

**16<sup>th</sup> Meeting of the IHO Inter-Regional Coordination Committee (IRCC-16)  
Santa Cruz Island, Ecuador, 10-12 June 2024**

<b>Contribution to the IHO Work Programme 2024</b>	
Task 3.1.1	Organize, prepare and report annual meetings of the Inter-Regional Coordination Committee (IRCC)

The 16<sup>th</sup> meeting of the Inter-Regional Coordination Committee (IRCC-16) was held in Santa Cruz Island, Galápagos, ECUADOR, from 10 to 12 June 2024, hosted by the National Defence Ministry through the Naval Oceanographic and Antarctic Institute (INOCAR), in the Charles Darwin Research Station of Puerto Ayora, Santa Cruz Island. The meeting was chaired by Mr Thomas Dehling (Germany) and attended by 40 in person from 16 Member States. The IHO Secretariat was represented by Director Luigi Sinapi and Assistant Director Leonel Manteigas.



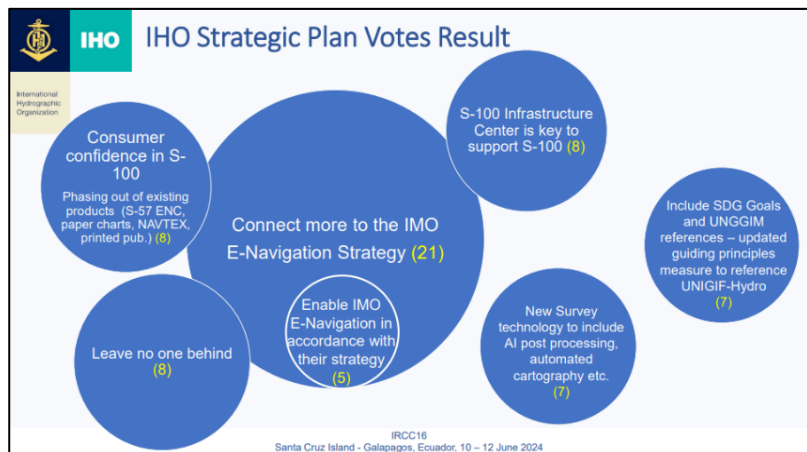
*Participants at IRCC16 – Figure 1*

IRCC Chair Mr Thomas Dehling opened the meeting thanking Ecuador for hosting two meetings in a row and emphasized the unity and the internationality of the IRCC by nature. Captain Andrés Pazmiño Manrique, Director of INOCAR, welcomed the participants expressing the gratitude and honor for hosting the

meeting and mentioned the ecological and historical significance of the Galapagos as a potential source of inspiration for the IRCC members. IHO Director Luigi Sinapi remarked the valuable support of the Regional Hydrographic Commissions (RHCs) and IRCC in achieving initiatives of common interest in the fields of Hydrography, Nautical Cartography, Capacity Building, Ocean Mapping and many others. IRCC Chair Mr Thomas Dehling provided the IRCC report, highlighting the activities since IRCC 15, the C-7 actions and decisions and those A-3 decisions addressed to IRCC, with particular focus on the review of the IHO Strategic Plan. IHO Director Luigi Sinapi provided the IHO Secretariat Report, highlighting the IHO initiatives of cooperation with international and intergovernmental organizations, the future C-8 meeting topics, the new SPRWG timeline to review the IHO Strategic Plan and the IHO outreach’s achievements.

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### IHO Strategic Plan results in HSSC – Figure 2



HSSC Chair presented on the progress of S-100 Implementation Roadmap and S-1xx products. He mentioned the approval of the S-100 Ed. 5.2.0 as the foundation of the Phase 1 S-100 products and services. The presence of WMO at HSSC was welcomed as an important sign of their commitment

into the development of S-4xx products and services, and for the industry committed in providing weather products and information useful to navigation. The offer from Canada to designate the St-Lawrence River as an IHO Canada S-100 Sea Trial Area (2024-2025) was agreed. Updates on the IHO Infrastructure Centre (ICE) as an integral part of the IHO Secretariat and the offer from ROK to be the host country of the Centre were presented. HSSC Chair highlighted on the recommendation from WENDWG to create *S-11 Part C - Guidelines for the Coordination and Management of the Development of S-100 Electronic Navigational Data Services* (except S101 ENCs), and the liaison between NIPWG (lead) / S-100WG and WWNWS to address on S-100 dissemination related to e-navigation affecting potential S-100 “real-time” products, including SECOM and a way forward. He also highlighted on the CIRM’s request for the IHO to consider a future retirement date for provision of S-57 ENC services and work with the IMO on the outcome. HSSC endorsed *Ed. 4.4.0 of S-57, Appendix B.1, Annex A - Use of the Object Catalogue (UOC) for ENC, Ed. 8.0.0 of S-58 - ENC Validation Checks* and *S-44 edition 6.2.0*, for the further approval via IHO CLs. Focus was given to the results of the vote on the Strategic Plan review, as shown in *Figure 2*.

Australia updated on the “*Ad-hoc Drafting Group for making IHO events more inclusive*”, to prepare an IHO Resolution with the objective to maximise participation at IHO meetings, based on 4 options, “Full remote VTC”, “Hybrid / in person & VTC”, “In person only plus passive live stream” and “In person only”. The IHO Secretariat will issue a CL containing a questionnaire to survey on how to make events more inclusive based on the above four categories and then, after the outcomes of the questionnaire, another CL to propose a Resolution on inclusivity of IHO events.

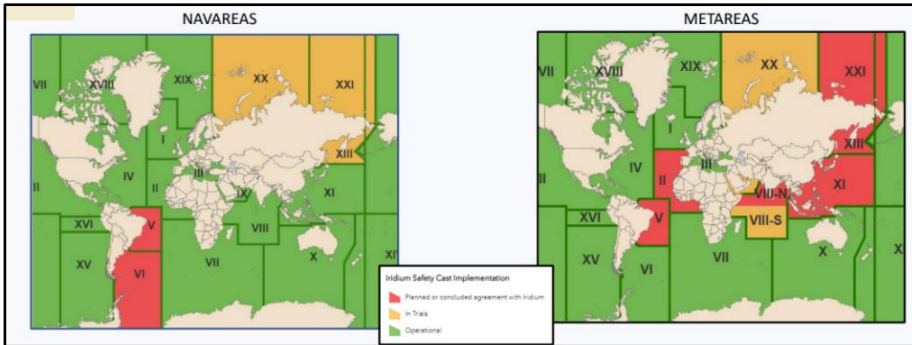
RHCs and HCA Chairs (and those speaking on behalf of those chairs not present at the meeting) focused their reports on the most important regional key achievements, key findings and lessons learned. The following were the main topics discussed:

- Revision of the IHO Strategic Plan;
- Harmonized development and implementation of S-100 products and services including all socio-economic benefits (e.g. Decarbonization, Voyage Optimization, Green Corridors and other Green/sustainable initiatives);
- Acceleration of the progress in the readiness of S-100 data migration through several ways such as exchange technology, experience, workshop and seminar between member states;
- Additional resource allocations to be found in order to start S-101 and S-102 production and how to better serve Sub-ECDIS customers with reliable, affordable and easy to access digital navigational products;
- Challenges with S-101 scheming and possible high workload during the dual fuel period, due to parallel production of both S-57 and S-101 ENCs;
- Implementation of the development of hydrographic survey technology and synchronization of the nautical charts in the future;
- Limited sharing of data with DCDB and GEBCO;
- Limited fund availability in the Capacity Building programme proved that strengthening

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collaboration across RHCs is very beneficial for cooperation amongst coastal states;

- Technical Visits and High-Level Technical Visits are extremely relevant to leverage hydrographic and cartographic activities in coastal states;
- Substantial achievement for enhancing gender balance in hydrography in some RHCs;
- Arctic's remoteness, vastness and ice-infested waters make it challenging to map the seabed, whilst in Antarctica, the activities of the Hydrographic Commission of Antarctica (HCA) need to be focused on the impact of climate change too.



*Iridium SafetyCast  
Implementation 2024 –  
Figure 3*

The WWNWS-SC Chair informed on the last WWNWS15 meeting, and the specific topics discussed (SPI, C-55, Iridium SafetyCast

Implementation, Capacity building and S-124 development). Overall, for 2024, the WWNWS assessed MSI Coastal States capacity to be 89,2% (IHO SPI 3.1.1 target is 90% by 2026) assigned to WWNWS. S-124 version 2.0.0 was endorsed by WWNWS and submitted to HSSC for approval. S-124 Document Encoding Guide draft version was completed and continues to be improved. MSC 108 approved the updated Joint IMO/IHO/WMO Manual on Maritime Safety Information. WWNWS is working in cooperation with CBSC on a C-55 GIS project, considering the States having the MSI capacity and meeting MSI SPI, and those not having such capacity and not meeting MSI SPI. Next step will be to move the web map to the IHO's ArcGis online server and add a link to the WWNWS web page. MSI courses provided by WWNWS were presented, in line with the IHO CB Strategy Phase 1. WWNWS agreed that the use of all IMO RMSSs should be mandatory, showing those NAVAREAs and METAREAs already fully implementing the Iridium SafetyCast system (see Figure 3), as well as those still in trial and those not having implemented the system yet. A Letter from WWNWS and IRCC Chairs will be issued for relevant member states to implement all IMO recognized mobile satellite services.

The CBSC Chair presented the CB Work Program (CBWP), e-Learning Center, EWH project, and the outcomes of the 13th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG/IMPA Capacity Building (CB) Coordination Meeting held in Monaco in May 2024. The Chair highlighted the generous financial contribution to Capacity Building coming from the Republic of Korea, Japan through the Nippon Foundation and Canada, and the related initiatives / projects funded with those contributions. The contribution from IHO Member States (Belgium, Canada, Denmark, France, Norway, UK and USA) was highlighted, allowing the EWH project to continue as decided at the 7<sup>th</sup> meeting of the Council. In accordance with action C7/24, a Scoping Team consisting of HOs plus representative/s from the IHO Directing Committee was established, to prepare the regulatory framework for a continued activity on this human resource theme embedded in the capacity building programme through a proposal for an IHO Resolution and draft the Terms of Reference (ToR) for a future Project Team by C-8.

Both RENCs presented plans for contributions to the CB Work Programme: IC-ENC with "Opt in fund" initiative (the first CB activity funded from this new fund was an ENC Quality Assessment & Conversion Course successfully organized by MBSHC), whilst PRIMAR is providing access to the full e-learning package for five non-RENC member states. Continuous low levels of IHO CB budget for non-earmarked CB activities in upcoming years were partly compensated by the contributions from ROK and from the surplus of the IHO budget. It was agreed that funded activities not completed would no longer be carried over into the following years work programme.

An overview on the IHO e-Learning Center was provided, highlighting that a General Manager Group was established. The System Manager is also provided by the ROK to maintain the system, the

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eLearning site improved, and the Steering Committee continues to seek e-Learning material from member states and partner organisations to be added to the e-Learning Center platform.

The WENDWG Chair reported on the latest achievements of the WENDWG. WEND-100 Principles are considered sufficient to meet the objectives. An *ad-hoc* drafting group was established for preparing amendments to the *Guidelines on the Implementation of the WEND-100 Principles* and inputs for the revision of the IHO Strategic Plan. The IGIF Matrix was considered important for HOs having no S-100 services scheduled yet, but any future annual completion of the WEND-100-IGIF matrix by RHCs was considered optional only. A new readiness level questionnaire was released in fall 2023 indicating an S-100 readiness level estimate of 53% (SPI 1.3.1) using a basic statistical approach. The lack of S-100 Coordinators in several RHCs was noted, and the IHO Secretariat took the initiative of collecting the information available with regard to S-100 coordination in the RHCs. No common ground for pursuing a global common grid scheme was found, notwithstanding risks coverage issues do exist where grids are not aligned or excessively overlapped. WENDWG established an *ad-hoc* S-11 - Part C drafting team to develop a proposed Edition 1.0.0 of S-11 Part C “*Guidelines for the Coordination and Management of the Development of S-100 Electronic Navigational Data Services (other than S-101 ENCs)*” to submit for approval in 2025. Some critical overlaps at Usage Band 5 (Harbour) and Usage Band 2 in some RHCs were presented, and the RHCs were encouraged to ask their members to engage bilaterally to resolve overlaps. WENDWG identified a need to consider the development of a communication strategy towards end-users, manufacturers, IMO, addressing readiness and expected geographic coverage of S-100 based products and data services in the following years, from 2026 onward, to be brought to the attention of the next Council for discussion and actions.

France presented a paper on “*WENDWG recommendation related to a new distribution model of the S-100 Phase I products and ENDS and decisions proposals*” to support the approach aimed at providing S-100 product coverage beyond the S-101 ENCs as soon as the first S-100 ECDIS is available. Because of their demonstrated robust role in the worldwide distribution of products on behalf of HOs, RENCs are key assets for the distribution of S-100. France highlighted the need to clarify what ENDS is and invited IRCC to request WENDWG to develop a new distribution model for S-100 products, in line with the HOs responsibility for the dissemination of nautical products to mariners under SOLAS convention. That dissemination of the S-100 products should build on RENCs, and the IHO Data Protection Scheme (S-100 Part 15) should be used to secure data integrity and retain the data producer signature all the way to the end user.



OGC federated MSDI pilot project – Figure 4

The MSDIWG Chair reported on the last meeting held in conjunction with UNGGIM and OGS that included a seminar on “*Effective and integrated marine geospatial information management*”. Exchange knowledge through national, RHCs, and expert contributor presentations, IHO Strategy and goals from an MSDI perspective, specifically IHO Strategic

Plan Target 2.1 “*Build a portal...*”, and collaboration with UN-GGIM WG-MGI and OGC Marine DWG, were discussed. Following action C7/44, IRCC will report to C-8 that the task of MSDIWG should be modified as “*MSDIWG to monitor and provide assistance to the S-122 Protected Seas pilot project with specific focus on the High Seas and MPAs adopted by IMO, to demonstrate the benefits of S-122 for non-navigation purposes*”. With reference to UN-GGIM WG-MGI – 6<sup>th</sup> Expert meeting and OGS meeting held aside the last MSDIWG15 meeting, implementation of the UN-IGIF-Hydro, terrestrial / marine / cadastral domain integration and an OGC federated MSDI pilot were discussed (see Figure 4). MSDIWG and IRCC Chairs will send a Letter to RHCs that haven’t appointed their MSDI Ambassadors, recommending nominating MSDI Ambassadors and inform MSDIWG on contact details.

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The IENWG reported on the 10<sup>th</sup> anniversary meeting of the European Commission (EC) and IHO held in 2022 and the last IENWG14 meeting held on the occasion of the European Maritime Days (EMD) 2024 organized by the EC and the host country Denmark, where the IHO Secretariat and Seabed2030 participated in the stand of the European Marine Observation Data network (EMODnet). EU maritime policies and projects involving HOs, development of the S-100 products and capacity building, EU initiative on marine data collection reporting and coordination (including hydrography) and need of data for the European Green Deal (GreenData4All) to increase interoperability with data and IHO standards, were presented. A new group was formed by the EC on the vision 2035 of EMODnet, and a representative from the IENWG was invited as a member. IENWG studied synergies on Capacity Building with the EC and produced a document on “*IHO and EC Cooperation in Third Countries – A proposal for Hydrographic Capacity Development*”, for increasing interactions between the IENWG and EC and promote programs for the development of competencies, expertise, training and means to increase the hydrographic capacity in the EU and outside EU.

The IBSC Chair reported on the last IBSC47 meeting, where 17 submissions were received, 2 were not recognized and for the remaining 15 the Board offered inter-sessional revisions, as the submissions had a significant number of shortcomings. A second annual meeting is required to finalize submission reviews and the revision of the four Standards. The board will organize a workshop in the second semester of 2024, to provide clarifications for the institutions on the preparation of submissions to the Board. The Board defined the fees for the recognition of Subjects. Thanks to the positive returns from the EWH project’s interns, IBSC will request new interns to work with IBSC on the outreach and on the revision of the Standards. IBSC will liaise with CBSC for the future maintenance of the C47 publication and will present the outcomes to IRCC in 2025.

The CSBWG Chair reported on the three working group meetings held since IRCC15. Following the publication of B-12 Ed. 3.0.0, CSBWG focused on a critical review of the group's operating mandate, identifying ten high level priority work areas and developed a multifaceted work plan. It was noted that in order to draft a submission to the UN Decade, an “*IHO CSB Initiative*” would first need to be more formally defined. The IHO Secretariat presented a proposal for how to incorporate the development and governance of an IHO CSB Initiative into the CSBWG Work Plan. The IHO CSB Initiative would serve as the central point of standardisation, policy and technical guidance - coordinated and administered by the CSBWG, into which those various CSB projects (such as The Great Barrier Reef Project, the joint IHO & Yacht Club of Monaco, etc.) managed outside the CSBWG would feed into and / or draw from. An *IRCC Workshop on Crowdsourced Bathymetry* was organised and hosted by members of the CSBWG and the IHO Secretariat on 26 April 2024, drawing 107 participants from over 50 coastal states. The workshop reiterated the value of this type of engagement and highlighted those previous modes of communication around the various aspects of CSB had not always been clear.

The DCDB Director reported on DCDB achievements over the last year. Today, the DCDB archives over 70 terabytes (TB) of uncompressed oceanic soundings acquired by hydrographic, oceanographic and other vessels during surveys or while on passage. Since June 2023, 93 new multibeam bathymetry surveys have been archived. The largest data providers to the DCDB continue to be the U.S. Academic Research Fleet (ARF) with 55 surveys archived in the last year.



GEBCO Gazetteer – Figure 5

New CSB data ingest pipelines were finalized with the Interdisciplinary Center for Development in Ocean Mapping (CIDCO), Seabed 2030, International Seakeepers Society, and the Center for Ocean Mapping and Innovative Technologies (COMIT).

Bathymetric data contributed to the DCDB are made discoverable and accessible through the DCDB web map viewer ([https://www.ncei.noaa.gov/maps/iho\\_dcdb/](https://www.ncei.noaa.gov/maps/iho_dcdb/)). The new *Ingest-to-archive data pipelines* will allow for improved reliability, increased automation, greater ease in ingesting new data,

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greater flexibility in allowed data formats for evolving bathymetric technology, provide error handling & notification, better handling of complex datasets and large volumes of data and allow us to be cloud ready. The CSB *Coastal State Review Application (CSRA)* was tested in late 2023 and will be fully operational soon, to reach out to all coastal States who requested pre-approval of CSB data and provide them training and access to the CSB CSRA. DCDB developed and hosts, on behalf of the IHO, the *GEBCO Gazetteer*, a web tool that allows the public to search for, view, and download information on more than 3800 undersea features. Gazetteer v4.3.7 is live at <https://www.ngdc.noaa.gov/gazetteer/>. The GEBCO Subcommittee on Undersea Feature Names (SCUFN) is the primary stakeholder for the Gazetteer.

The GEBCO Guiding Committee (GGC) Chair reported on the work of past GGC meetings and the organization of next GEBCO meeting in 2024 (Fiji). The new *GEBCO strategy* and *GEBCO Governance review* report were endorsed by IRCC. GGC will soon start to organize the implementation (if, how, priorities) of the GEBCO Strategy and the recommendations included in the GEBCO Governance review. The outcomes of the *Maps the Gaps Symposium* held in November 2023 in Monaco at Musee Océanographique were presented, highlighting on seabed knowledge, improved climate modelling, marine biodiversity discovery and monitoring, and offshore wind planning process. Request for higher resolution products, interest in expanding scope of GEBCO products and request for greater choice of file formats, including better visualization tools, were brought to the attention of IRCC. From the Nippon Foundation GEBCO Seabed2030 project, increased to 24.9% of the world's oceans directly measured and mapped, works alongside UN Decade team and other global initiatives, 14 new MoU's among which with NHC as first RHC, and the NF GEBCO UNH training alumni conference July 2023 in Tokyo, were also presented. The improved cooperation / harmonization between GEBCO Sub Committees work from new strategy as well as the funding challenges faced by the GEBCO programme were finally highlighted.

<b>Key #1</b>	<b>Maintain the 3 main goals but update and refine targets to better align with strategic objectives</b>
<i>Action 1:</i>	Be clear that Goal 1 is still the current priority
<i>Action 2:</i>	Goal 2 is a good statement, however update "how and why" to be more specific
<i>Action 3:</i>	Add mention of climate change (i.e.: "hydrography as an underpinning data layer for climate modelling")
<i>Action 4:</i>	Goal 3 - There's a need to build public awareness about ocean governance and activities and why they are important (i.e.: "Provide hydrographic data in support of safety of efficient maritime use")
<b>Key #2</b>	<b>Targets to be measurable and identifiable with clear responsibilities assigned</b>
<i>Action 1:</i>	Measure what we CAN measure, not necessarily what we NEED to measure.
<b>Key #3</b>	<b>SPIs should be objectively reviewable and applicable for all MS</b>
<i>Action 1:</i>	Enhance discoverability and governance for SPIs for MS, external stakeholders, tracking and newcomers
<i>Action 2:</i>	Make the metrics dynamic and automatic; structure national reports to extract that data directly from them
<b>Key #4</b>	<b>Conduct capacity building by IHO and RHCs for technical training and examination on how to develop the S-100 products</b>

*Example of the outcomes of brainstorming on the IHO Strategic Plan Review – Figure 6*

IRCC opened a discussion on the *Axis of evolution of the IHO Strategic Plan*. Three groups were created to brainstorm on the

"Strategic Plan structure", "Governance and Role of IRCC", "Measurement system (SPI ?)" and "Aspects concerning RHCs and IRCC bodies". Example outcomes of the brainstorming session (see *Figure 6*) will be brought to the attention of C-8.

Denmark presented on the results of the "*Fund Generation Project Team under IRCC*" established as a result of A-3 and C-7. Two meetings were held, Chair and Vice Chair were nominated. The initial focus for the PT will be to develop a prioritised list of activities and seek review from IRCC and HSSC to validate this list, focus will then shift to the identification of opportunities for recurring funding based on two scopes, Scope 1 – existing and short-term options and Scope 2 – long term strategic options. The Terms of Reference of the PT were adjusted and approved by IRCC.

The next IRCC meeting is planned to be held on 3-5 June 2025 in Monaco at the IHO Secretariat. Following meetings will be held in Peru (May/June 2026), Nigeria (May/June 2027), Australia or New Zealand (May/June 2028 – Venue TBD), and Denmark (May/June 2029).