

7th MEETING OF THE HYDROGRAPHIC SERVICES AND STANDARDS COMMITTEE

Busan, Republic of Korea, 09-13 November 2015

IALA Activities affecting HSSC

Submitted by:	IALA ENAV Committee – WG1 (Harmonization) Chair
Executive Summary:	This paper reports on matters from the IALA ENAV committee that relate to the work HSSC. In particular a request is made that S-100 is developed to support data services.
Related Documents:	HSSC6-5.4B List of Lights New Numbering System. S-100 IHO Universal Hydrographic Data Model. S-99 Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry.
Related Projects:	

Introduction / Background

IALA is the International Association of Marine Aids to Navigation and Lighthouse Authorities.

IALA is an international technical association with 77 National Members, 111 Industry Members and 49 Associate Members.

IALA encourages its members to work together in a common effort to harmonize aids to navigation worldwide and to ensure that the movements of vessels are safe, expeditious and cost effective while protecting the environment.

The IALA ENAV committee is responsible for a range of activities relating to the implementation of e-navigation. Of particular interest to IHO, the IALA ENAV committee is responsible for the management of the IALA domain of the IHO Geospatial Information Registry.

Current ENAV WG1 activities relevant to HSSC

The ENAV committee meets twice a year. Comprising 5 working groups, WG1 (Harmonization) is of particular relevance to HSSC, as it is responsible for the harmonisation of e-navigation principles and the development of guidelines to support IALA membership in the development of product specifications within the IALA S-200 domain, see Terms of Reference of ENAV WG1 at Annex 1.

PUIs – Persistent Unique Identifiers (PUIs) were discussed at ENAV16 in April 2015, including consideration of HSSC6-5.4B “List of Lights New Numbering System” from SNPWG. The discussion led to deliberation of the application of PUIs beyond Lights and AtoNs, considering advantages of unique numbering throughout e-navigation. Thus the concept of Navigationally Unique Identifiers (NUIDs) was proposed, asking members to consider the suitability and applicability of the proposal for further discussion at ENAV17 in Oct 2015.

S-200 domain - IALA is establishing the S-200 domain. This domain uses the range S-201 to S-299 for product specifications compliant with the IHO S-100 standard, covering fields within the IALA remit.

A supervisory structure (IALA Guideline 1087) has been established within IALA to manage its domain. The concept of Field Managers has been defined. IALA currently recognises the following Product Fields:

- VTS (Vessel Traffic Services)
- AtoN (Aids to Navigation)
- IWRAP (relating to maritime risk assessment)
- WWRN (World Wide Radio Navigation)

Fields comprise all relevant domains associated with that field, e.g. the VTS Field would comprise the IALA VTS domain from the Product Specification Register, the VTS domain from the Feature Concept Dictionary Register,

the VTS domain from the Portrayal Register and the VTS domain from the Metadata Register. The IALA Field Manager harmonises the different products / product specifications within that field. The IALA Field Manager also considers the usage of entries by others in his field.

IALA Guideline 1106 sets out the process for preparing S-100 product specifications and is being revised and updated as experience is gained. Two product specifications (S-201 and S-240) are nearing completion and several others are under development as described in the table below.

PS No.	Title	Developer	Field Manager	Status
S-201	Aids to Navigation Information	KRISO for ENAV WG1	N Ward nick.ward@gla-rnav.org	Completed for review
S-210	Inter VTS Exchange Format	VTS committee WG2	R Hoogendoorn rene.hoogendoorn@hitt.nl	Under development
S-230	Application Specific Messages	ENAV WG1	P Hooijmans peter.hooijmans@rws.nl	Planned
S-240	DGNSS Station Almanac	KRISO for ENAV WG5	Y Cho cho@iala-aism.org	Completed for review
S-245	eLoran ASF Data	GLA for ENAV WG5	P Williams paul.williams@gla-rnav.org	Under development
S-246	eLoran Station Almanac	GLA for ENAV WG5	P Williams paul.williams@gla-rnav.org	Planned

E-navigation infrastructure and its governance – Within IALA there is an emerging consensus to adopt the Maritime Cloud concept as the logical infrastructure for e-navigation. A position paper is being developed with the intention of delivering recommendations for how IALA should react to Maritime Cloud opportunities, and guidelines on how IALA could function as part of a larger federation governing and monitoring the delivery of maritime services through the Maritime Cloud. An IALA seminar on Maritime Digital Infrastructures and Test-beds is taking place 30 November – 3 December 2015, in Gothenburg, Sweden. Details at <http://www.iala-aism.org>.

Service Orientation (Data Streaming) - In its current construction, S-100 is currently dataset centric. This means that any collection of data structured in S-100 fashion, must fit within the scope of a dataset. An example of this is, S-100 0-4.16 (Part 11 – Product Specifications) where it is stated “A product specification is a description of all the features, attributes and relationships of a given application and their mapping to a dataset”. Datasets are usually identifiable collections of data about a domain within an area of coverage, at a particular point in time. This notion is not compatible with streaming data services, such as inter VTS exchange of data (IVEF) and some AIS ASM (application specific messages), where data is delivered over time, for example, as soon as it is created by sensor, manual input or other means.

At a meeting in February 2014, the Data Modelling Working Group of IALA-eNAV Committee found that in particular the metadata part of S-100 is ill suited to describe a streaming data service, given its dataset centric construction. Other parts of S-100, like the General Feature Model and Coordinate Reference System are well suited to describe the data elements of a streaming data service and can likely be used with little to no modifications.

At IHO-TSMAD29 a first draft of S-112 (water level over AIS-ASM) was presented. Given the nature of AIS being streaming data, one can expect that many of the complications faced by IVEF will be encountered by the team behind S-112.

An earlier study (e-NAV10-INF7; HSSC3-INF9) of the feasibility of using S-100 in ship reporting (notices of arrival/departure) concluded that the content modelling framework of S-100 could be used in non-geographic application areas as readily as for geospatial data, but other parts of S-100, specifically data format, delivery, data quality, and metadata would need to be adapted or simplified for message-oriented or temporally-focused data. It encouraged re-use of data model elements (objects and attributes) across both spatially-focused and non-spatially-focused domains.

S-100, in its current form, does not provide support for streaming data services that are envisioned to be formed in various e-Navigation Maritime Service Portfolios (MSPs). Preliminary exploration suggests that adding the appropriate support to S-100 is likely to consist more of extending the current framework rather than making fundamental changes to it.

Assistance is needed from streaming data experts to progress a proposal for extensions to S-100 to enable streaming data services under the S-100 framework.

ENAV update - The next meeting of ENAV is 26-30th October 2015. A verbal update will be provided at HSSC7.

Conclusions

IALA is active in the wider use of S-100 with the S-200 domain, but use of S-100 in wider support of e-navigation services is limited due to the current dataset focus of S-100.

Recommendation

S-100 should be developed to support data services. S-100 documentation is required to be more generic by removing terms like 'dataset' and 'file identifier' where applicable. Part 4 requires revision to improve support for the concept of e-navigation services (i.e. include services metadata).

Justification and Impacts

IALA believes that S-100 was always intended to support data services in addition to file transfer.

IALA believes that other organizations, including IHO, have a need for data streaming.

Action Required of [HSSC] [Relevant HSSC WG]

HSSC is invited to:

- a. note for information the S-200 work within IALA
- b. note opportunity to attend the IALA workshop on Maritime Digital Infrastructures and Test-beds
- b. endorse the need to develop S-100 to support data streaming;
- c. decide on appropriate action to ensure that S-100 supports the development of e-navigation;
- d. advise IALA on plans to make the recommended changes.

Annex 1 - Terms of Reference for the Harmonization Working Group (WG1)

Introduction

Harmonisation lies at the very core of the global development of e-Navigation. Without harmonized principles, concepts, data models, services and systems there will be no global implementation of e-Navigation. There will only be local solutions addressing local needs, and without any significant international interoperability.

Scope

The development of:

- Internationally accepted and harmonized principles, concepts, and data models;
- Recommendations and guidelines for e-Navigation services and systems.

Topics and activities

- Develop the technical content of e-Navigation services and MSPs;
- Support the IALA membership in the development of Product Specifications;
 - e.g. AtoN data information structure, exchange, presentation;
 - Data modelling;
 - Portrayal principles in relation to e-Navigation;
- Co-ordinate technical input to IMO, IHO, ISO, IEC and CIRM on e-Navigation;
- Management of IALA S200 domain ownership (IHO S-200, S-100 & S-99);
- Liaison with IHO on matters regarding S-100;
- Contribute to IMO/IHO Harmonisation Group on Data modelling (HGDM);
- Review and update IALA documents related to these topics.

Deliverables

- Appropriate draft Standards, Recommendations, Guidelines and Product Specifications, etc., to fulfil the tasks assigned to the Working Group in the Committee Work Programme;
- Information and support to relevant subtasks requested from other Working Groups within the Committee for them to fulfil their tasks;
- Draft liaison notes etc. as appropriate.