

E-navigation: The future of safe shipping

The International Maritime Organization (IMO) is developing a strategic vision for e-navigation, to integrate existing and new navigational tools in an all-embracing system that will contribute to enhanced navigational safety. Gurpreet Singhota, Deputy Director/Head of the Operational Safety Section within the Maritime Safety Division of the International Maritime Organisation (IMO), talks to Port Technology International about the progress of the project.



Gurpreet Singhota

What is the most recent progress for the e-navigation development?

Overall, the work is progressing quite well. The lead body is the Sub-Committee on Safety of Navigation, which next meets from 2 to 6 September 2013. The e-navigation concept is being developed in co-operation with the Sub-Committees on Radiocommunications, Search and Rescue (COMSAR) and Standards of Training and Watchkeeping (STW).

What were the outcomes of the last sub-committee on safety of navigation meeting?

The Sub-Committee on Safety of Navigation (NAV), at its 58th session, (2 to 6 July 2012) completed the gap analysis, approved the final list of gaps and endorsed the preliminary list of potential e-navigation solutions, the methodology of the Human Element Analysing Process, the procedure for the Formal Safety Assessment methodology and the further development of Maritime Service Portfolios (which define and describe the set of operational and technical services and their level of service provided by a stakeholder in a given sea area, waterway, or port, as appropriate).

The gap analysis identifies areas, which the e-navigation strategy should address, for example the possible lack of bandwidth and assignment of adequate bandwidth for potential e-navigation communication needs, including short range communication.

Potential solutions to address the identified gaps include those relating to:

- improved, harmonized and user-friendly bridge design;
- means for standardized and automated reporting;
- improved reliability, resilience and integrity of bridge equipment and navigation information; integration and presentation of available information in graphical displays received via communication equipment;
- information managements improved access to relevant information for search and rescue; improved reliability, resilience and integrity of bridge equipment and navigation information for shore-based users;
- improved and harmonized shore-based systems and services; and
- improved communication of Vessel Traffic Services (VTS) service portfolio.

The IMO Correspondence Group on e-navigation was re-established to further develop the detailed ship and shore architecture; the concept of Maritime Service Portfolios



The IMO's Sub-Committee on Safety of Navigation will next meet to discuss the progress of its e-navigation strategy in September 2013.

including the draft Strategy Implementation Plan (SIP). It was further tasked to provide comments and recommendations with respect to software quality assurance plus progress the development of draft guidelines for usability evaluation of navigational equipment and for the harmonization of test beds.

Can you describe the problems posed by lack of bandwidth and what solutions have been proposed for to tackle this issue?

One of the gaps identified is "possible lack of bandwidth and assignment of adequate bandwidth for potential e-navigation communication needs, including short range communication", with the COMSAR and NAV Sub-Committees identified as the technical bodies to look into this.

The preliminary list of potential e-navigation solutions identifies "Provision of system for automatic source and channel management on-board for the selection of most appropriate communication means (equipment) according to criteria as, bandwidth, content, integrity, costs". So the idea is to look into some kind of automatic source and channel management system.

What are the most essential aims of the e-navigation development?

The e-navigation Strategy Implementation Plan (SIP) aims to integrate existing and new navigational aids, in particular, electronic aids to navigation, in an all-embracing transparent,



"E-navigation will need to be adaptable to change as technology moves forward," Gurpreet Singhota.

user-friendly, cost-effective and compatible system that will contribute to enhanced navigational safety (with all the positive benefits this will have on maritime safety overall and environmental protection) while simultaneously reducing the workload burden on the navigator.

How adaptable will e-navigation be to change in the future?

E-navigation will need to be adaptable to change as technology moves forward. It is important that the e-navigation strategy allows for flexibility and review to accommodate any new technologies that arise and that could be incorporated into the system.

What major VTS needs of the industry will be addressed by the development of e-navigation?

In terms of VTS, the e-navigation strategy should result in improved shore-to-ship and ship-to-shore communication including the availability of real-time information to VTS operators. Some of this is already in operation as VTS services do have access to information from ships via AIS and so on.

A comprehensive integrated e-navigation system could enhance communication and the information available to VTS services – so ultimately accidents can be avoided.

So far in the process- what obstacles or difficulties have been faced?

The process so far in developing the e-navigation strategy has been about identifying the gaps and identifying possible solutions. No major obstacles have been encountered so far

in carrying out this process and there has been a great deal of interest and participation from all stakeholders.

In terms of obstacles that may arise in the implementation of the e-navigation system, it is too early to say what these might be.

However, we can be confident that all involved will try to work out solutions to any obstacles identified along the way.

How adaptable will e-navigation be to each user's needs?

The idea is that user needs are at the heart of the e-navigation strategy – it needs to respond to what the user needs are. Hence a lot of the work to date has been about identifying what those user needs are. If user needs change over time, then the e-navigation strategy should adapt to that.

Do you plan on having guidelines for training?

The discussion on what new training or training guidance will need to be developed will be discussed in the Sub-Committee on Standards of Training and Watchkeeping (STW), which has the remit to review all aspects of e-navigation from the human element perspective, including training issues. The decisions on what guidance or training is needed will be made later in the process of developing the e-navigation strategy.

How strong do you think the uptake of e-navigation will be?

I think there is a great deal of interest in using e-navigation as all relevant stakeholders are involved in the process, and there is likely to be strong uptake.

What concerns about e-navigation do people in the port industry have, that you are aware of?

I am not aware of any particular concerns. However, it is important that all stakeholders bring any concerns to the attention of IMO, given that the concept embraces ship and shore-side elements. The current overarching e-navigation architecture, as agreed by the NAV Sub-Committee, provides the shipboard and the shore-based parts connected through different links. It also identifies the concept of Maritime Service Portfolio (MSP), which defines and describes the set of operational and technical services and their level of service provided by a stakeholder in a given sea area, waterway, or port, as appropriate.

How involved (if at all) have port authorities been in the development of e-navigation? How have their interests been represented in discussions?

Their interests are represented via the various coastal States attending the relevant Sub-Committees. The International Association of Ports and Harbors (IAPH) has consultative status at IMO and as such can attend any of the technical meetings and provide input and participate in the discussions. So if there are any concerns or viewpoints from ports or port authorities they can raise them and bring their views to IMO, through their national delegation (Member State) or via IAPH. IMO all along has been encouraging all stakeholders to get involved in the process.

What will be the impacts on industry rules and regulations for navigation?

I think that will become more apparent as the strategy is developed and implemented.

E-navigation has huge potential to contribute to enhanced navigational safety (with all the positive benefits this will have on maritime safety overall and environmental protection) while simultaneously reducing the workload burden on the navigator. However, it must be developed in a coordinated and structured manner, taking into account all the relevant issues. All stakeholders have the opportunity to contribute to this process, via their national delegations attending IMO meetings or via the relevant international industry bodies.

ABOUT THE AUTHOR

Mr. Gurpreet Singhota is Deputy Director/Head, Operational Safety Section, Maritime Safety Division, International Maritime Organization (IMO), a specialized agency of the United Nations. He is Secretary of the Sub-Committee on Safety of Navigation (NAV) with responsibility for both the NAV and the Sub-Committee on Radiocommunications Search and Rescue (COMSAR) including the development of an e-navigation strategy implementation plan. Mr. Singhota is a Master Mariner with 14 years of sea-going experience, including six years of command experience on a variety of vessels including super tanker, bulk carrier, chemical tanker, cadet training ships etc., complemented by a M.Sc. degree course at Cranfield University (1984-1986), United Kingdom; also a Fellow of the Nautical Institute, London, United Kingdom. He joined IMO in 1987.

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