IALA ARM COMMITTEE

REPORT OF THE 19th SESSION OF THE IALA ATON REQUIREMENTS AND MANAGEMENT (ARM) COMMITTEE

7 – 17 October 2024

Thomas Southall

Committee Secretary

17 October 2024

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Report of the 19th session of the IALA

IALA AtoN Requirements and Management (ARM) Committee
Executive Summary

The 19th session of the IALA AtoN Requirements and Management (ARM) Committee was held from 7 – 17 October 2024, including the physical week at IALA HQ between 7 - 11 October, with Dave Lewald as Chair and Natasha McMahon as Vice-chair. The Secretary for the meeting was Thomas Southall.

96 participants from 30 countries participated in ARM19. 13 participants attended for the first time.

The ARM Committee considered 59 input papers and produced 18 output papers from three Working Groups.

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

Key outputs completed included:

ARM19- 11.2.4   Liaison note to ITU on MAtoN and single slot message 28

ARM19- 11.2.4.1 IALA response to WP 5B TD 73 on Revision of Recommendation ITU-R M

ARM19- 11.2.4.2 Joint input paper on revision of Recommendation ITU-R M.1371-5 (CIRM & IALA)

ARM19- 11.2.5   Draft Guideline on Enhancing Navigation Around OREI

ARM19- 11.2.6   Draft Recommendation on QMS for AtoN Authorities

ARM19- 11.3.1   Draft Guideline on Harmonised Waterways Datasets

ARM19- 11.3.2   Recommendation on Harmonised Waterways Datasets

The following liaison notes were approved:

ARM19-11.2.1   Liaison note to DTEC regarding MASS

ARM19-11.2.2   Liaison note to all committees on IoT sensors

ARM19-11.2.3   Liaison note to ENG regarding Buoy Tender activities

ARM19-11.2.3.1 Draft Guideline on Buoy Tender Activities

ARM19-11.3.3   Liaison note to PAP and DTEC on S-230

ARM19-11.3.4   Liaison note to all committees on MRN intersessional work

ARM19-11.3.5   Liaison note to VTS on S-200 implementation plan

ARM19-11.3.6   Liaison note to PAP on MCP reference information

ARM19-11.4.1   LN to ENG on the review of R0130 on Categorisation and Availability Objectives for Short Range   AtoN

ARM19-11.4.2   Liaison Note to DTEC on Draft Guideline on the Digitalisation of Waterways

Overall status of the ARM Committee 2023 - 2027 Work Programme after ARM19:

Standard	Scope	No.	Task	17	18	19	20	21	22	23
S1010 Marine AtoN	Marine AtoN planning	1.2.1	Compile new Guideline on AtoN Buoy Tender requirements and specification				x	x	x	x
	Marine AtoN planning	1.2.2	Compile guidance for buoy tender activities		x	x	x	x		
	Marine AtoN planning	1.2.3	Full review of Guideline G1078 The Use of AtoN in the Design of Fairways						x	x
	Marine AtoN planning	1.2.4	Development of aspects of digital communications, including promoting broadband connectivity for operational technology.			x	x	x	x	x
	Marine AtoN planning	1.2.5	Guidance on the use of simple IOT sensors on physical aids			x	x	x		
	Marine AtoN planning	1.2.6	Develop further guidance for navigators on the use of AtoN	x	x	x	x	x		
	Marine AtoN planning	1.2.7	Prepare an appropriate submission to IMO advising of the publication of the updated MBS highlighting MATON and MASS content.	x						
	Marine AtoN planning	1.2.8	Develop guidance on the provision of AtoN and risk management for autonomous vehicle/vessel operations (Maritime Autonomous Surface Ship, MASS)		*x*	*x*	*x*			
	Marine AtoN planning	1.2.9	Review relevant sections of NAVGUIDE in cooperation with the Secretariat	*x*	*x*	*x*	*x*	*x*	*x*	*x*

Standard	Scope	No.	Task	17	18	19	20	21	22	23
	Obligations and regulatory compliance	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.	x	x	x	x	x		
	Risk management	1.4.1	Enhancing the safety and efficiency of navigation around offshore installations	x	x	x				
	Quality management	1.5.1	Develop a recommendation and guideline consolidating content from G1030, G1035 and G1004.		x	x	x	x		
	Quality management	1.5.2	Revision of Guideline 1052 on Quality Management in Marine Aids to Navigation Service Delivery	x	x	X				
	Quality management	1.5.3	Revise Recommendation R0132 Quality management for AtoN authorities.	x	x	x				
S1020 AtoN design and delivery	Visual signalling	2.1.1	Consider developing guidance on the marking of test areas for autonomous vessels and vehicles, ice roads and competition and event areas etc				x	x	x	x
	Design, Implementation & Maintenance	2.2.1	Develop Recommendation and Guideline on the use of Drones for AtoN inspection and maintenance	x	x	x	x			
S1050 Training and certification	Training and assessment	5.1.1	Model course on incident response and crisis coordination							
S1060 Digital communicati	Harmonized maritime connectivity	6.3.1	Review and update G1062 Establishment of AIS as a [Marine] Aid to Navigation	X						

Standard	Scope	No.	Task	17	18	19	20	21	22	23
on technologies	Wide and medium bandwidth systems	6.1.1	Review G1050 Management and Monitoring of AIS Information	x						
S1010 Marine AtoN	Marine AtoN planning	1.2.1 1	Develop guidance on the provision of Marine AtoN for autonomous vehicle/vessel operations (Maritime Autonomous Surface Ship, MASS).							
	Obligations and regulatory compliance	1.1.2	Consider developing guidance on the certification of technical equipment, information systems and technical infrastructure related to MASS in the domain of IALA							
S1020 AtoN design and delivery	Floating Aids to Navigation	2.3.1	Update G1066 Design of floating AtoN moorings							
S1040 VTS	VTS implementation	4.1.1	Develop guidance on delineating the VTS area							
S1060 Digital communication technologies	Harmonized maritime connectivity	6.3.2	Recommendation for the AIS Service							
	Harmonized maritime connectivity	6.3.3	Review of the contents of A-124 series recommendations							
S1010 Marine AtoN	Risk management	1.4.2	Consider the development of IALA as a facilitator for an ISAC (Information Sharing and Analysis Centre) in relation to cyber security.	x						
	Risk management	1.4.3	Develop guidance on cyber security for Marine AtoN	x	x				x	x
S1050 Training and certification	Accreditation, competency, certification and revalidation	5.2.1	Develop a model course on AtoN Cyber Security arrangements		x	x				

Standard	Scope	No.	Task	17	18	19	20	21	22	23
S1020 AtoN design and delivery	Design, Implementation & Maintenance	2.2.1	Full review of A-126, G1084 and other AIS associated documentation							
	Design, Implementation & Maintenance	2.2.2	Develop an IALA guideline on the Maritime Architecture Framework							
	Design, Implementation & Maintenance	2.2.3	Develop an IALA recommendation and guideline on developing Harmonized Waterway Concept	x	x	x	x	x		
S1050 Training and certification	Accreditation, competency, certification and revalidation	5.2.2	Create S-100 model course	x	x					
S1060 Digital communication technologies	Harmonized maritime connectivity	6.3.4	Define user requirements for Maritime Connectivity, Maritime Internet of Things (IoT), and MRN addressing (may be three subtasks)	x						
S1070 Information services	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.1	Digital Fairway				x	x	x	x
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.2	Contribute to the standardization efforts with respect of the requirements of the S-100 domain experts	x	x	x	x	x	x	x
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.3	New Guideline on Operational considerations for S-200 (S-201 AtoN information and S-230 Application Specific Messages)		x	x	x	x		
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.4	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	x	x	x	x	x	x	x

Standard	Scope	No.	Task	17	18	19	20	21	22	23
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.5	Coordinate with IHO on implementation of IALA PS into S-98	x						
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.6	Continue development on S-125 in coordination with IHO NIPWG	x	x	x	x	x	x	x
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.7	Continue development on MRN documentation, considering inputs from IALA Secretariat, other committees, or others as needed	x	x	x	x	x	x	x
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.8	Review Guideline G1106 on producing an IALA S-200 series Product Specification		x	x	x			
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.9	Coordinate Committee support and submissions for IALA representation at IHO working groups in cooperation with Secretariat (HSSC, S-100WG, NIPWG)	x	x	x	x	x	x	x
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.10	Monitor the development of S-201 Testbed	x	x	x	x	x	x	x
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.11	Develop, implement and execute procedures for IALA to add, maintain and harmonize items to the IHO S-100 Feature Concept Dictionary(FCD)	x	x	x	x	x	x	x
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.12	Create S-200 Implementation Plan, following similar S-100 Implementation Strategy and/or Roadmap	x	x	x	x	x		
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.13	Develop guidance on the symbology and portrayal of AtoN for charting	x	x	x	x	x	x	x

Standard	Scope	No.	Task	17	18	19	20	21	22	23
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.14	Development of technical service specifications for the provision of AtoN information	x	x	x	x	x	x	x
	Data models and data encoding (IVEF, S-100, S-200, ASM)	7.1.15	Review Guideline G1159 on ship reporting from the shore-side perspective		x	x	x	x		
S1050 Training and certification	Training and assessment	5.1.2	Training in implementation of digital solutions (data analytics & maritime informatics)					x	x	x
S1010 Marine AtoN	Risk management	1.4.4	Review Risk Management related documentation. Update as per ongoing risk toolbox developments.	x	x	x	x	x	x	X
	Risk management	1.4.5	Develop a method to quantify and evaluate various risk mitigation options	x	x	x	X			
	Risk management	1.4.6	Encourage IALA members and other organisations to share historic AIS and other vessel tracking data with IALA. IALA aims to use such data for risk assessment, research and training purposes.		x			x	X	
	Risk management	1.4.7	Conduct a global scan of current risk analysis tools and identify potential candidates for inclusion within the IALA Risk Management Toolbox.	x	x		X			
	Risk management	1.4.8	Monitor the IRMAS reporting tool, ensuring it meets the requirements for future records of risk management. Ensure the form is modified as required.	X						
	Risk management	1.4.9	Ensure long term sustainable supportability for IWRAP Software.			x	x	x	X	

Standard	Scope	No.	Task	17	18	19	20	21	22	23
	Risk management	1.4.10	Guideline for Risk Assessment of Cyber Security threats	x			x	x	x	X
S1050 Training and certification	Training and assessment	5.1.3	WWA lesson plans to review	x	x	x	x	x	x	x

Legend:
Blank: Ongoing or scheduled task
Light orange: To Council to note or approve
Light grey: Task completed or deleted
X   Prolonged task

Legend for task numbering:
Digit 1: WG 1, 2 or 3
Digit 2: Standard Scope No.; Other standards = 8; Standard not available = 9
Digit 3: In sequence (1, 2, 3 etc.)
Digit 4: Sub task a, b, c…(if needed)

Table of Contents

Report of the 19th session of the
IALA AtoN Requirements and Management (ARM) Committee

1.   INTRODUCTION

The 19th meeting of the ARM Committee was held from 7 – 17 October 2024 with Dave Lewald as Chair and Natasha McMahon as Vice-chair. The Secretary for the meeting was Thomas Southall.

The physical week began on Monday 7 October with the opening plenary and continued until Friday 11 October, followed by an approval period and the virtual closing plenary on 17 October. The Chair welcomed everybody, both old as well as new participants to the meeting.

96 participants from 30 countries participated in ARM19. 13 participants attended for the first time. A breakdown of the participants is shown in the graph below.
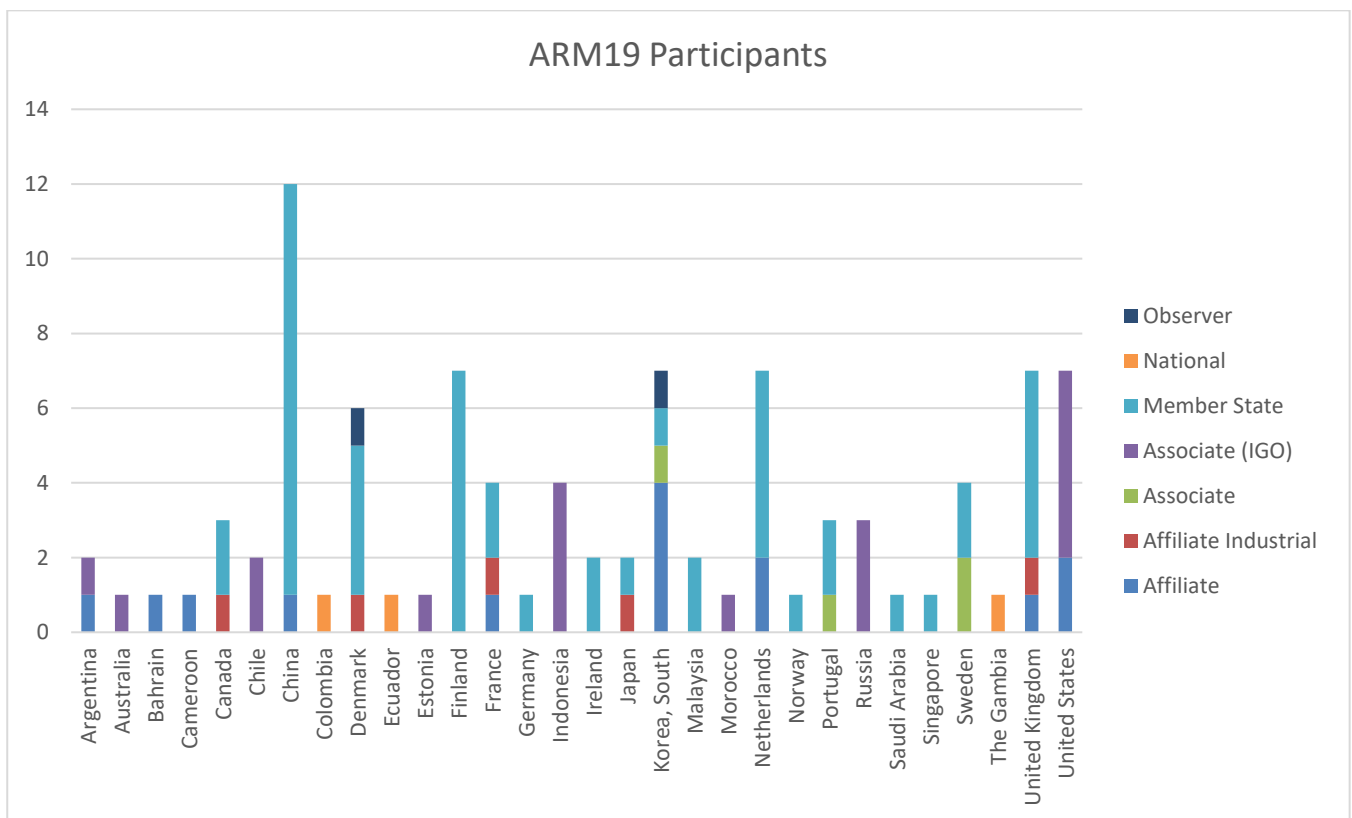
1.1   Welcome from the Secretary-General

Secretary-General Francis Zachariae warmly welcomed participants to ARM19 at Headquarters, with special recognition for both in-person and online attendees. He praised the recent S-100 workshop held in Annapolis, noting its success and the positive developments related to key projects such as S-124/125 and S-201. He highlighted the importance of harmonizing the digital environment, particularly through the Dat Product Specification, and acknowledged that some regions may require additional support, which the WWA is addressing.

He observed that ARM has a comprehensive agenda, covering a wide range of topics including MASS, S-100, MRN, and the digital waterway plan. He emphasized the value of cross-committee collaboration and encouraged attendees to leverage this opportunity for knowledge sharing, which is a core goal of IALA.

Additionally, Francis then informed the attendees about the transition to an IGO on 22 August, which now comprises 36 member states. He reminded participants to update all relevant documents with IALA's new name, the International Organization for Marine Aids to Navigation, and announced that the first General Assembly will take place in February 2025 in Singapore.

He concluded by expressing his gratitude for the participants' commitment to collaboration and wishing them a productive meeting.

1.2 Approval of the agenda

The agenda was reviewed and approved (ARM19-1.2.1).

1.3 Apologies

Gaelle Nassif and Mahesh Alimchandani submitted their apologies to the Secretariat. Mahesh notified the Secretariat that he was now retiring and the Committee gave him a round of applause in recognition of his years of service both as a participant and as the Secretariat. A list of participants who attended ARM19 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 tools available to them. This brief included an overview of the ARM19 Action Plan that had been

agreed by the ARM Committee Management Team (CMT) to be progressed during ARM19 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.

Task items that were worked on at ARM19 were displayed in the *Action Plan*, which can be found on IALA Dashboard for ARM.

2. REVIEW OF ACTION ITEMS FROM ARM18

The Committee Secretary confirmed that all Secretariat actions from ARM18 were completed (input paper ARM19-2.1.1).

3. REPORTS FROM OTHER BODIES

3.1 IALA

3.1.1 IALA Council

Minsu Jeon, the Technical Operations Manager of IALA, reported that at Council 80, several key revisions and updates to the work program for 2023-2027 were approved. These approvals included workshops, guidelines, and technical specifications.

The following workshops were approved or discussed; the 2nd IALA IHO Joint Workshop on S-100/200 in September 2024 (already concluded), an Aids to Navigation Engineering Workshop in October 2024 in Sydney, Australia, a VTS Competent Authority Workshop scheduled for January 2025 in Rome, Italy, a Sustainability and ENG 21 Workshop in October 2025 in Dublin, Ireland, and a Future of Radionavigation and Radiocommunication Workshop in 2026 in Edinburgh, UK. Additionally, the International Conference on Lighthouse Tourism and Maritime Heritage is also planned for October 2025 in Dublin, Ireland in conjunction with the workshop.

Several key documents and guidelines were also approved. These included the revised R1019 on Maritime Services in the context of e-Navigation (Ed2.0), a new draft Guideline on Cyber Security from an IALA perspective (Ed1.0), and a revision of G1141 Operational Procedures for Delivering VTS (Ed3.0). The Council also approved the revised G1177 Portrayal of VTS Information (Ed2.0) and a revised version of Model Course C0103-4 for VTS On-the-Job Training Instructors (Ed3.0). Additional revisions included the new draft Guideline on the Provision of MCP identities (Ed1.0), the revised R1007 on the VHF Data Exchange System (VDES) for Shore Infrastructure (Ed2.0), and the updated G1128 Specification of e-Navigation Technical Services (Ed1.5).

In the area of technical services, the Council noted the specifications for the Provision of Marine Aids to Navigation (AtoN) Information (Ed1.0) and the VTS Traffic Clearance Service (Ed1.3), as well as the service design for VTS Traffic Clearance using SECOM (Ed1.0). The IALA Manuals, including the VTS Manual (Ed8.3), were also acknowledged.

A procedure for the versioning and approval of product specifications and technical services was agreed. This protocol outlined three phases: the Development Phase for documents prior to version 1.0.0, the Testing and Validation Phase for documents between versions 1.0.0 and 1.9.9, and the Implementation Phase, where documents ready for publication and use are numbered from version 2.0.0 onward.

The Council further approved several liaison notes related to technical interactions with other organizations, including the IHO, RTCM, IEC, IMO, and ITU, focusing on operational interaction, standard updates and tasks.

Importantly, several documents were also approved by the Council, including Guideline G1180 focusing on Resilient Position, Navigation, and Timing, the updated Model Course C0103-2 for VTS Supervisor training, and Guideline G1181 addressing VDES VHF Data Link (VDL) Integrity monitoring. Additionally, the Council endorsed a workshop proposal concerning the VTS competent authority, with Italy offering to host the event.

A decision was made to select the Faro di Genova 'Lanterna' in Italy as the Heritage Lighthouse for the year 2024.

The Secretariat presented a paper to the Council on the necessity for more frequent updates to manuals, highlighting the rapid pace of technological evolution and the need for timely updates to ensure relevance and effectiveness. The request for authorization to implement a new process allowing committees to expedite the publication of updates to manuals was approved.

3.1.2   IALA Policy Advisory Panel

Minsu Jeon reported that at the PAP54, held on September 16 - 17 2024, at the IALA headquarters, several important topics were discussed and reviewed.

IALA's ongoing work on Maritime Autonomous Surface Ships (MASS) was a key focus, with a MASS Task Force meeting held on September 17, 2024, also at IALA HQ. IALA contributed to the revision of the Standards of Training, Certification, and Watchkeeping (STCW) and continued its efforts in the development, training, and testing of S-200 standards. This included the establishment of a roadmap for S-200 development and a report on the progress of S-200 Product Specification development, as documented in C80-10.8.1.

Additionally, the meeting reviewed the questionnaire, ensuring continued refinement and updates to IALA's terms.

3.2   IMO

Technical Operations Manager, Minsu Jeon, provided an update on key activities from the IMO relevant to IALA, summarizing the outcomes of two significant meetings, the 108th session of the IMO Maritime Safety Committee (MSC 108), held from May 15 to 24, 2024 and the 11th session of the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR 11), held from June 4 to 13 2024. Both meetings took place at the IMO Headquarters.

At MSC 108, chaired by Mrs. Mayte Medina of the United States and supported by Vice-Chair Capt. Theofilos Mozas of Greece, IALA was represented by Minsu Jeon, Tom Southall and Axel Hahn. IALA submitted MSC 108-INF.8 - IALA Workshop on establishing scenarios for the development of MASS (Maritime Autonomous Surface Ships).

The main outcomes of MSC 108 included:

- A revised roadmap for developing a regulatory code for MASS, marking progress in the regulation of autonomous ships.

- The adoption of revised guidelines on maritime cyber risk management, ensuring enhanced protection against cyber threats.

- New training requirements related to the prevention and response to violence and harassment in the maritime sector, particularly addressing sexual harassment, bullying, and sexual assault. These were incorporated into amendments to the STCW Code.

- Amendments to the 1974 SOLAS Convention and related instruments were also adopted, reflecting updates to key maritime safety regulations.

- Additionally, reports from various sub-committees were presented, leading to the approval of several important provisions.

At NCSR 11, chaired by Mr. J. Brouwers of the Netherlands and supported by Vice-Chair Mr. C. Cerda Espejo of Chile, IALA was represented by Minsu Jeon, Tom Southall and Stefan Bober. IALA submitted several papers, including:

- NCSR 11-14 - IALA Guideline G1181 on VDES VDL Integrity Monitoring.

- NCSR 11-18-1 - Draft revision of SN.1/Circ.297 on IALA Maritime Buoyage System (MBS).

- NCSR 11-18-2 - IALA Risk Management Toolbox.

Key outcomes from NCSR 11 included:

- The introduction of the VHF Data Exchange System (VDES) into the SOLAS framework, facilitating better communication and data transmission in maritime safety.

- Updates to the IALA Maritime Buoyage System (SN.1/Circ.297) and the Degree of Risk Evaluation (SN.1/Circ.296).

- Establishment of voluntary Vessel Traffic Services (VTS).

- Improvements to Marine Safety Information (MSI) and Global Maritime Distress and Safety System (GMDSS) services.

- Addressing AIS signal blockages caused by VHF radiotelephony, and revisions to Recommendation ITU-R M.1371-5 aimed at enhancing the security and integrity of AIS signals.

- Guidance on the validity of on-board radiocommunications equipment was updated (MSC.1/Circ.1460/Rev.4).

- Considerations regarding agenda item 1.12 of WRC-27, focusing on the use of the 1645.5-1646.5 MHz band, were discussed.

- Additionally, issues concerning S-100 implementation and the associated training needs for seafarers were highlighted, along with discussions on the future of the Maritime Messaging Service.

3.3 IHO

Minsu Jeon reported on recent activities with the IHO. The focus included various collaborations, technical updates, and workshops related to the S-100 and S-200 standards.

Key liaison involved the Hydrographic Services and Standards Committee (HSSC), the Nautical Information Provision Working Group (NIPWG) and ongoing liaison notes to NIPWG regarding AtoN Product Specifications (PS). Additionally, ITU's collaboration with S-100 Working Group and Regional Hydrographic Commissions played a central role. These collaborations helped define the technical aspects and portrayals of AtoN features, with particular emphasis on the IHO GI Registry and the S-124/125 technical services.

A key co-event between IALA and IHO was the 2nd Joint IHO/IALA Workshop on S-100/200 Development and Portrayal, which was held from September 9 - 13, 2024, at the U.S. Naval Academy in Annapolis, USA. This workshop attracted 84 participants from 19 countries, providing valuable insights into the integration and evolution of various S-100 series standards, including S-101, S-124, S-125, and S-201. Key conclusions from the workshop highlighted:

Operational Recommendations:

- Evaluation of the S-101 data model to ensure all information from S-12 (List of Lights) is included.

- Clarification that S-124 is designed for time-sensitive, navigationally critical information, while S-125 addresses changes in AtoNs.

- The need for S-124 and S-125 to provide a comprehensive operational picture, while S-125 does not duplicate AtoNs information in S-101.

Technical Recommendations:

- A review of data and service provisions required by IALA for international compliance, including for non-SOLAS vessels.

- Collection of test scenarios and datasets by the IHO-SGP lab to identify technical gaps in product specifications.

- Exploration of official testing MCP's identity management with IHO and addressing security concerns.

- Establishment of a formal system to notify stakeholders of changes to the S-100 standard.

- Recommendations to retain and enhance the S-124 symbol and align S-125 with IMO Circular Letter 243, while keeping S-101 symbols unchanged during the dual-fuel period.

Training Recommendations:

- Identification of knowledge gaps within the maritime community before training on S-100 standards.

- A focus on coordinated communication and marketing from IALA and IHO regarding S-100's benefits.

- Recommendations to refine STCW training requirements and include transition training to ECDIS.

- Emphasis on addressing significant training gaps for different user groups across the maritime community.

- Tailoring training courses to specific user groups, from high-level executives to software developers, ensuring materials remain current as standards evolve.

The workshop concluded with a joint recommendation to continue future discussions on the interaction of standards like S-101, S-124, S-125, and S-201, as well as broader efforts to implement and support remaining IHO and IALA product specifications across the maritime community.

3.4   ITU

The Committee noted Minsu Jeon's report regarding ITU that the recent meeting, several key revisions and new study questions were addressed concerning maritime communication systems.

A revision of Recommendation ITU-R M.1371-5 on the Automatic Identification System (AIS) was approved, along with updates to Recommendation ITU-R M.585-9 regarding the assignment and use of identities in the maritime mobile service. Two new ITU study questions were introduced: one focused on the "Coexistence of VHF Data Exchange System (VDES) with a Ranging-Mode," and another on the "Introduction of Digital Voice Communications in VHF maritime frequency channels."

A new report, ITU-R M. [VDES R-MODE], was also presented, which assesses the impact of introducing a range mode in the VHF data exchange system. Additionally, the suppression of Recommendation ITU-R M.693-1, which previously outlined technical characteristics for VHF emergency position-indicating radio beacons using digital selective calling, was approved..

3.5   Digital@Sea

The Committee noted the innovative approach taken at the recent Digital@Sea Digital@Sea North-America held on 8-9 May 2024 in Atlantic Beach, FL, US and Digital@Sea Asia Pacific and Capacity Building workshop in 2024.

3.6   Joint IHO/IALA workshop on S100/S200

The Chair updated the Committee on the 2nd IHO IALA workshop on S-100/200 which was held 9 – 13 September 2024 at the US Naval Academy, Annapolis, USA. The report is available as input paper ARM19-3.6.1.

4. PRESENTATIONS

All presentations given at ARM19 can be found on the fileshare (login necessary). The following presentations were given:

- IALA World Wide Academy update   Gerardine Delanoye

- Demonstration of technical service using   Thomas Christensen / Nikolaos Vastardis
  SECOM and MCP

- The Installation of AIS-AtoN in Antarctica   Raul Escalante

5. WORK PROGRAMME MANAGEMENT

5.1   Work Programme 2023 – 2027, Task Plan, Task Register

The Task Plan was updated to reflect the 2023 – 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 being updated to reflect the task registers. The Task Plan will be forwarded to ARM20 as a working paper.

Action item:

The Secretariat is requested to forward the WP ARM Committee Task Plan (ARM19-11.5.1.1) and as a working paper to ARM20 for further development.

6. REVIEW OF INPUT PAPERS

The input papers for ARM19 consisted of new input papers as well as working papers from the previous session. The input paper list (ARM19-6.1.1) did not include the working papers from ARM18. The working paper list (ARM19-6.1.2) 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	Guttorm Tomren (Chair), Johan Westerlund (Vice-chair)
WG2 – Information Services and Portrayal	Peter Hooijmans (Chair), LeeAnne Gordon (Vice-chair)
WG3 – Risk Management	John Stone (Chair), Kevin Gregory (Vice-chair)

8. WORKING GROUP 1 – NAVIGATIONAL REQUIREMENTS (WG1)

ARM19 has been an exciting third session of the work period with much progress on the various tasks of the working group. The group considered several input papers and drafted X liaison notes as response. The Chair and

Vice Chair would like to extend our profound gratitude to the working group members, who have all put in an enormous effort this meeting and achieved impressive 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: Guttorm Tomren, Trevor Harris

The task group did not convene during ARM19, but a member of the IALA secretariat participated in a MSC ISWG-STCW meeting at the IMO on Monday during the committee week. We are awaiting the internal meeting notes and the draft meeting report from IMO. An intersessional meeting will be held, when these are received.

During the meeting at IMO, our IALA proposal was negatively commented on by several nations and the IMO Committee have no desires to reference IALA documents in STCW. They did state they could include "electronic marks" in the training matrix of the revised STCW code.

The task group requests IALA members to discuss the paper with their national IMO delegates/participants and gain support for the IALA paper.

A potential, but not confirmed, way forward is to send an input paper to HTW in February 2025 from a IMO member state, co-sponsored by as many nations as possible. If this is decided to be our way forward, more intersessional meetings will need to be scheduled.

The Task leader invites ARM members to participate on this task. Please kindly indicate your desire to participate by sending an email to: guttorm.tomren@kystverket.no

Action items:

That committee participants express their interest in an intersessional meeting on task 1.1.1 – on the revision of STCW to Guttorm Tomren (guttorm.tomren@kystverket.no).

8.2 Task 1.2.2 Draft new Guideline on Buoy Tender Activities

Task group leader: Dave Merrill

The Task Group has completed approximately 99% of the Draft Guideline. A Liaison Note was drafted and posted to the File-Share from ARM to ENG. In the note we have requested ENG review the draft and provide input and recommendations. The task group will review these ENG recommendations in ARM-20, with the goal of completing the Guideline and submitting it for approval. There was a discussion at ARM-18 about an IALA AtoN Questionnaire developed by the Secretariat for NAVGUIDE feedback. As of ARM-19, no progress has been made on this IALA AtoN Questionnaire.

We do not anticipate any intersessional meetings between ARM-19 and ARM-20, but we may hold these later in the work period.

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 ARM19.

Action items:

That participants are asked to provide example pictures from buoy tending activities, as illustrations for the guideline.

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

Task leader: Naehyuk Yoo

The task group did not convene to evaluate the task at ARM19 due to other pending work. However, a simple scoping of the work was conducted during the week by the task leader, who will collect additional information intersessionally regarding the use of IoT.

Work on this task will continue at ARM20, and Members with experience in using IoT on AtoN are requested to forward relevant information to ARM20.

Action items:

The Secretariat is requested to forward Liaison note ARM19-11.2.2 to the other committees regarding experience and use cases of IoT on AtoN for their consideration.

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: Nigel Hare

Recognizing that there were more input papers than could be effectively reviewed during the week, the work group established three key aims:

- Review the DTEC MASS input paper (7.3.11.1) as a priority as this included elements of the VTS MASS input paper (73.13.1).

- Review and, if possible, finalize the draft ARM MASS paper (7.3.3).

- Review the input paper on an Advanced Adaptive Navigation System (7.3.6).

- The review of DTEC MASS input paper (7.3.11.1) was completed and comments were collated in a liaison note to DTEC.

The ARM MASS paper was reviewed and particular consideration was given to a proposal from China MSA for the potential catagorisation of AtoN based on their technical ability to interact with, and be used by, MASS. The group felt that in an increasingly digitised environment it would not only be beneficial for AtoN to be classified in terms of their Functional Capability to interact with MASS, it would also be beneficial for AtoN interaction to be considered with all vessels. Accordingly, the group decided to remove the proposal from the ARM MASS paper and present it as a liaison note to PAP for their view on whether the concept merited wider consideration across the other committees.

The ARM MASS paper was finalised with the exception of one section which the group agreed should be reviewed by WG 3. This section will be forwarded as a working paper to WG 3.

- The paper from China MSA (7.3.6) on Advanced Adaptive Navigation Systems was reviewed and a section covering this was included in the ARM MASS paper.

- During work on the MASS paper, the group considered a proposal from the Republic of Korea (Input paper 7.3.4) about the need to understand the delta between IALA expectations for AtoN interaction with MASS and the expectations of industry. The group concluded that a workshop to consider the delta would be appropriate and this will be considered at ARM 20.

- To help co-ordinate the proposed inter-committee discussion on the Guideline on MASS integration planned for 13 January 2025, it is proposed that the relevant committee chairs liaise in preparation for the meeting.

Action items:

That the Secretariat forward ARM19-11.2.1 liaison note to DTEC regarding MASS for their consideration.

That the Secretariat forward the ARM19-11.2.7 liaison note to PAP on the Definition of Functional Capability for their consideration.

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

Task group leader: Dave Merrill

The review and update of the NAVGUIDE began during ARM19. Good progress was made with the initial reviews of chapter 1, 2 and some of chapter 3 being completed. The Task Group will continue the review at ARM20. There are several chapters in the NAVGUIDE that will have to be reviewed by the experts in DTEC and ENG.

ARM will reach out to PAP requesting VTS, DTEC and ENG begin work on their sections of the NAVGUIDE. There is a Word version of the NAVGUIDE in the ARM File-Share. The task group recommends that access to this working copy be shared with DTEC and ENG so that changes are made in the same documents.

8.6 Task 1.2.10 – Update IALA Dictionary

Task group leader: Dave Merrill

China MSA has been conducting some intersessional work comparing terms and abbreviations in the Dictionary against the same terms and abbreviations in the NAVGUIDE. The overall goal is to agree to common definitions in both documents. A side note is terms and abbreviations related to navigation are being compared against the IHO definitions found in the IHO GI Registry. In most cases the IHO terms and abbreviations will be adopted by IALA. China MSA will continue their work and deliver recommended changes to all future ARM meetings in this current work period.

8.7 Task 1.4.1 – Enhancing the safety and efficiency of navigation around offshore installations

Task leader: Trevor Harris

The task group gathered to evaluate the document that was brought forward from ARM18. There were a few grammatical changes made to the text and a slight addition to document. The document was completed and a clean version formatted and developed ready for approval.

The group considers the task and document are completed.

Action items:

That the Secretariat forward ARM19-11.2.5 Draft Guideline on Enhancing Navigation Around OREI to Council for approval.

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

Task Leader: Trevor Harris

The task description as per the action plan is "Compile a recommendation and guideline to incorporate all references relating to the Categorization, Availability Objectives (G1030), Availability and Reliability for Short Range Aids to Navigation (G1035), Calculation of Availability (G1004) and relevant text appearing in the 2018 & draft 2023 NAVGUIDE that are not cross-referenced in the aforementioned Guidelines."

When starting the task it was identified that this task overlaps 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.

WG3 have identified a need to update IALA Recommendation R-0130 as part of their task. This will involve separating the existing document into a separate Recommendation and Guideline when identifying methods of measuring availability and/or other methods of monitoring waterway risk. WG1 will work alongside WG3 as the

revision of R-0130 progresses and the terminology is updated. On completion of the update of the existing documentation the Navguide 2023 Chapter 5 and ENG Guideline G1035 may require changes.

ARM WG3 are liaising with IALA ENG Committee as required around content of G1035. It has been identified that a lot of content of G1035 is specific for engineering needs and should be reassessed appropriately when ARM R0130 update.is completed.

IALA 2018 Navguide is now obsolete and does not need to be considered.

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

Task leader: Johan Westerlund

Work was progressed on this guideline during the week. Unfortunately the task group has received no new examples of best practice on QMS so the existing examples in the guideline will be unchanged. The VTS Committee has finalised the Guideline on QMS for VTS service, so sections in the guideline referring to VTS operations have been edited out of the draft guideline.

Action items:

That the Secretariat forwards (ARM19-11.5.2.1) WP draft Guideline G1052 Quality-Management-Systems-for-AtoN-Service-Delivery as a working paper to ARM20 for further development.

8.10 Task 1.5.3 – Revise Recommendation R0132 Quality management for AtoN authorities

Task leader: Johan Westerlund

The VTS Committee has finalised the Guideline on QMS for VTS service delivery, meaning the draft recommendation can be forwarded to Council for approval. Once the Guideline has been designated a number the draft recommendation can be updated with the number reference and thereafter approved by Council.

Action items:

That the Secretariat forwards (ARM19-11.5.2.3) Draft Revised R0132 Quality Management for Aids to Navigation Authorities to Council for approval.

That the Secretariat amends the draft revised recommendation with the VTS guideline's number prior to publishing the new edition.

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

Task leader: Naehyuk Yoo (Korea Institute Of Aids To Navigation)

The task group conducted a review of the DTEC committee's feedback concerning the scope of the guideline. Initially, the draft aimed to address aerial, floating, and underwater drones. Each type of drone presents distinct regulatory and operational challenges that are well understood. UAV operations, for instance, are governed by airspace management protocols and aviation safety regulations, while USV and UUV operations are influenced by factors such as maritime conditions, vessel traffic, and underwater navigation. Given these differing requirements, the draft was revised during ARM19 to focus on aerial drones, while acknowledging all drone types in the introduction, to allow for future updates or separate guidelines.

Additionally, the Drone Operations section has been revised to incorporate more detailed theoretical knowledge to better reflect the complexities involved in using drones for AtoN. These revisions align with the planned implementation of a Drone Operations Manual, ensuring the guideline can be adapted to evolving technologies and regulatory frameworks.

Work on this task will continue at ARM20, where the task group will review feedback from the ENG committee regarding the guideline.

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

Task group leader: Peter Douglas

The group has clarified the way ahead for AIS documentation as follows:

- A new **IALA Recommendation R0126** on AIS on an AtoN, based on input ARM19-7.3.7.1. This has been drafted but will be the final document to be completed.
- A new **IALA Guideline Gxxxx** based primarily on the content of the existing R0126. This has been mostly drafted, but requires further work on a number of Annexes.
- Relevant sections of the existing **Recommendation R0143 – Provision of virtual aids to navigation** and **Guideline G1081 – Virtual aids to navigation** will be incorporated within the new Guideline as an Annex B, allowing these documents to be retired.
- Relevant sections of the existing **Guideline G1050 – The management and monitoring of AIS information** will be incorporated within the new Guideline as an Annex D, allowing this document to be retired.
- 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. Annex A of this document will be incorporated within Annex B (Virtual AtoN) of Gxxxx.
- Relevant sections of the existing **Guideline G1084 – Authorisation of AIS AtoN** have been incorporated within the new Guideline, allowing this document to be retired.
- **Guideline G1095 – Harmonized implementation of application-specific messages** will be incorporated within the new Guideline as an Annex E, allowing this document to be retired.
- Relevant sections of the existing **Guideline G1098 – The application of AIS – AtoN on buoys.** have been incorporated within the new Guideline as Annex C, allowing this document to be retired.

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. This document dates from 2011 and refers to an urgent need for harmonization. **We recommend that R0144 be 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 as a separate document;** 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 are excluded from this AIS review.

The Task Group also reviewed the IALA WWA Model Course on AIS Data Management. A further online intersessional review will be planned.

8.13 Other input papers

Input paper ARM19-3.4.2 from ITU, Revision on ITU recommendation

WG1 drafted a liaison note to forward feedback to ITU on revision of ITI-R M.1371-5 as the document proposed some changes that WG1 do not concur with.

IALA previously sent a liaison note, a joint CIRM and IALA paper, for reference: IALA Council 73G/C/C73/21-06274, and at IALA Council 74, document C74-13.1.2. Both documents are attached to the liaison note.

Changes proposed using Mobile AtoN for marking fishing apparatus, a fishing apparatus is not an AtoN and should not be marked as such. Other changes proposed combination of marks, combining Mobile AtoN and cardinal marks, this is not appropriate according to IALA MBS. There is also proposed use of Mobile AtoN that results in making the Mobile Aton an unmanned vessel, and this should be avoided as described in current approved MAtoN document.

Action item:

That the Secretariat forwards ARM19-11.2.4 Liaison note to ITU Feedback on revision of ITI-R M.1371-5, ARM19-11.2.4.1 IALA response to WP 5B TD 73 on Revision of Recommendation ITU-R M and ARM19-11.2.4.2 Joint input paper on revision of Recommendation ITU-R M.1371-5 (CIRM & IALA) to Council for approval, and from there onward to ITU.

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

There were 22 participants in person and 6 participants online.

During ARM19, the 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 reorganised the task groups for the tasks.

The Report of the Second Joint IHO/IALA Workshop, input document ARM19-3.6.1, was discussed, including the possible action items it created for the working group. The actions from the workshop that were within the scope of the working group and the actions from the working group are captured in the table below.

Action from the workshop	Working group action
It is recommended that IHO/IALA explore official testing MCP's identity management in conjunction with IHO's identity management system (focused on producer and data protection). It was further suggested that IALA provide its concerns and/or requirements related to security.	The Working Group recognized the need to explore more testing and supports to establish an IALA MCP reference instance. Comprising of a identity registry, service registry and messaging service.
The IALA ARM Committee consider adding input on defining service specific latency requirements and the need for a goal based framework for the 'last mile' to IHO S-100WG.	The Working group is requesting the IALA Secretariat to monitor the need for input and consider adding this to the task register for future work.
Comparison should be undertaken of S-101 data model and S-201 as all information for populating AtoN Information in S-101 should be coming from S-201 datasets. (IALA Committees)	This will be done as a part of the migration roadmap.

Action from the workshop	Working group action
Action for IHO/IALA Member States to consider preparing a paper to IHO WWNWS Sub-Committee with regards to S-124 considerations of "time-critical" and "navigationally-significant" regarding AtoNs and S-125.	WG2 will draft a liaison note to WWNWS with some examples at ARM20
Use of MRN within S-101, S-124, S-125, S-201. Each dataset should use/include MRN wherever possible. Action on IALA ARM to verify that S-201 data model accommodate MRN use.	This is part of the work being done by the S-201/125 task group
IALA ARM Committee to consider including or verifying that the S-201 data model include "Authority" or "Source" information to identify the authority (or owners) of AtoNs belonging to another entity (than the S-201 issuer). This information may also appear in S-101 for Mariners (or may be simplified as "Private" or other notation). Action for Committee to consider contents of S-201 for exchange and for (S-101) portrayal to the Mariner.	Consideration will be taken into account by the S-201/125 task group
IALA ARM Committee and IHO NIPWG to consider further work to be undertaken to address how S-125 could be used in Route Planning versus Route Monitoring Mode, and if this is dependent on "type" (AC, PC, TC, DC) encoding.	TG-S125. Possible liaison note to IHO NIPWG at ARM20.
IALA ARM Committee and IHO NIPWG to consider technical and operational aspects of geographic footprints or extents with regards to S-124 and S-125 dataset boundaries and concerns of overlap.	Consideration will be taken into account by the S-201/125 task group
The Working Group recommends that document (WorkshopUseCasesS124S125.pdf) with use cases be forwarded to IALA ARM Committee Working Group 2.	Use cases will be taken into account by the S-201/125 task group

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

No work was done on this task because no input was provided by the WWA on the objectives of the model course. The working group was of the opinion that the working group could help in the review of the model course but the development is beyond the scope of working group.

Action item:

That the Secretariat and the Worldwide Academy consider how to assist ARM with the task 5.2.1 Develop a model course on AtoN Cyber Security arrangements.

9.2 Develop an IALA Recommendation and Guideline on developing Harmonized Waterway Concept (ARM-2.2.3).

Task group lead: Amilynn Adams

Intersessional work has been conducted to review the Guideline that has been created. The comments from the intersessional meetings were processed and the Guideline is ready for approval by Council. A Recommendation has been created and reviewed during intersessional work and is ready for approval by Council.

Action item:

That the Secretariat is requested to forward ARM19-11.3.1 GNNNN Harmonised Waterways Datasets and ARM19-11.3.2 RNNNN Harmonised Waterways Datasets to Council for approval

9.3 Contribute to the standardization efforts with respect of the requirements of the S-100 domain experts (ARM-7.1.2).

No specific action was taken on this task during the session. For the S-201 work, there will be submissions to the GI Registry intersessionally.

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

Task group leader: Dr. Sewoong Oh

Addressed input papers: ARM19-8.4.5

The Working Group discussed the liaison note from DTEC and came up with use cases which needed to be addressed in order to support the necessity for S-230. The use case was described in an liaison note to DTEC and PAP.

Action item:

That the Secretariat forward ARM 19-11.3.3 liaison note to PAP and DTEC for their consideration.

9.5 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

S-201 TG reviewed the analysis report on S-201 1.1 data model submitted by CCG at ARM18. In relation to the development direction of the S-201 AtoN data model, the S-101 and S-57 were reviewed, and according to the opinions of WG2 members, it was decided to revise S-201 data model to align it better with the S-101, but to ensure that it works well for AtoN Authority Stakeholders primarily, and that the model remains convertible to S-101 secondary and S-57 tertiary. It was decided to separate the light features into four types (All around light, Sectored light, Fog detector light, Air obstruction light) and maintain the Topmark as a feature type.

TG completed review of the analysis report by CCG and identified new and revised feature data in the IHO GI Registry. When FC is produced after ARM19, it was decided to test the S-201 data model through the S-200 test bed and share the results.

The work will continue at ARM20.

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

Task group leader: Dr. Sewoong Oh

Because of dependencies with S-201, this work is on hold until the next version of S-201 is finalized.

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

Task group leader: LeeAnne Gordon

Addressed input papers: ARM19-8.4.4, ARM19-8.4.4.1, ARM19-8.4.4.2, ARM19-8.4.6.

The Task Group discussed four input papers on MRN from DTEC and VTS. Both Committees expressed concerns with elements of the MRN documentation. During discussions, there were concerns that members of the other Committees may be misinterpreting the MRN documents, or misunderstanding IALA's two-fold role with MRN.

IALA has the role of prescribing procedures for adoption of MRN within its remit, which is covered in IALA Guideline G1143. As the owner of MRN, IALA also has the responsibility to allocate MRN namespaces to other interested parties, and to prescribe procedures for requesting those. This responsibility is documented in IALA Guideline G1164.

The Task Group noted that there may be an overall lack of awareness and familiarity with MRN across IALA Committees, which may result in the misinterpretations and misunderstandings. In this case, better awareness of MRN is needed.

In addition, the input from the DTEC Committee included a path of action for an IMO Submission on MRN. The Task Group supported the proposed plan of action, but agreed further work should be done by a cross-Committee Intersessional Work Group.

The Task Group concluded that intersessional work is warranted, and outlined some suggestions to inform and scop this intersessional work. A Liaison Note to PAP and all committees was created, to identify participants to work intersessionally, and to request use-cases and other information for intersessional discussions.

Action item:

That the Secretariat forwards ARM19-11.3.4 liaison note on Maritime Resource Name Intersessional Work to PAP and all committees for their consideration.

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

Task group leader: Peter Hooijmans

Addressed input papers; ARM19-8.4.1

The working group discussed the draft revision and amendments were made in the document. There was general consensus about keeping the G1106 IALA specific and refer to IHO standards as much as possible. Further work on the guideline will be done intersessionally and members can report to the TG lead if they want to participate.

Action item:

That members contact the task group lead by 1 December 2024 to express interest in contributing to intersessional work.

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

Task group leader: Eivind Mong

It was reported that the IALA Liaison note (NIPWG11_2024_09.2A_EN_C80-12.1.1 &) to NIPWG on the Operational Interaction Diagram had been well received and that NIPWG was grateful for the support from IALA ARM Committee.

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

Task group leader: Dr. Sewoong Oh

The S-200 Test Bed Phase 2 has been developed to support the VTS Committee's requirements for the use of the S-200 Test Bed and to support testing of S-200 series product specifications as well as S-201 Aton data model. The

redeveloped S-200 test bed can input sample data according to the FC/PC of the S-200 series PS, and upload multiple Aton data through an Excel template similar to the list of Atons. The S-200 test bed supports validation check and download functions of uploaded test data. WG2 recommended that IALA members use the S-200 test bed trials and share feedback to the ARM committee. It was noted at the 2nd IALA/IHO joint workshop that the S-200 test bed name was confused with the S-100 test bed, WG2 therefore agreed to change the name of the S-200 test bed to S-200 Test & Validation Tool.

9.11 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

G1087 is a guideline document that describes the procedures for registration, approval, and management of IALA domain feature data in the IHO GI Registry. As the GI Registry was revised, some of its contents became necessary to be revised. In relation to the IHO GI Registry, IALA domain is comprised of the IALA Deputy Secretary General, domain manager, field manager, and product specification developer. The organizational structure needs to be revised by reviewing the role of the field manager. WG2 agreed to the revision of G1087 and discussed that practical examples are needed to identify new concepts and feature data and propose a GI Registry, and that common data model for Virtual Aton regardless MARCOM and Aton monitoring information could be considered for this purpose. WG2 decided to revise G1087 on IALA domain management of the IHO GI Registry and supplement the identification and proposal procedures of new concepts/features for topics proposed as practical examples. WG2 invites interested parties to progress the revision intersessionally and report back to ARM20.

9.12 Create S-200 Implementation Plan, following similar S-100 Implementation Strategy and/or Roadmap (ARM-7.1.12).

Task group leader: LeeAnne Gordon

Addressed input papers: ARM19-8.4.5, ARM19-8-4.7

The Working Group discussed the input paper in Plenary and agreed with the VTS Committee's suggestion to remove the columns for "Operational Description Planned" and "Operational Description Completed Date." The Working Group noted that "Operational Context" is part of G1128 and does not need to be considered as a separate step in the S-200 Implementation Plan. A Liaison Note to VTS was prepared, to summarize the actions taken on their input.

The Working Group also noted, in ARM19-8.4.5, DTEC Committee requested to remove S-230 from the list of IALA specifications and identified an alternate path forward for incorporation of Application Specific Messages into the S-100 world. This proposal was also sent to PAP. Pending PAP's response, S-230 has not yet been removed from the S-200 Implementation Decade.

ARM has not yet received input from the ENG Committee on the S-200 Implementation Decade documents, so work on this document will carry over to future ARM sessions. Future sessions may also consider S-201 updates regarding S-57 and S-101. See ARM Task 7.1.4.

Action item:

That the Secretariat forwards ARM19-11.3.5 Liaison Note on the Roadmap for the S-200 Implementation Decade (2024 – 2034) to the VTS Committee for their consideration.

9.13 Develop guidance on the symbology and portrayal of AtoN for charting (ARM-7.1.13).

Task group leader: Eivind Mong

WG2 noted the input from China MSA (ARM19-8.4.3) as very welcomed support in progressing Graphical User Interface guidelines for S-125 in navigation systems. Questions raised included the need for a prominent view of the MRN identifier in the GUI and how sorting of information would work along a long route with many relevant AtoNs. The final location of guidance developed was discussed, and it was noted that the final destination of this guidance will likely be S-98, the guidance and product specification is not yet mature enough and it therefore is beneficial to maintain it within the product specification. China MSA was recommended to continue the research and report progress to IALA.

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

Task group leader: Nikolaos Vastardis

Addressed input papers: ARM19-8.4.2, ARM19-8.4.2.1

Although the input paper on this topic (draft service design for AtoN provision following SECOM) was very low level and technical, the group spent more time on very high level discussion concerning the relationship between S-125, S-201, S-124 and S-101 and thus also the technical services delivering such information. Furthermore it was discussed where to clarify these matters in the IMO Maritime Service specification for AtoN, in a IALA Maritime Service specification following G1155, or in the Technical Service specifications. An IALA G1155 compliant Maritime Service specification would be envisioned to be kept as an IALA document as a more detailed description of the IMO Maritime Service specification rather than updating the IMO description. Therefore the working group started the work to make the MS2 maritime service description based on the G1155 template. Work will be progressed intersessionally and members can report to WG chair if they want to participate.

The Joint IALA/IHO Workshop discussion also brought up the need for testing the MCP for the emerging technical services and thus the group prepared an Liaison note to PAP suggesting the establishment of an IALA reference instance of MCP for use by its members.

Some discussions were also held on the Service Design input document and this will be forwarded to ARM20.

Action item:

That the Secretariat forwards ARM19-11.3.6 Liaison Note on MCP Reference Implementation to PAP.

That participants contact WG2 Chair by 1 December 2024 to express interest in contributing to intersessional work.

9.15 Review Guideline G1159 on ship reporting from the shore-side perspective (ARM-7.1.15).

No progress was made on this document during ARM19. This will be progressed under a new task lead at ARM20.

10. WORKING GROUP 3 – RISK MANAGEMENT (WG3)

The Working Group (WG) was relatively small and it was therefore decided by the Chair to complete most meetings as a rolling plenary, with ad-hoc breakout groups to support specific tasks. The group contained around 19 participants who remained in WG3 for the week. 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 WG3. Thus, the WG Chair started by recapping on work undertaken at ARM18 and leading a discussion to explain and clarify each task item. Further discussion was then had to set the action plan for the week.

10.1 1.4.4 Review Risk Management related documentation. Update as per ongoing risk toolbox developments

Task group leader: Kevin Gregory

A presentation was provided by Sarah Robinson and Nick Neely on the latest developments of the PAWSA tool undertaken by the United States Coast Guard (USCG).

The USCG presented on the Ports and Waterways Risk Assessment (PAWSA) Methodology, a brief history, its goals and objectives, recent changes, and a discussion of potential changes. The potential changes stem from a desire to improve the Coast Guard's risk assessment capability. The WG provided feedback on the relative importance of the changes from diverse perspectives.

The IALA World-Wide Academy (WWA) also presented on observing a recent PAWSA in the US and identified differences in the PAWSA methodology used (Mk III) and compared to the PAWSA methodology adopted by IALA (Mk II). USCG will consider that feedback and continue developing PAWSA with the intent to provide an update at ARM20, likely with the preliminary results from a port using an updated PAWSA methodology (Mk IV).

The WWA will continue to present the PAWSA Mk II methodology as the current IALA Risk Management Toolbox tool during relevant model course training. The WWA offers intersessional technical support to the USCG as it develops the PAWSA Mk IV over the coming months.

Considering the IWRAK MkII tool, the WG noted and welcomed the intention of the WWA to run a second IWRAP 'Super User' seminar in 2025.

Action item:

The USCG is requested to provide input to ARM20 on the development of the PAWSA tool and the potential implications for IALA Risk Management related documentation.

10.2   1.4.5 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 is expected to be finalized by ARM20.

Action item:

Intersessional meetings with TG members will be organized as needed to confirm methodological choices and validate results. Floris Goerlandt is invited to provide input to ARM20 on the results of the study and their potential implications for IALA Risk Management related documentation

10.3   1.4.6 Encourage IALA members and other organisations to share historic AIS and other vessel tracking data with IALA. IALA aims to use such data for risk assessment, research and training purposes.

No work was undertaken on this item.

10.4   1.4.7 Conduct a global scan of current risk analysis tools and identify potential candidates for inclusion within the IALA Risk Management Toolbox

IALA Risk Management Toolbox questionnaire

The results of the IALA Risk Management Toolbox questionnaire were presented and discussed. The WG thanked the Secretariat for distributing and analysing the responses to the questionnaire. 45 further responses and 12

follow-up responses to the questionnaire were received and several areas of interest were highlighted with respect to the use of risk management tools. It was agreed that the WG would request the Secretariat to send out a further request for input via LinkedIn:

> ***Calling all maritime risk professionals!***
>
> *We need your expertise! What risk management tools or methods have you used to assess navigational risk? @IALA would appreciate your input. Please comment below or provide your response [**here**]*
>
> *Your insights are invaluable in helping us shape the future of maritime safety and efficiency. Please share this post with your network!*
>
> *#MaritimeSafety #RiskManagement #IALA #AtoN #SeaSafety*
>
> *Survey questions provided through a Microsoft Form:*
>
> ***What risk management tools and/or methods have you used to assess navigational risk?***
>
> ***Contact details*** *(optional)*

Additionally, the WWA agreed to contact a representative from the China MSA with a view to obtaining information on the use of risk assessment tools in China.

<u>Bow Tie risk analysis method</u>

At ARM18, the WG was given a presentation of how the Bow Tie analysis method is used to identify and manage risks in the Finnish aviation industry. It may be a useful technique that could be used to analyse navigational risk. It is also a relatively simple technique that could be used in a complementary manner with the other IALA Risk Management tools; for example, in exploring specific risk control measures arising from a SIRA or a PAWSA in greater detail or the output from a Bow Tie analysis could inform an IWRAP study area.

The WG continued discussions at ARM19 and will work to produce some general description text about the tool and identify some relevant examples that demonstrate how the method can be used as a navigational risk assessment tool. At ARM20, the WG will consider if the text is useful for competent authorities and navigation risk management practitioners and if so, will make a suggestion to the wider Committee regarding how the text could be incorporated into the existing risk management publications.

It was also suggested that, time permitting, a Bow Tie analysis exercise may be conducted at ARM20.

The WG also discussed other tools and techniques that may inform the risk assessment process and welcomed input and examples at future ARM meetings.

Action items:

The Secretariat is requested to post a request for further input on risk management methods on the IALA LinkedIn page.

10.5 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

The WG commenced a review of IALA Recommendation R0130 on Categorisation and Availability Objectives for Short Range Aids to Navigation. This includes the development of new guidance on the qualitative effectiveness of AtoN as well as the performance of a 'system of AtoN' (in terms of the performance of a number of individual AtoN in a waterway).

Additionally, the WG considered the following topics as potentially being of relevance to the task:

- Review of the definitions of 'vital', 'important' and 'necessary' categories of AtoN.
- Guidance to assist in the risk based determination of the category of AtoN.

- Clarifying the definition of a 'system of AtoN'.
- The implications of the categorization of AtoN.
- What constitutes 'unavailability' of an AtoN.
- Could the terminology used in Maritime Safety Information be of relevance to determining 'unavailability'.
- How virtual AtoN may be considered with respect to categorization.
- The relationship of categorisation with availability and reliability calculations.
- A review of existing use cases of AtoN categorization.

A key element of the work will be clarifying the definition of a 'system of AtoN' and the provision of guidance as to how the availability of individual AtoN impacts on the effectiveness of risk control measures to obtain an overview of the 'health' of a specific waterway.

As ARM pursues completion of the task, the WG recognized that changes to R0130 may impact upon G1035 on Availability and Reliability of Aids to Navigation - Theory and Examples. The WG also noted the relationship with Task 1.5.1 – Develop a Recommendation and Guideline consolidating content from Recommendation R0130, Guidelines G1035, G1004 and the NAVGUIDE and were joined by members of WG1.

Consequently, a Liaison Note was prepared for the ENG Committee to inform them of the work being undertaken by the ARM committee with respect to R0130 and seeking input to ARM20 as to what the terms 'system', 'system of AtoN' and 'system of aids' mean in the context of G1035 to inform the development of new guidance.

Action item:

The Secretariat is requested to forward ARM19-11.4.1 Liaison Note on the review of IALA Recommendation R0130 on Categorisation and Availability Objectives for Short Range Aids to Navigation to the ENG Committee.

The Secretariat is requested to forward the working paper ARM19-11.5.4.1 WP Recommendation R0130 on Categorisation and Availability Objectives for Short Range Aids to Navigation to ARM20.

Committee participants interested in participating in an intersessional group on the review Recommendation R0130 on Categorisation and Availability Objectives for Short Range Aids to Navigation are requested to notify Yvonne Koldenhof Y.Koldenhof@marin.nl by 1 November 2024.

10.6   Other discussion of interest

Example of Methodology Used to Build Risk Assessment in a case of Offshore Windfarms implementation

Cerema submitted a document which aims to describe the methodology used for a risk assessment of the implementation of an offshore wind farm. The methodology focused on the SIRA and IWRAP methods, taking into account stakeholders' constraints in the risk assessment conducted through meetings focus on risk analysis and control risk options. The methodology presented focus on one study which have been conducted with French stakeholders in Baie de Seine.

Essential Practices for Data and Management in Developing Automated Near-Miss Incident Identification

The Singapore Agency for Science, Technology and Research (A*STAR) Institute of High Performance Computing (IHPC) and Maritime and Port Authority Singapore (MPA) delivered a presentation to the WG on Essential Practices for Data and Management in Developing Automated Near-Miss Incident Identification.

The presentation described how a vessel collision incident in a given area may be preceded by several near-miss cases. The early detection, identification and analysis of these near-miss cases play a crucial role in aiding Vessel Traffic Service (VTS) operators and coastal authorities in the prompt identification of any underlying causes so as to proactively predict and prevent future vessel collision incidents.

The current detection and recording scheme primarily relies on manual reporting, as a result, human factors such as excessive cognitive workload and inconsistent/subjective opinions lead to potential underreporting of near-miss cases. In recent years, the AI-based method for automating near-miss identification has attracted increasing attention. However, such data-driven solutions, in addressing this problem, frequently suffer from a myriad of technical challenges such as AIS data quality issues, incomplete or even missing information in AIS datasets. The presentation proposed a technical recommendation on essential practices for digital data preparation in developing a near-miss case detection tool.

The presentation and associated input paper can be found within the DTEC Committee file share at DTEC3-5.2.1.3 and DTEC3-4.5.

Action item:

The Secretariat is requested to forward ARM19-11.5.4.2 WP Example of Methodology Used to Build Risk Assessment in a case of Offshore Windfarms implementation as a working document to ARM20 for further consideration.

Committee participants are requested to share examples of completed risk assessments/reports of risk assessments to contribute to the continued development of the IALA Risk Management Toolbox.

Liaison Note from DTEC Review of Draft Guideline on Digitalisation of Waterways

The Working Group reviewed the Liaison Note from the DTEC Committee along with the draft Guideline on the Digitalisation of Waterways. Due to time constraints, the Working Group was not able to review the documents thoroughly due to time constraints but prepared initial feedback along with a recommendation to seek further guidance from the Policy Advisory Panel on the way ahead.

Action item:

The Secretariat is requested to forward ARM19-11.4.2 Liaison Note to DTEC and PAP on Draft Guideline on the Digitalisation of Waterways.

11.   ANY OTHER BUSINESS

Nothing raised.

12.   SUMMARY OF OUTPUT AND WORKING PAPERS

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

Outputs from ARM19 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 (ARM19-12.1) was approved by the Committee at the Closing Plenary.

14.   DATE AND VENUE OF NEXT MEETINGS

ARM20 is planned to be held between 31 March – 4 April 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 ARM19.

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.

Secretary-General, Francis Zachariae, 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

19th Meeting of the AtoN Requirements and Management Committee (ARM19)

The opening plenary of the 19th meeting of the ARM Committee will commence at 10:30 local time on Monday 7 October 2024, and the closing plenary will be held online at 14:00 – 16:00 UTC on Thursday 17 October 2024.

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. Digital@Sea

    3.6. 2nd Joint IHO/IALA workshop on S100/S200   Dave Lewald

4. Presentations

    4.1. IALA World Wide Academy update   Gerardine Delanoye

    4.2. Demonstration of technical service using   Thomas Christensen / Nikolaos Vastardis
          SECOM and MCP

    4.3. The Installation of AIS-AtoN in Antarctica   Raul Escalante

5. Work Programme management

    5.1. Work Programme, Task Plan, Task Register

    5.2. Action plan for ARM19

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

ANNEX B   LIST OF PARTICIPANTS

First name	Last name	Organisation	Member type	Member Country
Raul	Escalante	Hidrovia S.a.	Affiliate	Argentina
Juan	Frias	Servicio de Hidrografia Naval	Associate (IGO)	Argentina
Terry	Skinsley	Australian Maritime Safety Authority	Associate (IGO)	Australia
Moahmed	Khurshid	Middle East Navigation Aids Services - Menas	Affiliate	Bahrain
Alain Serge	Mbene Koah	Port Authority Of Kribi	Affiliate	Cameroon
Natasha	Mcmahon	Canadian Coast Guard	Member State	Canada
Eivind	Mong	Canadian Coast Guard	Member State	Canada
Thomas	Snodgrass	Go Deep Aids To Navigation	Affiliate Industrial	Canada
Álex	Vargas	Armada de Chile	Associate (IGO)	Chile
Héctor	Durán	Armada de Chile	Associate (IGO)	Chile
Ru	Bin	China Maritime Safety Administration	Member State	China
Kangle	Li	China Maritime Safety Administration	Member State	China
Wei	Li	China Maritime Safety Administration	Member State	China
Jiangna	Liu	China Maritime Safety Administration	Member State	China
Yang Yang	Shen	China Maritime Safety Administration	Member State	China
Li	Shibo	China Maritime Safety Administration	Member State	China
Shuo	Wang	China Maritime Safety Administration	Member State	China
Pu	Zhang	China Maritime Safety Administration	Member State	China
Zhimin	Zhang	China Maritime Safety Administration	Member State	China
Yingdian	Zhuang	China Maritime Safety Administration	Member State	China
Luo	Ziwen	China Maritime Safety Administration	Member State	China
Ranxuan	Ke	Jimei University	Affiliate	China
Manuel Alejandro	Sanchez Molina	Direccion General Maritima	National	Colombia
Jakob	Bang	Danish Maritime Authority	Member State	Denmark
Peter	Dam	Danish Maritime Authority	Member State	Denmark
Ulla Bjørndal	Møller	Danish Maritime Authority	Member State	Denmark
Michael	Strandberg	Danish Maritime Authority	Member State	Denmark
Niels	Arndal	Force Technology	Affiliate Industrial	Denmark
Mauricio	Cruz Reyes	Instituto Oceanografico De La Armada	National	Ecuador
Pärtel	Keskküla	Estonian Transport Administration	Associate (IGO)	Estonia

First name	Last name	Organisation	Member type	Member Country
Joonatan	Ahlroos	Finnish Transport Infrastructure Agency	Member State	Finland
Stefan	Engström	Finnish Transport Infrastructure Agency	Member State	Finland
Mika	Lehtola	Finnish Transport Infrastructure Agency	Member State	Finland
Tuomas	Martikainen	Finnish Transport Infrastructure Agency	Member State	Finland
Henrika	Björkell-Virta		Member State	Finland
Valtteri	Laine		Member State	Finland
Janina	Tapia Cotrino		Member State	Finland
Vincent	Nineuil	Cerema	Affiliate	France
Fabien	Piotrowski	Cerema	Affiliate	France
Xavier	Hernoe	Direction Générale Des Affaires Maritimes, De La Pêche Et De L'aquaculture – Secrétariat D'état Chargé De La Mer	Member State	France
Samir	Benouda	Mobilis	Affiliate Industrial	France
Alidou	Treboul	Federal Waterways and Shipping Administration	Member State	Germany
Jerry	Indrayanto	Directorate General of Sea Transportation	Associate (IGO)	Indonesia
Eko	Sudarmanto	Directorate General of Sea Transportation	Associate (IGO)	Indonesia
Muhammad	Uluan Amirta	Directorate General of Sea Transportation	Associate (IGO)	Indonesia
Winsu	Wardana	Directorate General of Sea Transportation	Associate (IGO)	Indonesia
Joseph	Daly	Commissioners of Irish Lights	Member State	Ireland
Elaine	Fitzgerald	Commissioners of Irish Lights	Member State	Ireland
Yu	Nemoto	Japan Coast Guard	Member State	Japan
Michael	Card	Zeni Lite Buoy Co Ltd	Affiliate Industrial	Japan
Naehyuk	Yoo	Korea Institute Of Aids To Navigation(k-aton)	Affiliate	Korea, South
Taehee	Kim	Kriso – Korea Research Institute Of Ships And Ocean Engineering	Affiliate	Korea, South
Yungyeong	Ma	Kriso – Korea Research Institute Of Ships And Ocean Engineering	Affiliate	Korea, South
Sewoong	Oh	Kriso – Korea Research Institute Of Ships And Ocean Engineering	Affiliate	Korea, South
Hee Tae	Kim	Ministry of Oceans And Fisheries	Member State	Korea, South
Namkyun	Im	Mokpo National Maritime University	Associate	Korea, South
Hyuksun	Shin	Research Institute of Medium & Small shipbuilding	Observer	Korea, South
Siti Umainah	Abd Azit	Light Dues Board Peninsular	Member State	Malaysia
Syazwi	bin Asli	Light Dues Board Peninsular	Member State	Malaysia

First name	Last name	Organisation	Member type	Member Country
Maryam	Omari	Ministère des Transports, de l'Aviation Civile et de la Marine Marchande	Associate (IGO)	Morocco
Yvonne	Koldenhof	Marin	Affiliate	Netherlands
Maarten	Berrevoets	Ministry of Infrastructure And Water Management	Member State	Netherlands
Ernst	Bolt	Ministry of Infrastructure and Water Management	Member State	Netherlands
Peter	Hooijmans	Ministry of Infrastructure And Water Management	Member State	Netherlands
Laura	Snoep	Ministry Of Infrastructure And Water Management	Member State	Netherlands
Jacqueline	Van Den Bosch	Ministry Of Infrastructure And Water Management	Member State	Netherlands
Martijn	Ebben	Port Of Rotterdam Authority	Affiliate	Netherlands
Guttorm	Tomren	Norwegian Coastal Administration	Member State	Norway
Jorge	Estêvão	Direção De Faróis	Member State	Portugal
Pedro	Vacas De Carvalho	Direção De Faróis	Member State	Portugal
Filipe	Vieira	Portuguese Hydrographic Institute	Associate	Portugal
Oleg	Gaidai	Department of Navigation and Oceanography	Associate (IGO)	Russia
Kseniia	Ipatova	Department of Navigation and Oceanography	Associate (IGO)	Russia
Andrey	Leonov	Department of Navigation and Oceanography	Associate (IGO)	Russia
Ayyaf	Altalhi	Saudi Ports Authority	Member State	Saudi Arabia
Gary	Chew	Maritime And Port Authority	Member State	Singapore
Fredrik	Karlsson	Swedish Maritime Administration	Member State	Sweden
Johan	Westerlund	Swedish Maritime Administration	Member State	Sweden
Mats	Hörström	Swedish Transport Agency	Associate	Sweden
Johan	Pettersson	Swedish Transport Agency	Associate	Sweden
Abas	Saidykhan	Gambia Maritime Administration	National	The Gambia
Nikolaos	Vastardis	Grad	Member State	United Kingdom
Peter	Douglas	Northern Lighthouse Board - Scotland	Member State	United Kingdom
Jeremy	Peat	Srt Marine Technology Ltd	Affiliate Industrial	United Kingdom
Nigel	Hare	The General Lighthouse Authorities Of UK And Ireland	Member State	United Kingdom
Trevor	Harris	The General Lighthouse Authorities Of UK And Ireland	Member State	United Kingdom
Kevin	Gregory	Trinity House	Member State	United Kingdom
Alison	Contreras	Uk Hydrographic Office	Affiliate	United Kingdom
Leeanne	Gordon	National Geospatial-intelligence Agency	Affiliate	United States
Curtis	Peschel	National Geospatial-intelligence Agency	Affiliate	United States
Amilynn	Adams	US Coast Guard	Associate (IGO)	United States
R. Dave	Lewald	US Coast Guard	Associate (IGO)	United States

First name	Last name	Organisation	Member type	Member Country
David	Merrill	UK Coast Guard	Associate (IGO)	United States
Nick	Neely	US Coast Guard	Associate (IGO)	United States
John	Stone	US Coast Guard	Associate (IGO)	United States
Per Christian	Engberg	IALA		

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
ARM19-	1.2.1	Provisional Agenda	Secretariat	All
ARM19-	2.1	Action Items from ARM18	Secretariat	All
ARM19-	1.4.1	Programme of the physical week	Secretariat	All
ARM19-	3.1.1.1	Final Report Council 80 (C80-19.1)	Secretariat	All
ARM19-	3.2.1	Report to the committee_MSC 108	Secretariat	All
ARM19-	3.2.2	IALA Report NCSR 11	Secretariat	All
ARM19-	3.4.1	IALA Report on ITU-R WP5B meeting 14 to 24 May 2024	Secretariat	All
ARM19-	3.4.1.1	R23-WP5B-C-0096!N12!MSW-E revision Rec-R M1371-5	Secretariat	All
ARM19-	3.4.2	ITU LN to IALA R23-WP5B-240514-TD-0031!!MSW-E	ITU	All
ARM19-	3.6.1	Report on the 2nd Joint IHO IALA Workshop S-100 S-200	US Workshop	All
ARM19-	5.1.1	Committee task plan	ARM CMT	All
ARM19-	6.1.1	Input paper list	Secretariat	All
ARM19-	6.1.2	Working paper list	Secretariat	All
ARM19-	6.2.1	Input paper on Sustainability (PAP54-7.3.3.1)	PAP	All
ARM19-	6.2.1.1	Programme Overview_v1.0 (PAP54-7.3.3.1.1)	PAP	All
ARM19-	6.2.2	Proposal for modification of AIS-related performance parameters	China MSA	WG1
ARM19-	6.2.3	LN DTEC to all committees (and PAP) on digitalisation of waterways guideline (DTEC3-11.2.2.9)	DTEC3	WG3
ARM19-	6.2.3.1	Draft IALA Guideline on Digitalization of waterways (DTEC3-11.2.2.9.1)	DTEC3	WG3
ARM19-	7.2.1	Availability rate calculations in Finnish waters FINAL	Finnish Transport and Communications Agency	WG3
ARM19-	7.2.1.1	Availability rate calculations in Finnish waters ppt	Finnish Transport and Communications Agency	WG3
ARM19-	7.2.2	Liaison note to ARM on draft Recommendation on QMS for VTS (VTS56-12.2.1)	VTS56	WG1
ARM19-	7.2.2.1	Draft Recommendation on QMS for MAtoN Authorities (VTS56-12.2.1.1)	VTS56	WG1

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM19-	7.3.1	Report on possible MASS related work items for the IALA committees (MTF09-4.1)	MTF	WG1
ARM19-	7.3.1.1	Mindmap for the report on possible MASS related work items for the IALA committees (MTF09-4.1)	MTF	WG1
ARM19-	7.3.2	MASS Publications Scoping Report V2.2 (MTF09-4.2)	MTF	WG1
ARM19-	7.3.3	MASS Input Paper	IG on MASS	WG1
ARM19-	7.3.4	Proposal for MASS Requirements and Gap Analysis within IALA	KAtoN	WG1
ARM19-	7.3.5	Draft Guideline on Developments and implications of MASS for coastal authorities (DTEC3-5.2.2.7)	MTF/PAP	WG1
ARM19-	7.3.6	Decision-making for the autonomous navigation of MASS in port	China MSA	WG1
ARM19-	7.3.7	Proposal for Draft AIS Recommendation	China MSA	WG1
ARM19-	7.3.7.1	ANNEX-The use of the Automatic identification system(AIS) in marine aids to navigation services	China MSA	WG1
ARM19-	7.3.8	Proposal for preparing the annex of AIS guideline draft	China MSA	WG1
ARM19-	7.3.8.1	Annex-The practicable use of AIS AtoN	China MSA	WG1
ARM19-	7.3.9	Introduction of the Research and Application of single-slot AIS AtoN	China MSA	WG1
ARM19-	7.3.10	Liaison note to ARM on Guideline Rec on Drones in AtoN (DTEC3-11.2.2.4)	DTEC3	WG1
ARM19-	7.3.10.1	Annex Draft Guideline Use of Drones for AtoN Management (DTEC3-11.2.2.4.1)	DTEC3	WG1
ARM19-	7.3.11	Liaison note to ARM, ENG, VTS, MASS TF on MASS Rec and Guideline (DTEC3-11.2.2.6)	DTEC3	WG1
ARM19-	7.3.11.1	Revised draft Guideline on MASS for AtoN Authorities (DTEC3-11.2.2.6.1)	DTEC3	WG1
ARM19-	7.3.12	Liaison note to ARM, VTS, ENG, PAP on IALA documentation relating to AIS (DTEC3-11.2.3.4)	DTEC3	WG1
ARM19-	7.3.13	Liasion Note to ARM and DTEC - Recommendation on MASS and Marine AtoN (VTS56-12.2.4)	VTS56	WG1
ARM19-	7.3.13.1	Draft Recomendation on MASS and Marine AtoN (VTS56-12.2.4.1)	VTS56	WG1
ARM19-	7.6.1	Proposal on the update of terms for IALA Dictionary and NAVGUIDE	China MSA	WG1
ARM19-	7.6.1.1	ANNEX A-Amended Definitions for NAVGUIDE 2023	China MSA	WG1
ARM19-	7.6.1.2	ANNEX B-Amended Definitions for IALA Dictionary	China MSA	WG1
ARM19-	8.4.1	Input paper on G1106	WG2 Chair	WG2

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM19-	8.4.1.1	revised_Guideline 1106_v2	WG2 Chair	WG2
ARM19-	8.4.2	SERVICE DESIGN FOR THE PROVISION OF ATON INFO SERVICE TO END-USERS USING SECOM	GLA, UK & Ireland	WG2
ARM19-	8.4.2.1	Provision of AtoN Information Service to End Users - Technical Design v5	GLA, UK & Ireland	WG2
ARM19-	8.4.3	Portrayal Requirements Of the S125 Graphical User Interface	China MSA	WG2
ARM19-	8.4.4	Liaison note ARM on MRN v1.2 (DTEC3-11.2.1.2)	DTEC3	WG2
ARM19-	8.4.4.1	Draft Input to NCSR on Use of MRN Circular (DTEC3-11.2.1.2.1)	DTEC3	WG2
ARM19-	8.4.4.2	Draft Circular to MSC on Harmonisation of identifiers using MRN (DTEC3-11.2.1.2.2)	DTEC3	WG2
ARM19-	8.4.5	Liaison note to ARM and PAP on S-230 Application Specific Messages v1.1 (DTEC3-11.2.1.3)	DTEC3	WG2
ARM19-	8.4.6	Liaison Note to ARM on input paper to NCSR on MRN v1 (VTS56-12.3.2)	VTS56	WG2
ARM19-	8.4.7	Liaison Note to ARM on Roadmap for the S-200 Implementation Decade (2024-2034) (VTS56-12.3.3)	VTS56	WG2
ARM19-	9.1.1	PAWSA Methodology Information Paper	US Coastguard	WG3
ARM19-	9.1.2	Review of amendments to the PAWSA methodology	WWA	WG3
ARM19-	9.1.2.1	PAWSA Workshop Report Port of Tampa 2024 DRAFT (V5.0)_ARM	WWA	WG3
ARM19-	9.1.3	China's Practice on AtoN Maintenance Quality indicators	China MSA	WG3

Working papers from ARM18

Meeting	Paper Number	Output Paper Title	Source	Action
ARM18-	11.5.1.1	WP ARM Committee Task Plan	CMT	To ARM19
ARM18-	11.5.2.1	WP Buoy Tender Activities Work	WG1	To ARM19
ARM18-	11.5.2.2	WP draft guideline on Enhancing the safety and efficiency of navigation around offshore installations	WG1	To ARM19
ARM18-	11.5.2.3	WP draft Guideline G1052 Quality-Management-Systems-for-AtoN-Service-Delivery	WG1	To ARM19
ARM18-	11.5.2.4	WP Draft Revised R0132 Quality Management for Aids to Navigation Authorities	WG1	To ARM19

Meeting	Paper Number	Output Paper Title	Source	Action
ARM18-	11.5.2.5	WP Input on IALA R0126 MAtoN status page_24-03-30 (ARM18-8.3.1)	WG1	To ARM19
ARM18-	11.5.3.1	WP's on task 2.2.3	WG2	To ARM19

ANNEX D   LIST OF OUTPUT DOCUMENTS AND WORKING PAPERS

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
ARM19-	11.2.1	Liaison note to DTEC regarding MASS	WG1	DTEC
ARM19-	11.2.2	Liaison note to all committees on IoT sensors	WG1	All committees
ARM19-	11.2.3	Liaison note to ENG regarding Buoy Tender activities	WG1	ENG
ARM19-	11.2.3.1	Draft Guideline on Buoy Tender Activities	WG1	ENG
ARM19-	11.2.4	Liaison note to ITU on MAtoN and single slot message 28	WG1	Council and ITU
ARM19-	11.2.4.1	IALA response to WP 5B TD 73 on Revision of Recommendation ITU-R M	WG1	Council and ITU
ARM19-	11.2.4.2	Joint input paper on revision of Recommendation ITU-R M.1371-5 (CIRM & IALA)	WG1	Council and ITU
ARM19-	11.2.5	Draft Guideline on Enhancing Navigation Around OREI	WG1	Council
ARM19-	11.2.6	Draft Recommendation on QMS for AtoN Authorities	WG1	Council
ARM19-	11.2.7	Liaison note to PAP on the definition of functional capability	WG1	PAP
ARM19-	11.3.1	Draft Guideline on Harmonised Waterways Datasets	WG2	Council
ARM19-	11.3.2	Recommendation on Harmonised Waterways Datasets	WG2	Council
ARM19-	11.3.3	Liaison note to PAP and DTEC on S-230	WG2	PAP and DTEC
ARM19-	11.3.4	Liaison note to PAP and all committees on MRN intersessional work	WG2	All committees
ARM19-	11.3.5	Liaison note to VTS on S-200 implementation plan	WG2	VTS
ARM19-	11.3.6	Liaison note to PAP on MCP reference information	WG2	PAP
ARM19-	11.4.1	LN to ENG on the review of R0130 on Categorisation and Availability Objectives for Short Range AtoN	WG3	ENG
ARM19-	11.4.2	Liaison Note to PAP and DTEC on Draft Guideline on the Digitalisation of Waterways	WG3	DTEC

Working papers will remain within the Committee for further review during ARM20.

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

Meeting	Paper Number	Output Paper Title	Source	Action
ARM19-	11.5.4.1	WP Recommendation R0130 on Categorisation and Availability Objectives for Short Range Aids to Navigation	WG1	To ARM19
ARM19-	11.5.4.2	WP Example of Methodology Used to Build Risk Assessment in a case of Offshore Windfarms implementation	WG1	To ARM19

Action Items for Participants

ANNEX F   WORKING GROUP PARTICIPANTS LISTS

Working Group 1   Navigational Requirements

Chair – Guttorm Tomren   Vice-chair – Johan Westerlund

Members	Organisation	Task Group No.	Online (x)
Guttorm Tomren	Norwegian Coastal Administration	1.1.1	
Johan Westerlund	Swedish Maritime Administration	1.2.2, 1.5.2, 1.5.3	
Liu Jiangna	China MSA	2.2.2, 1.2.2, 1.2.9, 1.2.10, 1.5.2, 1.5.3	
Dave Merrill	U.S. Coast Guard	1.2.2, 1.2.9, 1.2.10	
Laura Snoep	Min Infrastructure	1.2.2, 1.2.9, 1.2.10	
Abas Saidykhan	Gambia Maritime Administration	1.2.2, 1.2.9, 1.2.10	
Tom Snodgrass	Canadian Coast Guard	1.2.2, 1.2.9, 1.2.10	
Peter Dam	Danish Maritime Authority	1.2.2, 1.2.9, 1.2.10	
Minsu Jeon	IALA	1.2.2, 1.2.9, 1.2.10	
Trevor Harris	Trinity House, UK	1.4.1, 1.5.1, 2.2.2	
Mohamed Khurshid	MENAS	1.2.2, 1.2.9, 1.2.10	
Peter Douglas	Northern Lighthouse Board	2.2.2	
Henrika Björkell-Virta	Finnish Transport and Communications Agency	2.2.2	
Jaime Alvarez	IALA	2.2.2	
Zhang Pu	China MSA	2.2.2	X
Kangle Li	China MSA	2.2.2	X
Terry Skinsley	AMSA	2.2.2	
Siti Azit	Malaysia Marine Department	2.2.2	
Manual Sanchez Molina	Direccion General Maritima Colombia	2.2.2	
Jeremy Peat	SRT UK	2.2.2	X
Wang Shuo	China MSA	2.2.2	X
Janina Tapia Cotrino	Finnish Transport and Communications Agency	1.4.1, 1.5.1, 1.2.8	
Filipe Alexandre Reis Vieira	Portuguese Hydrographic Institute	1.4.1, 1.5.1	

Members	Organisation	Task Group No.	Online (x)
Jaqueline Van Den Bosch	Ministry of Infrastructure and Water Management, Netherlands	1.4.1, 1.5.1	
Manuel Alejandro Sanchez Molina	Direccion General Maritima, Colombia	1.4.1, 1.5.1	
Naehyuk Yoo	Korea Institute Of Aids To Navigation	2.2.1, 1.2.5	
Mika Lehtola	Finnish Transport and Communications Agency	2.2.1, 1.2.5	
Michael Pfeiffer	Danish Maritime Authority	2.2.1, 1.2.5	
Mats Hörström	Swedish Transport Agency	2.2.1, 1.2.5	X
Li Guanzhen	China Maritime Safety Authority	2.2.1, 1.2.5, 1.2.2, 1.2.9, 1.2.10	X
Zhuang Yingdian	China Maritime Safety Authority	2.2.1, 1.2.5, 1.2.2, 1.2.9, 1.2.10	X
Wang Shuo	China Maritime Safety Authority	2.2.1, 1.2.5, 1.2.8	X
Luo Ziwen	China Maritime Safety Authority	2.2.1, 1.2.5	X
Hector Duran	Directemar Chile	1.2.2, 1.2.9, 1.2.10	X
Alex Vargas	Directemar Chile	1.2.2, 1.2.9, 1.2.10	X
C.F. Vincenzo De Maio	Chile?	1.2.2, 1.2.9, 1.2.10	X
Nigel Hare	General Lighthouse Authorities of the UK and Ireland	1.2.8	
Jakob Bang	Danish Maritime Authority	1.2.8	
Hyuksun Shin	ROK	1.2.8	
Namkyun Im	ROK	1.2.8	
Hee Tae Kim	ROK	1.2.8	
Maarten Berrevoets	NL	1.2.8	
Gary Chew	SP	1.2.8	
Oleg	RU	1.2.8	

Members	Organisation	Task Group No.	Online (x)
Maryam Omari	MOR	1.2.8	
Juan Carlos Frias	ARG	1.2.8	
Felipe Vierra	POR	1.2.8	

Working Group 2   Information Services and Portrayal

Chair – Peter Hooijmans   Vice-chair – LeeAnne Gordon

Members	Organisation	Task Group No.	Online (x)
LeeAnne Gordon	NGA	The group worked in plenary	
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	
Amilynn Adams	US Coast Guard	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 Maritime Authority	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

Members	Organisation	Task Group No.	Online (x)
Jose Mella	Chile	The group worked in plenary	
Tuomas Martikainen	Finnish Transport Infrastructure Agency	The group worked in plenary	
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, U.S. Coast Guard   Vice-chair - Kevin Gregory, Trinity House

Members	Organisation	Task Group No.	Online (x)
Joseph Daly	Commissioners of Irish Lights	The group worked in plenary	
Raul Escalante	Hidrovia S.A.	The group worked in plenary	
Sarah Robinson	IALA WWA Consultant	The group worked in plenary	
Ernst Bolt	Ministry of Infrastructure and Water Management	The group worked in plenary	
Valterri Laine	Finnish Transport and Communications Agency	The group worked in plenary	
Zhimin Zhang	China Maritime Safety Administration	The group worked in plenary	X
Dawn Seepersad	IALA WWA Consultant	The group worked in plenary	X
Niels Arndal	FORCE Technology	The group worked in plenary	X
Floris Goerlandt	Dalhousie University	The group worked in plenary	
Pedro Vacas De Carvalho	Direção de Faróis	The group worked in plenary	
Jorge Estêvão	Direção de Faróis	The group worked in plenary	
Per Engberg	Engberg Solutions APS	The group worked in plenary	
Vincent Nineuil	Cerema	The group worked in plenary	
Nick Neely	US Coast Guard	The group worked in plenary	X
Pärtel Keskküla		The group worked in plenary	
Yvonne Koldenhof	Marin	The group worked in plenary	

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