



From: ENAV Committee

EM1-12.3.2.2

To: IALA Legal Advisory Panel (LAP)

3 February 2023

## LIAISON NOTE

### Emerging Technology Review

#### 1 INTRODUCTION

During the IALA 2018-2023 work term the ENAV Committee has been seeking out and reviewing emerging technologies, as well as repurposing of existing technologies, that may be suitable within the IALA domain.

To assist with this, the IALA Council approved IALA G1153 – Template for the review of emerging technologies for possible use by IALA members (2019).

Based on the proposed technologies, several tables have been completed, with more in progress. A summary table of all technologies considered has been created, noting the progress of the review (Annex A).

To provide access to the reviews carried out, a folder has been created on the IALA File Share under 'ENAV / Completed Technology Reviews – Task 1.1.5 – ENAVWG2'. These reviews are for IALA members only, and will continue to reside within the members area of the IALA File Share.

#### 2 DISCUSSION

The ENAV Committee notes that the results of these reviews are for guidance only, and should not be taken as an official IALA endorsement of any specific product or service.

As such, it has been identified that a suitable caveat should be included in the summary document.

#### 3 ACTION REQUESTED

The IALA ENAV Committee requests the LAP to consider the Emerging Technologies - Candidate Technology Tracker and provide a suitable approach for a caveat to be included in the table. A possible position for such a caveat is noted within the text of the annex.

#### 4 ANNEXES

- A. Emerging Technologies - Candidate Technology Tracker

## Annex A - Emerging Technology Tracker



## Technologies – Candidate

The development of digital technologies continues to be rapid, and it impacts on almost all aspects of the maritime industry, including maritime communications, aids to navigation and VTS. Digital technologies deal with the creation and practical use of digital or computerised information using devices, methods, or systems. (Source <http://www.dictionary.com>)

### 1 Review of technologies

It is important to evaluate emerging digital technologies in consideration of user requirements and the needs of IALA membership. These evaluations are a preliminary, high level, desktop study. The reviews identify the key features and capabilities, advantages/disadvantages, limitations, and application to aids to navigation, VTS and other services and systems within the remit of IALA.

The simplified set of assessment criteria has been established to provide a consistent review approach, as provided in IALA G1153. The review process is an initial step in determining further steps that may be taken to confirm that technology is appropriate and feasible for the use of IALA members. When providing information on a new technology the organisation which provides the information should also identify how the technology may be adopted or adapted for use by IALA members.

The Emerging Technologies – Technology Tracker is a summary of those technologies reviewed within the IALA ENAV Committee (WG2).

[disclaimer text to be developed by IALA LAP – Liaison sent from ENAV EM1 (31)]

### 2 Summary of Technologies

When a review is completed, a rating of red, amber or green is identified. Technologies rated as:

- red are not considered suitable for use within a given context;
- amber could be considered for use with possible changes or developments;
- green could be considered suitable for use within a given context.

The Technology Tracker is updated following the completion of a technology review. The Technology tracker and supporting review document (completed G1153 review table) is provided on the IALA FileShare, under ENAV / Technology Review.

## Candidate Technology Tracker

No.	Candidate Technology	Rating	ENAV Start Session	ENAV Planned End Session	Revised End Session	Review (% complete)	Comments
1.	3GPP – 4G (including LTE)	Green	22 Oct 2018	24 Oct 2019	24 Oct 2019	100%	Completed / forward to WG3
2.	LoRa (Lorawan)	Green (some amber)	25 March 2020	26 Oct 2020	27 March 2021	100%	Completed
3.	Digital VHF - dPMR	Green (some amber)	24 Oct 2019	25 March 2020	31 Feb 2023	100%	Digital VHF voice technology is proven and could be suitable for use by IALA members. Amber elements relate to issues with IPR for the CODEC, and the ongoing work at ITU for the digitalisation of the maritime mobile VHF Channels. Further work on the development and implement of digital VHF voice for use in the maritime domain is required.
4.	Leo Constellation Developments – including Virgin/OneWeb; SpaceX/Starlink; Amazon/Kuiper, (2026); Telsat Lightspeed, (2026); ESA	Green	25 March 2020	---	31 Feb 2023	100%	Developments in solid state antenna suitable for the maritime environment, along with increasing number of satellites in the constellations, could provide significant capability. Upfront costs for users related to the terminal, antenna and monthly data plan subscription.
5.	NAVDAT – development in progress, updates provided to IMO.	On hold	25 March 2020	---	---	10%	Noting the work at IMO on NAVDAT, deemed not suitable for full template review. May be reviewed if further input is received.
6.	LiFi (Light Fidelity)	On hold	25 March 2020	---	---	10%	No input or expertise available in WG2. Will review when more input is received.

No.	Candidate Technology	Rating	ENAV Start Session	ENAV Planned End Session	Revised End Session	Review (% complete)	Comments
7.	Resilience in PNT: GPS/GNSS (presented by Orolia, technology called M SecureSync)	Amber (some green)	28 Oct 2021	29 March 2022	29 March 2022	100%	Review template for Orolia covers both M SecureSync and GNSS Antenna. For M SecureSync, the systems is not yet mature, awaiting feedback from trials. There are patents on the technology.
8.	Resilience in PNT: GPS/GNSS (presented by Orolia, GNSS antenna systems)	Green (some amber)	28 Oct 2021	29 March 2022	29 March 2022	100%	Review template for Orolia covers both M SecureSync and GNSS Antenna. The GNSS antenna is a mature technology, appears to have ease of implementation.
9.	5G Precise Positioning (presented by Qualcomm)	In Progress	28 Oct 2021	31 Feb 2023	32 Oct 2023	50%	Continuing
10.	AI detection of ships in ports / Synthetic images (Presented by SeerBI)	Deciding next steps	30 Oct 2022	TBC		---	To be decided
11.	IMT 2020 on buoys (Presented by Jet Engineering)	Deciding next steps	30 Oct 2022	TBC		---	To be decided
12.	Metal Surface Wave communication (Presented by KRISO/ SWT, technology called MS@MS)	In Progress	30 Oct 2022	32 Oct 2023		80%	To be completed through intersessional review
13.	Ships Air draft remote measurement (Presented by China MSA)	Submitted	30 Oct 2022	32 Oct 2023		10%	Commenced
14.	SigFox (Irish Lights)	Proposed				---	

#### Next steps:

1. China MSA - Ship air draft (Item 13) – request further detail on G1153 to complete evaluation for ENAV32
2. Irish Lights (Ronan Boyle) to complete SigFox evaluation for ENAV 32 (New item)

