



Crowdsourced Bathymetry Working Group

Report to IHO - IRCC16

By Jennifer Jencks

Chair, IHO CSBWG



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CSB Working Group Meetings

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CSBWG 14: 16-18 August 2023, hosted by the Norwegian Mapping Authority Hydrographic Service in Stavanger, Norway

Intersessional meeting: Held virtually on 13 December 2023

CSBWG 15: 23-25 April 2024, hosted by the IHO Secretariat in Monaco

CSBWG 16: Week of 24 March 2025, co-hosted by NIWA & LINZ in Wellington, NZ



CSBWG14 - ~60 participants (25 in person)



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CSB Working Group Meetings

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CSBWG15 - ~80 participants (20 in person)

Chair: Jennifer Jencks, USA; **Vice Chair:** Peter Wills, CA (CSBWG14); Belen Jimenez Baron (CSBWG15-present)

Current Representation from Member States: Argentina, Canada, China, Denmark, France, Germany, India, Iran, Italy, Jamaica, Lebanon, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, South Africa, Sri Lanka, Sweden, UK, Uruguay, USA

IHO Secretariat: IHO Assistant Director Sam Harper, IHO Director Luigi Sinapi

Observers and expert contributors: CCOM-JHC, CIDCO, CIRES, COMIT, Da Gama Maritime Ltd, Dongseo U, Dock Tech, ECC AS, ESRI, FarSounder, FLIR Systems AB, Fugro, GMATEK, Inc., Great Lakes Observing System (GLOS), H2i, Inkfish, International Seakeepers, James Cook U, JAMSTEC, Navico/C-Map, ONE Data Tech Co., Orange Force Marine, PYA, Seabed 2030, Sea-ID, SevenCs/ChartWorld, Teledyne CARIS, World Maritime University, and World Ocean Council

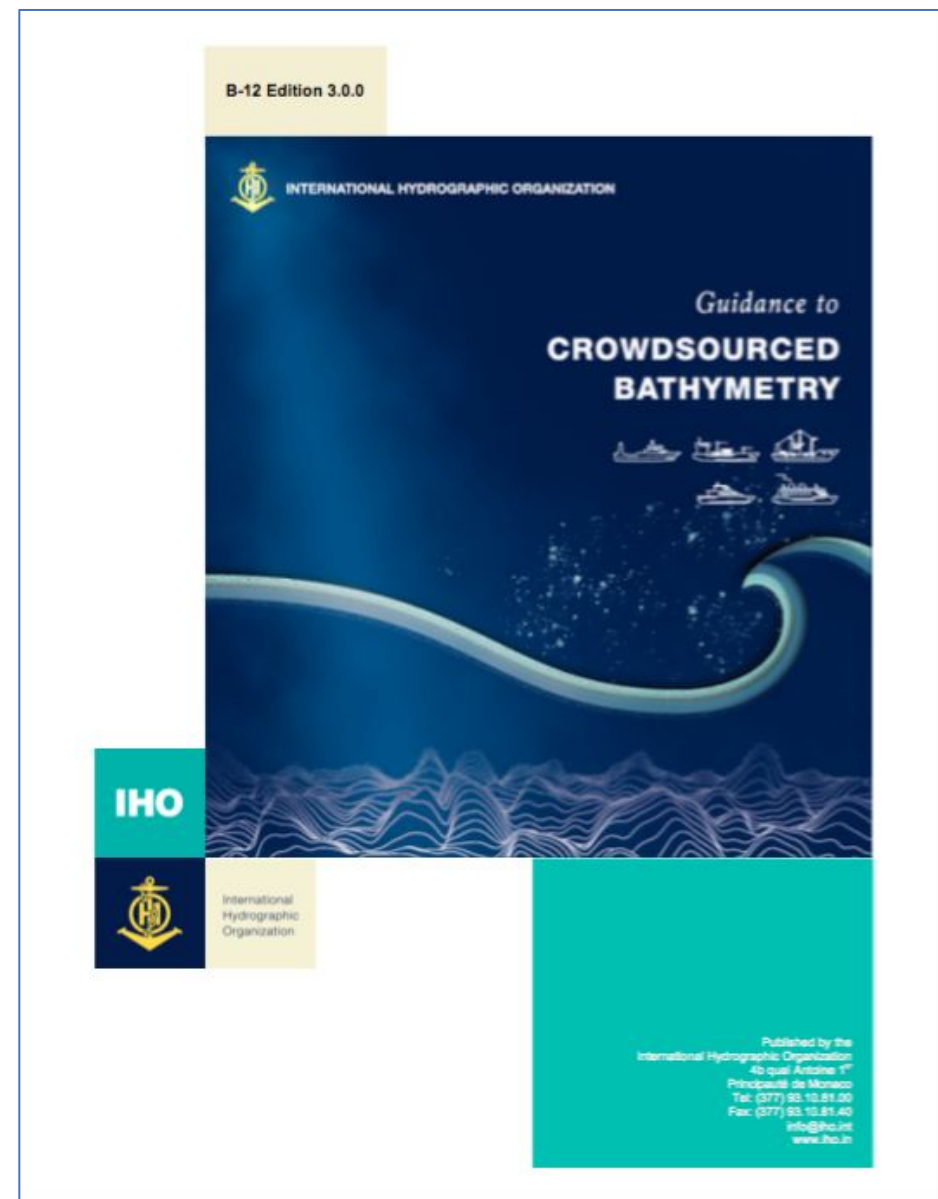


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CSBWG Work Programme

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Following the publication of B-12 Ed. 3.0.0 (which had been the major focus of the CSBWG for the last several years), CSBWG13 focused on a critical review of the groups operating mandate, as set out in the **ToRs and RoPs.**



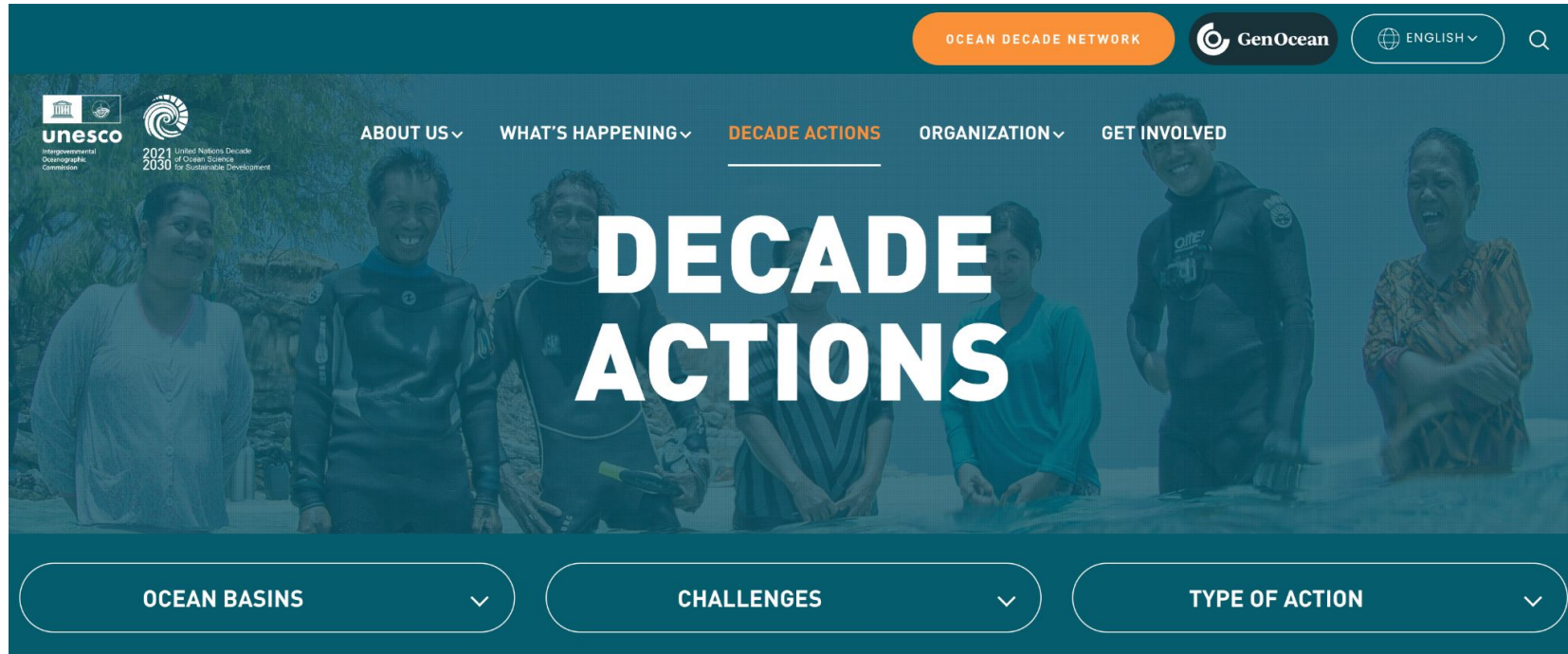
	Work Item	Lead
A	Maintain and update IHO CSB Guidance Document (B-12)	Guillaume Morissette
B	Submit IHO CSB initiative as a UN Decade Action	Evert Flier
C	Gather, prioritize and respond to HO-specific issues/opportunities regarding national policy/regulations related to CSB	Jenn Jencks
D	Gather and prioritize HO-specific issues relating to CSB data, including but not limited to Nautical Cartography	Pete Wills Anthony Klemm
E	Support CSB/SB2030 Coordinators in their RHC engagement	Belen Jimenez Baron
F	Discuss and propose potential software tool support for HOs	Anders Bergstrom Brian Jensen
G	Clarify support identified by current Trusted Nodes needed for current and future Trusted Nodes.	Guillaume Morissette
H	Clarify all aspects of the CSB data cycle and capture known issues, requirements and suggested enhancements.	Brian Calder
I	Develop a communication plan in coordination and collaboration with related efforts (SB2030, GEBCO, etc)	Tim Kearns Sarah Grasty
J	Develop a recognition & incentive strategy plan	David Miller



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Work Item B: Submit IHO CSB Initiative as a UN Decade Action

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What IS the IHO Crowdsourced Bathymetry Initiative?

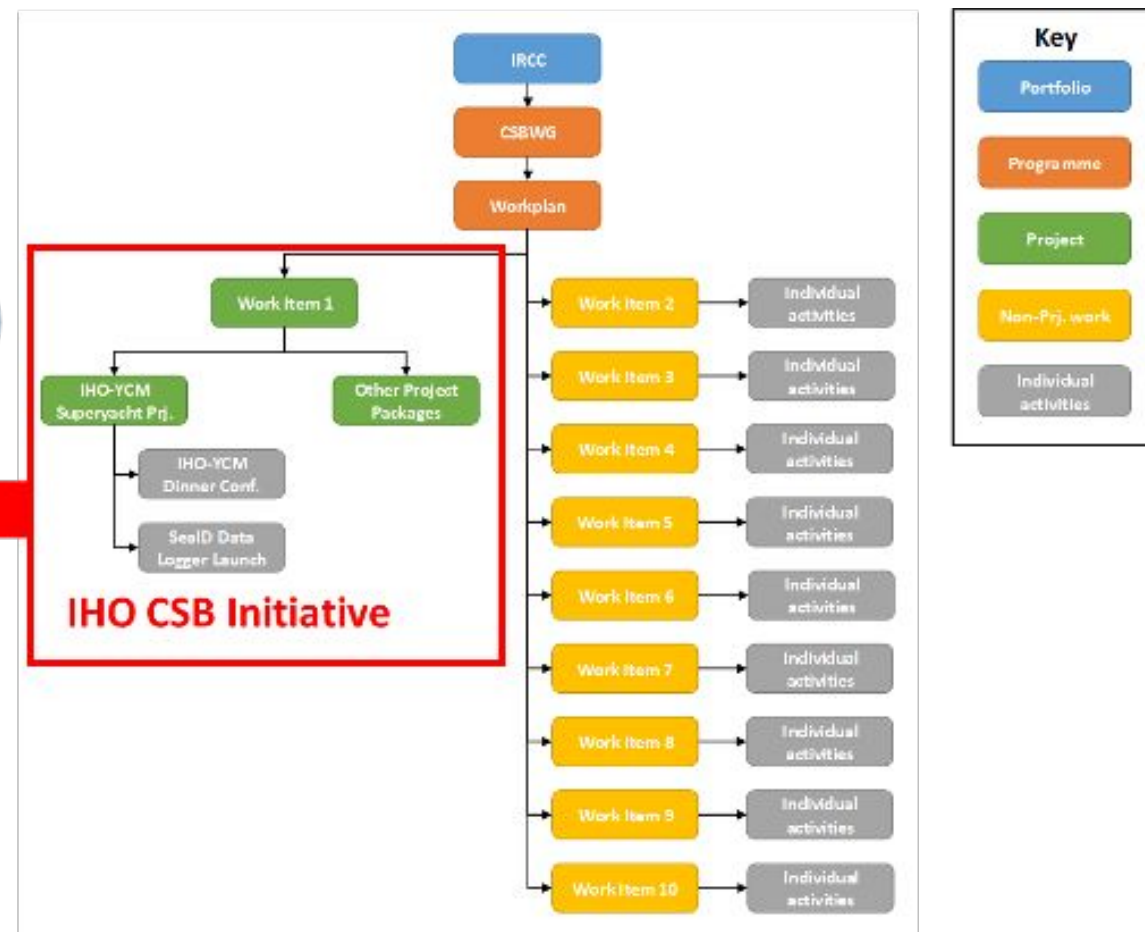
An “IHO CSB Initiative” would first need to be more formally defined. This would include defining its shape, nature and governance in terms that deliver measurable outputs, outcomes and impacts.



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IHO CSB Initiative

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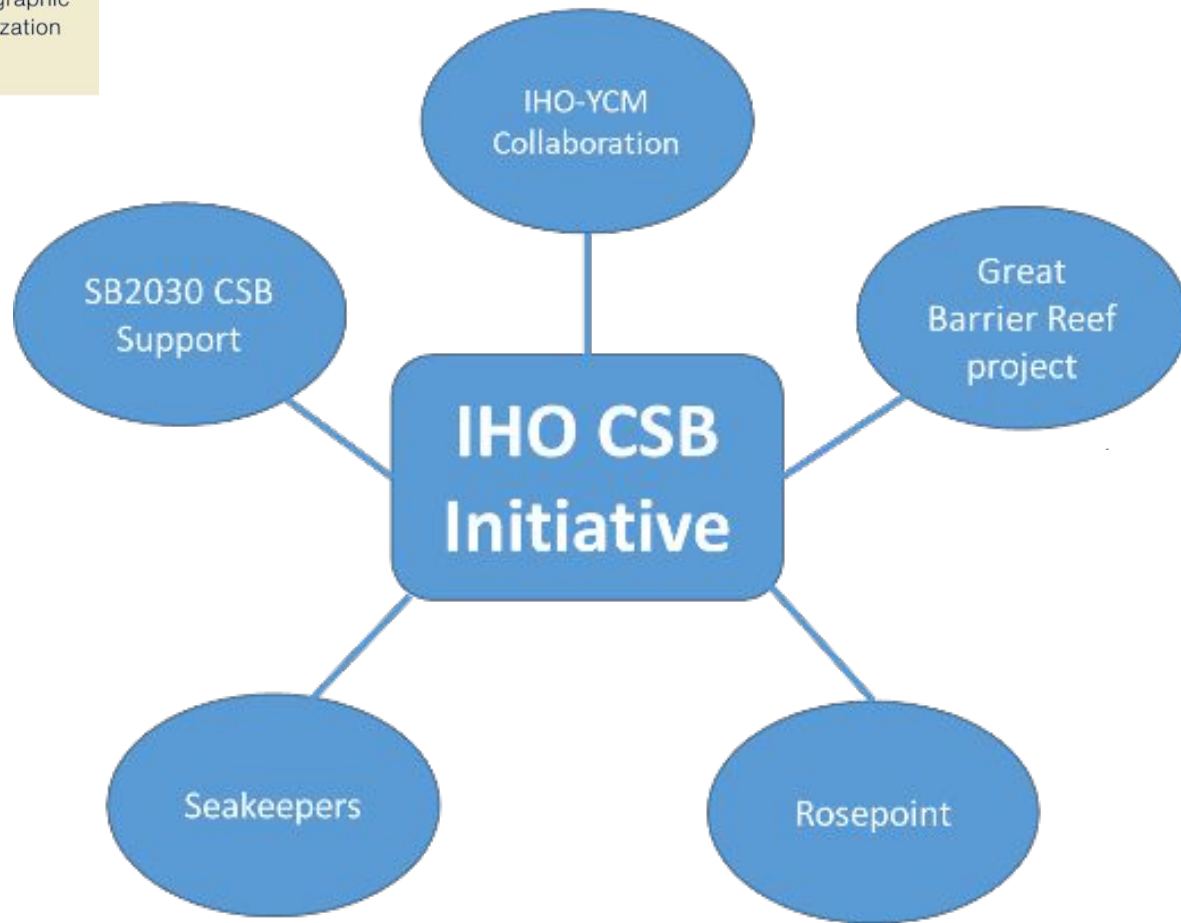
A need to clearly distinguish between the IHO CSB Initiative from the original work items.



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IHO CSB Initiative

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The Initiative would serve as the outward facing, enduring point of entry for those who wished to align themselves or their activity under its umbrella, draw on all of the resources created and maintained by the CSBWG, and contribute to the collective aims.



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IHO CSB Initiative

YCM BACKS MAPPING OF SEABED INITIATIVE

by Stephanie Horsman 26/07/2022



- These individual CSB projects/activities are governed and maintained by organisations outside of the CSBWG.
- The IHO CSB Initiative would serve as the central point of standardisation, policy and technical guidance - coordinated and administered by the CSBWG - into which these various CSB projects feed into and/or draw from.

How to Participate as a DISCOVERY Yacht

Privately-owned vessels can participate in increasing our knowledge of the ocean by sharing depth measurements from navigation instruments while out at sea. Yachts explore the world's oceans, often in areas where data is sparse, non-existent or of poor quality. These are exactly the places where contribution of global seafloor mapping efforts can have the greatest impact.

JOIN THE D/Y
PROGRAM

INSTALLATION
MANUAL

MANUFACTURER
MANUAL



**Crowdsourced
bathymetry on the
Great Barrier Reef**



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IHO CSB Initiative

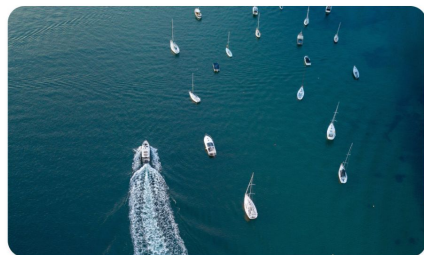
International Hydrographic Organization

HOW CROWDSOURCING CAN CHANGE THE GAME

FEBRUARY 27, 2023



The Aqua Map team is excited to announce a new partnership with NOAA for the Crowdsourced Bathymetry project, promoted by the International Hydrographic Organization (IHO), with the aim of improving the accuracy and timeliness of nautical chart updates.



- This approach means that CSB as a concept is standardised, while individual CSB activities can be tailored to the needs of a specific crowd.
- It's also worth noting that taking this approach also allows people to participate in the IHO CSB Initiative, without the burden of being a member of the CSBWG.

From volunteer ping to community map – The CHS’ Community Hydrography Program



Mathieu Rondeau



Michel Breton



Gabriel Montpetit-Allard



Michel Leger



Yan Bilodeau



Johnny Kasudluak

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Last Updated 31 May 2024 - 09:44

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Media Coverage | From: Sea Technology June 20, 2023

Crowdsourcing Bathymetry

As many of us working in the maritime industry know, hydrographic surveying is a hot topic. With less than 24% of our world's ocean floor mapped, the message from Seabed 2030 that "we know the topography of the Moon and Mars in greater detail than that of our own planet" surely resonates within our community. Seabed 2030 is a global initiative of the Nippon Foundation and GEBCO to map the world's oceans 2030 and make it available to all. By combining both professional and crowdsourced depth measurements, they aim to unite our community in building a complete map of our oceans. Expedition vessels, including cruise ships and explorer yachts, are actively participating in these efforts today. [Read More...](#)



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IHO CSB Initiative

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The proposed structure was agreed to at CSBWG15 and a new work item was added to the work plan (*Work Item K: Deliver a CSB Initiative*).

Initial work will focus on developing specific governance and clarifying next steps.

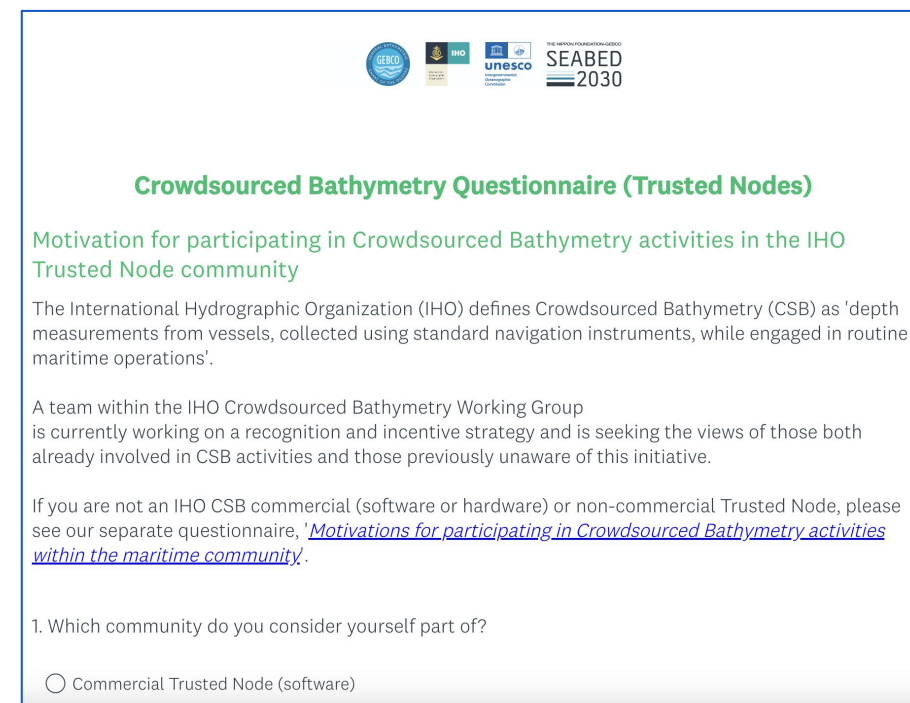
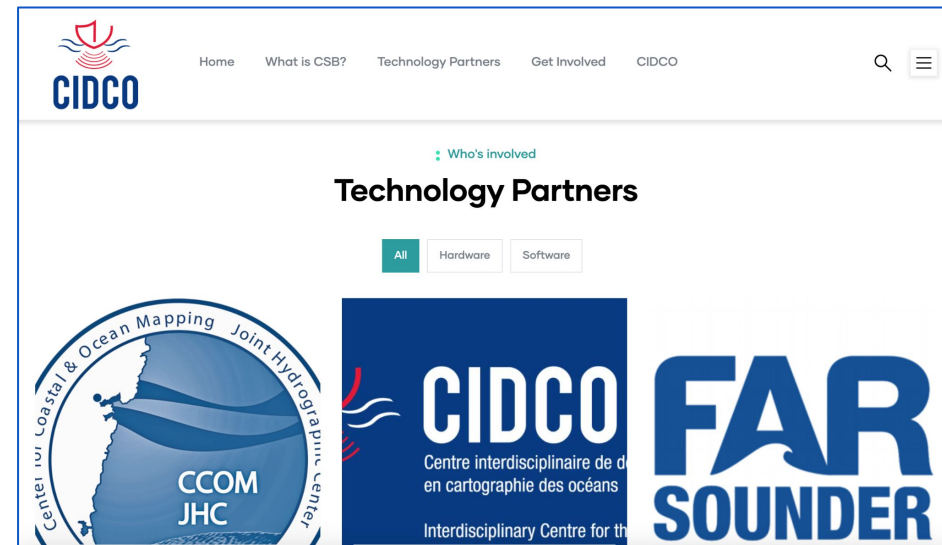
The IHO Secretariat will commit to managing a dedicated IHO CSB Initiative Web Page on the IHO website.



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Work Item Highlights

- Created and published an open-source uncertainty model
- Created a free portal to showcase CSB partners and projects
- Testing and feedback of data stored in the DCDB pointstore is ongoing.
- CHS & NOAA exploring tool generation and developing data processes
- Presented at CBSC-22 on the role of CSB in capacity building toolbox
- Drafted version 1 of CSB Comms & Outreach strategy
- Developed and issues online questionnaire re. incentives that would motivate individuals and/or organizations to participate in CSB





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Progress on IRCC Action Items

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IRCC 15 Action 9: CSBWG in liaison with the IHO Secretariat to host an IRCC workshop on the benefits of CSB and to extend the contribution of CSB.

Update: An IRCC Workshop on Crowdsourced Bathymetry was organised and hosted by members of the CSBWG and the IHO Secretariat on 26 April 2024.



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IRCC Workshop on CSB

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SESSION 1		
1320-1335	How CSB is supporting the UN Decade, GEBCO, & The IHO Strategic Plan	Belen Jimenez Baron
1335-1340	Q&A	All
1340-1355	Legal Considerations & Misconceptions	Steve Keating
1355-1400	Q&A	All
1400-1415	BREAK	
SESSION 2		
1415-1430	Utility of CSB (The NOAA Example)	Anthony Klemm
1430-1435	Q&A	All
1435-1450	Implementation of CSB in waters of national jurisdiction: the FRANCE case.	Laurent Kerléguer
1450-1455	Q&A	All
1455-1510	CSB and the world of Yachting: the experience of the Yacht Club de Monaco (YCM)	YCM (speaker TBD)
1510-1515	Q&A	All
1515-1530	FINAL WRAP-UP AND DISCUSSION on Developing CSB inside and outside the IHO Community	IHO Secretariat Jennifer Jencks
END OF WORKSHOP		



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IRCC Workshop on CSB

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- The workshop drew 107 participants from over 50 coastal States.
- The IHO and the CSBWG consider the workshop a success as there was very active engagement with over a dozen questions posed, time to provide adequate answers, and very positive feedback provided during the event and afterwards.
- Several MSs have since reached out reiterating the value of this type of engagement and highlighting that previous modes of communications around the various aspects of CSB had not always been clear.





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Problems Encountered

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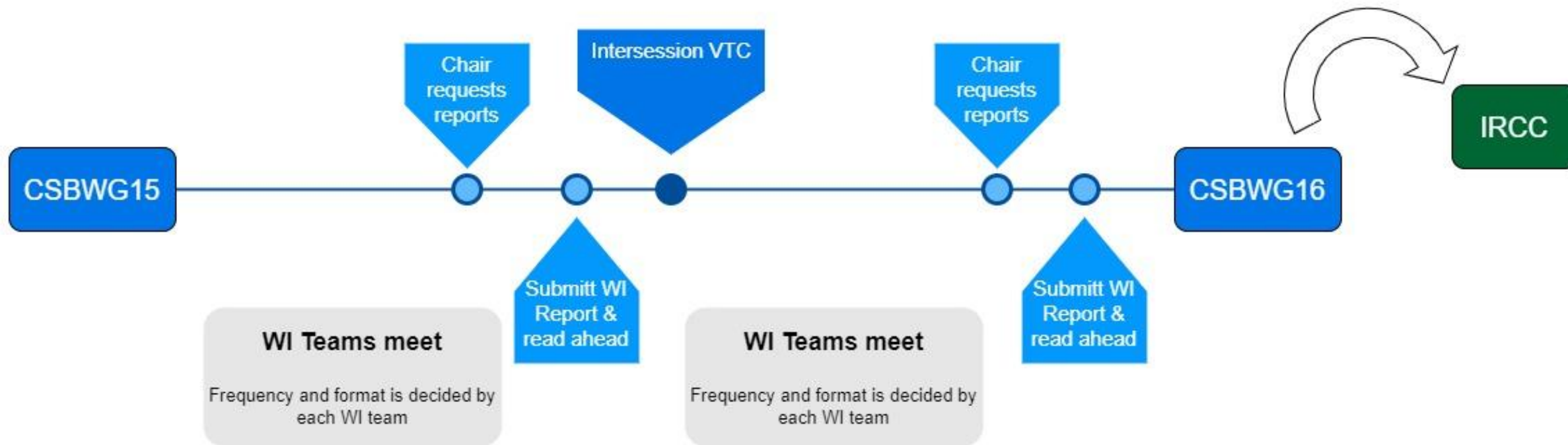
During the three meetings held this last year, it became obvious that we had yet to develop a way to effectively measure progress against our work item objectives.

The CSBWG Chair Team has prioritised the development of metrics gathering and reporting templates to be shared with Work Item leads before our next intersessional meeting.



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Problems Encountered



The first iteration of this process will be implemented during the intersessional work between CSBWG15 and CSBWG16 and will be adjusted as needed based on experience and feedback.



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Other Items of Note

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The CSBWG continues to enjoy strong industry participation and this is reflected in the membership of the group.

At IRCC15, a concern over dwindling participation from hydrographic offices and authorities was reported.

Likely, in part, [to the IHO-led social media efforts around promoting the IRCC CSB Workshop](#), registration and attendance to the CSBWG15 (held that same week) by HOs was record breaking, with over [80 registrants](#).



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Other Items of Note

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The CSBWG would like to emphasise that the group is not only for HOs that are active in CSB efforts, but for all offices to discuss their concerns or questions on the topic.

The CSBWG strongly believes that increasing the collection, sharing and use of CSB data will only happen if we can hear the full perspectives of all.

The CSBWG would also like to stress that we are an IHO resource, here to support all HOs, whether they are members of the CSBWG or not.



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Other Items of Note

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Since IRCC15, the number of positive MS respondents to IHO CL21/2020 and IRCC CL1/2020 has risen to **36** with the additions of **Palau** and **Kiribati**.

We also know that anecdotally, other nations are currently on the complicated journey of getting approval through their legislative processes



To date, 36 coastal States (green) have replied positively to IHO CL 21/2020 & IRCC CL 1/2020



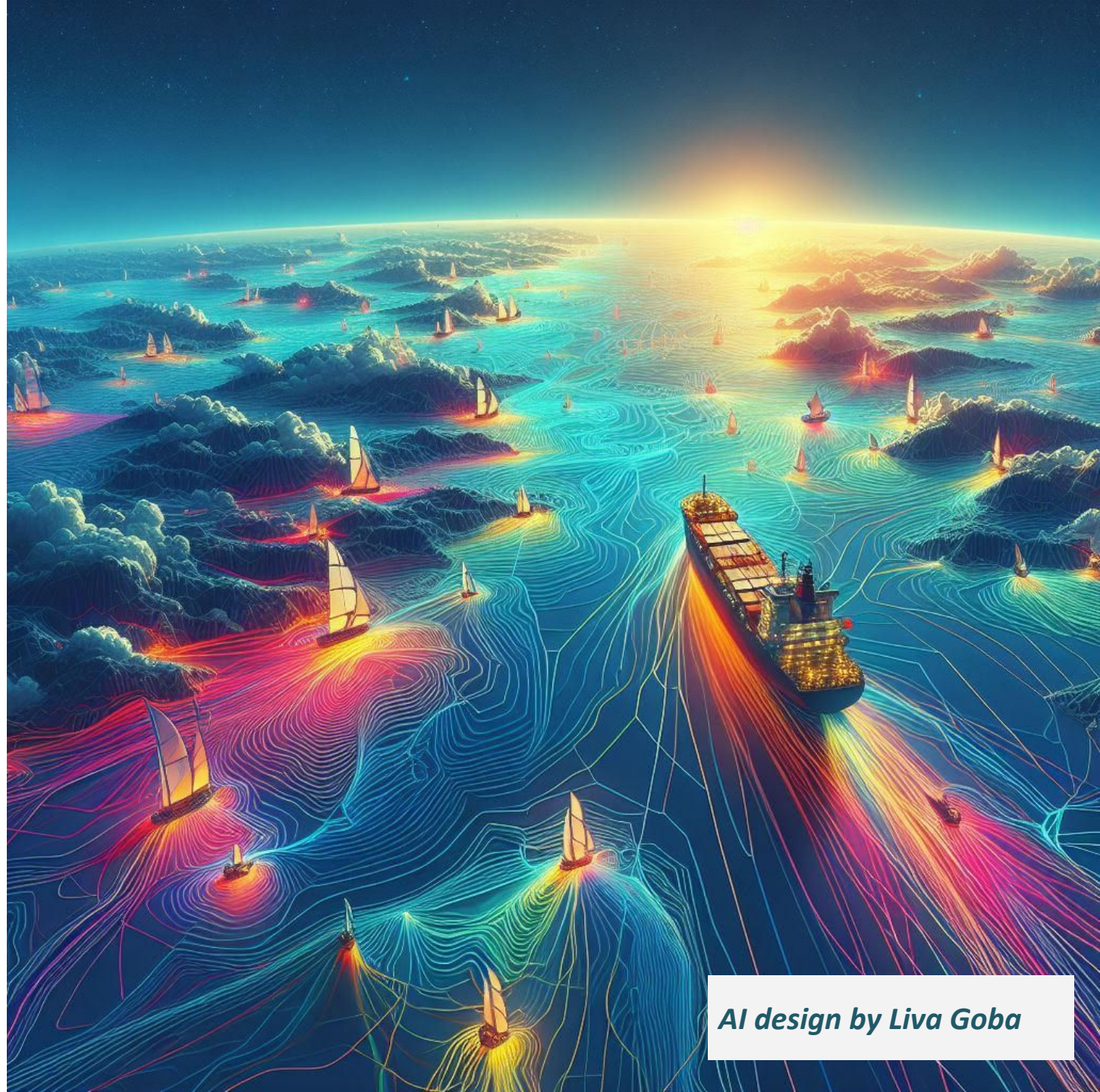
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Other Items of Note

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CSBWG16 will be co-hosted by
NIWA & LINZ in Wellington, NZ
Week of 24 March 2025

The week will include a hands-on
workshop focusing on the variety
of open source tools that support
the end to end flow of CSB data.



AI design by Liva Goba



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Conclusions and Recommended Actions

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As the CSBWG continues to progress activities associated with their work plan, specific work items will continue to be refined and changes to the work plan are expected.

Following the last 3 meetings, the CSBWG would like to propose a new work item:
Work Item K: Deliver the IHO CSB Initiative.



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Actions Requested of IRCC

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- a) Note the contents of this report;
- b) Approve addition of new Work Item K: Deliver the IHO CSB Initiative**
- c) Encourage all Member States to engage with the IHO CSBWG, either formally (by joining the CSBWG) or informally (attending CSBWG meetings, engaging with CSBWG members or their RHC CSB Coordinators with questions, concerns).
- d) Encourage Member States to support CSB with positive actions, such as encouraging vessels, from all sectors, to collect and contribute bathymetric data when involved in routine maritime operations;
- e) Take what other action is deemed necessary.