

Information Paper

Progress in the development of the S-100 Product Specification for Navigational Warnings (S-124)

Submitted by:	Leader of the S-124 Correspondence Group (Mr Yves Le Franc – France)
Executive Summary:	The IRCC/ World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC) created an S-124 Correspondence Group in October 2013 to develop an S-100 Product Specification for Navigational Warnings. This paper reports on the work of the S-124 CG.
Related Documents:	On IHO/IRCC/WWNWS-SC/S-124 CG web pages
Related Projects:	E-navigation, MSI Maritime Service Portfolios, Modernization of GMDSS.

The S-124 CG

The S-124 CG is a subsidiary group of the WWNWS-SC.

The objective is to develop an S-100 product specification for Navigational Warnings (MSI/NW) to improve dissemination and integration within bridge systems and shore systems via a digital format. The product specification is expected to contribute to the technical infrastructure of the e-navigation as designed by IMO and to the modernization of the Global Maritime Distress and Safety Systems (GMDSS).

The members are:

Australia, Denmark (Danish Maritime Authority), France, Greece, Japan, New-Zealand, Norway, Sweden, Turkey, United-Kingdom, United States, CIRM and the Korea Research Institute of Ships and Ocean Engineering (KRISO).

Activities since October 2013

The key elements of the IMO background related to the development of e-navigation and to the modernization of the GMDSS were gathered for consideration by the members (March 2014, October 2014). This includes the users' needs, the gap analysis, the risk control options, the prioritized solutions and the tasks of the SIP. This will insure that the design of the S-124 is in-line with IMO background expectations. The key elements of the IMO background are presented on the S-124 CG web pages¹.

The DMA brought an initial UML NW model developed within the ACCSEAS project². This model was checked by the CG in regard to the current NW standard (S-53) which defines the information contains in a NW (May 2014).

The principles of the method to review and refine the initial UML model were defined. The method adopted is based on use case diagram³ to identify actors aboard and onshore, their roles, their needs and the current gaps (May 2014).

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http://www.iho.int/mtg_docs/com_wg/CPRNW/S100_NWG/2014/IMO%20BACKGROUND%20RELATED%20TO%20THE%20DEVELOPMENT%20OF%20E-NAVIGATION.htm

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http://www.iho.int/mtg_docs/com_wg/CPRNW/S100_NWG/2014/ACCSEAS%20initial%20UML%20Model.png

3 http://www.iho.int/mtg_docs/com_wg/CPRNW/S100_NWG/2014/Use%20Case%20Diagram%20V1.pdf

Needs and gaps are identified from the IMO background, the members' knowledge, and a wide quality survey carried out by the WNWNS-SC via a questionnaire addressed to the shipboard users (2013-2014). This quality survey is very useful to know exactly what the problems with the current service are, in relation with the IMO background (gap analysis).

The use case diagram has been specified with a detailed scenario of the current processing aboard of the NWs received via SafetyNET and NAVTEX (what the devices do, what the user does)⁴ (October 2014). This allows a better understanding of the users' problems and their origins.

It is also used to imagine solutions and then, a new scenario based on digital NWs and new functionalities⁵. The goal is to identify some particular requirements on the NW model for the implementation of the solutions. This work is ongoing.

KRISO with its partners has also developed a NW model. KRISO joined the CG in November 2014. DMA and KRISO works together to harmonize their models. The objective is to obtain a unique model that responds to the requirements and expectations identified.

The new scenario of the processing of S-124 NWs will also contribute to the draft of future performance standards for systems aboard (Integrated Navigation System).

It also implies or suggests some changes in operations performed by NWs producers and some others S-100 products and services.

Way ahead

The group's work will continue schematically on the following topics:

- Refine requirements and NW modelling.
- Define the portrayal of the NW in relation other relevant organizations.

Provide outputs toward other relevant organizations (INS performances standard, Guidelines for the provision of NWs, consistency with others products and services...) and exchange.

- Draft the PS
- Proceed to test-beds in relationship with projects.
- Reach a consensus on the draft S-124 by demonstrating its contribution to the development of solutions and its feasibility (impact on the stakeholders) including the scenario of transition.
- Submit S-124 PS for endorsement.

The tentative schedule in Annex gives the approximate periods during which the work will focus on the different items.

Points to be considered

Review of NWs system and other means used to notify nautical information. The radio broadcast of NWs is a part of the means used to provide to the mariners the nautical information they need. NWs give notice of an uncharted event or change in the nautical environment. Other means like T&P NMs contribute to the same purpose and often relay NWs via another way of promulgation. EfficienSea and ACCSEAS projects worked on a combined model for NWs and T&P NMs since some similarities exist between these products.

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http://www.iho.int/mtg_docs/com_wg/CPRNW/S100_NWG/2014/Shipboard%20detailed%20scenario%20related%20to%20Navtex%20NW%20VI.pdf

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http://www.iho.int/mtg_docs/com_wg/CPRNW/S100_NWG/2015/Shipboard%20detailed%20scenario%20with%20solutions.pdf

This suggests a global approach for the review of the notification of nautical information in the perspective of a Maritime Service Portfolio. This action is beyond the framework set by the terms of reference of S-124 CG.

S-123 product and automation aboard

The new scenario of the processing of S-124 NWs aboard takes into account the current problems of the mariners. A gap identified in the IMO background is:

Lack of systems for source and channel management for communication equipment. Lack of seamless and communication mean dependent protocol for exchanging navigation information between ship. Insufficient techniques and procedures for exchange of data between ship shore and on board. Insufficient data protocols to support the exchange of reliability information describing data and system integrity. (Cf. NAV58/14 Annex 7 - Gap number 120-Gte03).

In fact, the mariner has to read the NP related to the radio services to determine which stations broadcast MSI at the ship location and then, he has to tune his receivers accordingly (cf. detailed scenario of the current processing, part I).

It is not so easy to find the information in the NP because of the paper form and it is possible for the mariner to forget to select the right stations on the receiver when changing of zone.

In the new scenario envisaged, the sequence is automatized by the use of a geo-database containing the radio-stations description: services supported, area covered, frequency, schedule broadcast times, etc. Receivers are automatically tuned according to the services that the mariner expects and the location of the ship. Thus, the mariner only needs to express the services he wants, assuming that the system knows the ship location. The geo-database could also respond easily to the question: "what services are available where I am?"

This solution included in the S-124 CG's new scenario is an example of new functionalities that an S-123 product could introduce. This product could be an international database, collectively maintained by nations and containing all MSI services. A regularly updated copy of the database should be kept aboard.

Action Required of NIPWG

The NIPWG is invited to note this information.

Tentative schedule

Work Item	Date start	Date end	Comment
Define a work program			done
Review needs, gaps and requirements	Feb. 2014	Nov. 2014	done
Identify basic functions	Dec. 2014	Dec. 2015	Aboard functions have priority. In relation with WWNWS for the new ways of operations and the scenario of the transition. On going
Improve UML model	Feb. 2015	Dec. 2015	On going
Define the portrayal of the NW	Sep. 2015	Jul. 2016	
Tests	2015	2017	
Contribute to draft performances standards	2016	2017	
Enlarge as appropriate the membership and relationships	2014	2017	So that other projects feed us of their ideas and find a normative outlet in them works, to validate functions by actors, to feed other works of other bodies, to reach a consensus, ...
Reach a consensus (impact on stakeholders,...)	2016	2017	
Submit S124 for endorsement		2017	