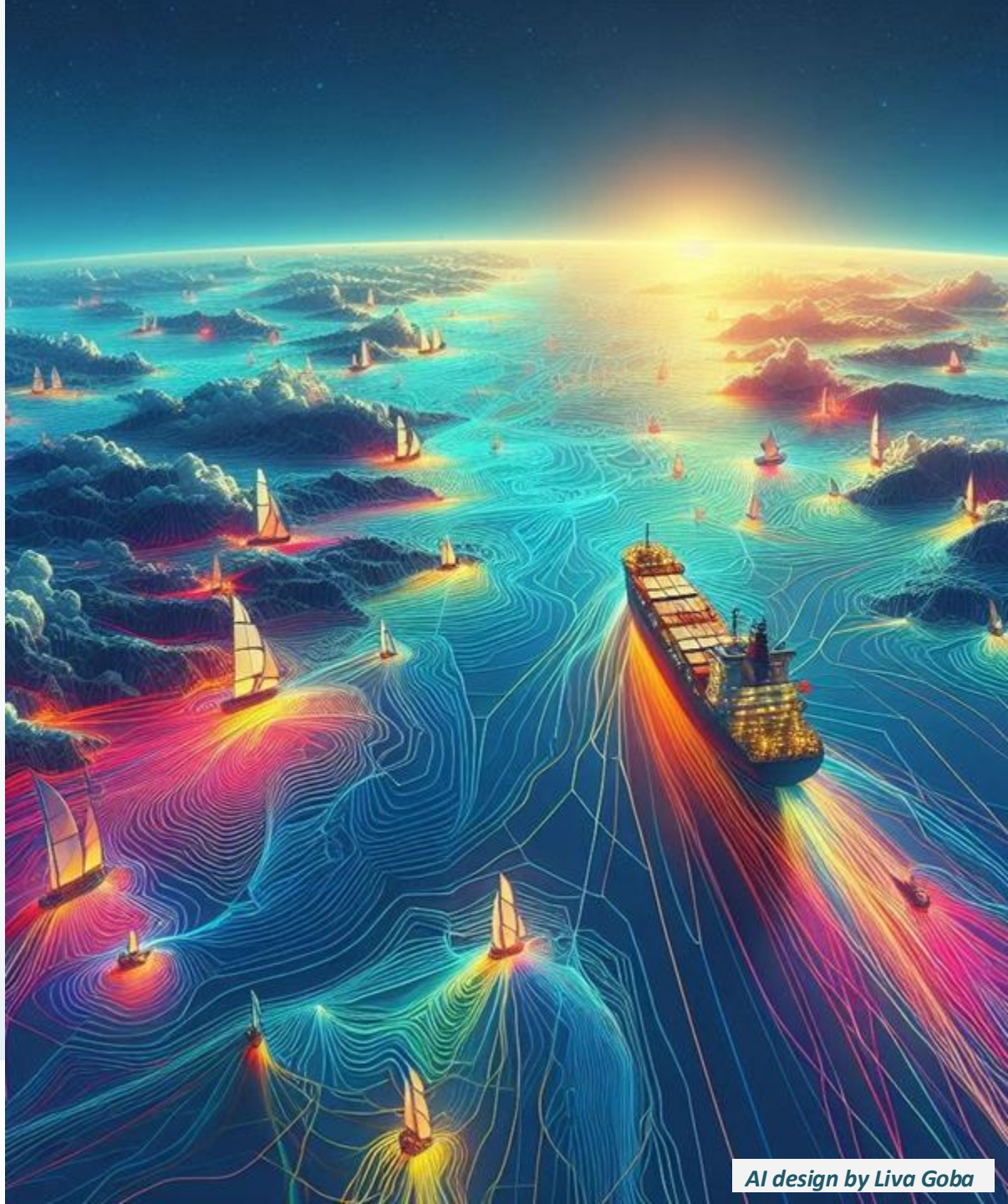
The IHO Crowdsourced Bathymetry Working Group 16

Welcome, Opening Remarks, Background & Report to IRCC

26-28 March 2025
Wellington, New Zealand



AI design by Liva Goba

International Hydrographic Organization
Organisation Hydrographique Internationale

The CSB Tools Workshop

24-25 March 2025
Wellington, New Zealand

International Hydrographic Organization
Organisation Hydrographique Internationale

Background

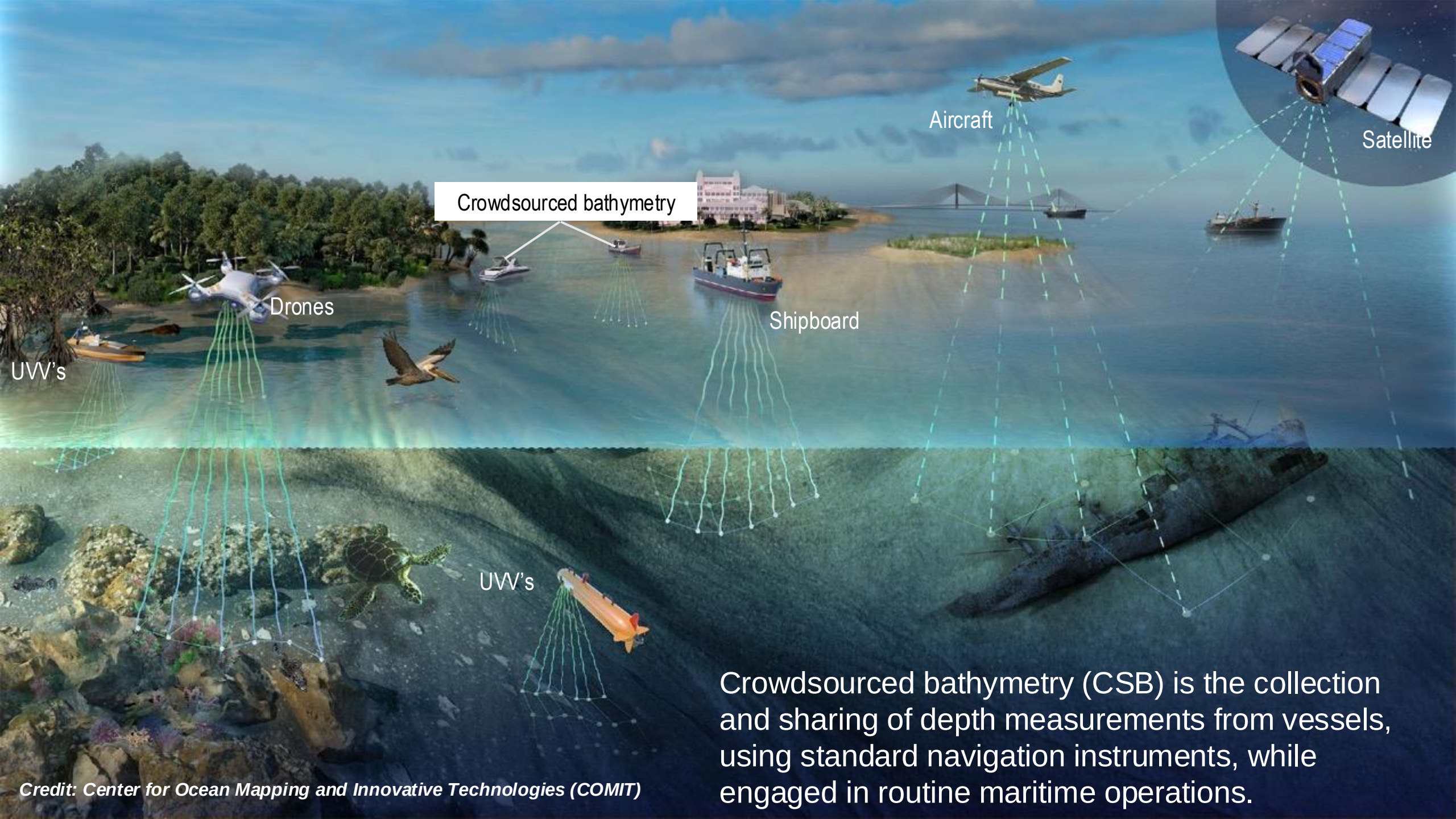
AI design by Liva Goba

IHO Crowdsourced Bathymetry Initiative

International Hydrographic Organization

In 2014, the International Hydrographic Organization (IHO) initiated a collaborative project to encourage mariners to collect and contribute “crowdsourced bathymetry”.

A Working Group was formed and tasked to develop B-12 IHO Guidance on Crowdsourced Bathymetry that states the IHO’s policy towards, and best practices for, the collection and contribution of CSB.



Crowdsourced bathymetry (CSB) is the collection and sharing of depth measurements from vessels, using standard navigation instruments, while engaged in routine maritime operations.

Credit: Center for Ocean Mapping and Innovative Technologies (COMIT)

IHO

International Hydrographic Organization

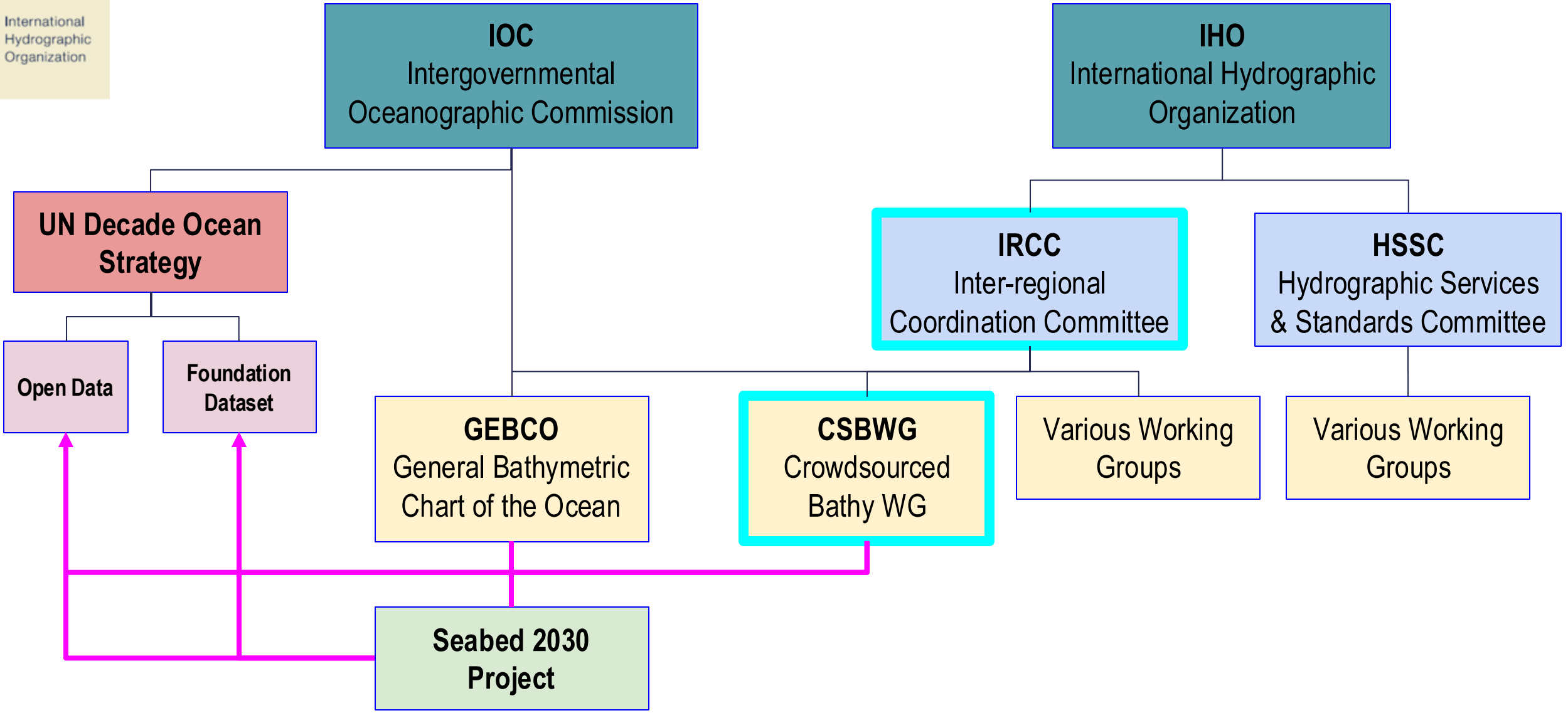
CSB Working Group

- **Chair:** Jennifer Jencks, USA; **Vice Chair**: Belén Jiménez Barón, New Zealand (until Jan. ‘25); Currently Vacant
- **Member State Participation:** Argentina, Canada, China, Denmark, Fiji, France, Germany, India, Iran, Italy, Jamaica, Japan, Kenya, Kiribati, Lebanon, Mexico, Netherlands, New Zealand, Norway, Portugal, PNG, Spain, South Africa, Sri Lanka, Sweden, UK, Uruguay, USA
- **IHO Secretariat:** IHO Assistant Director Sam Harper, IHO Director Luigi Sinapi

CSBWG15 - Monaco

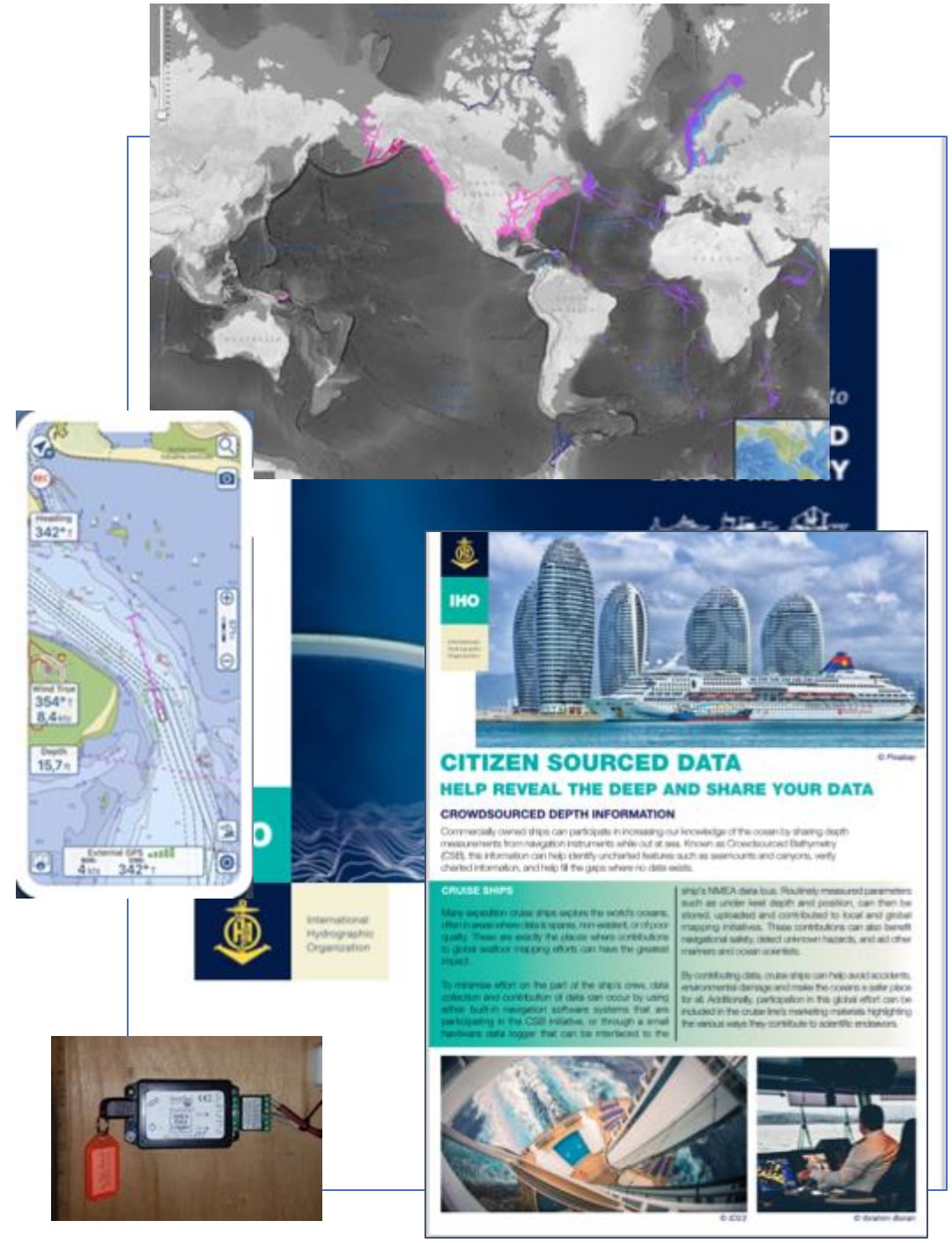
- **Observers and expert contributors:** CCOM-JHC, CIDCO, CIRES, COMIT/USF, Da Gama Maritime Ltd, Dongseo U, Dock Tech, ECC AS, ESRI, FarSounder, FLIR Systems AB, Fugro, GMATEK, Inc., Great Lakes Observing System (GLOS), H2i, Inkfish, International Seakeepers, James Cook U, JAMSTEC, Navico/C-Map, ONE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

Governance


IOC
Intergovernmental Oceanographic Commission
IHO
International Hydrographic Organization
UN Decade Ocean Strategy
IRCC
Inter-regional Coordination Committee
HSSC
Hydrographic Services & Standards Committee
Open Data
Foundation Dataset
GEBCO
General Bathymetric Chart of the Ocean
CSBWG
Crowdsourced Bathy WG
Various Working Groups
Various Working Groups
Seabed 2030 Project

CSBWG Highlights

- B-12 Ed. 3.0.0 (and a growing number of ancillary supporting documentation)
- 15 CSBWG meetings
- Industry Forum (2019), IRCC Workshop (2024), Tools Workshop (2025)
- A robust IHO DCDB-hosted CSB data infrastructure
- Interest and participation from industry and academia
- CSB/Seabed 2030 Coordinators from ***most*** RHCs
- Growing outreach efforts encouraging participation from the greater community
- 11 Work Items focused on a variety of CSB-related topics



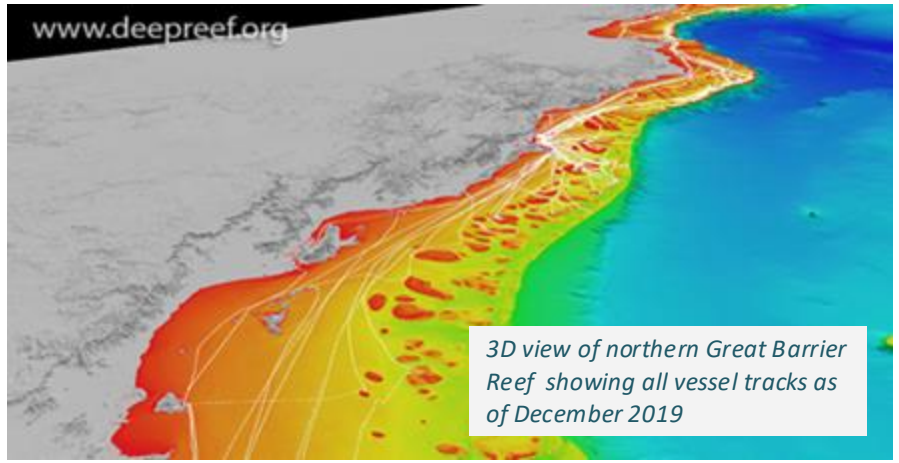
CSBWG Highlights

- In recent years, we have started to see a change in the way many coastal States view CSB - *with Fiji and Cyprus revisiting their CL response and their caveats.*

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

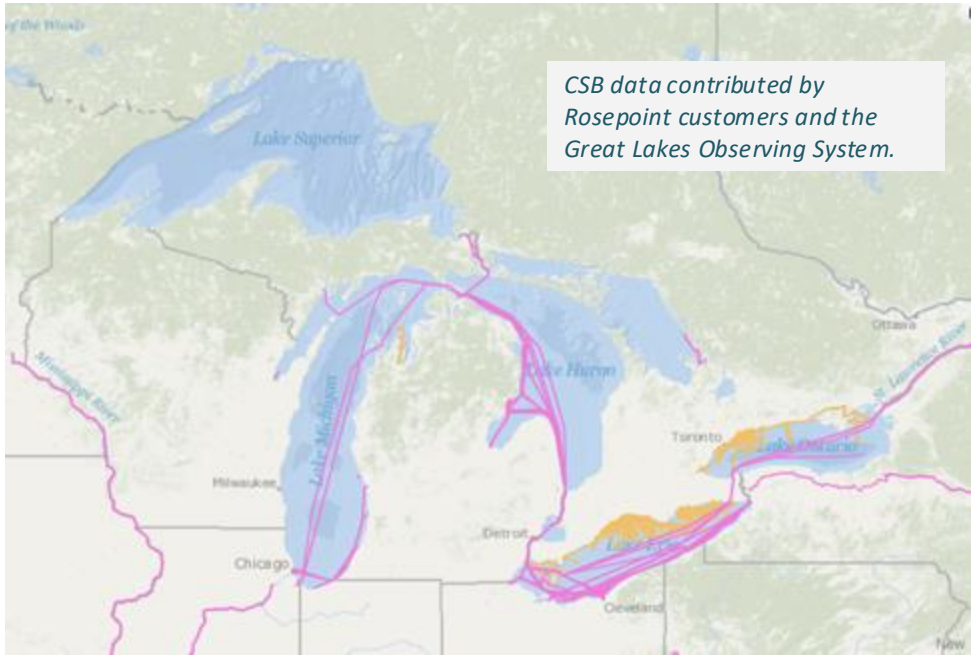
To date, 37 coastal States (green) have replied positively to IHO CL 21/2020 & IRCC CL 1/2020

With growing momentum comes a growing responsibility



3D view of northern Great Barrier Reef showing all vessel tracks as of December 2019

- Are we ready? Can we support the ever-increasing number of parties saying they want to get involved?
- How do we respond to demand? How do we manage expectations?
- This is a GREAT problem to have!
- As a WG, we need to continue to strive to become more efficient, smarter and collaborative to the needs, questions, concerns of our communities
- We must continue to identify both roadblocks **and solutions!**



CSB data contributed by Rosepoint customers and the Great Lakes Observing System.

CSBWG Terms of Reference

A. Maintain the **IHO publication B-12** through periodic reviews and updates identified by Member States;

B. Engage with **HOs and IHO Member States on matters relating to CSB uses**, including but not limited to Nautical Cartography;

C. Monitor **Member State and Regional Hydrographic Commission progress** regarding development of best practices and CSB initiatives and incorporate into B-12 as appropriate;

D. Investigate ways to **foster and facilitate data providers** (i.e.: Trusted Nodes), increase data contributions and identify incentives on how and why mariners should become involved;

E. Investigate and promote **greater end use of CSB data in and outside the hydrographic community**;

CSBWG Terms of Reference

F. Provide **guidance on data quality and standards** for CSB in liaison with appropriate IHO Working Groups;

G. Liaise with other relevant IHO and allied bodies involved with CSB data to i**mprove coordination and promote its use and development**;

H. Liaise closely with the IHO Data Centre for Digital Bathymetry (DCDB) as it continues to **develop technology to collect, display and distribute CSB data** to the public;

I. ***Encourage and support all aspects of the CSB data life cycle from acquisition through archival to discovery and distribution, emphasizing automation and efficiency whenever possible***; and

J. Encourage and expand scholarly discourse regarding the benefits of CSB to **support U.N. Decade on Ocean Science and GEBCO objectives** by encouraging contributions to scientific, legal, and policy literature.

CSBWG Work Items

A. Maintain and update IHO CSB Guidance Document (B-12)

B. Submit IHO CSB initiative as a UN Decade Action

C. Gather, prioritize and respond to HO-specific issues/opportunities regarding national policy/ regulations related to CSB

D. Gather and prioritize HO-specific issues relating to CSB data, including but not limited to Nautical Cartography

E. Support CSB/SB2030 Coordinators in their RHC engagement

F. Discuss and propose potential software tool support for HOs

G. Clarify support identified by current Trusted Nodes needed for current and future Trusted Nodes.

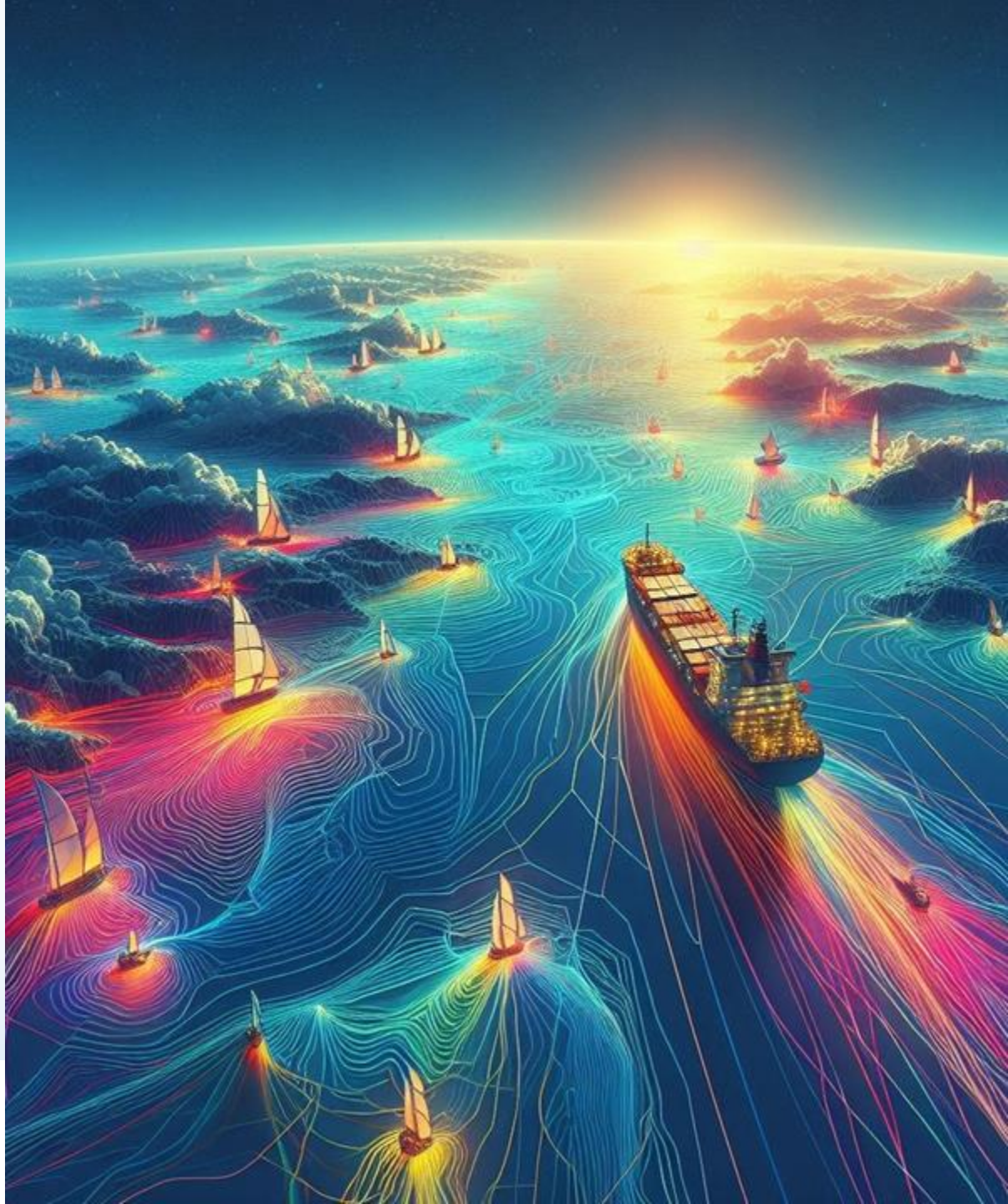
H. Clarify all aspects of the CSB data cycle and capture known issues, requirements and suggested enhancements.

I. Develop a communication plan in coordination and collaboration with related efforts (SB2030, GEBCO, etc)

J. Develop a recognition & incentive strategy plan

K. Deliver the IHO CSB Initiative

Introductions



Report to IRCC

Report to IRCC: CSB Working Group Meetings

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

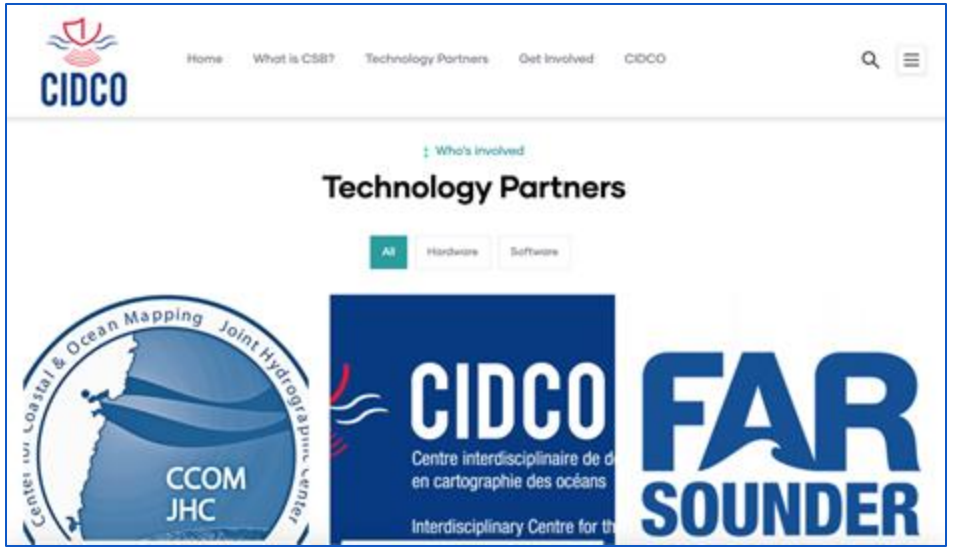
CSBWG 15: 23-25 April 2024, hosted by the IHO Secretariat in Monaco

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

CSBWG14 - ~60 participants (25 in person)

Report to IRCC: 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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Report to IRCC:

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

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

Report to IRCC: IHO CSB Initiative

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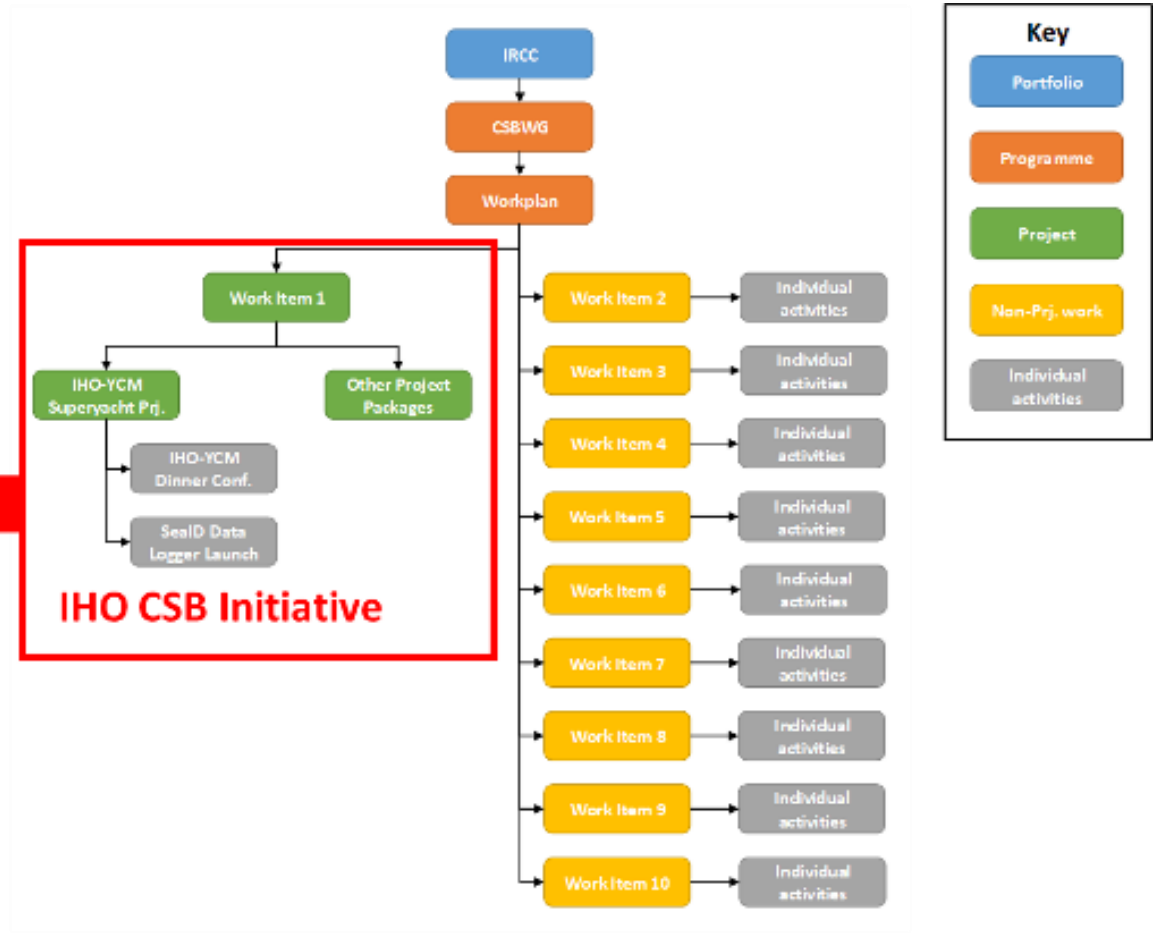

A need to clearly distinguish between the IHO CSB Initiative from the original work items.

Report to IRCC: IHO CSB Initiative

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.

Report to IRCC: Progress on IRCC Action Items

<u>IRCC 15 Action 9</u>: 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.

Report to IRCC: IRCC Workshop on CSB

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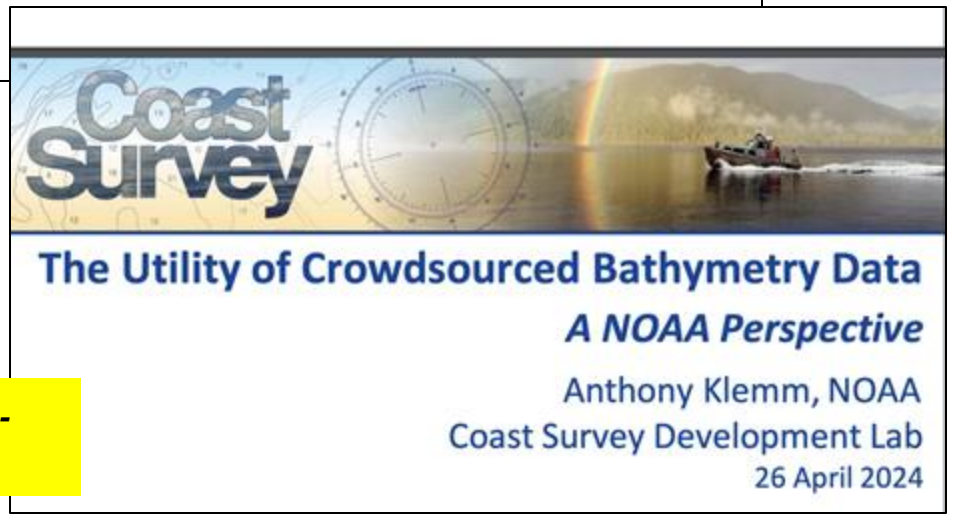
	SESSION 1	
1320-1335	**How CSB is supporting the UN Decade, GEBCO, & The IHO Strategic Plan**	Belen Jimenez Baron
1335-1340	**Q&A**	All
1340-1355	**Legal Considerations & Misconceptions**	Steve Keating
1355-1400	**Q&A**	All
1400-1415	**BREAK**	
	SESSION 2	
1415-1430	**Utility of CSB (The NOAA Example)**	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	

Report to IRCC: Workshop on CSB

Organized a CSB Workshop (26 Apr 2024)

- 107 participants from over 50 coastal States
- Active engagement with over a dozen questions posed, time to provide adequate answers, and 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.



Slides available: iho.int/en/csbwg-ircc-workshop-2024

Report to IRCC: Problems Encountered

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.

Actions Requested of IRCC

a) Note the contents of this report;

b) Approve addition of new Work Item K: Deliver the IHO CSB Initiative

c) Recommend RHCs to encourage 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) Recommend RHCs to 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.

CSBWG 16

	Work Item	Lead	Team
A	Maintain and update IHO CSB Guidance Document (B-12)	Guillaume Morissette	Evert Flier, Thierry Schmitt, Brian Calder
B	Submit IHO CSB initiative as a UN Decade Action	Evert Flier	Jenn Jencks, Sam Harper, David Miller
C	Gather, prioritize and respond to HO-specific issues/opportunities regarding national policy/ regulations related to CSB	Jenn Jencks (??)	Evert, Chandana Rathnayake, Denis Haines
D	Gather and prioritize HO-specific issues relating to CSB data, including but not limited to Nautical Cartography	Anthony Klemm (acting)	Giuseppe Masetti, Hans Oias, Andy Talbot, Akim Mahmud, Michel Breton
E	Support CSB/SB2030 Coordinators in their RHC engagement	Jenn Jencks (??)	Jenn, Evert, Anthony, Denis, Stuart
G	Clarify support identified by current Trusted Nodes needed for current and future Trusted Nodes.	Guillaume Morissette	Matt Zimmerman, Brian Calder, Colin Thomson
H-F	Clarify all aspects of the CSB data cycle and capture known issues, requirements and suggested enhancements. (Now includes F: Discuss and propose potential software tool support for HOs)	Brian Calder	Shaul Solomon, Colin, Giuseppe, Guillaume, Brian Miles, ~~Brian Jensen~~, Emma Wise, Mathieu Rondeau, Knut Hartman, Thierry
I	Develop a communication plan in coordination and collaboration with related efforts (SB2030, GEBCO, etc)	**Vacant**	Steve Monk., Akim M., David M.., Derek Niles, Tim Kearns, Belen, Pauline Weatherall, Jennifer Cheveaux, Chandana, Denis
J	Develop a recognition & incentive strategy plan	David Miller (??)	Matt Z., Jennifer C.
K	Deliver the IHO CSB Initiative	Sam Harper	Jenn Jencks

Work Item Reporting

Work Item Background - Why is this WI needed?

Current WI Purpose - Current intention, goals

Work Item Update - The table.

Progress Since Prior Meeting - Description of any key activities that directly support the WI that have taken place since the previous meeting

Reporting - How is the Team measuring and reporting progress

Planned Work & Timeline

Issues/Risks/Concerns/Barriers

Proposed Changes to Work Item

IHO

International Hydrographic Organization

Day 3 : 28 March 0900 – 1600 (UTC+13) **1030 - 1100 - AM Health Break** **1200 – 1300 – Lunch** **1430 – 1500 – PM Health Break**			
0900 – 1030	**5. CSB Tools Workshop (24-25 March)** *5.1. **Recap, Discussion, Next steps***	B Calder	
1100 - 1400	**6. CSB Initiatives (Work Item K)** *6.1. **Ocean Riot*** *6.2. **Community Hydrography*** *6.3. **CSB on the Great Barrier Reef - Project Update*** *6.4. **Seabed 2030 & the Spanish Navy Project Updates*** *6.5. **WIBL Project Update*** *6.6. **CSB in the Pacific*** *6.7. **Other?***	 G. Morissette M. Rondeau R. Beaman J. Cheveaux, S. Rubens Prim B. Miles K. Mackay	
1400 - 1600	**7. Closing proceedings**	Chair/IHO Sec	

Ground Rules

- Everyone has a voice.
- Remember English is not everyone's first language.
  - Speak slowly and clearly, no jargon (or clarify)
- Please keep cameras off, mics muted when you aren't speaking
- Raise your hand to speak
  - Speak (turn camera on) when Chair or WI Lead have called on you
- Recommendations, Decisions, Actions will be used for the report
- Feel free to use the chat window for continued conversation but, f you have a comment you want to be addressed, you must request the floor
- Try and have fun!
- Anything else?