



IALA's activities concerning e-navigation and related maritime domain developments

A road map for 2016 and beyond

Introduction

This document is a high-level representation of how overarching concepts and strategies such as the IMO concept of a Sustainable Maritime Transportation System (SMTS) [1], IMO's e-Navigation strategy and its implementation plan [2; 3; 4] and IHO's Universal Hydrographic Data Model (UHDM; S-100) [5] can be applied in a coordinated manner to contribute to IALA's vision in its overall strategy [6].

The relationships between the SMTS, e-Navigation, operational and technical issues in this road map are reflected in several IALA documents approved by Council (e.g. [7; 8; 9]).

Furthermore, there is a need for an overall, pan-IALA road map for IALA's activities concerning e-Navigation and related maritime domain developments. The development of such a road map is an approved task in the work programme 2014-2018 (4.3.4) of the ENAV Committee. Consideration has been given to the fact that numerous e-Navigation-related activities are already incorporated in the work programmes (2014-2018) of IALA's committees¹. IALA is coordinating numerous aspects of e-Navigation (those within IALA's mandate). Close cooperation will be required with other IGOs and NGOs to ensure any gaps in the development of e-Navigation are addressed.

Legend

- Individual *circles* designate milestones when tasks indicated by the road map should be completed. Different colours of the circles are used to indicate different years.
- The *arrow* designates a continuous process, where the start and/or end points of the process is as yet unspecified.
- In future, the circles can be replaced by ellipses to contain the designation of the group or entity within IALA responsible. Several Ellipses and arrows can be combined to designate several meaningful milestones within a continuous process. This way of designation may be required for complex tasks.

Note 1. The list of MSPs given in the SIP [3] is a proposed list of internationally recognised MSPs, and task 17 of the SIP specifically states that further development shall take place. Several (sub) domains with relevance to the maritime domain are not included yet. This is to be amended in due course. Hence these MSPs-to-be-added are postulated.

Note 2. For further introduction to the application of IHO's UHDM/S-100 framework to the IALA domain, compare IALA Guideline 1106 on Producing an IALA S-100 Product Specification [10]. Also, it is necessary to identify the emerging S-1xx specifications of IHO and their relevance to IALA's own product specifications S-2xx.

¹ It is intended that this road map should be aligned with the tasks and work items as noted in the work programmes of all IALA Committees.

2016

2017

2018

2019

Note 3. It should be noted that for some activities in this high level road map, individual road maps will need to be developed in keeping with this high level road map.

1 Requirements derivation and traceability ([9], Table 2, refers)

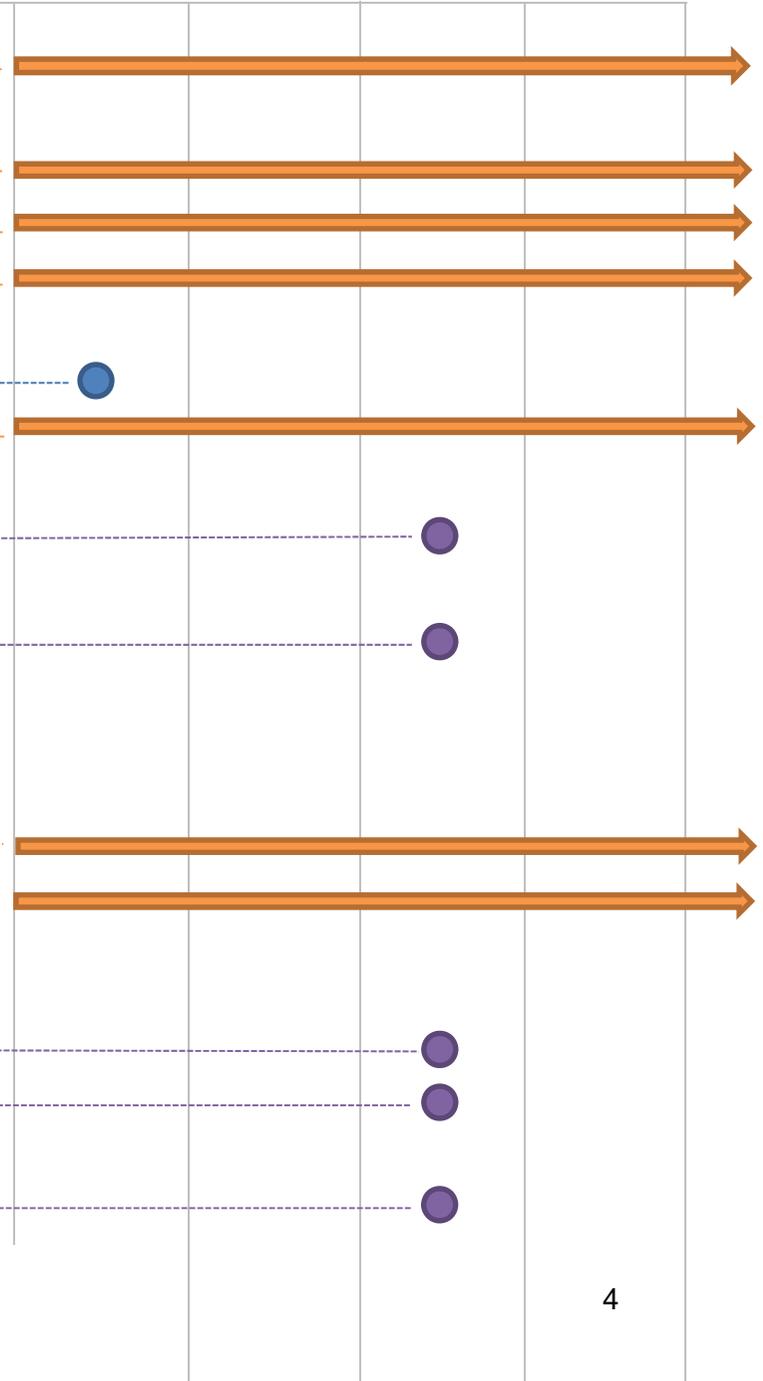
- Contribute to the development of the Sustainable Maritime Transportation System (SMTS) (as source for requirements)
- Review user requirements as required
- Derive system requirements, as required, from user requirements
- Develop scope of IALA-administered S-100 products

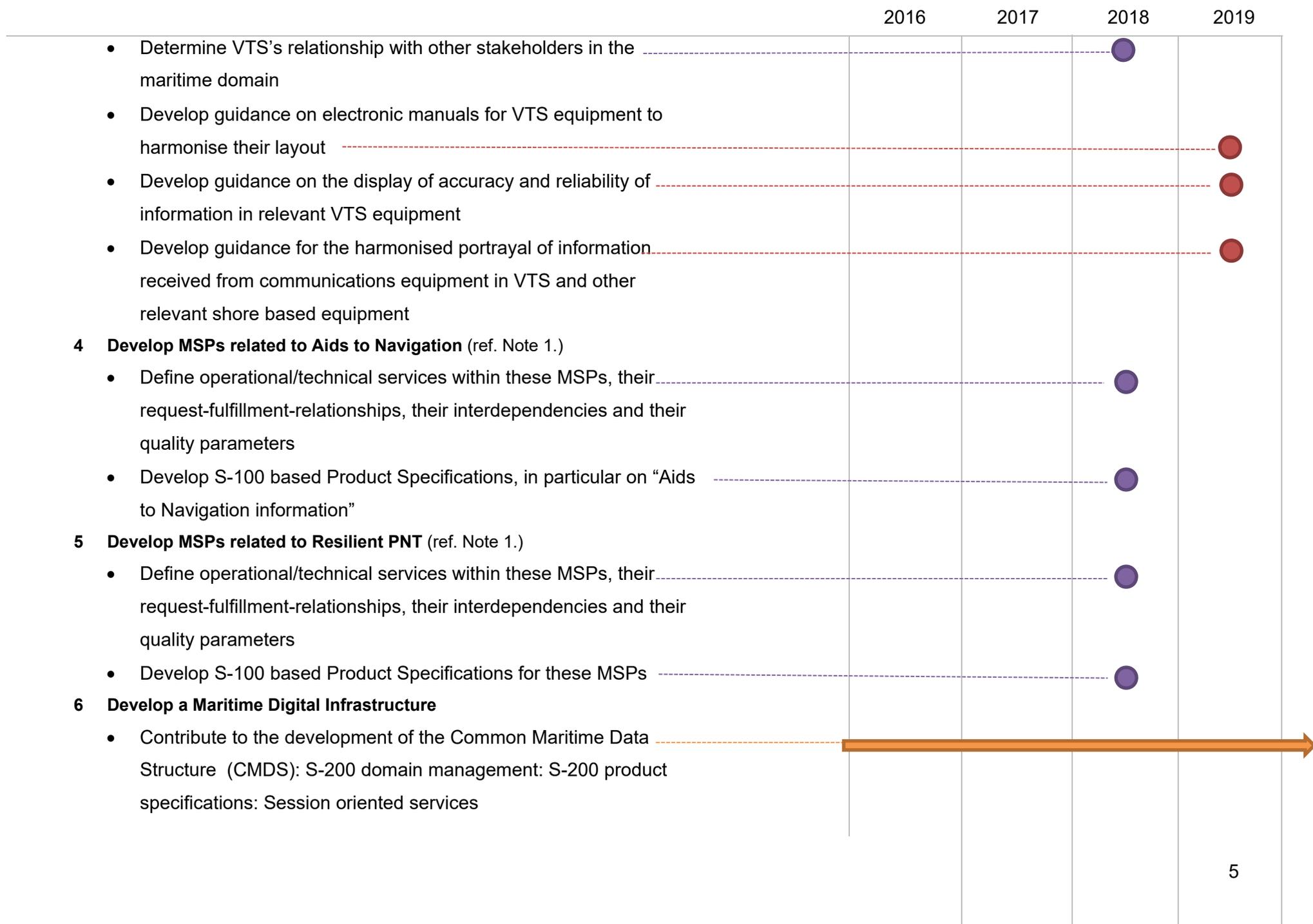
2 Scope IALA's share in the MSPs domain

- Identify those MSPs to be developed and administered by IALA
- Liaise with relevant organisations where IALA has a supporting role
- Develop objective, scope and description of MSPs within IALA's remit
- Define the generic request-fulfillment-relationships amongst operational and/or technical services, their generic interdependencies and their generic quality parameters

3 Develop MSPs for Vessel Traffic Services

- Develop guideline on the development of MSPs
- Define operational/technical services within these MSPs, their request-fulfillment-relationships, their interdependencies and their quality parameters
- Develop S-100 Product Specifications for VTS
- Develop S-100 Product Specifications for "Inter VTS Exchange Format"
- Determine VTS's relationship with the Single Window concept
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2016 2017 2018 2019

- Explore the concept of System Wide Information Management (SWIM) ●
- Explore the Maritime Cloud (MC) including concept (e.g.identities, the MC Identity Register (MIR), identity management, services, the service register, security and communication links) and governance model ●
- Further develop Common Shore-based System Architecture (CSSA; [11]), including generic service description, generic M2M interfacing, application notes and guidance documents →
- Explore the Maritime Architecture Framework (MAF) Cube ●
- Update the IALA Maritime Radiocommunications Plan ●
- Develop IALA Guidance on VDES →
- Review IALA Guidance on AIS ●
- Develop S-100 based product for VDEs, AIS and Application Specific Messages and manage ASM register (web catalogue) →
- Monitor developments of the modernisation of GMDSS (IMO) and identify the communication commonalities with e-Navigation →
- Liaison with ITU (WRC-19 preparation) and assistance to IALA membership for national matters →
- Consider developing a vision for digital/voice communication in the maritime domain →

7 Develop Resilient Positioning, Navigation and Timing (PNT)

- Develop Recommendation on PNT relevant services ●
- Develop Recommendation on Resilient PNT ●
- Develop guideline on high accuracy systems ●

2016 2017 2018 2019

• Provide support on the development of techniques used for onboard PNT data processing



• Review IALA radiobeacon DGNSS guidance, including coverage



• Develop and maintain a road map for R-Mode



• Develop guidance on the Ranging (or R-) Mode of operation



• Develop guidance on maritime use of SBAS



• Develop guidance on eLORAN



• Consideration of additional uses of existing shore based infrastructure



8 Testbeds and implementation

• Revise guidance on planning testbeds and reporting of testbed results



• Provide guidance and advice on developed solutions and services



References

- [1] The former Secretary-General of IMO, Mr Koji Sekimizu. *A Concept of a Sustainable Maritime Transportation System*. (Sustainable Development: IMO's Contribution beyond Rio+20). September 2013 (World Maritime Day).
- [2] IMO. 'Strategy for the Development and Implementation of e-Navigation.' In: IMO Maritime Safety Committee. *Report of the Maritime Safety Committee on its 85th Session*. MSC 85/26/Add.1, Annex 20, 6 January 2009.
- [3] IMO. 'Draft IMO e-Navigation Strategy Implementation Plan (SIP).' In: IMO Sub-Committee on Navigation, Communication and Search and Rescue. *Report to the Maritime Safety Committee*. NCSR 1/28, Annex 7. 16 July 2014. Adopted by IMO MSC 94, 17-21 November 2014.
- [4] IMO. 'Development and implementation of e-navigation.' In: IMO Maritime Safety Committee. *Report of the Maritime Safety Committee on its Ninety-fifth Session*. MSC95/22, para 19.12. 19 June 2015. Refers to MSC95/19/8, as applicable.
- [5] IHO. *S-100 – Universal Hydrographic Data Model*. First released January 2010, as amended.
- [6] IALA's STRATEGIC VISION 2014-2026. (Approved by IALA Council 56-2013-12-11).
- [7] Australia et al (including IALA). 'Implementing e-navigation to enhance the safety of navigation and protection.' MSC95/19/8. 03 March 2015; together with IALA co-sponsored submission to IMO MSC96 (May 2016).
- [8] IALA. 'Vessel Traffic Services in a rapidly changing World.' IMO NCSR3/INF.10. 17 December 2015.
- [9] IALA. IALA Guideline 1113 on Design and Implementation Principles for Harmonised System Architectures of Shore-based Infrastructure; Ed. 1; May 2015
- [10] IALA. IALA Guideline 1106 on Producing an IALA S-100 Product Specification, Ed. 1, December 2013
- [11] IALA. IALA Guideline 1114 on A Technical Specification for the Common Shore-based System Architecture (CSSA), Ed. 1, May 2015
- [12] ACCSEAS Project. ACCSEAS e-Navigation Architecture Report; May 2015; also submitted to IALA Committees, e.g. as ENAV18-10.8.2