

Report of the Marine Spatial Data Infrastructures Working Group (MSDIWG)

Submitted by:	Chair of IHO MSDIWG, Denmark
Executive Summary:	This report reviews the work group's findings, status and the planned next steps.
Related Documents:	C-17 - Spatial Data Infrastructures: The Marine Dimension - Guidance for Hydrographic Offices
Related Projects:	Arctic MSDI, Baltic Sea and North Sea Marine Spatial Data Working Group, (BS-NSMSDIWG), Maritime Economical Information Programme (MEIP), OGC Marine Domain Working Group

IHO MSDIWG

Meetings Held During Reporting Period

The MSDIWG9 meeting of IHO Marine Spatial Data Infrastructures Working Group (MSDIWG) took place in Niteroi (Rio de Janeiro), 30 January – 1 February 2018. The outcome of the meeting is available from the IRCC section of the IHO Website under the MSDIWG. The MSDIWG meeting was preceded firstly on 29 January by a MSDI Open Forum and after the MSDIWG9 meeting on the 2 February 2018 an OGC Marine Domain WG was arranged.



Figure 1. The participants at the MSDI Open Forum.

The aim of the MSDIWG9 meeting was to focus on MSDI and to propose ways to progress MSDI implementation within the Organisation and its Member States.



Figure 2. The IHO MSDI WG members attending the MSDI WG 9 meeting.

Next Planned Meeting:

The IHO/MSDI WG will hold a day-long MSDI Open Forum, an OGC Marine Domain WG meeting and the MSDI WG 10 meeting in 2019 in Busan, Republic of Korea (4-8 March 2019, exact dates TBD). Logistics and meeting details will be available at:

https://www.iho.int/srv1/index.php?option=com_content&view=article&id=483&Itemid=370&lang=en

The IHO/MSDI WG will continue to facilitate a MSDI Open Forum which would allow non-MSDI WG stakeholders (e.g. RHC MS, government, academia, industry, funding bodies and NGOs) to attend to see what the MSDI WG and the commercial partners can offer. Attendees at the Open Forum would then be encouraged to stay on for the MSDI WG10 meeting. This approach is being developed in consultation with the hosts.

The Open Forum meeting will be followed by a three day-long MSDI WG10 meeting at the same venue and the meeting will include WG Work Plan task group break-out sessions. The MSDI WG10 meeting will also be arranged as a back-to-back meeting with the OGC Marine Domain WG meeting. The IHO/MSDI WG will further investigate the possibility to arrange a back-to-back meeting with the newly established IHO-UN-GGIM WG on Marine Geospatial Information

The key interest for the IHO is enabling MS to ensure MSDI provides a framework for the provision of hydrographic information beyond the traditional field of surface navigation.

Work Programme

Work Plan 2018–2021

Work Programme was redeveloped at MSDI WG9 based on recent changes and change in focus on MSDI from a regional and national perspective. In order to deliver this Work Programme there are eight established MSDI Tasks:

A. Communication and dissemination

B. Operational - Data sharing and management

C. Policies and governance – RHC. (Ensure that MSDI is a standing agenda item for RHCs' meetings (IHO Res 2/1997, as amended, refers))

D. Standards (OGC and HSSC)

E. Innovation – Future perspectives (2021 - 2023)

F. Training and education

G. Maintain and extend the publication IHO MSDI C-17 (IHO Task 3.9.2.1 refers)

H. Conduct annual meetings of MSDIWG, arranged back to back with 1-day MSDI Open Forum (IHO Task 3.9.1 refers)

The work programme can be found on the IRCC section of the IHO Website under the MSDIWG.

MSDIWG9 Action List:

The existing action list was updated and renewed as consequence of the new work plan.

Any Other Items of Note

a. Data Centric Operations and Workflows

Data is the second most important asset in an organization after the people it employs and is now often referred to as the "new oil" or the "new electricity"! Data therefore needs to be treated as an enterprise-wide, national and even global asset with tremendous intrinsic value, not only to the organization that captures and / or manages it, but to other potential users as well. In the maritime sector we have been promoting the term "collect once, use many times" for many years in respect of the wider value and utility of, for example, bathymetry data. However, there is other important data held by the HO that has additional or residual value once it has been used to support the business of charting. The terms "data centric" and "With a data centric approach" define operations and workflows that are managed as close to "source" as possible rather than as products. Enabling efficient data sharing exchange and re-use across government, academia, and commerce thereby stimulating economic and socio-economic benefits, not only to the nation, but potentially across borders with neighboring HOs.

b. OGC Candidate Standard to replace Coordinate Reference Systems (CRS)

This initiative specifies the core of an OGC Discrete Global Grid System (DGGS) encoding standard. This OGC standard defines the DGGS core data model and the core set of requirements to which every OGC DGGS encoding must adhere. Extensions to the DGGS core standard add further functionality to the core requirements. In particular, DGGS extensions to the core will be required to support additional functional capabilities and interoperability using OGC Web Service (OWS) architectures, such as OGC Web Coverage Service (WCS) and Web Coverage Processing Service (WCPS) interfaces. This standard defines:

- i. A concise definition of the term Discrete Global Grid System as a spatial reference system
- ii. The essential characteristics of a conformant DGGS
- iii. The core functional algorithms required to support the operation of a conformant DGGS

Concept Development Initiative - Defining the Future of Marine Spatial Data Infrastructure.

The proposal to launch an IHO Concept Development Initiative was presented at the IRCC9 meeting. At the MSDIWG meeting in Vancouver 2017, the MS discussed the possibility to create an OGC study that could establish the framework for future development of MSDI. After the MSDIWG meeting OGC has developed a proposal for a concept development study for MSDI, with the ultimate intent after completion to propose to IHO a full pilot timed for 2018 to be funded by NGA. The proposal presents the Open Geospatial Consortium's (OGC) approach for evaluating the current state and defining the potential future of MSDIs. The initiative will emphasize on the rapid evolution of technologies and methodologies for generating non-navigational, location-based information of value to a broad range of users.

The following are objectives outlined in the proposal:

- Document the current state of MSDIs
- Document the needs for an MSDI based on current emerging technologies
- Document strategies to interoperate with other Spatial Data Infrastructures

- Develop a common interoperability reference architecture
- Engage with experts from across the user community as well as from the community of technology / information and services providers, including hydrographic offices, industry, government, research, and other SDOs

USA/NGA briefed the meeting on the special agreement with OGC and stated that it may be able to support the study with funds and human resources (expertise). The importance of the concept study proposed by the MSDIWG was supported by the meeting and Canada offered to contribute to the study. HSSC Chair stressed the importance of cooperating with OGC with respect to standards.

UN-GGIM WORKING GROUP ON MARINE GEOSPATIAL INFORMATION

The principal purpose of the UN-GGIM is to play a leading role in setting the agenda for the development of global geospatial information management and to promote the use of geospatial information in addressing key global challenges, particularly taking into account the role of geospatial data in monitoring and achieving the Sustainable Development goals agreed under the UN 2030 Agenda for Sustainable Development. The UN-GGIM reports to the UN General Assembly via the UN Economic and Social Council (ECOSOC).

At the seventh Session of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) that took place at the UN Headquarters in New York, USA from 31 July to 4 August 2017 it was decided to establish an UN-GGIM Working Group on Marine Geospatial Information (MGIWG). The MGIWG will provide input to the Committee to support its Member States in developing national policy, strategic priorities, decision-making and the monitoring of global developments in relation to their spatial data infrastructures and marine geospatial information management. It should be noted that although the IHO has been recognised as having a fundamental role in marine geospatial information, the terms of reference of the WG indicate a scope well beyond hydrography. The WG is expected to play a leading role at the policy level by raising political awareness and highlighting the importance of reliable, timely and fit-for-purpose marine geospatial information to support the administration, management and governance of the marine environment. It is anticipated that the WG will consider the full range of maritime geospatial information, including met-ocean data.

The MGIWG objectives as stated in the Terms of Reference:

- play a leading role at the policy level by raising political awareness and highlighting the importance of reliable, timely and fit-for-purpose marine geospatial information to support the administration, management, and governance of the marine and ocean environments
- encourage the use of internationally agreed-upon geospatial information frameworks, schemas, systems and established standards to improve the growing inter-dependent relationships between people and the marine environments
- support the Committee of Experts in the development of norms, principles, guides and standards to increase significantly the availability of high-quality, timely and reliable geospatial information including any regional capacity development initiatives

Important topics with direct relevance to most national hydrographic services will be:

- global geodetic reference frame
- legal and policy frameworks including issues related to authoritative data
- geospatial information for sustainable development,
- geospatial information and service for disasters
- strengthening collaboration with the UN Group of Experts on Geographical Names (UNGEGN)

The UN-GGIM Secretariat has identified the co-Chairs and participation to the UN-GGIM: MGIWG. The first on-line meeting will take place 26 March 2018. It is anticipated that the first meeting of the MGIWG will take place immediately prior to the next session of the UN-GGIM in New York in August 2018.

The eighth Session of UN-GGIM will take place at the UN Headquarters in New York during the first week of August 2018.

Conclusions and Recommended Actions

a. Education and Learning

The RHCs that promoted training in MSDI now have students achieving promotions in the workplace as decision makers and, in some cases, driving the MSDI evolution in their HOs providing testament on the return of investment in training. The IHO Capacity Building Programme for 2013-2017 supported Member States to improve their corporate governance in respect of data management, database design and MSDI through a variety of training courses and briefing sessions, ranging from half-day workshops and briefings to more comprehensive five day residential courses aimed at all levels of staff from practitioners through to directors.

b. Preparation of a new MSDI White Paper

The existing "promotional" MSDI White Paper "The Hydrographic and Oceanographic Dimension to Marine Spatial Data Infrastructure Development: 'Developing the capability'" was authored and published by Caris and OceanWise in May 2010 and later adopted by the MSDIWG. As knowledge and understanding of SDI and MSDI has developed in the past five years, the MSDIWG revised the document named "Realizing the benefits of Spatial Data Infrastructures in the Hydrographic Community" which is available at the IHO website at: https://www.iho.int/mtg_docs/com_wg/MSDIWG/MSDIWG_Misc/MSDIWG-BOK.html

c. Best Practices and List of Standards related to SDI/MSDI

MSDIWG produced a compilation of best practices and a list of standards related to SDI/MSDI. These documents are available at: [www.iho.int / Committees & WG / MSDIWG / Body of Knowledge](http://www.iho.int/Committees%20&%20WG/MSDIWG/Body%20of%20Knowledge).
https://www.iho.int/mtg_docs/com_wg/MSDIWG/MSDIWG_Misc/MSDIWG-BOK.html

d. GIS layer on existing SDI/MSDI around the world

The IHO Secretariat established a GIS layer representing existing SDI/MSDI around the world. This layer can be accessed at: [www.iho.int / Committees & WG / MSDIWG / SDI/MSDI portals around the world](http://www.iho.int/Committees%20&%20WG/MSDIWG/SDI/MSDI%20portals%20around%20the%20world)

e. Creation of an OGC Marine Domain Working Group (DWG)

MSDIWG has been cooperating with the OGC, the world-wide body responsible for developing de-facto standards for the geospatial industry and has contributed to the development of an OGC compliant Conceptual Model for Oil Spill Response. OGC has recently facilitated a Maritime Ad-Hoc meeting in Washington on 10 March 2016 at which the MSDIWG was represented. As a result the Marine DWG was created within OGC with an aim of developing an OGC compliant MSDI Conceptual Model. Its first meeting took place in November 2016.



Figure 3. The participants at the OGCMDWG meeting.

Baltic Sea and North Sea MSDIWG

Meetings held during reporting period

The Baltic Sea Marine Spatial Data Infrastructure Working Group (BSMSDIWG) Workshop No 5 took place in Rostock on December 6-8, 2016. MS from the North Sea Hydrographic Commission and the Baltic Sea Hydrographic Commission were invited to participate in the workshop. Members from the HELCOM and the VASAB secretariat participated in the workshop on the second day.

The overall aim of the workshop was to create a common MSDI framework and to evaluate the BSMSDIWG work plan which focuses on how the BSHC and NSHC MS can benefit from a regional approach to MSDI. The workshop also focused on how to cooperate and coordinate with HELCOM and VASAB in a forward looking perspective especially with a focus on the implementation of MSP.

For more information, see <http://www.bshc.pro/working-groups/msdiwg/>

Next meetings planned

The next meeting, no 6 of the BS-NSMSDIWG, is planned to take place in Denmark in 2018 at the Danish Hydrographic Offices in Aalborg. All MS from BSHC and NSHC will be invited to participate in the meeting. Members from the HELCOM and the VASAB secretariat and representatives from EuroGOOS will be invited to participate in the workshop on the first or second day.

BS-NSMSDI Draft Work Programme

At the fifth meeting of the Baltic Sea North Sea Marine Spatial Data Infrastructure Working Group, the work group adjusted the draft work program. The work plan is now divided in six work items and there are relevant milestones and coordinators for each item. The work program focuses on tasks that are foreseen to be important and challenging from a regional and a national perspective. At the BSHC21 meeting the work program was approved.

Marine Spatial Planning

In order to achieve the goal of the Regional Baltic MSP Roadmap (to draw up and apply maritime spatial plans throughout the Baltic Sea Region by 2020 that are coherent across borders and apply the ecosystem approach), VASAB and HELCOM has established the Baltic Sea Region MSP Data Expert Sub-group (MSP Data Expert sub-group) as a sub-group to the joint HELCOM-VASAB MSP Working Group.

The aim of BSR MSP Data Expert sub-group is to support data, information and evidence availability for MSP processes with regard to cross-border / trans-boundary planning issues to ensure comparability of maritime spatial plans in the Baltic Sea Region. The BSR MSP Data Expert sub-group facilitates the work of the HELCOM-VASAB MSP WG, as well as helping with implementation of the Regional Baltic MSP Roadmap 2013-2020.

Core members of the Baltic MSP Data Expert Group are MSP experts / planners representatives from all the Baltic countries and Data / GIS / SDI (Spatial Data Infrastructure) experts from relevant authorities/agencies in the Baltic countries. Additional members/experts may participate in meetings by invitation by the chair of the group depending on issues to be dealt with such as representatives of other organizations, technical experts, etc.

Deliverables of the group shall be (among others):

- i. List of National MSP Data Contact Points and contact persons
- ii. List of additional relevant institutions, contact person/data experts
- iii. List of main / most relevant MSP issues in a cross-border / trans-boundary context in relation to data and information
- iv. Compilation of minimum requirements for Maritime Spatial Plan Data: "Output Data" and sharing of this data

- v. Compilation of minimum requirements for “Input Data” and sharing of this data which has relevance for trans-boundary / cross-border planning issues
- vi. Overview on (national / regional) situation of MSP Data which has been identified as being relevant with regard to cross-border/trans-boundary (planning) issues in BSR
- vii. Terms of Reference for a Baltic Sea Region Spatial Data Infrastructure for MSP
- viii. Regular reports to HELCOM-VASAB MSP WG

The Commission is invited to

- take note of the report
- discuss the implication of MSDI from a HO perspective and how MS can benefit from a Nordic approach to MSDI