

6th Arctic Regional Hydrographic Commission Meeting
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Canada

**Proposal for the Arctic Regional Marine Spatial Data Infrastructures Working Group
(ARMSDIWG)**

- Submitted by: United States of America, Denmark
- Executive Summary: This is a proposal for a formalized working group under the Arctic Regional Hydrographic Commission (ARHC) focused on Marine Spatial Data Infrastructures (MSDI) including consideration of the Arctic Voyage Plan.
- Related Documents: ARHC 5 List of Actions - Action Nr. ARHC 5-11
ARHC 5: Report of the Marine Spatial Data Infrastructures Working Group (MSDIWG)
(DRAFT) IHO Publication C-17, Spatial Data Infrastructures: "The Marine Dimension" - Guidance for Hydrographic Offices, Ed 2.0, April 2016
- Related Projects: Arctic Spatial Data Infrastructure (Arctic SDI)
<http://arctic-sdi.org/>
- Baltic Sea and North Sea Marine Spatial Data Working Group, (BS-NSMSDIWG)
<http://www.bshc.pro/working-groups/msdiwg/>
- MACHC16: MEIP Report to the MACHC16 - 27-11-2015
https://www.iho.int/mtg_docs/rhc/MACHC/MACHC16/MACHC16-06.1-MEIPWG_Report.pdf
- Open Geospatial Consortium (OGC) Marine Domain Working Group (Marine DWG)
http://external.opengeospatial.org/twiki_public/MarineDWG/WebHome
- IHO Marine Spatial Data Infrastructures Working Group (MSDIWG)
https://www.iho.int/srv1/index.php?option=com_content&view=article&id=483&Itemid=370&lang=en
- ARHC 5: Status Report on AVPG Project and Proposal for an ARHC AVPG Portal
https://www.iho.int/mtg_docs/rhc/ArHC/ArHC5/ARHC5-C3_AVPG%20Report.pdf

PROPOSAL

The Arctic Regional Hydrographic Commission (ARHC) members are invited to consider the establishment of an Arctic Regional MSDI Working Group (ARMSDIWG) in order to move forward with MSDI activities in the region and contribute to the Arctic Voyage Planning Guide (AVPG).

The ARHC members are invited to:

- Take note of this proposal as an approach to a MSDI for the Arctic.
- Discuss the implication of MSDI from a HO perspective and how Member States (MS) can benefit from a regional approach to MSDI.
- Approve the establishment of an Arctic Regional MSDI Working Group (ARMSDIWG).
- Nominate national representatives from the ARHC MS to the ARMSDIWG.
- Consider the ARMSDIWG's involvement in spatially enabling the thematic information of the AVPG with open and interoperable standards.
- Approve the suggested Terms of Reference and Work Plan for the ARMSDIWG provided under separate covers.
- Discuss if information and status updates about MSDI should be included in the National Reports from ARHC MS at ARHC meetings.
- Take action as seen appropriate.

EXPLANATORY NOTE

Arctic MSDI Context

The IHO MSDI WG is in the process of drafting a new edition of the IHO Publication C-17, Spatial Data Infrastructures: “The Marine Dimension” - Guidance for Hydrographic Offices which, in its current working state, stresses a change in the way that modern HOs are operating. HOs have traditionally collected vast amounts of hydrographic data to make distilled, navigational products for specific customers. Now, there is growing demand for that data from a much greater user base (e.g., science, engineering, energy industry, fishing, marine SAR) that HOs have the potential to fulfill. The modern view of the HO as a data provider through a MSDI makes them a relevant and relied-upon contributor to the larger SDI. Without such relevance or reliability, the destiny of the HO becomes uncertain in a rapidly advancing, open, technology- and data-driven society.

There has been a push among several IHO Regional Hydrographic Commissions (RHCs) towards regional MSDI-related working groups and projects for their respective regions:

- Baltic Sea and North Sea MSDI WG (BS-NSMSDIWG)
- Meso American - Caribbean Sea Hydrographic Commission Marine Economic Infrastructure Programme Working Group (MACHC MEIP WG)

In particular, the BS-NSMSDIWG is a successfully functioning MSDI WG with a full Work Plan scheduled to 2020. The BS-NSMSDIWG already has some of the same MS represented in the ARHC. In addition to these already participating MS, Canada and the United States also have a strong focus on MSDI, and all ARHC MS working together could work to produce a very robust and beneficial MSDI for the Arctic Region that would likely attract interest and support from the aforementioned, wider user base.

Between concurrent MSDI initiatives by the MS of the ARHC within other commissions/committees of the IHO, and all of their National Mapping Agencies already operating under the Memorandum of Understanding (MoU) in the Arctic SDI, the ARHC is clearly positioned to have a working group to communicate, connect, and create a Marine Dimension to the greater SDI for the region. The proposed ARMSDIWG would be the working body to serve this function.

MSDI & Arctic Voyage Plan

Increasing interest and access to the Arctic Ocean by the wider user base requires a holistic view of the Arctic in terms of Safety of Navigation (SoN) data and supplemental information. The work of the ARHC's Arctic Voyage Planning Guide (AVPG) addresses that exactly. The AVPG project has established a comprehensive thematic framework for which data and publications are to be included in the AVPG. The ARMSDIWG could work to incorporate the AVPG themes (Carriage Requirements, Route Planning, Marine Services, etc.) into a geospatial portal where not only is information linked, but it is spatially represented for the user in a unified, web-based portal as part of the greater Arctic MSDI. With the propagation of open geospatial standards that allow easy development, acceptance and interoperability of information, MS already contributing their content could do so in open geospatial formats/services. Using the themes outlined by the AVPG, the following are just a few conceptual spatial layers:

- Port point locations with attributed/linked entry procedures
- ENC Cell boundaries with attributed links to acquire
- Hardcopy Chart footprints with attributed links to acquire
- Geographic boundaries linked to publications such as Sailing Directions
- Polygonal sea ice extents
- Locations of HYDROARC Warnings
- Routing geometries

In June 2016, the Open Geospatial Consortium (OGC) Marine Domain Working Group (Marine DWG) was officially formed under the OGC Technical Committee (TC). The Marine DWG serves as the focal

point for “complimentary organizations” like the IHO MSDIWG and for “OGC best practices and standards to meet the technical needs of MSDI”. Furthermore, the Marine DWG could potentially explore interoperability testbeds within OGC, which could be a strong starting point for a spatially enabled AVPG: taken as an action for the ARMSDIWG to work with the OGC Marine DWG.

CONCLUSION

The ARMSDIWG would be dedicated to the increased awareness, relevance, and interoperability of marine spatial data made available by the Hydrographic Offices (HOs) of ARHC Member States (MS) in a regional infrastructure. Additionally, the ARMSDIWG would serve as an organized body to compliment the work of the AVPG project and assist in spatially enabling the thematic information of the AVPG with open and interoperable standards potentially facilitated by the OGC Marine DWG.

The ARMSDIWG would work in cooperation with the National Mapping Agencies that form the Arctic SDI and find areas for collaboration, sharing, and interoperability in order to connect both topographic and hydrographic data in a larger infrastructure. Contributing to a stronger regional infrastructure will garner more support from both traditional and non-traditional users of HO-provided data in the Arctic.