S-124 Correspondence Group (S-124CG) Report

Submitted by Chair, S-124 Correspondence Group

SUMMARY

Executive Summary: The development of S-124 continues with improvements to the data model. A full review has been finalized and the comments are being adjudicated. E-Navigation testbeds continue to provide valuable input and the work on the product specification document has started.

Action to be taken: Note this report and comment as appropriate.

Related documents: S-124 Product Specification Draft 2.0.0

1. Introduction / Background

The World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC) established the S-124 Correspondence Group to develop next generation navigational warnings to enable integration with bridge systems and shore systems using the S-100 framework. The Hydrographic Standards and Services Committee (HSSC), at its 9th meeting, invited S-124CG to reinvigorate the liaison with NIPWG and S-100WG (HSSC9/44). This report of S-124CG is to update WWNWS-SC on the progress in developing S-124 Product Specification and related activities.

1.2 Analysis/Discussion

Since WWNWS10, the S-124CG chair has attended S-100WG TSM6, NIPWG6 and S-100WG4 to report on S-124 development, seek input on direction of S-124 development, and to remain current with S-100 and related developments.

2. Membership

Since last WWNWS10, we have gained a number of new members. An updated list of members is uploaded to the S-124CG webpage. Please see:

https://www.iho.int/mtg_docs/com_wg/CPRNW/S100_NWG/Membership.pdf

New members include Amund Gjersøe (Kongsberg Norcontrol AS), Elena Maria Gnehm (German Hydrographic Office/BSH), Ed Weaver (WR Systems).

David Wilson (Maritime New Zealand) has replaced Stuart Caie (LINZ), and Stephen Gregory (UKHO) has replaced Edward Hosken (UKHO).

3. WWNWS10, Navigational Warnings, Temporary and Preliminary Notices

WWNWS10 clarified that the inclusion of Temporary and Preliminary Notices in S-124 is not within the current scope of S-124 so we have therefore removed this concept from both the data model and GML schema. See Annex A for an updated view of the S-124 data model.

The data model which included Temporary and Preliminary Notices was shared with NIPWG, who is developing an NtM exchange format, as an input to their development at a workshop held in Genoa in October 2018. See:

https://www.iho.int/mtg_docs/com_wg/NIPWG/WorkshopXMLNtM2018/Input%20paper%20on%20NtM%20information%20exchange%20format_final.docx

NIPWG decided to develop their NTM information exchange format as a means of sharing print versions of NTM information between hydrographic offices.

4. Draft S-124 Product Specification development

With assistance from Yves LeFranc (SHOM), the first S-124 product specification draft was developed and sent out to the S-124 membership for their input mid-October, 2018 with a review deadline of November 30th. Responses were received from Sweden, Germany, France and New Zealand. After these comments were adjudicated, a second draft version of the S-124 product specification was developed and sent out for review at the beginning of July, 2019. This latest version also complies with the updated S-100 Edition 4.0.0 released at end of 2018. Adjudication of comments from the ongoing review period is planned for the S-124 workshop to be held in parallel with WWNWS11.

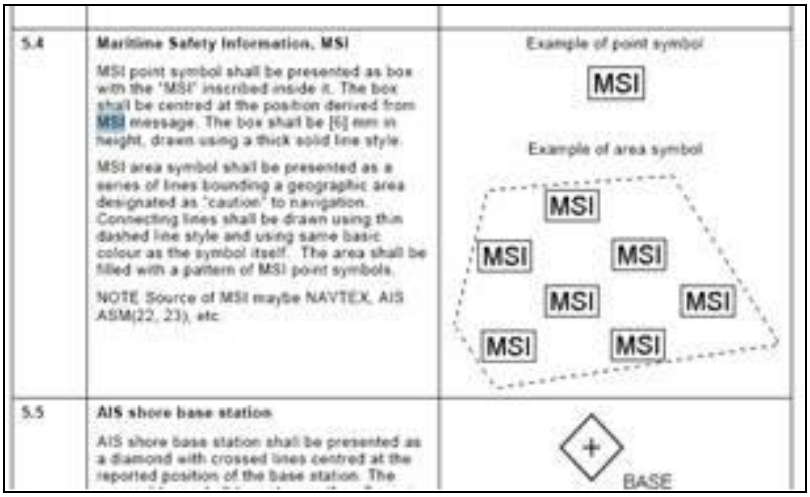
Although the draft product specification has come a long way and many parts are quite stable and well defined, a number of challenges still remain to be worked out. These issues are described below and further discussions on them are planned for the S-124 workshop.

4.1 Portrayal of S-124

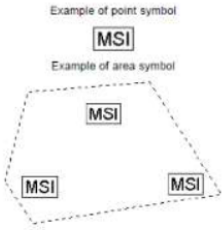
The portrayal of S-124 is a challenge due to IMO and IEC guidelines defining one common symbol for MSI. This means it is currently not possible to visually distinguish between navigational warnings, weather warnings, other MSI or SAR information.

Complicating this issue is both the number of categories that navigational warnings can have and the requests from mariners to have a function to categorise navigational warnings within their user system.

- Should S-124 use the MSI symbol, or something else?
- If something else, is it one symbol for all NWs or should some additional variations be given? E.g. plain boundaries for non-restricted areas vs ‘T’ line for restricted areas.



Screen shot from IEC 62288

Topic	Symbol	Description
MSI		MSI point symbol should be presented as a box with the "MSI" inscribed inside it. The box should be centred at the position derived from the MSI message. The box should be drawn using a thick solid line style. The MSI area symbol should be presented as a series of lines bounding a geographic area designated as "caution" to navigation. Connecting lines should be drawn using thin dashed line style and using the same basic colour as the symbol itself. The area should be filled with a sparse pattern of MSI point symbols. Note that the source of MSI may be NAVTEX, AIS ASM function identifier 22 or 23 (SN.1/Circ.289), etc.

Screen shot from NCSR6 report [Guidelines for the Standardization of User Interface Design for Navigation Equipment]

4.2 Units of measure (UoM)

Should UoM be more prescriptive in S-124 given that the primary user system is ECDIS and in the ECDIS standards many of the UoM are prescribed? In S-53 Standard Message Element Reference 7, it states NM is the UoM for distances, but it is probably not intended for shorter distances.

- Should we include metres as well?

4.3 Format of date and time

The S-53 Standard Message Element Reference 7 for format for the date and time (date time group) is not consistent with S-100 . The S-100 follows ISO 8601:1988 and as a consequence, S-124 inherits this standard too. Though it can be specified to be shown differently in the ECDIS, the overall risk is that S-124 specifies something different from what S-53 currently does.

- Are there any circumstances where time/date information must be included in the text attributes? If so, this must be documented in S-124 documents, such as DCEG.

4.4 Multiplication factor for coordinates

In ISO 8211, encoding coordinates can be encoded as integer values to save data volume. This is achieved by a fixed multiplication factor that makes decimal numbers into whole numbers.

- Is there a need to retain the latitude and longitude multiplication factors in S-124 since GML stores coordinate tuples [1]as a set of float values[2]? The fields in question are optional (see S-100 10b-9.6.2).

4.5 Maritime Resource Name (MRN) Identifier

The GML structure calls for each class/part to have unique identifiers within the dataset.

- Should MRN object identifiers be added for each NW feature part or is a MRN identifier for the whole NW sufficient?

[1] Sequences like a list but that cannot be changed
[2] Accuracy up to 7 decimal points in S-124

4.6 Data volume

The S-100 defined exchange set structure imposes a discovery metadata file on each S-124 dataset of approximate 10KB, while preliminary tests indicate an average NW dataset to be about 3-5KB. This means that for the total exchange set, metadata will account for 66-75% of total data amount. This issue can, to some extent, be mitigated by compression. S-100 Ed 4.0.0 permits ZIP compression (see S-100 part 15).

Another mitigation can be to use a different encoding (e.g. 8211 or HDF5), but since the metadata is external to the dataset, the improvements offered are limited and likely offset by increased complexity in the production systems, such as when reusing the same data for different purposes, e.g. publishing on websites.

Another option to reduce data volume is to use the Online Communication Exchange (OCE) (see S-100 Part 14) which would not use the exchange set methodology, but rather send metadata at the beginning of a session and then send only the NW datasets. A drawback is that this specification is still new and largely untested. The IALA ENAV committee is working on testbeds and improved documentation for OCE.

4.7 Data Capture and Encoding Guide (DCEG)

DCEG is needed to capture encoding decisions so that the production method of S-124 is as harmonized as possible, and that the risk of unforeseen issues in user systems are reduced as much as possible. Other S-100 product specifications have developed the DCEG as a description of the use of each feature and information class.

As S-124 is a much smaller data model there is a large variation of topics to be resolved within the data model. Therefore, there may be benefits in using the S-53 example NWs, mapped to S-124 format, as a comprehensive discussion on how to use the data model for various types of NW. See Annex of S-124 Training Manual.

4.8 warningHazardType codelist

The codelist warningHazardType is quite lengthy. There is potential that it will become longer in an effort to harmonize with S-125 (Digital List of Light). It is also a codelist of type open enumeration, permitting producers to add their own variations.

- Should S-124 retain warningHazardType in it's current construction, or do something else? E.g. rationalize the list into something smaller and convert to enumeration type, which would remove the option of producers adding their own types.

An impact study will be conducted once the product specification matures further. The S-124 workshop will review the process and evaluate the timelines for when an impact study should be conducted.

5. E-Navigation Testbeds

The STM Validation Project has tested concepts including the STM version of Navigational Warning service. Swedish Maritime Authority (SMA) was a key contributor to the STM Validation Project, and is now engaged in defining a common structure for service descriptions, which is expected to form a basis for how data exchange is managed in a machine readable way.

The SMART Navigation Project continues to support the testing of S-124 and is developing the test cases for additional tests of a full NAVWARN service. Sea trials are being planned for the S-124 implementation that have been under development within the project.

A team of participants from STM and SMART Navigation Projects meets regularly with the S-124 Chair to coordinate the testing and development of S-124. The Marine Connectivity Platform (MCP) consortium facilitates a discussion forum that comprise industry, research and government for discussions on how to further develop S-124, which has been very helpful in advancing the development of the product specification.

6. Technical Service Description

Using IALA G1128 (Specification of e-Navigation Technical Services) Sweden is drafting a technical service description of a Navigational Warning service. They have also reviewed an earlier Danish draft Technical Service Description (IALA ENAV21-9.6) for additional guidance. The latest draft will be presented at the S-124 workshop.

7. Training materials

Canadian Coast Guard has drafted S-124 training materials for NAVAREA co-ordinators. These include descriptions of the envisioned usage of S-124 in ECDIS, briefs of various standards, and guidelines that could(?) influence the use in ECDIS.

An annex that maps the S-53 NW examples to a table structure that emulates S-124 is also included to show how various types of NWs can be encoded using S-124. The exercise of creating these examples has been a good way of testing the data model and has generated a number of procedural questions for WWNWS to review and answer.