

IHO-SGP Innovation and Technology Laboratory

6th Governing Board Meeting (GBM), In-person and VTC

17 November 2023, 15:00 ~ 17:00 (UTC+8, SGT)

List of Decisions and Actions from the 6th Governing Board Meeting: **Draft**

Doc No.	Title	Remarks
GBM06	Opening Remarks	
	<p>Meeting noted that under the Terms of Reference of the Governing Board, the Chair would be rotated between the appointed IHO Director and Singapore as host country. However, Singapore may not assume the position of Chair of the Governing Board at this moment and agreed for the appointed IHO Director to continue as Chair.</p> <p>[Decision 6/1] GB6 confirmed the appointment of Dr John Nyberg as the new Chair of the Governing Board.</p>	
GBM06-01a	Confirmation of Minutes of last Meeting	
	<p>[Decision 6/2] GB6 approved the draft decisions and actions of the 5th GB Meeting posted on the IHO Lab GBM5 webpage.</p>	
GBM06-01b	Review and Update actions of last Meeting	
	<p>GB6 reviewed and updated the actions from the 5th GBM and concluded that all action items had been completed.</p>	
GBM06-2	Update on Approved the IHO Lab Projects	
GBM06-2a	S-57 to S-101 Conversion	
	<p>PT Member Jonathan (IIC) shared preliminary findings from the recent S-57 to S-101 Conversion Workshop held 6-10 November 2023 in Singapore.</p> <p>The workshop had 30 participants from 20 countries, including industry partners, which allowed a variety of ENC's to be tested using multiple software tools.</p> <p>General Manager (GM) acknowledged the support from the industry, including IC-ENC's funding for the Workshop and its members. The Workshop was also supported by the participation of PRIMAR, and the IHO-Singapore Lab's and OEM's provision of laptops.</p> <p>GM highlighted that even though the workshop was self-funded, the number of participants was testimony to the importance that such initiatives to address the challenges of S-101 production and conversion are highly valued. In view of this, he shared that similar Workshops could be replicated by regional commissions.</p> <p>Magnus (HSSC Chair) shared that PRIMAR had started a training taskforce two years ago that focused on long-term education for their members, and these courses were conducted in phases (e.g 4 countries per phase).</p> <p>Julia (Chair of S-100 WG) shared that IHO's efforts were spent largely on validation, and not enough on verification. Jonathan agreed that verification oversight, framework and tools are still a work-in-progress. OEMs were made aware of these arising needs. Eivind (CCG) mentioned none of S-100 products have verification tools available, and suggested that the development of such tools (e.g verification of gml) could be facilitated through the IHO-Singapore Lab.</p> <p>Notwithstanding the comments made, Jonathan said that validation would become more complex as more products are implemented.</p>	

	<p>GM noted that one of the outcomes of the Workshop was that the OEMs agreed to work together to improve consistency on validation results. This, together with data producers on variety of ENC's, would help uncover potential gaps.</p> <p>HSSC Chair mentioned there could be a need for IHO to explicitly state what would be considered <i>approved</i>, e.g depth value <i>has to</i> convert to a certain value in accordance with S-65, so that it signals to the community that it is a safe product to be used. Anything beyond this, it would be at each HO's discretion to fulfil.</p> <p>HSSC Chair suggested to develop a document on warning / disclaimer / best practice when HOs embark on S-101 production and conversion, highlighting what would be "simple" or "not simple". This document would be mutually exclusive of and supplementary to S-65, and should not impact S-65.</p> <p>Yong (Secretariat) expressed his concern on the use of "simple" and "not simple" in the report. He suggested that "safe" and "not safe" should be used.</p> <p>GB Chair and HSSC Chair enquired on the feedback on backward conversion from S-101 to S-57, as many HOs expect it to be automated. Jonathan replied a hybrid database would seem to be a simpler solution. He also noted that support for dual-fuel production is a work-in-progress.</p> <p>Louis (CHS) added that more should be done to help HOs identify resources required, critical paths etc to operationalise S-101 production without human intervention, rather than having HOs figuring out by themselves, which may cause significant delays in achieving IHO goals and timeline.</p> <p>GM Chair noted that these findings come at opportune time for RENCs, as the timeline narrows.</p> <p>[Decision 6/3] GB6 supported that the recommendations arising from the project be presented at HSSC. Secretariat reminded that the report to be submitted would need to be done by end of March 2024.</p> <p>[Action 6/1] GM to report achievement and recommendations of the conversion project to the HSSC16 meeting.</p> <p>[Decision 6/4] GB6 approved the preliminary report of the S-57 to S-101 conversion project and confirmed it would be concluded accordingly upon the submission of the final project report.</p>	HSSC16
GBM06-2b	Marine Harbor Infrastructure Database Project (S-131)	
	<p>PT Lead Sarah was unable to join in the GBM6 VTC. Mr Louis Maltais, Director, National Geospatial Services - Canadian Hydrographic Services) presented on her behalf via VTC.</p> <p>Louis provided a recap of the progress. IIC had introduced a new version of API, as well as completed digitisation of Singapore Port Information.</p> <p>There were no significant issues foreseen for database and API at this phase. However, there were concerns on integration between IIC's database and API with NTOU's GUI.</p> <p>Additionally, preliminary feedback from testing with selected ports in Montreal, Vancouver and Halifax indicated that the GUI needs to be simplified.</p> <p>Louis proposed 3 options to address the integration challenges.</p> <ul style="list-style-type: none"> - Option 1 - Refine/Simplify GUI - Option 2 - End Phase 1 (i.e current scope and deliverables) and refine/simplify GUI in Phase 2 (i.e new proposal) - Option 3 - Start afresh 	

	<p>GM enquired that if Option 1 would be adopted, would it meet the original objectives and original timeline. Louis replied that it would. However, he added that the current version of GUI could be retained but there would be a need to develop a “wizard” to help users adopt quicker.</p> <p>GM asked if a “simple” GUI would be adequate to ingest more comprehensive data required by some of the most advanced ports. Eivind clarified that majority of the ports would input simple data, such as berth boxes, quays etc. Jonathan added that for the most advanced ports, PT had yet to find compelling reasons for them to adopt S-131, because these ports would likely have an existing model.</p> <p>Jonathan clarified it should not be just simplifying GUI, but also to keep certain workflow “transparent” to users (i.e the port personnel entering the data).</p> <p>Secretariat raised concerns on system robustness, data quality checks, regulation of the data input etc. Jonathan suggested that, if and when Phase 2 begins, PT would engage more with port partners and consider for these to be scoped. The goal for Phase 1 would be to deliver a minimum-viable-product capable of portraying port information in conformance with S-131, so as to encourage quicker adoption.</p> <p>Meeting discussed a possible timeline in mid-December 2023 to collect feedback on GUI in preparation for Phase 2 to commence in 2024.</p> <p>Secretariat suggested to raise Phase 2 items at next NIPWG VTC meeting.</p> <p>Meeting discussed on possible business models for S-131 and how to integrate with S-131 with S-128, e.g if Canada created a web service on S-131 database, and a S-128 request is received, would it be under the S-131 database.</p> <p>HSSC Chair enquired if ports could provide the S-131 products themselves directly or if they would have to go through state/government agencies in order to get their products included in S-128. Louis shared CHS’s early-stage vision, that besides having an S-131 database, there could be an information service and automation service to track and compile S-128.</p> <p>Eivind cautioned that it would not be impactful promoting just S-131 data by itself; emphasis should also be on the information exchange service between terminal operators and the port. As such, both API and GUI would be equally important. The challenge is that the GUI was attempting to accurately reflect/transcribe the complexity of S-131 PS (e.g many relations need to be established diligently to reflect the richness of the model). Eivind pointed out that there could be justification for changes to be made in S-131 PS as it evolves, but for now, PT need to deliver a useable GUI and achieve tangible outcomes.</p> <p>[Decision 6/5] GB6 supported the Option 1 in the proposed way ahead would be applicable and agreed that after the current project has been successfully completed, then to consider the transition to Phase 2 as a separate project proposal.</p>	
GBM06-2c	Portrayal of S-102 with S-101 on an S-100 compatible ECS	
	<p>GM shared that a high frequency survey had been completed for the testbed area in Singapore waters. Following this, the data acquired would be used to produce the S-102 product. KRISO would then commence the evaluation using their S-101 ECDIS.</p> <p>GM shared that the PT would be reaching out to T-CARIS Mr Hugh Astle and CHS Ms Lynn Patterson for their interest to participate in the project.</p> <p>Louis mentioned that CHS would be continuing their support of supplying S-102 datasets. Julia mentioned US could support with S-102 Edition 2.2, for areas such as LA and NY.</p>	

	<p>GM mentioned that this project was also shared at the S-102PT15 meeting, and the S-102PT agreed IHO-Singapore Lab would be added to S-102PT as a member, so as to highlight/avoid any duplication of efforts.</p> <p>GM also shared that during S-102PT15, one of the members Mr Raphael Malyankar suggested for the IHO-Singapore Lab to explore using sun illumination for portrayal, without affecting the works of S102PT.</p>	
GBM06-3	Potential project / proposal	
GBM06-3a	Integrate sea and land datum for monitoring of possible rise/fall of sea level	
	<p>GM provided an overview on importance of land and maritime authorities addressing land-sea datum integration, which was reiterated at the 13th UN-GGIM Session.</p> <p>The project content arose from a technical discussion with UN-GGIM Expert Group on Land Administration and Management (EG-LAM), inputs from the UN Geodesy Centre of Excellence Mr Nicolas James Brown, Geoscience Australia, and UN-GGIM Secretariat Mr Teo Chee Hai in attendance on 3 November 2023.</p> <p>GM mentioned an increasing need to monitor differences between land and sea, and that HOs' tidal data by itself would be insufficient to determine land subsidence. The project would examine a need to establish a guidance document to develop numerical models and address climate change monitoring and analysis.</p> <p>GM added that Baltic states had embarked on similar efforts to harmonise the region's vertical datum and we would be liaising with the Swedish representatives to share their experience.</p> <p>HSSC Chair suggested the importance of collaboration with land experts, learn more about their geodesy efforts and have a broader view on variety of vertical datums, instead of just LAT. He also suggested to contact Norwegian Mapping Authority to understand more on their findings on differences between LAT and ellipsoid.</p> <p>Julia suggested that NOAA's VDatum and GRAV-D projects could be valuable resources.</p> <p>Louis shared that CHS had previously completed moving from one horizontal projection to another, and the technology employed could be similar to achieve vertical datum transformation.</p> <p>GM mentioned that these conversations are important as more HOs would need to address how to contribute to climate change mitigation. Chair acknowledged that there is an existing need, and there are ongoing conversations from UN.</p> <p>[Action 6/2] GM to continue the conversations at the 6th UN-GGIM Expert Meeting of the Working Group on Marine Geospatial Information (WG-MGI) in Q12024 and report the update at the next GBM if appropriate.</p> <p>[Decision 6/6] GB6 supported the Part 1 of the project proposal in principle.</p> <p>[Action 6/3] GM to update on identified PT and submission of a more detailed proposal, Part 2, according to the project proposal guidance and submit it to the next GB meeting.</p>	<p>GB7</p> <p>GB7</p>
GBM06-3b	Enhanced Real Time Positioning and E-racon	
	GM briefly shared ongoing engagements with manufacturers, such as Furuno, on next generation of Electronic Navigational Chart integrated with e-Radar for positioning using Conspicuous Landmarks.	

	[Action 6/4] GM to update if there were any further development and interests and report the update to the next GB meeting.	GB7
GBM06-3c	Wider use of S-100 (as a whole)	
	GM briefly shared on engagements with manufacturers, such as Furuno, on supplementing S-100 data layers for Augmented Reality (AR) Navigation systems. [Action 6/5] GM to update if there were any further development and interests and report the update to the next GB meeting.	GB7
GBM06-3d	Dual Fuel for MSS-ENC	
	<p>GM shared on the possibility to leverage on survey results from the recently completed joint hydrographic survey of waters lesser than 30 meters covering the entire 600 km of Malacca and Singapore Straits. The survey results could potentially be used to produce S-101 and coupled with S-57 to produce dual-fuel ENCs. KRISO could be a partner for use of their S-101 ECDIS for field testing.</p> <p>Jonathan mentioned that day-to-day compilers' tasks, such ENCs incremental updates, NTMs etc, should be included for the project.</p> <p>Secretariat added that there had been a lack of discussions on a fully functional shore-based ECDIS for Phase 1 S-101 datasets. The challenge is that it is tedious to collect data on same area/space in a machine-readable language. IHO-Singapore Lab could potentially coordinate among different entities, e.g NOAA, KHOA etc.</p> <p>Julia suggested to also consider producing dual-fuel at high density, i.e S-57 to S-101 with S-102. NOAA could potentially provide S-104 and S-111 data from its global models. Louis commented that there is nothing stopping countries to move ahead to produce S-102, even if the S-102 PS was not yet ready.</p> <p>GM mentioned that the advantage of SOMS(?) is that the 3 littoral States shared a common set of ENCs. Julia suggested that the efforts on producing S-57 in SOMS could be repeated for S-101. This would also lessen the optic bias of a "perpetual US-centric" solution.</p> <p>GM would evaluate options on funding mechanisms, either through IHO, or industry funding, or a combination of both.</p> <p>Chair mentioned IHO is keen to have real working examples. GM asked for a reasonable target/phased target. Julia suggested Q12025, considering that every Phase 1 PS needs to go through S-100 Ed.5.2.0, or, after S-101 Ed.2.0.0 has been published, whichever is earlier.</p> <p>[Decision 6/7] GB6 supported that the potential project would be an excellent opportunity to signal to stakeholders, including the IMO and shipping lines that the IHO stands ready to start delivering S-101 ENCs by 1 Jan 2026. The GB6 also agreed that test-bedding should start as soon as possible based on IHO's S-100 roadmap timeline.</p> <p>[Action 6/6] GM to update and submit Project Proposal Part 1 according to the project proposal guidance.</p>	GB7
GBM06-4	Any other business	
	<p>Chair, GM and GB Members expressed appreciation on projects' progress, efforts undertaken and execution by IHO-Singapore Lab and the Project Teams.</p> <p>Chair shared that the IHO-Singapore Lab updates presented at the 7th IHO Council Meeting were well received. This indicated that there is growing consensus and focus on future issues, and opportunities to apply the work done during recent S-</p>	

	100WG8 for navigation safety and beyond, e.g land-sea interface, sea-level rise etc. IHO-Singapore Lab could potentially provide the space to supplement and synergise these efforts.	
GBM05-5	Next meeting (Venue and Date)	
	<p>[Decision 6/8] GB6 agreed to hold the 7th Meeting of GB in-person and VTC with other co-located IHO meetings.</p> <p>[Action 6/7] GM / Secretary to announce the venue, date, time of the 7th meeting of GB three months prior to the scheduled meeting date.</p>	

List of Participants

- John Nyberg (@iho.int) : **Chair** [*in-person*]
- Parry OEI (parry_oei@mpa.gov.sg) : **General Manager** [*in-person*]
- Yong BAEK (yong.baek@iho.int) **Secretariat** [*in-person*]
- Magnus Wallhagen (magnus.wallhagen@sjofartsverket.se) : **HSSC Chair** [*in-person*]
- Julia Powell (julia.powell@noaa.gov) : **S100WG Chair** [*in-person*]
- Victor Sim (victor_sim@mpa.gov.sg) : **Observer** [*in-person*]
- Kok Liling (liling_kok@mpa.gov.sg) : **Observer** [*in-person*]

Absent with apologies:

- Thomas TING (thomas_ting@mpa.gov.sg)
- Thomas Dehling (Thomas.Dehling@bsh.de)

Project Team Representatives:

Title	Representatives
S-131 MHI	Louis Maltais [<i>VTC</i>] (louis.maltais@dfo-mpo.gc.ca) Eivind Mong [<i>in-person</i>] (eivind.mong@dfo-mpo.gc.ca)
S-57 to S-101 conversion	Jonathan Pritchard [<i>in-person</i>] (jonathan.pritchard@iictechnologies.com)
Portrayal of S-102 with S-101 on an S-100 compatible ECS	Sewoong Oh [<i>in-person</i>] (osw@kriso.re.kr)