



# B-12 Guidance on Crowdsourced Bathymetry

## ***Introduction***

Discussion Topics

19 January 2022



IHO

# Discussion Topic #1: CSB Definition

International  
Hydrographic  
Organization

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

Suggestion 1: Crowdsourced bathymetry (CSB) is the collection of depth measurements from vessels while engaged in routine maritime operations.

Suggestion 2: CSB is the (use and) sharing of depth measurements (incidentally) collected from vessels while engaged in routine maritime operations.

Suggestion 3: Crowdsourced bathymetry (CSB) is the collection and provision of depth and other related measurements from platforms (satellite, aerial, surface or subsurface) while engaging in related operations.

Suggestion 4 (new): CSB is the aggregation, use, and sharing of depth measurements (incidentally) obtained from vessels while engaged in routine maritime operations.

## **Points for discussion:**

- Rewrite should contribute to effort to make document equipment agnostic
- Denmark (DK): concern over removal of original language



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# Discussion Topic #1: CSB Definition

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

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## Points for discussion:

- Main concerns surround the removal/inclusion of the term ‘standard Navigational Instruments’; also the inclusion of ‘sharing’ in the definition as it is an intrinsic part of the concept
- David Wyatt (DW) suggested that the modern usage of this term is now far broader and this has to be recognized
- Denmark (DK) – suggested key issue for them is to make sure that the difference between surveying and CSB is made clear, the former needing permission (in Denmark) and in their legislation is defined as the systematic collection of data.
- Guiseppe Masetti (GM) suggested that the onward promulgation/sharing of the data should be included in the definition as it is an intrinsic component of the activity. Strong concurrence of this point from multiple members
- DCDB: Agrees with including the word “sharing” and removing the word “collection”.
- Steve Keating (updated): I recommend the removal of the word “collection” from the definition of CSB because it is essential to treat CSB as being distinct from planned, systematic hydrographic surveying or Marine Scientific Research (MSR), activities which are contemplated by and regulated by the United Nations Convention on the Law of the Sea (UNCLOS). I would propose that CSB is sui generis, that is, a thing unto itself.



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## Points for discussion:

- Denmark (DK): The proposed suggestions make it harder to distinguish between CSB and surveying, and therefore DK would rather keep the original definition. Option to add sharing to make the definition more complete.
- Evert Flier (EF): The definition of Crowdsourced bathymetry is a sensitive and important topic. Important, because it defines the playing field for which B-12 is valid. Sensitive because changing a definition that has taken a lot of time to get widely accepted is not without risk. That being said, and with the ever growing momentum of interest for ocean mapping, I believe it is worthwhile to have a more future robust definition than we currently have. In the current situation, we miss out on a growing part of seabed mapping data. The current definition speaks of collection by use of standard navigation equipment (single beam, max 200m depth coverage). Obviously systematic survey is another large part but what about collection of depth data using multibeam echosounders while engaged in other maritime operations (especially fisheries, transit commercial survey vessels on transit, research vessels on transit or while doing other marine research operations)? We have the sector specific flyers for them. If we limit B-12 to the current definition of Crowdsourced bathymetry, we limit B-12 to less than 10% of our oceans (0-200m).



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## Additional input:

- Evert Flier (EF): If we limit definition to current version then there is a risk that we have 3 categories: 1) systematic surveying, 2) CSB through use of navigational echosounders, 3) use of multibeam echosounders (or any other echosounder) while in other operations. Guidance document should cover the broadest possible. David Wyatt acknowledged that the scope has changed since the original document, need to make it more inclusive. Agreed with DK's suggestion to include "sharing" in the definition. Considers "provision of" the same as "sharing". Open to any of 2,3, or 4 pending sensitivities of other member states.
- Denis Hains (DH) prefers suggestion 3.
- Steve Keating (SK) agrees with suggestions 2, 3, or 4. Also agrees document should reflect changes in technology. Questions if any vessels have only MB and not SB. If we do restrict to SB, would we exclude acquisition while in transit or fishing vessel fishing instead of surveying?
- EF responds that we should be very careful to make distinction between SB and MB. In the newer generation it will become more MB anyway, even for navigational purposes. Not yet there, but for fisheries no Norwegian fisheries vessel has just SB when built. Collection of depth measurements instead of identifying type of instrument would make it more future robust.
- DH: any systems should be acceptable, we need water depth.



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## Additional input:

- Chair: Concern with suggestion 3. Definition of CSB is always first slide in presentations. Concerned if we have things in parentheses, examples, etc. This is a strength of the current definition. As we look to updating, an edit to suggestion 2 to remove parentheses and include “collection” could be preferred. Agreement from EF, Pete Wills (PW)
- DH: I suggest to add ..."and other platforms"... after the term..."vessels"... when used to cover more than vessels implicitly understood as ships... or change to just platforms
- EF: document written for people we would like to engage. Right now primarily vessels. Would ARGO floats be covered for B-12? This is aimed at mariners who operate any sort of vessel, could even be an unmanned vessel. Sticking to vessel at this stage seems appropriate. If we go very broad to make it future robust, member states could raise issues and find it difficult to agree to. JJ agrees, do not have any current examples of ARGO floats, DCDB not set up to take data from ARGO floats or aircraft etc.
- SK: I think 'vessels' covers a variety of platforms. Perhaps we can look at deferring Suggestion 3 to a later time.
- DH: limiting to vessel is not inclusive. Chair agrees, but as EF said we believe this is appropriate for now. SK agrees with broadening aperture eventually, but saying “vessel” is inclusive of many platform types. Could look at adding in satellite-derived at later date, etc
- Chair: Suggestion as see it based on current discussion: ***“CSB is the collection and sharing of depth measurements collected from vessels while engaged in routine maritime operations”***



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## Additional input:

- Giuseppe Masetti (GM): We could argue that hydrographic surveys are also routine maritime operations. This is the value provided by "using standard navigation instruments".
- SK asks about acquisition or aggregation instead of collection. Better distinguishes so outside parties do not assume that data has been collected to populate DCDB, not incidentally collected. But could be covered if we include incidentally outside of parenthetical in suggestion 2. DH prefers collection.
- EF - GM and DH raised question of why include "routine". Surveying may be routine for some vessels. So perhaps use "other" routine maritime operations.
- Chair - updated proposal - ***"CSB is the collection and sharing of depth measurements collected from vessels while engaged in other routine maritime operations"***
- BJ - so far not satisfied, but open to to compromise and take back to office. Right now not ready to agree with what has been shared
- Chair - clarified that DK biggest concern is the removal of "standard navigational instruments." Standard navigational instruments could be a multibeam. BJ agrees that this occurs in arctic regions.
- DH - suggests removal of routine from Chair's proposal. Now at ***"CSB is the collection and sharing of depth measurements collected from vessels, using standard navigation instruments, while engaged in other maritime operations"***.



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## Additional input:

- EF: have the definition, but also have caveats for specific issues. Dangerous if base definition on nation's concerns. Need to make difference between definition and what each nation would allow to happen in their own waters. If we get a definition everyone would agree with we get a definition that will not help map the seafloor globally. This is a major issue.
- Chair "***CSB is the sharing of depth measurements collected from vessels, using standard navigation instruments, while engaged in other maritime operations***"
- DH: "***CSB is the collection and sharing of depth measurements collected from vessels, using navigation instruments, while engaged in maritime operations***"
- GM: The current definition was already accepted by all the member states.. not just DK
- DH: I am suggesting to remove the words "standard" and "routine"...
- DK wants to keep standard navigation instruments, most agree to adding of sharing,





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## Additional input:

- Main concern from DK is that it can become hard to distinguish survey from CSB. BJ would like to better understand all of the data that we are missing. IHO summarized that as soon as a vessel installs depth measurement equipment that is ancillary to anything for primary navigation, regardless of whether for navigation, it becomes “surveying”. BJ is not sure about that part of definition, but needs to be very clear what is systematic. Part of issue is lack of clear definition of what is systematic survey. Could be useful to have two definitions together to see where there is overlap. Raised at CSBWG9 where brought question to David Wyatt re: definition of surveying
- EF: should have two definitions - CSB and systematic surveying. Make it clear that collection is one or the other. For Norway, want data going from territorial seas to survey area should be going to GEBCO/CSB/DCDB. Do not consider this systematic. Systematic is operating in defined area with particular sensors for sole purpose of mapping the seabed. On transit, collecting depth data, is crowdsourced data. Quality of equipment does not matter in definition, although we get better data
- GM: We could argue that hydrographic surveys are also routine maritime operations. This is the value provided by "using standard navigation instruments".
- Chair  
[https://iho.int/uploads/user/Inter-Regional%20Coordination/CSBWG/CSBWG10/CSBWG10\\_2021\\_4.1.4\\_EN\\_Data\\_Gathering\\_Terminology\\_v1.0.pdf](https://iho.int/uploads/user/Inter-Regional%20Coordination/CSBWG/CSBWG10/CSBWG10_2021_4.1.4_EN_Data_Gathering_Terminology_v1.0.pdf) Data gathering terminology from point of view of IHO. Proposes following guidance for distinguishing between CSB, transit, and systematic surveying



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## Additional input:

- DH: Shorter and simpler the better... "***CSB is the collection and sharing of depth measurements collected while engaged in maritime operations***".
- GM: We recognize that the current definition is far from being perfect, but each proposed definition raises potential concerns that we need to evaluate back in our HO.
- Chair reminds group that this will need to go to broader working group, this will not be the end of the discussion.
- EF questions GM - if limit to standard navigation equipment, we miss depth range and info from MB. DH agrees with this point. EF asks that DK takes this back to their HO. As definition of CSB, let's be careful not to let new technology change how we see CSB
- PW: standard navigation instruments has an IMO specification meaning singlebeam. At some point multibeam will be standard. Initial definition said systematic which was changed to be routine. Multibeam has 5% penetration into sounding market but potential to collect huge amounts.
- IHO: was going to suggest taking original definition and adding "sharing". Now reconsidering. Instead could specify collection of depth measurements while engaged in other primary routine maritime operations or something. Suggest this needs to be parked for some targeted work. Closest to consensus is adding "sharing" to current definition, acknowledge that future versions will need refinement as CSB evolves. But would adding only sharing inhibit the project in the next few years?



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## Additional input:

- DH: @Pete, this is the internal expert jargon, important but not for our audience I think...
- DH: I agree to add "sharing" to existing definition for now... but I feel it could be truncated to the minimal. Must write for audience not for us
- SK: How about "using the vessel's navigation instruments..."
- EF: Is Denmark only country in this group opposing to adjusted definition without standard navigational equipment?
- DH: My short and sweet suggestion is: "CSB is the collection and sharing of depth measurements"

## Decisions/Next Steps

- Come up with suggestion 5 - take suggestion 1 and add "sharing". Put all 5 options to broader working group, can provide additional comments at that point.



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## Discussion Topic #2: Use of the word “systematic”

***This document is not meant to provide advice or recommendations on systematic bathymetric data acquisition and processing, for these the interested reader is invited to consult the IHO C-13 and IHO S-44 6th edition.***

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Suggestion 1: This document is meant to provide guidance. For advice or recommendations on bathymetric data acquisition and processing consult the IHO C-13 and IHO S-44 6th edition.

Suggestion 2 (**new**): This document is not meant to provide advice or recommendations on systematic bathymetric data acquisition and processing, for these the interested reader is invited to consult the IHO C-13 and IHO S-44 6th edition, both of which relate to hydrographic surveying.

Suggestion 3 (**new**): This document is meant to provide guidance. For advice or recommendations on bathymetric data acquisition and processing resulting from hydrographic surveying operations, consult the IHO C-13 and IHO S-44 6th edition.

### Points for discussion:

- Pete Wills: suggest removal of “systematic” to avoid misunderstanding or implication that B-12 is about systematic.
- DK: Current sentence is fine
- Thierry Schmitt (TS) clarified that it needs to be clear that this doc should not provide advice on how to do a systematic survey as there is other documentation that does this. Therefore the proposed addition of the word ‘systematic’ should stay



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## Discussion Topic #2: Use of the word “systematic”

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### Points for discussion:

- **SK (new):**
  - I believe the current language distinguishes CSB from activities that associate with systematic collection of bathymetric data. Recommend underlining “not” to avoid confusion.
  - Both C-13 and S-44 refer to “systematic” activities.
    - E.g., C-13, para. 1. States the purpose of hydrographic surveying is: to collect, with systematic surveys at sea, along the coast and inland...”
    - S-44 Glossary refers to “Bathymetric coverage...[as the]...Extent to which an area has been surveyed using a systematic method of measuring the depth and is based on the combination of the survey pattern and the theoretical area of detection of the survey instrumentation.”
  - I believe it is crucial to delineate the difference that CSB is the result of depth readings obtained from routine maritime operations which are NOT hydrographic or bathymetric surveys and NOT MSR.



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### Additional input:

- PW: Suggestion to remove word systematic was global to the document itself, goes back to the definition and having multiple layers to keep multiple member states happy. Generally ok for keeping the statement as-is
- Chair: suggestion 3 does remove “systematic”. PW appreciates that suggestion 3 highlights this is meant to provide guidance, not a prescriptive document.
- DH: questions why we need this statement. Prefers suggestion 3
- Chair: prefers suggestion 3, DH highlights that it is more positive
- GM: Hydrographic survey is the only way to do systematic acquisition? Systematic is more inclusive.
- Chair:: modify suggestion 1 to say “for advice or recommendations on systematic bathy...”? Would this suite DK?
- BJ: Document is meant to provide guidance... but guidance on what? No disagreement with proposals, but original sentence reads more clear and much more clear on what not providing. Could be easier to be on board with proposals if better understood issue with the original. If we are just avoiding systematic, isn't this actually the place to specify that this is not addressing systematic surveying?
- DH: 1 and 3 are ok



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### Additional input:

- GM: We already have this sentence at the beginning of the chapter: "The purpose of this document is to provide guidance to mariners to help them acquire and contribute crowdsourced bathymetric data in a format that is useful to the broadest possible audience".
- Chair: summarizes keeping as is, highlight NOT. BJ, EF agree. DH asks why we would highlight what we are NOT. SK argues that in this case highlighting what it is not is beneficial, BJ agrees. PW questions if underlining words is a normal publication practice of the IHO.
- DH: OK - but I do "not" agree... I can live with it...
- SK: if underlining is not an IHO convention, how about italics?
- IHO: We can find a method which is consistent but this can be done in the final editorial review of the whole document.

### Decisions/Next Steps

- Consensus - keep sentence as is.
- **ACTION:** IHO to review options to highlight “not” within guidelines



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# Discussion Topic #3: Who are the intended users of B-12?

*The IHO seeks to inform and guide collectors of crowdsourced bathymetry data.*

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Suggestion 1: The IHO seeks to reach out to all potential crowdsourced bathymetric data collectors and users and provide them with guidance.

Suggestion 2: The IHO seeks to reach out to all potential crowdsourced bathymetric stakeholders and provide them with guidance.

Suggestion 3: The IHO welcomes the provision of all types of data to improve knowledge for the best possible representation of seabed and the water bottom. IHO seeks to inform and guide collectors of crowdsourced bathymetry data.

## Points for discussion:

- IHO/DW - ToRs include the consideration of potential uses, therefore include the term ‘and users’ is appropriate
- Evert Flier (EF): document should provide guidance for data collector, information for users
- DK: We find this definition (Suggestion 2) more inclusive, but original writing is also fine.
- DCDB: Also likes Suggestion 2’s use of the word “stakeholders.”
- DCDB: Do we prefer “reach out” to “inform and guide”?





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# Discussion Topic #3: Who are the intended users of B-12?

***The IHO seeks to inform and guide collectors of crowdsourced bathymetry data.***

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## Additional input:

- SK: I recommend Suggestion 2 as it does not use the term “collectors” which runs the risk of blurring the distinction between CSB and hydrographic surveying and MSR. The CSB stakeholders term is broad enough to encompass those who operate the vessels which incidentally acquire the sounding data, to the DCDB, and ultimately to the use community.
- Chair: prefers suggestion 2
- SK: The UN Decade of the Ocean uses "stakeholders" often. See: <https://ioc.unesco.org/ocean-decade>. Stakeholders is a broad term. “Stakeholders” may prove to be positive for influencers of potential 'collectors'
- DH: I like the way it is... short, clear & simple!. Chair highlights that this only addresses collectors. DH counters with adding “users”
- PW: do not want identify every user. Prefers generic term to cover all users
- Chair: suggestion: "***The IHO seeks to inform and guide all stakeholders of CSB data.***"
- IHO: inform and guide translates more easily/precisely into other languages (prefer to “reach out”). SK agrees with “inform and guide”
- PWK: preference for “all stakeholders”
- IHO: all stakeholders involved in CSB



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# Discussion Topic #3: Who are the intended users of B-12?

*The IHO seeks to inform and guide collectors of crowdsourced bathymetry data.*

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## Additional input:

- Chair - updated suggestion: "***The IHO seeks to inform and guide all stakeholders of CSB data.***" BJ agrees
- SK: Policy makers are stakeholder too, they may not be users, per se
- DH: I'm recommending to keep it the way it is and just inserting ..."and users"... after "collectors"
- EF questions if we have sections relevant to all stakeholders, or would more need to be written to cover users, policy makers, etc. If guidance document aimed mostly at those interested in collecting data, perhaps should keep to that. Are we telling people how to use data?
- Chair: putting more emphasis on informing TN, who may not be the person collecting the data. There is not a stand-alone section meant to guide or inform users. We do not want to mislead anyone looking at document but it is greater than collectors
- SK: trusted nodes are key stakeholders.



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# Discussion Topic #3: Who are the intended users of B-12?

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## Additional input:

- BJ: Users and policy makers will find useful information in B-12, even if they don't find all the answers
- EF: why suggested “information” for some and “guidance” for others in definition
- PW: does stakeholder translate well?
- GM: At the beginning of the chapter we specifically say: "The purpose of this document is to provide guidance to mariners to help them acquire and contribute crowdsourced bathymetric data in a format that is useful to the broadest possible audience"

## Decisions/Next Steps

- Suggestion 4 - modify original sentence to change “collectors” to “all stakeholders”. Put suggestion 4 to whole group for feedback.



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## Discussion Topic #4: Replace the word “collection, collect, collector”

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### Points for discussion:

- **SK (new):**
  - I suggest that we use alternative terms for “collection” and “collector” such as **acquisition, or supplier**, based upon the context. It is crucial to distinguish CSB from MSR and hydrographic surveying, even if CSB data may incidentally benefit scientific research or hydrographic activities.
  - In my simple mind, I see that the sounding data is automatically ‘collected’ by the vessels fathometer (single beam, or multibeam,) while the vessel is engaged in routine maritime operations. If a vessel is merely transiting, then this data may arguably be acquired in a coastal States internal waters, its territorial sea, or in its EEZ, all without the permission of the coastal State, because the use of a fathometer is either mandated by SOLAS or is consistent with good navigational practice. If routine maritime operations are other activities, such as fishing, then a coastal State’s permission may already be required to conduct fishing within the coastal State’s EEZ. What a routine maritime operations is or isn’t may raise concerns in the eyes of certain coastal States.
  - Another term may be ‘store’ If vessels will be using any specialized hardware/software to record and upload depth data to DCDB.



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## Discussion Topic #4: Replace the word “collection, collect, collector”

### Additional input:

- JJ: major lift to apply to entire document. Does not mean it should not be done. Asks others if this should be applied throughout the document
- DH: I do not see this as an issue - as long as we are consistent throughout... I would not change it...
- SK: This suggestion may be too far a departure from the original language. As long as we are consistent in highlighting that CSB is distinct from MSR or hydrographic surveying we will be ok.
- BJ: Agree with Denis, there is a lot of parallel discussions about the consistency of those terms and they need to be addressed together
- PW: acquisition has an implicit hydrographic survey in my usage of the term.

### Decisions/Next Steps

- Defer, future discussion after this revision

Week of 31 Jan:

Week of 07 Feb:

Week of 14 Feb: All sections to Jenn by 18 Feb.

- Final decision on CSB Meeting (virtual/hybrid) by 18 Feb.

Week of 21 Feb: Jenn to try and consolidate all sections.

Week of 28 Feb: Final draft to WG by Monday 28 Feb

Week of 07 March: CSBWG 12

22 April: B-12 Submission Deadline to IRCC

06 June: IRCC