



# IALA ARM COMMITTEE

## REPORT OF THE 20<sup>th</sup> SESSION OF THE IALA ATON REQUIREMENTS AND MANAGEMENT (ARM) COMMITTEE

**31 March – 19 May 2025**

**Thomas Southall**

**19 May 2025**

**Committee Secretary**

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International Organization for Marine Aids to Navigation

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## Report of the 20<sup>th</sup> session of the IALA

### IALA AtoN Requirements and Management (ARM) Committee Executive Summary

The 20<sup>th</sup> session of the IALA AtoN Requirements and Management (ARM) Committee was held from 31 March – 19 May 2025, including the physical week at IALA HQ between 31 March – 4 April, with Guttorm Tomren as Chair and Natasha McMahon as Vice-Chair. The Secretary for the meeting was Thomas Southall. This session had a longer duration in order to provide for an extended approval period for S-201 edition 2.0.0.

107 participants from 29 countries participated in ARM20. 24 participants attended for the first time.

The ARM Committee considered 66 input papers and produced 19 output papers from three Working Groups.

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

Key outputs completed included:

- ARM20-11.2.8 Revised Guideline G1052 Quality Management Systems for AtoN Service Delivery
- ARM20-11.3.2 Revised Guideline G1106 on Producing an IALA S-200 Series Product Specification
- ARM20-11.3.3 S-201 edition 2.0.0 (zip file)
- ARM20-11.3.4 New concept and proposed definitions for S-201

The following liaison notes were approved:

- ARM20-11.1.1 LN to DTEC on Discussion on the task on Digitalization Discussion Paper
- ARM20-11.2.1 LN to all committees on Development of the AIS Model Course
  - ARM20-11.2.1.1 Overview AIS model course
- ARM20-11.2.2 LN to the Secretariat on the NAVGUIDE review
- ARM20-11.2.3 LN to all committees on the draft recommendation related to digitalization of AtoN
  - ARM20-11.2.3.1 Draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy
- ARM20-11.2.5 LN to PAP on the draft recommendation related to digitalization of AtoN
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- ARM20-11.2.6 LN from ARM to ENG on R0101 and R0146
  - ARM20-11.2.6.1 Revised Recommendation R0146 Strategy for Maintaining Racon Service Capability
- ARM20-11.2.7 LN to VTS on Draft Guideline Drone Operation for AtoN Management
  - ARM20-11.2.7.1 Draft Guideline Drone Operation for AtoN Management
- ARM20-11.2.9 LN from ARM to VTS on the revision of Guideline G1185 Enhancing the safety and efficiency of navigation around OREI
  - ARM20-11.2.9.1 Revised Guideline G1185 Enhancing the safety and efficiency of navigation around OREI
- ARM20-11.3.1 LN to IHO NIPWG on S-125 v1.0
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## **Report of the 20<sup>th</sup> session of the IALA AtoN Requirements and Management (ARM) Committee**

### **1. INTRODUCTION**

The 20<sup>th</sup> session of the ARM Committee was held from 31 March – 19 May 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 31 March with the opening plenary and continued until Friday 4 April, followed by an approval period and the virtual closing plenary on 19 May. This session had a longer duration in order to provide for an extended approval period for S-201 edition 2.0.0. The Chair welcomed everybody, both old as well as new participants to the meeting.

107 participants from 29 countries participated in ARM20. 24 participants attended for the first time.

#### **1.1 Welcome from the Secretary-General**

Secretary-General Francis Zachariae welcomed all participants to Saint Germain-en-Laye, including those joining online. He congratulated Guttorm Tomren and Natasha McMahon on their appointment and reappointment as Chair and Vice-Chair and gave thanks to Dave for his fantastic work as Chair and Vice-Chair in previous years.

He reported on the General Assembly held in Singapore last month with over 350 participants, key outcomes included approval of governance documents, election of the President, Vice-President, Secretary-General and Council and a welcome to Albania, Belgium, Croatia and Romania as new Council members. The IGO is now fully operational.

An update on the new Headquarters project was given that was progressing well support from the French Government. The timeline involves a contract signing in late spring, construction starting after summer and completion by September/October 2026. Meetings will be hosted elsewhere between June and September/October 2026 with planning is underway for the next General Assembly in Mumbai in 2027.

The Secretary-General noted the importance of addressing the digital age which presents IALA with a new challenge and are clear priorities for the Policy Advisory Group, recognizing the complexity of cross-committee work. He expressed great interest in the input papers from many members including China, Republic of Korea, Canada, the United States Coastguard, GRAD, Argentina and wished the committee success in its discussions.

#### **1.2 Approval of the agenda**

The agenda was reviewed and approved (ARM20-1.2.1).

#### **1.3 Apologies**

Jacob Bang, Laura Sneop, Amilynn Adams and Nigel Hare submitted their apologies to the Secretariat. A list of participants who attended ARM20 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 ARM19

The Committee Secretary confirmed that all Secretariat actions from ARM19 were completed (input paper ARM20-2.1.1).

### 3. REPORTS FROM OTHER BODIES

#### 3.1 IALA

##### 3.1.1 General Assembly

Minsu Jeon, Technical Director, reported on the IALA General Assembly held last month in Singapore. Key outcomes included the adoption of the declaration on IALA, Brazil's election as President, India's election as Vice President and Francis Zachariae's election as Secretary-General. The assembly approved governance documents such as general and financial regulations. It retained the existing committee structure with ARM, ENG, VTS and DTEC as the four committees and confirmed the policy and legal advisory panels as subsidiary bodies. The General Assembly also decided that all standards, recommendations and other documents from the former IALA will be adopted.

##### 3.1.2 IALA Council

Minsu Jeon reported on two Council meetings since the last ARM Committee meeting. The 3rd Transition Council meeting took place from 10 - 13 December last year at the IALA HQ and was the final Transition Council meeting before IALA became an IGO. Discussions covered governance, financial stability, technical progress and strategic initiatives. The Council approved most technical documents except for the draft guideline on VTS interactions with conventional, automated and autonomous ships which was sent back to the VTS Committee for further review. The Council approved a workshop proposal on maritime communication technologies in Germany and selected Lingao Lighthouse, China, as the 2025 Heritage Lighthouse of the Year.

During the first session of the new Council in Singapore, the focus was on strategy and operational direction. The Council approved the 2025 – 2027 work programme, committee working arrangements and the appointment of committee chairs and vice-chairs.

##### 3.1.3 IALA Policy Advisory Panel

Minsu Jeon reported on the 56th session of the PAP held from 4 - 6 February this year. The session focused on strengthening committee cooperation, advancing digitalization and addressing key policies and technical developments. Discussions included IALA's growing involvement in the Green Corridor initiative for sustainable maritime navigation, ongoing work on the Maritime Connectivity Platform and S-100 framework and advancements in digitalization and interoperability.

Technical discussions covered AIS documentation, digitalization of waterways and improvements to S-200 products. Upcoming events were noted including the Sustainability Workshop in Dublin, Ireland, in October 2025, the IMT Workshop in Germany in September 2025 and a workshop on future radio navigation and communication systems to be held in 2026. The PAP also reviewed committee processes, enhancements to the online task tool and coordination on policy matters.

Additionally, the PAP decided on the direction for developing MASS recommendations and guidelines. Work on the holistic MASS guideline is paused until the recommendation is fully developed. Submitted MASS documents are to be uploaded to a specific file share folder for future use.

#### 3.2 IMO

Minsu Jeon summarized the outcomes of the 109th session of the IMO MSC, held from 2 - 6 December 2024 at the IMO Headquarters in London. Discussions focused on autonomous ship regulations, digitalization in navigation and maritime safety improvements.

Key outcomes included updates to the roadmap for developing the MASS code, aiming for completion by 2026 with potential SOLAS amendments. The committee supported proposals for implementing S-100 data distribution



and connectivity by January 2026, emphasising secure connections and operational guidance. The committee approved revised performance standards for ECDIS and planned updates to training and operational guidance.

The committee approved the draft SN circular on IALA Maritime Buoyage System, revising and revoking SN.1/Circ.297 and the draft SN circular on IALA Risk Management Toolbox for aids to navigation and vessel traffic services, revising and revoking SN.1/Circ.296.

Cybersecurity concerns were addressed through enhanced standards for AIS and radiocommunications. A transition scheme for digital VHF communications was approved, targeting implementation by 2027, with intersessional work beginning in 2025.

Reports from sub-committees were reviewed, including revised descriptions of Maritime Services, updates to the ECDIS performance standards and a new version of the IMO/IHO/WMO Manual on Maritime Safety Information, effective January 2025.

### 3.3 IHO

Minsu Jeon provided an update on IHO matters. IALA continues to cooperate with IHO on the portrayal of navigation features, terms and definitions, the IHO registry and S-124, S-125, S-201 and S-200 testbeds and trials. IALA participates in the Hydrographic Services and Standards Committee, the IHO Data Quality Working Group and the IHO S-100 Working Group.

IALA contributes to the development of S-200 product specifications in collaboration with international organizations and IHO committees. It is also involved in creating testing and validation tools and providing training. In March 2025, IALA conducted S-200 training and a testbed in Korea, led by the ARM Committee, as part of its ongoing work on IHO matters.

### 3.4 ITU

Minsu Jeon provided a report on ITU matters. He discussed the 20th meeting of the Joint IMO/ITU Expert Group on Maritime Radiocommunication Matters, which took place at IMO Headquarters in London from 7 - 11 October 2024. IALA participated as an observer with consultative status, represented by Stefan Bober.

A key topic at the meeting was the preliminary IMO position for WRC-27, where the group worked on a draft position regarding the use of the 1 645.5–1 646.5 MHz frequency band for future maritime communications. This draft position will be finalized in 2026 in preparation for WRC-27.

Another significant discussion focused on the revision of ITU-R M.1371-5, where the group proposed updates to the ship type table to accommodate up to 99 ship type identifiers. This revision also included the inclusion of a VDES capability indicator, which would improve AIS functionality and the compatibility of navigation systems.

There were also concerns raised by the United States regarding the blockage of AIS signals caused by VHF radiotelephony. The group acknowledged the issue but recommended further studies to assess its potential impact on navigation safety. They prepared a draft liaison statement to ITU-R WP 5B to address this matter.

The group reviewed the draft NAVDAT performance standards and discussed a roadmap for aligning the system with WRC-23 decisions and IHO S-124 specifications for navigational warnings.

IALA also presented its work on the IMT-2030 standardisation, showcasing use cases for AtoN to support the development of future maritime communication systems.

In addition, the group made revisions to MSC.1/Circ.1657 to align operational procedures with ITU-R M.541-11 recommendations and discussed the assignment of manufacturer IDs for devices that use freeform number identities.

### 3.5 IEC

Minsu Jeon provided a report on IEC matters. He explained that IALA received liaison documents from IEC last year and has since responded. One of the key documents, identified as ARM20-3.5.1, outlined technical aspects, compliance requirements and coordination timelines related to route plan exchange. The revised IMO performance standards now require bidirectional route plan exchange between ship and shore-based service providers. There are two methods for this data exchange: the data set method and the exchange set method.

The exchange set method may be preferred due to cybersecurity requirements, as shipboard systems must authenticate any route plan received from the shore. It was noted that the timeline for implementation and next steps was outlined in the document.

IALA was requested to confirm whether the shore side specification would adopt the data set or exchange set method for route plan delivery. Additionally, IALA was asked to provide a timeline for when preliminary details on this decision would be available and to indicate the expected publication date of the final specification.

### **3.6 Digital@Sea**

Minsu Jeon reported that the Digital@Sea had two major conferences held in North America and another in South Korea.

The upcoming Digital Asia-Pacific Conference will take place on 21–22 October 2025 and will focus on establishing a communication framework, including IP-based S-100 access, the Maritime Connectivity Platform, and SECOM.

## **4. PRESENTATIONS**

All presentations given at ARM20 can be found on the fileshare (login necessary). The following presentations were given:

- |  |                                  |
|--|----------------------------------|
| • IALA World Wide Academy update         | Vincent Denamur, Dean of the WWA |
| • IALA S-100/200 Training                | Dave Lewald                      |
| • AtoN concepts, features and attributes | Minsu Jeon                       |

## **5. WORK PROGRAMME MANAGEMENT**

### **5.1 Work Programme 2025 – 2027, 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.

## **6. REVIEW OF INPUT PAPERS**

The input papers for ARM20 consisted of new input papers as well as working papers from the previous session. The input paper list (ARM20-6.1.1) did not include the working papers from ARM19. The working paper list (ARM20-6.1.2) 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
WG1 – Navigational Requirements	Dave Lewald (Chair), Johan Westerlund (Vice-Chair)
WG2 – Information Services and Portrayal	Peter Hooijmans (Chair), Alison Contreras (Vice-Chair)
WG3 – Risk Management	John Stone (Chair), Kevin Gregory (Vice-Chair)

## 8. WORKING GROUP 1 – NAVIGATIONAL REQUIREMENTS (WG1)

ARM20 has been a productive session of the work period with much progress on the various tasks of the Working Group. The group considered several input papers and drafted liaison notes as response. The Chair and Vice-Chair would like to extend our gratitude to the working group members, who have all put in a great effort this meeting and achieved progress on all the tasks assigned.

### 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

Although Task Group did not convene during the ARM Committee meeting, task leader Jiangna Liu and representatives from Finland discussed Finland's proposal for amendments to the STCW Convention.

Finland has drafted a proposal for the European Union, under whose jurisdiction this matter falls, to amend competency table A-II/1 of the Minimum Standard of Competence for Officers in Charge of a Navigational Watch on Ships of 500 Gross Tonnage or More within STCW. The proposed amendments aim to better align the use of AtoN for vessel positioning with current technological advancements, address future requirements for electronic Aids to Navigation, and ensure consistency with IALA's MBS definitions on Aids to Navigation.

For more detailed information please contact [henrika.bjorkell-virta@traficom.fi](mailto:henrika.bjorkell-virta@traficom.fi).

The Task Group leader invites ARM members to participate on this task. Please kindly indicate your desire to participate by sending an email to: [Robert.D.Lewald@uscg.mil](mailto:Robert.D.Lewald@uscg.mil)

### 8.2 Task 1.2.2 Draft new Guideline on Buoy Tender Activities

**Task group leader:** Dave Merrill

**Input papers:**

7.3.2	Liaison Note ENG to ARM_Buoy Tender Activities (ENG19-9.2.1.1)
7.3.2.1	Draft guideline on Buoy Tender (ENG19-9.2.1.1.1)

**Comments:**

The Task Group completed a draft recommendation to go with the Guideline. The guideline itself is completed, all that remains is to tidy up formatting and include pictures and illustrations to make the guideline more accessible and provide clear examples of operations detailed in the text.

The group thanks the members of the task groups, both here at IALA Headquarters and those that joined via Teams. Their wealth of experience and willingness to participate in the process was greatly appreciated and are very pleased with the progress made at ARM20.

**Key outcomes include:**

The group advanced ARM20-11.2.4 Draft Recommendation on Buoy Tender Activities to near completion , which will be completed at ARM21 along with the Guideline.

**Output:**

ARM20-11.5.1.1 WP Draft Guideline on Buoy Tender Activities

ARM20-11.5.1.7 WP Draft Recommendation on Buoy Tender Activities

*Action items:*

*The Secretariat is requested to forward the WP draft guideline on buoy tender activities (ARM20-11.5.1.1) and WP Draft Recommendation on Buoy Tender Activities (ARM20-11.5.1.7) as a working paper to ARM21 for further development.*

*That Committee participants provide example pictures from buoy tending activities, as illustrations for the draft guideline on buoy tender activities.*

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

**Task leader:** Naehyuk Yoo

**Input papers:**

7.3.3	Liaison note to ARM on Development of IoT Guidance (ENG19-9.2.1.5)
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**Comments:**

During ARM20, the task group held several meetings to discuss the scope and structure of the new guideline on IoT sensors for physical AtoN. A working draft was developed, outlining essential functions, technical requirements, and key considerations such as data transmission, power efficiency, and sensor integration. The group agreed to continue this work toward ARM21, with intersessional drafting and review planned to further develop and refine the document.

**Key outcomes include:**

Development of a working draft.

Intersessional work to be undertaken.

**Output:**

ARM20-11.5.1.2 WP draft guideline on the use of simple IoT sensors on physical AtoN

*Action items:*

*The Secretariat is requested to forward the WP draft guideline on the use of simple IoT sensors on physical AtoN (ARM20-11.5.1.2) to ARM21 for further development.*

*Committee participants are invited to join the intersessional group (Virtual meetings) working on Task 1.2.5 Guidance on the use of simple IoT sensors on physical aids. Participants are requested to express their interest to*

*Naehyuk Yoo (nhyoo@katon.or.kr) by 1 June 2025, noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard.*

*The Intersessional Group Leader to provide input on the intersessional work on Task 1.2.5 to ARM21.*

#### **8.4 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:** Martin Berrevoets

##### **Input Papers:**

6.2.11	LN from DTEC to ARM on AtoNs support autonomous navigation (DTEC4-15.3.3)
6.2.11.1	Draft Discussion paper on AtoNs designed to support autonomous navigation (DTEC4-15.3.3.1)
7.3.5	Proposal for defining the functional capabilities of physical AtoN for MASS (MPA Singapore)

##### **Comments:**

The ARM Committee was invited to continue work on draft a recommendation related to digitization of Marine AtoN (PAP56-6.1.1 and ARM20-7.3.4).

ARM reviewed the draft recommendation Digitization of Marine AtoN and came to the draft RXXX Digitalization of Marine AtoN and Services for Vessels of Varying Levels of Autonomy. This draft is returned for review to PAP and all committees.

ARM will forward all other input papers to ARM21 and has suspended work on the ARM Draft Guideline on MASS until further guidance is received from PAP.

##### **Key outcomes:**

Draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy to all committees and PAP.

##### **Output:**

ARM20-11.2.3 LN to all committees on the draft recommendation related to digitalization of AtoN

ARM20-11.2.3.1 Draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy

ARM20-11.2.5 LN to PAP on the draft recommendation related to digitalization of AtoN

ARM20-11.2.5.1 Draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy

ARM20-11.5.1.3 WP LN from DTEC to ARM on AtoNs support autonomous navigation (DTEC4-15.3.3 and ARM20-6.2.11)

ARM20-11.5.1.3.1 WP Draft Discussion paper on AtoNs designed to support autonomous navigation (DTEC4-15.3.3.1 and ARM20-6.2.11.1)

ARM20-11.5.1.4 WP Defining the Functional Capabilities of physical AtoNs for MASS (ARM20-7.3.5)

##### **Action items:**

*The Secretariat is requested to forward the Liaison Note on the draft recommendation related to the digitalization of AtoN (ARM20-11.2.3) and the draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy (ARM20-11.2.3.1) to all committees for their consideration.*

*The Secretariat is requested to forward the Liaison Note on the draft recommendation related to the digitalization of AtoN (ARM20-11.2.5) and the draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy (ARM20-11.2.5.1) to the PAP for their consideration.*

*The Secretariat is requested to forward the WP Liaison Note from DTEC to ARM on AtoNs supporting autonomous navigation (ARM20-11.5.1.3), the WP Draft Discussion Paper on AtoNs designed to support autonomous navigation (ARM20-11.5.1.3.1), and the WP on Defining the Functional Capabilities of Physical AtoNs for MASS (ARM20-11.5.1.4) as working papers to ARM21 for further development.*

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

**Task group leader:** Dave Merrill

### Input Papers:

7.3.1	Proposal on the Consistency of definitions of terms between the NAVGUIDE and IALA Dictionary
7.3.1.1	ANNEX A-Amended Definitions for NAVGUIDE 2023
7.3.1.2	ANNEX B-Amended Definitions for IALA Dictionary

### Comments:

The review and update of the NAVGUIDE continued at ARM20 with sections under the Committee's responsibility completed. A liaison note to the Secretariat was drafted to request VTS, DTEC and ENG to complete revision of their respective sections ahead of ARM22.

### Key outcomes:

A liaison note to the Secretariat was drafted to request VTS, DTEC and ENG to complete revision of their respective sections ahead of ARM22.

### Output:

ARM20-11.2.2 LN to the Secretariat on the NAVGUIDE review

### Action item:

*The Secretariat is requested to communicate the contents of the Liaison Note on the NAVGUIDE review (ARM20-11.2.2) to all committees for their consideration.*

## 8.6 Task 1.2.10 – Update IALA Dictionary

**Task group leader:** Dave Merrill

### Input papers:

Nil

### Comments:

Work continued on revising the Dictionary and a number of edits were submitted. The difference between IALA and IHO definitions in some cases is still an issue, and ARM suggests that harmonizing definitions is made a work item for the third joint IALA/IHO workshop.

### Key outcomes:

A proposal for a work item for future IALA / IHO workshops on harmonizing definitions.

### Output:

Nil

### Action item:

*That the ARM CMT take into consideration the proposed work item to harmonize definitions for a future IALA / IHO workshop.*



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

**Task Leader:** Trevor Harris

**Comments:**

Refer to ARM WG3 Task 1.4.11 Develop measures for and a method to monitor waterway risk. Includes effectiveness of risk mitigations, qualitative validation with stakeholders, and re-evaluation of risks.

## Task 1.5.2 – Revision of Guideline 1052 on Quality Management in AtoN Service Delivery

**Task leader:** Johan Westerlund

**Input paper:**

7.2.1	Incorporating the QMS Process for AtoN Management into the G1052 Draft Guidelines.
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**Comments:**

The task group received input paper ARM20-7.2.1 Incorporating the QMS Process for AtoN Management into the G1052 Draft Guideline from China MSA and was able to incorporate the provided input to complete work on the Guideline. The task group wishes to express its sincere gratitude to China MSA for the provided input that allowed us to substantially improve the quality of the Guideline. The completed draft guideline will be sent to Council for approval.

**Key outcomes:**

Completed revised Guideline G1052.

**Output:**

ARM20-11.2.8 Revised Guideline G1052 Quality Management Systems for AtoN Service Delivery

**Action item:**

*The Secretariat is requested to forward the Revised Guideline G1052 Quality Management Systems for AtoN Service Delivery (ARM20-11.2.8) to Council for approval.*

## 8.8 Task 2.1.1 - Develop guidance on marking of restricted areas

**Task leader:** Mats Hörström

**Input papers:**

Nil

**Comments:**

The task group assembled to commence work on the task and started out with the task lead showing a presentation outlining the task for the working group.

The group members agreed it would be appropriate to create the new guideline as a complement to IALA Recommendation R1001 IALA MBS, rather than creating a new recommendation along with the guideline.

The work started with a “brainstorming” session to identify and further clarify the scope of the task in dialogue with the vice-chair of WG1. The group identified three main areas of guidance requiring different perspectives, so it was decided to form three subgroups to cover each subject area. The subgroup and then began developing a draft guideline for marking restricted areas.

The task group intends to hold an intersessional meeting before ARM21.

**Key outcomes:**

Intersessional work to be conducted.

**Output:**

ARM20-11.5.1.5 WP draft Guideline on marking of restricted areas

*Action items:*

*Committee participants are invited to join the intersessional group (Virtual meetings) working on Task 2.1.1 – Develop guidance on the marking of test areas for autonomous vessels and vehicles, ice roads, and competition and event areas. Participants are requested to express their interest to Mats Hörström (mats.horstrom@transportstyrelsen.se) by 1 June 2025, noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard.*

*The Intersessional Group Leader to provide input on the intersessional work on Task 2.1.1 to ARM21.*

*The Secretariat is requested to forward the WP Draft Guideline on Marking of Restricted Areas (ARM20-11.5.1.5) as a working paper to ARM21 for further development.*

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

**Task leader:** Naehyuk Yoo

**Input Papers:**

7.7.3	Proposal on the draft guideline on Use of Drones for AtoN Management
7.7.3.1	ANNEX- WP Draft Revised Guideline on Use of Drones for AtoN Management
7.7.4	Liaison note from ENG to ARM on the Use of drones for AtoN Management (ENG19-9.2.1.3)
7.7.4.1	Comments for Drone Recommendation (ENG19-9.2.1.3.1)
7.7.4.2	Draft Guideline Use of Drones for AtoN Management ENG Committee Comments (ENG19-9.2.1.3.2)

**Comments:**

The task group are content with the draft guideline, which was initiated at ARM17. Over the sessions of the committee, the group worked through the structure, scope, and content of the document, incorporating comments from the DTEC and ENG Committees. As this is a joint task with VTS the draft will now be forwarded to them with a liaison note for their consideration.

At ARM20, the full document was reviewed multiple times, resulting in significant refinements. These include the consolidation of overlapping content, a clearer and more modular structure, and the addition of detailed technical sections, including cost-analysis considerations and an improved maintenance framework.

Furthermore, the use of surface and underwater drones, while already applied in certain maritime applications, is noted in the introduction. Although these types of platforms are beyond the scope of this guideline, they are referenced for awareness and possible consideration in future related work.

**Key outcomes:**

The work will be forward to the VTS Committee to consider with a view to finalization at ARM21

**Output:**

ARM20-11.2.7 LN to VTS on Draft Guideline Drone Operation for AtoN Management

ARM20-11.2.7.1 Draft Guideline Drone Operation for AtoN Management

**Action item:**

The Secretariat is requested to forward the Liaison Note to VTS on the Draft Guideline Drone Operation for AtoN Management (ARM20-11.2.7) and the Draft Guideline Drone Operation for AtoN Management (ARM20-11.2.7.1) to the VTS Committee for their consideration.

**8.10 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:**

7.7.1	Liaison to ARM on AIS Documentation (ENG19-9.2.2.5)
7.7.2	Proposal for the development of the annex “Virtual AIS AtoN” to the new AIS guideline draft
7.7.2.1	Annex-Virtual AIS AtoN

**Comments:**

The group reviewed input documents ARM20-7.7.1 (Liaison note from ENG) and ARM20-7.7.2 and ARM20-7.7.2.1 (inputs from China MSA regarding new Guideline).

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 ARM21, thus allowing the wider Committee to have greater input and oversight before finalising these documents as Outputs from ARM21.

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 has 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 – Authorization 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.

The following recommendations are provided:

- 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:**

The draft Recommendation R0126 on AIS as an AtoN and the supporting Guideline are nearly complete.

These documents are proposed for submission to ARM21 for broader Committee review and input before finalization.

The new Recommendation and Guideline consolidate and modernize several existing IALA documents, allowing some to be retired or archived.

Final review and feedback during ARM21.

#### **Output:**

ARM20-11.5.1.6 WP R0126 The use of the Automatic Identification System (AIS) in marine Aids to Navigation

ARM20-11.5.1.7 WP GXXXX use of the AIS in Marine Aids to Navigation Services

#### **Action item:**

*The Secretariat is requested to forward the WP R0126 The Use of the Automatic Identification System (AIS) in Marine Aids to Navigation (ARM20-11.5.1.6) and the WP GXXXX Use of the AIS in Marine Aids to Navigation Services (ARM20-11.5.1.7) as working papers to ARM21 for further development.*

#### **IALA WWA Model Course on AIS Data Management**

#### **Input papers:**

6.2.5	Input paper Model Course on AIS Data Management and Applicability for Safety of Navigation
6.2.5.1	Overview AIS model course_v1.0

#### **Comments:**

The Task Group also reviewed the IALA WWA Model Course on AIS Data Management. A liaison note on this subject was prepared to be forwarded to the other committees.

#### **Key outcomes:**

A liaison note to all committees.

#### **Output:**

ARM20-11.2.1 LN to all committees on Development of the AIS Model Course

ARM20-11.2.1.1 Overview AIS model course

*Action items:*

*The Secretariat is requested to forward the Liaison Note on the Development of the AIS Model Course (ARM20-11.2.1) and the Overview of the AIS Model Course (ARM20-11.2.1.1) to all committees for their consideration.*

### 8.11 Other input papers

ARM20-6.2.3 Practice of China in receiving IMO member state audit concerning AtoN session (China MSA)

ARM welcomes this valuable submission for China MSA and their recommendations/observations are well received. WG1 was particularly intrigued by the IMO Auditors emphasis on quality assurance practices and remote monitoring of AtoN.

ARM20-6.2.8 and 6.2.8.1 Liaison to ARM on R0101 and R0146 (ENG19-9.2.2.4), R0146 Strategy for Maintaining Racon Service Capability (ENG19-9.2.2.4.1)

The liaison note, along with the attached draft revision of Recommendation R0146, was reviewed by Alan Grant assisted by Trevor Harris. Significant changes were made to the draft R0146 and the document will be returned to ENG for consideration.

The opinion of the ARM Committee that RACON will continue to be required as an AtoN is conveyed to ENG within the liaison note and draft R0146.

**Output:**

ARM20-11.2.6 LN from ARM to ENG on R0101 and R0146

ARM20-11.2.6.1 Revised Recommendation R0146 Strategy for Maintaining Racon Service Capability

*Action item:*

*The Secretariat is requested to forward the Liaison Note from ARM to ENG on R0101 and R0146 (ARM20-11.2.6) and the Revised Recommendation R0146 Strategy for Maintaining Racon Service Capability (ARM20-11.2.6.1) to the ENG Committee for their consideration.*

ARM20-6.2.9 Proposal for revision of R0113 (deprecated) and G1172 on marking of bridge and R0110 on rhythmic characters of lights (WWA)

This input paper was reviewed and after discussion it was determined that the context and scope of the desired outcome needed additional refinement. It is the recommendation of WG1 that the Secretariat arrange a meeting with UNECE on the Signals for Inland Waterways (SIGNI) for further discussion.

*Action item:*

*That the Secretariat consider arranging a meeting with UNECE on the Signals for Inland Waterways (SIGNI) for further discussion.*

ARM20-7.7.5 LN to ARM19 on the proposal of the revision of Guideline G1185 (VTS57-12.2.2)

The Chairs and Members of the ARM Committee held a short meeting with the Chair of the VTS Committee to discuss the Liaison note forwarded from the VTS57 meeting.

Small changes were made to IALA Guideline G1185, including a slight change to the document title, and this was sent to the VTS Committee Chair for comment.

Comments were received back from the VTS committee before the end of ARM20 and will be fully reviewed at ARM21. The VTS committee is asked to further review the G1185 (ARM20 version) at the VTS58 meeting, giving feedback prior to ARM21.

#### Action items:

*That the ARM Chair arrange an intersessional meeting for members of the ARM and VTS committees, to consider the changes to G1185 and the broadening of the document to be more generic for marine spatial planning whilst considering VTS Recommendations and Guidelines alongside existing ARM Guidelines. Results of scoping exercise to be considered for the workplan 2027 - 2030.*

*The Secretariat is requested to forward the Liaison Note on the revision of Guideline G1185 Enhancing the safety and efficiency of navigation around OREI (ARM20-11.2.9) and the revised Guideline G1185 Enhancing the safety and efficiency of navigation around OREI (ARM20-11.2.9.1) to the VTS Committee for their consideration.*

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

There were 28 participants in person and 3 participants online.

During ARM20, 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 of the input papers to the group and work in plenary for most of the session.

### 9.1 Develop a model course on AtoN Cyber Security arrangements (ARM 5.2.1).

In previous meeting discussions it was agreed that this task is not for WG2 but for IALA WWA. WG2 could provide support when specific questions can be submitted to the WG2. The WWA is invited to look at a European project for the water sector called Athena. More info [here](#).

In this project there by means of VR and gamification the operators are trained in recognizing and acting on possible cyber security incidents. This training could be transformed to be used for the IALA domain topics.

WG 2 regards the action items as finished.

### 9.2 Continue to Develop Product Specification S-201. Continue development on S-201, specifically on Maintenance, data validation, and harmonization with S-125, S-124, and S-101 (ARM-7.1.4).

**Task group leader:** Dr. Sewoong Oh

#### Input papers:

8.4.2	Operational version candidate of S-201 Aton information product specification(Fin)
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#### Comments:

The working group reviewed the S-201 product specification in full and updated the draft Edition 2.0.0 with revised UML diagrams. Schema's, catalogues and DCEG where updated as required. The S-201 product specification bundle shall be submitted to Council for approval.

The S-201 product specification is a comprehensive package of documents, including written guidance and technical frameworks for actual coding/implementation of the specification. Few AtoN authorities have started implementing S-201 version 1.0.0, and the S-201 version 2.0.0 will be the starting point for almost all nations. Many nations have their proprietary systems operating, and we suspect that interfacing the new S-201 and existing systems are a huge task, including discovering features/functions that might need adjustments to S-201.



During the work of updating the S-201, a strategic decision was made to adhere to the S-101 edition 2.0.0. This results in various small changes, for example types of allowable colours and the coding of such. As IHO is the prime owner of all S-100 documents, which S-201 is a subset of, the ARM Committee decided that is better to inherit methods from S-101, than start making exemptions.

The ARM Committee would like to highlight that the S-100 standard is a living standard. Unlike the S-57 standard, which was a “frozen” standard from the start. The launch of S-201 edition 2.0.0 is not the end, it is the start of evolving, expanding and tuning of the product specification.

#### **Key outcomes:**

S-201 Edition 2.0.0 completed.

#### **Output:**

ARM20-11.3.3 S-201 edition 2.0.0 (zip file)

ARM20-11.3.4 New concept and proposed definitions for S-201

#### **Action item:**

*The Secretariat is requested to forward S-201 Edition 2.0.0 (ARM20-11.3.3) to Council for approval.*

*The Secretariat is requested to, once approved by Council, register the S-201 2.0.0 (ARM20-11.3.3) in the IHO GI Registry.*

*The Secretariat is requested to register the New concept and proposed definitions for S-201 (ARM20-11.3.4) in the IHO GI Registry.*

*The Secretariat is requested to consider identifying and implementing effective strategies for promoting the finalization and publication of the S-201 Product Specification to the members, once it has been approved by the Council.*

### **9.3 Continue development on S-125 in coordination with IHO NIPWG (ARM-7.1.6).**

**Task group leader:** Dr. Sewoong Oh

#### **Input papers:**

8.4.4	S-125 Update (fin)
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#### **Comments:**

The working group updated S-125 to a Draft Edition 1.0.0 of S-125 product specification, including revised UML diagrams, schema's, catalogues and DCEG. Draft edition 1.0.0 status is intended to facilitate test implementation and needed for proper feedback for the edition 2.0.0.

#### **Key outcomes:**

Updated S-125 to a Draft Edition 1.0.0 of S-125 product specification.

#### **Output papers:**

ARM20-11.3.1 LN to IHO NIPWG on S-125 v1.0

ARM20-11.3.1.1 S-125 edition 1.0.0 (zip file)

#### **Action item:**

*The Secretariat is requested to forward the Liaison Note to IHO NIPWG on S-125 Edition 1.0.0 (ARM20-11.3.1) and S-125 Edition 1.0.0 (ARM20-11.3.1.1) to Council for approval and then IHO NIPWG in order to, after review and amended by NIPWG, start the approval process at IHO.*

#### 9.4 Continue development on MRN documentation, considering inputs from IALA Secretariat, other committees, or others as needed (ARM-7.1.7).

**Task group leader:** Martijn Ebben.

**Input papers:**

8.4.1	Canadian MRN Guidance-March-2025
8.4.1.1	DRAFT_Canadian MRN Guidance_March 19 2025
8.4.7	Liaison note to ARM on MRN Intersessional work (DTEC4-15.2.1)

**Comments:**

The working group noted the suggestions made by the Canadian Coast Guard for future work.

Workgroup 2 has noted the valuable input from the DTEC committee in Liaison Note ARM20-8.4.7 regarding the Maritime Resource Name (MRN). The ARM committee will proceed to plan 2 inter-committee intersessional meetings, on 26 June 2025 and 04 September 2025, both 12:00 – 15:00 UTC. The first session is meant to determine the scope of work and decide on actions to be performed by the participants. The second will be to collect the input from the first session and collectively finalize the documents to be sent as input to the relevant committee's fall sessions.

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: [m.ebben@portofrotterdam.com](mailto:m.ebben@portofrotterdam.com).

An agenda and relevant input documents will be shared with the participants well in advance of the first session.

**Key outcomes:**

Intersessional work.

*Action items:*

*Committee participants are invited to join the intersessional group (Virtual meetings) working on Task 7.1.7 – Continue development on MRN documentation, considering inputs from the IALA Secretariat, other committees, or others as needed. Participants are requested to express their interest to Martijn Ebben ([m.ebben@portofrotterdam.com](mailto:m.ebben@portofrotterdam.com)), noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard.*

*The Intersessional Group Leader to provide input on the intersessional work on Task 7.1.7 to ARM21.*

#### 9.5 Review Guideline G1106 on producing an IALA S-200 series Product Specification (ARM-7.1.8).

**Task group leader:** Peter Hooijmans

**Input papers:**

8.4.3	Proposal for revision of Guideline G1106
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**Comments:**

The working group discussed the draft revision and amendments that were made intersessionally. The working group finalized the document at ARM20.

**Key outcomes:**

A revised Guideline G1106 on producing an IALA S-200 series Product Specification.

**Output paper:**

## ARM20-11.3.2 Revised Guideline G1106 on Producing an IALA S-200 Series Product Specification

### Action item:

*The Secretariat is requested to forward the Revised Guideline G1106 on Producing an IALA S-200 Series Product Specification (ARM20-11.3.2) to Council for approval.*

### 9.6 Monitor the development of S-201 Testbed (ARM-7.1.10).

**Task group leader:** Dr. Sewoong Oh

#### Input papers:

8.4.5	Update of S-200 Test & Validation Tool (fin)
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#### Comments:

Dr. Oh presented the progress and changes to the S-200 Test & Validation Tool. The working group appreciated the presentation and the work done. This will be a continuous task.

#### Key outcomes:

Revised task name.

### Action item:

*The Secretariat is requested to ask Council for approval to amend the task name of 7.1.10 - Monitor the development of S-201 Testbed to: "Monitor the development of the test & validation tool".*

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

**Task group leader:** Dr. Sewoong Oh

#### Comments:

The working group did a first review of the G1087 as was agreed at ARM19. The work will be progressed at ARM21.

#### Output:

ARM20-11.5.2.1 WP review of the G1087

### Action item:

*The Secretariat is requested to forward the WP Review of Guideline G1087 (ARM20-11.5.2.1) as a working paper to ARM21 for further development.*

### 9.8 Development of technical service specifications for the provision of AtoN information (ARM-7.1.14).

**Task group leader:** Nikolaos Vastardis

#### Input papers:

8.5.1	MS AtoN Information
8.5.1.1	MARITIME-SERVICE-DESCRIPTION-AtoN-information-service (1)

#### Comments:

The task group was formed in ARM19 to create a specification document describing the technical services required to support the provision of AtoN information within the context of e-Navigation. However, it became clear very quickly that there was a knowledge gap regarding the underlying user requirements and needs.

To move forward, the task group decided to first focus on interpreting the 'MS-2 - Aids to Navigation' maritime service, initially defined by the IMO in MSC.1/Circ.1610 (as proposed by IALA). This service aims to promulgate the latest information on AtoN and augment charted AtoN information on an appropriate shipborne navigation display prior to updates to the nautical chart.

During the ARM20 committee work, the task group compiled a generic diagram illustrating the flow of AtoN information from the perspective of IALA authorities. They also evaluated previously identified user needs by the IMO and developed their own set of service objectives and information requirements necessary to achieve the goals of MS-2. The task group plans to continue its work through two inter-sessional meetings, likely scheduled for May and September 2025. These meetings will focus on defining a set of service features that meet the identified user needs and developing a high-level business process model. It will also need to examine the best way for IALA to publish this interpretation, in line with IALA G1155, as it is most likely not suited to be an IALA guideline. This is a quite challenging but also long-due piece of work.

**Key outcomes:**

Intersessional work.

**Output:**

ARM20-11.5.2.2 WP MS-Description (Zip File)

**Action item:**

*Committee participants are invited to join the intersessional group (Virtual meetings) working on Task 7.1.14 – Development of technical service specifications for the provision of AtoN information. Participants are requested to express their interest to Nikolaos Vastardis (nikolaos.vastardis@gla-rad.org) by 1 May, noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard.*

*The Intersessional Group Leader to provide input on the intersessional work on Task 7.1.14 to ARM21.*

*The Secretariat is requested to forward the WP MS-Description zip file (ARM20-11.5.2.2) as a working paper to ARM21 for further development.*

## 10. WORKING GROUP 3 – RISK MANAGEMENT (WG3)

During the 20<sup>th</sup> session of the ARM committee, the WG3 – Risk Management contained around 23 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 three 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 recapping on work undertaken at ARM19 and leading a discussion to explain and clarify each task item. Further discussion was then had to set the action plan for the week.

The Chair and Vice-Chair of the Working Group thanked all participants, both in person and online for their hard work during the session.

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

- Review Risk Management related documentation. Update as per ongoing risk toolbox developments
- Develop a method to quantify and evaluate various risk control options
- Conduct a global scan of current risk analysis tools and identify potential candidates for inclusion within the IALA Risk Management Toolbox

- Develop measures for and a method to monitor waterway risk. Includes effectiveness of risk mitigations, qualitative validation with stakeholders, and re-evaluation of risks

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

**Task group leader:** Kevin Gregory

#### Input papers:

9.1.4	PAWSA Methodology Information Paper
6.2.6	Traffic model(rev)_250305 RoK – Mokpo National Maritime University

#### Comments:

##### PAWSA Update

Nick Neely provided a presentation on the latest developments regarding the United States Coast Guard's (USCG) update to the PAWSA Mk IV. The model has been fully developed and has undergone two rounds of testing. One round was conducted with the development and facilitation teams, and one used USCG personnel outside of those teams. Feedback from both testing cycles is being incorporated into the model and supporting documentation. The model was discussed in more detail with examples of inputs / forms and outputs shown. The USCG intends to begin using the PAWSA Mk IV in May 2025.

While there has been much progress with the PAWSA Mk IV, it is not yet at a state for IALA to determine if it should be adopted and included in the Risk Management Toolbox. Further review of the methodology and facilitation needs is required.

Two documents were on the table in the working group. A proposed guideline on provisioning of MCP identities, and a proposed update of IALA guideline 1019 'Provision of maritime services in the context of e-navigation in the domain'. The purpose of the latter, is to reflect the specific work done on e-navigation in IALA, i.e. development of product specifications, technical service specifications and MCP specifications.

#### *Action item:*

*The USCG is requested to provide input to ARM21 on an evaluation of the PAWSA Mk IV, as well as facilitation and methodology guides.*

##### Proposal for the Integration of a Marine Traffic Model into Risk Management Framework

Mokpo National Maritime University delivered a presentation in support of input paper ARM20-6.2.6. The presentation and paper proposed the integration of a traffic flow model as a risk assessment tool to support more precise and data-driven maritime safety evaluations. This model represents traffic flow in a specific area by simultaneously visualizing speed, direction, and density using an arrow-based approach. Furthermore, the study introduces the Marine Traffic Hazard Index model as a future research direction. By utilizing real-time AIS data, the model enables the visualization of real-time navigational risk levels in specific areas through both 2D and 3D representations.

The WG welcomed the presentation which generated a substantial discussion. The WG agreed that there could be a potential gap in G1018 with reference to traffic flow visualisation tools and how they may be used in support of the risk assessment process.

Further discussion on the operational requirements that this capability may be used to support would also be beneficial. The model will undergo further development and has capability to support real-time decision making, possibly in the VTS environment. Subject to further development, the model could potentially be used to support topics including risk management and VTS decision support as well as future MASS operations. The model has an

advantage as it has a higher degree of granularity and differing capabilities which may grow stronger as the tool is combined with other sources of data (such as hydrographic information).

The input paper proposed making amendments to Guideline G1018 to incorporate a traffic flow model as a potential risk management tool. The WG did agree that there may be merit in including such new guidance which may be considered during the next update to G1018.

### 3.2 Task ARM-1.4.5 on Develop a method to quantify and evaluate various risk control options

**Task group leader:** Sarah Robinson

A presentation was provided by Floris Goerlandt regarding ongoing academic research associated with this task. The ongoing work takes an empirical approach to gain insight into what risk control options (RCO) have been proposed in previous applications of PAWSA. The study aims to provide insights into the relative effectiveness of different RCOs. The WG hopes to use the results to improve the guidance in the IALA toolbox about what RCOs can be considered for different risk factors. The work is currently ongoing and will also consider the outputs of SIRA reports, which is expected to be finalized by ARM21.

#### Action item:

*That Floris Goerlandt presents updated research results incorporating the outcome of the research related to risk control options from the outputs of both PAWSA and SIRA application at ARM21.*

### 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

**Task group leader:** Sarah Robinson

#### Input papers:

9.1.3	Review and assess risk management tools currently used in the maritime and allied industries-submitted
9.1.3.1	Risk Management Tools Global Survey_Email
9.1.3.2	Risk Management Tools Global Survey_LinkedIn

Three surveys conducted between April 2024 and January 2025 gathered input from IALA ARM Committee members and the maritime community on risk assessment tools. The most cited methods were SIRA, PAWSA, and IWRAP, with some respondents indicating AISyRISK, NIST, SAMSON, and HAZID use. Additionally, Vincent Denis reported using the Voyage Planning Template in BASSnet, Axel Hahn reported using Maritime Traffic Simulation, Human Models, and a Risk Assessment Method from automotive and aviation, while Yvolkan Aydogdu mentioned the Environmental Stress Model.

The WWA described an online discussion with Monty Smedley of ABPmer consultants and there were subsequent suggestions for potential further refinement of the SIRA, including average weighted rather than maximum consequence scores, effectiveness of individual control options and a review of risk levels over time.

The group agreed that there may be merit in reviewing the proposal made some years ago to develop a simple online repository of risk assessment information, firstly for the benefit of competent authorities, and secondly to facilitate harvesting of results, linked to the research activities of Professor Goerlandt (Task 1.4.5). The IRMAS Excel spreadsheet produced by Ernst Bolt previously summarized this and Nash Maritime through Ed Rogers had created a prototype.

#### Action item:



*The IALA World-Wide Academy is requested to obtain further information on the use and benefits of the BASSnet, Maritime Traffic Simulation/Human Models and the Environment Stress Model referred to above and provide input to a future ARM session.*

### **3.4 Task ARM-1.4.11 on Develop measures for and a method to monitor waterway risk. Includes effectiveness of risk mitigations, qualitative validation with stakeholders, and re-evaluation of risks**

**Task group leader:** Yvonne Koldenhof

#### **Input papers:**

9.1.5	Report from intersessional meetings - RO130_v2
9.1.1	Availability determination in Argentine waterway
9.1.2	LN ENG to ARM on Categorisation and Availability Objectives for AtoN (ENG19-9.2.1.2)

A summary of the intersessional work undertaken was provided by Yvonne Koldenhof (ARM20-9.1.5) and the Liaison Note from ENG (ARM-9.1.2) was reviewed. Input Paper ARM20-9.1.1 on availability determination in Argentine waterway was reviewed which comprehensively explained an example of the categorisation and system related approach.

The general scope of the task was reviewed and summarised and it was considered that it may be beneficial to review the definitions associated with the ‘vital’, ‘important’ and ‘necessary’ categories of AtoN and to provide guidance to inform the categorization decision making process. Additionally, the categorization of RACONs and AIS/Virtual/Synthetic AtoN may benefit from further guidance.

This may then lead to the development of further guidance which may contribute to an assessment of the effectiveness of AtoN, both individual, system and characteristic based, in terms of risk management which may then influence defect response planning and other decision making.

In particular, the relationship between risk management (in terms of the ‘criticality’ or ‘health’ of a waterway or areas of it) and the categorization of AtoN may benefit from the provision of enhanced guidance. This will require new guidance on waterway categorization and the function of AtoN along with potential metrics related to a range of areas such as traffic, hydrography, meteorology etc.

#### **Action item:**

*Committee participants are invited to join the intersessional group (Virtual meetings) working on task 1.4.11 categorization of AtoN and the concept of waterway health. Participants are requested to express their interest to Yvonne Koldenhof (Y.Koldenhof@marin.nl) by 1 June 2025, noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard.*

*The Intersessional Group Leader to provide input on the intersessional work on task 1.4.11 to ARM21.*

### **3.5 Other discussion of interest**

#### **Presentation on potential impacts of windfarm development on ship traffic in the Gulf of Bothnia**

The Finnish Transport and Communications Agency delivered a presentation which described a study investigating the potential impacts of wind farm development on ship traffic in the Gulf of Bothnia, with a specific focus on the ice-free season. The study may be further developed to incorporate the ice season.

Its main purpose is to identify critical areas in the Gulf of Bothnia that need to be preserved for future shipping activities, ensuring the continued safety, sustainability, and efficiency of maritime transport. These findings will inform decision-making processes of the Finnish and Swedish maritime authorities aimed at optimizing the use of the sea area between maritime transport and wind farm development while considering ethical values.

### 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

### 2027 – 2030 Work Programme Proposals

The Chair called for participants to consider submitting work programme proposals to the next ARM Committee for the 2027 – 2030 period using the template found in the resources section of the ARM dashboard.

#### *Action item:*

*That participants consider submitting work programme proposals to the next ARM Committee for the 2027 – 2030 period using the template found in the resources section of the ARM dashboard.*

### ARM20-6.2.11 and 6.2.11.1 LN from DTEC to ARM on AtoNs support autonomous navigation (DTEC4-15.3.3), Draft Discussion paper on AtoNs designed to support autonomous navigation (DTEC4-15.3.3.1)

The CMT addressed input papers from DTEC4 on the topic of Digitalization in the Scope of IALA during ARM20. ARM expresses gratitude to DTEC for inviting input into the draft discussion paper. Given the broad scope of this task and the pre-established priorities for ARM20, a comprehensive review was not possible at this meeting. However, ARM looks forward to continued discussions during PAP and further opportunities to contribute to this important work. A liaison noted was sent to DTEC with some initial feedback.

#### *Action item:*

*The Secretariat is requested to forward the Liaison Note on the Discussion of the Task on Digitalization Discussion Paper (ARM20-11.1.1) to the DTEC Committee for their consideration.*

### Withdrawal of Recommendation R0113 The Marking of Fixed Bridges and other Structures Over Navigable Waters

The Secretariat is requested to withdraw *Recommendation R0113 The Marking of Fixed Bridges and other Structures Over Navigable Waters*, as it has been superseded by *Guideline G1172 The Marking of Bridges and other structures over navigable waters*, developed under *Recommendation R0139 The Marking of Man-Made Offshore Structures*.

#### *Action item:*

*The Secretariat is requested to withdraw the R0113, which was replaced by G1172 under R0139.*

## 12. SUMMARY OF OUTPUT AND WORKING PAPERS

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

Outputs from ARM20 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 (ARM20-12.1) was approved by the Committee at the Closing Plenary.

## 14. DATE AND VENUE OF NEXT MEETINGS

ARM21 is planned to be held between 20 – 24 October 2025 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 ARM21.

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



## 20<sup>th</sup> Meeting of the AtoN Requirements and Management Committee (ARM20)

The opening plenary of the 20<sup>th</sup> meeting of the ARM Committee will commence at 10:30 local time on Monday 31 March 2025, and the closing plenary will be held online at 12:00 – 14:00 UTC on Monday 19 May 2025.

### Agenda

- |        |  |             |
|--------|--|-------------|
| 1.     | Introduction                                 | ARM Chair   |
| 1.1.   | Welcome address from the Secretary-General   |             |
| 1.2.   | Approval of agenda                           |             |
| 1.3.   | Apologies and introductions                  |             |
| 1.4.   | Working arrangements                         |             |
| 2.     | Review of action items                       |             |
| 3.     | Reports from other bodies                    | Minsu Jeon  |
| 3.1.   | IALA   |             |
| 3.1.1. | IALA Council                                 |             |
| 3.1.2. | IALA Policy Advisory Panel (PAP)             |             |
| 3.2.   | IMO  |             |
| 3.3.   | IHO  |             |
| 3.4.   | ITU  |             |
| 3.5.   | IEC  |             |
| 3.6.   | Digital@Sea                                  |             |
| 4.     | Presentations                                |             |
| 4.1.   | IALA World Wide Academy update               | WWA         |
| 4.2.   | IALA S-100/200 Training                      | Dave Lewald |
| 4.3.   | AtoN concepts, features and attributes       | Minsu Jeon  |
| 5.     | Work Programme management                    |             |
| 5.1.   | Work Programme, Task Plan, Task Register     |             |
| 5.2.   | Action plan for ARM20                        |             |
| 6.     | Review of input papers                       |             |
| 6.1.   | Input papers                                 |             |
| 6.2.   | Input papers not related to an existing task |             |
| 7.     | Establish WG1 - Navigational requirements    |             |
| 7.1.   | Obligations and regulatory compliance        |             |

- 7.2. Quality management
- 7.3. AtoN planning
- 7.4. Virtual marking
- 7.5. Visual signalling
- 7.6. Capacity building (NAVGUIDE)
- 7.7. Additional tasks/work
- 8. Establish WG2 - Information services and portrayal
  - 8.1. Design, implementation and maintenance
  - 8.2. Wide/Medium bandwidth systems (AIS & VDES)
  - 8.3. Harmonised maritime connectivity framework (CMDS) Maritime IoT (Intelligent sensors, AtoN monitoring)
  - 8.4. Data models and data encoding (IVEF, S-100, S-200, ASM)
  - 8.5. Data exchange systems (Traffic Information)
  - 8.6. Terminology, symbology, and portrayal
  - 8.7. Additional tasks/work
- 9. Establish WG3 - Risk management
  - 9.1. Risk management
  - 9.2. Training and certification
  - 9.3. Seminar
  - 9.4. Additional tasks/work
- 10. Any other business
- 11. Summary of output and working papers
  - 11.1. Committee wide
  - 11.2. WG1 output
  - 11.3. WG2 output
  - 11.4. WG3 output
  - 11.5. Working papers
- 12. Review of session report
- 13. Date and venue of next meeting
- 14. Close of the meeting

## ANNEX B

## LIST OF PARTICIPANTS

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## ANNEX C LIST OF INPUT PAPERS

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
ARM20-	1.2.1	Provisional Agenda	Secretariat	All
ARM20-	2.1	Action Items from ARM19	Secretariat	All
ARM20-	1.4.1	Programme of the physical week	Secretariat	All
ARM20-	3.1.1	Report on Transition Council 03	Secretariat	All
ARM20-	3.2.1	Report on MSC 109	Secretariat	All

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM20-	3.4.1	IALA Report Joint IMO-ITU Expert group 7th to 11th October 2024	Secretariat	All
ARM20-	3.4.1.1	20241011 IMO-ITU EG 20-WP.1 - Draft Report To The Ncsr Sub-Committee And Itu (Secretariat)	Secretariat	All
ARM20-	3.4.2	IALA Report on ITU-R WP5B meeting 19 to 28 November 2024	Secretariat	All
ARM20-	3.5.1	MT7-2426 Liaison note from IEC TC80-MT7 to IALA	IEC	All
ARM20-	5.1.1	Committees Work programme 2025-2027	Secretariat	All
ARM20-	5.1.1.1	Annex Work Programme 2025-2027	Secretariat	All
ARM20-	6.1.1	Input paper list	Secretariat	All
ARM20-	6.1.2	Working paper list	Secretariat	All
ARM20-	6.2.1	Credentials, participation, numbering etc. in IALA committees and subsidiary bodies as an IGO	Secretariat	All
ARM20-	6.2.2	Input paper on the IMT Workshop	Secretariat	All
ARM20-	6.2.3	Practice of China in receiving imo member state audit concerning aton session	China MSA	WG1
ARM20-	6.2.4	Proposal for Organizing Categories of AtoN change information in S124 and S125	China MSA	WG2
ARM20-	6.2.5	Input paper Model Course on AIS Data Management and Applicability for Safety of Navigation	WWA	All
ARM20-	6.2.5.1	Overview AIS model course_v1.0	WWA	All
ARM20-	6.2.6	Traffic model(rev)_250305 RoK	Mokpo National Maritime University	WG3
ARM20-	6.2.7	Liaison Note to ARM on remote monitoring	ENG19	WG2
ARM20-	6.2.8	Liaison to ARM on R0101 and R0146 (ENG19-9.2.2.4)	ENG19	WG1
ARM20-	6.2.8.1	R0146 Strategy for Maintaining Racon Service Capability (ENG19-9.2.2.4.1)	ENG19	WG1
ARM20-	6.2.9	Proposal for revision of R0113 and G1172 on marking of bridge and R0110 on rhythmic characters of lights	WWA	WG1
ARM20-	6.2.10	LN on IALA Digitalisation Discussion Paper (DTEC4-15.3.5)	DTEC4	WG2



Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM20-	6.2.11	LN from DTEC to ARM on AtoNs support autonomous navigation (DTEC4-15.3.3)	DTEC4	CMT
ARM20-	6.2.11.1	Draft Discussion paper on AtoNs designed to support autonomous navigation (DTEC4-15.3.3.1)	DTEC4	CMT
ARM20-	7.2.1	Incorporating the QMS Process for AtoN Management into the G1052 Draft Guidelines	China MSA	WG1
ARM20-	7.3.1	Proposal on the Consistency of definitions of terms between the NAVGUIDE and IALA Dictionary	China MSA	WG1
ARM20-	7.3.1.1	ANNEX A-Amended Definitions for NAVGUIDE 2023	China MSA	WG1
ARM20-	7.3.1.2	ANNEX B-Amended Definitions for IALA Dictionary	China MSA	WG1
ARM20-	7.3.2	Liaison Note ENG to ARM_Buoy Tender Activities (ENG19-9.2.1.1)	ENG19	WG1
ARM20-	7.3.2.1	Draft guideline on Buoy Tender (ENG19-9.2.1.1.1)	ENG19	WG1
ARM20-	7.3.3	Liaison note to ARM on Development of IoT Guidance (ENG19-9.2.1.5)	ENG19	WG1
ARM20-	7.3.4	Draft Recommendation on MASS and Marine AtoN (PAP56-6.1.1)	PAP20	WG1
ARM20-	7.3.5	Defining the Functional Capabilities of physical AtoNs for MASS	MPA Singapore	WG1
ARM20-	7.3.6	Liaison note to ARM on IoT (DTEC4-15.3.2)	DTEC4	WG1
ARM20-	7.3.6.1	Revised G1179 Ed1.0 Introduction to IoT from an IALA perspective (DTEC4-15.3.2.1)	DTEC4	WG1
ARM20-	7.7.1	Liaison to ARM on AIS Documentation (ENG19-9.2.2.5)	ENG19	WG1
ARM20-	7.7.2	Proposal for the development of the annex "Virtual AIS AtoN" to the new AIS guideline draft	China MSA	WG1
ARM20-	7.7.2.1	Annex-Virtual AIS AtoN	China MSA	WG1
ARM20-	7.7.3	Proposal on the draft guideline on Use of Drones for AtoN Management	China MSA	WG1
ARM20-	7.7.3.1	ARM20-7.7.3.1 ANNEX- WP Draft Revised Guideline on Use of Drones for AtoN Management	China MSA	WG1
ARM20-	7.7.4	Liaison note from ENG to ARM on the Use of drones for AtoN Management (ENG19-9.2.1.3)	China MSA	WG1

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM20-	7.7.4.1	Comments for Drone Recommendation (ENG19-9.2.1.3.1)	China MSA	WG1
ARM20-	7.7.4.2	Draft Guideline Use of Drones for AtoN Management ENG Committee Comments (ENG19-9.2.1.3.2)	China MSA	WG1
ARM20-	7.7.5	LN to ARM19 on the proposal of the revision of Guideline G1185 (VTS57-12.2.2)	VTS57	WG1
ARM20-	8.4.1	Canadian MRN Guidance-March-2025	CCG	WG2
ARM20-	8.4.1.1	DRAFT Canadian MRN Guidance_March 19 2025	CCG	WG2
ARM20-	8.4.2	Operational version candidate of S-201 Aton information product specification (Fin)	KRISO / CCG	WG2
ARM20-	8.4.3	Proposal for revision of Guideline G1106	China MSA	WG2
ARM20-	8.4.4	S-125 Update (fin)	KRISO	WG2
ARM20-	8.4.5	Update of S-200 Test & Validation Tool (fin)	KRISO	WG2
ARM20-	8.4.6	Sea trial of Aton data management and maritime service(fin)	KRISO	WG2
ARM20-	8.4.7	Liaison note to ARM on MRN Intersessional work (DTEC4-15.2.1)	KRISO	WG2
ARM20-	8.4.8	Liaison note on S100 AtoN Authority Perspective (DTEC4-15.3.4)	DTEC4	WG2
ARM20-	8.4.8.1	WSV IMT Application Workshop (DTEC4-15.3.4.1)	DTEC4	WG2
ARM20-	8.5.1	MS AtoN Information	GRAD / USCG	WG2
ARM20-	8.5.1.1	MARITIME-SERVICE-DESCRIPTION-AtoN-information-service (1)	GRAD / USCG	WG2
ARM20-	9.1.1	Availability determination in Argentine waterway	HIDROVIA SA	WG3
ARM20-	9.1.2	LN ENG to ARM on Categorisation and Availability Objectives for AtoN (ENG19-9.2.1.2)	ENG19	WG3
ARM20-	9.1.3	Review and assess risk management tools currently used in the maritime and allied industries-submitted	WWA	WG3
ARM20-	9.1.3.1	Risk Management Tools Global Survey_Email	WWA	WG3
ARM20-	9.1.3.2	Risk Management Tools Global Survey_LinkedIn	WWA	WG3
ARM20-	9.1.4	PAWSA Methodology Information Paper	USCG	WG3

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM20-	9.1.5	Report from intersessional meetings - RO130_v2	MARIN	WG3

#### Working papers from ARM19

Meeting	Paper Number	Output Paper Title	Source	Action
ARM19-	11.5.1.1	WP ARM Committee Task Plan	CMT	To ARM19
ARM19-	11.5.2.1	WP draft Guideline G1052 Quality-Management-Systems-for-AtoN-Service-Delivery	WG1	To ARM19
ARM19-	11.5.4.1	WP Recommendation R0130 on Categorisation and Availability Objectives for Short Range Aids to Navigation	WG3	To ARM19
ARM19-	11.5.4.2	WP Example of Methodology Used to Build Risk Assessment in a case of Offshore Windfarms implementation	WG3	To ARM19

**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
ARM20-	11.1.1	LN to DTEC on Discussion on the task on Digitalization Discussion Paper	CMT	DTEC5
ARM20-	11.2.1	LN to all committees on Development of the AIS Model Course	WG1	All committees
ARM20-	11.2.1.1	Overview AIS model course	WG1	All committees
ARM20-	11.2.2	LN to the Secretariat on the NAVGUIDE review	WG1	Secretariat
ARM20-	11.2.3	LN to all committees on the draft recommendation related to digitalization of AtoN	WG1	All committees
ARM20-	11.2.3.1	Draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy	WG1	All committees
ARM20-	11.2.5	LN to PAP on the draft recommendation related to digitalization of AtoN	WG1	PAP
ARM20-	11.2.5.1	Draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy	WG1	PAP
ARM20-	11.2.6	LN from ARM to ENG on R0101 and R0146	WG1	ENG
ARM20-	11.2.6.1	Revised Recommendation R0146 Strategy for Maintaining Racon Service Capability	WG1	ENG
ARM20-	11.2.7	LN to VTS on Draft Guideline Drone Operation for AtoN Management	WG1	VTS
ARM20-	11.2.7.1	Draft Guideline Drone Operation for AtoN Management	WG1	VTS
ARM20-	11.2.8	Revised Guideline G1052 Quality Management Systems for AtoN Service Delivery	WG1	Council
ARM20-	11.2.9	LN from ARM to VTS on the revision of Guideline G1185 Enhancing the safety and efficiency of navigation around OREI	WG1	VTS
ARM20-	11.2.9.1	Revised Guideline G1185 Enhancing the safety and efficiency of navigation around OREI	WG1	VTS
ARM20-	11.3.1	LN to IHO NIPWG on S-125 v1.0	WG2	Council and IHO
ARM20-	11.3.1.1	S-125 edition 1.0.0 (zip file)	WG2	Council and IHO
ARM20-	11.3.2	Revised Guideline G1106 on Producing an IALA S-200 Series Product Specification	WG2	Council
ARM20-	11.3.3	S-201 edition 2.0.0 (zip file)	WG2	Council
ARM20-	11.3.4	New concept and proposed definitions for S-201	WG2	Secretariat

**Working papers** will remain within the Committee for further review during ARM21.

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

*Action Items for the IALA Secretariat*

1. The Secretariat is requested to forward the WP draft guideline on buoy tender activities (ARM20-11.5.1.1) and WP Draft Recommendation on Buoy Tender Activities (ARM20-11.5.1.7) as a working paper to ARM21 for further development. 12
2. The Secretariat is requested to forward the WP draft guideline on the use of simple IoT sensors on physical AtoN (ARM20-11.5.1.2) to ARM21 for further development. 12
3. The Secretariat is requested to forward the Liaison Note on the draft recommendation related to the digitalization of AtoN (ARM20-11.2.3) and the draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy (ARM20-11.2.3.1) to all committees for their consideration. 13
4. The Secretariat is requested to forward the Liaison Note on the draft recommendation related to the digitalization of AtoN (ARM20-11.2.5) and the draft Recommendation on Digitalization of Marine AtoN and Services of Vessels of Varying Levels of Autonomy (ARM20-11.2.5.1) to the PAP for their consideration. 13
5. The Secretariat is requested to forward the WP Liaison Note from DTEC to ARM on AtoNs supporting autonomous navigation (ARM20-11.5.1.3), the WP Draft Discussion Paper on AtoNs designed to support autonomous navigation (ARM20-11.5.1.3.1), and the WP on Defining the Functional Capabilities of Physical AtoNs for MASS (ARM20-11.5.1.4) as working papers to ARM21 for further development. 14
6. The Secretariat is requested to communicate the contents of the Liaison Note on the NAVGUIDE review (ARM20-11.2.2) to all committees for their consideration. 14
7. The Secretariat is requested to forward the Revised Guideline G1052 Quality Management Systems for AtoN Service Delivery (ARM20-11.2.8) to Council for approval. 15
8. The Secretariat is requested to forward the WP Draft Guideline on Marking of Restricted Areas (ARM20-11.5.1.5) as a working paper to ARM21 for further development. 16
9. The Secretariat is requested to forward the Liaison Note to VTS on the Draft Guideline Drone Operation for AtoN Management (ARM20-11.2.7) and the Draft Guideline Drone Operation for AtoN Management (ARM20-11.2.7.1) to the VTS Committee for their consideration. 17
10. The Secretariat is requested to forward the WP R0126 The Use of the Automatic Identification System (AIS) in Marine Aids to Navigation (ARM20-11.5.1.6) and the WP GXXXX Use of the AIS in Marine Aids to Navigation Services (ARM20-11.5.1.7) as working papers to ARM21 for further development. 18
11. The Secretariat is requested to forward the Liaison Note on the Development of the AIS Model Course (ARM20-11.2.1) and the Overview of the AIS Model Course (ARM20-11.2.1.1) to all committees for their consideration. 19
12. The Secretariat is requested to forward the Liaison Note from ARM to ENG on R0101 and R0146 (ARM20-11.2.6) and the Revised Recommendation R0146 Strategy for Maintaining Racon Service Capability (ARM20-11.2.6.1) to the ENG Committee for their consideration. 19
13. That the Secretariat consider arranging a meeting with UNECE on the Signals for Inland Waterways (SIGNI) for further discussion. 19

14. The Secretariat is requested to forward the Liaison Note on the revision of Guideline G1185 Enhancing the safety and efficiency of navigation around OREI (ARM20-11.2.9) and the revised Guideline G1185 Enhancing the safety and efficiency of navigation around OREI (ARM20-11.2.9.1) to the VTS Committee for their consideration. 20
15. The Secretariat is requested to forward S-201 Edition 2.0.0 (ARM20-11.3.3) to Council for approval. 21
16. The Secretariat is requested to, once approved by Council, register the S-201 2.0.0 (ARM20-11.3.3) in the IHO GI Registry. 21
17. The Secretariat is requested to register the New concept and proposed definitions for S-201 (ARM20-11.3.4) in the IHO GI Registry. 21
18. The Secretariat is requested to consider identifying and implementing effective strategies for promoting the finalization and publication of the S-201 Product Specification to the members, once it has been approved by the Council. 21
19. The Secretariat is requested to forward the Liaison Note to IHO NIPWG on S-125 Edition 1.0.0 (ARM20-11.3.1) and S-125 Edition 1.0.0 (ARM20-11.3.1.1) to Council for approval and then IHO NIPWG in order to, after review and amended by NIPWG, start the approval process at IHO. 21
20. The Secretariat is requested to forward the Revised Guideline G1106 on Producing an IALA S-200 Series Product Specification (ARM20-11.3.2) to Council for approval. 23
21. The Secretariat is requested to ask Council for approval to amend the task name of 7.1.10 - Monitor the development of S-201 Testbed to: "Monitor the development of the test & validation tool". 23
22. The Secretariat is requested to forward the WP Review of Guideline G1087 (ARM20-11.5.2.1) as a working paper to ARM21 for further development. 23
23. The Secretariat is requested to forward the WP MS-Description zip file (ARM20-11.5.2.2) as a working paper to ARM21 for further development. 24
24. The Secretariat is requested to forward the Liaison Note on the Discussion of the Task on Digitalization Discussion Paper (ARM20-11.1.1) to the DTEC Committee for their consideration. 28
25. The Secretariat is requested to withdraw the R0113, which was replaced by G1172 under R0139. 28

#### *Action Items for Participants*

26. That Committee participants provide example pictures from buoy tending activities, as illustrations for the draft guideline on buoy tender activities. 12
27. Committee participants are invited to join the intersessional group (Virtual meetings) working on Task 1.2.5 Guidance on the use of simple IoT sensors on physical aids. Participants are requested to express their interest to Naehyuk Yoo (nhyoo@katon.or.kr) by 1 June 2025, noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard. 12
28. The Intersessional Group Leader to provide input on the intersessional work on Task 1.2.5 to ARM21. 13



29. That the ARM CMT take into consideration the proposed work item to harmonize definitions for a future IALA / IHO workshop. 14
30. Committee participants are invited to join the intersessional group (Virtual meetings) working on Task 2.1.1 – Develop guidance on the marking of test areas for autonomous vessels and vehicles, ice roads, and competition and event areas. Participants are requested to express their interest to Mats Hörström (mats.horstrom@transportstyrelsen.se) by 1 June 2025, noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard. 16
31. The Intersessional Group Leader to provide input on the intersessional work on Task 2.1.1 to ARM21. 16
32. That the ARM Chair arrange an intersessional meeting for members of the ARM and VTS committees, to consider the changes to G1185 and the broadening of the document to be more generic for marine spatial planning whilst considering VTS Recommendations and Guidelines alongside existing ARM Guidelines. Results of scoping exercise to be considered for the workplan 2027 - 2030. 20
33. Committee participants are invited to join the intersessional group (Virtual meetings) working on Task 7.1.7 – Continue development on MRN documentation, considering inputs from the IALA Secretariat, other committees, or others as needed. Participants are requested to express their interest to Martijn Ebben (m.ebben@portofrotterdam.com), noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard. 22
34. The Intersessional Group Leader to provide input on the intersessional work on Task 7.1.7 to ARM21. 22
35. Committee participants are invited to join the intersessional group (Virtual meetings) working on Task 7.1.14 – Development of technical service specifications for the provision of AtoN information. Participants are requested to express their interest to Nikolaos Vastardis (nikolaos.vastardis@gla-rad.org) by 1 May, noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard. 24
36. The Intersessional Group Leader to provide input on the intersessional work on Task 7.1.14 to ARM21. 24
37. The USCG is requested to provide input to ARM21 on an evaluation of the PAWSA Mk IV, as well as facilitation and methodology guides. 25
38. That Floris Goerlandt presents updated research results incorporating the outcome of the research related to risk control options from the outputs of both PAWSA and SIRA application at ARM21. 26
39. The IALA World-Wide Academy is requested to obtain further information on the use and benefits of the BASSnet, Maritime Traffic Simulation/Human Models and the Environment Stress Model referred to above and provide input to a future ARM session. 27
40. Committee participants are invited to join the intersessional group (Virtual meetings) working on task 1.4.11 categorization of AtoN and the concept of waterway health. Participants are requested to express their interest to Yvonne Koldenhof (Y.Koldenhof@marin.nl) by 1 June 2025, noting the dates and times of the intersessional meetings will be published on the ARM Committee Dashboard. 27
41. The Intersessional Group Leader to provide input on the intersessional work on task 1.4.11 to ARM21. 27

42. That participants consider submitting work programme proposals to the next ARM Committee for the 2027 – 2030 period using the template found in the resources section of the ARM dashboard.

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## Working Group 1

## Navigational Requirements

Chair – Dave Lewald

Vice-Chair – Johan Westerlund

Members	Organisation	Task Group No.	Online (x)
R. David Lewald	US Coast Guard		
Johan Westerlund	Swedish Maritime Administration	1.5.2, 1.2.2	
Peter Douglas	Northern Lighthouse Board, UK	2.2.2	
Henrika Björkell-Virta	FTCA, Finland	2.2.2	
Jaime Alvarez	IALA	2.2.2	
Zhang Pu	China MSA	2.2.2	X
Terry Skinsley	AMSA, Australia	2.2.2	
Jeremy Peat	SRT UK	2.2.2	X
Lim Fung Vui	Malaysia Marine Department	2.2.2	
Mayumi Arita	Japan Coast Guard	2.2.2	
Gary Chew	Maritime and Port Authority of Singapore	2.2.2	
Pasquale Mellone	Italian Navy	2.2.2	
Alex Vargas	Directemar Chile	2.2.2	X
Hector Duran	Directemar Chile	2.2.2	X
Filipe Vieira	Instituto Hidrografico – Portuguese Navy	2.2.2	
Evans Ondigui	National Port Authority Cameroun	2.2.2	
Alan Grant	GLA Research & Development, UK	2.2.2	
Liu Jiangna	China MSA	1.5.2, 2.2.1, 1.2.2	
Yang Jun	China MSA	1.5.2, 1.2.2	X
Mats Hörström	Swedish Transport Agency	2.1.1	
Janina Tapia Cotrino	Traficom	2.1.1	X
Filipe Alexandre Reis Vieira	Instituto Hidrográfico, Portuguese Navy	2.1.1	
Alidou Treboul	German Transport Agency	2.1.1, 2.2.1	
Wang Shuo	China MSA	2.1.1, 2.2.1, 1.2.8	X

Members	Organisation	Task Group No.	Online (x)
Kseniia Ipatova	Department of Navigation and Oceanography, Russian Federation	2.1.1, 1.2.2	
Naehyuk Yoo	Korea Institute of Aids to Navigation	2.2.1, 1.2.5	
Mika Lehtola	Finnish Transport and Communications Agency	2.2.1, 1.2.2, 1.2.9	
Pasquale Mellone	Italian Coast Guard	2.2.1	
Azza Abdelali	Agence Nationale Des Ports, Morocco	2.2.1	
Li Guanzheng	China MSA	1.2.2	X
Ji Bing	China MSA	1.2.9	X
Maarten Berrevoets	Ministry of Infrastructure and Water Management	1.2.8, 1.2.2, 1.2.9	
Oleg Gaidai	Department of Navigation and Oceanography, Russian Federation	1.2.8, 1.2.2	
Konstantin Speranskii	Department of Navigation and Oceanography, Russian Federation	1.2.2	
Artem Ivanov	Department of Navigation and Oceanography, Russian Federation	1.2.2	
Maria Belozerova	Department of Navigation and Oceanography, Russian Federation	1.2.2	
Gary Chew	Singapore MPA	1.2.8	
Gregory Pretorius	Ministry of Infrastructure and Water Management	1.2.8	
Dave Merrill	US Coast Guard	1.2.2, 1.2.9	
Peter Dam	Danish Emergency Management Agency	1.2.2, 1.2.9	
Joonatan Ahlroos	Finnish Transport Infrastructure Agency	1.2.2, 1.2.9	
Oyvind Schroder	Norwegian Coastal Administration	1.2.2, 1.2.9	
Mohamed Khursid	Middle East Navigation Aids Services - MENAS	1.2.2, 1.2.9	

## Working Group 2

## Information Services and Portrayal

Chair – Peter Hooijmans

Vice-Chair – Alison Contreras

Members	Organisation	Task Group No.	Online (x)
Peter Hooijmans	Ministry of infrastructure and waterways	The group worked in plenary	
Minsu Jeon	IALA Secretariat	The group worked in plenary	
Martijn Ebben	Port of Rotterdam Authority	The group worked in plenary	
Thomas Christensen	AIveNautics	The group worked in plenary	
Fredrik Karlsson	Swedish Maritime Administration	The group worked in plenary	X
Sewoong Oh	KRISO	The group worked in plenary	
Eivind Mong	Canadian Coast Guard	The group worked in plenary	
Shen Yangyang	China Maritime Safety Administration	The group worked in plenary	
Ulla Bjorndal Moller	Danish Emergency Management Agency	The group worked in plenary	
Nikolaos Vastardis	GRAD	The group worked in plenary	
Yang Yang Shen	China Maritime Safety Administration	The group worked in plenary	X
Fabien Piotrowski	Cerema	The group worked in plenary	X
Taehee Kim	KRISO	The group worked in plenary	
Yunjee Kim	KRISO	The group worked in plenary	
Xavier Hernoe	Direction générale des affaires maritimes, de la p	The group worked in plenary	X
Michael Strandberg	Danish Maritime Authority	The group worked in plenary	
Alain Serge Mbene Koah	Port Authority of Kribi	The group worked in plenary	
Li Shibo	China Maritime Safety Administration	The group worked in plenary	X
Huiwen Zhou	China Maritime Safety Administration	The group worked in plenary	X
Jose Mella	Chile	The group worked in plenary	
Tuomas Martikainen	Finnish Transport Infrastructure Agency	The group worked in plenary	

Members	Organisation	Task Group No.	Online (x)
Ru bin	China MSA	The group worked in plenary	
Hyun Kim	Korea MOF	The group worked in plenary	
Elaine Fitzgerald	Irish Lights	The group worked in plenary	

### Working Group 3

### Risk Management

Chair – John Stone

Vice-Chair - Kevin Gregory

Members	Organisation	Task Group No.	Online (x)
Ed Rogers	Nash Maritime	The group worked in plenary	
Ernst Bolt	Ministry of Infrastructure and Water Management	The group worked in plenary	
Floris Goerlandt	Dalhousie University	The group worked in plenary	
Gian Luca Menabene	Ministero delle infrastrutture e dei trasporti-Italian Coast Guard	The group worked in plenary	X
Gregory Pretorius	Ministry of Infrastructure and Water Management	The group worked in plenary	
Henrika Bjorkell-Virta	Finnish Transport and Communication Agency	The group worked in plenary	X
Im Namkyun	Mokpo National Maritime University	The group worked in plenary	
Jacqueline van den Bosch	Ministry of Infrastructure and Water Management	The group worked in plenary	
Jean Yves Brehmer	French Lighthouse Authorities Guadeloupe	The group worked in plenary	
Jorge Estêvão	Direção de Faróis	The group worked in plenary	
Neils Arndal	FORCE Technology	The group worked in plenary	X
Nick Neely	US Coast Guard	The group worked in plenary	
Oh Do Hyun	Mokpo National Maritime University	The group worked in plenary	X
Pärtel Keskküla	Estonian Transport Administration	The group worked in plenary	
Pedro Vacas De Carvalho	Direção de Faróis	The group worked in plenary	
Per Christian Engberg	Engberg Solutions	The group worked in plenary	



Members	Organisation	Task Group No.	Online (x)
Per Engberg	Engberg Solutions APS	The group worked in plenary	
Raul Escalante	Hidrovia S.A.	The group worked in plenary	
Roberto Calabria	Ministero delle infrastrutture e dei trasporti-Italian Coast Guard	The group worked in plenary	X
Ru Bin	China MSA	The group worked in plenary	
Sarah Robinson	IALA WWA Consultant	The group worked in plenary	
Stein Jarle Loevik	Norwegian Coastal Administration	The group worked in plenary	
Valterri Laine	Finnish Transport and Communications Agency	The group worked in plenary	
Vincent Nineuil	Cerema	The group worked in plenary	
Yvonne Koldenhof	Marin	The group worked in plenary	
Zhimin Zhang	China Maritime Safety Administration	The group worked in plenary	X



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