**Input paper:** PAP44-6.10.1.1

**Input paper for the following Committee(s):** **Purpose of paper:**

(Select as appropriate)

ARM  ENG  PAP  Input

ENAV VTS  Information

**Agenda item** [[1]](#footnote-1) 6.10.1

**Technical domain/ Task number** 2 …………………………………

**Author(s)/Submitter(s)** ENAV…………………………

Draft Proposal for the Work Programme 2022-2026

# Overview

During ENAV27 WG2 – Emerging Digital Technologies – held a brainstorming session to identify future work items that may be considered by IALA for the 2022-2026 work programme. The session took into account ENAV27-3.1.0.1 – IALA Current Drivers and Trends and ENAV27-3.1.0.3 – IALA Strategic Vision. In addition, reference was made to ENAV27-3.1.0.2 – IALA Position Document on the Development of Marine Aids to Navigation. The discussion opened up for input on aspects for future work, including areas that may be beyond the current working group terms of reference.

Following the brainstorming session, input was collated into a table which was then forwarded to members for input to identify priorities and also opportunities to group some of the concepts together. Table X represents the summarized outcomes of the review, in grouped priority.

These items are provided for consideration in addition to the ongoing work of WG2: monitoring and reviewing digital technologies (existing, emerging); revision of MRCP (communications manual – working title MARCOM GUIDE); review an update of relevant IALA documentation.

## Strategy References:

S1 ‐ Develop standards suitable for direct citation by States, in areas deemed important by the General Assembly, and the related Recommendations and Guidelines.

S2 ‐ Position IALA as the source of standards, knowledge, and expertise that will enable States to provide Marine Aids to Navigation, in accordance with relevant international obligations and recommendations.

S3 ‐ Coordinate the further development of Marine Aids to Navigation, taking into account evolving operational and functional requirements, new techniques, new technologies and sustainability.

S4 ‐ Continue to develop capacity building activities to improve the global provision of Marine Aids to Navigation.

S5 ‐ Harmonise the information structure and communications for future navigation by creating standards, and by cooperation with other international organisations, to achieve worldwide interoperability of shore and ship systems.

S6 ‐ Improve and harmonise the delivery of VTS globally and in a manner consistent with international conventions, national legislation and public expectations, to ensure the safety and efficiency of vessel traffic and to protect the environment.

S7 ‐ Work towards the transformation of IALA into an IGO, to enable the organization to achieve its aim and objectives.

S8 ‐ Ensure that the resources and capabilities of the Secretariat are sufficient to enable IALA and its committees and organs to reach its goals.

# Priority Items (as identified by WG2, ENAV27)

| Ref # | Topic | Elements | Standard Ref | Strategy Ref | Related activities |
| --- | --- | --- | --- | --- | --- |
|  | Digital Communications | 1. Use case for digital comms 2. Digital VHF (as per Jeffrey’s comments) 3. Future need for IALA Community 4. Use case roadmap against existing and emerging technologies 5. Communication as a service 6. Opportunity for use of proprietary comms 7. Using an open / consistent / harmonised interface 8. Connecting to the physical radio link. 9. Internet of Things    1. Protocol and system considerations/recommendations 10. Cyber security 11. Communications / application security 12. Cyber ‘hygiene’ – guidance to AtoN authorities 13. possible applications for block chain | 1060 (focus: harmonised maritime connectivity) | S3  S4 | Developments in IMT (IMT-2020; IMT-2030) |
|  | Intelligent Fairway | 1. Integrating sensors 2. Providing a 'smart' approach to AtoN 3. Reference to project in Finland / US projects (precision navigation in a fairway) 4. Precise information systems 5. Supporting maritime data formats - link to S-100 6. Transitioning technologies:    1. How to / migration path (road map for migration) 7. Link to other international organisation | 1060 (focus: harmonised maritime connectivity)  1070 (focus – exchange systems; terminology, symbology and portrayal) | S2  S3  S4  S5 | Smart navigation / Smart Ships / Smart Ports  Developments in Maritime Informatics |
|  | Technologies to support VTS / ship reporting and monitoring | 1. Integration of sensors 2. Cloud based technology and VTS 3. VTS as a service 4. AI enabled decision support tools 5. Integration of technologies to support VTS 6. Shore control centre connectivity to MASS | 1040 (focus: data and information management; technologies)  1060 (focus: harmonised maritime connectivity) | S2  S5  S6 | Activity in VTS Committee |
|  | Creating and promoting innovation | 1. Highlighting organisations promoting innovations / maritime 'start ups' 2. Identify limitations to innovation and mitigate these (i.e. - costs of documentation – IEC, ISO etc.) 3. Mentoring opportunities 4. Use Catapult structures 5. Form an IALA innovation lab and provide a platform for innovation / presentations 6. Link with other 'catapults' / innovation labs | 1010 (focus: virtual marking; risk management)  1060 (focus: harmonised maritime connectivity)  1070 (focus – exchange systems; terminology, symbology and portrayal) | S3  S4  S5 | National / regional innovation programs |
|  | Virtual / augmented reality | 1. Identify opportunities within IALA 2. Simulation of systems 3. Providing enhanced services 4. Determine required communication technologies 5. Data analytics / AI / Machine learning    1. Big data / effective use of data / management of data | 1010 (focus: virtual marking; risk management)  1040 (focus: operations; information and management; technologies)  1060 (focus: harmonised maritime connectivity) | S3  S5  S6 |  |

# Additional Items

Additional items identified, that did not come in at the high priority rating:

***Efficiencies in real time monitoring***

* Monitoring AtoN measuring Quality of Service
* The use of terrestrial / satellite systems
* In field changes to i.e. battery until battery on scene
* Changing the paradigm - report failure to stop systems failing dealing with 'pre failure' maintenance and support

***Digital Twin***

* What is it and how it applies to AtoN
* How can we use the information for maintenance
* How to share information
* Supporting just in time arrivals

***Drones***

* Uses cases in IALA domain
* Threat to AtoN security
* Drone sensor and data
* Drone monitoring of AtoN
* Use of Drone in SAR

***Human elements and technology***

* Training
* Human Machine Interface

1. Leave open if uncertain [↑](#footnote-ref-1)