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Video Teleconferencing (VTC)

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 fourth full year of operation. Despite the inability to hold an annual in-person meeting due to the novel coronavirus outbreak, ARMSDIWG completed the Arctic Voyage Planning Guide (AVPG), Initialization Survey, and continued cooperative activities with Arctic SDI all through virtual teleconferencing and collaborative web-based platforms. 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
Related Groups/Projects:	Arctic Spatial Data Infrastructure (Arctic SDI) http://arctic-sdi.org/

ARMSDIWG Workshop (Virtual) No. 4
Amid the novel coronavirus outbreak, the Arctic Regional Marine Spatial Data Infrastructures Working Group Workshop No. 4 (ARMSDIWG4) was held virtually over multiple days, in lieu of the annual in-person meeting:
- ARMSDIWG 4.1, 22 APR 2020
- ARMSDIWG 4.2, 27 APR 2020
- ARMSDIWG 4.3, 08 JUN 2020

The meeting consisted of attendees from the Hydrographic Offices (HOs) of Canada, Denmark, Finland, Norway, and United States of America.

Highlights of the ARMSDIWG work included monitoring the work of related working groups (e.g., IHO MSDIWG, OGC Marine DWG, UN-GGIM WG-MGI, Arctic SDI), and a major focus on the Arctic Voyage Planning Guide (AVPG). In 2019, the United States created an Initialization Survey based on a section of the ARHC MSDI 2018 Questionnaire provided by Denmark. The survey, once answered by a national ARMSDIWG representative, would allow immediate identification of common web services currently available or web service/data gaps in the themes of the AVPG. To date, Canada, Denmark, Finland, Iceland, Norway, and United States of America have completed the AVPG Initialization Survey.

AVPG Initialization Survey Results
Initial results of the survey show that for the 24 AVPG datasets to be provided by each of the participating nations, a collective 38% have been identified by the six responding nations, as currently available to support a web-based AVPG, with only a collective 21% already available as a geospatial web service. An additional 5% of resources has the potential to be made available as a geospatial web service, collectively. This means there is a total potential for a collective 42% of AVPG datasets to fulfill a MSDI-enabled AVPG, but only with additional resources and effort to attain that 42%.

Better visualized in the graph below, a significant amount of information is currently missing (i.e. gray areas of the graph), which will not allow for a comprehensive AVPG to be created. Only five of the 24 AVPG datasets are strongly supported: Navigation Warning Services, Nautical Charts and Publication Services, Weather Station Locations and Services Available, Airports and Hospitals, Nautical Chart Catalogue and Coverage.

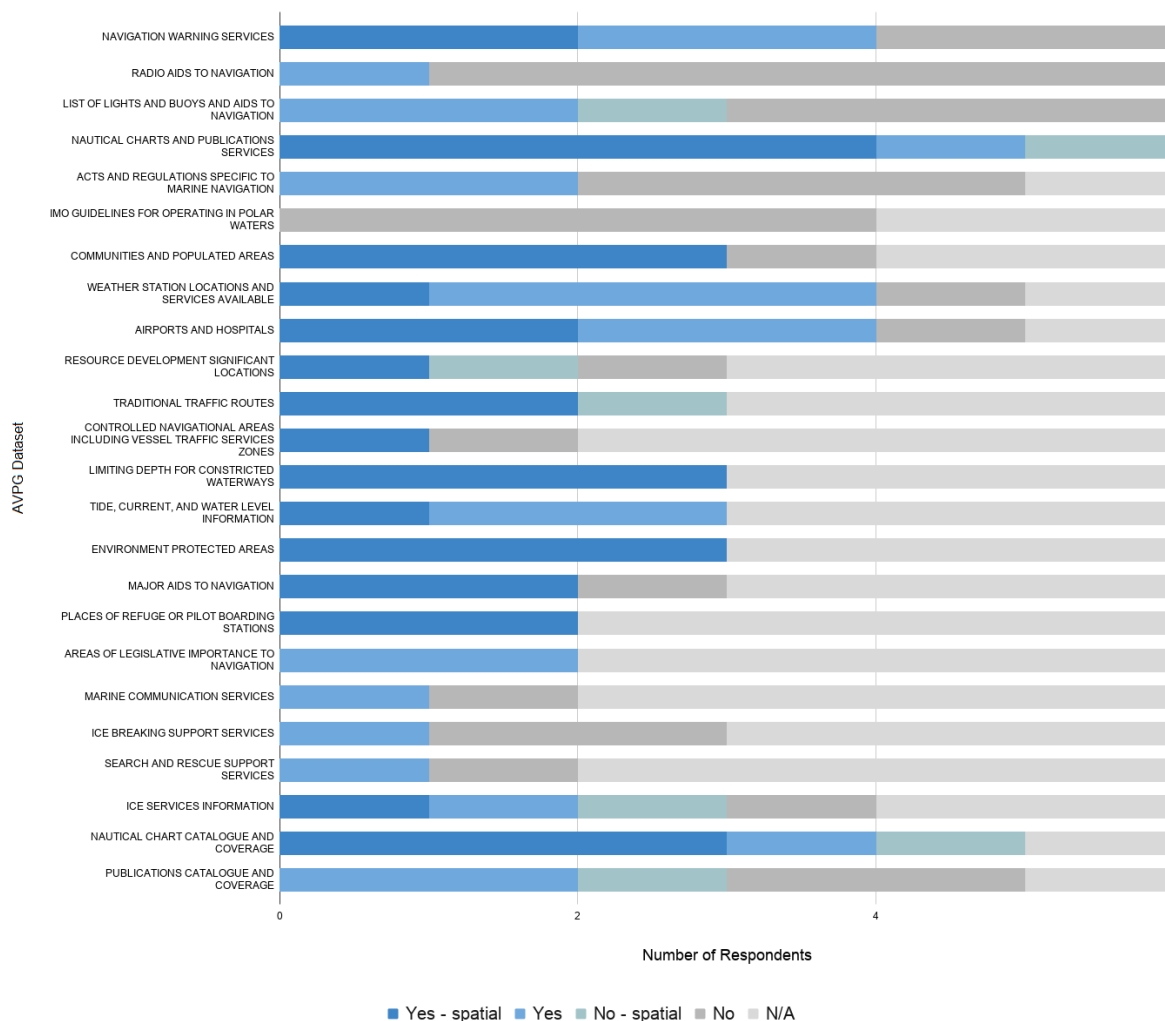## Current Web Service Availability for AVPG Themes

Figure 1 *Status of web services currently available from CAN, DNK, FIN, ISL, NOR, USA. Description of statuses:*
  Yes - spatial, a spatial web service is available to support the AVPG theme;
  Yes, a non-spatial web service is available;
  No - spatial, a web service is not available but a spatial dataset exists to support the AVPG theme;
  No, no dataset exists to support the AVPG theme;
  N/A, not applicable, unknown, or more information is needed.

It is likely that more datasets exist to further support the themes of the AVPG, but they might require more information to be identified or discovered by the respondent, or require coordination with other agencies to ensure accessibility and interoperability with whatever the host platform would be.

Following the high-level AVPG Implementation Plan approved at ARHC8, an option for a starting point would be making the effort to provide only the five most strongly supported AVPG datasets from each of the survey respondents, in a prototype geoportal. Previously, at the ARMSDIWG level, the United States has offered to provide such a prototype, but this could be discussed and decided among ARHC where the prototype could be hosted.

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Probably the easier component of the AVPG is providing a prototype portal for geospatial data to be viewed and accessed. But as identified in several recent MSDI-related papers and projects from IHO and OGC, the *Findable*, *Accessible*, *Interoperable*, and *Reusable* (FAIR Data Principles) aspects of marine geospatial data continue to require more work from the source HOs & marine geospatial agencies to allow multi-national, federated services to be ultimately accessible to users operating across boundaries throughout, in this case, the Arctic Region. ARMSDIWG has made progress in identifying both the data available and the gaps in coverage for an AVPG. In order to successfully provide a comprehensive AVPG, office-level requirements may need to be established for each ARHC participating nation to ensure that data exists and is curated to supply the information required to fulfill the AVPG themes. As one of MSDI's Four Pillars, strong and clear *Policy and Governance* is absolutely necessary in actually identifying what data exists in a HO to support whatever requirement the office plans to fulfill (e.g. supporting the AVPG).

Full results of the AVPG Initialization Survey will have been distributed to ARMSDIWG representatives by ARHC10. ARHC is encouraged to review the individual country results with their representative in ARMSDIWG to understand where more information or resources could be made available if they wish to contribute to a more comprehensive AVPG.

ARMSDIWG Hackathon
ARMSDIWG began exploring the idea of a Hackathon in order to accomplish tasks like MSDI-enabled AVPG, and providing data for themes defined in the Norwegian-led, User Survey Report. The Baltic Sea-North Sea MSDIWG (BS-NSMSDIWG) is in the process of planning and executing their own Hackathon, and it was suggested that ARMSDIWG spend more time planning and wait for the BS-NSMSDIWG Hackathon to occur since several Member States in that working group are also in ARMSDIWG, and the knowledge & experience from this activity in the BS-NS region could be transferred to ARMSDIWG at a later time. While an ARMSDIWG Hackathon would be a significant leap in completing a MSDI-enabled AVPG or response to the User Survey Report, it should be remembered that the access, availability, and essential existence of supporting data will be critical prior to commencing a Hackathon, like the ARHC MSDI 2018 Questionnaire and the AVPG Initialization Survey aim to address. A next task in ARMSDIWG is to create an Initialization Survey for the User Survey report.

Cooperation with Arctic SDI
As summarized in the ARMSDIWG Report earlier this year, *ARHC_VTC01_2020_02C*, both ARMSDIWG and the Arctic SDI's working groups still seek to move forward with an Arctic SDI and ARHC Joint Statement of Intent approved by both the ARHC and Arctic SDI Board, as the executive-level coordinating bodies, which will serve as a tool to concisely describe their common goal and cooperative relationship for both organizations during outreach to their users and relevant bodies (e.g., IHO, UN, Arctic Council). The draft version of the Arctic SDI and ARHC Joint Statement of Intent (below), which was last revised by ARHC after the ARHC Intersessional VTC-01 Meeting (2020), has since been approved and endorsed by the Arctic SDI Board, which the ARHC may now decide to finally approve and endorse, for both organizations to ultimately adopt and share:

> *The Arctic National Mapping Agencies of the Arctic SDI Board and the Member State Representatives of the Arctic Regional Hydrographic Commission (ARHC) are committed to maintain a collaborative partnership in order to provide both the terrestrial and marine foundations in a regional SDI. The collaboration will facilitate bringing land and marine data together in an infrastructure that connects users across domains to the spatial data valued to support research, planning, and decision making in the Arctic.*

Invited Actions of ARHC

The ARHC members are invited to:

- Take note of the report.
- Discuss the need for HO-level requirements in order to provide data necessary to support the MSDI-enabled AVPG, and take action to review results of the AVPG Initialization Survey with their ARMSDIWG representative to understand where gaps in data availability may exist.
- Discuss the creation and hosting of an AVPG Portal Prototype.
- Finally approve and endorse the Joint Statement of Intent with the Arctic SDI Board.
- Take action as seen appropriate.