise or extend certain elements from the perspective of the S-201 data model was discussed. The group emphasized the necessity of establishing a platform to track discussions related to the S-201 standard. Accordingly, the IALA Secretariat was requested to secure storage space for the S-201 standard within the GitHub platform currently being prepared by IALA.

Once the S-201 GitHub under IALA's management becomes available, it was agreed that records of discussions concerning proposed revisions to the S-201 standard would be maintained there to ensure traceability. Furthermore, it was decided that when such revisions are incorporated, the updated version of the standard will be issued as S-201 Edition 2.1.0.

Furthermore, it was suggested that IALA should use the IHO change proposal form to manage and track changes to the operational version.

S-201 Edition 2.1.0 will be harmonized with S-125 1.0.0. In the future S-201 edition 2.1.0 will be published inline with the IHO publication timeline for S-125.

Key outcomes include:

The group agreed to establish a GitHub platform for S-201 under IALA management, adopt the IHO change proposal form for version control, and harmonize S-201 Edition 2.1.0 with S-125 1.0.0.

Output:

None

Action item:

The Secretariat is requested to consider a GitHub repository to track issues and changes for S-201.

9.3 Task 7.1.6 Continue development on S-125 in coordination with IHO NIPWG

Task group leader:

Dr. Sewoong Oh

Input papers:

ARM21-8.4.1 The Alignment and Compatibility between S-201 and S-125

ARM21-8.4.3 IHO_NIPWG_S-125_input_to_IALA_ARM21

Comments:

The organizational structure of the S-125 Task Group (TG) established by the IHO NIPWG, along with IHO's review and development schedule for S-125, was examined. The IHO has opened a GitHub repository for the publication and discussion of the S-125 package, where 35 review comments have been registered. WG2 reviewed these comments submitted by the S-125 TG in sequence and summarized possible revision approaches for S-125. Based on the S-125 TG's review comments, it was identified that, in addition to the revision of S-125 itself, related modifications to S-201 Edition 2.0 would also be required. To maintain consistency between S-125 and S-201, the revision work for both product specifications will be carried out simultaneously. The matters discussed and decided during the IALA ARM21 are planned to be further discussed at the S-125 TG meeting scheduled for November 2025.

Regarding the comments made by China MSA (ARM21-8.4.1). It was requested to add the comments to the issue section of the S-125 GitHub site for discussion at the S-125 TG.

The issue of harmonization of colour between S-201 and S-125 will be discussed at the S-125 task group and ARM22 will determine if a input paper for the joint IHO-IALA workshop is require.

It was recognized that S-98 3.0.0 can include S-125 as an optional phase 2 product.

Furthermore the WG commented on the issues documented in the S-125-Product-Specification-Development Github repository. <https://github.com/iho-ohi/S-125-Product-Specification-Development/issues>

Key outcomes include:

WG2 reviewed 35 GitHub comments, identified the need for simultaneous revision of S-125 and S-201, and agreed to maintain traceability through GitHub. Harmonization of colour and potential input for the joint IHO-IALA workshop will be addressed at ARM22.

Output:

None

9.4 Task 7.1.7 Continue development on MRN documentation, considering inputs from IALA Secretariat, other committees, or others as needed

Task group leader:

Martijn Ebben.

Input papers:

ARM21-8.4.2 Liaison note to PAP, ARM and VTS regarding MRN

ARM21-8.4.4 Report of MRN task group

Comments:

The WG took note of the two input documents regarding MRN; the report from the inter-committee task group and a Liaison Note from DTEC. The Liaison Note was discussed in a teams-call with stakeholders from both ARM and DTEC. The conclusion is that the existing guideline G1143 should be split up in a generic guideline (remains G1143) and an IALA-specific guideline for IALA-specific guidance on the management of the IALA namespace.

The WG discussed and processed the input from the inter-committee task group into the existing guidelines and the contents of G1143 were split to create 2 guidelines as described before.

A liaison note to PAP and all committees was sent to determine which committee(s) should be the owner(s) of the guideline(s). This may differ per guideline.

The three draft guidelines were sent alongside the Liaison Note to be forwarded to the correct committees.

Key outcomes include:

The WG finalized three draft guidelines and prepared a Liaison Note for distribution to PAP and other committees for ownership determination.

Output papers:

ARM21-11.2.8 LN to PAP and all committees on MRN

ARM21-11.2.8.1 Draft G1143 Ed3.1 Unique Identifiers For Maritime Resources – post ARM21

ARM21-11.2.8.2 Draft G1164 Ed1.1 Management of Maritime Resource Name Organisation Identifiers – post ARM21

ARM21-11.2.8.3 Draft Gxxx Management of the IALA MRN namespace – post ARM21

Action item:

The Secretariat is requested to forward the Liaison Note on MRN (ARM21-11.2.8) and the accompanying draft guidelines (ARM21-11.2.8.1, ARM21-11.2.8.2, ARM21-11.2.8.3) to PAP and other committees for their consideration.

9.5 Task 7.1.9 Coordinate Committee support and submissions for IALA representation at IHO working groups in cooperation with Secretariat (HSSC, S-100WG, NIPWG)

Task group leader:

Peter Hooijmans

Comments:

No specific work was done on this task during the meeting. The WG2 is of the opinion that this task should remain at the IALA Secretariat.

Key outcomes include:

The task was reviewed, and it is proposed that responsibility should be with the Secretariat.

Output:

None

Action item:

The Secretariat is requested to consider transferring Task 7.1.9 – Coordinate Committee support and submissions for IALA representation at IHO working groups in cooperation with the Secretariat (HSSC, S-100WG, NIPWG) to the Secretariat.

9.6 Task 7.1.11 Develop, implement and execute procedures for IALA to add, maintain and harmonize items to the IHO S-100 Feature Concept Dictionary (FCD)

Task group leader:

Peter Hooijmans

Comments:

During ARM21 the working group produced a revised version of G1087 to align it with the latest version of the related G1106 and the latest version of IHO S-99.

Key outcomes include:

The guideline G1087 was updated to ensure alignment with G1106 and IHO S-99 and prepared for submission to Council.

Output paper:

ARM21-11.2.6 G1087 Ed4.0 Procedures for the Management of the IALA Domain under the IHO GI Registry October 2025 v2

Action item:

The Secretariat is requested to forward G1087 Ed4.0 Procedures for the Management of the IALA Domain under the IHO GI Registry October 2025 v2 (ARM21-11.2.6) to Council for approval.

9.7 Task 7.1.12 Create S-200 Implementation Plan, following similar S-100 Implementation Strategy and/or Roadmap

Task group leader:

Peter Hooijmans

Comments:

This task was discussed and Working Group 2 proposed that this task should sit with PAP as a cross-committee task.

Key outcomes include:

The working group agreed to recommend transferring the task to PAP for broader coordination.

Output:

None

Action item:

The Secretariat is requested to transfer Task 7.1.12 – Create S-200 Implementation Plan, following similar S-100 Implementation Strategy and/or Roadmap to PAP as a cross-committee task.

9.8 Task 7.1.13 Develop guidance on the symbology and portrayal of AtoN for charting

Task group leader:

Dr. Sewoong Oh

Input papers:

None

Comments:

Possible approaches for developing guidelines on the symbol and portrayal of AtoN for purposes other than charting were discussed. It was decided to conduct brainstorming for the development of new guidelines during intersessional meetings, which are tentatively scheduled for early 2026.

Since Korea has experience in developing its own symbols for AtoN information management purposes, it was agreed that Korea would share these examples during the intersessional meeting. Representatives from the VTS committee, in addition to the ARM, may also participate in the intersessional meeting on AtoN symbols and portrayal methods.

IALA members are requested to indicate their desire to participate by sending an email to: osw@kriso.re.kr

Key outcomes include:

The task group agreed to initiate brainstorming during intersessional meetings and confirmed participation from ARM and VTS representatives. Korea will provide examples of national AtoN symbols to support guideline development.

Output:

None

Action item:

Committee participants interested in the physical intersessional meeting on Task 7.1.13 (Develop guidance on the symbology and portrayal of AtoN for charting) are invited to join. The exact meeting date will be announced in due course and published on the IALA calendar. To register interest, participants are requested to notify Dr. Sewoong Oh (osw@kriso.re.kr) by 15 November 2025.

The Intersessional Task Group Leader is requested to provide input on the intersessional work on Task 7.1.13 to ARM22.

9.9 Task 7.1.14 Development of technical service specifications for the provision of AtoN information

Task group leader:

Nikolaos Vastardis

Input papers:

ARM-8.5.1 MS AtoN

ARM-8.5.1.1 draft IALA_ms2_maritime_service

ARM-8.5.2 Amendments - MS description for the MS-2 – AtoN Service

Comments:

Task-group 7.1.14 for the "Development of technical service specifications for the provision of AtoN information", completed the first stage of its allocated work. The suggestions mentioned in 8.5.2 Amendments - MS description for MS-2-AtoN Service have been taken into consideration.

The work done during the week involved the drafting and submission for approval of a specification describing the "MS-2 - Aids to Navigation" Maritime Service, as defined in the IMO MSC.1/Circ.1610, as amended. The MS-2 specification follows the structure proposed in IALA G1155 guideline, for the description of maritime services in the context of e-Navigation. It contains information on the operational context, the main objectives of the service, as well as a detailed list of functional and non-functional requirements. The identified requirements will be used in the next stages of the task, to inform the specification of the technical services for the provision of AtoN information, through the use of the S-125 and S-201 data products.

Key outcomes:

Updates on the MS-2 specification document are naturally expected in the future, as more IALA members contribute to the list of requirements. To better manage this process, an online repository for the specification document has been prepared:

- https://github.com/gla-rad/iala_ms2_maritime_service

All interested IALA members are invited to use this resource to raise new requirements and point out issues.

For participating in task 7.1.14, on progressing the technical service specifications for the provision of AtoN information, committee participants are invited to join the intersessional group (Virtual meetings). Participants are requested to express their interest to Nikolaos Vastardis (nikolaos.vastardis@gla-rad.org).

Output paper:

ARM21-11.2.5 LN to VTS DTEC ARM and ENG on MSAtoN

ARM21-11.2.5.1 Draft_Guideline_IALA_ms2_maritime_service

Action item:

The Secretariat is requested to forward the Liaison Note on MS AtoN (ARM21-11.2.5) and the accompanying draft guideline (ARM21-11.2.5.1) to VTS, DTEC, and ENG Committees for their consideration.

Committee participants interested in the intersessional meeting on Task 7.1.14 (Development of technical service specifications for the provision of AtoN information) are invited to join. The exact meeting date will be announced in due course and published on the IALA calendar. To register interest, participants are requested to notify Nikolaos Vastardis (nikolaos.vastardis@gla-rad.org) by 15 November 2025.

The Intersessional Task Group Leader is requested to provide input on the intersessional work on Task 7.1.14 to ARM22.

9.10 Responses to Input papers not relating to any task

Input paper:

ARM21-6.2.5 LN to VTS, ARM and ENG on operational IALA MCP instance (DTEC5-15.2.3)

Comments:

The Working Group discussed the input paper and responded with a Liaison Note to DTEC.

Output document:

ARM21-11.2.1 Liaison Note from ARM to DTEC on establishing MCP instance

Action item:

The Secretariat is requested to forward the Liaison Note on establishing MCP instance (ARM21-11.2.1) to the DTEC Committee for their consideration.

Input paper:

ARM21-6.2.6 LN to ARM, ENG, VTS on Update of Emerging Technology Review (DTEC5-15.3.1)

Comments:

The Working Group noted the paper.

Output:

None

Input paper:

ARM21-6.2.7 LN to ARM, ENG, VTS on Draft Discussion Paper on IALA Vision Towards Digitalization (DTEC5-15.3.4)

Comments:

The Working Group discussed the input paper and responded with a Liaison Note to DTEC.

Output document:

ARM21-11.2.2 Liaison Note to DTEC on Discussion Paper on IALA Vision Towards Digitalization

Action item:

The Secretariat is requested to forward the Liaison Note on IALA Vision Towards Digitalization (ARM21-11.2.2) to the DTEC Committee for their consideration.

Input paper:

ARM21-6.2.8.1 Revised G1178 An Introduction to AI in IALA Domain (DTEC5-15.3.5.1)

Comments:

The Working Group discussed the input paper and responded with a Liaison Note to DTEC.

Output document:

ARM21-11.2.4 Liaison Note to DTEC on G1178

Action item:

The Secretariat is requested to forward the Liaison Note on G1178 (ARM21-11.2.4) to the DTEC Committee for their consideration.

Input paper:

ARM21-6.2.9.1 Draft Guideline on Digitalization of Waterways (DTEC5-15.3.7.1)

Comments:

The Working Group discussed the input paper and responded with a Liaison Note to DTEC. The Working Group noted that DTEC will hold an intersessional online inter-committee meeting which is scheduled for 6 November 2025 at 9:00 - 10:30 UTC to gather direct feedback from other committees to the draft Guideline. The meeting will be announced in the IALA Committee Calendar with a link to the latest version.

Output document:

ARM21-11.2.3 Liaison Note to DTEC on Digitalization of Waterways

Action item:

The Secretariat is requested to forward the Liaison Note on Digitalization of Waterways (ARM21-11.2.3) to the DTEC Committee for their consideration.

That Committee participants note and participate the intersessional online inter-committee meeting which is scheduled for 6 November 2025 at 9:00 - 10:30 UTC to gather direct feedback from other committees to the draft Guideline on Digitalization of Waterways (DTEC5-15.3.7.1). The meeting will be announced in the IALA Committee Calendar with a link to the latest version.

10. WORKING GROUP 3 – RISK MANAGEMENT (WG3)

During the 21st session of the ARM committee, the WG3 – Risk Management contained around 18 participants who remained in WG3 for the week. Given the work plan, it was decided by the Chair to complete most meetings as a rolling plenary. The group worked as a hybrid meeting with around four virtual participants attending for a large part of the week.

Several participants were new to the Working Group. Thus, the Working Group Chair started by introducing the action plan for the week.

Throughout the physical session of the week the WG focused on the following tasks:

- Review Risk Management related documentation, specifically the draft Model Course on AIS Data Management (which may, in future, have a specific task number). Update as per ongoing risk toolbox developments

- Conduct a global scan of current risk analysis tools and identify potential candidates for inclusion within the IALA Risk Management Toolbox

3.1 Task ARM-1.4.4 on Review Risk Management related documentation. Update as per ongoing risk toolbox developments

Input papers:

- ARM21-6.2.2 LN to ARM on AIS Model Course (VTS58-12.3.1)
- ARM21-6.2.4 Model Course on AIS Data Management
- ARM21-6.2.4.1 AIS Data management Model course template_v2.0
- ARM21-6.2.4.2 Overview AIS model course_v3.0
- ARM21-6.2.10 Designing an Optimized AIS Data Pipeline

Comments:

Review of proposed Model Course on AIS Data Management

WG3 reviewed the documentation provided by the IALA World-Wide Academy related to the development of the Model Course on AIS Data Management. The WG reviewed document ARM21-6.2.4.2 on Overview AIS model course V3.0 in depth and proposed several changes to the course content and associated competencies. The WG also took account of the feedback provided by the VTS Committee in their Liaison Note (ARM21-6.2.2).

As drafted, the purpose of the model course is to explore and gain a comprehensive overview of the Automatic Identification System and how its data can be obtained, managed, processed, utilized and thereafter through analysis to support to the safe, sustainable and efficient movement of vessels.

The course has two pathways:

- AIS Data Management and Processing (technical aspects), focusing on data acquisition, validation, storage, and analysis; and
- AIS Data Utilization for Maritime Navigation and Safety (operational aspects), concentrating on the practical application of AIS data in navigation, risk assessment and decision-making processes.

The proposed Model Course will require further development in the following aspects:

- Placed in the current IALA model course template,
- Identification of a clear purpose, objectives and target audience for the course along with entry and instructor requirements,
- Review for repetition between modules and competencies,
- Enhanced definition of competencies and learning outcomes, in the model course template, so as to be clear as to what is required of candidates,
- Review of the sequencing of modules and course content to provide for logical progression,
- The identification of pathways for AIS Data Management and Processing candidates and AIS Data Utilization for Maritime Navigation and Safety candidates.

Once this work is completed, the draft Model Course may be submitted to the other technical committees for review and comment, with the aim of inviting them to focus on the technical content at this stage, providing feedback to ARM22.

The WG also reviewed ARM21-6.2.10 on Designing an Optimized AIS Data Pipeline. Due to the focus given on reviewing the proposed Model Course, the document was not reviewed in depth. However, the content of the

document and work undertaken to prepare it is worthy of commendation. The WG made several proposals to enhance the Model Course with content which is aligned with paper on Designing an Optimized AIS Data Pipeline and encourages the IALA World-Wide Academy and committee participants to review the document and provide further feedback at ARM22 with respect to identifying useful content for inclusion in the Model Course to share the expertise and research in as wide a manner as possible.

Action items:

That the World-Wide Academy is requested to continue development of the Model Course on AIS Data Management and to submit the revised draft, taking into account the feedback provided by ARM WG3, to the other technical committees for a review of the technical content and to request the committees provide their feedback to ARM22.

That the Secretariat is requested to bring to the attention of Council ARM21-11.3.1 Task Proposal AIS Model Course to the Council for inclusion in the current work programme.

Committee participants are invited to join an intersessional meeting with the World-Wide Academy to continue development of the Model Course on AIS Data Management at 11:00 UTC on Thursday 15 January 2026 via a link provided on the Committee Dashboard.

The Intersessional Task Group Leader is requested to provide input on the intersessional work on the AIS Data Management Model Course to ARM21.

Committee participants are invited to provide feedback on the technical content on the draft Model Course on AIS Data Management to ARM22.

PAWSA Update

Scott Humphrey from the Marine Exchange Of San Francisco (MXSF) provided an interactive presentation describing a recent PAWSA risk assessment covering the wider San Francisco area. The presentation described the approach taken in organising and delivering the PAWSA including the use of technology to analyse traffic patterns, the complementary use of the IWRAP tool as well as the use of a 'PAWSA Explorer' tool to both share and gain information from participants.

Some 40 hazards were considered in the PAWSA and the presentation provided insights into four of these and as to the approach taken to delivering a data driven risk assessment whilst taking into account the human element/aspect and wide stakeholder group.

Whilst the PAWSA Mk IV method was not used during the risk assessment process, a briefing on it was given to gauge the views of the participants in terms of the proposed developments.

The MXSF agreed to make a copy of the PAWSA report available to committee participants.

Action item:

The USCG is requested to provide input to ARM22 on an evaluation of the PAWSA Mk IV, as well as facilitation and methodology guides.

3.3 Task ARM-1.4.7 on Conduct a global scan of current risk analysis tools and identify potential candidates for inclusion within the IALA Risk Management Toolbox

Input papers:

ARM21-9.1.1 Maritime Hydro-Meteo Fusion Index (MHFI)

Comments:

Maritime Hydro-Meteo Fusion Index (MHFI)

Mokpo National Maritime University delivered a presentation in support of input paper ARM21-9.1.1.

The paper focused on the consideration of environmental conditions that directly affect navigational safety. IALA Guideline G1018 provides various risk assessment tools such as PAWSA, IWRAP, and SIRA, which are effective for analyzing collisions, groundings, and contacts in congested waterways. However, the paper highlighted that the current toolbox may lack a framework for quantitatively assessing environmental risk factors such as wave height, swell, current, wind, and visibility. The paper suggested that many maritime accidents occur through the combination of traffic conditions and environmental factors, emphasizing the need for an environment-based assessment tool.

To address this gap, this study proposes the Maritime Hydro-Meteo Fusion Index (MHFI) as an environment-based risk assessment tool. The MHFI quantifies five key elements—wave height, swell, current, wind, and visibility, each classified into five levels of risk based on international standards and domestic indices. The final composite index is derived by applying weight to the three most influential factors to effectively reflect significant environmental risks to navigation.

The paper suggested that the MHFI offers several key advantages:

- It reflects the combined impact of multiple environmental factors rather than a single element
- Results can be visualized on S-100 based electronic charts, using color-coded levels (LV0–LV4: green–yellow–orange–red–deep red) for intuitive understanding and visualization
- It is developed based on numerical weather and ocean forecast data, making it inherently suitable for real-time application

The paper went on to explain that including the MHFI in the IALA Risk Management Toolbox could extend the current traffic-oriented framework into a more comprehensive system that also incorporates environmental factors. This will support safe navigation in coastal and port areas, provide objective criteria applicable to both small and large vessels, and strengthen IALA's overall risk management strategy.

The WG had a thorough discussion on the proposal and highlighted the following:

- The tool may need to take into account different vessel types and characteristics as well as location (such as ports/harbours vs. more open water) which may give risk to different risk thresholds.
- The addition of other inputs such as wind and wave direction as well as ice and tide could enhance the tool.
- The display of information in different manners (such as animation or directional arrows) may also aid interpretation.
- The outputs of the tool could be used in a complementary manner with other risk assessment tools to provide a comprehensive picture and aid the assessment of probability/consequence and associated mitigation measures.
- The creation of indexes based on parameters is positive however data is required of a high resolution to enable valid results which could limit the utility by some. As such, an oceanographic/meteorological model of the area would be required to a relatively high resolution.
- Similar models used such as 'impact diagrams' by the Portuguese Navy containing oceanographic and meteorological parameters with a green/yellow/red risk coding.
- Mitigations may also need to be factored in for each risk level, such as through Marine Aids to Navigation, therefore it is difficult for the outputs cannot be used in isolation.
- The current IALA Risk Management Tools are statistical in nature. The inclusion of such a capability would improve the toolbox through the provision of additional insights.
- It is foreseen that the algorithm behind the tool may be made freely available in due course.

- The parameters for data input would need consideration – the length and volume of data input to give valid results.

In summary, with further information, the concept may be suitable for inclusion in G1018 and the IALA Risk Management Toolbox and further consideration will be given as the next work programme is developed.

Action item:

That Committee participants to provide input on the use of meteorological and oceanographic factors in risk assessment to ARM22.

3.5 Other discussion of interest

Update on the AISyRISK tool

Valtteri Laine provided an update and demonstration on AISyRISK. AISyRISK is a method for automated calculation of risk in Norwegian waters and presents the risk in interactive graphs. The tool can be viewed and used at www.aisyrisk.no.

Update on IWRAP Mk2

An update was provided on the latest developments within the IWRAP MK2 too, these included:

- Introduction of other languages into the tool.
- Updates to traffic analysis to include traffic directional arrows to aid interpretation.
- Swept path analysis.
- Bow crossing range and bow crossing time.
- Proposed environmental stress model.

3.6 Review of Task Register

The Task Register was updated, noting that it is a living document on the website and will be reviewed at each meeting.

11. ANY OTHER BUSINESS

ARM21-6.2.1 and 6.2.1.1 ICAO circ364 water aerodrome

The CMT reviewed the input paper it was agreed that the document requires no further action from IALA, but ICAO should be made aware that IALA have now changed from an NGO to a IGO and change the name to International Organization for Marine Aids to Navigation. However, ICAO have a reference to the MBS (2023 version), and this reference is formally correct, since it actually was issued by the International Association of Marine Aids to Navigation and Lighthouse Authorities.

Quality Assurance Process

The committee discussed the quality assurance for document approval, involving review by the Secretariat. Participants acknowledged the importance of ensuring high-quality outputs but concerns were raised about the level and timing of this review. The Secretariat confirmed that the process is necessary standards and will continue to be refined. The current overlap with Council deadlines made the process more visible during ARM21, but normally this review occurs after committee sessions.

3rd IALA–IHO Workshop

It was confirmed that a proposal for the 3rd Joint IALA–IHO Workshop will be submitted to Council for approval. The workshop is planned to take place in Turkey from 1 – 4 September and will build on the success of previous

workshops. The focus will include technical collaboration on S-125 and S-201, portrayal proposals and identifying gaps in existing standards.

Action item:

The Secretariat is requested to forward the Workshop Proposal on the Third Joint IHO–IALA Workshop on S-100 and S-200 (ARM21-11.4.2) to Council for approval.

Future Committee Hosting – Norway

The Norwegian Coastal Administration (NCA) has indicated willingness to host a future committee meeting during the normal scheduling of committees or the transition to IALA's new Headquarters in 2027, should this be requested by the Organization. Invitations for hosting ARM during this transition period will be circulated to Member States.

Training on S-124 / S-125 Implementation

The need for training on implementing S-124 and S-125 standards was raised, with suggestions for seminars or courses, preferably low-cost to broaden awareness and support compliance with IHO, IALA and IMO obligations. The Secretariat emphasized that all events aim to be as low cost as possible, training at headquarters may be lower cost due to available facilities.

IALA initiatives are already underway with two courses are scheduled:

- February 2026 at IALA Headquarters
- May 2026 in the Americas region

Further efforts will focus on expanding training opportunities and ensuring accessibility for Member States.

12. SUMMARY OF OUTPUT AND WORKING PAPERS

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

Outputs from ARM21 were approved by the Committee using the approval procedure. The output documents and working papers are listed in Annex D.

13. REVIEW OF SESSION REPORT

The draft report of the meeting (ARM21-12.1) was approved by the Committee at the Closing Plenary.

14. DATE AND VENUE OF NEXT MEETINGS

ARM22 is planned to be held between 20 – 24 April 2026 at IALA Headquarters, Saint Germain-en-Laye, France.

Other IALA events will be publicised on the IALA website.

15. CLOSING OF THE MEETING

The Chair thanked all Committee participants again for all the engagement and hard work and looked forward to seeing everybody again at ARM22.

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

Deputy Secretary-General, Omar Eriksson, thanked all participants for their work.

Finally, the Chair asked if there were any final comments that participants wished to make; there were none.

16. LIST OF ANNEXES

- A. Agenda
A copy of the agenda is at Annex A.
- B. Participants list
A list of participants is at Annex B.
- C. Input Papers
A list of input papers is at Annex C.
- D. Output and Working papers
A list of output and working papers is at Annex D.
- E. Action Items
A list of action items is at Annex E.
- F. Working Group Participants Lists
Lists of working group participants is at Annex F



21st Meeting of the AtoN Requirements and Management Committee (ARM21)

The opening plenary of the 21st session of the ARM Committee will commence at 10:30 local time on Monday 20 October 2025 and the closing plenary will be held online at 14:00 – 16:00 UTC on Thursday 30 October 2025.

Provisional Agenda

- | | | |
|--------|--|--|
| 1. | Introduction | ARM Chair |
| 1.1. | Welcome address from the Secretary-General | |
| 1.2. | Approval of agenda | |
| 1.3. | Apologies | |
| 1.4. | Working arrangements | |
| 2. | Review of action items | |
| 3. | Reports from other bodies | Minsu Jeon |
| 3.1. | IALA | |
| 3.1.1. | Council | |
| 3.1.2. | Policy Advisory Panel (PAP) | |
| 3.2. | IMO | |
| 3.3. | IHO | |
| 3.4. | ITU | |
| 3.5. | IEC | |
| 3.6. | Digital@Sea | |
| 4. | Presentations | |
| 4.1. | The Grand Faw Port Breakwaters | General Company for Ports of Iraq (GCPI) |
| 4.2. | SMART Project | KRISO |
| 4.3. | S-100 data validation | Teledyne |
| 4.4. | OREI and safety incidents | Dutch Safety Board |
| 4.5. | AtoN for SIDS project | Royal College of Art, UK |
| 4.6. | IALA World Wide Academy update | WWA |
| 5. | Work Programme management | |
| 5.1. | Work Programme, Task Plan, Task Register | |
| 6. | Review of input papers | |
| 6.1. | Input papers | |
| 6.2. | Input papers not related to an existing task | |
| 7. | Introducing 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. Introducing 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. Introducing 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. WG1 output
 - 11.2. WG2 output
 - 11.3. WG3 output
 - 11.4. Committee wide
 - 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

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All papers are posted on the Committee section of the IALA website. Items in blue = late or updated paper.

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM21-	1.2.1	Provisional Agenda	Secretariat	All
ARM21-	2.1	Action Items from ARM20	Secretariat	All
ARM21-	1.4.1	Programme of the physical week	Secretariat	All
ARM21-	3.2.1	Report on MSC110	Secretariat	All
ARM21-	3.2.2	Report on NCSR 12 v2	Secretariat	All
ARM21-	3.4.1	IALA Report on ITU-R WP5B meeting 29 April to 8 May 2025	Secretariat	All
ARM21-	6.1.1	Input paper list	Secretariat	All
ARM21-	6.1.2	Working paper list	Secretariat	All
ARM21-	6.2.1	ICAO circular on water aerodrome	Secretariat	CMT
ARM21-	6.2.1.1	ICAO circ364 water aerodrome	ICAO	CMT
ARM21-	6.2.3	LN to ARM on AIS Model Course (VTS58-12.3.1)	VTS58	WG3 lead and WG1
ARM21-	6.2.4	Model Course on AIS Data Management	WWA	WG3 lead and WG1
ARM21-	6.2.4.1	AIS Data management Model course template_v2.0	WWA	WG3 lead and WG1
ARM21-	6.2.4.2	Overview AIS model course_v3.0	WWA	WG3 lead and WG1
ARM21-	6.2.5	LN to VTS, ARM and ENG on operational IALA MCP instance (DTEC5-15.2.3)	DTEC5	WG 2 lead and WG1
ARM21-	6.2.6	LN to ARM, ENG, VTS on Update of Emerging Technology Review (DTEC5-15.3.1)	DTEC5	All
ARM21-	6.2.7	LN to ARM, ENG, VTS on Draft Discussion Paper on IALA Vision Towards Digitalization (DTEC5-15.3.4)	DTEC5	WG2 Lead and WG 1
ARM21-	6.2.8	LN to all committees on AI Guideline G1178 (DTEC5-15.3.5)	DTEC5	WG1 lead and 2
ARM21-	6.2.8.1	Revised G1178 An introduction to AI in IALA Domain (DTEC5-15.3.5.1)	DTEC5	WG1 lead and 2
ARM21-	6.2.9	LN to all committees on Digitalisation of Waterways Guideline (DTEC5-15.3.7)	DTEC5	All - WG3 lead

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM21-	6.2.9.1	Draft Guideline on Digitalization of waterways (DTEC5-15.3.7.1)	DTEC5	All - WG3 lead
ARM21-	6.2.10	Designing an Optimized AIS Data Pipeline	Secretariat	WG3 lead and WG1
ARM21-	6.2.11	LN from ENG to ARM on AtoN for SIDS project (ENG21-9.2.1.1)	ENG21	WG1
ARM21-	7.1.1	Proposal on the update of IMO Model Course 7.03 - OOW	China MSA	WG1
ARM21-	7.3.1	Liaison note to ARM on MASS Recommendation (ENG20-9.2.2.2)	ENG20	WG1
ARM21-	7.3.2	LN to DTEC & ARM draft Rec on digitalization of Marine AtoN (VTS58-12.1.5)	VTS58	WG1
ARM21-	7.3.3	Consistent definitions of terms between the NAVGUIDE and IALA Dictionary	China MSA	WG1
ARM21-	7.3.4	LN to ARM on draft Rec on Digitalization Marine AtoN (DTEC5-15.3.6)	DTEC5	WG1
ARM21-	7.5.1	Chapter on marking test of area for Marking Different Restricted Areas	China MSA	WG1
ARM21-	7.7.1	LN to ARM on G1185 OREI (VTS58-12.1.3)	VTS58	WG1
ARM21-	7.7.1.1	Draft G1185 Enhancing the safety around OREI (VTS58-12.1.4)	VTS58	WG1
ARM21-	7.7.2	LN to ARM - VTS response on Drone Guideline (VTS58-12.2.1)	VTS58	WG1
ARM21-	8.4.1	The Alignment and Compatibility between S-201 and S-125	China MSA	WG2
ARM21-	8.4.2	Liaison note to PAP, ARM and VTS regarding MRN	DTEC5	WG2 and WG1
ARM21-	8.4.3	IHO_NIPWG_S-125_input_to_IALA_ARM21	IHO NIPWG	WG2
ARM21-	8.4.4	Report of MRN task group	IG 7.1.7	WG2
ARM21-	8.4.5	Supporting Production of Basic Data for S-201 Transition Assistance	KRISO	WG2
ARM21-	8.5.1	MS AtoN	IG 7.1.14	WG2
ARM21-	8.5.1.1	draft IALA_ms2_maritime_service	IG 7.1.14	WG2

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM21-	8.5.2	Amendments - MS description for the MS-2 – AtoN Service	China MSA	WG2
ARM21-	9.1.1	Maritime Hydro-Meteo Fusion Index (MHFI)	MMU	WG3

Working papers from ARM20

Meeting	Paper Number	Output Paper Title	Source	Action
ARM20-	11.5.1.1	WP draft guideline on buoy tender activities	WG1	ARM21
ARM20-	11.5.1.2	WP draft guideline on the use of simple IoT sensors on physical AtoN	WG1	ARM21
ARM20-	11.5.1.3	WP LN from DTEC to ARM on AtoNs support autonomous navigation (DTEC4-15.3.3)	WG1	ARM21
ARM20-	11.5.1.3.1	WP Draft Discussion paper on AtoNs designed to support autonomous navigation (DTEC4-15.3.3.1)	WG1	ARM21
ARM20-	11.5.1.4	WP Defining the Functional Capabilities of physical AtoNs for MASS	WG1	ARM21
ARM20-	11.5.1.5	WP draft Guideline on marking of restricted areas	WG1	ARM21
ARM20-	11.5.1.6	WP R0126 The use of the Automatic Identification System (AIS) in marine Aids to Navigation	WG1	ARM21
ARM20-	11.5.1.7	WP GXXXX use of the AIS in Marine Aids to Navigation Services	WG1	ARM21
ARM20-	11.5.1.8	WP draft Recommendation on Buoy Tender Activities	WG1	ARM21
ARM20-	11.5.2.1	WP review of the G1087	WG2	ARM21
ARM20-	11.5.2.2	WP MS-Description (Zip File)	WG2	ARM21

Output documents are submitted to a body other than the Committee initiating the document for further review/action or as information.

Meeting	Paper Number	Output Paper Title	Source	Action
ARM21-	11.1.1	Draft Recommendation on Digitalization of AtoN and Services for Vessels of Varying Levels of Autonomy	WG1	To Council
ARM21-	11.1.2	LN from ARM to all committees on NAVGUIDE 2027	WG1	To all committees
ARM21-	11.1.3	Draft Guideline on Drone Operation for Marine Aids to Navigation and VTS Infrastructure Management	WG1	To Council
ARM21-	11.1.4	LN from ARM to VTS on the revision of G1185 relating to OREI	WG1	To VTS
ARM21-	11.1.4.1	Reviewed Guideline G1185 Enhancing the safety around OREI V3	WG1	To VTS
ARM21-	11.1.5	Task Proposal Revision of G1054 Preparing for An IMO Audit on AtoN Service Delivery	WG1	To Secretariat
ARM21-	11.1.6	AtoN for SIDS Task Description	WG1	To Secretariat
ARM21-	11.2.1	LN from ARM to DTEC on establishing MCP instance	WG2	To DTEC
ARM21-	11.2.2	LN from ARM to DTEC on Discussion Paper On IALA Vision Towards Digitalization	WG2	To DTEC
ARM21-	11.2.3	LN from ARM to DTEC on digitalization waterways	WG2	To DTEC
ARM21-	11.2.4	LN from ARM to DTEC on G1178	WG2	To DTEC
ARM21-	11.2.5	LN from ARM to all committees on MSAtoN	WG2	To all committees
ARM21-	11.2.5.1	Draft_Guideline_IALA_ms2_maritime_service	WG2	To all committees
ARM21-	11.2.6	Reviewed G1087 Procedures for the Management of the IALA Domain under the IHO GI Registry	WG2	To Council
ARM21-	11.2.8	LN from ARM to PAP and all committees on MRN	WG2	To all committees
ARM21-	11.2.8.1	Draft G1143 Ed3.1 Unique Identifiers For Maritime Resources – post ARM21	WG2	To all committees
ARM21-	11.2.8.2	Draft G1164 Ed1.1 Management of Maritime Resource Name Organisation Identifiers – post ARM21	WG2	To all committees
ARM21-	11.2.8.3	Draft Gxxx Management of the IALA MRN namespace – post ARM21	WG2	To all committees
ARM21-	11.3.1	Task Proposal on AIS Model Course	WG3	To Secretariat
ARM21-	11.4.1	LN from ARM to PAP on Cyber Security Tasks	CMT	To PAP
ARM21-	11.4.2	Workshop proposal on the third joint IHO IALA workshop on S-100 and 200	CMT	To Council

Working papers will remain within the Committee for further review during ARM22.

Meeting	Paper Number	Output Paper Title	Source	Action
ARM21-	11.5.1.1	WP draft guideline on AtoN Buoy Tender requirements and specifications	WG1	ARM21
ARM21-	11.5.1.2	WP draft recommendation on Buoy Tender Operations	WG1	ARM21
ARM21-	11.5.1.3	WP draft guideline on Buoy Tender Activities	WG1	ARM21
ARM21-	11.5.1.4		WG1	ARM21
ARM21-	11.5.1.5	WP draft proposal on the Consistency of Definitions between the NAVGUIDE and the IALA Dictionary	WG1	ARM21
ARM21-	11.5.1.6	WP draft Recommendation on the Use of the Automatic Identification System (AIS) in Marine Aids to Navigation	WG1	ARM21
ARM21-	11.5.1.7	WP draft guideline on the marking of different restricted areas	WG1	ARM21
ARM21-	11.5.1.8	WP draft Guideline on the Use of the AIS in Marine Aids to Navigation Services	WG1	ARM21

Action Items for the IALA Secretariat

1. The Secretariat is requested to forward the Liaison Note on consolidating cross-committee tasks on cyber security (ARM21-11.4.1) to PAP for their consideration. 11
2. The Secretariat is requested to forward the WP draft guideline on AtoN Buoy Tender requirements and specifications (ARM21-11.5.1.1) as a working paper to ARM22 for further development. 13
3. The Secretariat is requested to forward the WP draft recommendation on Buoy Tender Operations (ARM21-11.5.1.2) and the WP draft guideline on Buoy Tender Activities (ARM21-11.5.1.3) as working papers to ARM22 for further development. 13
4. The Secretariat is requested to forward the WP draft guideline on the Use of Simple IoT Sensors on Physical AtoN (ARM21-11.5.1.4) as a working paper to ARM22 for further development. 14
5. The Secretariat is requested to forward the draft recommendation on Digitalization of AtoN and Services for Vessels of Varying Levels of Autonomy (ARM21-11.1.1) to Council for approval. 14
6. The Secretariat is requested to forward the Liaison Note from ARM to all Committees on NAVGUIDE 2027 (ARM21-11.1.2) to other IALA Committees for their consideration. 15
7. The Secretariat is requested to forward the Liaison Note on the revision of G1185 relating to OREI (ARM21-11.1.4) and the reviewed Guideline G1185 Enhancing the Safety around OREI V3 (ARM21-11.1.4.1) to VTS59 for their consideration. 16
8. The Secretariat is requested to forward the WP draft guideline on the marking of different restricted areas (ARM21-11.5.1.7) as a working paper to ARM22 for further development 17
9. The Secretariat is requested to forward the draft guideline on Drone Operation for Marine Aids to Navigation and VTS Infrastructure Management (ARM21-11.1.3) to Council for approval. 18
10. The Secretariat is requested to forward the WP draft Recommendation on the Use of the Automatic Identification System (AIS) in Marine Aids to Navigation (ARM21-11.5.1.6) and the WP draft Guideline on the Use of the AIS in Marine Aids to Navigation Services (ARM21-11.5.1.8) as working papers and input documents to the full Committee at ARM22. 19
11. The Secretariat is requested to bring to the attention of Council the Task Proposal AtoN for SIDS Task Description (ARM21-11.1.6) for inclusion in the current work programme. 19
12. The Secretariat is requested to bring to the attention of Council the Task Proposal Revision of G1054 Preparing for an IMO Audit on AtoN Service Delivery (ARM21-11.1.5) for inclusion in the current work programme. 20
13. The Secretariat is requested to consider a GitHub repository to track issues and changes for S-201 21
14. The Secretariat is requested to forward the Liaison Note on MRN (ARM21-11.2.8) and the accompanying draft guidelines (ARM21-11.2.8.1, ARM21-11.2.8.2, ARM21-11.2.8.3) to PAP and other committees for their consideration. 23
15. The Secretariat is requested to consider transferring Task 7.1.9 – Coordinate Committee support and submissions for IALA representation at IHO working groups in cooperation with the Secretariat (HSSC, S-100WG, NIPWG) to the Secretariat. 23

16. The Secretariat is requested to transfer Task 7.1.12 – Create S-200 Implementation Plan, following similar S-100 Implementation Strategy and/or Roadmap to PAP as a cross-committee task. 24
17. The Secretariat is requested to forward the Liaison Note on MS AtoN (ARM21-11.2.5) and the accompanying draft guideline (ARM21-11.2.5.1) to VTS, DTEC, and ENG Committees for their consideration. 26
18. The Secretariat is requested to forward the Liaison Note on establishing MCP instance (ARM21-11.2.1) to the DTEC Committee for their consideration. 26
19. The Secretariat is requested to forward the Liaison Note on IALA Vision Towards Digitalization (ARM21-11.2.2) to the DTEC Committee for their consideration. 26
20. The Secretariat is requested to forward the Liaison Note on G1178 (ARM21-11.2.4) to the DTEC Committee for their consideration. 27
21. The Secretariat is requested to forward the Liaison Note on Digitalization of Waterways (ARM21-11.2.3) to the DTEC Committee for their consideration. 27
22. That the World-Wide Academy is requested to continue development of the Model Course on AIS Data Management and to submit the revised draft, taking into account the feedback provided by ARM WG3, to the other technical committees for a review of the technical content and to request the committees provide their feedback to ARM22. 29
23. That the Secretariat is requested to bring to the attention of Council ARM21-11.3.1 Task Proposal AIS Model Course to the Council for inclusion in the current work programme. 29
24. ARM21-6.2.1 and 6.2.1.1 ICAO circ364 water aerodrome The CMT reviewed the input paper it was agreed that the document requires no further action from IALA, but ICAO should be made aware that IALA have now changed from an NGO to a IGO and change the name to International Organization for Marine Aids to Navigation. However, ICAO have a reference to the MBS (2023 version), and this reference is formally correct, since it actually was issued by the International Association of Marine Aids to Navigation and Lighthouse Authorities. 31
25. The Secretariat is requested to forward the Workshop Proposal on the Third Joint IHO–IALA Workshop on S-100 and S-200 (ARM21-11.4.2) to Council for approval. 32

Action Items for Participants

26. That ARM Committee participants note the EU proposal to IMO HTW in February 2026 regarding the definition change of AtoN. 12
27. Committee participants interested in the physical intersessional meeting on Task 7.1.3 (S-125/201) are invited to join. The exact meeting date will be announced in due course and published on the IALA calendar. To register interest, participants are requested to notify Dr. Sewoong Oh (osw@kriso.re.kr) by 15 November 2025. 21
28. The Intersessional Task Group Leader is requested to provide input on the intersessional work on Task 7.1.3 to ARM22. 21
29. Committee participants interested in the physical intersessional meeting on Task 7.1.13 (Develop guidance on the symbology and portrayal of AtoN for charting) are invited to join. The exact meeting date will be announced in due course and published on the IALA calendar. To register

- interest, participants are requested to notify Dr. Sewoong Oh (osw@kriso.re.kr) by 15 November 2025. 25
30. The Intersessional Task Group Leader is requested to provide input on the intersessional work on Task 7.1.13 to ARM22. 25
31. Committee participants interested in the intersessional meeting on Task 7.1.14 (Development of technical service specifications for the provision of AtoN information) are invited to join. The exact meeting date will be announced in due course and published on the IALA calendar. To register interest, participants are requested to notify Nikolaos Vastardis (nikolaos.vastardis@glarad.org) by 15 November 2025. 26
32. The Intersessional Task Group Leader is requested to provide input on the intersessional work on Task 7.1.14 to ARM22. 26
33. That Committee participants note and participate the intersessional online inter-committee meeting which is scheduled for 6 November 2025 at 9:00 - 10:30 UTC to gather direct feedback from other committees to the draft Guideline on Digitalization of Waterways (DTEC5-15.3.7.1). The meeting will be announced in the IALA Committee Calendar with a link to the latest version. 27
34. Committee participants are invited to join an intersessional meeting with the World-Wide Academy to continue development of the Model Course on AIS Data Management at 11:00 UTC on Thursday 15 January 2026 via a link provided on the Committee Dashboard. 29
35. The Intersessional Task Group Leader is requested to provide input on the intersessional work on the AIS Data Management Model Course to ARM21. Committee participants are invited to provide feedback on the technical content on the draft Model Course on AIS Data Management to ARM22. 29
36. The USCG is requested to provide input to ARM22 on an evaluation of the PAWSA Mk IV, as well as facilitation and methodology guides. 29
37. That Committee participants to provide input on the use of meteorological and oceanographic factors in risk assessment to ARM22. 31

First Name	Last Name	Organization	Working Group	Task worked on
Kseniia	Ipatova	Department of navigation and oceanography	Working Group 1	2.1.1
Andrei	Leonov	Department of Navigation and Oceanography, Russia	Working Group 1	2.1.1
Maarten	Berrevoets	Ministry of Infrastructure and Watermanagement	Working Group 1	1.1.2, 1.2.8, 1.4.1
Øyvind	Schrøder	Norwegian Coastal Administration	Working Group 1	1.2.10
Trevor	Harris	Trinity House UK	Working Group 1	1.1.1 1.4.1 1.5.1 2.1.1
Peter	Douglas	Northern Lighthouse Board	Working Group 1	2.2.2
Monica	Sundklev	Swedish Transport Agency	Working Group 1	1.4.1
Johan	Westerlund	Swedish Maritime Administration	Working Group 1	All tasks to some extent, acting Chair of WG1
Frederick	Varnie	Liberia Maritime Authority	Working Group 1; Working Group 2	No
Oleg	Gaidai	Department of Navigation and Oceanography	Working Group 1; Working Group 3	
Juan	Frias	Servicio de Hidrografia Naval Argentina	Working Group 1; Working Group 2; Working Group 3	
Elaine	Fitzgerald	Commissioners of Irish Lights	Working Group 2	
Anne	Duret	DGAMPA	Working Group 2	
Gaelle	Nassif	Cerema	Working Group 2	
Peter	Hooijmans	Rijkswaterstaat	Working Group 2	
Diego Martins	Martins	Brazilian Navy	Working Group 2	
Nikolaos	Vastardis	United Kingdom	Working Group 2	7.1.14
Sewoong	OH	KRISO	Working Group 2	7.1.4
Taehee	kim	Bluemap	Working Group 2	
Yong	Baek	International Hydrographic Organization (IHO)	Working Group 2	

First Name	Last Name	Organization	Working Group	Task worked on
Tuomas	Martikainen	Finnish Transport Infrastructure Agency	Working Group 2	7.1.6, 7.1.10, 7.1.12, 7.1.14
Ulla	Bjørndal Møller	Danish Emergency Management Agency	Working Group 2	7.1.12, 7.1.2, 7.1.7, maybe 7.1.9?
Martijn	Ebben	Port of Rotterdam Authority	Working Group 2	All/any (plenary work)
Yingdian	ZHUANG	CHINA MSA	Working Group 2	7.1.4
Stefan	Engström	Traficom /Finland	Working Group 2	
Kevin	Gregory	United Kingdom	Working Group 3	
Valtteri	Laine	Traficom	Working Group 3	
Pedro	Vacas de Carvalho	Portuguese Lighthouse Directorate	Working Group 3	
Jose	Mota	Portuguese Lighthouse Directorate	Working Group 3	
Jorge	Estevão	Portuguese Lighthouse Directorate	Working Group 3	
Do Hyun	Oh	Mokpo National Maritime University	Working Group 3	
Do Hyun	Oh	Mokpo National Maritime University	Working Group 3	1.4.4, 1.4.5, 1.4.7, 1.4.11
Ernst	Bolt	Min. Of infrastructure and water management of the netherlands	Working Group 3	
Per Chistian	Engberg	Engberg Solutions ApS	Working Group 3	
Pärtel	Keskküla	Estonian Transport Administration	Working Group 3	
Raul	Escalante	Hidrovia SA	Working Group 3	
Raul	Escalante	Hidrovia SA	Working Group 3	9.1.1
Gregory	Pretorius	Ministry of Infrastructure and Water Management	Working Group 3	
Jaime	Alvarez	IALA WWA	Working Group 3	1.4.4
Mayumi	Arita	Japan Coast Guard	Working Group 3	
Namkyun	Im	mokpo maritime university	Working Group 3;Working Group 1	1.4.4, 1.4.11
Jacqueline	Van den Bosch	Rijkswaterstaat	Working Group 3;Working Group 1	-



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