



# CURRENT DRIVERS AND TRENDS

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# DOCUMENT REVISION

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Revisions to this document are to be noted in the table prior to the issue of a revised document.

Date	Details	Approval
17 June 2019	1 <sup>st</sup> Edition as “White paper”	Council 69
13 December 2019	Edition 1.1 Revision entire document	Council 70
3 June 2020	Edition 1.2 Minor revision adding sustainability	Council 71
10 December 2020	Edition 2.0 Revised text for Point 3 and points added in section 2 and section 4	Council 72
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16 December 2022	Edition 4.0 Revision entire document	Council 76

## 1. INTRODUCTION

While IALA's goals cover the long-term objectives of the Organisation, the world is evolving at a rapid pace. These global changes also affect the maritime world and, as a consequence, the work of IALA. The trends and drivers reflect these changing maritime trends and their effects on members around the world and serve as guidance as to how IALA can reach its goals within the foreseeable future.

## 2. GLOBAL MARITIME RELATED TRENDS

The identified trends and developments are:

### 1. *Increased digitalization, including big data and future communication*

- Implications onboard vs. onshore.
- How to provide data and how much data.
- Shift from physical to informatic systems.
- Block Chain technology.
- System interoperability.
- Connectivity is key.
- Artificial Intelligence to support human decision-making.

### 2. *Development of autonomous, automated and unmanned vessels*

- The further development of autonomous vessels could lead to increased safety and efficiency.
- Today some vessels are to some extent semi-automated or semi-autonomous.
- The development will continue with unmanned vessels as the ultimate stage.
- Will have an implication on the infrastructure, the development of new and more advanced technology and services and lead to fewer human errors.
- Require reliable and resilient Position, Navigation and Timing (PNT) and connectivity in terms of integrated and corresponding systems and machine-readable signals in cases where no crew are present.
- Secure the achievements in development of shore-based service technology related to MASS.
- Consider establishing plans to build support infrastructure for land-based autonomous navigation systems.

### 3. *Need for increased connectivity and interoperability*

- To further connect the maritime activities on sea and on land, an increased connectivity is a prerequisite.
- Additional GNSS and communications satellites and more capable shore-based technologies for communications and Position, Navigation and Timing (PNT) applications will be available in the near future.
- Implementing an increased connectivity will in many cases require new infrastructure and increased bandwidth.
- Require revised regulations with international and to some extent centralized policies.
- It will also call for new skills and training for crew onboard and staff ashore.

- It may also require alternative use of AtoN infrastructure.
- Consider new ways of providing navigational safety information for small ships.
- Maritime Services in the context of e-Navigation will continue to evolve, such as collaboration of Maritime Service data collection and exchange, connectivity and interoperability between ship-borne systems, whether autonomous or not, and shore-based systems such as VTS and different traffic management systems.

4. *Cyber-crime vulnerability /cyber security*

- The more digitalized and autonomous the marine industry, the more vulnerable to cyber-attacks.
- Cyber Security has become a high priority area for maritime authorities, ship owners and shipping companies.
- It is important to analyze the threats to AtoN, VTS and the IALA membership and suggest appropriate measures.

5. *Competing use of the ocean for utilizing the sea space and marine resources (Marine Spatial Planning)*

- Maritime Spatial Planning is the rational organization of sea and coastal areas to cater for the different – and sometimes competing – needs of various economic activities (such as fisheries, aquaculture, transport, energy and so on) and to make sure they are carried out safely and sustainably.
- Risk Assessment should be conducted during the planning and it needs to be negotiated across sectors and across borders.
- The trend is expected to continue and IALA is an excellent platform to manage the necessary developments across sectors and across borders regarding Marine Aids to Navigation.

6. *Demand for efficiency in the transport chain*

- The competition forces shipowners to demand from ship operators that they are as efficient as possible.
- Efficiency demands can shift focus away from safety.
- Some companies may have realized that they may have a competitive edge by striking the best balance between safety and efficiency.

7. *High demand for sustainable and environmentally friendly operations and development*

- Environmental sustainability is a core area of interest for IALA members.
- Marine Aids to Navigation services are expected to be provided in an environmentally responsible manner.
- Activities need to be in line with and support the UN Sustainable Development Goals.

8. *The worlds changing climate*

- Consequences of the increasing frequency of extreme weather events.
- Provision of Marine Aids to Navigation services in extreme climate conditions including new polar routes.
- Large cruise ships going to remote locations.

- Impact on small remote communities.

9. *Development in global economics and supply chains*

- Potential conflicts and major events, such as a pandemic, may affect the maritime sector, including technology proliferation and standards.
- Shifts in market structures may influence the global trading routes.

The drivers and trends are continuously monitored, reviewed and adopted by the Council.

### 3. STRATEGIC INITIATIVES

Based on the trends and drivers, IALA defines strategic initiatives to achieve IALAs goals.

Current initiatives focus on Digitalization and data management, cyber security, all aspects of the information revolution, including system interoperability, connectivity and data management/development – both technical (systems, equipment etc.) and operational (VTS etc.).

These strategic initiatives are used to define the working agenda of the technical committees, thus contributing to meeting the goals and needs of IALA and its members in today's environment.

The strategic initiatives are continuously monitored, reviewed and adopted by the Council.



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Association Internationale de Signalisation Maritime