



9th Arctic Regional Hydrographic Commission Meeting
17-19 September 2019
Murmansk, Russian Federation

**Status Report of the Arctic Regional Marine Spatial Data Infrastructures Working Group
(ARMSDIWG)**

Submitted by: Chair ARMSDIWG, United States of America

Executive Summary: This report contains the current status and planned actions of the ARMSDIWG in its third full year of operation. ARMSDIWG made progress on initializing the Arctic Voyage Planning Guide (AVPG), contributing to the OGC-IHO MSDI-Concept Development Study, and professional outreach to the UN-GGIM alongside Arctic SDI. Relevant information on related projects and working groups is provided in this report.

Related Documents: Development of Spatial Data Infrastructures for Marine Data Management, OGC-IHO MSDI Concept Development Study (MSDI-CDS)
https://portal.opengeospatial.org/files/?artifact_id=88037

User Survey Report: Better access to geographic data for Arctic marine and ocean areas

Working Group on Marine Geospatial Information “Readily available and accessible marine geospatial information”

http://ggim.un.org/meetings/GGIM-committee/9th-Session/side_events/Concept_Note_Side%20event_Marine_Geospatial_Information.pdf

UN-GGIM Working Group on Legal and Policy Frameworks for Geospatial Information Management “Availability, accessibility, application, provenance, privacy and protection of geospatial information”

http://ggim.un.org/meetings/GGIM-committee/9th-Session/side_events/Concept_Note_Roundtable_legal_and_policy_rev.pdf

Related Projects: Arctic Spatial Data Infrastructure (Arctic SDI)
<http://arctic-sdi.org/>

OGC - IHO MSDI Concept Development Study (OGC-IHO MSDI-CDS)
<http://www.opengeospatial.org/projects/initiatives/msdi-cds-2018>

ARMSDIWG Workshop No. 3

The Arctic Regional Marine Spatial Data Infrastructures Working Group Workshop No. 3 (ARMSDIWG3) was held in Reykjavík, Iceland 03-05 April, 2019. The meeting was hosted by the Government of Iceland through the Icelandic Coast Guard (LHG) in Reykjavik, Iceland. The meeting consisted of attendees from the Hydrographic Offices and other government agencies of Canada, Denmark, Iceland, Norway, and United States of America.

At its 3rd meeting, highlights of the ARMSDIWG work included an update to their Work Plan, national MSDI reports and updates including demonstrations of national portals and resources, as well as in-depth discussions on a number of relevant MSDI initiatives. Specifically, the working group reviewed the ARHC MSDI 2018 Questionnaire, discussed the upcoming release of the OGC MSDI Concept Development Study (CDS) engineering report, and conceptualized the implementation of the Arctic Voyage Planning Guide (AVPG). Regarding the AVPG, it was decided that the United States would create an Initialization Survey in order to immediately identify common web services currently available or web service/data gaps in the themes of the AVPG, upon response from each ARMSDIWG representative.

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Additionally, the working group discussed current and future collaboration with other applicable working groups, including the OGC Marine Domain Working Group (Marine DWG) as well as the United Nations Committee of Experts on Global Geospatial Information Management Working Group on Marine Geospatial Information (UN-GGIM WG-MGI). ARMSDIWG spent considerable time deliberating over the details of strengthened cooperation with Arctic SDI and editing a Joint Statement of Intent.



Figure 1 Participants of ARMSDIWG3 - Reykjavík, Iceland

3rd Joint Meeting of the Arctic SDI and the ARMSDIWG

During the timeframe of ARMSDIWG3, both ARMSDIWG and Arctic SDI held a joint meeting hosted by the National Land Survey of Iceland on 04 APR in Akranes, Iceland.

At the joint meeting, the two groups discussed in further detail what a closer partnership could look like (see diagram in Figure 2 on following page) with representation from both organizations in relevant sub-working groups and projects – truly becoming co-facilitators for the regional SDI. Potential pilot projects were discussed, based on specific user needs defined in User Survey Report: Better access to geographic data for Arctic marine and ocean areas conducted by Norway, and information contained in the forthcoming OGC MSDI CDS engineering report. This joint meeting was also attended by the Executive Secretary of the Arctic Council's Conservation of Arctic Flora and Fauna (CAFF) working group. It was determined that the Fall may be a better timeframe for future, in-person, joint meetings due to Arctic SDI's preparation for the Arctic SDI Board meeting in Spring. ARMSDIWG attempted to shift its meeting cycle starting in SEP 2019 (ARMSDIWG4); however, due to already scheduled Baltic Sea Hydrographic Commission-related meetings and the upcoming ARHC-9 meeting, it was determined that Chair/ARMSDIWG and USA representatives would attend portions of Arctic SDI's meeting taking place in Reston, Virginia, USA, hosted by the United States Geological Survey, during 10-12 SEP 2019.

ARMSDIWG3 Conclusions

ARMSDIWG3 resolved with a look forward to the release of the OGC MSDI CDS and will continue discussions for a potential follow-on use case activity. For the AVPG, the first step towards implementation was made by drafting an AVPG Initialization Survey in order to determine common themes for use in an AVPG pilot. The outcome of the survey was to be discussed at the next ARMSDIWG virtual meeting in May 2019. The working group agreed to the use of an online platform (i.e. Trello) for the purposes of tracking the group's progress on specific Work Plan actions as well as shared communication.

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At the joint meeting in Akranes, Arctic SDI and ARMSDIWG expressed their shared interest in working together on common initiatives henceforth and the potential of another joint meeting in Fall 2019. Both groups planned to give a joint presentation at the UN-GGIM WG-MGI side-event in AUG 2019. The Arctic SDI/ARMSDIWG Joint Statement of Intent was well-received and is expected to be approved by both groups' governing bodies in Fall 2019. Finally, a decision paper will be drafted for ARHC9 to request additional resources from ARHC in order to more effectively participate with Arctic SDI in facilitating a regional infrastructure.

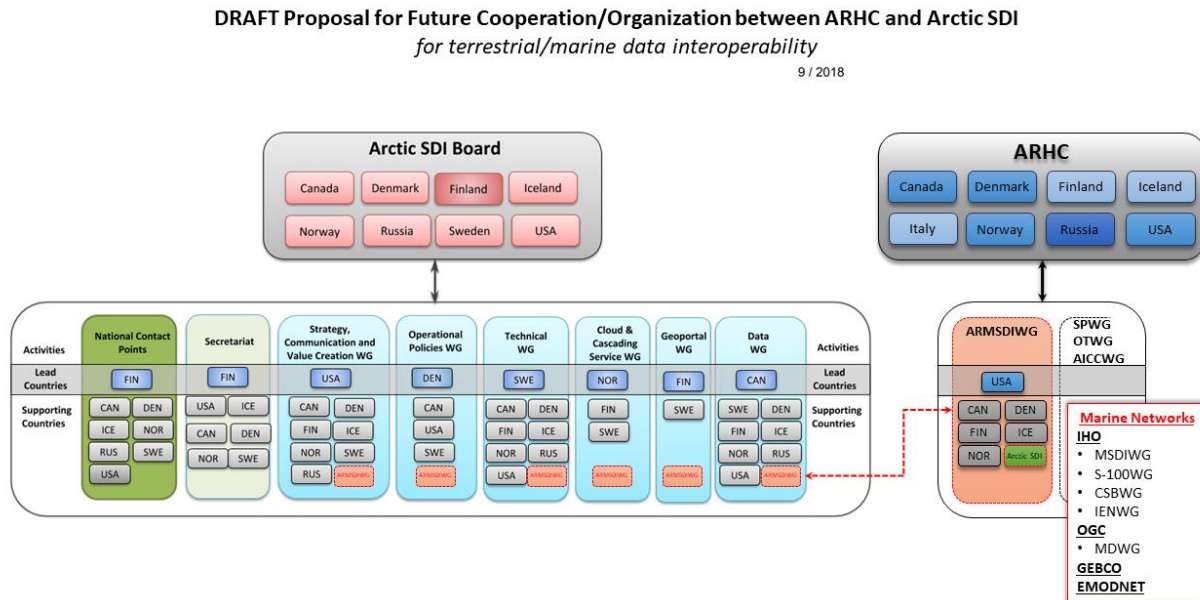


Figure 2 Draft Proposal for Future Cooperation/Organization between ARHC and Arctic SDI discussed at the Joint Meeting of the Arctic SDI and the ARMSDIWG – Akranes, Iceland

ARMSDIWG3.1 – ARMSDIWG Workshop No.3 Virtual Follow-up Meeting

ARMSDIWG3.1 was held as a follow-up on items from ARMSDIWG3. This meeting was held on 22 MAY 2019 and hosted virtually by the Norwegian Mapping Authority. Topics covered during ARMSDIWG3.1 included:

- Arctic Voyage Planning Guide (AVPG)
 - *Google Forms used to capture AVPG themes, data format, web services available, and web service URL.*
 - *Review of current results, and clarification of instructions for responding.*
- ARMSDIWG Trello Boards
 - *Solution for centralized and real-time organization of work for ARMSDIWG.*
 - *Streamlines progress on work items and drastically reduces confusion between current documents.*
- Planning for Arctic SDI Meeting, SEP 2019
 - *Logistics for meeting with Arctic SDI during their meeting in Reston, Virginia, USA, 10-12 SEP 2019.*

Upcoming ARMSDIWG Meetings

The next, virtual meeting, ARMSDIWG3.2, will take place virtually on 26 SEP 2019 and continue the progress of items from ARMSDIWG3, specifically the AVPG and a similar approach to the Norwegian User Survey Report, as well as a review of the report *Development of Spatial Data Infrastructures for Marine Data Management*, from the OGC - IHO Marine SDI Concept Development Study. ARMSDIWG4 will be an in-person meeting, occurring in Spring 2020, with the intent to be combined with another Joint Meeting of the Arctic SDI and the ARMSDIWG, but the date and location is still to be decided.

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UN-GGIM 9th Session

At the 9th Session of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) on 05 AUG 2019, the Working Group on Marine Geospatial Information Side Event hosted a panel on *Readily available and accessible marine geospatial information – Regional Practices in the Arctic*. Moderated by Chair ARMSDIWG, the panel included a joint presentation titled *Cooperation between Arctic SDI and ARMSDIWG - access to land and marine data to face challenges in the Arctic*, presented by both the Chair of the Arctic SDI Board and Chair ARMSDIWG. The presentation covered background information and strategic direction on both organizations, Arctic SDI Geoportal demonstration, data reuse in collaborative activities (e.g., Arctic SDI Geoportal displaying Arctic SDI Basemap utilizing International Bathymetric Chart of the Arctic Ocean (IBCAO), and the GEBCO Sub-Committee on Undersea Feature Names (SCUFN) digital gazetteer service of the names, generic feature type and geographic position of features on the seafloor), and challenges.

The UN-GGIM was so interested in the ARMSDIWG and Arctic SDI collaboration that both Chair ARMSDIWG and Chair of the Arctic SDI Board were invited to participate in a Roundtable on *Availability, accessibility, application, provenance, privacy and protection of geospatial information* hosted by the Working Group on Legal and Policy Frameworks for Geospatial Information Management during a panel on *Enabling regional collaboration and applications*. Both Chairs of Arctic SDI and ARMSDIWG spoke to: “Data sharing across borders enables regional collaboration and partnerships, ensure that governments and related stakeholders can discover, access and apply data to coordinate, address and respond to issues and emergencies. This panel seeks to understand from experiences of regional initiatives vis-à-vis legal and policy, including from partners of the Arctic SDI that are facilitating better access to data related to the arctic environment.”



Figure 3 Chair ARMSDIWG presenting during the panel “Readily available and accessible marine geospatial information – Regional Practices in the Arctic” at the UN-GGIM Working Group on Marine Geospatial Information Side Event – United Nations Headquarters, New York

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Completion of the OGC-IHO MSDI Concept Development Study (MSDI-CDS)

During the IHO MSDIWG8 meeting in Vancouver 2017, the idea was formed to create an OGC study that could establish the framework for future development of MSDI and demonstrate to stakeholders the diversity, richness and value of a Marine SDI – specifically data, analysis, interoperability and associated IT services - including web services - in addressing needs of the marine domain.

Beginning in July 2018, the OGC-IHO MSDI-CDS was supported by the United States, on behalf of the International Hydrographic Organization (IHO) and the IHO MSDI Working Group (MSDIWG), and executed by the Open Geospatial Consortium (OGC).

The study included an open Request for Information (RFI) with the objective to gather additional information to better support governments, agencies, nongovernmental organizations and citizens, unlocking the full societal and economic potential of the wealth of marine data at local, national, regional or international levels. The RFI results also provide information and insight on the current state of the Marine SDI. In addition to the RFI, a MSDI workshop and roundtable were held to gather additional information from both expert panel members and the audience. The final engineering report presents an analysis of RFI, workshop and roundtable responses and interactions which provided in depth information on requirements and issues related to stakeholders, architecture, data, standards of current and a possible future Marine SDI. In addition, the report will serve as the basis for improvement of SDIs' to support the marine domain. The responses will also be discussed with potential sponsoring organizations that would provide funding opportunities for possible Marine SDI Pilot(s) initiatives proposed for later this year, and in subsequent years. All RFI, workshop and roundtable responses will contribute to Marine SDI(s) moving forward. It will help to achieve greater interoperability, availability and usability of geospatial Web services and tools across different types of marine spatial data uses. In addition, these responses will provide identification of gaps, and definition of core components of an SDI to be referenced by IHO MSDIWG and used to define reference use-cases and scenarios for use in future pilot activities.

The final engineering report can be found on OGC's website here: <https://www.opengeospatial.org/docs/er>
Direct link to download PDF here: https://portal.opengeospatial.org/files/?artifact_id=88037

ARHC/ARMSDIWG member organizations participated throughout all stages of the OGC-IHO MSDI-CDS (e.g. RFI, workshops, and roundtable). The findings from this initiative should benefit a number of tasks and items within the ARMSDIWG Work Plan and future use cases during a potential follow-on Pilot could be support by ARHC member organizations and explored in such a project.

Invited Actions of ARHC

The ARHC members are invited to:

- Take note of the report.
- Take note of updated ARMSDIWG Work Plan provided under separate cover.
- Take note of the Status of Actions since ARHC8 (Appendix A).
- Request from ARHC Members and Associate Members named representatives to participate in ARMSDIWG in an effort to achieve total ARHC member organization representation.
- Request from ARHC Members and Associate Members if they have a Socio-economic study or other relevant studies and best practices to feature on IHO MSDIWG Body of Knowledge (using the template).
- Request from Members and Associate Members to complete the AVPG Initialization Survey by 25 OCT 2019 (survey link available from Chair/ARMSDIWG or national ARMSDIWG representative).
- Approve "Arctic SDI and ARMSDIWG Joint Statement of Intent" (Appendix B).
- Take action as seen appropriate.

APPENDIX A

Status of Actions since ARHC8

ACTION	STATUS
All MS to reply to the ARCTIC MSDI questionnaire published in June 2018.	PENDING Note: Focus on AVPG Initialization Survey
ARMSDIWG to connect GEBCO Undersea feature names Gazetteer for the Arctic and Into GIS II charting info into the Arctic SDI Geoportal base map.	COMPLETE
US and IHO Secretariat to review joint statement of intent regarding cooperation between Arctic SDI and ARHC.	PENDING Note: For approval at ARHC-9
ARMSDIWG Chair to circulate the proposed logo to the MS and ask for comments and/or approval.	COMPLETE Note: Via email correspondence
MS to check if they have a Socio-economic study or other relevant studies and best practises and include it in the MSDI portal template.	ONGOING CALL
MS to consider participating in the OGC workshop in Washington D.C 23rd of October 2018. Possible to participate online.	COMPLETE

APPENDIX B

***DRAFT* Arctic SDI and ARHC Joint Statement of Intent**

The Arctic Spatial Data Infrastructure cooperation (Arctic SDI), based on a Memorandum of Understanding between the National Mapping Agencies of the 8 Arctic countries, and the members of the Arctic Regional Hydrographic Commission (ARHC), maintain a collaborative partnership to provide both the terrestrial and marine foundations in a regional SDI. Together, Arctic SDI and the ARHC's Arctic Regional Marine SDI Working Group (ARMSDIWG) will facilitate an infrastructure that connects users, across domains, to the spatial data valued to support research, planning and decision making in the Arctic.