To: IALA ARM Committee

NIPWG response on IALA liaison note to NIPWG, ref C72-13.4.1

**Vision outline on S-125 Marine Navigational Services Product Specification**

NIPWG appreciates the provided liaison note. The note shows how much potential a close cooperation between S-201 and S-125 could have.

NIPWG supports the note content in principle. Without elaborating each bullet point it in more detail, the key advantages are:

* The provision of S-125 data by AtoN Authorities can assists the data exchange between them and the responsible Hydrographic Office(s).
  + Sharing of responsibilities
  + Split of resources
  + Reduce delays in information provision
  + Shorten of HOs data bases update time
  + Support of Autonomous Shipping
* HOs can establish scale independent features data streams utilising S-125.
  + Replacement of P&T S-124 information by durable chart content updates
  + Shorten the information provision time of affected features
  + Support of Autonomous Shipping
* The introduction of IMO Maritime Services in context of e-navigation concept requests innovative solutions.
  + Shorten the information provision time for all information
  + Support of Autonomous Shipping
  + Support of Route Plan Exchange
  + Utilising of the advanced S-98 Interoperability Catalogue

NIPWG support more efficient data stream based on provision of AtoN information.. IMO, IHO, IALA and other standardisation bodies envisioned and described the future S-100/e-navigation world. The architecture is ready. The IALA S-201 outline paper provided to NIPWG’s consideration (ref C72-13.4.1) describes the final status of an S-100 based ECDIS in an e-navigation environment; taking into account the IMO e-navigation concept. Converting the currently planned short-term 3+ years (S-101) ENC production and provision mechanism to the envisioned status is a long-term 10+ years’ goal. However, it is necessary to build the foundation of this final status better earlier than later. S-201/S-125 are few of the first real bricks.

Having established the data exchange between AtoN Authorities and HOs, involved organisations can learn from the experiences made.

Specific passages need updates to reflect concerns regarding responsibilities of involved organisations and on the relation between S-124 and S-125. In addition, NIPWG members discussed operational aspects.

NIPWG recommends splitting the outline in two sections

* data models
* exchange mechanism and operational aspects.

Annex A provides comments to affected paragraphs in red font colour.

Best regards,



Jens Schröder-Fürstenberg,

Chair, NIPWG

**Annex A**

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| From: IALA | C72-13.4.1 |
| To: IHO NIPWG | 11 December 2020 |

LIAISON NOTE

S-125 Marine Navigational Services Product   
Specification – Vision outline

# INTRODUCTION

IHO NIPWG welcomed the IALA offer in drafting of S-125, Navigational Services, as a dataset-based on S-201, Aids to Navigation Information, and requested that S-125 should provide navigationally significant information additional to the data currently available in S-101 (IALA Paper ARM8-10.6 refers). ARM11 drafted the S-125 vision outline and ARM12 finalized this outline.

This paper provides an update of how IALA ARM Committee proposes to develop S-125 in-line with the instructions from NIPWG.

# DETAILS

S-201 is a standard for exchanging all information related to any AtoN including metadata like maintenance schedules, equipment types (such as battery and bulb types). S-201 is intended to be the means of communicating such information within an AtoN organization or between AtoN organization and in certain circumstances with its main partners such as hydrographic offices. S-201 is not intended to be for navigation systems like ECDIS, and therefore is not constrained by ECDIS requirements. This means the S-201 can include additional cartographic information to inform about AtoN services that would not be appropriate in a navigation system, such as ….. (provide an example here)

S-125 meanwhile, would be a derivative of S-201 service as the public facing information for use in ECDIS/ECS. In other words, S-125 would be the digital equivalent of the extended list of lights in order to meet IMO SOLAS V requirements of having list of lights on board and serve as a continually updated list of AtoN, including virtual AtoNs.

S-125 should also be designed to boost S-124 NW and ENC S-101 productions, especially by reducing the effort in the transformation of data, with the harmonization of data models. This could be done by introducing efficient data exchange mechanism between authorities. In terms of S-125 is means the exchange of data on nautical aspect of AtoN.



Not all HOs have consistent AtoN authorities, which have the capabilities or responsibilities of providing this data as a separate dataset to the ENC provided by the HO. It doesn’t exist an internationally agreed understanding of the term “Local NM”.

It is also envisioned that following scenario illustrates how S-125 would work with the S-124 MSI Product Specification:

* An AtoN Outage is reported and immediately communicated by S-124. Upon confirmation of the outage, the responsible AtoN authority will move the report of outage from S-124 into the S-125, thereby relieving S-124 of old, but still active information.

What is considered “old” in S-124? If the AtoN information is still active and in-force then why is it being transferred to S-125? Is this for the clutter of point features in S-124 at the expense of removing in-force warnings?

MSI Providers are responsible with the removal of any Navigational Warnings from S-124. A Navigational Warning moved from S-124 to S-125 will remain in force and continue to be promulgated by GMDSS broadcast services, since adding the information to the S-125 database will not, on its own, be sufficient to cancel the warning from GMDSS broadcast.

With respect to the proposed interaction between S-124 and S-125, MSI Providers (National and NAVAREA Co-ordinators) are the recognised authorities for promulgating and cancelling Navigational Warnings, so consideration must be given to the implications of having another party (the AtoN authority) move Navigational Warnings from the “in force nav warning list” in S-124.

The placement of long-term S-124 temporary information through S-125 is a good plan though. It helps lower the chance the mariner overlooks older critical navigation safety information.

All in-force NAVAREA warnings should remain in S-124. The NAVAREA coordinators should be the only agency responsible for cancelling these warnings. If they are kept in S-124, and the cancellation will occur in S-124, there is no need to move them to S-125. If active in-force warnings will be taken out of S-124 then what is the point since it will be an incomplete dataset of world-wide active navigational warnings.

S-125 will include the attributes necessary to digitally populate discrepancies, proposed changes, Advance Notice of Change and Temporary Changes.

Will non-navigation or seasonal buoys, which are normally maintained by a Temporary Notice, be taken into account, such as:

1. Tsunami warning buoys off the east and west coasts of India.
2. NOAA weather buoys (ATLAS buoys, RAMA buoys, PIRATA buoys, and High Latitude Climate Station buoys) in the Atlantic, Pacific, and Indian Oceans.
3. St. Lawrence Seaway seasonal buoys.

How would the four categories mentioned above (discrepancies, proposed changes, Advanced Notice of Change, and Temporary Changes) be differentiated among themselves, as well as from Permanent ECDIS information? Also, what is the difference between a proposed change and an Advanced Notice of Change?

S-125 will support both route planning and route monitoring functions of any voyage. It is further envisioned that S-125 can contribute to the check route function of S-100 based ECDIS. This means that S-125 and S-421 can complement each other.

Will all S-125 information, even ones that are preliminary (not active yet), be included in the check route function? Is there going to be a specified buffer along the route since the S-125 dataset mostly consists of point features?

In order to support the above vision, S-125 will be developed using S-100 Edition 4 but may utilize later versions should these become available during the development phase. S-125 compliant datasets will contain the AtoN information within the dataset area of coverage and delta changes to these datasets will contain the change information.

An S-125 service will be able to issue any change information more rapidly than what is expected from an ENC service. This is required to provide the navigationally significant information additional to the data currently available in ENC. Should the ENC service subsequently include the updated information, this information status change can then be reflected in the S-125 service.

In places where the buoyage changes very frequently, we can imagine that possibly, an S-125 local layer be issued by the qualified AtoN service and transmitted to the end users systems without HO’s checks or transformation.

The suggestion is that this layer could be updated more frequently than the ENC and pre-assumes the updating periods of HOs ENCs will remain weekly/monthly and not be reduced.

Portrayal of AtoN information in an S-125 compliant dataset will be governed by a portrayal catalogue. This will be a required component of S-125 in order to meet the sufficient S-100 compatibility level that allows for use in ECDIS. The development of a portrayal catalogue also allows IALA to specify the appropriate portrayal for AtoN information. It is important to remember that since ECDIS is a target user system, all portrayal specifications must follow relevant IMO guidelines, such as SN.1/Circ.243 as amended.

S-125 product specification development will explore functionality within GML, including upcoming enhancements that better permit delta change functionality, as the means of packaging relevant data into datasets for ingestion into ECDIS/ECS.

It may be necessary to enhance the S-100 framework standard to support these envisioned goals which will necessitate writing and submitting change proposals to S-100WG. Such submissions can be done jointly between ARM Committee and NIPWG.

AtoN information must be of highest possible quality to be considered useful in ECDIS/ECS. Some AtoN information currently in ENC have been altered from the source information to better fit with related features such as coastline using cartographic principles. Providing for such alterations would be unlikely in a S-125 service, and the focus should therefore be on providing the most accurate positional and descriptive information possible. S-125 will contain sufficient instructions to highlight the need to focus on data quality.

S-125 will require an implementation guide that should act as a living document which captures lessons learned and provides best practice for implementation and operation of an S-125 service. In order to keep such a guide relevant and up to date regularly, it may be beneficial to keep such guidance outside of the S-125 document bundle and thus reduce the risk of having to update the other S-125 documents with version changes of the implementation guide. The ARM committee envision itself to be the maintainer of this guidance document as an IALA document.

Since S-125 is intended for ECDIS, it is required that S-125 consider any impact on S-98, which is the Interoperability Catalogue Specification for ECDIS. This standard will govern how the various product layers will interact within an ECDIS and it is therefore important that the intentions with S-125 be communicated to the IHO. Within the IHO, S-98 is developed and maintained by S-100WG. Such communication can be undertaken jointly between the ARM Committee and NIPWG.

It will be necessary to develop an operational service specification (according to the final version of ARM12-11.3.1.1 and ARM12-11.3.1.1.1), and service specification/ service technical design (G1128).

# RELATED PAPERS

* G1143 – Unique Identifiers for Maritime Resources.
* IHO S-100 4.0
* IALA S-201 Aton Product Specification 1.0, 2019.
* IALA ARM12-11.3.1.1 and ARM12-11.3.1.1.1 Guideline on the development of a description of a maritime service in the context of e-Navigation plus annex.

# Related Meetings

* IALA ARM12 (28 September – 22 October 2020)
* IALA ARM13 (13 – 28 April 2021)
* IHO NIPWG8 (22 - 26 March 2021)

# Action requested

The IHO NIPWG is requested to:

1. Review the S-125 vision outline and provide feedback and comments to the ARM Committee, by the input paper deadline for consideration at ARM13.