



# 16<sup>th</sup> Meeting of the Hydrographic Services and Standards Committee

## **Report on the Joint IHO-Singapore Innovation and Technology Laboratory and Possible Impact on HSSC Activities**

### **Agenda Item 04.4A**

HSSC-16, Tokyo, Japan, 27 – 31 May 2024



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## Objectives of IHO-Singapore Lab

### 01 Facilitate

The conduct of innovative or **investigative projects** proposed by IHO Member States(s), IHO organs, or other stakeholders. (including test bedding)

### 02 Enable

Knowledge creation and foster collaboration to evaluate specifications of global standard setting within the scope of IHO standardization activities

### 03 Foster

A multidisciplinary and collaborative environment for technical experts to interact learn and promote new solutions and technologies, including collaboration and cooperation with **other international organizations** research and development bodies active in the maritime domain under the guidance of a Governing Board



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## Composition of the Governing Board



John Nyberg  
Chair  
(Director, IHO)



Thomas Dehling  
Member  
(Chair, IRCC)



Magnus Wallhagen  
Member  
(Chair, HSSC)



Thomas Ting  
Member  
(Host Country Rep)



Yong Baek  
Secretariat  
(IHO)



Parry Oei  
General Manager  
(IHO Lab)

New Member



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## Establishment of the IHO – SG Lab

- **Decision at 2nd IHO Assembly, 2020**
- **Formation of the Governing Board, May 2021**
- **Launch the IHO-Singapore Lab, Aug 2021**
- **Developed Webpage for Lab, Sep 2021**
- **Kick off Meeting of 1<sup>st</sup> Project in Mar 2022**
- **2 projects successfully completed:**
  - Apr 2023
  - Nov 2023
- **3 projects in progress through to 2024**
- **1 potential project with in-principle approval**





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# **ACTIVITIES SINCE HSSC15**

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- **GBM**
  - July 2023
  - Nov 2023 (appointment of new Chair)
- **S-57 to S-101 Project**
  - VTC Meeting Sep 2023
  - Conduct of Workshop, Singapore, Nov 2023
- **S-131 Project**
  - PT VTC Meeting Aug 2023
  - PT In-person Meeting, Singapore, Nov 2023
  - PT VTC Meeting Jan 2024
- **S-102 Project**
  - Preliminary study of data acquisition, Q1 2024
  - Request to be observer within IHO S-102 PT, Nov 2023



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# ACTIVITIES SINCE HSSC15

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- Engaging with industry and HOs to explore potential project collaborations
  - Furuno on supplementing AR Navigation | eRacon, Oct 2023
  - Indonesia, Malaysia, Singapore on Dual-fuel ENC's, Nov 2023
  - Discussion with potential stakeholders on Land-Sea datum integration, Nov 2023
- (approved Jan 2024) Dual-fuel ENC's Project
  - Planning Meeting, Kuching, Jan 2024
  - Scheduled Malacca and Singapore Straits (MSS-ENC Steering Committee Meeting, Bali, Mar 2024
- (newly-proposed) Land-Sea datum integration
  - Discussion at UNGGIM MGI-WG, Bali, Mar 2024



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# STATUS OF IHO-SGP LAB PROJECTS

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1. Review of S-57 to S-101 Conversion Guidance Document and Workshop [Completed Nov 2023]
2. S-131 Project: Engaging relevant stakeholders for testing and making improvements, where appropriate [scheduled completion Q1 2024]
3. Creation and test-bedding of ECDIS capable of displaying S-102 Bathymetric Surface (Phase 1) and S-104 Water Level products (Phase 2) on S-101 ENCs [ongoing]
4. Proof of Concept Project between IHO and IALA: S-124 & S-125 [Completed Apr 2023]
5. Demonstrate availability of ENCs (S-57 and S-101) for S-100 ECDIS along major shipping routes [ongoing]
- 6 To integrate sea and land datum for monitoring of possible rise in sea level. [New Proposed Project]



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# 1. Review of S-57 to S-101 Conversion Guidance Document and Workshop

## Goals of the Project:

- Thoroughly **test and propose refinements** to the "S-57 to S-101 Conversion Guidance" document, produced by the IHO ENC Working Group (ENCWG).
- Use existing conversion tools to **test and review existing the Conversion Guidance document** and produce outputs conformant to its contents
- Workshop conducted in Singapore, November 2023 – supported by IHO-SG Lab and IC-ENC
- Final report submission Q1 2024

Headed by:  
Thomas Mellor, Chair ENCWG





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# 1. Review of S-57 to S-101 Conversion Guidance Document and Workshop





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## 2. S-131 Marine Harbour Infrastructure Database

### Goals of the Project:

- Create a **database and interface** that will **improve the information exchange** between harbours and hydrographic offices by acting as a **neutral repository of harbour information**.
- In-person meeting held in Singapore, November 2023
- Project scheduled for completion Q1 2024

Headed by:  
Sarah Rahr, Canadian Hydrographic  
Services



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## 2. Meeting of S-131 Project Team at IHO-SG Lab in Singapore





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### **3. Creation and test-bedding of ECS capable of displaying S-102 Bathymetric Surface (Phase 1) and S-104 Water Level products (Phase 2) on S-101 ENCs**

#### **Goals of the Project:**

- **Interfacing S-102 with S-101** to explore display options to best match user needs & requirements without cluttering of information, including in conformance with S-98.
- Provision of Test-bed infrastructure or Testbed ECDIS (including hardware) which allows **display of S-102 onto S-101 ENCs.**
- Current status : Discussion with stakeholders and seeking funding and resources support

**Participating Parties:**  
Korean Hydrographic and  
Oceanographic Agency (KHOA),  
Singapore Hydrographic Office and  
Canadian Hydrographic Services



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## 4. Proof of Concept Project : 1<sup>st</sup> IHO-IALA collaboration to demonstrate interoperability of S-101 and S-124/S-125 at sea using wireless updating via 4G/5G telecom links

### Goals of the Project:

- Support navigational safety – supplementing **S-101 ENC**s using varying sizes of **S-125 dataset**, including overlays.
- Service S-125 datasets via **4G/5G telecom** means during sea-trial.
- Check **interoperability between S-124/S-125 and S-101** as interleaving and overlaying – which was agreed at joint IHO/IALA workshop held in Norway, September 2022.
- **Project completed April 2023**

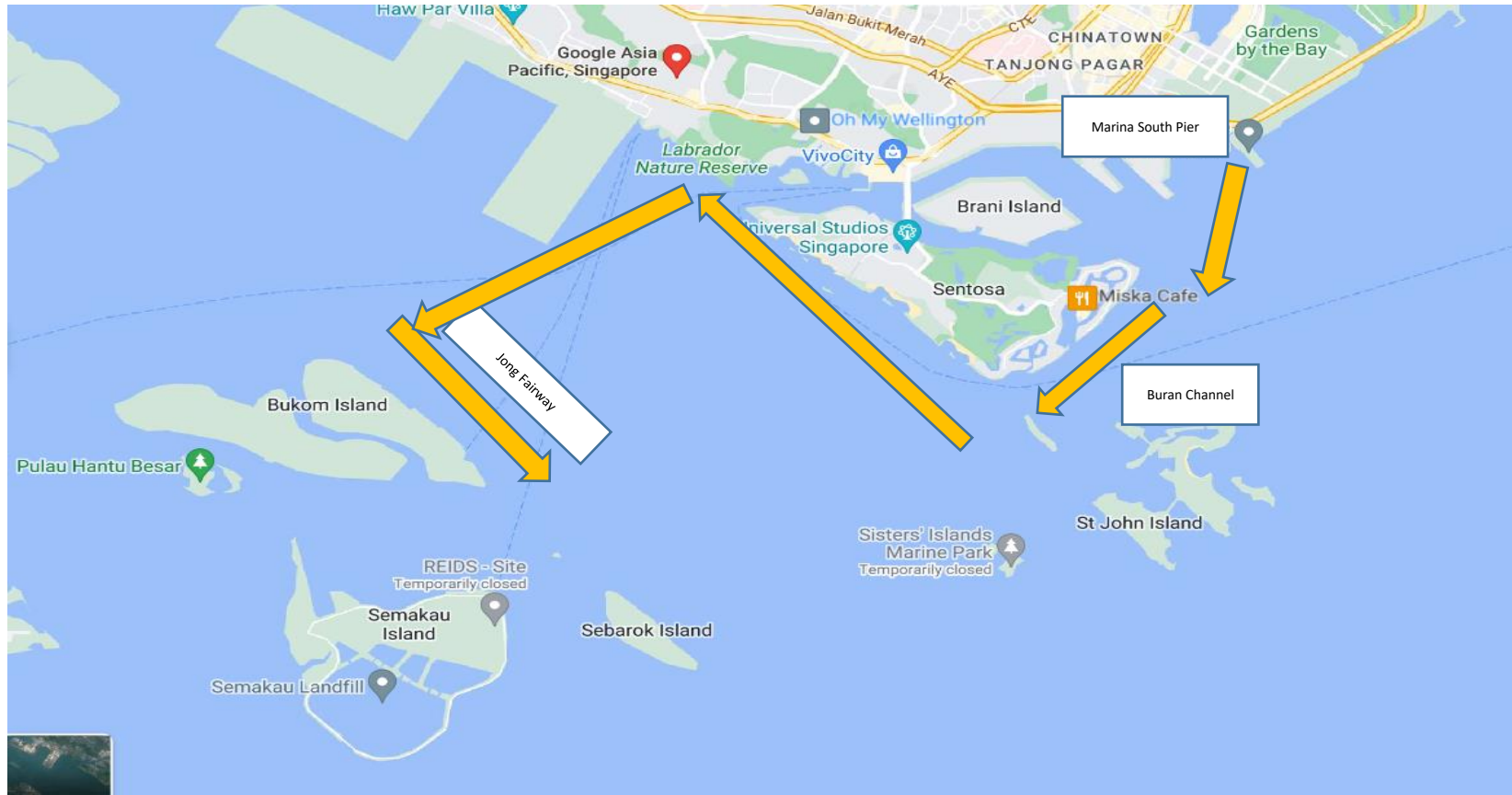
Joint Collaboration with Korean Research Institute of Ships and Ocean Engineering (KRISO), Singapore HO and Chair NIPWG.



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## 4. S-124/S-125 at test-bedding at sea





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## 5. Demonstrate availability of ENC's (S-57 and S-101) in S-100 ECDIS for Dual Fuel along major shipping routes (2 Phases)

### Goals of the Project:

- **Coordinate and provide** S-57 and S-101 covering the planned routes, e.g Malacca and Singapore Straits (Phase 1) and Round-the-World by Navy Ship (Phase 2)
- Demonstrate to the shipping community and other users that the IHO and our stakeholders stand ready to **make available ENC's in S-100 for Dual Fuel** covering major shipping routes ahead of the 1 January 2026 commitment to the IMO.
- Carry out testing of **wireless updating** of the S-101 ENC's and applying the latest IHO standards at sea
- **Planning Meeting** held in Kuching, Malaysia, January 2024

Joint Collaboration with JHA, Malaysia, Indonesia and Singapore HOs, Italian Navy, KHOA and RENCs.



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## 5. Dual-fuel ENC Project







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## 6. *(New Proposed project)* To integrate sea and land datum for monitoring of possible rise in sea level

### Goals of the Project:

- Understanding the significance of **integrated monitoring of relative and absolute sea level variation** using tide gauge and GNSS data to address short and long-term issues in climate change monitoring and adaptation.
- Accelerating **capacity building** and knowledge sharing amongst HOs and broader marine geospatial information community.
- Collaboration between **hydrographers and land surveyors** on innovative solutions to reach shared objectives

Participating Parties: Singapore  
Land Authority and Maritime and  
Port Authority of Singapore



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## ACTIONS REQUESTED FROM HSSC

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### Request HSSC-16 to note the Report on the IHO-SG Lab:

- HSSC to note the Report; and
- HOs and industry stakeholders strongly encouraged to actively engage and support in identifying and participate in **collaborative projects**.



**For Information**