Input paper: DTEC4-6.2.2.3

Input paper for the following Committee(s): check as appropriate Purpose of paper:

**□** ARM **□** ENG **□** PAP **X** Input

**X** DTEC **□** VTS **□** Information

Agenda item 6.2

Technical Domain / Task Number DTEC-7.1.2

Author(s) / Submitter(s) Task Group DTEC-7.1.2

Report from Task Group DTEC-7.1.2 Digitalization of Waterways

# Summary

This document reports the results of the Task Group DTEC-7.1.2 intersessional work between DTEC3 and DTEC4 meetings, introduces a draft Discussion paper on MASS compatible AtoNs and outlines the planned future work.

Task Group DTEC-7.2.1:

* continued drafting the new Guideline on Digitalization of Waterways;
* had two online intersessional meetings where feedback from ARM19 and ENG19 was discussed and the offline work done by the members of the group was reviewed;
* drafted a Discussion paper on MASS compatible AtoNs based on ARM19 feedback.

Task Group plans to continue drafting the Guideline intersessionally between DTEC4 and DTEC5 and proposes to send a Liaison note related to MASS compatible AtoNs from DTEC4 to ARM20.

## Related documents

A short summary of the related DTEC4 input documents is given below.

Results from the intersessional work between DTEC3 and DTEC4 are attached to this paper. The draft Guideline is submitted in two versions, with and without track-changes. It is suggested to continue drafting with the clean version. The Discussion paper is suggested to be send to ARM for consideration.

* DTEC4-6.2.2.3.1 Draft GXXXX on Digitalization of Waterways – post intersessional
* DTEC4-6.2.2.3.2 Draft GXXXX on Digitalization of Waterways – post intersessional – clean
* DTEC4-6.2.2.3.3 Draft Discussion Paper on MASS Compatible AtoNs
* DTEC4-6.2.2.3.4 Draft Liaison note DTEC to ARM on MASS Compatible AtoNs

Working paper forwarded from DTEC3. This document is for information and traceability only, the work will continue using the results from intersessional work.

* DTEC4-[TBD] Draft IALA Guideline on Digitalization of waterways (DTEC3-11.2.2.13)

Feedback from other Committees and PAP:

* DTEC4-[TBD] Liaison note to PAP and DTEC- Digitalization of Waterways (ARM19-11.4.2)
* DTEC4-[TBD] Liaison note ENG to DTEC committee on digitalization of waterways guideline (ENG19-9.2.2.8)
* Possible additional input from VTS57 and PAP56

Other input

* Any additional input from IALA members

# Background

During DTEC1 meeting, WG2 started to work on a new task: Develop guidance for IALA members on the digitalisation of waterways. The target date for finalization of the new guideline is DTEC6 (spring 2026). The main objectives of the new Guideline are:

* Define what is meant by digitalisation of waterways;
* Provide guidance on identifying digital maturity of waterways;
* Review guidance on the use of simulation as a tool in waterway design and AtoN planning (IALA G1058 and G1097, noting this has been superseded by G1058 Ed 3.0);
* Identify best practice in development and use of digital twins;
* Provide guidance on the use of digital twins for fairways / aids to navigation provision;
* Identify uses of digital twins for planning, monitoring and maintenance;
* Identify options to share information on the fairway infrastructure and services in a digital format with users;
* Link with, for example, IMT-2030 and beyond for data exchange, AI/ML, S100;
* Identify opportunities to enhance sustainability through the use of technology / digital twins for fairways and AtoNs.

# Discussion

## Intersessional work

The Task Group held two intersessional online meetings between DTEC3 and DTEC4 were feedback from ARM19 and ENG19 meetings was discussed and the offline work done by the members of the group was reviewed. The meetings were held outside the IALA Teams environment because some members of the group continue to experience difficulties connecting to Teams meetings. The online meeting connection details were announced via IALA File-Share and additional notifications were sent by e-mail to the registered members of the Task Group.

The working papers discussed during the intersessional work can be found from IALA File-Share (Committees > ENAV-DTEC > Post DTEC3 Intersessional TGs > DTEC-7.1.2-Digitalization of Waterways).

## Task group members

The current members of the Task Group DTEC-7.1.2 are:

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## Status of the draft Guideline

DTEC3 meeting sent the draft Guideline to other committees for the first round of review and comments.

Task Group discussed during its online intersessional meetings the feedback from ENG19 and ARM19 meetings based on output papers available from these meetings. ENG19 had no specific comments at this point. ARM19 committee made a preliminary review of the draft Guideline and provided some comments and guidance back to DTEC4 meeting. DTEC was asked to consider submitting a position paper regarding the information provided in Section 7.4 of the draft Guideline. Section 7.4 of the draft guideline discusses MASS compatible AtoNs and introduces a concept of AtoNs specifically designed to assist autonomous vessels.

The possible additional feedback from VTS56 and PAP56 meetings is expected to be discussed during DTEC4.

Task Group continued drafting of the Guideline between DTEC3 and DTEC4 intersessionally. New content has been added to the following Sections:

* Section 3.1.2 Digital Model – Definition in International Standards
* Section 3.1.4 Digital Twin – Definition in International Standards – The ITU Example
* Section 4.2 Digital Services for Waterways as Defined by IMO
* Section 4.6 Digital Service Objects
* Section 4.7 Digital Service System and Platform
* Section 5 Architectures for Digitalisation of Waterways

The latest version of the Guideline including the intersessional work is annexed to this paper.

## Discussion paper on MASS compatible AtoNs

Based on feedback from ARM19 meeting, Task Group drafted a Discussion paper on MASS compatible AtoNs. The Discussion paper suggests that IALA could consider defining new terminology and concepts related to the MASS compatible AtoNs.

The different types of MASS compatible AtoNs could, for example, be categorized using the tentative terminology shown in the table below.

1. Possible categorization of MASS compatible AtoNs.

|  |  |  |
| --- | --- | --- |
| Type of MASS compatible AtoN | Functionality | Primary target group |
| MASS adapted AtoN | Provision of additional M2M AtoN information | Various intermediate degrees of shipboard automation from traditionally operated vessels to autonomous vessels |
| MASS supportive AtoN | Emulating visual AtoN functionalities by other means e.g. radio transmissions | Assisted autonomous vessels |

It is suggested to send the annexed Discussion paper on MASS compatible AtoNs to ARM20 meeting for consideration.

## Plan for future work

The Task Group plans to

* continue drafting the Guideline based on feedback received from other Committees between DTEC4 and DTEC5 intersessionally;
* send the Guideline to other committees for the second round of review and comments after DTEC5.

# Action requested of the Committee

The Committee is requested to:

1. Note the status of the Task DTEC-7.1.2 Digitalization of Waterways.
2. Review the new content added to the draft Guideline on Digitalization of Waterways during intersessional work.
3. Discuss the feedback received from other Committees and PAP.
4. Finalize the Discussion paper on MASS compatible AtoNs.
5. Send a Liaison note with the finalized Discussion paper on MASS compatible AtoNs to ARM committee.