



KYSTVERKET
NORWEGIAN COASTAL ADMINISTRATION

Status on the IMO e-navigation process

E-Nav Underway February 2017

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IMO e-nav decisions (MSC 95)

1. Guidelines on standardised modes of operation, S mode - approved 2015 (S1)
2. Addition of new modules to the Performance Standards for INS – approved 2015 (S1)
3. Revision of Guidelines and criteria for ship reporting systems – approved 2015 (S2)
4. Revision of the General Requirements (A694(17)) for Built In Integrity Testing (BIIT) – approved 2015 (S3)
5. Guidelines for harmonized display of navigation information received by communications equipment - approved 2015 (S4)
6. Resolution on MSPs – approved by 2016 (MSC 96) (S5)



Prioritization of work

- Output 2 - New INS Modules (S1) NCSR3-4 (16-17)
- Output 3 - Ship Reporting Guidel.(S2) NCSR3-4 (16-17)
- Output 5 - Harmonized Display (S4) NCSR3-4 (16-17)

- Output 1 - S-mode guidelines NCSR5-6 (18-19)
- Output 4 - BIIT revision of A694(17) NCSR5-6 (18-19)
- Output 6 – Resolution on MSPs NCSR5-6 (18-19)



New INS Modules - Output 2 (S1)

- To draft a new module on harmonization of bridge design, which will assist designers with the application of human factor principles when realising the design of the bridge. The objective of improving the reliability, efficiency and effectiveness of INS in supporting safe navigation.
- To draft a new module on display of information, which will ensure that navigation safety-related information can be properly displayed by an INS with interfaced communications equipment/systems to support safe navigation.



New INS Modules - Output 2 (S1)

- **China:** Report on the outcome of the work of the CG formed to develop two new modules for the performance standards for Integrated Navigation System (INS):
 - Module on harmonization of bridge design
 - Module of information received via communications equipment



New INS Modules - Output 2 (S1)

- **Ukraine:** Proposal to include to INS new functions in the additional two new modules to provide two-way connections of communications equipment, including VHF DSC controller.



Ship Reporting Guidelines – Output 3 (S2)

- To revise the Guidelines and criteria for ship reporting systems (resolution MSC.43(64), relating to standardised and harmonized electronic ship reporting and automated collection of onboard data for reporting.
- This will entail trials of systems at sea to ensure that the appropriate communications channels and formats are developed to bring a harmonised and automated approach to ship reporting.



Ship Reporting Guidelines (2016)

- **China** (NCSR 3/10/1) proposes an amendment to the *Guidelines and criteria for ship reporting systems* (resolution MSC.43(64), relating to standardized and harmonized electronic ship reporting and automated collection of board data for reporting; and
- **The Republic of Korea** (NCSR 3/10/2) proposes revision of the *Guidelines* in accordance with the SIP.



Ship Reporting Test Bed Set Up

- The data transmitted was a subset of SafeSeaNet Norway SW ship reporting data set, such as arrival, ship security and border control,
- The data set received from the ship were automatically submitted into SSN Norway,
- Most of the messages were transmitted via AIS and ASM,
- A number of e-mail arrival reports from the ship were also submitted directly to MPA of Singapore,
- A number of departure messages were automatically transferred shore to shore from SSN Norway to the system in Brazil using XML and web services.



Ship Reporting Guidelines

- **Brazil:** Provided comments and analysis of the test bed results for ship to shore communication and the transmission of pre-arrival information by ships to the port of call.
- Proposes the Architecture for Interoperating Single Windows Systems and a new GISIS (Global Integrated Shipping Information System). The feature facilitates the use of Single Window systems.



Agenda item: Revised Guidelines and criteria for ship reporting systems

- **MSC 96** instructed the IMO Secretariat to consider the perceived administrative burdens. The Secretariat's recommendations related to reporting requirements are:
 - «Request NCSR to consider the establishment of a central reporting system using a single uniform reporting format.»
 - Review adopted mandatory ship reporting systems using existing technologies such as LRIT and AIS for inclusion of possible amendment to the system



Harmonized Display - Output 5 (S4)

- To draft Guidelines for the harmonized display of navigation information received via communications equipment.
- A task-oriented integration and presentation of information, when all necessary information for the respective task and situation is available in a fast, reliable, consistent and easily interpretable format will support the officers on board in their decision making and enhance the safety of navigation.



Guidelines for the harmonized display of navigation information

Norway and IHO: Present a first draft of the Guidelines, however:

- There are overlaps between work on S1 (two modules to INS), and the coordination of common elements is crucial to reach a good result
- There is also a need to coordinate with other e-navigation work such as S-mode and MSP
- The work should further continue in 2018-19

IHO: Status of the development of the IHO S-100 Framework



Relevant IEC programme (NCSR 3/6)

- On INS:
 - A new version of IEC 61162 on interfaces is being prepared
 - A new standard on Integrated communications workstations is being prepared
- On display of navigation information received from Comms systems:
 - A new version of IEC 62288 on presentation of navigation related information on ship displays was published in 2014
- On ship reporting systems:
 - IEC has started work on CMDS and S-100
 - The new edition of the ECDIS standard contains a specification for a route transfer interface
- On connection of NAVTEX and safetyNET to INS displays:
 - New sentences have been developed for sending data from these devices to other displays



GMDSS modernization

(extract from NCSR 4/12)

- The GMDSS modernization project needs to continue to support the needs of the e-navigation strategy.
- With respect to the GMDSS and communications in general, interoperability is required between ships and between ships and shore stations. In the course of the High-level Review, as well as in the work on the e-navigation strategy, there have been numerous calls for standardized user interfaces.
- The GMDSS and other communication technologies are at the core of the e-navigation strategy, providing ship-to-shore and shore-to-ship exchange of data. AIS and ECDIS are the newest technologies included in SOLAS.



Activate IMO-IGO Harmonization Group on Data Modelling (HGDM)

- Activate the IMO-IGO Harmonization Group on Data Modelling (HGDM) to work on the development of guidance on definition and harmonization of the format and structure of Maritime Service Portfolios (MSPs)
- MSPs have been identified in the SIP as the framework for the electronic provision of information related to maritime services on a harmonized way between shore and ships
- The development of the MSP guidance will need to be coordinated with the development of the S-100 framework. This has to be adopted as the baseline for the Common Maritime Data Structure, which is the heart of e-navigation



Guidance on S-Mode (2018-19)

- **Australia, the Republic of Korea, InterManager and the Nautical Institute:** Schedule and progress of the further work on S-mode:
- 2017: Develop testbeds based on user assessments and commence simulation trials with a wide variety of seafarers. Continue development of an initial draft S-mode guidance
- 2018: Continue simulation trials, assessing user feedback, and drafting of the Guidance
- 2019: Complete drafting the S-mode guidance for the design of shipboard navigational equipment



Harmonized provision of PNT data and integrity information

- **CG:** Proposal on draft Guidelines for shipborne PNT data processing (Germany et al.)
- The proposed Guidelines are directly associated with the performance standards for multi-system ship-borne radio-navigation receivers, but the scope of application should cover all shipborne navigation equipment and systems applying or providing PNT data
- The draft Guidelines support the harmonization and improvement of onboard PNT data processing
- **E-nav:** Include the Built In Integrity Testing (BIIT) functionality for navigation equipment in Resolution A.694(17)) 2018-19



Reporting and sharing of e-navigation test bed results

IALA: IALA Guideline No 1177 on The Reporting of Results of e-Navigation Testbeds has included a new section on planning of testbeds

- The new IALA website includes a section on e-navigation testbeds results
- The IALA Guidance formed the basis for IMO document MSC.1/Circ.1494 on Guidelines on Harmonization of testbed reporting



Harmonization and standardization work

S1: *improved, harmonized and user-friendly bridge design;*
New INS module on **harmonization** of bridge design and
a module which will outline the **standardized** interfaces
for data exchange. S-mode aims to reduce variation in
navigation systems and equipment through the
standardization of aspects of user interfaces

S2: *means for standardized and automated reporting;*
Harmonized and standardised electronic ship reporting



Harmonization and standardization work

S3: *improved reliability, resilience and integrity of bridge equipment and navigation information;*

The BIIT will provide **standardized** self-check capability for navigational equipment. Draft Guidelines for shipborne PNT data processing support the **harmonization** and improvement of onboard PNT data processing

S4: *integration and presentation of available information in graphical displays received via communication equipment;*

Draft Guidelines for the **harmonized** display of navigation information received via communications equipment.

Harmonization with the work on S-mode (S1) and MSP (S5)



Harmonization and standardization work

S4 cont.: The implementation of presentation of S4 information in graphical displays requires the development of a Common Maritime Data Structure based on IHO S-100 data model. Work to be done by IMO-IHO **Harmonization** Group on Data modelling (HGDM)

S5: improved Communication of VTS Service Portfolio;
Develop guidance on definition and **harmonization** of the format and structure of MSPs, as MSPs have been identified in the SIP as the framework for the electronic provision of information related to maritime services in a **harmonized** way between shore and ships. HGDM to work on the MSP output



Harmonization and standardization work

- IMO-IHO **Harmonization** Group on Data modelling (HGDM) should, using IHO's 100 as baseline, **harmonize and standardize** formats for collection, exchange and distribution of data, processes and procedures for collection, and development of open **standard** interfaces
- Guideline on Software Quality Assurance and Human Centred-design for e-navigation systems and equipment draws extensively on existing relevant international **standards**
- The IALA Guidance formed the basis for IMO's Guidelines on **Harmonization** of testbed reporting



Thank you for your attention!

