



KYSTVERKET
NORWEGIAN COASTAL ADMINISTRATION

Status of needed governmental actions for the implementation of the e-Navigation solutions

E-Nav underway February 2016

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MSC 95 decisions

1. Guidelines on standardised modes of operation, S mode - approved
2. Addition of new modules to the Performance Standards for INS - approved
3. Revision of Guidelines and criteria for ship reporting systems - approved
4. Revision of the General Requirements (A694(17)) for Built In Integrity Testing (BIIT) - approved
5. Guidelines for harmonized display of navigation information received by communications equipment - approved
6. Resolution on MSPs not approved but new input prepared for MSC 96



Prioritization of work

- Output 2 - New INS Modules NCSR3-4 (16-17)
- Output 3 - Ship Reporting Guidelines NCSR3-4 (16-17)
- Output 5 - Harmonized Display 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 – on MSPs (to be agreed at MSC 96)



Work needed on INS-output 2

- To draft a new module on harmonization of bridge design will assist designers in realising an ergonomic design of the bridge, with the objective of improving the reliability and efficiency of navigation.
- To draft a new module on display of information which will ensure that the INS can display the information received via communications equipment.
- Input papers have been received from China and Norway.



Work needed on Ship reporting – output 3

- To revise the Guidelines and criteria for ship reporting systems (resolution MSC.43(64), as amended) 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.
- Input papers received from China, Norway and Republic of Korea



Work needed on the display of information-output 5

- 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.
- Input papers received from Norway and IHO (S100 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 3/14)

- 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.
- GMDSS satellite service providers will provide much of the communication capacity for e-navigation.
- VHF Data Exchange System (VDES) is another e-navigation technology in development that uses the VHF maritime frequencies.
- Furthermore, Digital Radio Mondial (DRM) has developed new capacity with digital transmission such as NAVDAT on MF.



Other e-nav related papers at NCSR3

- NCSR 3/6/1 (China) proposes duplex connectivity between INS and Communications devices as a new INS module
- NCSR 3/10/1 (China) proposes new text on the guidelines on ship reporting, and
- NCSR 3/10/2 (Republic of Korea) proposes a direction for the revision of the guidelines on ship reporting



Support role of IGO NGOs

The role of responsible IGO/NGOs is important to the implementation of e-navigation e.g.

- liaison with the work on CMDS
- revising appropriate standards
- co-ordinating the work on MSPs with other relevant orgs
- helping with trials vessels
- supporting all initiatives for test beds and trials
- supporting the development of S mode

Close cooperation ***between*** NGO/IGOs is important.



Guidelines on SQA and HCD for e-navigation

A short video from Australia is available on the Norwegian e-navigation page about the guidelines on Software Quality Assurance and Human Centred Design

www.e-nav.no and

<https://www.youtube.com/watch?v=dXi2Q7An9fwyoutube>



So how do we do e-navigation on
both the ship & the shore now
that all the pieces are about to be
on the table?

Some issues for the future?



List of e-nav solutions

- S1:** improved, harmonized and user-friendly bridge design;
- S2:** means for standardized and automated reporting;
- S3:** improved reliability, resilience and integrity of bridge equipment and navigation information;
- S4:** integration and presentation of available information in graphical displays received via communication equipment; and
- S5:** improved Communication of VTS Service Portfolio.



How do we move to e-navigation equipment and systems on board?

- **S1** (improved harmonised and user friendly bridge design) and **S4** (integration and presentation of available information in graphical displays received via communications equipment) are possibly related to an INS display
- There are to be two new modules for INS performance standard, situation display and user friendly design
- What about standardised modes of operation “S-mode” which is part of **S1**, is this new equipment?



How do we move to e-navigation equipment and systems on board?

- Should the guideline on SQA and HCD be mandatory in the long term in order to support the links between **S1** and **S4** and prevent cyber attack?
- **S3** improved reliability, resilience and integrity of bridge equipment and navigation information will become mandatory when A.694(17) (General requirements....) is modified to add Built In Integrity Testing, it should be considered an INS functionality as well as being related to SQA and HCD



Reception of MSPs

- MSPs are improved communication of the VTS service portfolio however not limited to VTS stations **S5**
- They are therefore, on the ship side, navigation information received from communications equipment **S4**
- Without an INS with a suitable display **S1** and **S4**, where do we route Maritime Service Portfolio information for display?



How should we prepare for e-navigation ashore?

- Ship Reporting
 - Existing ship reporting systems should be made ready for an automated, harmonised and standardised approach for all ships globally with a goal to further develop single window solutions
- MSPs
 - Service providers of Maritime Services need to have access to suitable communications channels and be ready to transmit MSPs in a standardised and harmonised manner to all ships globally
 - This may require port states and coastal administrations to develop systems for providing electronic information



How should we prepare for e-navigation on board ships?

- Can we equip the ships for e-navigation without making INS compulsory in order to ensure a harmonised and global implementation?
- Like the introduction of ECDIS, the e-navigation solutions have already been through IMO's Formal Safety Assessment (FSA) for risk reduction and cost benefit.
- Is e-navigation for new buildings only, or should there be a timetable like ECDIS for all ships?



Thank you for your attention!

