



CURRENT DRIVERS AND TRENDS

ED.3.0

DOCUMENT HISTORY

Date	Details	Approval
2019-06-17	1 st publication as “White Paper”	Council 69
2019-12-13	Revision of all documents	Council 70
2020-06-03	Point added about sustainability	Council 71
2020-12-10	Revised text for Point 3 and points added in section 2 and section 4	Council 72
2021-12-14	Deletion of old point 5 and 6 and revision of old point 10 (new point 8).	Council 74

CONTENTS

1. INTRODUCTION.....	5
2. GLOBAL MARITIME RELATED TRENDS	5
3. IMPACT ON IALA PRIORITIES.....	7
4. CONSIDERATIONS ON IALA’S FUTURE ORGANIZATION AND ACTIVITIES	7

1. INTRODUCTION

On 17 June 2019, the Council conducted a strategic workshop as part of the 69th session of the IALA Council held in Rotterdam. The purpose of the workshop was to create a joint picture of possible future maritime trends and global developments which are most likely to have an impact on IALA and how these may affect the association's priorities, organization and activities which are aimed at supporting its objectives and strategic goals:

"The aim of IALA is to foster the safe, economic and efficient movement of vessels, through improvement and harmonization of aids to navigate worldwide and other appropriate means, for the benefit of the maritime community and the protection of the environment."

Goal 1 Marine Aids to Navigation are developed and harmonized through international cooperation and the provision of standards.

Goal 2 All coastal states have contributed to a sustainable and efficient global network of Marine Aids to Navigation through capacity building and the sharing of expertise.

The current drivers and trends are described below and will serve as guidance as to how IALA can reach its strategic goals with a long-term horizon and perspective.

2. GLOBAL MARITIME RELATED TRENDS

The identified trends and developments are:

1. Increased Digitalization, including big data and future communication.
2. Development of autonomous, automated and unmanned vessels.
3. Need for increased connectivity and interoperability.
4. Cyber-crime vulnerability and cyber security.
5. Competing use of the oceans (Marine Spatial Planning).
6. Demand for efficiency in the transport chain.
7. High demand for sustainable and environmentally friendly operations and development.
8. The world's changing climate.

These trends and developments should be monitored closely and when required, appropriate action should be taken.

This could include an adjustment of the priorities and/or structure of the organization. The trends and developments are listed below together with certain aspects and implications as discussed. Some of them may be interrelated: e.g., digitalization, connectivity and cyber-crime etc.

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.

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 is expected to continue with unmanned vessels as the ultimate stage.

- Will have an implication on the infrastructure 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 autonomous system, e-Navigation shore-based system and to some extent future VTS.

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 and VTS authorities, 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 across sectors and across borders developments regarding AtoN.

6. *Demand for efficiency in the transport chain*

- The competition forces shipowners to demand from ship operators that they are as efficient as possible.
- This 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 AtoN services in extreme climate conditions including new polar routes.
- Large cruise ships going to remote locations
- Impact on small remote communities.

3. IMPACT ON IALA PRIORITIES

In summary, IALA must ensure that the above-mentioned trends should be closely monitored and considered in the future priorities of the association. Digitalization and data management should be prioritized. Dealing with all aspects of the information revolution, including system interoperability, connectivity and data management/development – both technical (systems, equipment etc.) and operational (VTS etc.) are areas to be prioritized.

4. CONSIDERATIONS ON IALA'S FUTURE ORGANIZATION AND ACTIVITIES

IALA should consider the following actions, as well as ensuring a higher flexibility and agility in the committee structure:

- Define, develop and provide support regarding digitalization and managing of data, including but not limited to data infrastructure, harmonization and sharing of data, data protection and vulnerability, data risk tools etc.
- Evaluate and evolve the role of VTS in the future including update guidelines and training in VTS - ability to communicate with modern vessels.
- Consider regularly the structure of IALA committees and their expertise (industry, secretariat). Where relevant, committee structure to become more flexible and responsive.
- Consider how IALA supports IMO and increase cooperation with IMO and other international maritime organization where relevant.
- Update guidelines and provide training in smart ATON vs. traditional ATON.
- Provide guidance on AtoN related cyber security threats and procedures.
- Focus on smart shore and floating maritime infrastructure to cope with smart ships.
- Capacity building and training (also through partnership collaboration).
- Develop resilient GNSS independent PNT solution.
- Develop high level, goal orientated policies to support measures that mitigate the impacts of climate change on AtoNs.
- Provide guidance to IALA members to manage the risks they will face when providing AtoNs and related services.
- Engage risk management, business continuity and climate change expertise as part of the work of IALA's technical committees.
- It is a prerequisite that IALA possesses skilled and competent staff and authorities to conduct the above new activities as well as its current tasks and obligations. In addition to maritime and technical expertise, the focus on digitalization requires competencies and specific skills.