

Submission of Proposal for Consideration by the Council

Submitted by:	Singapore
Executive Summary:	Proposal to Establish an “IHO Innovation and Technology Laboratory” supported by, and situated in Singapore

Introduction

1 The world is at an interesting crossroad of technological exploration and exploitation. Like many organizations, the IHO is confronted by rapidly evolving technologies, the development of new applications and their impact on how hydrographic offices traditionally meet their obligations. It is timely that the IHO examines these new technologies and applications and explore ways we can transform them into opportunities, especially when we, collectively, are custodians of an enriched cache of hydrographic information globally. It is only in this way that we can move ahead into the future, further enhance our international standing and deliver benefits to users and society in navigational and non-navigational areas.

2 Presently, most of the investigative work involving proposals on new standards, products and services related to the work of the IHO rests on the goodwill of IHO Member States and/or industry stakeholders. This arrangement is not sustainable as IHO Member States and stakeholders are faced with increasing constraints in terms of manpower and funding support. We need to find a more sustainable solution of consolidating our efforts and optimising our collective resources. At the same time, consideration should be given on how we can contribute towards addressing the growing concern on global climate change and sustainable development.

Analysis and Discussion

3 In order to reassert the IHO’s vision “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”, we may need answers to three major questions and these are:

- a. How do we identify and keep pace with rapidly-evolving technologies that will impact on the hydrographic community?
- b. How can we develop these technologies into products and services that will meet and support the present and future needs of users and society; and

- c. How can we contribute to and effectively support the United Nations Sustainable Development Goal 14 – Conserve and sustainably use the oceans and sea and marine resources for sustainable development?

4 We may not have answers to all these questions but a window of opportunity may be to jump start the process by establishing an “IHO Innovation and Technology Laboratory” (IHO Lab) tasked to find the appropriate answers to some of these questions.

5 On the rationale as to why under the IHO flag, the following are some of the reasons:

- a. The IHO represents the entire IHO community, including industry stakeholders;
- b. The IHO Lab fills the need for a more coordinated international approach, particularly on technical issues. This proposal offers the opportunity to move potential activities away from a local perspective or by a single RENC or industry stakeholder, which restricts it to a limited audience;
- c. More appealing to potential International Organizations providing funding support, as it would be viewed to have greater impact and benefit to a larger IHO community rather than an individual member State or region;
- d. Ensure better continuity and sustainability for longer term projects such as the next-generation ENC’s and use of distributed ledger technology (DLT) to augment hydrographic and cartographic processes. This is in order to keep pace with the rapidly evolving technologies and data standards;
- e. Provide consolidation of resources and efforts to accelerate testing and also better utilisation of limited funds, which can be channelled to other useful projects; and

6 The proposed IHO Lab could attract other stakeholders or form partnership with organizations such as the IMO, IALA, IOC, UN-GGIM or OGC, by either contributing and/or participating jointly in innovative or research and developmental projects. This could be similar to the Nippon Foundation GEBCO (IHO/IOC) Seabed 2030 project.

The Proposal for Consideration

7 The objectives of the propose IHO Lab would be to:

- a. Facilitate the conduct of research or investigative projects in the laboratory and/or test bedding in the field submitted by IHO Member State(s), IHO organs, or other stakeholders;
- b. Enable knowledge creation for the evaluation and specification of global standard-setting at the request of eg. IHO Member State(s); and
- c. Foster a multidisciplinary and collaborative environment for researchers and investigators to interact, learn and promote new solutions and technologies, including collaboration with other international organizations under the guidance of a Governing Board (see paragraph 9).

8 Potential projects could include the evaluation of new technologies to further improve accuracy and processes in the field of hydrography and nautical cartography such as:

- a. Test bedding of integrated ENC and topographic details that could be used for positioning. This would complement the global navigation satellite systems.
- b. In the area of marine spatial data, which is gaining momentum across various regions, we could explore the use of artificial intelligence to assist in ensuring improving processes and data quality.
- c. For longer term ideas such as the development of next generation of “Smart ENCs”, we could explore how machine readable data could be used in promoting E-Navigation with the IMO and IALA.

9 In order to provide leadership and set direction for the IHO Lab, it is proposed that it be managed by a Governing Board, headed by the IHO Secretary General or Director, and comprising of about 6 to 8 members. The members would be nominees from member States and industry stakeholders based on criteria recommended by the IHO Secretariat. Singapore would provide the administrative support to the Governing Board.

10 If the proposal is approved by the IHO Member States, Singapore would like to offer and stand ready for hosting Laboratory for the following reasons:

- a. The Straits of Malacca and Singapore is one of the world’s busiest Straits used for International Navigation with an advanced Vessel Traffic System that is able to handle more than 10,000 vessels;
- b. Easy access in terms of excellent communications infrastructure for telecommunications and transportation;
- c. With the recently established Living Lab for E-Navigation in Singapore, there is opportunity to facilitate system integration between ship and shore and vice versa; and

- d. About 600 shipping lines based in Singapore and they could be sought to participate in potential projects. This number excludes Ship Management Companies, Classification Societies and OEMs from the marine industry.

11 The proposed IHO Lab would be fully funded by Singapore and there would be **no cost implication** on the IHO. To kick off the IHO Lab, Singapore would also be willing to consider contributing seed money for collaborative joint research and development or investigative work. For a start, it is also proposed that the IHO Lab operates for a term of 10 years and a review be made before the end of the term.

12 Member State(s) or stakeholder(s) are welcomed to jointly conduct or jointly fund the projects, subject to the approval by the Governing Board. The framework for the operational component of the processes related to the proposal needs to be further worked out separately.

Conclusion

13 With increasing pressures on the limited resources that we all experience, the progress on some of the IHO work programmes inevitably have been affected. The question then is whether the present model of meeting current and future challenges by relying on the goodwill of the member States or industry stakeholders to carry the work programmes is a sustainable approach.

14 The proposed IHO Lab would provide the IHO a window of opportunity to look forward into addressing our present concerns and constraints in carrying out investigative work involving proposals on new standards, products and services. To help address them, Singapore is willing to establish and host the proposed IHO Lab. In addition, Singapore is also willing to consider providing some seed funding to support projects, and welcomes any collaborative partnership.

Action required of the Council

- 15 The Council is invited to:
- a. Discuss and consider the proposal to set up an “IHO Innovation and Technology Laboratory”;
 - b. Discuss Singapore’s proposal to establish and host the IHO Lab, with no cost implication to the IHO; and
 - c. Take any other actions that may be appropriate.