



DTEC COMMITTEE

REPORT OF THE 6th SESSION OF THE IALA DIGITAL TECHNOLOGIES (DTEC) COMMITTEE

23 – 27 March 2026

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2 April 2026

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International Organization for Marine Aids to Navigation

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Report of the 6th session of the IALA Digital Technologies (DTEC) Committee Executive Summary

The 6th session of the DTEC Committee was held from 23 March – 02 April 2026, including the physical week at IALA HQ between 23 – 27 March, chaired by Hideki Noguchi and vice-chaired by Dennis Khoo. The Secretary for the meeting was Alisa Nechyporuk.

146 participants from 24 countries, three Sister organisations, and six observers participated in DTEC6. 25 participants attended for the first time.

The DTEC Committee considered 60 input papers and produced 17 output papers from three Working Groups, not including working papers.

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

Key outputs completed included:

DTEC6 15.2.1 G1191 Guideline on Maritime Service Registry Technical Specification

DTEC6 15.3.1 Revised Guideline G1153 on Review of Emerging Technologies

DTEC6 15.3.2 Draft Guideline on Demonstration of Innovation

DTEC6 15.3.4 Draft discussion paper – IALA Vision on Digitalisation

DTEC6 15.4.1 New Recommendation on VDE Payload Format Identifier (VPFI)

DTEC6 15.4.2 Revised Guideline on VDES Overview

The following liaison notes and other documents were approved:

DTEC6 15.2.2 Liaison note from DTEC to all other committees on S-100 security threats

DTEC6 15.2.3 Liaison note from DTEC to IEC-TC80 on S-100 security threats

DTEC6 15.2.4 Liaison note from DTEC to IHO on S-100 security threats

DTEC6 15.2.5 Information paper to IMO NCSR on MCP Instance feasibility study

DTEC6 15.2.6 Input paper from DTEC to Council on MCP Instance feasibility study

DTEC6 15.3.3 Liaison note to VTS Committee – Discussion Paper for IALA Vision on Digitalisation

DTEC6 15.3.5 Liaison note to VTS-request for AI use cases

DTEC6 15.4.3 Liaison note to NCSR13 Results of IALA Workshop on RNAV and RCOM

DTEC6 15.4.4 Liaison note to Council on Workshop Proposal on VDES Satellite

DTEC6 15.4.5 Draft Liaison note to IEC on VPFI

DTEC6 15.4.6 Draft Liaison note to RTCM on VPFI

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Report of the 6th session of the IALA Digital Technologies (DTEC) Committee

1. INTRODUCTION

The 6th session of the DTEC Committee was held from 23 March – 2 April 2026, including the physical week at IALA HQ between 23 – 27 March, chaired by Hideki Noguchi and vice-chaired by Dennis Khoo. The Secretary for the meeting was Alisa Nechyporuk.

1.1 Welcome from the Secretary-General

Secretary-General Francis Zachariae extended a warm welcome on behalf of himself and the Secretariat to all participants, both in person and online. He noted the strong sense of community within the IALA family, highlighting the presence of many returning participants from recent meetings. He briefly referred to seasonal contrasts between regions and welcomed attendees to Saint-Germain-en-Laye, expressing hope that participants were well rested and ready for a productive week focused on DTEC matters.

He acknowledged the extensive agenda, comprising over 60 papers, and commended the high quality of contributions and the significant intersessional work undertaken. Particular attention was drawn to progress on the Maritime Connectivity Platform (MCP), which is gaining momentum globally, as well as to ongoing developments in digitalisation.

The Secretary-General also expressed appreciation for the contributions of Member States, organizations, and individual experts. He reported positively on IALA's continued growth, including new Member States and the successful completion of its transition to an intergovernmental organization. He further highlighted progress on the new headquarters project in Saint-Germain-en-Laye and informed participants about upcoming events and meetings.

He concluded by encouraging active participation during the week and wished all attendees a successful and engaging session.

1.2 Approval of the agenda

The agenda was reviewed and approved (DTEC6-1.2.1).

1.3 Apologies

Apologies from Jeffrey van Gils was received. A list of participants who attended DTEC6 can be found on the IALA Dashboard for DTEC 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 EU General Data Protection Regulations. A list of participants, including email addresses, will be included in the report of this meeting and may also appear in other committee-related platforms. Any participant who does not wish their contact details to be shared should inform the Committee Secretary as soon as possible.

The Committee Secretary asked the following statement:

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 [DTEC6 Action Plan](#) that had been agreed by the DTEC Committee Management Team (CMT) to be progressed during DTEC6 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 DTEC6 were displayed in the *Action Plan*, which can be found on the IALA Task register for DTEC.

The deadline for submitting documents to the silent approval procedure was set to 01 April 2026 at 09:00 CEST.

1.5 Quality check procedure

Christina Schneider, IALA Document Controller and Legal Advisor, outlined recent developments following IALA's transition to an intergovernmental organization. Drawing on her long-standing involvement with IALA, she highlighted the importance of adapting working practices to align with the legal framework established by the Convention.

She emphasized the need for a strengthened quality assurance process for all technical documents, noting that while such processes existed previously, greater rigor and consistency are now required. In particular, she encouraged careful attention to terminology and definitions, such as "Marine Aids to Navigation" and membership categories, as formally set out in the Convention.

She explained that the Secretariat is undertaking a significant effort to update existing documentation (including recommendations and guidelines) to reflect the new IGO status. Contributors were encouraged to support this process by applying appropriate wording in new drafts.

A key proposed improvement to the document development process is the introduction of an additional six-month review period between working group output and final committee approval. This aims to enhance document quality by allowing more time to Committee participants and the Secretariat for review, while maintaining flexibility for urgent matters that may require immediate submission to Council.

She also introduced new templates for recommendations and guidelines, including a revised structure whereby the normative "recommendation" text is clearly presented in an annex, improving clarity and usability.

The Secretariat reaffirmed its commitment to supporting committees through an open-door approach, including offering pre-checks of draft documents. Following a remark from Mr. Koichi Yoshida, it is noted that further guidance on the updated quality assurance process may be made available to ensure transparency for all members.

2. REVIEW OF ACTION ITEMS FROM LAST MEETING

The Committee Secretary confirmed that all Secretariat actions from DTEC6 were completed (input paper DTEC6-2.1.1).

3. REPORTS FROM OTHER BODIES AND INITIATIVES

3.1 IALA

3.1.1 IALA Council

Minsu Jeon, Technical Director, reported that the Council met in Mumbai from 8–12 December 2025, with observers from Portugal, Tunisia, Qatar, Oman and Russia.

The Council approved revised Staff Rules, adopted a policy on submissions to other intergovernmental organisations, and endorsed the updated Committee Work Programme (2025–2027). It reviewed the financial report and supported further development of IALA Centres of Excellence, requesting a governance framework from the Secretariat.

From DTEC, revised recommendations on Application-Specific Messages and an updated Maritime Service Registry specification were approved. The Council also confirmed that World Marine Aids to Navigation Day will be hosted by the Republic of Korea in 2026 and Georgia in 2027. Updates to the Heritage Lighthouse of the Year scheme were endorsed, and Evangelistas Lighthouse (Chile) was selected for 2026.

Finally, due to the new headquarters project, no meeting space will be available in early 2027. Member States were invited to host committee meetings and inform the Secretariat by 31 March 2026.

3.1.2 IALA Policy Advisory Panel (PAP)

Minsu Jeon reported on the 60th session of the PAP, held at IALA Headquarters from February 02 to 05. The PAP session (February 2026) focused on strengthening organisational coherence in the post-IGO transition phase. Key outcomes include:

- Digitalisation Strategy: Recognition that current activities are progressing in a bottom-up manner. It was agreed that ongoing work (DTEC Task 7.1.1) should evolve into an organization-wide strategic framework.
- Maritime Resource Name (MRN): Responsibilities clarified between committees:
 - DTEC: technical framework and governance
 - ARM: implementation guidance (S-201 context)
- S-100/S-200 Implementation: Challenges identified in harmonization of terminology and interoperability; further work on dictionary alignment is required.
- Sustainability: Establishment of a dedicated working group within ENG with cross-committee participation.

A strategic workshop also identified key drivers shaping IALA's future, including digital transformation, autonomy (MASS), resilient PNT, sustainability, and evolving regulatory frameworks.

The feasibility study on the Maritime Connectivity Platform (MCP) will continue under DTEC, focusing on governance, liability, and operational implications.

3.1.3 WWA Updates

Mr. Vincent Denamur reported on the increasing activity and strategic importance of the Worldwide Academy, highlighting the expansion of training programmes, including risk management (Levels 1–3), S-200 data production, and procurement training. He also noted the strengthening of capacity-building missions in countries such as Gambia, Iraq, Indonesia and the Philippines, as well as the recruitment of an Education Planner to support both operational and strategic development.

He further emphasized that the Academy's work is increasingly aligned with DTEC activities, particularly in the areas of S-100/S-200, digitalisation and maritime services. Updated training materials have been introduced to

reflect e-Navigation as an integrated system, alongside growing collaboration with the International Hydrographic Organization and other partners.

3.2 Digital@Sea

Minsu Jeon provided an overview of Digital@Sea activities, noting successful events held in 2025 in the Asia-Pacific and North America regions. The Digital@Sea International 2026 event focused on resilient navigation, S-100/S-200 services, IP-based connectivity, and artificial intelligence in the maritime domain. Upcoming events include Digital@Sea North America in May 2026 and Digital@Sea Asia-Pacific in October 2026, which continue to support alignment between industry, authorities, and IALA's technical work.

3.3 IHO

Minsu Jeon reported that cooperation between IALA and the International Hydrographic Organization has further strengthened over the past year, particularly to support coherent development between the S-100 and S-200 frameworks. IALA has continued its participation in the IHO Hydrographic Services and Standards Committee, while the Worldwide Academy has engaged in several Regional Hydrographic Commission meetings. In parallel, IHO has increased its involvement by attending IALA committee meetings. This mutual engagement has proven essential to ensure alignment of product specifications and to prevent divergence between the two frameworks.

In the area of capacity building, the joint IMO–IHO–IALA workshop held in Turkmenistan in December 2025 was successfully delivered. Cooperation has also continued through S-200 training activities, where IHO experts contributed as lecturers in IALA-led sessions, enabling effective knowledge sharing and consistent technical messaging to Member States.

Looking ahead, preparations are underway for a joint IHO–IALA workshop in Istanbul in September 2026. The workshop will focus on practical implementation challenges and interoperability between the S-100 data model managed by IHO and the S-200 framework coordinated by IALA.

3.4 IMO

Minsu Jeon provided an overview of recent and upcoming work at the International Maritime Organization. He noted that MSC 111 is expected to adopt SOLAS amendments on AIS/VDES carriage requirements, entering into force on 1 January 2028, as well as the non-mandatory MASS Code as a preparatory step toward a mandatory framework. Discussions will also cover developments related to the World-Wide Radionavigation System, including SBAS, ARAIM, cybersecurity, and software maintenance.

At NCSR 13, the focus will be on digital navigation and connectivity, including S-100 implementation, IP-based ship–shore communication, and digital route exchange. While these developments are progressing, they are not yet mandatory under SOLAS, with emphasis placed on trials, operational guidance, and human element considerations.

IALA has submitted two information papers to NCSR 13: one on a harmonized connectivity architecture for S-100 ECDIS based on SECOM and MCP, and another presenting outcomes of the IMT workshop, highlighting the role of emerging technologies such as 5G and 6G in supporting digital AtoN, VTS, and maritime services.

3.5 ITU

Stefan Bober reported on recent developments at the International Telecommunication Union, noting the publication of updated Recommendation ITU-R M.2092 in February 2026, following final technical and editorial revisions. He also highlighted the release of the revised AIS Recommendation ITU-R M.1371-6, which introduces key changes, including the removal of channel management, the use of two frequencies (AIS 1 and AIS 2), and the addition of a new message (Message 28). These updates are expected to impact related IALA documentation.

He further reported that ongoing work within ITU-R Working Party 5B includes developments on VDES R-Mode and digital voice technologies, with further discussions to continue at future meetings. In addition, work has been completed on Recommendation M.585 regarding the assignment and use of identities in maritime mobile devices, including the expansion of maritime identity formats from 9 to 12 digits. Updates were also noted to DSC standards and Report ITU-R M.2231 on the use of Appendix 18 of the Radio Regulations.

3.6 IEC

Stefan Bobber reported that work within the International Electrotechnical Commission is advancing on VDES testing and performance standards, including conformance testing specifications aligned with SOLAS implementation timelines towards 2028. In addition, IEC has initiated updates to multiple AIS-related standards to reflect the recent ITU revisions, alongside ongoing work on VDES shipborne and shore-based equipment standards.

3.7 ISO

Minsu Jeon reported on a proposal within the International Organization for Standardization that was presented concerning the development of a global maritime digital identity framework. This proposal includes the use of Legal Entity Identifiers (LEI) and a potential IMO-led PKI system as a root of trust. While this approach aims to provide secure, verifiable digital identities across maritime services, concerns were raised regarding overlap with existing IALA frameworks such as the Maritime Connectivity Platform (MCP) and Maritime Identity Registry (MIR). The importance of coordination was emphasized to prevent fragmentation and ensure interoperability across systems.

3.8 ISO-IEC JTC 1

Jin Hyoung Park reported on developments within ISO/IEC JTC 1, particularly in the domain of IoT and digital twins. Work is increasingly focused on interoperability frameworks, data exchange architectures, and the emergence of autonomous digital twin systems capable of synchronized and automated operation. These developments are highly relevant to maritime digitalisation, especially in the context of e-Navigation and future smart infrastructure.

3.9 RTCM

Ross Northsworthy presented updates from RTCM highlighted ongoing work on Maritime Messaging Service (MMS), advanced dual-frequency GNSS technologies, and R-Mode. RTCM continues to play a key role in developing technical standards that can later be transferred to organizations such as IEC and ITU, with strong collaboration maintained with IALA.

3.10 3GPP

Hyounhee Koo (3GPP representative at SyncTechno Inc.) provided were presented, noting that IALA has become a Market Representation Partner. This provides a formal pathway for integrating maritime requirements into future mobile communication standards, particularly in areas relevant to VDES, advanced connectivity, and MASS.

3.11 VDES Alliance

Stefan Pielmeier, Chair of WG3, provided an update on VDES Alliance. He noted that VDES Alliance continues its work on VDES satellite guidelines, interoperability testing, and global promotion of VDES technologies. Current efforts focus on areas not fully addressed by formal standardisation bodies, including coordination of satellite services and practical implementation aspects.

3.12 ETSI

Minsu Jeon updates from the European Telecommunications Standards Institute highlighted ongoing work on MRN-based identity frameworks and distributed trust models using distributed ledger technologies (DLT). These initiatives aim to address fragmentation in maritime identity systems and introduce privacy-aware trust architectures, while maintaining alignment with IALA developments on digital identity and S-200 services.

4. PRESENTATIONS

All presentations given at DTEC6 can be found on the [fileshare](#) (login necessary). The following presentation were given:

- Demonstration of Satellite VDES Downlink of S-124 Navigational Warnings and Distribution through MCP/MMS, Hiroaki Watanabe, TST Corporation
- E-navigation initiatives in Turkiye, Okan Kanyilmaz, Aselan
- Prospected standardization and a new Trust Model tailored to e-Navigation, Alexandr Tardo, CNIT Laboratory
- Result of a Field Trial on VHF Digital Voice Communication, Takahiko Konishi, Japan Coast Guard
- Field Trials of VDES ASM Reception, Ono Masatora, Japan Coast Guard

5. COMBINED WORKING GROUPS SESSION ON SERVICES DATA CONNECTIVITY STACK

The session addressed the imminent implementation of the Services–Data–Connectivity stack, emphasizing the transition towards a unified, IP-based e-navigation environment. Discussions focused on the need for coordinated international actions to align maritime services, standardized data models, and communication infrastructures, ensuring interoperability and supporting the future development of digital maritime services.

1. [The urgent need to maintain and progress the key international documents for ‘Stack & Services’ – IMO Resolution M.467 for the ‘Stack’ and MSC.1/Circ.1610 for the ‘Services’ - and IALA’s potential role – Axel Hahn](#)

The presentation highlighted the transition towards an integrated, IP-based e-navigation architecture structured in three layers: operational maritime services (VTS and AtoN), the S-100 data layer, and the underlying connectivity infrastructure. It was emphasized that IMO Resolution M.467 and MSC.1/Circ.1610 remain key instruments for enabling this Services–Data–Connectivity “stack” and must be actively maintained and further developed.

The need to move away from fragmented, voice-based communication towards standardized digital data exchange was underlined, particularly to support services such as Information Service (INS), Navigational Assistance Service (NAS), and Traffic Organization Service (TOS). In this context, IALA’s role was identified as critical in supporting implementation, ensuring alignment between service definitions and technical standards, and contributing to the evolution of the global e-navigation framework.

2. [The urgent need for implementing the IMT technology family as the versatile, future IP-capable ‘working horse’ carrier at maritime and consequential activities at IALA and beyond](#)
 - a. [A coastal state perspective and the future ‘winning team’ of IMT + VDES – Jan-Hendrik Oltmann](#)

The presentation highlighted the limitations of current maritime communication systems, characterized by fragmented “siloes” architectures, bandwidth constraints, and lack of interoperability. A combined approach using IMT and VDES was presented as a “winning team,” enabling a unified, IP-based communication environment capable of supporting high-volume S-100 data exchange and modern e-navigation services.

- b. The ‘maritime vertical’ and the need to live up to IALA’s new role of Market Representation Partner (MRP) at 3GPP – implications for coordinating the common face of maritime to 3GPP - Minsu Jeon

The presentation highlighted the importance of establishing a coherent “maritime vertical” within the 3GPP ecosystem to ensure that maritime requirements are adequately reflected in the development of IMT technologies. In its new role as Market Representation Partner (MRP), IALA is expected to coordinate and consolidate inputs from the maritime community, providing a unified representation towards 3GPP. This includes aligning stakeholders, identifying common requirements, and ensuring that future communication standards support maritime use cases such as VTS, AtoN, and digital services.

- c. A consequential new work item proposal at IMO for implementing the IMT family as a matter of urgency – Jan-Hendrik Oltmann

It was emphasized that existing legacy communication systems are insufficient to support future digital maritime requirements, including S-100 services and autonomous operations. As such, a new IMO work item was proposed to address the implementation of the IMT technology family as a matter of urgency and to ensure global alignment on future maritime communication capabilities.

- d. A consequential migration path proposal for transiting towards IMT technology family – Jan-Hendrik Oltmann

A transition strategy was outlined to move from legacy systems (e.g. VHF voice, AIS, NAVTEX) towards a unified IP-based communication framework. The concept of a hybrid communication mesh—integrating terrestrial IMT and satellite connectivity—was presented as a resilient solution ensuring seamless data exchange, global coverage, and service continuity during the transition.

3. Open plenary discussion

Participants discussed the urgency of addressing current connectivity limitations and the need for coordinated international action. Key themes included interoperability, alignment between organizations, and ensuring a balanced transition that maintains existing services while enabling future digital capabilities.

- 4. “Rising to the challenges and opportunities” (Karlsruhe IMT Workshop’s running theme) – Jan-Hendrik Oltmann

The session concluded with a call to “rise to the challenges and opportunities,” emphasizing that the implementation of a unified, IP-based communication framework is essential for enabling advanced maritime services and Maritime Autonomous Surface Ships (MASS), and requires collective effort across the maritime community.

6. WORK PROGRAMME MANAGEMENT

6.1 Work Programme 2025 – 2027, Task Plan, Task Register

The Task Plan was updated prior to the session by the DTEC CMT and the Task Plan and Task Register were updated by the Chair and Vice-chair and these were noted by the Committee. They will both be forwarded to DTEC7 as working papers.

6.2 Action Plan for DTEC6

The DTEC6 Action Plan, which can be found on the [IALA Task Register](#), was noted by the Committee.

7. REVIEW OF INPUT PAPERS

The input papers for DTEC6 consisted of new input papers as well as working papers from the previous session. The input paper list (DTEC6-6.0.1) include the working papers from DTEC5.

8. 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 – Digital Information Systems	Axel Hahn / Jin Hyoun Park
WG2 – Emerging Digital Technologies	Jillian Carson-Jackson / Olli Soininen
WG3 – Digital Communication Systems	Stefan Pielmeier / Stefan Bober

9. WORKING GROUP 1 – DIGITAL INFORMATION SYSTEMS (WG1)

During the 6th session of the DTEC committee, WG1 – Digital Information Systems – tackled several tasks related to digital infrastructures and refined Guideline G1191.

The Chair and Vice-Chair of the WG thanked all participants – both in person and online – for their hard work during the hybrid session.

Over the course of the week, the WG held focused sessions and concentrated on the following:

- Developing the concepts and operational issues of the Maritime Connectivity Platform (MCP) by discussion on G1128 and updating G1191
- Maritime Resource Names (MRN)
- IP-based communication (in cooperation with WG2)
- S-100 security

9.1 Task 1.4.1 Develop Guidance on Risk Assessment and Certification Methods in the context of e-Navigation and Task 7.1.6 Development of MCP-related IALA documents

Task Group Leader: Michael Kirkedal Thomson

Referencing Document(s):

DTEC6-2.1.7	Decentral Trust System of the Maritime Connectivity Platform
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Comments:

The Working Group reviewed the input paper and discussed the development of a new Guideline. It will be important to be consistent with and on time for the SECOM Standard and type approval requirements.

Action item(s):

Action Item DTEC6-1 IALA Members are encouraged to develop a Guideline for a Maritime Trust System.

9.2 Task 7.1.5 Review G1128 Specification of e-Navigation technical services

Task Group Leader: Thomas Christiansen

Referencing Document(s): none

Comments:

Further progress on G1128 was discussed, including the potential addition of amendments. It was noted that these amendments would involve additional technical specifications, particularly in support of the SECOM Standard. However, it was agreed to defer further updates until the related requirements become more stable.

9.3 Task 7.1.6 Development of MCP-related IALA documents

Task Group Leader: Thomas Christensen

Referencing Document(s):

DTEC6-2.1.3	Informational MCP Related Documents
DTEC6-2.1.3.1	MCP Gen5 Vetting procedure for MCP instance providers
DTEC6-2.1.3.2	MCP Gen7 Procedure for endorsing MCP identity service providers
DTEC6-2.1.3.3	Use Cases for Multi-Domain MCP Scenarios
DTEC6-2.1.3.4	Procedure for endorsing MCP MMS providers
DTEC6-2.1.3.5	Procedure for endorsing MCP MSR service providers

Comments:

The WG reviewed and commented on the input document as a basis for further work. The MCC endorsement and vetting procedures are just background information. The WG discussed the various use cases connected to these documents. DTEC6-2.1.3.3 became an annex to G1191 (Task 7.1.17).

9.4 Task 7.1.14 Defining IALA's Role in MCP Trust Infrastructure: Operational MCP Instance under IALA Custodianship

Task Group Leader: Thomas Christiansen

Referencing Document(s):

DTEC6-2.1.1	Intersessional meeting report on the MCP instance
DTEC6-2.1.10	Liaison note from VTS to DTEC on MCP

Output:

DTEC6-15.2.5	Information paper to IMO NCSR on MCP Instance feasibility study
DTEC6-15.2.6	Input to the Council on the MCP Instance feasibility study

Comments:

The plan is going forward:

1. An intersessional meeting will be held online on May 8th, 2026, 10:00-12:00 UTC, in which the feasibility study scope will be extended to include input from ENG and ARM.
2. Funding for an independent feasibility study has been secured by the Ministry of Ocean and Fisheries in Korea (MOF) and will be managed by Korea Maritime Cooperation Center (KMC / MCC secretariat). Combitech (the Swedish company that was operating the Navelink MCP on behalf of the Navelink consortium) will be requested to provide input to this feasibility study, which then should be input to DTEC7. Any IALA member is, of course, welcome to contribute to the feasibility study and provide input on this to DTEC7.

3. At DTEC7, the plan will be to make a recommendation to IALA with regard to making a decision on establishing an operational MCP based on the results of the feasibility study. This recommendation should include conclusions on the different elements covered in the feasibility study.
4. The recommendations from DTEC7 will be submitted to ENG, ARM, VTS, PAP, as well as LAP for their consideration, which then will be input to DTEC8.
5. At DTEC8, the recommendation will be updated based on the input from ENG, ARM, and VTS. This updated recommendation will then be sent to PAP – and subsequently to the IALA Council for final decision.

The WG wrote an information paper on its progress to the council and NSCR/IMO.

Action item(s):

Action Item DTEC6-2 *The Secretariat is requested to forward the output document DTEC6-15.2.5 Information paper to IMO NSCR on the MCP Instance feasibility study to the Council for approval, and forward it to IALA NSCR after approval.*

Action Item DTEC6-3 *The Secretariat is requested to forward the output document DTEC6-15.2.6 Input paper from DTEC to the Council on the MCP Instance feasibility study to the Council for information.*

9.5 Task 7.1.17 Maritime Service Registry G1191 TG on Update G1191

Task Group Leader: Juho Pitkänen

Referencing Document(s):

DTEC6-2.1.2.	Update to G1191 on MSR
DTEC6-2.1.2.1	Draft Guideline on Maritime Service Registry (MSR) 2.0 (fileshare DTEC6/WG1)

Output:

DTEC6-15.2.1	G1191 Guideline on Maritime Service Registry Technical Specification
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Comments:

Final review of Guideline G1191, including the remarks from the quality assessment, is now ready for approval and publication, and includes the use cases as mentioned above.

Action item(s):

Action Item DTEC6-4 *The Secretariat is requested to forward the output document DTEC6-15.2.1 G1191 Guideline on Maritime Service Registry Technical Specification to the Council for approval.*

9.6 Task 7.2.1 Contribute to the standardization efforts with respect to the requirements of the S-100 domain experts: Discussion of the Security Problem of S-100

Task Group Leader: Michael Kirkedal Thomsen

Referencing Document(s): none

Output:

DTEC6-15.2.2	Liaison note to all other committees on S-100 security threats
DTEC6-15.2.3	Liaison note to IEC-TC80 on S-100 security threats
DTEC6-15.2.4	Liaison note to IHO on S-100 security threats

Comments:

The possibility of including program code (Lua scripts) in the S-100 Product Specification is a security risk. The WG decided to write notes to other IALA committees, IHO, and IEC. Action item(s):

Action Item DTEC6-5 The Secretariat is requested to forward the output document DTEC6-15.2.2 Liaison note from DTEC to ENG, ARM, and VTS regarding S-100 vulnerability to all committees.

Action Item DTEC6-6 The Secretariat is requested to forward the output document DTEC6-15.2.3 Liaison note from DTEC to IEC TC80 regarding S-100 vulnerability and DTEC6-15.2.4 Liaison note from DTEC to IHO regarding S-100 vulnerability to the Council for approval and forward it to IEC and IHO after approval.

Action Item DTEC6-7 IALA Members are requested to note DTEC6-15.2.2 Liaison note from DTEC to ENG, ARM, and VTS regarding S-100 vulnerability.

9.7 Task on MRN

Task Group Leader: Rasmus Madsen Jensen

Referencing Document(s):

6-2.1.10	Liaison note from VTS to DTEC on MCP
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Comments:

The WG noted and discussed the liaison note from VTS to DTEC on MCP.

10. WORKING GROUP 2 – EMERGING DIGITAL TECHNOLOGIES (WG2)

During DTEC6, participants met in a hybrid meeting environment and progressed the identified tasks assigned under the 2023 - 2027 Work Programme. The working group produced 5 output documents to be forwarded to Council for approval and 5 working papers for the Secretariat to be forwarded to DTEC7.

Reference Document(s): DTEC 06 – WG2 overview-vs2 provided the working schedule. This was introduced, reviewed, and adopted by the WG.

The Chair and Vice-Chair of the Working Group thanked all participants, active both in person and online, for their hard work during the session. They noted the ongoing success of the hybrid working environment.

The WG focused on the following tasks:

- DTEC 1.2.1 – Develop guidance for IALA members on going from development test bed/ trial reporting to implementation
- DTEC-1.2.5 – Review of IALA G1178 – AI / ML Guideline
- DTEC-3.1.3 – Develop a guideline on exchanging GNSS interference data
- DTEC 6.2.1 – Contribute to the development of IMT-2030 by formulating user requirements for Marine AtoN
- DTEC 6.2.2 – IMT-Family application to the Maritime Domain
- DTEC 7.1.1 – Develop a discussion paper on digitalisation in the scope of IALA
- DTEC 7.1.2 – Develop a guideline on the developments and implementation of the digitalisation of waterways
- DTEC 7.2.2 – Consider guidance on the implementation of S-100 from AtoN Authority Perspective
- DTEC 8.3.1 – Review of new / candidate technologies for use in the IALA domain

The following tasks were noted, but were not progressed:

- DTEC 1.2.4b – Develop guidance on the provision of Marine AtoN for autonomous vehicle/vessel operations (Maritime Autonomous Surface Ship, MASS)
- DTEC-5.1.1 / 5.1.2 – Training on the implementation of digital solutions
- DTEC-6.3.13 – Develop guidance on NAVDAT development, considering shore-based infrastructure
- DTEC-7.1.3 – Review G1114 – Technical Specification for Common Shore-based System Architecture

10.1 DTEC-1.2.1 – Implement Innovation

Task group leader: Ernie Batty

Input papers:

DTEC5	15.5.2	Draft guideline implementation of innovation
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Key outcomes:

The draft guideline was reviewed in full. A number of amendments to support clarity of wording were made.

The draft new Guideline on the implementation of innovation was finalised, to be forwarded to the IALA Council for approval.

Action item

Action Item DTEC6-8 *The Secretariat is requested to forward the DTEC6-15.3.2 Draft guideline on the Demonstration of Innovation to the Council for approval.*

10.2 DTEC 1.2.4b – Develop guidance on the provision of Marine AtoN for autonomous vehicle/vessel operations (Maritime Autonomous Surface Ship, MASS)

Task group leader: Jillian Carson-Jackson

Input papers:

R1026 Ed1.0 – Digitalization of Marine Aids to Navigation and Services for Vessels of Varying Levels of Autonomy		
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Key outcomes

It was noted that the recommendation had been approved, and the scope of further work on a Guideline related to MASS requires clarification.

The item was not progressed during DTEC6 and will be further reviewed at DTEC7.

10.3 DTEC 1.2.5 – Review IALA G1178 – an introduction to AI/ML in the IALA domain

Task group leader: O Christians

Input papers:

DTEC5	15.5.4	Draft – An introduction to AI/ML in IALA Domain
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DTEC6	6.2.2.5	Response to the review and update G1178 – An Introduction to Artificial Intelligence (AI) from an IALA perspective
DTEC6	6.2.2.8	Proposal for the work plan DST
DTEC6	6.2.2.8.1	Task Register Proposal: Advanced Decision Support System

Comments:

The Guideline G1178 “An Introduction to Artificial Intelligence (AI) from an IALA Perspective” (Edition 1.0, December 2022) was reviewed, noting comments from DTEC5 and the results of the intersessional work.

DTEC6-6.2.2.5 – liaison from VTS on the review and update of G1178 – was reviewed. The considerations for AI in VTS training were noted and will be considered in the development of the revised guideline. The request for use cases was noted, however the proposed template provided by the VTS Committee was not considered to provide sufficient structure for the overall development use cases for AI from an IALA perspective. A response to the VTS Committee was provided, including a revised use case structure.

The development of a Use Case Register for the use of AI from an IALA perspective is part of the activity of the task, and the use cases will be collated as noted in the table below, which has been completed with a sample use case based on the presentation provided by China MSA and Wuhan University of Technology. It is planned to provide an additional level (use case group) and a reference to the respective committee who present the use case as the table develops.

ID	Title	AI Technology	Benefits of AI	Supports IALA goal	Notes
UC-002	Collision Avoidance	Decision Making, Time Series Analysis	Enhanced safety by predicting and preventing collisions; real-time decision support.	S	Generic

Two related presentations were provided:

1. Application of an AI model for Vessel trajectory analysis and prediction, Wuhan University of Technology, Prof. He Zhenwei

The presentation introduced an AI-driven model for vessel trajectory analysis and prediction. This model facilitates ship collision risk assessment and provides critical decision-making support for Aids to Navigation (AtoN) deployment and vessel traffic organization during emergency situations, including shipwrecks, traffic control interventions, and the construction of offshore engineering structures.

2. Yangshan VTS Decision Support Tool, Yi Jingjing, Shanghai MSA

The advanced decision support system of Yangshan VTS is an upgrade based on traditional VTS decision support tools (DST). It is centred on the core concepts of data-driven, risk-oriented and human-machine collaboration. By introducing the dual-engine architecture of "data-driven + mechanism model", it realizes the transformation of VTS decision support from "passive alarm" to "active planning" and comprehensively surpasses traditional decision support tools in terms of technical concepts, application methods and system performance.

Based on the discussions, including the input from the presentations, a revised table of contents for G1178 was developed and reviewed and will form the basis for future work on the guideline. **Revised Table of Contents (for sections following the Background)**

2. UNDERSTANDING ARTIFICIAL INTELLIGENCE

2.1. Basics of AI

2.2. Key AI Technologies

3. AI IN THE IALA DOMAIN

3.1. Use Cases and Applications

3.2. Benefits of AI in the IALA Domain

4. CHALLENGES AND RISKS

4.1. Technical Challenges

4.2. Ethical and Regulatory Challenges

4.3. Environmental and Sustainability Challenges

5. OVERCOMING CHALLENGES AND MITIGATING RISKS

5.1. Regulatory Frameworks and Standards

5.2. Technological Solutions

5.3. Best Practices for Sustainable AI

6. ENSURING TRUSTED AND LIABLE AI

6.1. Transparency and Explainability

6.2. Validation and Verification

6.3. Continuous Monitoring and Evaluation

Key outcomes

1. Liaison response to VTS Committee approved
2. Revision to ToC agreed – for further review intersessionally
3. Intersessional task group meeting to be held the week of 18 May 2026
4. Proposal to set up AI as a full session at the IALA Conference in 2027, including a panel with Maritime Authorities, Maritime Academic Institutes, the IALA WWA, LAP and industry. Members are encouraged to submit papers on AI in the domain of IALA, noting the deadline for submitting abstracts is 31 August, 2026. (IALA Circular Letter 2026/06 refers)

As noted at DTEC5, Input from all IALA Committees has been requested to ensure comprehensive coverage and relevance for members and stakeholders. This was included in the liaison sent from DTEC5 to all committees (DTEC5-15.3.5). The request remains active, noting that a response from the VTS Committee was received for DTEC6.

Action Item(s):

Action Item DTEC6-9 *Committee participants are invited to join the intersessional task group to progress the work on the “Guideline G1178” (DTEC-1.2.5) and contact Olaf Christian (olaf.christians@airbus.com)) on or before 10 April 2026 if they plan to attend.*

Action Item DTEC6-10 *The Secretariat is requested to forward DTEC6-15.3.5 Liaison note to VTS-request for AI use cases, response to DTEC6-6.2.25 to the VTS Committee.*

Action Item DTEC6-11 *The Secretariat is requested to note the proposal to have a session at the IALA Conference in 2027 focused on AI, including a panel with Maritime Authorities, Maritime Academic Institutes, the IALA WWA, LAP, and industry.*

10.4 DTEC-3.1.3 Develop guideline for exchanging GNSS interference data Task

Task group leader: Olli Soininen

Input papers:

DTEC5	DTEC6-6.2.2.1	Report from Task Group DTEC-3.1.3 Exchanging GNSS Interference Data For Navigational Safety
DTEC5	DTEC6-6.2.2.1.1	Draft IALA Guideline on Exchanging GNSS Interference Data For Navigational Safety

Comments:

The Working Group reviewed the progress of Task 3.1.3 concerning the development of guidance for the exchange of GNSS interference data. Ongoing work and recent developments were presented and discussed.

The Working Group agreed on a set of primary use cases to frame the guidance, namely:

- Ship-to-shore reporting
- Shore-to-ship dissemination
- Ship-to-ship information exchange
- Authority-to-authority coordination

In addition, the Working Group discussed the need for the guidance to address interfaces with other relevant systems and data exchange mechanisms related to interference information. Consideration was also given to incorporating inputs from multiple data sources, enabling more comprehensive modelling approaches.

Furthermore, the importance of risk modelling and the inclusion of situational awareness elements was emphasized, with the aim of supporting operational decision-making and enhancing maritime safety.

The work will continue with further refinement of use cases and development of the guidance structure.

Key outcomes:

The work will continue intersessionally through correspondence and one online meeting to review the input to DTEC7. The online meeting will be announced in the Committee Dashboard Calendar, together with a link to the latest version of the draft Guideline.

Action item(s):

Action Item DTEC6-12 *Committee Participants are requested to send e-mail to task group leader, Mr Olli Soininen (olli.soininen@fintraffic.fi), by 10 April in order to be included in the task group email distribution list.*

Action Item DTEC6-13 *The Secretariat is requested to forward the working paper DTEC6-15.5.4 on Draft IALA Guideline on Exchanging GNSS Interference Data for Navigational Safety (Task 3.1.3) to DTEC7 for further review.*

10.5 DTEC-5.1.1 / 5.1.2 Training on the implementation of digital solutions

Task group leader: J Carson-Jackson

Due to time constraints, this item was not progressed at DTEC6.

10.6 DTEC-6.2.1 IMT-2030

Task group leader: H Koo

Input Papers:

DTEC6		Draft IALA Guideline on Marine AtoN over IMT-2030_WD_20260326
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The meeting was held as per the agenda provided on the FileShare. The session covered:

- review of the 3GPP update,
- review of the IMT-2030 (6G)
- presentation from the IALA Workshop on future radionavigation and radiocommunication systems,
- development of use cases and requirements for Marine AtoN over IMT-2030,
- planning of intersessional task group activities, and
- any other business.

The group reviewed the ongoing work on the draft IALA Guideline on Marine AtoN over IMT-2030. It was agreed to harmonize terminology by using “IMT-2030 (6G) technologies,” delete the annexes, continue revision of Chapters 2, 3 and 5, and introduce use cases in Chapter 4. Detailed discussions on Chapters 2, 3, 4, and 5 will continue through separate email threads after DTEC6.

A series of email threads on discussions for Chapters 2, 3, 4, 5 and the Conclusion in separate email are planned:

1. Review & Discussion on revision of **chapter 2 (MBS)**
5. WHEN: 1st April to 15th May
2. Review & Discussion on revision of **chapter 3 (Positioning)**
6. WHEN: 1st April to 15th May
3. Review & Discussion on revision of **chapter 5 (PWS)**
7. WHEN: 18th May to 30th June
4. Review & Discussion on introduction of **chapter 4 (Digital VTS)**
8. WHEN: 18th May to 30th June
5. Review & Discussion on introduction of **Conclusion**
9. WHEN: 1st July to 31^{July}

The group agreed that continued work on the Guideline as proposed, and provide input to DTEC07 with a plan to complete the guideline. Committee participants are invited to participate, and are requested to send their name and email address to koo@synctechno.com by 27th March (Friday) to indicate which topic email thread(s) they wish to join.

Key Outcomes

It was agreed to continue work on the document through intersessional activity:

10. Continue intersessional work on the draft Guideline through email discussion.
11. Launch separate email threads for Chapter 2 (MBS), Chapter 3 (Positioning), Chapter 5 (PWS), Chapter 4 (Digitalized VTS), and the Conclusion.
12. Hold an online intersessional meeting in September 2026 for final review of all chapters and conclusion.

Action Item(s):

Action Item DTEC6-14 Committee participants are requested to send an email to the task group leader H Koo (koo@synctechno.com) by 27 March 2026 to join email discussion for the intersessional task group DTEC-6.2.1 working on developing use cases for maritime in IMT-2030.

Action Item DTEC6-15 Committee participants are requested to send an email to the task group leader H Koo (koo@synctechno.com) by May 31 2026 to join the online intersessional meeting on 3rd September 2026 at UTC 10:00 - 11:00 / CEST 11:00 - 12:00 / KST 19:00 - 20:00 for the intersessional task group DTEC-6.2.1 working on developing use cases for maritime in IMT-2030.

Action Item DTEC6-16 The Secretariat is requested to publish the timing for the review of the chapters on IALA website to inform other IALA technical committees, who are invited to participate through appropriate means.

10.7 DTEC-6.2.2 IMT Family Application within the Maritime Domain

Task group leader: Jan-Hendrik Oltmann

Input Papers and Presentations:

DTEC5	6.2.2.9	Report on the on IMT Workshop for Marine AtoNs, September 2025, Germany
DTEC6	3.1.4.1.1	Report on the Workshop on Radionavigation and Radiocommunication, February 2026, Edinburgh
DTEC6	AI 4.6	Presentation on Services-Data-Connectivity Stack
DTEC6	AI 7.1-7.3	Presentations at the joint WGs session on Monday 23 March 2026

Comments:

This task was progressed in conjunction with tasks DTEC-7.1.3 and DTEC-7.2.2 during the joint WG1, WG2, and WG3 session on Monday 23 March 2026 immediately after the Opening Plenary as well as during breakout sessions of WG2 on Tuesday 24 March 2026. In addition, liaison with chairpersons of DTEC Committee took place on how to progress the task intersessionally and the upcoming DTEC Committee meetings.

Key outcomes:

Agreement that the “unified global IP based framework” definition and description to be finalised by IMO NCSR13 (22-26 June 2026) would need versatile and powerful IP capable ‘working horse’ carriers to reap the full benefits of that framework. It is understood, that the final decision on the implementation of this framework is planned at IMO MSC112 (14-18 December 2026). It is also understood that this framework would be a substantial part of the whole Services-Data-Connectivity (SDC) stack (compare task DTEC-7.2.2).

Agreement to develop a conceptual framework for the shipboard entity or entities needed as a mandatory carriage requirement to support the Services-Data-Connectivity stack interactions shore-ship/ship-shore using the capabilities of IMT family of technologies in one way or another. It was recognised and agreed that this scoping would be the first step and should be progressed intersessionally.

Agreement to prepare appropriate input documents to IMO NCSR and MSC as appropriate and taking into account the relevant submission deadlines and guidelines. The following IMO meetings were identified as relevant:

- MSC112 (14-18 December 2026) – potentially a non-bulky document can be submitted from DTEC7 (05-09 October 2026) to MSC112;
- NCSR14 (26-30 April 2027; preliminary date) – potentially even a bulky document can be submitted from DTEC7 (05-09 October 2026) to NCSR14 (e.g. for advance information) or from intersessional work between DTEC7 and DTEC8 (spring 2027; not yet scheduled);

- MSC113 (16-25 June 2027; preliminary date) – this would be the key meeting to submit any information and new work item proposal(s) for introducing the IMT technology family in support of the SDC stack in the context of e-navigation;
- Note: There will not be a second MSC meeting in 2027 because of IMO Assembly (December 2027; preliminary date).

Agreement that this would build on the accumulated information from IALA to IMO regarding the IMT technologies family and its potential usefulness for the maritime domain at large, but for the implementation of e-navigation specifically.

Agreement that IALA's new role of Market Representation Partner (MRP) at 3GPP would need both an informative and advice backing as far as IMT technology family is concerned and a point to debrief IMT-related information acquired at 3GPP to IALA.

Agreement that this task has a pan-IALA-Committee relevance and that other IALA Committees should be made aware of the task.

Agreement that more meeting time would be needed for above activities both during the Committee week and intersessionally:

1. Agreement that the work on task DTEC-6.2.2 (as well as other associated tasks) should be assigned to a new WG4 of DTEC from DTEC7 onwards for the remainder of the present session period, and that Terms of reference (ToR) for such a new WG, including a proposal for an appropriate name, should be prepared intersessionally as input for DTEC7.
2. Agreement to continue work on this task through intersessional activity by virtual and/or physical meeting(s). A hybrid intersessional meeting for task DTEC-6.2.2 is tentatively planned for 25/26 August 2026 in Germany.

Action item

Action Item DTEC6-17 Committee participants are requested to indicate their interest in intersessional work for task group DTEC-6.2.2 to Jan-Hendrik Oltmann (jan-hendrik.oltmann@wsv.bund.de) by 13 April 2026.

Action Item DTEC6-18 Jan-Hendrik Oltmann and Axel Hahn are requested to prepare draft Terms of Reference (ToR) for the envisaged WG4 of DTEC Committee and submit them to a correspondence group with a view to have the draft finalized as input to DTEC7.

Action Item DTEC6-19 DTEC Chair is requested to plan for the work of the new WG4 of DTEC from DTEC7 onwards.

Action Item DTEC6-20 Secretariat is requested to provide meeting facilities for the new WG4 of the DTEC Committee during the Working Group sessions.

10.8 DTEC-7.1.1 – Digitalization in the scope of IALA

Task group leader: Nicholas Chiew

Input papers:

DTEC6	6.2.2.3	Liaison note on Progress Update for Task to Develop Discussion Paper on Digitalization in the Scope of IALA
DTEC6	6.2.2.7	Liaison note on Response to Draft Discussion Paper on IALA Vision Towards Digitalization

Comments:

At DTEC6, both input papers were reviewed. The group agreed that the work on the discussion paper is completed and ready to be forwarded to PAP and IALA Council for considerations. Noting that at PAP 60 (held between in February 26) has begun its deliberations on IALA's vision and work plans for the committees, the group propose to close the task at DTEC6 so that the information enclosed within the discussion paper would be timely to support the further discussions at PAP and the IALA Council for future planning for digitalization initiatives and committee work plans.

Key outcomes

1. Draft discussion paper on Digitalization in the Scope of IALA
2. DTEC6-15.3.3 - A Liaison note will be forwarded to VTS to thank VTS Committee for their inputs to DTEC6.
3. The IALA Secretariat is asked to forward the DTEC6-15.3.4. *the Discussion Paper on Digitalization in the Scope of IALA* to PAP and/or IALA Council as appropriate.

Action item

Action Item DTEC6-21 *The Secretariat is requested to forward DTEC6-15.3.3 Liaison note to VTS-Digitalisation Discussion Paper to the VTS Committee, thanking them for their input to the discussion paper.*

Action Item DTEC6-22 *The Secretariat is requested to forward DTEC6-15.3.4 Draft Discussion Paper-IALA Vision on Digitalisation to PAP and/or IALA Council.*

10.9 DTEC-7.1.2 Digitalization of waterways

Task group leader: K Heikoinen

Input papers:

DTEC6	6.2.2.2	Report on Task DTEC-7.1.2 Digitalization of waterways
DTEC6	6.2.2.2.1	Draft Guideline on Digitalization of waterways
DTEC6	6.2.2.6	Liaison note from VTS to DTEC on Digital Waterways

Comments:

The progress on Task 7.1.2 was reviewed, noting the intersessional work and advances made after DTEC5, in particular:

- Feedback from VTS57, ENG21 and ARM21 reviewed and addressed by defining the scope and target group, improving the structure of the guideline, and using more established terminology;
- Unnecessary references to inland waterways were removed from the text and figures;
- The document was shortened and streamlined by deleting unrelated material;
- Editorial improvements were made throughout the document.

Feedback from VTS59 was also reviewed and addressed during the meeting.

Participants acknowledged that further work was still required, including elaborating the best practice summary on digital services and moving the document to the new IALA Guideline template. The session concluded that the guideline was on track to be finalized for editorial review at DTEC7.

Key outcomes:

The work will continue intersessionally through correspondence and one online meeting to review the input to DTEC7. The online meeting will be announced in the Committee Dashboard Calendar, together with a link to the latest version of the draft Guideline. The meeting will be held on:

- 2 July 2026 at 11-12:30 UTC

Action item(s):

Action Item DTEC6-23 *Committee Participants are requested to send e-mail to task group leader, Ms Heikonen (kaisu.heikonen@ftia.fi), by 10 April in order to be included in the task group email distribution list.*

Action Item DTEC6-24 *The Secretariat is requested to forward the working paper DTEC6-15.5.2 on Digitalization of Waterways (Task 7.1.2) to DTEC7 for further review.*

10.10 DTEC-7.1.3 – Review of G1114 Common Shore-based System Architecture

Task group leader: Jan-Henrik Oltmann

Input papers: None

Comments: Due to a lack of input documents and time, this task has not been started yet. There was a brief introductory discussion, however.

Key outcomes:

Agreement that the following IALA documents would be affected by a review of G1113 and should be taken into consideration - Recommendation R0140 (formerly e-Nav140 Ed. 2) and G1113

Output: None

10.11 DTEC-7.2.2 – Implementation of the Services-Data-Connectivity (SDC) stack from an AtoN Authority perspective

Task group leader: Jan-Henrik Oltmann

Input Papers and Presentations:

IMO	Resolution MSC.467(101)	Guidance on the Definition and Harmonization of the Format and Structure of Maritime Services in the Context of e-navigation
IMO	MSC.1/Circ.1610, Rev.1 (2024)	Descriptions of Maritime Services in the Context of e-navigation
DTEC6	AI 4.6	Presentation on Services-Data-Connectivity Stack
DTEC6	AI 7.1-7.3	Presentations at the joint WGs session on Monday, 23 March 2026

Comments:

This task DTEC-7.2.2 addresses the need to convey the whole of the Services-Data-Connectivity (SDC) stack to IALA by the creation of a guideline on that topic. The IMO Resolution MSC.467(101) is a foundational and framework document introducing the SDC stack into the IMO domain, while the IMO MSC.1/Circ.1610 introduce the instance descriptions of the Maritime Services in the context of e-navigation as identified at IMO.

Key outcomes:

- Agreement on the need to constantly revise the above two IMO documents in the future and devise the appropriate international mechanisms to do so as the SDC-Stack is more elaborated and the understanding of it increases.
- Recognition that the revision of both documents would require a work item proposal at IMO, either a combined one or one for each of the two documents: While the MSC Resolution can only be revised by an approved work item proposal, the same holds true for substantial amendments, i. e., amendments

beyond the purely editorial, to the MSC.1 Circular – the next edition of the MSC.1 Circular will contain advanced descriptions of the Maritime Services truly reflecting their operation solely in Digital Space.

- Agreement that this task has a pan-IALA-Committee relevance and that other IALA Committees should be made aware of the task.
- Agreement that more meeting time would be needed for above activities both during the Committee week and intersessionally

Output: no output documents.

Action item(s):

Action Item DTEC6-25 Committee participants are requested to indicate their interest in intersessional work for task group DTEC-7.2.2 to Jan-Hendrik Oltmann (jan-hendrik.oltmann@wsv.bund.de) by 13 April 2026.

10.12 DTEC-8.3.1 Review of Technologies

Task group leader: Jillian Carson-Jackson

Reviewed documents:

Late input – Completed G1153 for Galileo Open Service Navigation Satellite Message Authentication (OSNMA)

Comments:

The review was commenced and will continue at DTEC7.

Output:

Revised version of the G1153 on Galileo OSNMA to be forwarded to DTEC7.

Action item(s):

Action Item DTEC6-26 The Secretariat is requested to forward the working paper G1153 on the review of Galileo OSNMA to DTEC7 for further review.

10.12.1 DTEC-8.3.1 Review of Technologies – Technology Tracker

As a related activity, the ‘Candidate Technology Tracker’ was noted.

To facilitate access to the summary of technology reviews, a folder is located to the parent folder of the Committee File Share. Within the folder there are sub-folders for each technology, including the detailed review and related documents. In addition, ‘parent’ of the folder contains the Candidate Technology Tracker Summary tables, as updated at each DTEC meeting. (Figures 1 and 2 refer)

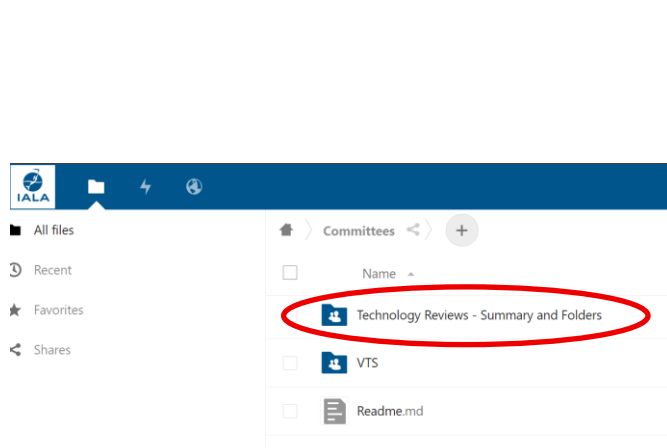


Figure 1 – Location of the Technology Reviews

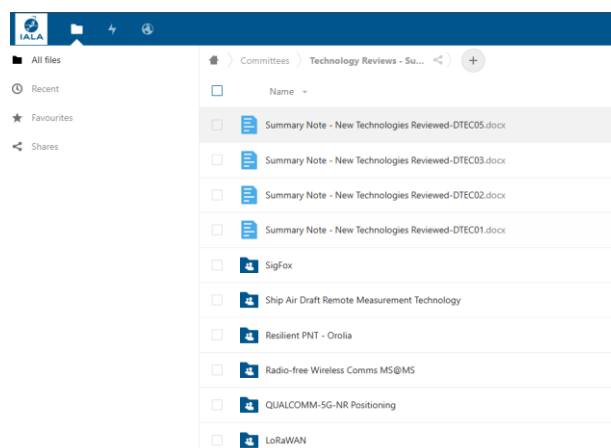


Figure 2 – Contents of the Technology Review Summary folder

10.12.2 DTEC-8.3.1 Review of G1153

The review of G1153 - *Template for the Review of Emerging Technologies for Possible use by IALA Members* commenced at DTEC4, with a liaison to LAP to confirm terminology in light of the move of IALA from IGO to NGO. The response from LAP was reviewed at DTEC6, noting no further change was required.

The guideline was reviewed in full, including the questions contained in the annex.

Output:

Revised G1153 – template for the review of emerging technologies for possible use by IALA Members.

Action item

Action Item DTEC6-27 *The Secretariat is asked to forward DTEC6-15.3.2 Draft Guideline on Demonstration of Innovation, revised G1153, to IALA Council for approval.*

10.12.3 DTEC-8.3.1 – New Technology Presentations

Task group leader: Olli Soininen

Presentations

Jussi Poikonen	GNSS Interference via AIS Data
Sirpa Kannos	Digital VTS Traffic Clearance
Stelios Christodoulou	GNSS Situational Awareness from FleetBroadband Terminals
Olli Soininen	VTS2040 (VTS 2040 Delphi Study)
Dmitry Rostopshin	Using AIS Data in Detection of GNSS Spoofing
China MSA	The Introduction of the Advanced Decision Support System of Shanghai Yangshan VTS

Comments:

Six presentations were provided:

- Jussi Poikonen – GNSS Interference via AIS Data - A presentation was given on the use of AIS data to detect GNSS interference. The Awake solution demonstrates how anomalies in AIS behaviour can be analysed to identify potential GNSS disruptions and provide area-based risk assessments.
- Sirpa Kannos – Digital VTS Traffic Clearance - An update was provided on Fintraffic’s testing of the IALA-defined digital traffic clearance service from the MaDaMe project. The presentation included operational results and feedback from both VTS operators and bridge crews.
- Stelios Christodoulou – GNSS Situational Awareness from FleetBroadband Terminals - The presentation highlighted how vessel satellite communication terminals (FleetBroadband) can be utilized to detect and monitor GNSS interference, contributing to improved situational awareness at sea.
- Olli Soininen – TS2040 (VTS 2040 Delphi Study) - The VTS 2040 Delphi study was presented, outlining future scenarios for vessel traffic management up to 2040. The study explored long-term trends, backcasting approaches, and potential development pathways toward a shared vision.
- Dmitry Rostopshin – Using AIS Data in Detection of GNSS Spoofing - The presentation focused on the use of AIS data to identify GNSS spoofing incidents. Methods were discussed to support VTS operators in recognising spoofing patterns and enhancing maritime safety.

- China MSA – Presented the application achievements of artificial intelligence in the maritime domain—the "Yangshan Advanced Decision Support System". This system utilizes AI technology and is applied in areas such as traffic flow pre-control, identification of abnormal vessel behaviors, categorized and graded warnings and autonomous handling, as well as intelligent navigation. It provides new ideas for the development of digital technologies in the maritime field.

Key outcomes:

All presenters were thanked for sharing their knowledge and information. A number of elements of the presentations was noted for inclusion in the work on specific tasks, including DTEC-3.1.1 (sharing GNSS interference information) and DTEC-1.2.5 (review of G1178 – Use of AI from the perspective of IALA).

All presentations were placed on the IALA fileshare, under DTEC6 / DTEC6-WG2 / General / Presentations.

Output:

None

10.13 Review of Additional Documents

Additional documents were identified for review:

DTEC6	3.1.4.1	Progressing on Sustainability Matters within IALA and Advance Notice of New Sustainability Working Group in the ENG Committee
DTEC6	3.1.4.1.1	Report on the Workshop on Sustainability in AtoN provision
DTEC6	3.1.4.2	Report on the Workshop on Radionavigation and Radiocommunication
DTEC6	6.2.0.3	Workshop Proposal on VHF Data Exchange System (VDES) Satellite
DTEC6	6.2.0.5	Overview of the RIN Maritime GNSS Interference Report (2026)

Comments:

The additional documents were noted. In particular, the development of the new working group within the ENG Committee on Sustainability and the proposed workshop on VHF Data Exchange System (VDES) Satellite.

Key outcomes:

None

11. WORKING GROUP 3 – DIGITAL COMMUNICATION SYSTEMS (WG3)

During the 6th session of the DTEC committee, the WG3 – DIGITAL COMMUNICATION SYSTEMS mainly on VDES and AIS topics to further develop the tasks assigned to the working group.

All file references are relative to the Committee Fileshare WG3 folder for DTEC6: DTEC/WG3/DTEC6.

Referencing Document(s): DTEC WG3 Work Program

The group reviewed the tasks in the online IALA Committee Task Plan: <https://www.iala-task-register.com/committee-working-group?id=13>.

The group identified a potential new task in the proposed changes to Guideline G1117 for SBAS (Input DTEC6-6.2.3.8 and earlier inputs). The complexity of the changes proposed to G1117 seemed out of proportion for a VDES overview document and it may be an approach to target a new task on the topic. However, as the topic is mostly a PNT topic, EUSPA is asked to propose a new task with the ENG committee.

The Chair and Vice-Chair of the Working Group thanked all participants, both in person and online for their hard work during the session. They noted the ongoing success of the hybrid working environment.

During DTEC6 the Working Group met in a hybrid meeting environment and took into account the following tasks:

Task	Description
2.2.1	Full review of A-126, G1084 and other AIS associated documentation; after the revision of ITU-R M.1371-5 (2026)
6.3.2	Develop guidance on Digital VHF voice communication
6.3.3	Develop a Guideline for VDES VDL integrity monitoring
6.3.4	Develop Guidelines on VDES Authentication Techniques
6.3.5	Develop Guidelines on VDES resource sharing and coordination/cooperation
6.3.6	Maintain existing IALA Standards, Recommendations and Guidelines regarding the VHF Data Exchange System (VDES)
6.3.7	Liaise with ITU, IEC and IMO on VDES Topics
6.3.8	Liaise with IEC on the Test standard for VDES
6.3.9	Develop guidance on documentation on communications channels for public service digital information services in coastal areas
6.3.10	New IALA Guideline on Shore-based VDES infrastructure
6.3.11	Maintain existing IALA Standards, Recommendations and Guidelines for the AIS Service
6.3.14	VDES related technical advances and issues

11.1 Task 2.2.1 Full review of A-126, G1084 and other AIS associated documentation: after the revision of ITU-R M.1371-5 (2026)

Task group leaders: Stefan Bober

Key outcomes include:

ITU has revised ITU-R M.1371-5 and published ITU-R M.1371-6 in February 2026.

The biggest changes are:

- Removal of Channel management,
- Addition on AIS Message 28, and
- Addition of a VDES capability indicator.

The group decided to create a task group to perform a screening of AIS associated documentation and propose the necessary indicated changes.

The task group consists of: Stefan Bober, Johnny Schultz and Johan Lindborg. Other volunteers are welcome to contact Stefan Bober.

Action item(s):

Action Item DTEC6-28 *The task group works intersessionally on the task with the goal to input resulting change proposals to existing documentation and to propose a liaison with other committees on their impacted documents for DTEC7.*

11.2 Task 6.3.2 Develop Guidance on Digital VHF voice communication

The Task group collectively informed the Working group that ITU is advancing the working document towards a new recommendation, but the codec has not been selected yet. It may be that the Codec is decided at IEC, and some work remains.

The group discussed the differences between DMR and DPMR, highlighting that DPMR is superior to DMR as it is independent of synchronization sources and base stations.

The group does not recommend starting to write a guideline on the topic before ITU has settled the work on the recommendation.

Action item(s):

Action Item DTEC6-29 *The committee is asked to plan to carry this task forward to the next committee period, as completion does not seem feasible until DTEC8.*

11.3 Taks 6.3.3 Develop a Guideline for VDES VDL integrity monitoring

Task group leaders: Plenary

Input	DTEC6-6.2.3.5 Informative paper on Global AI Applications for AIS Spoofing Detection
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Key outcomes include:

The group noted the input.

11.4 Task 6.3.4 Develop Guidelines on VDES Authentication Techniques

Task group leaders: Jan Safar

Working Input	Working version of the draft revision of Guideline G1192, found at Working/G1192_VDES_Authentication/20260326-03-iala_g_vdes_authentication.docx
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Key outcomes include:

The group discussed updating Guideline G1192 to incorporate the new AIS authentication technique based on the 'signed segment' defined in ITU-R M.2092-2. Jan Safar presented a revised draft integrating these changes to provide guidance ahead of the document review. The document is considered complete by the editor, but requires review by the working group and committee at DTEC7.

Jan Safar also demonstrated an OpenCPN plugin, developed to enable the display of authenticated AIS AtoN on an electronic chart. A video clip of the demonstration is available via the WG3 file share.

Action Items:

Action Item DTEC6-30 *Committee members are asked to review the draft revision of Guideline G1192 as working output from DTEC6, and to provide feedback to jan.safar@gla-rad.org or via the G1192 GitHub repository (contact Jan Safar for access details).*

Action Item DTEC6-31 *The Secretariat is requested to perform quality checks on the provided working draft revision DTEC6-15.5.6 Guideline on VDES authentication and DTEC6-15.5.7 IALA Guideline on Shore-based VDES Infrastructure in preparation for finalization and approval at DTEC7.*

11.5 Task 6.3.5 Develop Guidelines on VDES resource sharing and coordination/cooperation

Task group leaders: Koichi Yoshida

Input 6.2.3.10	Discussion on the draft Guidelines on VDES resource sharing and coordination/cooperation.
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Key outcomes include:

The group recalled the amended scope/goal of the guideline:

- To create a full-service coverage with VDE-SAT min. 60 satellites, maybe more, are needed.
- It would be much earlier to create a working constellation for certain services if the satellite operators cooperate on these.
- The goal of the guideline is to create a platform that promotes cooperation between VDE-SAT transmissions.
- VDE-TER coordination is not considered here, because it is covered by the pfd limit in the ITU-R M.2092 and the draft shore base VDES infrastructure guideline.

Issues with finalizing VDE-SAT sharing guideline:

- Satellite service providers need more time to being able to contribute to the guideline in the required detail
- There is no globally agreed network layer for VDE-SAT, therefore sharing today could only be possible on the link layer
- The RTCM 13900.0 standard could be a candidate for such a network layer

The group notes that the VDES Alliance on their home page provide a Guideline on coordinated use of satellite VDES frequencies, Logical Channels and spreading code among satellite VDES operators that may be used for the work by copying content into IALA documents. The secretariate clarified that references to VDES Alliance documents are not preferred at this point.

Stefan Pielmeier, president of the VDES Alliance informed the group that the VDES Alliance does welcome IALA to using the published work of the VDES Alliance by copy.

The group agreed to propose an intersessional virtual meeting at 09 SEPT 2026, 11-14 UTC. The meeting will be accessible through the IALA DTEC Committee calendar.

Action item(s):

Action Item DTEC6-32 Committee members are invited to participate in the work may contact koichi.yoshida.bbnj@gmail.com for coordination before the intersessional.

Action Item DTEC6-33 Committee members that are interested in participating in the intersessional should check the IALA DTEC Committee calendar for participation information. No registration will be required.

11.6 Task 6.3.6 Maintain existing IALA Standards, Recommendations and Guidelines regarding the VHF Data Exchange System (VDES)

11.6.1 Revision of Guideline G1117

Task group leaders: Stefan Pielmeier, Chair

Working inputs	<ol style="list-style-type: none"> 1. Draft revision of Guideline G1117 in Working/ 2. Draft new Recommendation on VPFI
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3. Draft new Guideline on VPFI

Key outcomes include:

The group reviewed the inputs.

Due to the international adoption of the VDES Payload Identifier (VPFI), the group decided to move the normative VPFI definitions from Guideline G1117 (VDES overview) to the new dedicated proposed Recommendation on VPFI. Therefore, both documents need to be published together.

The group discussed the normative character of the Guideline, as it is required to have unique and harmonized identifiers for VDES payload format identifier and the formats themselves. The recommendation in the future will serve as a reference for international standards and recommendations describing VDES applications. Therefore, the entire proposed Guideline on VPFI was integrated into the draft new Recommendation, as all parts of the VPFI are to be normative to ensure a harmonized use.

The group amended the proposed new revision of Guideline G1117 and restructured the document for a better overview.

After review of all proposed outputs the group approved the documents.

Note: IEC in its new draft VDES mobile station equipment test standard (IEC 63514) is referring to the new draft Recommendation on VPFI and plans to change the status of the new equipment test standard to Voting (CDV) in July 2026. For this voting, is it important that the reference to the new Recommendation on VPFI is published before July 2026?

Additionally, as the first edition of this Recommendation is intended to be referenced in a normative way in a future IEC publication for the VDES shipborne mobile station (IEC 63514). IALA secretariat is therefore requested to keep the first edition of this Recommendation available for public access until further notice.

Action item(s):

Action Item DTEC6-34 *The Secretariat is requested to forward the output paper DTEC6-15.4.1 New Recommendation on VDE Payload Format Identifier (VPFI) to the Council for approval and publish it on the IALA website before 1st of July 2026.*

Action Item DTEC6-35 *The Secretariat is requested to forward the DTEC6-15.4.2 Revised Guideline on VDES Overview to the Council for approval and publish it on the IALA website before 1st of July 2026.*

Action Item DTEC6-36 *The Secretariat is asked to forward the DTEC6-15.4.5 Draft Liaison note to IEC on VPFI and DTEC6-15.4.6 Draft Liaison note to RTCM on VPFI to IEC and RTCM appropriately, informing them about the new recommendation on VPFI and updated Guideline G1117, after publishing on the IALA website.*

Action Item DTEC6-37 *The Secretariat is requested to maintain superseded IALA documents available for public access.*

11.7 Task 6.3.7 Liaise with ITU, IEC and IMO on VDES Topics

11.7.1 AIS Authentication harmonization

Task group leaders: Plenary

Key outcomes include:

The group discussed the necessity of informing IMO about the now-defined methods for AIS authentication. A key point of the deliberation was the need for a clearer understanding at the IMO level regarding the specific requirements for performing AIS authentication.

The group explains that a VDES station and a maritime PKI are needed to authenticate AIS by the use of digital signatures. Updated display equipment may be needed to portray the authentication status.

At IMO, the fact that VDES authenticates AIS is known because it is required by the performance standard. It is not mandated to authenticate AIS according to SOLAS.

As a potential next step, the group considered addressing the current lack of mandatory AIS authentication with national governments. This could involve submitting a new output proposal to the MSC with a concrete change proposal to consider mandating authentication.

Finally, it was observed that ITU regulatory updates could potentially lead to automatic updates in IMO instruments. This mechanism might allow for necessary adjustments to be made following ITU changes without the administrative requirement of a new output proposal.

11.8 Task 6.3.8 Liaise with IEC on the Test standard for VDES

No liaisons were developed during DTEC6 by the group.

11.9 Task 6.3.9 Develop guidance on documentation on communications channels for public service digital information services in coastal areas

No inputs or progress was performed on this task. It is not expected that DTEC will provide an output on this topic during the current DTEC period.

11.10 Task 6.3.10 New IALA Guideline on Shore-based VDES infrastructure

Task group leader: Lukas Kim

Input papers:

Formal inputs	6.2.3.1 new proposed Annex for interfacing 6.2.3.4 and 6.2.3.11 reports from intersessional work 6.2.3.11.1 draft Guideline on shore based VDES infrastructure
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The working group:

Reviewed the results of the intersessional meetings and discussed the goal to have a publishable version ready by DTEC7. That will require to tailor the scope of the current working draft, in order to keep the workload at a level to being able to achieve that target.

China MSA presented and summarized DTEC 6.2.3.1 (an appendix on data service interface specification) and there were no comments/questions from the group.

The working group proposes to continue the work during an intersessional meeting which shall be held in Dalian, China, as described in Task 3.6.14 below.

Action Items

Action Item DTEC6-38 *Committee members are invited to review the working document 6.2.3.11.1 and propose amendments before the intersessional meeting in August (see Task 3.6.14 below). The goal is a publication-ready version as input to DTEC7.*

Action Item DTEC6-39 *The Secretariat is requested to start quality screening of the working paper DTEC6-15.5.7 IALA Guideline on Shore-based VDES Infrastructure and provide feedback before the intersessional meeting to the WG3 Chair and Vice-Chair.*

11.11 Task 6.3.11 Maintain existing IALA Standards, Recommendations and Guidelines for the AIS Service

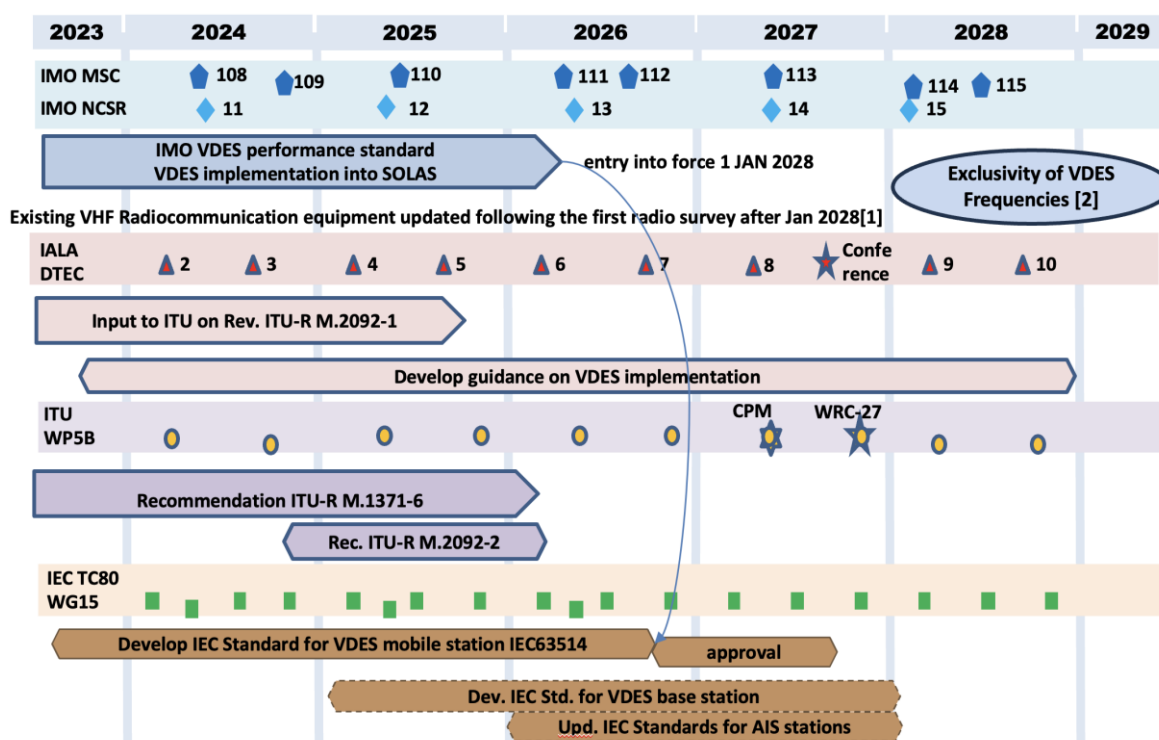
No necessary actions were identified for this Task during DTEC6.

11.12 Task 6.3.14 VDES related technical advances and issues

The group reviewed the VDES roadmap (Working/20251002_VDES_Roadmap.pptx), no changes were indicated. The group noted that both ITU recommendation revisions were performed at ITU, as expected. Thank you for all contributions to improve and clarify AIS and VDES further.

Committee members may now refer to ITU-R M.1371-6 for AIS and ITU-R M.2092-2 for VDES.

Possible Road Map VDES standardisation - maritime -



[1]: MSC.1/Circ.1460/Rev.4

[2]: According to Appendix 18 to the ITU Radio Regulations of 2024 (WRC-19), the VDES frequencies are exclusively assigned for VDES 1st of January 2030;

11.12.1 ASM Application Identifiers

Task group leader: Yao Gaole, China MSA

Input papers & presentations:

ASM Application Draft Guideline Presentation	
6.2.3.2	Draft Guideline on ASM Application Protocol

Key Outcome:

The group agrees that a Guideline on the ASM Application Protocol is required.

In order to carry forward the necessary work, the group proposes to hold an intersessional meeting as follows:

China Dalian City (1 flight hour from Beijing) Tuesday 18 - Saturday 22 AUG 2026, 9-17h local time, hybrid meeting facilities for remote participants will be made available. Please contact huaishuaiheng@dlmu.edu.cn for an invitation. Registration shall be made by email to sp@albatros-tech.eu, huaishuaiheng@dlmu.edu.cn, ane@iala.int and stefan.bober@wsv.bund.de.

This intersessional meeting also covers further work on the Guideline on shore based VDES infrastructure Task 6.3.10.

An working output of this new proposed Guideline for quality screening is expected at DTEC7, and final approval by the committee may be expected at DTEC8.

Action Items

Action Item DTEC6-40 *Committee members are invited to review the proposed draft Guideline input DTEC6-6.2.3.2 and prepare comments for the proposed intersessional.*

Action Item DTEC6-41 *Committee members are invited to register for the intersessional meeting not later than 18th of July, 2026 in the manner described above.*

11.12.2 ITU-R M.2092-2 change proposal

Task group leader: Plenary

Input papers & presentations:

6.2.3.3	Proposed Revision to Recommendation ITU-R M.2092
Presentation	Presentations/ChinaMSA_DTEC6_Presentation-2092

Key Outcomes:

Yao Gayole presented MSA-1 of the input on a potential improvement of VDES as amendment of ITU-R M.2092-2, and potentially also impacting the IEC mobile station equipment test standard.

The group discussed the following aspects on the draft proposal to prevent ASM-SAT transmissions:

- overlapping areas are not covered by the proposal, so there is a missing coverage area for the command,
- it should be required that the message should be authenticated by the equipment before acting on it, e.g. by transmitting it over a signed segment VDE-TER transmission, and
- if the mobile is deciding to want to transmit to a satellite, it should be allowed to do that,
- that an ASM service area should be considered in general,
- that in case we accept the proposal the PI interface should provide a status information on the suppression to the applications,
- that the IEC mobile station equipment test standard should be updated in case the proposal is accepted,
- that the LID4 is not protected against collisions with other ASM LID and that a satellite with its huge footprint would receive many messages at the same time. Therefore, it also might be an approach to simply remove ASM-SAT from 2092 entirely.

The group didn't accept the change proposal as proposed and invites China MSA to consider amendments.

Yao presented MSA-2 which introduces an aspect when receiving VDE-SAT on high speed boats where the high AIS reporting rate limits the maximum time the VDES transceiver may receive VDE-SAT transmissions uninterrupted. The group sees it as not conformant with IMO resolutions and ITU recommendations to propose to change reporting intervals, i.e. the priority of AIS and the required report interval of highspeed crafts.

The problem presented in MSA-2, however, might be seen frequently and should be addressed by a better forward error correction, maybe on a fragment repetition level, to be investigated further in the future.

11.12.3 VDES R-mode

Task group leader: Plenary

Input papers & presentations (Working/R-Mode):

Presentation on VDE-SAT R-Mode Project MAPS (ESA)	DTEC6-6.2.3.7 Maritime alternative PNT solutions R-Mode - Dateien - IALA Nextcloud: 20260325_MAPS_Kongsberg_DTEC6.pdf
Presentation on R-mode status	R-Mode - Dateien - IALA Nextcloud: https://nextcloud.iala.int/f/474950
Draft submitted to the EC is on the fileshare	https://nextcloud.iala.int/f/474235

Key Outcomes:

Anders Bjørnevik (KSX) presented DTEC6-6.2.3.7, Maritime Alternative PNT Solutions. He outlined the objectives of the new project, the proposed R-Mode architecture, and the status of the upcoming launch of the Mimir-1 satellite (formerly ADIS). Further discussions focused on the possibility of changing the secondary spectrum allocation for VDE-SAT, particularly in view of VDE-SAT R-Mode at WRC-31. The conclusion was that the prospects for such a change are limited. A discussion on MF R-Mode as a complement to VDE-SAT highlighted its dependence on existing infrastructure. This infrastructure is distributed non-homogeneously worldwide, although it is comparatively favourable in the Baltic Sea region.

Ronald Raulefs (DLR) presented current developments toward establishing a VDES R-Mode testbed using WSV infrastructure east of Rügen, Germany. The infrastructure includes a base station, monitoring functionality for over-the-air signals from neighbouring base stations, and a loopback monitoring and recording device for local observation of VHF signals. In addition, the free-running atomic clock can also be monitored locally. A revised set of tracking filters were used for recent measurement data of dynamic VDES R-Mode ranging signals. The scope was to assess the impact on reducing the update rate of ranging sequences. The assessment showed the need to have a regular update rate of 1 Hz especially for low complex tracking filters. Further, discussions included:

1. IEC recently removed Link-ID 29 from the final IEC test document for the VDES mobile station. Link-ID 29 was the only configuration supporting a 150 kHz channel. This led to discussions on the potential impact on the future development of VDE-SAT R-Mode, as the removal excludes a specific physical-layer functionality. It was acknowledged, however, that IEC needs to limit the scope of its test configurations.
2. A call was made for adjustments to G1158 before the DTEC 7 meeting. The suggested adjustments include:
 - Refine navigation message to address all link-IDs in M.2092-1
 - Add VPFI structure to the upcoming IALA guideline about the navigation messages
 - Adding authentication to VDES R-Mode for the navigation message.

- Enhancing the flexibility and scalability of VDES R-Mode in conjunction with shoreline infrastructure. Address the impact of GNSS jamming or spoofing that is locally detected.
 - Addressing the missing timing information for ASM R-Mode (comments were provided).
 - Add VDE-SAT R-Mode
3. Information was provided on the current activities at ITU WP5B, specifically concerning:
- A study item on the co-existence of VDES R-Mode and VDES communication. The study was elevated by ITU WP5B to the next level.
 - For the next WP5B meeting in May expected inputs are measurement and trial results from NIT, Kongsberg, China and DLR
 - The proposed timeline is to conclude this study item by Q2 2026 to address the relevant information for the agenda items at WRC'31.
4. MSC 110 (6/2025) accepted the proposal to develop a performance standard for an R-Mode receiver. This will start in 6/2026 at NCSR 13. A draft submitted to the EC by Germany is on the fileshare (<https://nextcloud.iala.int/f/474235>). It might be updated by the EC before it is submitted to NCSR. Committee participants are invited to support the R-Mode performance standard at the NCSR 13 meeting.

Action items

Action Item DTEC6-42 Committee participants are invited to contribute to the revision of Guideline G1158 before and at the next DTEC-7 meeting.

Action Item DTEC6-43 Committee participants are invited to support the R-Mode performance standard at the NCSR 13 meeting.

11.12.4 JCG VDE-SAT Workshop proposal

Task group leader: Plenary

Input papers:

Input	DTEC6-6.2.0.3 Workshop Proposal on VHF Data Exchange System (VDES) Satellite
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Key outcomes:

The group welcomed the idea of a VDE-SAT dedicated workshop after listening to the presentation of Japan Coast Guard about the proposed workshop. Multiple members of the group indicated interest in participating.

11.12.5 S3C/FLIR Transponder Tech integration test and VDE-TER range test campaign

Task group leader: Plenary

Input papers:

Input	Presentations/IALA DTEC6 WG3 - Jan 2026 VDE-TER Field Test Results - FLIR and S3C.pptx
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Key outcomes:

Johan and Attie presented the Input, highlighting a very good observed performance of VDE-TER with PER being always better than 5% at 47km range (LID19) or better under these test conditions.

Anders from Kongsberg is confirming the observed ranges with LID11 are reproducing what also can be observed in Norway in the test performed by Kongsberg.

Observed in these tests is that line of sight, noise floor are the main factors determining the range. Multi-path was not observed in this test but is important to be taken into account.

12. SUMMARY OF OUTPUT AND WORKING PAPERS

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

Outputs from DTEC6 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 (DTEC6-12.1) was approved by the Committee at the Closing Plenary.

14. DATE AND VENUE OF NEXT MEETINGS

DTEC7 is planned to be held between 05 – 09 October 2026 at IALA Headquarters, Saint Germain-en-Laye, France.

Other IALA events will be publicised on the IALA website.

15. ANY OTHER BUSINESS

DTEC Vice-Chair thanked the Chairs/Vice-Chairs of WG1 and WG2 for their support in encouraging their respective members to participate in the review of Chapters 9 and 10 of the NAVGUIDE, with special thanks to the China MSA for furnishing their inputs and working documents during DTEC5 and DTEC6.

WG2 and WG1 participants are warmly invited to join the intersessional meetings on 12 May 2026 (1100h-1230h) and 13 May 2026 (1100h-1230h) respectively to progress the review of the NAVGUIDE. For further clarification, please feel free to contact me at dennisdtevc@gmail.com.

Action Item DTEC6-44 *Committee participants are invited to join the intersessional task group (Virtual meetings) working on the review of Chapters 9 and 10 of the NAVGUIDE and to express their interest to DTEC Vice-Chair Dennis Khoo (dennisdtevc@gmail.com) by 12 May 2026, noting that dates and times of the intersessional meetings will be published on the IALA DTEC Committee Dashboard.*

Regarding the IALA Workshop on future Maritime radionavigation and radiocommunication system held in February 2026 at NLB headquarters in Edinburgh. The Chair proposed to submit the information paper on the report of the Workshop to NCSR13 and the Committee agreed to the output DTEC 6-15.4.3.

Action Item DTEC6-45 *Secretariat is requested to send DTEC6-15.4.3 to Council for the correspondence approval and send it to IMO considering the deadline of 17 April.*

The delegation of the Republic of Korea announced their intention to host DTEC 8 in Korea. The Chair thanked the Republic of Korea for their kind invitation but informed the Committee that the final decision was made at Council meeting in June 2026.

Minsu Jeon reported on Summary of Conclusions & Recommendations – Digital@Sea North America (April 2025). The workshop emphasized that IP-based data exchange is fundamental to maritime digitalization, with SECOM and the Maritime Connectivity Platform (MCP) identified as key enablers. The importance of secure communication was highlighted through the roles of the Maritime Identity Registry (MIR) and Maritime Service Registry (MSR). To ensure connectivity for all users, technologies such as VDES and Maritime Messaging Service (MMS) were identified as important complementary solutions, particularly for vessels without high-speed IP access. The session also noted increasing risks related to AIS spoofing and GNSS interference, calling for urgent mitigation measures. It was recommended that IALA take a leading role in hosting MIR and MSR to ensure global

stability and continue the development of S-200 product specifications. Additionally, authorities were encouraged to use the Global Maritime Digital Route Testbed (GMDRT) to support harmonization and verify interoperability of maritime digital services.

The Nautical Institute presented the project 'STEER' - Seafarer Technology Empowerment Engagement Resilience. The seafarer is increasingly a supervisor of systems rather than a direct operator. This also relates to the operations ashore, where those interacting with the seafarer are also seeing a change in operations. Watching screens, managing alarms, interpreting data, and intervening when automation struggles affect those ashore and afloat.

It is anticipated that updates on STEER will be presented at further sessions of DTEC. Members of the committee were invited to use the QR code to learn more about STEER, and join the STEER community.

For more information or to join the
STEER community



16. CLOSING OF THE MEETING

The Chair thanked all Committee participants again for all the engagement and hard work. He hoped that all the participants would return again to DTEC6.

She 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 especially as he is aware that all have their jobs back at home to work on also.

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

17. 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



6th Session of the Digital Technologies Committee (DTEC6)

The physical week of the 6th session of the DTEC Committee will take place from 23 to 27 March 2026 at the IALA HQ in Saint Germain-en-Laye, France. Please note that the Opening Plenary will be held in a hybrid format on Monday, 23 March, starting at 09:00 UTC (10:00 CET). The Closing Plenary will be held online on Thursday, 02 April 2026, starting at 12:00 UTC (13:00 CET).

Agenda

1. Introduction
 - 1.1. Welcome from the Secretary-General Francis Zachariae
 - 1.2. Approval of agenda Hideki Noguchi
 - 1.3. Apologies Hideki Noguchi
 - 1.4. Working arrangements Alisa Nechyporuk
 - 1.5. Quality check procedure Christina Schneider
2. Review of action items from last session
 - 2.1. Review of action items from DTEC5 Hideki Noguchi
3. Reports from other bodies and initiatives
 - 3.1. IALA Minsu Jeon
 - 3.1.1. IALA Council Minsu Jeon
 - 3.1.2. IALA Policy Advisory Panel (PAP) Minsu Jeon
 - 3.1.3. WWA Updates Vincent Denamur
 - 3.2. Digital@Sea Minsu Jeon
 - 3.3. IHO Minsu Jeon
 - 3.4. IMO Hideki Noguchi / Minsu Jeon
 - 3.4.1. MSC
 - 3.4.2. NCSR
 - 3.5. ITU Stefan Bober
 - 3.6. IEC Stefan Bober / Jorge Arroyo
 - 3.7. ISO Minsu Jeon
 - 3.8. ISO-IEC JTC 1 Jin Hyoungh Park
 - 3.9. RTCM Ross Northswordy / Johnny Schultz
 - 3.10. 3GPP Hyounhee Koo
 - 3.11. VDES Alliance Stefan Pielmeier
 - 3.12. ETSI Minsu Jeon

4. Presentations
 - 4.1 Demonstration of Satellite VDES Downlink of S-124 Navigational Warnings and Distribution through MCP/MMS, Koichi Nishimura, TST Corporation
 - 4.2 E-navigation initiatives in Turkiye, Okan Kanyilmaz, Aselan
 - 4.3 Prospected standardization and a new Trust Model tailored to e-Navigation, Alexandr Tardo, CNIT Laboratory
 - 4.3 Result of a Field Trial on VHF Digital Voice Communication, Takahiko Konishi
 - 4.4 Field Trials of VDES ASM Reception, Ono Masatora, Japan Coast Guard
 - 4.5 Services Data Connectivity Stack, Jan-Hendrik Oltmann, WSV
5. Work programme management
 - 5.1. Work Programme, Task Plan, Task Register
 - 5.2. Action plan for this session
6. Review of input papers
 - 6.1. Introduction of input papers Submitter(s)
 - 6.2. Allocation of input papers Hideki Noguchi
7. DTEC6 Working Group programmes and arrangements
 - 7.1. WG1 – Digital Information System Axel Hann
 - 7.2. WG2 – Emerging Digital Technology Jillian Carson-Jackson
 - 7.3. WG3 – Digital Communication System Stefan Pielmeier
8. Break out into Working Groups
9. Reconvene Plenary Session (Friday 27 March, 08:00 – 10:00 UTC, 09:00 – 11:00 CET)
10. Summary of Working Group reports, documents, and output papers (Plenary Session)
 - 10.1. WG1 – Digital Information System Axel Hann
 - 10.2. WG2 – Emerging Digital Technology Jillian Carson-Jackson
 - 10.3. WG3 – Digital Communication System Stefan Pielmeier
11. The Nautical Institute on 'STEER' Jillian Carson-Jackson
12. DTEC6 Output Review Period
13. Closing Plenary (Thursday 02 April, 12:00 – 11:00 UTC, 13:00 – 14:00 CET, online)
 - 13.1. Review of session report
 - 13.2. Review of outcome documents
 - 13.3. Date and venue of next meeting
14. Close of the meeting
15. Summary of output and working papers
 - 15.1. Committee-wide
 - 15.2. WG1 output
 - 15.3. WG2 output
 - 15.4. WG3 output
 - 15.5. Working papers
16. Any other business

ANNEX B LIST OF PARTICIPANTS

First name	Last name	Member type	Member Country	Organisation
Marcos	Silva	Member State	Brazil	Marinha do Brasil-Diretoria de Hidrografia e Navegação
Alain Serge	Mbene Koah	Affiliate	Cameroon	Port Authority of Kribi
Willie Mba	Tsanga	Affiliate	Cameroon	Autorité Portuaire Nationale du Cameroun
Barry	Baker	Member State	Canada	Canadian Coast Guard
Glenn	Coady	Member State	Canada	Canadian Coast Guard
Natacha	Riendeau	Member State	Canada	Canadian Coast Guard
Dmitry	Rostopshin	Affiliate Industrial	Finland	ICS Technologies S.R.L.
Mauricio	Concha	Member State	Chile	Minister of Foreign Affairs of Chile
Xu	Haibo	Member State	China	China MSA
Shuaiheng	Huai	Member State	China	Ministry of Transport of the People's Republic of China
Qiong	Jia	Member State	China	Ministry of Transport of the People's Republic of China
Chunxu	Li	Affiliate	China	China Waterborne Research Institute
dong	Li	Affiliate Industrial	China	Tianjin Tianyuanhai Technology Development Co., Ltd.
Di	Lin	Member State	China	Ministry of Transport of the People's Republic of China
Jialin	Liu	Member State	China	Ministry of Transport of the People's Republic of China
Woodson	Walt	Affiliate Industrial	China	China Head Aerospace Technology Co
Iv	Xuwei	Member State	China	Ministry of Transport of the People's Republic of China
Gaole	Yao	Member State	China	China MSA
Songbo	Zhuang	Member State	China	China Maritime Safety Administration
Yingdian	Zhuang	Member State	China	China Maritime Safety Administration
Thomas	Christensen	Affiliate Industrial	Denmark	AIVeNautics Corp
Agata	Dakowicz	Affiliate Industrial	Denmark	Sternula A/S
Oliver	Haagh	Affiliate Industrial	Denmark	AIVeNautics Corp
Rasmus Madsen	Jensen	Member State	Denmark	Danish Emergency Management Agency
David	Marchant	Observer	Denmark	University of Copenhagen
Lars	Moltsen	Affiliate Industrial	Denmark	Sternula A/S
Michael	Pfeiffer	Member State	Denmark	Danish Emergency Management Agency under the Ministry of Resilience and Preparedness.
Christopher	Saarnak	Member State	Denmark	Danish Emergency Management Agency under the Ministry of Resilience and Preparedness.

First name	Last name	Member type	Member Country	Organisation
Mikko	Heikkinen	Affiliate	Finland	Fintraffic Vessel Traffic Services Ltd
Kaisu	Heikonen	Member State	Finland	FINLAND-Finnish Transport Infrastructure Agency
Sirpa	Kannos	Affiliate	Finland	Fintraffic Vessel Traffic Services Ltd
Antti	Kukkonen	Affiliate Industrial	Finland	Furuno Finland Oy
Ramin	Miraftabi	Affiliate	Finland	Fintraffic Vessel Traffic Services Ltd
Juho	Pitkanen	Affiliate	Finland	Fintraffic Vessel Traffic Services Ltd
Olli	Soininen	Affiliate	Finland	Fintraffic Vessel Traffic Services Ltd
Olaf	Christians	Affiliate Industrial	France	Airbus Defence and Space
Anne	Duret	Member State	France	Direction Générale des affaires maritimes, de la Pêche et de l'Aquaculture
Hugo	Guerin	Observer	France	Bureau Veritas Marine & Offshore
Xavier	Hernoe	Member State	France	Direction Générale des affaires maritimes, de la Pêche et de l'Aquaculture
Johann	Larue	Affiliate Industrial	France	Airbus Defence and Space
Fabien	Piotrowski	Affiliate	France	Cerema
Antoine	Rigole	Member State	France	Direction Générale des affaires maritimes, de la Pêche et de l'Aquaculture
Lamin Jubairu	Njie	Associate	Gambia	Gambia Maritime Administration
Abas	Saidykhan	Associate	Gambia	Gambia Maritime Administration
Stefan	Bober	Member State	Germany	Federal Waterways and Shipping Agency
Axel	Hahn	Affiliate	Germany	German Aerospace Centre
Adrian	Hegmann	Observer	Germany	ifak e.V. Magdeburg
Michael	Kirkedal Thomsen	Affiliate	Germany	German Aerospace Centre - Institute of Communications and Navigation
Marcus	Krol	Affiliate Industrial	Germany	in-innovative navigation GmbH
Jan-Hendrik	Oltmann	Member State	Germany	Federal Waterways and Shipping Agency
Ronald	Raulefs	Affiliate	Germany	German Aerospace Centre - Institute of Communications and Navigation
Jochen	Ritterbusch	Member State	Germany	Federal Maritime and Hydrographic Agency
Sarah	Willmann	Observer	Germany	ifak e.V. Magdeburg
Frebory	Dioubate	Associate	Guinea	Agence de Navigation Maritime - Ministère des Transports

First name	Last name	Member type	Member Country	Organisation
Djetenin	Kuyate	Associate	Guinea	Agence de Navigation Maritime - Ministère des Transports
Felix Ho	Kong	Associate	Hong Kong	Department of the Hong Kong Special Administrative Region
Abdulfatah Hassan Abdulsaed	Almohsen	Associate	Iraq	General Company for Ports of Iraq
zain alabden adil abdulmunem	Almusawi	Associate	Iraq	General Company for Ports of Iraq
Yahya Abdulkareem Nafea	Alsarhani	Associate	Iraq	General Company for Ports of Iraq
Mortada Abdul Hafed	Mal Alla	Associate	Iraq	General Company for Ports of Iraq
Francesco	Borghese	Affiliate Industrial	Italy	ELMAN S.r.l.
Roberto	Calabria	Member State	Italy	Italian Coast Guard
Antonio	Cammisa	Member State	Italy	Italian Coast Guard/ Italian Navy
Domenico	Febbo	Affiliate Industrial	Italy	ELMAN S.r.l.
Luca	Fiorentino	Affiliate Industrial	Italy	ELMAN S.r.l.
Michele	Fiorini	Affiliate Industrial	Italy	Leonardo S.p.A.
Mario	Greco	Member State	Italy	Italian Navy
Francesco	Stagira	Member State	Italy	Italian Coast Guard/ Italian Navy
Alexandr	Tardo	Observer	Italy	CNIT - National Inter-University Consortium for Telecommunications
Hollo	Kambire	Associate	Ivory Coast	Port Autonome d'Abidjan
Mayumi	Arita	Member State	Japan	Japan Coast Guard
Michael	Card	Affiliate Industrial	Japan	Zeni Lite Buoy Co Ltd
Junji	Fukuto	Affiliate	Japan	Japan Ship Technology Research Association (JSTRA)
Takuo	Kashiwa	Affiliate Industrial	Japan	ArkEdge Space Inc.
Natsuki	Kayamori	Affiliate Industrial	Japan	ArkEdge Space Inc.
Kenji	Kogo	Affiliate Industrial	Japan	IHI Corporation
Takahiko	Konishi	Member State	Japan	Japan Coast Guard
Minoru	Kowaki	Affiliate Industrial	Japan	Furuno Electric Co Ltd
Yoshio	Miyadera	Affiliate Industrial	Japan	Japan Radio Co., Ltd.
Daichi	Nakamura	Affiliate Industrial	Japan	ArkEdge Space Inc.
Hideki	Noguchi	Affiliate	Japan	Japan Ship Technology Research Association (JSTRA)
Masatora	Ono	Member State	Japan	Japan Coast Guard
Ryohei	Uemura	Affiliate Industrial	Japan	ArkEdge Space Inc.
Masanori	Watagawa	Affiliate Industrial	Japan	ArkEdge Space Inc.
Hiroaki	Watanabe	Affiliate Industrial	Japan	TST Corporation
Koichi	Yoshida	Member State	Japan	Japan Coast Guard

First name	Last name	Member type	Member Country	Organisation
Miyoung	Kang	Member State	Korea, South	Ministry of Oceans & Fisheries
Lukas	Kim	Affiliate Industrial	Korea, South	ALLFORLAND
Hyun	Kim	Affiliate Industrial	Korea, South	GMT Cybernetics Co Ltd
Yumin	Kim	Affiliate Industrial	Korea, South	GC Co. Ltd
Bu Young	Kim	Affiliate	Korea, South	Korea Research Institute of Ships and Ocean Engineering (KRISO)
Elly Seomgyeol	Lee	Affiliate Industrial	Korea, South	GMT Cybernetics Co Ltd
Namsung	Lee	Member State	Korea, South	Ministry of Oceans & Fisheries
Jin Hyoung	Park	Affiliate Industrial	Korea, South	AIVeNautics Corp.
Suyoung	Park	Affiliate Industrial	Korea, South	GMT Cybernetics Co Ltd
Dayoung	Park	Affiliate	Korea, South	Korea Maritime Cooperation Center
Dayoung	Song	Affiliate	Korea, South	Korea Maritime Cooperation Center
Naehyuk	Yoo	Affiliate	Korea, South	Korea Institute of Aids to Navigation (KATON)
Mohamed	Tachghou	Associate	Morocco	Direction des Ports et du Domaine Public Maritime
Nader	Alagha	Affiliate	Netherlands	ESA - European Space Agency
Maarten	Berrevoets	Member State	Netherlands	Ministry of Infrastructure and Water Management
Gerrit Jan	de Bie	Affiliate	Netherlands	Port of Rotterdam Authority
Anders	Bjoernevik	Affiliate Industrial	Norway	Kongsberg Discovery AS - Seatex
Sinikka	Hartonen	Affiliate Industrial	Norway	Kongsberg Norcontrol AS
Knut	Hovda	Member State	Norway	Norwegian Coastal Administration
Renzo	Esquivel	Associate	Peru	Direccion de Hidrografia y Navegacion
Krzysztof	Bronk	Affiliate	Poland	National Institute of Telecommunications
Nicholas	Chiew	Member State	Singapore	Maritime and Port Authority
Wing Kei	Ho	Member State	Singapore	Maritime and Port Authority
Dennis	Khoo	Member State	Singapore	Maritime and Port Authority
Jotham	Teo	Member State	Singapore	Maritime and Port Authority
Eduardo	Diaz	Affiliate	Spain	GSC/EUSPA
Jose Luis	Martin Sanchez	Affiliate	Spain	ESSP-SAS
Taoufik	El Bacha	Affiliate Industrial	Sweden	Teledyne FLIR TransponderTech AB
Johan	Lindborg	Affiliate Industrial	Sweden	FLIR TransponderTech
James	Mann	Affiliate Industrial	Sweden	AAC Clyde Space
Magnus	Nyberg	Affiliate Industrial	Sweden	Teledyne FLIR TransponderTech AB
Stefan	Pielmeier	Affiliate Industrial	Sweden	FLIR Transpondertech AB
Berkant	Bayraktar	Affiliate Industrial	Türkiye (Republic of)	HAVELSAN AS
Ali Okan	Kanyilmaz	Affiliate Industrial	Türkiye (Republic of)	Aselsan A.S

First name	Last name	Member type	Member Country	Organisation
Nurullah	Koc	Member State	Türkiye (Republic of)	Directorate General of Coastal Safety
Furkan	Koroglu	Affiliate Industrial	Türkiye (Republic of)	HAVELSAN AS
Richard	Allan	Member State	United Kingdom	Maritime & Coastguard Agency
Ernest	Batty	Affiliate Industrial	United Kingdom	IMIS Global Ltd
Huw	Escott	Affiliate Industrial	United Kingdom	CML Microcircuits
Nick	Hirst	Member State	United Kingdom	Department for Transport
Lawrence	Hughes	Member State	United Kingdom	United Kingdom-Department of Transport
Attie	Labushagne	Affiliate Industrial	United Kingdom	CML Microcircuits
Derek	Love	Affiliate Industrial	United Kingdom	CML Microcircuits
Rhyno	Meyer	Affiliate Industrial	United Kingdom	IMIS Global Ltd
Tammy	Newey	Member State	United Kingdom	Department for Transport
Jan	Safar	Member State	United Kingdom	General Lighthouse Authorities of the UK & Northern Ireland
Pieter	Winter	Affiliate Industrial	United Kingdom	CML Microcircuits
Patrick	Armstrong	Associate	United States	US Coast Guard
Clayton	Diamond	Affiliate	United States	American Pilots Association Inc
Sean	Foster	Associate	United States	US Coast Guard
Patrick	Gallagher	Associate	United States	US Coast Guard
Ross	Norsworthy	Associate	United States	US Coast Guard
Johnny	Schultz	Associate	United States	US Coast Guard
Paul	Burton	Sister organisations		UKHO
Jillian	Carson-Jackson	Sister organisations		Nautical Institute
Joel	Kinghan	Sister organisations		CIRM
Christian	Sabella	Observer		ETSI
Matthew	Williams	Sister organisations		IMPA
Javier	Yasnikouski	Sister organisations		IMO

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	Agenda Item	Output Paper Title	Source	Action
DTEC6	1.2.1	Provisional agenda v1.0	Secretariat	All
DTEC6	1.4	Programme for the week	Secretariat	All
DTEC6	2.1	Final report of DTEC5	Secretariat	All
DTEC6	2.1.1	DTEC5 Action Items	Secretariat	All
DTEC6	3.1.1	Report of the 3rd session of the IALA Council	Secretariat	All
DTEC6	3.1.2.1	Report of PAP59	Secretariat	All
DTEC6	3.1.2.2	Report of PAP60	Secretariat	All
DTEC6	3.1.4.1	Progressing on Sustainability Matters within IALA and Advance Notice of New Sustainability Working Group in the ENG Committee	Alwyn Williams, ENG Chair	All
DTEC6	3.1.4.1.1	Report on the Workshop on Sustainability in AtoN provision	Secretariat	All
DTEC6	3.1.4.2	Report on the Workshop on Radionavigation and Radiocommunication	Secretariat	All
DTEC6	3.5.1	IALA Report Joint IMO-ITU Expert group 6th to 10th October 2025	IALA	All
DTEC6	3.5.2	IALA Report on ITU-R WP5B meeting 18 to 27 November 2025	IALA	All
DTEC6	6.0	Input paper Committee meeting template	Secretariat	All
DTEC6	6.0.1	List of input papers	Secretariat	All
DTEC6	6.2.0.1	Proposal on the revision of relevant sections of the NAVGUIDE 2023	China MSA	All
DTEC6	6.2.0.1.1	Annex Update of Chapter 9 of the 2023 NAVGUIDE	China MSA	All
DTEC6	6.2.0.2	Proposal on the update of the Information Service Chapter of NAVGUIDE 2023	China MSA	All
DTEC6	6.2.0.2.1	Annex on Update of the Information Service chapter for NAVGUIDE 2023	China MSA	All

Meeting	Agenda Item	Output Paper Title	Source	Action
DTEC6	6.2.0.3	Workshop Proposal on VHF Data Exchange System (VDES) Satellite	Japan Coast Guard	All
DTEC6	6.2.0.4	Liaison note from ITU-R WP 5B	ITU	All
DTEC6	6.2.0.5	Overview of the RIN Maritime GNSS Interference Report (2026)	Secretariat	All
DTEC6	6.2.1.1	Intersessional meeting report on the MCP instance	Thomas Christensen	WG1
DTEC6	6.2.1.2	Update to G1191 on MSR	Fintraffic, GLA, AIVeNautics	WG1
DTEC6	6.2.1.2.1	Draft Guideline on Maritime Service Registry (MSR)	Fintraffic, GLA, AIVeNautics	WG1
DTEC6	6.2.1.3	Informational MCP Related documents	Fintraffic, GLA, AIVeNautics	WG1
DTEC6	6.2.1.3.1	MCP Gen5 Vetting procedure for MCP instance providers	Thomas Christensen	WG1
DTEC6	6.2.1.3.2	MCP Gen7 Procedure for endorsing MCP identity service providers	Thomas Christensen	WG1
DTEC6	6.2.1.3.3	Use Cases for Multi-Domain MCP Scenarios	Nikolaos Vastardis	WG1
DTEC6	6.2.1.3.4	Procedure for endorsing MCP MMS providers	Thomas Christensen, Jakob Svenningsen	WG1
DTEC6	6.2.1.3.5	Procedure for endorsing MCP MSR service providers	Thomas Christensen, Jakob Svenningsen	WG1
DTEC6	6.2.1.4	Decentral Trust System of the Maritime Connectivity Platform	DLR, and AIVeNautice	WG1
DTEC6	6.2.1.5	Liaison note from VTS to DTEC on MCP	VTS59	WG1
DTEC6	6.2.1.6	Liaison note from VTS to DTEC and ARM on MRN	VTS59	WG1
DTEC6	6.2.2.1	Report from Task Group DTEC-3.1.3 Exchanging GNSS Interference Data for Navigation	Task Group DTEC-3.1.3	WG2
DTEC6	6.2.2.1.1	Draft IALA Guideline on Exchanging GNSS Interference Data for Navigational Safety	Task Group DTEC-3.1.3	WG2
DTEC6	6.2.2.2	Report on Task DTEC-7.1.2 Digitalization of waterways	Task Group DTEC-7.1.2	WG2
DTEC6	6.2.2.2.1	Draft Guideline on Digitalization of waterways	Task Group DTEC-7.1.2	WG2

Meeting	Agenda Item	Output Paper Title	Source	Action
DTEC6	6.2.2.3	Progress Update for Task on Developing a Discussion Paper on Digitalisation in the Scope of IALA	MPA Singapore	WG2
DTEC6	6.2.2.4	Review of IALA G1153 – Template for the Review of Emerging Technologies for Possible Use by IALA Members	LAP28	WG2
DTEC6	6.2.2.5	Response to the review and update G1178 – An Introduction to Artificial Intelligence (AI) from an IALA perspective	VT559	WG2
DTEC6	6.2.2.6	Liaison note from VTS to DTEC on Digital Waterways	VT559	WG2
DTEC6	6.2.2.7	Liaison note from VTS to DTEC on Digitalization Vision	VT559	WG2
DTEC6	6.2.2.8	Proposal for the work plan DST	China MSA	WG2
DTEC6	6.2.2.8.1	Task Register Proposal: Advanced Decision Support System	China MSA	WG2
DTEC6	6.2.3.1	Proposal for the Guideline on Shore VDES Infrastructure	China MSA	WG3
DTEC6	6.2.3.2	Draft Guideline on ASM Application Protocol	China MSA	WG3
DTEC6	6.2.3.3	Proposed Revision to Recommendation ITU-R M.2092	China MSA	WG3
DTEC6	6.2.3.4	Intersessional meeting on Draft Guideline on Shore-based VDES infrastructure	Stefan Pielmeier, FLIR Transponder Tech AB	WG3
DTEC6	6.2.3.4.1	Intersessional meeting on Draft Guideline on Shore-based VDES infrastructure	Stefan Pielmeier, FLIR Transponder Tech AB	WG3
DTEC6	6.2.3.5	Informative Paper on Global AI Applications for AIS Spoofing Detection	DGLL	WG3
DTEC6	6.2.3.6	Result of a Field Trial on VHF Digital Voice Communication	Japan Coast Guard	WG3
DTEC6	6.2.3.7	Maritime alternative PNT solutions	Kongsberg Discovery	WG3 WG2
DTEC6	6.2.3.8	Proposal of VDES shore station upgrade to enable SBAS data retransmission	ESSP	WG3
DTEC6	6.2.3.9	Field Trials of VDES ASM Reception	Japan Coast Guard	WG3
DTEC6	6.2.3.10	Discussion on the draft Guidelines on VDES resource sharing and coordination/cooperation	OPRI, SPF	WG3

Meeting	Agenda Item	Output Paper Title	Source	Action
DTEC6	6.2.3.11	Report on Intersessional meeting on development of Guidelines for Shore-based VDES Infrastructure	Stefan Bober	WG3
DTEC6	6.2.3.11.1	IALA Guideline on Shore-based VDES Infrastructure	Stefan Bober	WG3

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	Output paper number	Output Paper Title	Source	Action
DTEC6	15.2.1	G1191 Guideline on Maritime Service Registry Technical Specification	WG1	Council
DTEC6	15.2.2	Liaison note from DTEC to all other committees on S-100 security threats	WG1	ENG, ARM, VTS
DTEC6	15.2.3	Liaison note from DTEC to IEC-TC80 on S-100 security threats	WG1	IEC
DTEC6	15.2.4	Liaison note from DTEC to IHO on S-100 security threats	WG1	IHO
DTEC6	15.2.5	Information paper to IMO NCSR on MCP Instance feasibility study	WG1	IMO
DTEC6	15.2.6	Input paper from DTEC to the Council on the MCP Instance feasibility study	WG1	Council, PAP
DTEC6	15.3.1	Revised Guideline G1153 on Review of Emerging Technologies	WG2	Council
DTEC6	15.3.2	Draft Guideline on Demonstration of Innovation	WG2	Council
DTEC6	15.3.3	Liaison note to VTS Committee – Discussion Paper for IALA Vision on Digitalization	WG2	VTS
DTEC6	15.3.4	Draft discussion paper – IALA Vision on Digitalization	WG2	Council
DTEC6	15.3.5	Liaison note to VTS-request for AI use cases	WG2	Council
DTEC6	15.4.1	New Recommendation on VDE Payload Format Identifier (VPFI)	WG3	Council
DTEC6	15.4.2	Revised Guideline on VDES Overview	WG3	Council
DTEC6	15.4.3	Liaison note to NCSR13 Results of IALA Workshop on RNAV and RCOM	WG3	IMO ENG
DTEC6	15.4.4	Liaison note to Council on Workshop Proposal on VDES Satellite	WG3	Council
DTEC6	15.4.5	Draft Liaison note to IEC on VPFI	WG3	IEC
DTEC6	15.4.6	Draft Liaison note to RTCM on VPFI	WG3	RTCM

Working papers will remain within the Committee for further review during VTS56.

Meeting	Agenda Item	Working Paper Title	Source	Action
DTEC6	15.5.1	G1153 template-Galileo OSNMA v1.2	DTEC6	DTEC7
DTEC6	15.5.2	Draft Guideline on Digitalization of waterways	DTEC6	DTEC7
DTEC6	15.5.3	Working paper on AI within the domain of IALA	DTEC6	DTEC7
DTEC6	15.5.4	Draft Guideline on exchanging GNSS Interference data	DTEC6	DTEC7
DTEC6	15.5.5	Draft Guideline on development of IMT-2030 - user requirements for Marine AtoN	DTEC6	DTEC7
DTEC6	15.5.6	Guideline on VDES authentication	DTEC6	DTEC7
DTEC6	15.5.7	IALA Guideline on Shore-based VDES Infrastructure	DTEC6	DTEC7

ANNEX E ACTION ITEMS

- Action Item DTEC6-1** IALA Members are encouraged to develop a Guideline for a Maritime Trust System.
- Action Item DTEC6-2** The Secretariat is requested to forward the output document DTEC6-15.2.5 Information paper to IMO NCSR on the MCP Instance feasibility study to the Council for approval, and forward it to IALA NCSR after approval.
- Action Item DTEC6-3** The Secretariat is requested to forward the output document DTEC6-15.2.6 Input paper from DTEC to the Council on the MCP Instance feasibility study to the Council for information.
- Action Item DTEC6-4** The Secretariat is requested to forward the output document DTEC6-15.2.1 G1191 Guideline on Maritime Service Registry Technical Specification to the Council for approval.
- Action Item DTEC6-5** The Secretariat is requested to forward the output document DTEC6-15.2.2 Liaison note from DTEC to ENG, ARM, and VTS regarding S-100 vulnerability to all committees.
- Action Item DTEC6-6** The Secretariat is requested to forward the output document DTEC6-15.2.3 Liaison note from DTEC to IEC TC80 regarding S-100 vulnerability and DTEC6-15.2.4 Liaison note from DTEC to IHO regarding S-100 vulnerability to the Council for approval and forward it to IEC and IHO after approval.
- Action Item DTEC6-7** IALA Members are requested to note DTEC6-15.2.2 Liaison note from DTEC to ENG, ARM, and VTS regarding S-100 vulnerability.
- Action Item DTEC6-8** The Secretariat is requested to forward the DTEC6-15.3.2 Draft guideline on the Demonstration of Innovation to the Council for approval.
- Action Item DTEC6-9** Committee participants are invited to join the intersessional task group to progress the work on the “Guideline G1178” (DTEC-1.2.5) and contact Olaf Christian (olaf.christians@airbus.com) on or before 10 April 2026 if they plan to attend.
- Action Item DTEC6-10** The Secretariat is requested to forward DTEC6-15.3.5 Liaison note to VTS-request for AI use cases, response to DTEC6-6.2.25 to the VTS Committee.
- Action Item DTEC6-11** The Secretariat is requested to note the proposal to have a session at the IALA Conference in 2027 focused on AI, including a panel with Maritime Authorities, Maritime Academic Institutes, the IALA WWA, LAP, and industry.
- Action Item DTEC6-12** Committee Participants are requested to send e-mail to task group leader, Mr Olli Soininen (olli.soininen@fintraffic.fi), by 10 April in order to be included in the task group email distribution list.
- Action Item DTEC6-13** The Secretariat is requested to forward the working paper DTEC6-15.5.4 on Draft IALA Guideline on Exchanging GNSS Interference Data for Navigational Safety (Task 3.1.3) to DTEC7 for further review.
- Action Item DTEC6-14** Committee participants are requested to send an email to the task group leader H Koo (koo@synctechno.com) by 27 March 2026 to join email discussion for the intersessional task group DTEC-6.2.1 working on developing use cases for maritime in IMT-2030.
- Action Item DTEC6-15** Committee participants are requested to send an email to the task group leader H Koo (koo@synctechno.com) by May 31 2026 to join the online intersessional meeting on 3rd September 2026 at UTC 10:00 - 11:00 / CEST 11:00 - 12:00 / KST 19:00 - 20:00 for the intersessional task group DTEC-6.2.1 working on developing use cases for maritime in IMT-2030.
- Action Item DTEC6-16** The Secretariat is requested to publish the timing for the review of the chapters on IALA website to inform other IALA technical committees, who are invited to participate through appropriate means.

- Action Item DTEC6-17** Committee participants are requested to indicate their interest in intersessional work for task group DTEC-6.2.2 to Jan-Hendrik Oltmann (jan-hendrik.oltmann@wsv.bund.de) by 13 April 2026.
- Action Item DTEC6-18** Jan-Hendrik Oltmann and Axel Hahn are requested to prepare draft Terms of Reference (ToR) for the envisaged WG4 of DTEC Committee and submit them to a correspondence group with a view to have the draft finalized as input to DTEC7.
- Action Item DTEC6-19** DTEC Chair is requested to plan for the work of the new WG4 of DTEC from DTEC7 onwards.
- Action Item DTEC6-20** Secretariat is requested to provide meeting facilities for the new WG4 of the DTEC Committee during the Working Group sessions.
- Action Item DTEC6-21** The Secretariat is requested to forward DTEC6-15.3.3 Liaison note to VTS-Digitalisation Discussion Paper to the VTS Committee, thanking them for their input to the discussion paper.
- Action Item DTEC6-22** The Secretariat is requested to forward DTEC6-15.3.4 Draft Discussion Paper-IALA Vision on Digitalisation to PAP and/or IALA Council.
- Action Item DTEC6-23** Committee Participants are requested to send e-mail to task group leader, Ms Heikonen (kaisu.heikonen@ftia.fi), by 10 April in order to be included in the task group email distribution list.
- Action Item DTEC6-24** The Secretariat is requested to forward the working paper DTEC6-15.5.2 on Digitalization of Waterways (Task 7.1.2) to DTEC7 for further review.
- Action Item DTEC6-25** Committee participants are requested to indicate their interest in intersessional work for task group DTEC-7.2.2 to Jan-Hendrik Oltmann (jan-hendrik.oltmann@wsv.bund.de) by 13 April 2026.
- Action Item DTEC6-26** The Secretariat is requested to forward the working paper G1153 on the review of Galileo OSNMA to DTEC7 for further review.
- Action Item DTEC6-27** The Secretariat is asked to forward DTEC6-15.3.2 Draft Guideline on Demonstration of Innovation, revised G1153, to IALA Council for approval.
- Action Item DTEC6-28** The task group works intersessionally on the task with the goal to input resulting change proposals to existing documentation and to propose a liaison with other committees on their impacted documents for DTEC7.
- Action Item DTEC6-29** The committee is asked to plan to carry this task forward to the next committee period, as completion does not seem feasible until DTEC8.
- Action Item DTEC6-30** Committee members are asked to review the draft revision of Guideline G1192 as working output from DTEC6, and to provide feedback to jan.safar@gla-rad.org or via the G1192 GitHub repository (contact Jan Safar for access details).
- Action Item DTEC6-31** The Secretariat is requested to perform quality checks on the provided working draft revision DTEC6-15.5.6 Guideline on VDES authentication and DTEC6-15.5.7 IALA Guideline on Shore-based VDES Infrastructure in preparation for finalization and approval at DTEC7.
- Action Item DTEC6-32** Committee members are invited to participate in the work may contact koichi.yoshida.bbnj@gmail.com for coordination before the intersessional.
- Action Item DTEC6-33** Committee members that are interested in participating in the intersessional should check the IALA DTEC Committee calendar for participation information. No registration will be required.
- Action Item DTEC6-34** The Secretariat is requested to forward the output paper DTEC6-15.4.1 New Recommendation on VDE Payload Format Identifier (VPFI) to the Council for approval and publish it on the IALA website before 1st of July 2026.

- Action Item DTEC6-35** *The Secretariat is requested to forward the DTEC6-15.4.2 Revised Guideline on VDES Overview to the Council for approval and publish it on the IALA website before 1st of July 2026.*
- Action Item DTEC6-36** *The Secretariat is asked to forward the DTEC6-15.4.5 Draft Liaison note to IEC on VPFI and DTEC6-15.4.6 Draft Liaison note to RTCM on VPFI to IEC and RTCM appropriately, informing them about the new recommendation on VPFI and updated Guideline G1117, after publishing on the IALA website.*
- Action Item DTEC6-37** *The Secretariat is requested to maintain superseded IALA documents available for public access.*
- Action Item DTEC6-38** *Committee members are invited to review the working document 6.2.3.11.1 and propose amendments before the intersessional meeting in August (see Task 3.6.14 below). The goal is a publication-ready version as input to DTEC7.*
- Action Item DTEC6-39** *The Secretariat is requested to start quality screening of the working paper DTEC6-15.5.7 IALA Guideline on Shore-based VDES Infrastructure and provide feedback before the intersessional meeting to the WG3 Chair and Vice-Chair.*
- Action Item DTEC6-40** *Committee members are invited to review the proposed draft Guideline input DTEC6-6.2.3.2 and prepare comments for the proposed intersessional.*
- Action Item DTEC6-41** *Committee members are invited to register for the intersessional meeting not later than 18th of July, 2026 in the manner described above.*
- Action Item DTEC6-42** *Committee participants are invited to contribute to the revision of Guideline G1158 before and at the next DTEC-7 meeting.*
- Action Item DTEC6-43** *Committee participants are invited to support the R-Mode performance standard at the NCSR 13 meeting.*
- Action Item DTEC6-44** *Secretariat is requested to send DTEC6-15.2.5 to Council for the correspondence approval and send it to IMO considering the deadline of 17 April.*

ANNEX F WORKING GROUP PARTICIPANTS LISTS

Working Group 1 Digital Information Systems

Chair – Axel Hahn, German Aerospace Centre

Vice-chair – Jin Hyoung Park, Aivenautics

Members	Organisation	Task Group No.
Rasmus	Jensen	Danish Maritime Authority
Michael	Pfeiffer	Danish Emergency Management Agency
Lawrence	Hughes	GLA
Michael	Kirkedal Thomsen	DLR
Li	Chunxu	China MSA
Axel	Hahn	DLR
Nurullah	KOÇ	Kıyı Emniyeti Genel Müdürlüğü
Jotham	Teo	Maritime and Port Authority of Singapore
Antonio	CAMMISA	Italy navy
NATSUKI	KAYAMORI	ArkEdge Space Inc.
Dayoung	Park	Korea Maritime Cooperation Center
Xu	Haibo	CHINA
Abas	Saidykhan	Gambia Maritime Administration
Felix	Kong	Marine Department of Hong Kong Special Administrative Region
NAMSUNG	LEE	Ministry of oceans and fisheries
Dayoung	Song	Korea Maritime Cooperation Center
Jose	Mella	DIRECTEMAR
Ronald	Raulefs	DLR
Knut	Hovda	Norwegian Coastal Administration
Marcos	Silva	Aids to Navigation Center - Brazilian Navy
Juho	Pitkänen	Fintraffic VTS
Nurullah	KOC	Directorate General of Coastal Safety
Sarah	Willmann	ifak e.V. Magdeburg
Adrian	Hegmann	ifak e.V.
Hiroaki	Watanabe	TST Corporation
Jochen	Ritterbusch	Federal Maritime and Hydrographic Agency

Chair – Jillian Carson-Jackson, Nautical Institute

Vice-chair – Olli Soininen, Fintraffic

Members	Organisation	Task Group No.
MASATORA	ONO	JCG
Michael	Pfeiffer	Danish Emergency Management Agency
Olli	Soininen	Fintraffic
Juho	Pitkänen	Fintraffic VTS
Sinikka	Hartonen	Kongsberg Norcontrol
Francesco	Stagira	Italian Coast Guard
Jillian	Carson-jackson	The Nautical Institute
Christopher	Saarnak	Danish Emergency Management Agency
Nurullah	KOÇ	Kıyı Emniyeti Genel Müdürlüğü
Xavier	Hernoë	DGAMPA
Olaf	Christians	Airbus Defence and Space
Natacha	Riendeau	Canadian Coast Guard
Roberto	Calabria	Italian Coast Guard
Richard	Allan	HM Coastguard, UK
Felix	Kong	Marine Department of Hong Kong Special Administrative Region
Matthew	Williams	IMPA
Takahiko	Konishi	Japan Coast Guard
Miyoung	Kang	Ministry of Oceans and Fisheries, Korea
Knut	Hovda	Norwegian Coastal Administration
Mikko	Heikkinen	Fintraffic VTS
Sirpa	Kannos	Fintraffic VTS
Yumin	Kim Yumin	GC Co., Ltd.
Marcos	Silva	Aids to Navigation Center - Brazilian Navy
Tachghou	Mohamed	Direction des ports et domaine public maritime
Nurullah	KOC	Directorate General of Coastal Safety
Sarah	Willmann	ifak e.V. Magdeburg
Adrian	Hegmann	ifak e.V.
Jochen	Ritterbusch	Federal Maritime and Hydrographic Agency
Maarten	Berrevoets	Ministry of Infrastructure and Water Management
Furkan	Köroğlu	Havelsan A.Ş.
Ernest	Batty	IMIS Global
Kaisu	Heikonen	Finnish Transport Infrastructure Agency
Dmitry	Rostopshin	ICS TECHNOLOGIES

Working Group 3 Digital Communication Systems

Chair – Stefan Pielmeier, Sternula AS

Vice-chair – Stefan Bober, Germany, Federal Waterways and Shipping Administration

Members	Organisation	Task Group No.
MASATORA	ONO	JCG
Michael	Pfeiffer	Danish Emergency Management Agency
Ali Okan	KANYILMAZ	ASELSAN
Stefan	Pielmeier	Flir Transponder Tech
Shuaiheng	Huai	China MSA
Christopher	Saarnak	Danish Emergency Management Agency
Nurullah	KOÇ	Kıyı Emniyeti Genel Müdürlüğü
Kenji	Kogo	IHI Corporation
Wing Kei	Ho	Maritime Port Authority of Singapore
Felix	Kong	Marine Department of Hong Kong Special Administrative Region
Johan	Lindborg	FLIR TransponderTech
Jose	Mella	DIRECTEMAR
Ronald	Raulefs	DLR
Krzysztof	Bronk	National Institute of Telecommunications
Takahiko	Konishi	Japan Coast Guard
Miyoung	Kang	Ministry of Oceans and Fisheries, Korea
Lukas	Kim	ALLFORLAND
Marcos	Silva	Aids to Navigation Center - Brazilian Navy
Nurullah	KOC	Directorate General of Coastal Safety
Johnny	Schultz	USCG
Joel	Kinghan	CIRM
Hiroaki	Watanabe	TST Corporation
Ernest	Batty	IMIS Global
Kaisu	Heikonen	Finnish Transport Infrastructure Agency



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