

Paper for Consideration by HSSC 16

HSSC Workshop on the IHO Strategic Plan

Submitted by:	Chair HSSC, IHO Secretariat
Executive Summary:	To present the results of the HSSC Workshop on the IHO Strategic Plan revision.
Related Documents:	Decisions C7/37 and A3/08e.

Introduction / Background

Following IHO Assembly-3 decision A-3/08e, Council 7 tasked the HSSC and IRCC to provide inputs on the possible axis of evolution of the existing IHO Strategic Plan (SP) in preparation for the revision phase (2024-2025) of the current IHO SP. However, Council 7 decided that the current structure of the SP 2021-26 is still relevant, choosing to keep the high level vision and goals, but that the IHO Strategic Plan 2027-32 may accommodate a limited revision.

HSSC working group chairs, project leads and IHO staff convened an online session on February 2, 2024 to discuss the future of the IHO Strategic Plan. The group, led by Magnus Wallhagen (HSSC chair), held a brainstorming session to provide HSSC inputs to the revised Strategic Plan resulting in several inputs for consideration in the 2027-32 plan to be submitted to Assembly—4.

Analysis/Discussion

The HSSC Chair Group Workshop on the IHO Strategic Plan resulted in a number of suggestions to improve the IHO Strategic Plan. The suggestions have been categorized according to Strategic Plan Goal and then sub-categorized into themes to help highlight suggestions from a high level. The themes according to goals are as follows:

Goal 1: Evolving the hydrographic support for safety and efficiency of maritime navigation, undergoing profound transformation

- General SP Comments
- IHO Supporting Navigation
- New Technologies
- IHO S-100 Infrastructure and Cyber Security

Goal 2: Increasing the use of hydrographic data for the benefit of society

- Environment and Climate Change Protection
- Stakeholder Involvement – IHO is providing safe, efficient and modern navigation

Goal 3: Participating actively in international initiatives related to the knowledge and the sustainable use of the Ocean

- Capacity Building

The comments are provided in detail in **Annex A**.

Conclusions

The workshop highlighted a need to improve the IHO Strategic Plan to better align it to the challenges facing the IHO during the S-100 implementation period, particularly with respect to new technologies, standards implementation, the environment, IHO stakeholders, and leaving no countries behind.

Recommendations

Discuss the workshop results in HSSC plenary then decide on a path towards refining the comments provided in Annex A for presentation to the IHO Council and for consideration by the SPRWG¹ as HSSC's first input for the revision of the IHO Strategic Plan.

¹ Still to be established (at the date of this paper, under consideration by a Council Correspondence Group led by Council Vice-Chair (Japan)).

Action Required of HSSC

The HSSC is invited to:

- a. review the comments provided in Annex A
- b. decide on a refined set of recommendations for the future SPRWG (or any other body) who will undertake the revision of the IHO Strategic Plan and prepare the draft IHO 2027-32 Strategic Plan
- c. present recommendations 3 months prior to C-8
- d. note this report

IHO SP

Purpose The purpose of the IHO Strategic Plan is to identify specific strategic goals and targets that will direct the IHO's Work Programme in a way that will foster the IHO vision, mission, and objects.

Vision The vision of the IHO is to be the authoritative worldwide hydrographic body which actively engages all coastal and interested States to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment.

Mission The mission of the IHO is to create a global environment in which States provide adequate, standardized and timely hydrographic data, products and services and ensure their widest possible use.

Council Action

The **Council** acknowledged that the current structure of the Strategic Plan (SP) 2021-2026 was still relevant at conceptual level (vision, goals, etc.), and agreed that the objective for the next SP 2027-2032 should be limited to a *revision* of the current SP. (C7/36)

The **Council** tasked the **HSSC** and **IRCC** to provide their inputs on the possible axis of *evolution* of the existing SP in preparation of the *revision* phase (2024-2025) of the current SP. (C7/37)

Goal 1: Evolving the hydrographic support for safety and efficiency of maritime navigation, undergoing profound transformation

- **General SP Comments**

Is the current IHO structure and organization (and HSSC and IRCC's WGs, PTs and SCs in particular) optimal for SP 2027-2032?

Whether the IHO should develop an operational (maintained?) INTtoGIS-like version XX, to display for all (not only for HOs), where hydrographic data services are available (the Big Worldwide IHO **Coverage** Catalogue of Products and Data Services) and the user matrix of the adequacy of these services for meeting user needs across Goal 1 and Goal 2.

We should also work towards standardisation across standards.

I think the SPIs need an overall review but that we should focus on the key goals and content first and refine that.

From 2027 to 2032, I think we will consider developing more non-nautical standards and products in addition to navigation safety-related standards.

There is a move to shore based support (e.g. fleet management, route exchange to support JIT arrival) within the industry driven by automation therefore I agree that we should consider this aspect also.

More emphasis that we are a standards body.

Support industry and decarbonization.

Mention UN Sustainable Development Goals.
Add digital twin to the SP.

Update the UN Guiding Principles measure. We now have a UN endorsed IGIF-Hydro that would be better to reference – many IHO MS worked to put this together and it includes a significant chapter on standards.

- **IHO supporting navigation**

Connect more to IMO E-nav Strategy and the agreed upon S-100 implementation.

Challenge for HOs to achieve a substantial coverage of first S-101 ENC's, but also the additional layers. Recognizing that it is the additional layers that creates added value to the shipping industry.

Consumer confidence in S-100 – need something to promote trust in our process.

Phasing out of S-57 ENC and other existing products? (paper charts, NAVTEX, nautical publications).
Alternatives for the users currently dependant on the existing products?

Find a creative way to rework the MSDI portal item (or to add something to 2.2) to help us measure S-1xx implementation.

- **New technologies**

New means of navigation. MASS, traffic management from shore, more automated navigation and route optimization.

New survey technology and production methods. Autonomous Survey Vessels (USV, ASV, UUV,).

Production methods: AI post processing, automated cartography generalization, etc.

Recognizing that modern standards will need modern data for them to realize their full potential.

Think it will be important to tie 2.2 with the need for quality data to build S-100 products.

HSWG happy to retain 2.2 relating to better surveys, as well as 2.2.2, but suggest the measure can be improved.

The capacity of IHO to take over and handle innovations in AI, digital twins, big data ... with a scope of standardization. The role of the IHO innovation lab?

An obvious one from the MASS perspective would be to ensure S-100 product specifications are fit for purpose for both manned and unmanned shipping, including full autonomy. As a general principle we should move away from natural language text to machine readable data where ever possible. We should also be thinking about the interoperability of our S-100 PS with our peer organisations such as WMO and IALA (S-400 and S-200).

New standards that cater for the new requirements: autonomous shipping.

Part II of the plan needs to be expanded to be more specific about relevant technologies such as MASS and the e-Navigation developments at IMO.

What are the technological domains that need to be addressed by the IHO in the future (UUV technologies and regulations for instance, AI, etc.), and how the IHO can be organized (beyond the current Singapore Lab) to handle this?

Recognising the S-100 ECDIS will use both S-100 and S-57 data for an as yet undefined period there should be a SPI to reflect the current standards.

- **IHO S-100 Infrastructure and Cyber Security**

An agreed distribution model for all S-1xx PS. Many of our PS will be built (or at least depend on data) from organisations outside the HOs. Distribution will be an additional challenge along these lines

Sustainable business model. Management of the Security Scheme. Secure the security around the IHO S-100 Infrastructure, business continuity plan (hacker attacks can happen everywhere).

It's perhaps a minor point, but I see potential for improving SPI 2.1.1. Should we consider alternative indicators (e.g., results of a user survey) that would better suggest overall utility (as compared to mere number of hits/downloads)?

Management of the IHO security scheme will be imperative if we are to reduce the likelihood of a cyber attack and management of the scheme will need significant resources from the IHO. This must be part of the plan

I would like to see an SPI about the security scheme and associated the paperwork that must be part of infrastructure improvement.

The S-100 eco-system in operational mode requires a robust Infra Centre. Is the current IHO business model (coalition of the willing) sufficient enough and sustainable in the long term?

S-100 Infrastructure Center is a key component to support S-100 implementation, so I propose to add a SPI on the establishment of the S-100 Infra Center with 2 targets :

2027 : S-100 Infra Center is operational

2030 : S-100 Infra Center is certified ISO 9001

Although it doesn't currently I wonder if the plan should consider the enabling capabilities of the secretariat in terms of technology and infrastructure such as the S-100 Infra Centre operation. This could be considered in terms of initial and full operating capability IOC/FOC.

SPI 1.2.1 : Percentage of hydrographic data products and services based on S-100 model that are covered by IHO standards, specifications and guidelines on cyber security has the target 1.1.2 Number of hydrographic data products and services based on Universal Hydrographic Data Model that cater for the new requirements: autonomous shipping, reduction of emission (a PS must include cyber security and data quality assessment to be operational ?) - Change one of this SPI to have one on the robustness of security scheme for example?

Goal 2: Increasing the use of hydrographic data for the benefit of society

- **Environment and Climate change protection**

How could IHO contribute? Sea Level Rise, historic data, etc. Reduced environmental impact from shipping. Hydrographic data for marine environmental mapping, MSP, etc.

SP should give more attention to supporting reduction of emission by IHO.

Although digitalisation is covered and can be expanded, decarbonisation as a key focus for IMO should be more prominent and our work related to it.

The ocean role on climate change could be strengthened and the importance of the ocean's knowledge for short term and long term previsions. The concept of digital twins offering dynamic visions to better understand the ocean system, to simulate evolutions and support decision making generates an increasing interest among scientists, policy makers ... Digital twins (DT) brings new ways to manage marine data. I think that we need to contribute because hydrographic and oceanographic data underpin digital twins (I use the plural "twins" advisedly, because there will be different twins to support different use cases) and international standards are solutions for complexity. But how? It's a topic that is calling for innovation, AI, Virtual Reality

- **Stakeholder involvement - IHO is providing safe, efficient and modern navigation**

- Enabling IMO e-navigation in accordance with their (IMO) strategy. SOLAS chapter V connection.

- How can we obtain a more systematic stakeholders engagement? Predictable changes and phase-out of standards. Long term planning.

In line with the ISO 9001 model some sort of checklist that covers aspects such as user consultation and cross review with associated standards would help. In this specific case we have the challenge that some of the standards are frozen which S-100 addresses to some extent.

All HSSC WG should have this clause in their TORs. The WG should liaise with other IHO bodies, international organizations and industry to ensure the relevance of its work and timely notice of changes to the standards.

Stakeholder input from user community must be part of this plan. If we fail to do this the industry could become very negative to the changes IHO are making. There is already some negativity about S-100 seen as IHO changing things for the benefit of HOs rather than trying to support the industry with new better products.

A more general comment and maybe one for the SPRWG but in addition to the bottom up from HSSC organs will this revision take into account key stakeholders input such as IMO, CIRM etc I think this would demonstrate how we work with key partners. Maybe it comes later in the process.

The SP should have a clear view of how we support the requirements of the industry with standards that solve their core issues. Cyber security, decarbonization.

Goal 3: Participating actively in international initiatives related to the knowledge and the sustainable use of the Ocean

- **Capacity Building**

Leave no one behind.

Training is covered in the plan in terms of CB to build the basic capabilities noting the profound transformation and need for more mature HOs to develop should the plan also consider developing and maintaining broader skills including those within the groups themselves.

For Capacity Building, I would like to see a 3.2.2 that specifically references helping MS to implement S-1xx standards. This could be through contracting, production, etc. but essentially aims to leave nobody behind.

The SP should give MSs more opportunity to participate.

The IHO should support HOs to pass from the IMO mandatory Audit about the implementation of SOLAS Chapter V with a focus on the provision of all phase I S-100 products.