INTERNATIONAL HYDROGRAPHIC ORGANIZATION

ORGANISATION HYDROGRAPHIQUE INTERNATIONALE

Dossier du BHI n° S3/3055

LETTRE CIRCULAIRE 20/2015
6 mars 2015

CONTRIBUTION DE L'OHI A L'APPLICATION DE LA « E-NAVIGATION »
PROPOSITION DE SOUMISSION A LA 95ème SESSION DU
COMITE DE LA SECURITE MARITIME DE L'OMI

Références :

A. LC de l'OHI 78/2014 du 1er décembre – *Rapport sur la 94ème session du Comité de la sécurité maritime de l'OMI ;*
B. NCSR 1/28 - Annexe 7 – *Projet de plan d'application de la stratégie en matière de e-navigation ;*
C. MSC 95/1 – *Ordre du jour provisoire de la quatre-vingt-quinzième session du Comité de la sécurité maritime.*

Madame la Directrice, Monsieur le Directeur,

1. Comme indiqué à la référence A, la 94ème session du Comité de la sécurité maritime (MSC) de l'Organisation maritime internationale (OMI) a approuvé le plan d'application de la stratégie en matière de « e-navigation » (SIP), tel qu'exposé à la référence B. Le Comité a invité les gouvernements membres à préparer un plan de travail hiérarchisé global, identifiant les résultats appropriés, pour examen à sa 95ème session (MSC 95), aux fins d'inclusion dans le prochain ordre du jour biennal du Comité. La Norvège s'est portée volontaire pour coordonner cette activité.

2. A la suite de sa contribution au groupe de correspondance de l'OMI sur la « e-navigation » pour le compte de l'OHI, le Comité de direction a fait part de ses commentaires sur le projet de soumission au MSC 95 qui a été préparé et diffusé pour avis par la Norvège. Toutefois, les points de vue de l'OHI n'étant pas totalement reflétés dans le projet et ayant noté que le co-parrainage du document par plus d'organisations observatrices que d'Etats membres pouvait ne pas être un bon signal au sein de l'OMI, le Comité de direction, agissant au nom de l'OHI, n'a pas co-parrainé la soumission coordonnée par la Norvège.

3. La soumission finale de la Norvège et autres au MSC95 est jointe en pièce jointe A (*en anglais uniquement*). Le document propose une action de haut niveau modifiée « *Développement et application de la « e-navigation »* » pour inclusion dans les plans d'action de haut niveau de l'OMI pour 2016-2019 et décrit six propositions de résultat dans le cadre de l'action de haut niveau modifiée.

4. Le Comité de direction considère qu'il est important que le Comité de la sécurité maritime soit averti des points de vue de l'OHI lorsqu'il examinera la pièce jointe A. A cet effet, le Comité de direction a préparé un projet de soumission de l'OHI au MSC 95 qui est joint en pièce jointe B.

5. Notant que les soumissions commentant des propositions devant être examinées par MSC 95 ne doivent pas dépasser quatre pages et doivent parvenir au secrétariat de l'OMI **avant le 14 avril 2015** (cf. référence C), le Comité de direction invite les Etats membres à examiner la proposition de soumission de l'OHI en. pièce jointe B (*en anglais uniquement*) et à faire parvenir leurs commentaires, le cas échéant, au BHI **avant le 10 avril 2015**.

6. En raison du calendrier très serré qui ne permet pas de consultations successives, la présente lettre circulaire est également adressée aux présidents des organes de l'OHI concernés par le développement de la « e-navigation ». Leurs commentaires sont bienvenus dans les mêmes délais.

Veuillez agréer, Madame la Directrice, Monsieur le Directeur, l'assurance de ma haute considération

Pour le Comité de direction,

Gilles BESSERO
Directeur

Pièces jointes :

A. MSC 95/19/aa - Work Programme - Implementing e-navigation to enhance the safety of navigation and protection of the marine environment (*en anglais uniquement*)
B. MSC 95/19/xx - Work Programme - Comments on implementing e-navigation to enhance the safety of navigation and protection of the marine environment (*en anglais uniquement*)

Diffusion :

- Etats membres de l'OHI
- Président du HSSC
- Président du SMAN-SC
- Président de l'ENCWG
- Président du S-100WG
- Président du SNPWG
- Président du S-124CG

INTERNATIONAL MARITIME ORGANIZATION

E

MARITIME SAFETY COMMITTE
95th session
Agenda item 19

MSC 95/19/aa
3 March 2015
Original: ENGLISH

WORK PROGRAMME

Implementing e-navigation to enhance the safety of navigation and protection of the marine environment

Submitted by Australia, Denmark, Finland, Germany, the Netherlands, Norway, Republic of Korea, BIMCO, CLIA, IALA, ICS, InterManager and the Nautical Institute

SUMMARY

Executive summary:	This document proposes six outputs on e-navigation as well as an amended High-level Action 5.2.6, "Development and implementation of e-navigation."
Strategic direction:	5.2
High-level action:	5.2.6
Planned output:	No related provisions
Action to be taken:	Paragraph 27
Related documents:	Resolution A.1061(28) and A.1062(28); MSC-MEPC.1/Circ.4/Rev.2; MSC 81/23/10; MSC 85/26/Add.1; MSC 94/21; MSC 94/18/8; MSC 94/18/10; MSC 94/28; NAV 58/14; NAV 59/INF.8; NCSR 1/9 and NCSR 1/9/1; and NCSR 1/28

Introduction

1 This document proposes six outputs for inclusion in the High-level Action Plan for the following two biennia (2016-17 and 2018-19). It also proposes to amend High-level Action 5.2.6 in order to ensure that the Organization maintains leadership and coordination of e-navigation.

2 e-navigation aims to provide needed information, in electronic format, to a ship's bridge team to enhance the safety and efficiency of marine navigation. This will involve the integration of new and existing bridge technologies and equipment to enable the provision of globally harmonised maritime services. e-navigation will also help simplify the exchange of information between systems on board ships, ships and shore and on shore.

3 During its development, it was well recognized that e-navigation, through its technical and operational service capabilities (particularly the provision of reliable and timely data and information along with enhanced interaction between ship and shore) could contribute to:

- enhanced safety of navigation, security and protection of the environment;
- improved efficiency of shipping;
- improved access to sea areas and ports; and
- further development of a, sustainable global maritime transportation system.

4 The benefits of e-navigation, particularly the benefits to be gained from access to timely information through the transfer of data, will lead to increased safety and efficiency and ultimately to safer ships and cleaner oceans.

5 This document is submitted in accordance with the Guidelines on the organization and method of work of the Maritime Safety Committee and Marine Environment Protection Committee and their subsidiary bodies (MSC-MEPC.1/Circ.4/Rev.3).

Background

6 MSC 94 approved the e-navigation Strategy Implementation Plan (SIP), as set out in document NCSR 1/28, Annex 7. The Committee also considered document MSC 94/18/8, proposing the plan of work for the Organization for the harmonized implementation and future development of e-navigation, together with document MSC 94/18/10 (Norway), and, recognizing the importance of e-navigation and that the Organization should take a leading role, invited Member Governments to:

.1 review each of the tasks listed in the SIP with a view to reducing the numbers of outputs;

.2 prepare a full justification for each reviewed output in accordance with the information required in Annex 3 to resolution A.1062(28);

.3 prepare a comprehensive prioritized plan of work, which should include the time required for the completion of each output; and

.4 submit the information to MSC 95 for consideration with a view for inclusion in the post-biennial agenda of the Committee.

Outputs

7 The co-sponsors have reviewed each of the 18 tasks listed in the SIP with a view to reducing the number of outputs. The details of this review are shown in Annex 7.

8 Six outputs have been identified and prioritised, based on the original 18 tasks for the five agreed solutions from the approved e-navigation SIP. The outputs proposed are:

.1 guidelines on standardized modes of operation (S-mode);

.2 an update, by adding new modules, to the revised performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information;

.3 a revision of 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;

.4 amendments to the General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids (resolution A.694(17)) relating to Built In Integrity Testing (BIIT) for navigation equipment;

.5 guidelines on harmonized display of navigation information received via communications equipment; and

.6 Consideration of reports on development and implementation of Maritime Service Portfolios (MSPs) (and other e-navigation reports) by Member States and other international organizations

9 Three outputs, 8.2 (INS modules), 8.3 (ship reporting Guidelines) and 8.5 (display Guidelines) are identified as high priority items.

Justifications

10 Justification for each proposed output in accordance with Annex 3 to resolution A.1062(28), including SMART terms, are attached at Annexes 1 to 6.

Plan and Prioritization of the work

11 Below is comprehensive summary of the prioritized plan of work, which includes the time required for the completion of each output. The detail plan for each output is contained in the appropriate Annex.

Tasks for the Committee or Sub-Committee			Committee or Sub-Committee	Deadline
1	a	Receive Input papers on INS	Before NCSR 3	Dec 2015
	b	Preparation of Draft new modules, to the Revised performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information (Annex 2)	NCSR 3 and NSCR 4 High Priority	2017
2	a	Receive Input papers on ship reporting systems	Before NCSR 3	Dec 2015
	b	Preparation of Draft revised 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 (Annex3)	NCSR 3 and NSCR 4 High Priority	2017
3	a	Receive Input papers on display of received information	Before NCSR 3	Dec 2015
	b	Preparation of Draft Guidelines for the harmonized display of navigation information received via communications equipment (Annex 5)	NCSR 3 and NCSR 4 High Priority	2017
4	a	Receive Input papers on S-mode	Before NCSR 5	Dec 2017
	b	Preparation of Draft Guidelines on standardized modes of operation, S-mode (Annex 1)	NCSR 5 and NCSR 6 Medium Priority	2019

Tasks for the Committee or Sub-Committee			Committee or Sub-Committee	Deadline
5	a	Receive Input papers on BIIT	Before NCSR 5	Dec 2017
	b	Preparation of a revision of the General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids (resolution A.694(17)) relating to Built In Integrity Testing (BIIT) for navigation equipment; (Annex 4)	NCSR 5 and NCSR 6 Medium Priority	2019
6		Consideration of reports on development and implementation of Maritime Service Portfolios (MSPs) (and other e-navigation reports) by Member States and other international organizations. This is an ongoing process	MSC 95 through MSC 101	2019

Justification for inclusion of e-navigation in the High-level Action Plan

IMO's Objectives

12 IMO's highest priority is the safety of human life at sea. Central to this should be an effective and comprehensive framework for safe, secure, efficient and environmentally sound shipping. This proposal falls within this priority, under the scope of the Strategic Direction 5.2 "Enhancing technical, operational and safety management standards;" and proposes:

.1 an amended High-level Action 5.2.6 "Development and implementation of e-navigation."

Need

13 The implementation of e-navigation is crucial for ships and seafarers to continue being safe and efficient in a world that is undergoing unprecedented technology-driven change. A key aim of e-navigation is to ensure ship and seafarer safety remain a top priority amongst often uncoordinated technology-driven change.

14 The initial proposal (MSC 81/23/10) for the development of an e-navigation strategy identified that a lack of standardization on board and ashore would lead to increased and unnecessary levels of complexity and incompatibility between systems.

15 The clear and pressing need to ensure that future work on e-navigation is conducted in a structured and coordinated manner under the ongoing leadership of IMO was identified in the IMO e-navigation strategy (MSC 85/26/Add.1, Annex 20, paragraph 9.4).

16 Central coordination (a key tenet of the e-navigation concept) is essential to ensure that the implementation of e-navigation solutions is harmonized globally.

Analysis of the Issue

17 The importance of continued leadership by the IMO to ensure harmonisation and active development of the approved e-navigation SIP cannot be overstated.

18 e-navigation is expected to equip shipboard users and those ashore responsible for the safety of shipping with effective, user-friendly, proven tools that are optimized for effective decision making in order to make marine navigation and communications more reliable, resilient and user friendly.

Analysis of the implications

19 This proposal does not introduce any significant additional burden (legislative or administrative) on the maritime industry, but merely proposes that future work on e-navigation SIP solutions is undertaken in a structured, harmonized and coordinated manner under the on-going leadership of the Organization.

20 A completed checklist for "Identifying administrative requirements and burdens" in accordance with MSC-MEPC.1/Circ.4/Rev.3 is provided in Annex 9.

Benefits

21 The main benefits of e-navigation, with its capabilities to disseminate, exchange and manage timely and reliable data and information, are improved safety of navigation, enhanced efficiency (through better integration of shipboard and shore-based systems) and improved protection of the marine environment.

22 Significant economic benefits of e-navigation have become evident, based on the findings from recent e-navigation related test-bed projects. Increased efficiencies and reduced costs, aided by improved ship reporting, dynamic route planning, sea traffic coordination, reduction of steaming distances and coordinated arrival times are some examples where e-navigation will contribute to the global economy (NAV 59/INF.8 refers).

23 These benefits will depend largely on regional implementation of e-navigation solutions being harmonized and compatible with each other.

Industry Standards

24 As international industry standards for some e-navigation elements do not exist as yet, IMO agreed to take on responsibility for the initial work. Industry will then be in a position to implement harmonised international standards.

Human element

25 The proposal is consistent with the objectives of the Organization and is based on the human element vision, principles and goals for the Organization (A.947(23)). The completed checklist for considering human element issues by the IMO bodies given in annex to MSC-MEPC.7/Circ.1 and referred to in MSC-MEPC.1/Circ.4/Rev.3 is set out in Annex 8.

Priority/Urgency

26 It has been widely recognized during the e-navigation user needs identification process that a wide range of stakeholders in the maritime domain (mariners, shore-based authorities, ports, ship owners, agents etc.) would benefit from the implementation of e-navigation. It is important that the current momentum is not lost.

Action requested of the Committee

27 The Committee is requested to:

.1 agree to amend the existing the High-level Action 5.2.6 to read "Development and implementation of e-navigation" for inclusion in the High-level Action Plans for 2016-2019; and

.2 approve, for inclusion in the biennial or post biennial agenda of the NCSR Sub-Committee, as appropriate, the following planned outputs:

.1 Guidelines on standardized modes of operation (S-mode) (Annex 1);

.2 Amendments to the Revised performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to harmonization of bridge design and display of information (Annex 2);

.3 Revision of 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 (Annex 3);

.4 Amendments to the General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids (resolution A.694(17)) relating to Built In Integrity Testing (BIIT) for navigation equipment (Annex 4);

.5 Guidelines on Harmonized display of navigation information received via communications equipment (Annex 5); and

.6 Consideration of reports on development and implementation of Maritime Service Portfolios (MSPs) (and other e-navigation reports) by Member States and other international organizations (Annex 6).

Annex 1
Output 1

Description

1 Draft Guidelines on standardized modes of operation, S-mode. This will describe/ outline a standardized mode of operation and display for all navigational equipment and provide seafarers with the ability to operate all navigation equipment in a standardized manner, thereby improving the safety and efficiency of navigation.

Background

2 Today with many different manufacturers of navigational equipment, the display and controls differ from one equipment to another which causes confusion for the mariner.

3 To rectify this problem, the International Federation of Shipmasters' Associations (IFSMA) proposed and described an S-mode of operation in a submission to NAV 54 (NAV 54/13/1 refers).

4 A challenge faced by all mariners, is to become quickly familiar with the wide range of systems and models of navigational equipment supplied by different manufactures.

5 S-mode calls for all navigation systems in the future to have a standard or 'S-Mode' for display and control, that when activated (with a single operator action) defaults to a standard display (e.g., head-up display, relative vectors, etc.) and a standard user interface for key tasks.

6 The Guidelines may also incorporate provisions for the configuration of personal settings that may be stored within the system and which would allow a user to rapidly customise the system to their preferred settings (overlay custom display features or give access to specialist information).

IMO's Objectives

7 This planned output is within the scope of IMO's objectives and is related to the scope of the Strategic Plan as part of the long term e-navigation strategy.

Need

8 Because of the increasing complexity and functionality of navigation equipment, a need has arisen for navigation systems to have more standardized functionality to enable better operation to support good decision making.

Analysis of issues

9 This proposal produces a new guideline for system design, to help mariners operate all navigation displays in standard manner, improving the safety of navigation.

Analysis of implications

10 This proposal does not introduce any significant additional burden (legislative or administrative) to the maritime industry, but merely proposes Guidelines on standardized modes of operation, S-mode, including store and recall for various situations. The proposal will have implications for shipbuilders, Classification Societies, Competent Authorities, the end users and the equipment manufacturers.

Benefits

11 The benefit of S-mode is that all shipboard navigation systems will have the ability to change to a standardized navigation functionality, by a single operator action. S-Mode would supplement additional manufacturer-supplied modes. S-Mode supports the objectives of e-navigation to improve navigation decision making and hence safety and protection of the marine environment.

Industry Standards

12 Currently no industry standards exist.

Output

13 The output in SMART terms is as follows:

.1 The output in this case is the preparation of Draft Guidelines on standardized modes of operation, S-mode;

.2 The output will be a completed draft, approved by the NCSR Sub-Committee and presented to MSC for final approval;

.3 The NCSR Sub-Committee can work on the output based on substantive proposals from Member Governments or organizations with only detailed drafting work required; and

.4 The output is anticipated to be achievable within two sessions of the NCSR Sub-Committee in order to complete the draft. It is proposed that the work is planned for the 2018-2019 biennium (NCSR 5 and NCSR 6) giving time for Member Governments and organizations to prepare inputs, and also in order to divide the workload for the NCSR Sub-Committee.

14 The proposal is consistent with the objectives of the Organization, and is consistent with the human element guidance and principles set out in resolution A.947(23). The completed human factors checklist from MSC-MEPC.7/Circ.1, as referred to in MSC-MEPC.1/Circ.4/Rev.3, is set out in Annex 8.

15 The proposal has also been made with reference to Administrative Requirements and Burdens in accordance with MSC-MEPC.1/Circ.4/Rev.3 and the checklist is set out in Annex 9.

Priority Urgency

16 Medium priority; other areas of e-navigation may need to be addressed first.

Action requested

17 The Committee is requested to include in the post-biennial agenda of the Committee an output on Draft Guidelines on standardized modes of operation, S-mode, with 2 sessions needed to complete the item.

Annex 2
Output 2

Description

1 An update, by adding new modules, to the Revised performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information.

Background

2 The last revision of the IMO performance standards for INS, made the performance standards modular. This means that provision for any new facility can be added to the performance standards by adding an appropriate module for that facility.

3 The modular concept of INS performance standards provides provisions for individual configurations and extensions, where required. Currently, the performance standard contains four modules relating to: integration of navigational information (A), operational requirement (B), alert management (C) and documentation requirements (D).

IMO's Objectives

4 This planned output is within the scope of IMO's objectives and is related to the scope of the Strategic Plan as part of the long term e-navigation strategy.

Need

5 To reduce the risk of accidents that may result from important information not being acted upon due to, for example, lack of situational awareness or information overload, it is necessary to integrate received navigational information via communications equipment into the integrated navigation system in a harmonised and agreed way. In this way information will be available at the appropriate display while not affecting the mandatory navigational tasks.

Analysis of Issue

6 e-navigation relies on integration of relevant navigational information and INS provides an effective means to integrate navigation equipment data. By providing integrated and combined functions to avoid geographic, traffic and environmental hazards, INS enhances the safety of navigation.

7 Although module A of MSC.252(83) is suitable for integrating navigation information required for e-navigation, the INS performance standard will require two new modules so that information received by communications equipment can be integrated as well as properly displayed. The proposed two new modules relate to:

- harmonization of bridge design; and
- display of information

8 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. This module will support the provisions of SOLAS Chapter V Regulation 15 relating to bridge design, design and arrangement of navigational systems and equipment and bridge procedures.

9 Another new module on display of information will ensure that the INS can display the information received via communications equipment. This module will outline the standardized interfaces for data exchange to support transfer of information from communication equipment to an INS interface so that information received via such equipment can be processed, filtered, routed and displayed on the navigational system.

Analysis of Implications

10 This proposal does not introduce any significant additional burden (legislative or administrative) to the maritime industry, but merely proposes that new modules are introduced in the Performance Standards for INS to make the bridge design suitable for use in e-navigation. The functionality specified within these new modules will support and enable the use of standalone equipment for e-navigation as well. The proposal will have implications for ship designers, ship builders, Classification Societies, Competent Authorities, the end users and the equipment manufacturers.

Benefits

11 New modules will add functionality to the INS Performance Standard which will facilitate a simplified and harmonised bridge design and ensure relevant information is displayed, including information received via communications equipment. This will result in reducing complexity without compromising existing navigational functionality in INS.

Industry Standards

12 IEC 61924-2 ed1 refers to INS

Output

13 The output in SMART terms is as follows:

.1 The output in this case is the preparation of Draft new modules, to the Revised performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information;

.2 The output will be a completed draft, approved by the NCSR Sub-Committee and presented to MSC for final approval;

.3 The NCSR Sub-Committee can work on the output based on substantive proposals from Member Governments or organizations with only detailed drafting work required; and

.4 The output is anticipated to be achievable within two sessions of the NCSR Sub-Committee in order to complete the draft. It is proposed that the work is planned for the 2016-2017 biennium (NCSR 3 and NCSR 4) giving time for Member Governments and organizations to prepare inputs, and also in order to divide the workload for the NCSR Sub-Committee.

14 The proposal is consistent with the objectives of the Organization, and is consistent with the human element guidance and principles set out in resolution A.947(23). The completed human factors checklist from MSC-MEPC.7/Circ.1, as referred to in MSC-MEPC.1/Circ.4/Rev.3, is set out in Annex 8.

15 The proposal has also been made with reference to Administrative Requirements and Burdens in accordance with MSC-MEPC.1/Circ.4/Rev.3 and the checklist is set out in Annex 9.

Priority Urgency

16 High priority, needs to be harmonized with other e-navigation outputs. High prioritised outputs will be further developed by Norway as proposed in MSC 94/18/10, para 9.

Action requested

17 The Committee is requested to include in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda of NCSR3, an output on drafting new modules to the INS performance standards.

Annex 3
Output 3

Description

1 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.

Background

2 Ship reporting systems and reporting requirements are used to provide, gather or exchange information through radio reports. The information is used to provide data for many purposes including search and rescue, vessel traffic services, weather forecasting and prevention of marine pollution.

3 The existing guidelines and criteria for ship reporting systems (Resolution MSC.43(64)) were initially adopted on 9 December 1994. This guideline outlined the criteria for planning, proposing and implementing adopted ship reporting systems by Contracting Governments.

4 In addition, general principles for ship reporting systems and ship reporting requirements are provided in Resolution A.851(20). This further includes guidance for reporting incidents involving dangerous goods, harmful substances and/or marine pollutants.

IMO's Objectives

5 This planned output is within the scope of IMO's objectives and is related to the scope of the Strategic Plan as part of the long term e-navigation strategy.

Need

6 Currently there are no harmonized standards for ship reporting by electronic means and a considerable burden is placed on the ship to complete different paper forms for different identities ashore such as customs, immigration, cargo manifest etc. A fully automated electronic system will have a benefit and reduce administrative burdens.

7 It is important however that IMO ensure that a unified and harmonized system is adopted worldwide before regional systems are introduced.

Analysis of Issue

8 In the absence of harmonized standards for ship reporting systems, national ship reporting systems may use different procedures and reporting formats. Such different procedures and reporting formats create an additional burden for ships moving from one area to another covered by different ship reporting systems. Such administrative burdens could be alleviated if ship reporting systems and reporting requirements were made in accordance with a single, standard format and procedures.

9 A revision and update to the existing guidelines will provide standardised and automated reporting of ships information through single entry of reportable information by electronic means. Single reporting arrangements may also be referred to as "single window".

10 The revised guideline will assist automated collection of internal ship data for reporting and automated or semi-automated digital distribution as required by coastal and

port states. The required reportable information will contain both “static” documentation and “dynamic” information.

11 The revised guideline will consider digital reporting formats based on recognized internationally harmonized standards such as IMO FAL Forms or SN.1/Circ.289, as considered appropriate.

12 The updated and improved guideline will support the provisions of SOLAS Chapter V Regulation 11 relating to ship reporting systems.

Analysis of Implications

13 This proposal does not introduce any significant additional burden (legislative or administrative) to the maritime industry, but merely proposes that the new guidelines are used when developing such systems to ensure harmonisation.

14 The implications of Updated Guidelines will be that all countries wanting to take part in automated reporting will have clear guidance on how to implement this part of the e-navigation strategy. Furthermore it will be clear from the guidelines which standards will apply to the data exchange and data format.

Benefits

15 The benefit will be a worldwide harmonised automated ship reporting system saving cost and reducing administrative burden, while reducing the non-navigational workload of the navigator and increasing the efficiency of trade.

Industry Standards

16 No industry standards currently exist. The development of industry standards requires the establishment of the Common Maritime Data Structure based on the IHO S-100 series of international standards.

Output

17 The output in SMART terms is as follows:

.1 The output in this case is the preparation of Draft revised 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;

.2 The output will be a completed draft, approved by the NCSR Sub-Committee and presented to MSC for final approval;

.3 The NCSR Sub-Committee can work on the output based on substantive proposals from Member Governments or organizations with only detailed drafting work required; and

.4 The output is anticipated to be achievable within two sessions of the NCSR Sub-Committee in order to complete the draft. It is proposed that the work is planned for the 2016-2017 biennium (NCSR 3 and NCSR 4) giving time for Member Governments and organizations to prepare inputs, and also in order to divide the workload for the NCSR Sub-Committee.

18 The proposal is consistent with the objectives of the Organization, and is consistent with the human element guidance and principles set out in resolution A.947(23). The completed human factors checklist from MSC-MEPC.7/Circ.1, as referred to in MSC-MEPC.1/Circ.4/Rev.3, is set out in Annex 8.

19 The proposal has also been made with reference to Administrative Requirements and Burdens in accordance with MSC-MEPC.1/Circ.4/Rev.3 and the checklist is set out in Annex 9.

Priority Urgency

20 High priority, would be of great benefit but will depend on the INS task being completed. High prioritised outputs will be further developed by Norway as proposed in MSC 94/18/10, para 9.

Action requested

21 The Committee is requested to include in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda of NCSR3, an output on revising the Guidelines and criteria for ship reporting systems.

Annex 4
Output 4

Description

1 Revise the General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids (resolution A.694(17)) relating to Built In Integrity Testing (BIIT) for navigation equipment.

Background

2 During the user needs analysis stage of the e-navigation process, a large number of navigators advised that there was no indication of the quality and integrity of navigational data displayed.

3 The BIIT functionality will be a critical component of navigational equipment to ensure a level of confidence in their correct operation. It will provide the user with information about non-functionality of the equipment in an unambiguous and timely manner.

IMO's Objectives

4 This planned output is within the scope of IMO's objectives and is related to the scope of the Strategic Plan as part of the long term e-navigation strategy.

Compelling Need

5 Taking into account the safety of navigation, there is a compelling need to ensure that the navigator has is presented with information that is accurate and reliable at all times with an indication when the equipment is not working satisfactorily.

Analysis of Issue

6 Currently it is not possible to establish if navigational equipment is displaying the correct information without manually cross checking with other equipment.

7 The BIIT will provide standardized self-check capability to ensure automatic quality and integrity verification testing for navigational equipment.

8 BIIT functionality will provide options for power-up testing, initiated testing or periodical/continuous testing (in the background) of the navigational equipment. Such testing options may be provided by the vendor as part of the system application itself or they could be configured by the user during installation.

9 The type approval process for navigation equipment needs to be further developed to ensure BIIT is included.

Analysis of Implications

10 This proposal does not introduce any significant additional burden (legislative or administrative) to the maritime industry, but merely proposes that additional requirements are added to the General Requirements resolution. It will mean that the relevant Industry Standards will need to be updated (IEC 60945). The proposal will have implications for equipment manufacturers and the end users.

Benefits

11 Requirements for built in integrity testing of navigation equipment will ensure that navigators are confident that the information presented to them is accurate.

Industry Standards

12 There are currently no industry standards other than IEC 60945 which will need to be updated.

Output

13 The output in SMART terms is as follows:

.1 The output in this case is the preparation of a revision of the General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids (resolution A.694(17)) relating to Built In Integrity Testing (BIIT) for navigation equipment;

.2 The output will be a completed draft, approved by the NCSR Sub-Committee and presented to MSC for final approval;

.3 The NCSR Sub-Committee can work on the output based on substantive proposals from Member Governments or organizations with only detailed drafting work required as long as the revision is only for the addition of BIIT; and

.4 The output is anticipated to be achievable within two sessions of the NCSR Sub-Committee in order to complete the draft. It is proposed that the work is planned for the 2018-2019 biennium (NCSR 5 and NCSR 6) giving time for Member Governments and organizations to prepare inputs, and also in order to divide the workload for the NCSR Sub-Committee.

14 The proposal is consistent with the objectives of the Organization, and is consistent with the human element guidance and principles set out in resolution A.947(23). The completed human factors checklist from MSC-MEPC.7/Circ.1, as referred to in MSC-MEPC.1/Circ.4/Rev.3, is set out in Annex 8.

15 The proposal has also been made with reference to Administrative Requirements and Burdens in accordance with MSC-MEPC.1/Circ.4/Rev.3 and the checklist is set out in Annex 9.

Priority Urgency

16 Medium.

Action requested

17 The Committee is requested to include in the post-biennial agenda of the Committee an output to revise the General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids (resolution A.694(17)) relating to Built In Integrity Testing (BIIT) for navigation equipment with 2 sessions needed to complete the item.

Annex 5
Output 5

Description

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

Background

2 Broadcast and reception of Maritime Safety Information (MSI) by means of direct printing is an important part of the GMDSS. During the user need analysis stage of e-navigation, mariners expressed the need to sort and display MSI more effectively.

3 On most ships, MSI information received via communications equipment such as NAVTEX and INMARSAT-C are either displayed on separate screens or printed on a scroll of paper. The coordinates of the MSI must then be mentally compared to that of the vessel by the watchkeeper to assess relevance and risk. This is time-consuming, distracting and is susceptible to human error.

4 It is important that this information is displayed as task oriented on the bridge and harmonized with other navigation related information without obscuring critical navigation information.

IMO's Objectives

5 This planned output is within the scope of IMO's objectives and is related to the scope of the Strategic Plan as part of the long term e-navigation strategy.

Compelling Need

6 Although IEC TC80 has recently updated its test standards, IEC 62288 ed2, for the display of such information, It is necessary to review this work in relation to the reception of MSPs for example.

7 It is important however that IMO ensure that a unified and harmonized and user friendly solution is integrated and adopted. The solution must be based on an agreed standard.

Analysis of Issue

8 Most navigational information received via communications equipment is currently printed and has to be read, analysed and transferred where necessary rather than being displayed on the navigational systems. To fulfil the requirements for safe navigation to include all means and information in the decision making, a presentation of this information at the navigational workstations is essential.

9 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 onboard in their decision making and enhance the safety of navigation.

10 The new guideline will include standard symbology and text support taking into account human element and ergonomic design principles to ensure useful presentation and

prevent information overload. The guideline will consider IMO Performance Standards for the Presentation of Navigation-Related Information on Shipborne Navigational Displays (resolution MSC 191(79)).

Analysis of Implications

11 This proposal does not introduce any significant additional burden (legislative or administrative) to the maritime industry, but merely proposes that Guidelines for the harmonized display of navigation information received via communications equipment are introduced. The proposal will have implications for equipment manufacturers and end users.

Benefits

12 The display of the information in harmonised and effective way increases the overall awareness of the information improving the situational awareness as well as reducing the mistakes made transferring information from paper outputs.

Industry Standards

13 IEC 62288 ed 2, Presentation of navigation related information, Annex A para 5.4 contains information related to the display of MSI which might be useful when drafting the Guidelines.

Output

14 The output in SMART terms is as follows:

.1 The output in this case is the preparation of Draft Guidelines for the harmonized display of navigation information received via communications equipment;

.2 The output will be a completed draft, approved by the NCSR Sub-Committee and presented to MSC for final approval;

.3 The NCSR Sub-Committee can work on the output based on substantive proposals from Member Governments or organizations, including the work already done by IEC TC80 in IEC 62288 ed2, with only detailed drafting work required; and

.4 The output is anticipated to be achievable within two sessions of the NCSR Sub-Committee in order to complete the draft. It is proposed that the work is planned for the 2016-2017 biennium (NCSR 3 and NCSR 4) giving time for Member Governments and organizations to prepare inputs, and also in order to divide the workload for the NCSR Sub-Committee.

15 The proposal is consistent with the objectives of the Organization, and is consistent with the human element guidance and principles set out in resolution A.947(23). The completed human factors checklist from MSC-MEPC.7/Circ.1, as referred to in MSC-MEPC.1/Circ.4/Rev.3, is set out in Annex 8.

16 The proposal has also been made with reference to Administrative Requirements and Burdens in accordance with MSC-MEPC.1/Circ.4/Rev.3 and the checklist is set out in Annex 9.

Priority Urgency

17 High. High prioritised outputs will be further developed by Norway as proposed in MSC 94/18/10, para 9.

Action requested

18 The Committee is requested to include in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda of NCSR3, an output on Guidelines for the harmonized display of navigation information received via communications equipment

Annex 6
Output 6

Description

1 Consideration of reports on development and implementation of Maritime Service Portfolios (MSPs) (and other e-navigation reports) from Member States and International Organizations.

2 This output should not only allow IMO to provide the “leading and coordinating role” but also the possibility of considering reports on e-navigation development and implementation of MSPs and reports on e-navigation issues from Member States and international organizations, including proposals to deal with the remaining non-prioritized potential e-navigation solutions.

Background

3 As a result of the e-navigation user needs, and gap analysis processes, one of the prioritised solutions centres on MSPs. The MSPs provide the definitive basis for the relationship between ship and shore under e-navigation. In order to ensure that shore based services are harmonised and compatible internationally, the types of services need to be properly reviewed, particularly when new services are developed. This is analogous to the work already undertaken by MSC and NCSR on routeing measures and ship reporting. Several MSP initiatives are ongoing in regional projects and in order that a global solution can work, guidelines are needed from the relevant International Organizations.

IMO’s Objectives

4 This planned output is within the scope of IMO’s objectives and is related to the scope of the Strategic Plan as part of the long term e-navigation strategy. This will ensure that proposals for regional solutions, which will provide services to ships, are harmonised and compatible with global e-navigation solutions. This would not preclude new and innovative contributions to the MSPs being made but would ensure that such contributions are appropriately scrutinised.

Need

5 There is a need to harmonise e-navigation services quickly to avoid the establishment of many differing services and systems with resultant regional protocols being adopted. There is also a need to ensure that the MSPs provide a robust basis for compatibility and interoperability between regionally implemented solutions, services and systems.

Analysis of Issue

6 MSPs are a key part of the e-navigation strategy as the basis for ship-shore service provision. Harmonisation of services and systems around the world is a priority.

Analysis of Implications

7 This proposal does not introduce any significant additional burden (legislative or administrative) to the maritime industry, but proposes that regular reports are received from Member States and International Organizations (such as IHO and IALA), which have taken responsibility for coordinating some parts of e-navigation.

Benefits

8 This process will ensure that IMO retains the leading role in harmonising the implementation of e-navigation and ensuring compatibility and interoperability of regionally implemented solutions. These reports will allow also facilitate Member States being able to monitor the activities of co-operating organizations during the e-navigation implementation phase.

Industry Standards

9 IALA is already taking a leading role in developing MSPs in cooperation with other organizations, including IHO.

Output

10 The output in SMART terms is as follows:

.1 Consideration of reports on development and implementation of Maritime Service Portfolios (MSPs) (and other e-navigation reports) from Member States and other International Organizations.

.2 The output will be regular reports received by the Organisation from Member States and International Organizations as submissions to the Committee and the NCSR Sub-Committee;

.3 The Committee can review the reports and take action as appropriate; and

.4 The output is anticipated to be achievable over the next two biennia, 2016–2017 and 2018-2019.

11 The proposal is consistent with the objectives of the Organization, and is consistent with the human element guidance and principles set out in resolution A.947(23). The completed human factors checklist from MSC-MEPC.7/Circ.1, as referred to in MSC-MEPC.1/Circ.4/Rev.3, is set out in Annex 8.

12 The proposal has also been made with reference to Administrative Requirements and Burdens in accordance with MSC-MEPC.1/Circ.4/Rev.3 and the checklist is set out in Annex 9.

Priority Urgency

13 This is an ongoing process.

Action requested

14 The Committee is requested to include in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda for NCSR 3, an output on Consideration of reports on development and implementation of Maritime Service Portfolios (MSPs) (and other e-navigation reports) from Member States and other International Organizations for two sessions and to also consider including it on the post biennial Agenda of the Committee until 2019 as the time-line for the approved SIP is for 2016-2019.

Annex 7

Tables describing the 5 Solutions and the original tasks showing the proposed revision and merging of tasks

1 The tables below show the original 17 Tasks defined in the e-navigation Strategy Implementation Plan (SIP) and the comments made by the co-sponsors on how to merge tasks and to also show tasks that are already complete. From these tables come the 6 Outputs that are proposed for inclusion in the High-level Action Plan for the following two biennia (2016-17 and 2018-19). They are listed in order of the 5 agreed Solutions defined in the SIP.

S1 - improved, harmonized and user-friendly bridge design;

SIP Task	SIP Definition	Comments	Action
T1	*Guidelines on Human Centred Design (HCD) for e-navigational systems*	Now combined with UTEA and SQA and named "Guideline on Software Quality Assurance and Human Centred Design for e-navigation"	expected to be finalized at NCSR 2 and approved by MSC 95
T2	*Guidelines on Usability Testing, Evaluation and Assessment (UTEA) of e-navigation systems.*	Merged with T1	expected to be finalized at NCSR 2 and approved by MSC 95
T3	*Guidelines on electronic equipment manuals.*	Consequential to T1 and T2 not necessary to carry out more work (industry to implement)	For Industry
T4	*Guidelines on S-mode.*	***Draft Guidelines on standardized modes of operation, and S-mode functionality on relevant equipment, taking into account T1 and T2***	***Proposed Output 1***
T5	*a) Guidelines on implementation of Bridge Alert Management.* *b) Revised Performance Standards on BAM.*		Completed
T6	*Guidelines on the display of accuracy and reliability of navigation equipment.*	Industry to implement	For Industry
T7	*a) Report on the suitability of INS (as part of the e-navigation harmonised equipment)* *b) New or additional modules for the Performance Standards for INS.*	***(a) Report on the suitability of INS (see S4 below) and*** ***(b) Add new modules for the Performance Standards for INS***	***Proposed Output 2***

2 The outputs required to achieve S1, an improved, harmonized and user-friendly bridge design is to:

.1 develop Guidelines on standardized modes of operation, S-mode; and

.2 To update, by adding new modules, the Revised performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information .

3 The co-sponsors considered that the footnotes in regulation 15 of Chapter V of SOLAS might need amending with a view to incorporate the appropriate guidelines and allocate responsibilities with a view to enhancing the safety of navigation before S1 can be fully met.

S2 - means for standardized and automated reporting;

SIP Task	SIP Definition	Comments	Action
T8	*Updated Guidelines on ship reporting to reflect the single window concept* *Refer to MSC.43(64) as amended by MSC.111(73) and A.851(20)*	***Updated Guidelines on ship reporting to reflect the single window concept including the automated collection and organization of internal ship data for reporting taking into account the work of FAL 40***	***Proposed Output 3***
T9	*Technical Report on the automated collection of internal ship data for reporting.*	Merged with T8 above	
T15	*Guidelines on seamless integration of all currently available communications infrastructure and how they can be used and what future systems are being developed along with the revised GMDSS.*	Seamless integration of available communications infrastructure will be ongoing by the communications suppliers as technology develops	For Industry

4 The output required to achieve S2, the means for standardized and automated reporting is to:

.1 Update the Guidelines and criteria on ship reporting (see MSC Res.43(64) as amended by MSC Res.111(73)) to allow standardised and harmonized electronic ship reporting, and the automated collection of internal ships data for reporting such as the relevant information contained in the FAL forms and national requirements. The first step can be national and regional harmonisation.

5 Industry will need to provide the relevant communication links and appropriate software both for the ship and the shore in accordance with harmonized standards.

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

SIP Task	SIP Definition	Comments	Action
T6	*Guidelines on the display of accuracy and reliability of navigation equipment.*	Merged with T12 see below	
T10	*Revised Resolution on the general requirements including Built In Integrity Testing.* *Revised IEC Standard on General Requirements including Built In Integrity Testing*	***Prepare a draft revision of Res A.694(17) in order to include Built In Integrity Testing (BIIT) especially for navigational related equipment***. Consequently IEC standard 60945 will need to be revised	***Proposed output 4***
T11	*Guidelines for Software Quality Assurance (SQA) in e-navigation.*	Complete and incorporated with T1 and T2	expected to be finalized at NCSR 2 and approved by MSC 95
T12 merged with T6	*Guidelines on how to improve reliability and resilience of onboard PNT systems by integration with external systems and on the display of accuracy and reliability of navigation equipment.*	Improved industry standards required on how to improve reliability and resilience of onboard PNT systems by integration with external systems based on the new multi receiver system performance standards.	Completed awaiting MSC 95 approval

6 The output required to achieve S3 the improved reliability, resilience and integrity of bridge equipment and navigation information is to:

.1 to revise Resolution A.694(17) to include BIIT especially for navigational equipment in order that the navigator can check that the equipment is working correctly and is delivering reliable, resilient and high integrity information for safe and secure navigation.

7 Industry should use the revised resolution on BIIT as well as the Guideline on Software Quality Assurance and Human Centred Design for e-navigation when designing navigational equipment and consequently to improve relevant industry standards for PNT and other navigational systems.

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

SIP Task	Sip Definition	Comments	Action
T6	*Guidelines on the display of accuracy and reliability of navigation equipment.*	See S3 tasks T6 and T12	
T7	*Report on the suitability of INS (for displaying information)* *New or additional modules for the Performance Standards for INS.*	See S1 task T7	
T11	*Guidelines for Software Quality Assurance (SQA) in e-navigation.*	Completed and merged with T1 and T2	Completed
T13	*Guidelines on the harmonized display of navigation information received from communications equipment.*	***Guidelines on the harmonized display of navigation information received from communications equipment***	***Proposed Output 5***
T14	*Guidelines on a Common Maritime Data Structure.* *Further develop the IEC standards for data exchange used onboard including firewalls.*	IMO/IHO harmonization group on data modelling according to MSC 90/28 para 10.12 and its terms of reference set out in MSC 90/28/Add.1 annex 22	Work ongoing
T15	*Guidelines on seamless integration of all currently available communications infrastructure and how they can be used and what future systems are being developed along with the revised GMDSS.*	See S2 T15	For Industry
T16	*Report on the Harmonization of conventions and regulations for navigation and communication equipment would be best carried out.*	To be considered after the completion of the SIP.	Later

8 The output required to achieve S4, the integration and presentation of available information in graphical displays received via communication equipment is to:

.1 to add modules to the INS performance standards to display information received from communications equipment and to draft guidelines for the harmonized display of navigation information received via communications equipment taking into account the work of the IMO/IHO harmonization group on data modelling. (Note: The INS performance standards are taken care of in S1)

9 Industry should use the Guidelines on the harmonized display of navigation information received from communications equipment and the Guideline on Software Quality Assurance and Human Centred Design for e-navigation and report on any changes to conventions and regulations that may need to be addressed in the future.

S5 – improved Communication of VTS Service Portfolio (not limited to VTS stations).

SIP Task	SIP Description	Comments	Action
T17	*Resolution on Maritime Service Portfolios*	***Resolution on Maritime Service Portfolios*** To be proposed by relevant shore based organization(s) via (a) member state(s) after completing the relevant Guidelines	***Proposed Output 6***

10 The output required to achieve S5 (previously S9), the improved Communication of VTS Service Portfolio (not limited to VTS stations) is to:

.1 Consideration of reports on development and implementation of Maritime Service Portfolios (MSPs) (and other e-navigation reports) by Member States and other international organizations and take action as appropriate.

11 In the case of MSPs, industry to provide appropriate systems and services based on the MSP guidelines both ashore and on ships, taking into account the Guideline on Software Quality Assurance and Human Centred Design for e-navigation, as well as relevant Recommendations and Guidelines from other International Organizations.

Annex 8

CHECKLIST FOR CONSIDERING HUMAN ELEMENT ISSUES BY IMO BODIES

Instructions:
If the answer to any of the questions below is:

(A) **YES**, the preparing body should provide supporting details and/or recommendation for further work.
(B) **NO**, the preparing body should make proper justification as to why human element issues were not considered.
© **NA** (Not Applicable), the preparing body should make proper justification as to why human element issues were not considered applicable.

Subject Being Assessed: (e.g. Resolution, Instrument, Circular being considered)

Responsible Body: (e.g. Committee, Sub-Committee, Working Group, Correspondence Group, Member State)

1.	Was the human element considered during development or amendment process related to this subject?	☐Yes ☐No ☑NA
2.	Has input from seafarers or their proxies been solicited?	☐Yes ☐No ☑NA
3.	Are the solutions proposed for the subject in agreement with existing instruments? (Identify instruments considered in comments section)	☑Yes ☐No ☐NA
4.	Have human element solutions been made as an alternative and/or in conjunction with technical solutions?	☐Yes ☐No ☑NA
5.	Has human element guidance on the application and/or implementation of the proposed solution been provided for the following:	
•	Administrations?	☐Yes ☐No ☑NA
•	Shipowners/Managers?	☐Yes ☐No ☑NA
•	Seafarers?	☐Yes ☐No ☑NA
•	Surveyors?	☐Yes ☐No ☑NA
6.	At some point, before final adoption, has the solution been reviewed or considered by a relevant IMO body with relevant human element expertise?	☐Yes ☐No ☑NA
7.	Does the solution address safeguards to avoid single person errors?	☐Yes ☐No ☑NA
8.	Does the solution address safeguards to avoid organizational errors?	☐Yes ☐No ☑NA
9.	If the proposal is to be directed at seafarers, is the information in a form that can be presented to and is easily understood by the seafarer?	☐Yes ☐No ☑NA
10.	Have human element experts been consulted in development of the solution?	☐Yes ☐No ☑NA
11.	**HUMAN ELEMENT**: **Has the proposal been assessed against each of the factors below?**	
☑	CREWING. The number of qualified personnel required and available, to safely operate, maintain, support, and provide training for system.	☐Yes ☐No ☑NA
☑	PERSONNEL. The necessary knowledge, skills, abilities, and experience levels that are needed to properly perform job tasks.	☐Yes ☐No ☑NA
☑	TRAINING. The process and tools by which personnel acquire or improve the necessary knowledge, skills, and abilities to achieve desired job/task performance.	☐Yes ☐No ☑NA
☑	OCCUPATIONAL HEALTH AND SAFETY. The management systems, programmes, procedures, policies, training, documentation, equipment, etc. to properly manage risks.	☐Yes ☐No ☑NA
☑	WORKING ENVIRONMENT. Conditions that are necessary to sustain the safety, health, and comfort of those on working on board, such as noise, vibration, lighting, climate, and other factors that affect crew endurance, fatigue, alertness and morale.	☐Yes ☐No ☑NA

☑	HUMAN SURVIVABILITY. System features that reduce the risk of illness, injury, or death in a catastrophic event such as fire, explosion, spill, collision, flooding, or intentional attack. The assessment should consider desired human performance in emergency situations for detection, response, evacuation, survival and rescue and the interface with emergency procedures, systems, facilities and equipment.	☐Yes ☐No ☑NA
☑	HUMAN FACTORS ENGINEERING. Human-system interface to be consistent with the physical, cognitive, and sensory abilities of the user population.	☐Yes ☐No ☑NA

Comments: The Human Element (Human Factors) has been addressed during previous e-navigation development stages using a modified application of the IMO's Human Element Analysis Process (HEAP) (NAV 56/8, COMSAR 16/11 and NAV 58/INF.10 refer).

In addition, a draft IMO Human Centred Design (HCD) Guideline for e-navigation has been produced. A Correspondence Group established by NCSR 1 is harmonizing the draft HCD guideline with draft Software Quality Assurance (SQA) and draft Usability, Testing and Evaluation (U-TEA) guidelines. The combined and harmonized e-navigation guidelines will be provided to NCSR 2 for consideration/approval.

ANNEX 9

CHECKLIST FOR IDENTIFYING ADMINISTRATIVE REQUIREMENTS AND BURDENS

The Checklist for Identifying Administrative Requirements and Burdens should be used when preparing the analysis of implications required in submissions of proposals for inclusion of unplanned outputs. For the purpose of this analysis, the terms "administrative requirements" and "burdens" are as defined in resolution A.1043(27), i.e. administrative requirements are an obligation arising from future IMO mandatory instruments to provide or retain information or data, and administrative burdens are those administrative requirements that are or have become unnecessary, disproportionate or even obsolete.

Instructions:

(A) If the answer to any of the questions below is **YES**, the Member State proposing an unplanned output should provide supporting details on whether the burdens are likely to involve start-up and/or ongoing costs. The Member State should also make a brief description of the requirement and, if possible, provide recommendations for further work (e.g. would it be possible to combine the activity with an existing requirement).

(B) If the proposal for the unplanned output does not contain such an activity, answer **NR** (Not required).

1 Notification and reporting? Reporting certain events before or after the event has taken place, e.g. notification of voyage, statistical reporting for IMO Members, etc.	NR	~~Yes~~ ~~□ Start-up~~ ~~□ Ongoing~~
Description: (if the answer is yes)		
2 Record keeping? Keeping statutory documents up to date, e.g. records of accidents, records of cargo, records of inspections, records of education, etc.	NR	~~Yes~~ ~~□ Start-up~~ ~~□ Ongoing~~
Description: (if the answer is yes)		
3 Publication and documentation? Producing documents for third parties, e.g. warning signs, registration displays, publication of results of testing, etc.	NR	~~Yes~~ ~~□ Start-up~~ ~~□ Ongoing~~
Description: (if the answer is yes)		
4 Permits or applications? Applying for and maintaining permission to operate, e.g. certificates, classification society costs, etc.	NR	~~Yes~~ ~~□ Start-up~~ ~~□ Ongoing~~
Description: (if the answer is yes)		
5 Other identified burdens?	NR	~~Yes~~ ~~□ Start-up~~ ~~□ Ongoing~~
Description: (if the answer is yes)		

INTERNATIONAL MARITIME ORGANIZATION

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MARITIME SAFETY COMMITTE
95th session
Agenda item 19

MSC 95/19/xx
xx April 2015
Original: ENGLISH

WORK PROGRAMME

Comments on implementing e-navigation to enhance the safety of navigation and protection of the marine environment

DRAFT

Submitted by the International Hydrographic Organization

SUMMARY

Executive summary:	This document presents comments, from the IHO perspective, on the proposal to approve six outputs on e-navigation in relation with the proposed amended High-level Action 5.2.6, "Development and implementation of e-navigation."
Strategic direction:	5.2
High-level action:	5.2.6
Planned output:	No related provisions
Action to be taken:	Paragraph 19
Related documents:	Resolution MSC.232(82); MSC-MEPC.1/Circ.4/Rev.3; MSC 90/28; MSC 90/28/Add.1; MSC 94/18/8; MSC 94/18/10; MSC 95/19/aa; NAV 59/6/4; NAV 59/INF.6; NCSR 2/11; NCSR 2/22/2

Background

1. This document is submitted in accordance with paragraph 6.12.5 of the Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies (MSC-MEPC.1/Circ.4/Rev.3), and comments on document MSC 95/19/aa.

2. At its 94th session the Maritime Safety Committee (MSC) approved the e-navigation Strategy Implementation Plan (SIP), as set out in document NCSR 1/28, Annex 7. The Committee also considered document MSC 94/18/8, proposing the plan of work for the Organization for the harmonized implementation and future development of e-navigation, together with document MSC 94/18/10, and, recognizing the importance of e-navigation and that the Organization should take a leading role, invited Member Governments to:

.1 review each of the tasks listed in the SIP with a view to reducing the numbers of outputs;

.2 prepare a full justification for each reviewed output in accordance with the information required in Annex 3 to resolution A.1062(28);

.3 prepare a comprehensive prioritized plan of work, which should include the time required for the completion of each output; and

.4 submit the information to MSC 95 for consideration with a view for inclusion in the post-biennial agenda of the Committee.

3. Accordingly, document MSC 95/19/aa proposes an amended High-level Action 5.2.6 on "Development and implementation of e-navigation" and six related outputs:

.1 guidelines on standardized modes of operation (S-mode);

.2 an update to the revised performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information;

.3 a revision of 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;

.4 amendments to the General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids (resolution A.694(17)) relating to Built In Integrity Testing (BIIT) for navigation equipment;

.5 guidelines on harmonized display of navigation information received via communications equipment; and

.6 consideration of reports on development and implementation of Maritime Service Portfolios (MSPs) (and other e-navigation reports) by Member States and other international organizations.

4. As a co-sponsor of MSC 94/18/8, the International Hydrographic Organization (IHO) supports the proposed amended High-level Action 5.2.6. Subject to their approval by the Committee, the proposed outputs .1, .2, .4, .5 and .6 could potentially impact the work programme of the IHO. This document reviews these five proposed outputs from the perspective of the IHO.

S-mode

5. The S-mode concept is partially implemented in the current IMO ECDIS performance standard (resolution MSC.232(82)) and the associated IHO chart display standard (S-52 - *Specifications for Chart Content and Display Aspects of ECDIS*). If this output is accepted and if the development of the proposed guidelines introduces additional requirements, the impact on ECDIS standards will have to be considered. This aspect is not clearly addressed in the analysis of the implications of the proposed output.

Harmonization of bridge design and display of information

6. The proposal includes the development of a new module to the performance standards for Integrated Navigation Systems (INS) concerning the display of information received via communications equipment. The IHO notes that this component needs to be

closely coordinated with proposed outputs 5 (Harmonized display of navigation information) and 6 (Maritime Service Portfolios).

Built In Integrity Testing (BIIT) for navigation equipment

7. This proposed output addresses the revision of resolution A.694(17) and the associated industry standard IEC 60945. Both documents are referenced in the ECDIS performance standard (MSC.232(82)). If this output is accepted, the impact on ECDIS standards will have to be considered.

Harmonized display of navigation information

8. The development of the Common Maritime Data Structure (CMDS) based on IHO standard S-100 - Universal Hydrographic Data Model and the further development of the relevant proposed Maritime Service Portfolios (output 6) would seem to be pre-requisites to the development of guidelines for the harmonized display of navigation information.

9. The development of the CMDS is addressed in task T14 of the e-navigation SIP. Annex 7 of MSC 95/19/aa reports this task as "work ongoing" and refers to the IMO/IHO Harmonization Group on Data Modelling (HGDM) established by MSC 90 (MSC 90/28/Add.1, Annex 22). The IHO notes that the HGDM is still dormant, in the absence of specific matters to be considered. According to its terms of reference, the HGDM should be chaired by an IMO Member State.

10. Any new requirements affecting the provision of Maritime Safety Information (MSI) arising from the proposed output should be considered in the context of the on-going review of the Global Maritime Distress and Safety System (GMDSS). Therefore, the IHO recommends that the implementation of the proposed output, if approved, be coordinated closely with that review.

11. As reported in NCSR 2/11, three product specifications based on S-100 which are relevant to navigational warning services are being developed. The IHO is developing S-124 - *Navigational warnings*. The Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) of the World Meteorological Organization (WMO) and of the Intergovernmental Oceanographic Commission (IOC) is developing S-411 - *Sea ice* and S-412 - *Met-ocean forecasts*.

Maritime Service Portfolios

12. The proposed output is limited to the consideration of reports submitted by Member States and international organizations. This proposal is supposed to address task T17 of the e-navigation SIP which aims at developing a resolution on Maritime Service Portfolios (MSPs). That objective is not reflected in the proposal.

13. The IHO notes that the development and implementation of MSPs involve several organizations and require their agreement on the output, in accordance with the deliverable of task T17, and coordination of its delivery by the IMO, in accordance with the recognized leading role of the Organization.

14. As indicated in paragraph 8 above, the further development of the MSPs would seem to be a pre-requisite to the development of guidelines for the harmonized display of navigation information.

Arrangements for the IHO contribution to the e-navigation Strategy Implementation Plan

15. The contribution of the IHO to the e-navigation SIP is coordinated by the IHO Hydrographic Services and Standards Committee (HSSC). The HSSC relies on a number of specialized working groups (WG). A new structure of working groups has been in effect since 1 January 2015.

16. The Nautical Information Provision Working Group (NIPWG) is tasked to develop high level specifications for a combined MSP covering the provision of hydrographic services to mariners, in accordance with the e-navigation SIP.

17. The maintenance of the current IHO standards for ECDIS has been regrouped under the ENC Standards Maintenance Working Group (ENCWG). The S-100 Working Group (S-100WG) leads the development of IHO standards for IHO e-navigation-based services. The development of S-100-based product specifications is now assigned to dedicated project teams or subgroups which draw on the expertise of the relevant organ(s) specialized in the subject-matter and of the S-100WG.

18. The IHO welcomes the participation of expert contributors from other international organizations and from industry.

Action requested of the Committee

19. The Committee is invited to consider the views and information provided above in its deliberations on document MSC 95/19/aa and take whatever action is deemed appropriate.

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