S-124 Workshop Minutes

1.0 Introduction

Eivind Mong (EM) welcomes the participants to the workshop. He noted that it was important work ahead for the development of S-124 Product Specification. He highlighted that moving from NAVWARN, NAVTEX and SafetyNET to S-124 is like moving from paper charts to ENC, it's a paradigm shift.

1.1 Approval of Agenda

Agenda was approved as presented. See agenda in Annex 1.

1.2 Participants introductions

Participants introduced themselves. See participant list in Annex 2.

2.0 Adjudication of S-124 Product Specification Draft 2.0.0. comments

The workshop initiated the comments review, but due to time constrains was not able to complete the review. It was therefore agreed to finish the comments review by correspondence.

Action 2-1; EM to draft adjudications for each comment and share with the workshop participants for approval.

Yves Le Franc (YLF) raised the question of the reuse of the S-124 model for T&P Notices. EM suggested to make a list of notices to mariners that do not fit within the S-100-based product specifications to document the gaps. This gap analysis could be used to justify requests to IHO-HSSC that something will need to be done in order to bridge this gap.

Action 2-2; Bridget Gagne (BG), YLF, Elena Gnhem (EG), Johan Bultzingslowen (JB), Stephen Gregory (SG); Try to find 50 cases of Notice to Mariners of navigational significance that do not fit with Navigational Warning (post 42-day limit), nautical publications or correction to ENCs.

Action 2-3; YLF to share data flow diagram of information as an inspiration to the rest of the working group as to how to present this flow of information.

3.0 Portrayal of S-124 and S-124's place in S-100 ECDIS Interoperability (S-98).

Recommendation from the S-124 portrayal discussions:

- Navigational Warning layer cannot be turned off.
- No need for filtering which types of warnings to show (e.g. local vs coastal).
- Navigational Warnings will show up depending on the coverage of the navigation screen (graphical restriction).
- Filtering: no spatial, topic, or route. Temporal is still important.

- Navigational Warning and Weather Warning (S-412) are different symbols. (These are both MSI, but have different packaging.)
- One symbol for all navigational warnings.
- "NW" will be the Navigational Warning symbol.

Action 3-1; EM will draft a request to the IHO Nautical Cartography Working Group (NCWG) to make S-124 portrayal recommendations using the outcomes of this workshop.

3.1 Current visualization of S124 messages in the Wartsila-Transas products.

Review of the portrayal of Navigational Warning questions from Wartsila-Transas on the information in STM Validation project yielded some recommendations for portrayal of S-124 as noted below.

Point 2 (Page 2): It was noted that in cases where a central symbol is larger than the area it represents due to scale is a common problem for all products. S-124 should follow whatever the official line is for ENCs at this point. It was also noted that these situations are minor and that they still represent sufficient information to make a decision for how valid the NW is for your route so that it can be queried.

Point 3 (Page 3): It was noted and agreed with the proposal to develop a 'more than one' grouping symbol and S-124CG will forward it to the NCWG with the request for their support in developing NW Symbology

Point 4 (Page 4): A new Navigational Warning should appear distinguishable from an already read Navigational Warning to indicate the new information to the mariner. It was also noted that, if the positon of the Navigational Warning is off-screen, but it has an area of effect that go into the current routing screen, then it will appear in the list of relevant Navigational Warnings in a different visual representation (bold, colour, etc.) as well as show up in the area that overlaps the current routing screen. The representation of this new Navigational Warning will change to normal once the mariner has acknowledged this new warning. It is up to the mariner if they want to zoom out to see the entire area of effect of this new warning.

It is recommended that ECDIS include a function to reset the list of received navigational warnings back to a certain point in time for when a new officer comes on duty to show all Navigational Warnings received in the period.

Point 5 and 6 (Page 4 and 5, respectively): It was recommended to ask the NCWG for point representation, line representation and area representation for NW, and they all need to have the distinguishability between new and acknowledged navigational warnings.

- It needs to be understood which warning has been selected according to their different representations.

Point 7 (Page 5): There needs to be a visual differentiation (whether it be to put a new warning in bold or change the colours, etc.) between a message received by a mariner (i.e. a warning that is new and not acknowledged yet vs read and already acknowledged). Already mentioned in more detail above in Point 4

There needs to be a visualization of the affected area that is not intrusive (e.g. a light tinting of the selected area which is temporary with the duration an affected area is selected) for day, night and dusk (e.g. outage of a light has an affected area related to its nominal range). This point will be raised in the request for support from NCWG on defining portrayal.

The meeting took note of Wartsila-Transas' NAVTEX in ECDIS plans.

4.0 S-124 dataset lifecycle; new dataset, cancellations and in-force lists distribution logic

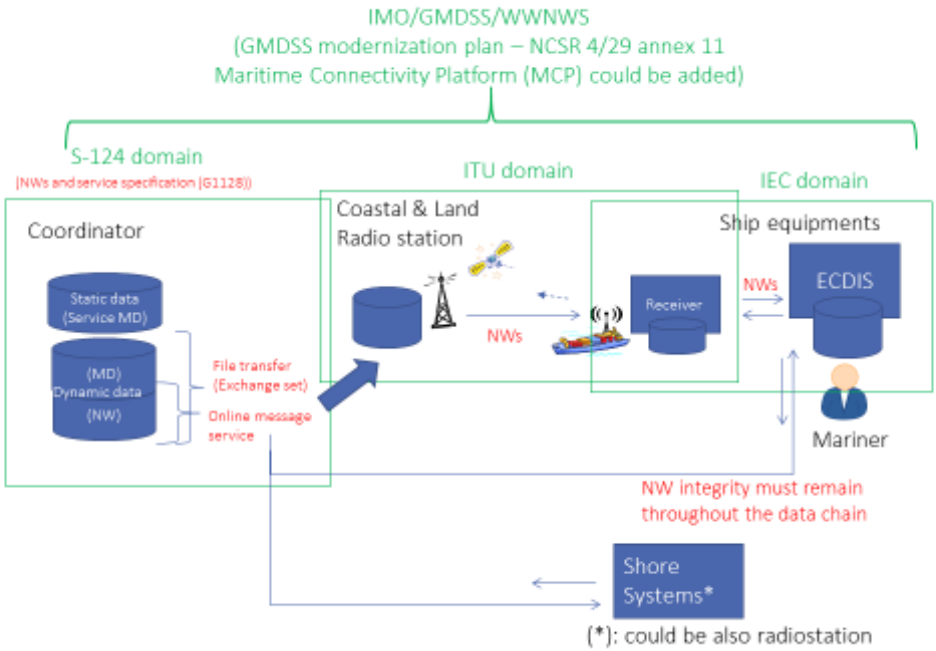
YLF pointed out that according to Terms of Reference S-124 NW fit with communication technologies of the modernized GMDSS as WWNWS is part of the GMDSS. He highlighted that the GMDSS Modernization Plan was approved by MSC 98 (NCSR4/29 annex 11).

Some potential candidates for radio-communication of digital NWs are NAVDAT, VDES, Modern satellite communication. NAVDAT performances could help when setting max size requirements for S-124 data. It was noted that duration of the broadcast over NAVDAT of 100 KB (e.g. 20 NWs at 5 KB each) could take several minutes depending on the configuration (tests are ongoing). Over NAVDAT there is no data cost for the end-user. It was noted that satellite communications may imply heavy cost for significant data volume[1]. NWs size must be optimized as each KB could be significant for the feasibility of the dissemination at sea (cost and time it takes to broadcast). S-124 CG needs to be well aware of the radio-communications constraints and has to look for information.

It was noted that size of datasets can be reduced significantly by replacing GML tags with specific numbers but will require a special protocol.

It was agreed that the scope of the S-124 PS is the data format and the delivery by the producer system. The PS doesn't cover the dissemination from the producer system to the client system. Different ways of dissemination will exist. The S-124 PS should fit with the main dissemination options which have to be captured. The integrity of the information must be maintained throughout the whole data supply chain. The image below was drafted to show the scope of S-124 Product Specification versus the dissemination.

[1] It was reported from a satellite service provider that the average cost to broadcast of an average S-53 compliant Navigational Warning is 1 GBP and that a Navigational Warning of 15 KB would cost about 90 GBP.



In the Coordinator box, static data represent the technical service metadata while the dynamic data represent the navigational warning and its metadata. It is not anticipated that the technical service metadata will be exchanged together with navigational warning data. S-124 will need to be expanded to allow for 2 methods of transmission/distribution; file-based and online communication based distribution methods.

File-based distribution means exchange set with NW dataset and metadata files. This could be distributed via Only exchange sets and online communication of file transfers.

Online communication-based distribution means NW datasets as messages with metadata sent at the beginning of a session. This type of distribution could be via web portals.

In S-100 the metadata files contains the data integrity, so in Online Communication that part may need to be managed by different means.

4.1 S-124 Information Exchange Service Specification

Presented by Per Lofbom (PL), IT Architect (STM: Sea Traffic Management). Overall requirement is that the service interface shall be described in accordance with S-100 and IALA 173 guidelines (G1128). The service description needs to be general in order to allow flexibility in different types of dissemination methods.

There will be two types of services to choose from for S-124 implementation:

- File-based transfer: exchange set
- Message-based transfer: online message service

To elaborate: Service discovery metadata to know what is there, and then you pick one of the two types.

- The exchange set contains the dataset discovery metadata (as required by S-100) and the NW dataset itself (file-based transfer).
- The online message service contains the payload (message-based transfer).
- User then decide which service he wish to consume.
- (Refer to the image above for a visual representation of the above.)

Action 4.1-1; PL to draft the S-124 Service Specification.

4.2 Online Communication of S-124 data

For file transfer, S-100 requires all the metadata that is listed in the accompanying dataset discovery metadata document.

For an online service, things can be different since the discovery metadata may not be required. The group thanked OFFIS University of Oldenburg (Axel Hahn) for the draft version of the Online Service of an S-124 service. It was agreed to invite the OFFIS University of Oldenburg to assist in developing the online message service for S-124.

Action 4.2-1; EM to invite the OFFIS University of Oldenburg (Axel Hahn) to contribute with a template of an online message service for S-124

5.0 S-124 metadata and S-100 metadata requirements.

Metadata is required for file transfer. For online service, metadata is less needed, and we will have to determine what metadata should be duplicated in the message itself (something we will most likely learn with more experience). Maybe message-based has more metadata attached to it than file-based would. As this is being specified, we will most likely make discoveries on how this will turn out.

Metadata for Datasets

- dataProtection (optional): may need it for data integrity
- classification: we could get rid of this
- purpose: “new dataset” could get rid of this too if it is always a new dataset
- editionNumber, issue Date: mandatory in S-124

6.0 S-124 Data Quality and tests.

It was agreed that the approach to data quality that S-124 should have is summed up in the statement *Generally, the quality of information is evident from the navigational warning text by the use of qualitative words such as “approximate,” “reported,” “in the vicinity of” and “about.”*.

The focus should be on the quality of the S-124 service and the speed of broadcasting this information. Having quantifiable data could slow down the speed and upset the quality of the service.

The current list of Validation Checks in S-124 was discussed, keeping in mind that the checks represents the minimum checks that any S-124 dataset has to go through before being published.

Action 6.1; All to go over the list of checks to make sure that:

- All the necessary checks are listed.
- Are there any checks that could be removed?
- Do we need to distinguish between checks for file-based vs messaged-based service
- Look at each check and write them in a way that is more agnostic in relation to the 2 methods of dissemination (exchange set vs online message service)

Keeping in mind different types of checks looking at the semantics of the message vs the content of the message. Comments should be submitted to Eivind before the end of November 2019.

A discussion on the portrayal of approximate positions took place. It was agreed to ask WWNWS11 at what decimal point should there be a flag to show that the coordinate given is an approximate position (with the producer using the words "observed around/about," etc.)? And at what decimal point would there be enough detail to show that it is a very specific point? WWNWS11 clarified that they wish the default for all positions in NWs to be approximate, unless otherwise made clear by the data producer.

7.0 Impact study and system tests.

The group agreed that the Product Specification is not in a state where it is sufficiently complete to start drafting the questions for the impact study. Suggestion from the chair to re-ask this question in a year's time.

Action 7-1; EM to re-ask the group in a year's time whether the S-124 Product Specification is sufficiently complete to start drafting white paper for an impact study.

8.0 S-124 Product Specification timeline for version 1.0.0.

IHO has clarified that they intend to make S-101 Product Specification Operational in 2024, and have asked that S-124 follow suit. A draft timeline was developed.

2019.08.26 – 2020.12.31: S-124 Ed 1.0.0 Development (16 months) – 1st milestone
2020.12.31: WWNWS-SC Approval
2021.01.01 – 2022.08.31: Testing and Familiarization Interval (20 months)
2022.09.01 – 2023.08.31: S-124 Ed 2.0.0 Development (12 months)
2023.09.01 – 2023.11.30: IMO Member States Voting Period (3 months)
2023.12.01 – 2024.12.31: Implementation Period (13 months)
2024.12.31: IHO requests S-124 Product Specification to be operational.

The above timeline is the best case scenario and means that the development schedule of S-124 needs to speed up. The group was in agreement with the vision of the above timeline and that it is our best guess for achieving the end goal of S-124 Product Specification being operational. The chair suggests that with at least 2 face-to-face meetings, ideally 3, to complement the development work, is necessary to achieve version 1.0.0 by the end of 2020.

Action 8-1; All to go back to their administration with the timeline, and to bring up that without face-to-face meetings, the above timeline cannot realistically be achieved. Participants should aim to spend 10% of their time towards S-124 in order to meet the end of 2020 goal for version 1.0.0. If you require a statement from the chair or from IHO to help convince your administration, then please let the chair know.

Before deliverables can be elaborated upon:

- The chair needs to know whether the participants in the correspondence group has the appetite to become a project team.
- If each participant's administration supports the travel for face-to-face meetings to achieve this timeline.

WWNWS11 agreed to make S-124CG into a Project Team to more easily facilitate face to face meetings.

9.0 Testbeds.

Two testbeds reported on activities relating to S-124, the SMART Navigation Project in Republic of Korea and the STM Validation Project in the Baltic Sea region.

9.1 SMART Navigation Project test of S-124 service.

MSI Service in SMART Navigation Project

- Presented by Dr. Sewoong Oh (SW) of Korea Research Institute of Ships & Ocean Engineering (KRISO) via GoToMeeting.

Overview of SMART Navigation Project

- The SMART Navigation implements the concept of IMO's e-Navigation, providing additional services for Non-SOLAS ships such as fishing boats, coastal vessels and small ferries.
- Budget: USD 115 M (From March 2016 to December 2020)
- Project Activities (3 activities, divided into 13 Work Packages (WP)):
    - Goal is the development of e-Navigation services
    - Includes Establishment of infrastructure such as communication and physical centre for the e-navigation service and the development of equipment for end users

WP1: Navigation Monitoring & Assistance Service (NAMAS) monitors navigation of vulnerable ships and gives alarm for navigation assistance to prevent collision and grounding.

- It uses positional information of ships and their route information when available.

WP2: Ship-borne System Monitoring Service (SBSMS) monitors on-board systems of passenger ships with Korean flag and other ships requesting the service to detect hazardous events within the ships such as flooding, fire and engine failure.

WP3: Safe & Optimal Route Planning Service (SORPS) provides safe and optimal routes plan when requested. It can be used for voyage planning by merchant ships or for emergency route guidance for small vessels without navigation-aid systems such as radar and AIS.

WP4: Real-time Electronic Navigational Chart Distribution & Streaming Service (REDSS) provides ENC of Korean waters for Non-SOLAS ships when requested. It supports streaming as well for small ships without on-board electronic chart system (ECS).

WP5: Pilot & Tugs Assistance Service (PITAS) supports pilotage by providing pilots and tugs with information needed for pilotage.

WP6: Maritime Environment and Safety Information Service (MESIS) provides maritime safety information (MSI) including navigational warning, weather information, hydrographic information and maritime environment information.

Navigational Warnings of KHOA (Korea Hydrographic and Oceanographic Agency) does not track changes in aids to navigation status (e.g. extinguished, off position, etc.) All navigational warnings are open to the public.

Every software/system within the project will have their own MRN.

- MRN is used as a tag to identify the sender (MRN A) and the receiver (MRN B).

Sea trials are currently ongoing in the project to validate the services that have been developed.

Action 9.1-1; SW to share SMART Navigation project sea trial outcomes with S-124CG to assist members in learning how to overall improve the product specifications.

The Workshop would like to thank Dr. Oh for presenting the SMART Navigation Project to us and for allowing us to use his GoToMeeting for carrying on the workshop while one of the S-124 workshop participants was unable to attend in person due to illness.

9.2 STM Validation Project test of S-124 service.

PL presented Sea Traffic Management Services

- Creating a safer, more efficient and environmentally friendly maritime sector

https://www.stmvalidation.eu/ has more information, including project report and a video on STM Services in Practice.

The website shown by PL demonstrated how sensor information (AIS) coupled with participant information (route plan), through a system where interoperability is built into the design, can give authorities a more complete situational awareness of their waters.

PL noted that a lesson from STM Validation Project was that although the design seemed ok, the implementation of the design has left too much room for the implementer to make mistakes.

Another lesson noted was that it is better to not integrate conditional validation checks into the GML schema due to significant increase in complexity.

Annex 1 – Agenda

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3.1	Current visualization of S124 messages in the Wartsila-Transas products.
4.0	S-124 dataset lifecycle; new dataset, cancellations and in-force lists distribution logic.
4.1	S-124 Information Exchange Service Specification
4.2	Online Communication of S-124 data
5.0	S-124 metadata and S-100 metadata requirements.
6.0	S-124 Data Quality and tests.
7.0	Impact study and system tests.
8.0	S-124 Product Specification timeline for version 1.0.0.
9.0	Testbeds.
9.1	SMART Navigation Project test of S-124 service.
9.2	STM Validation Project presentation.

Annex 2 – Participant List

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United Kingdom	UKHO	Neil Salter	Neil.Salter@ukho.gov.uk	Wednesday Afternoon Portrayal Discussion
Expect contributor	WR Systems	Edward P Weaver	eweaver@wrsystems.com	
Expect contributor	KRISO	Sewoong Oh	osw@kriso.re.kr	via GoToMeeting for Thursday morning