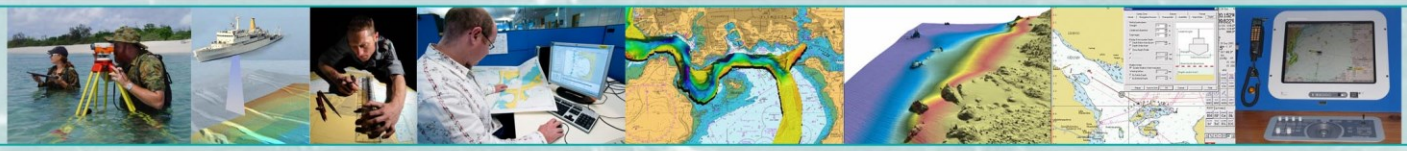


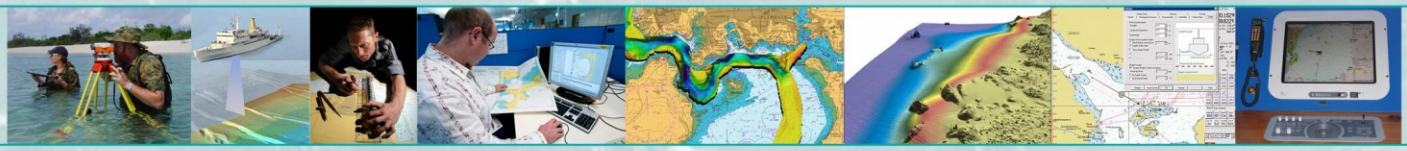
13TH MEETING OF THE MARINE SPATIAL DATA INFRASTRUCTURES WORKING GROUP (MSDIWG), OGC MARINE DOMAIN WORKING GROUP MEETING, UN-GGIM WORKING GROUP ON MARINE GEOSPATIAL INFORMATION AND INTERNATIONAL SEMINAR ON UNITED NATIONS GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

Singapore, 09 – 13 May

Contribution to the IHO Work Programme 2022	
Task 3.7.1	Organize, prepare and report annual meetings of the Marine Spatial Data Infrastructures Working Group (MSDIWG).
Task 3.7.4	Coordinate relevant activities with the Open Geospatial Consortium (OGC) Marine Domain Working Group (Marine DWG)
Task 1.1.12.1	Maintain relationship with the United Nations (UN) organizations including the Committee of Experts on Global Geospatial Information Management (UN-GGIM) and the WG on Marine Geospatial Information (WG-MGI)

The 13th Meeting of the IHO Marine Spatial Data Infrastructures Working Group (MSDIWG) took place in a hybrid format from 9 to 13 of May 2022 in Singapore, and was organized by the Maritime and Port Authority of Singapore. The meeting was chaired by Mr Jens Peter Weiss Hartmann (Denmark). The MSDIWG 13 meeting was a joint meeting with the Open Geospatial Consortium (OGC) and the UN-GGIM Working Group on Marine Geospatial Information (WG-MGI). 52 delegates from 26 Member States (Australia, Brazil, Brunei Darussalam, Canada, China, Colombia, Denmark, Egypt, Germany, Greece, India, Indonesia, Italy, Netherlands, New Zealand, Nigeria, Norway, Oman, Portugal, Republic of Korea, Romania, Singapore, Spain, Thailand, United Kingdom and United States) and 17 representatives of observer organizations and industry members attended the meeting, in total 70 participants with 22 attending in-person. Assistant Director Leonel Manteigas represented the IHO Secretariat in person.

From 10 to 12 May 2022, the International Seminar on United Nations Global Geospatial Information Management, with the theme “Effective and Integrated Marine Geospatial Information” took place. The seminar was arranged and hosted by the Maritime and Port Authority of Singapore with the intention to provide a forum for deliberating key considerations for integrated marine geospatial information within a data ecosystem for effective policies, decisions, programmes and projects to achieve national development priorities and the 2030 Agenda for Sustainable Development.



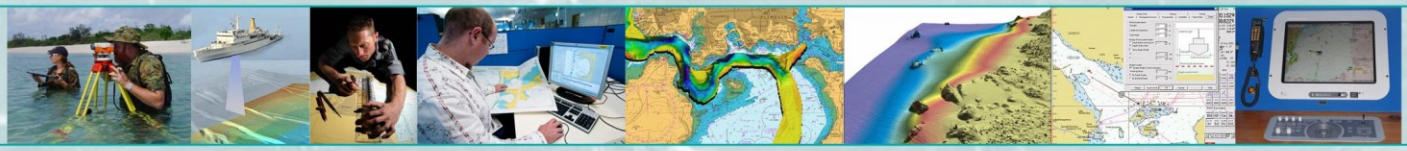
Participants of the MSDIWG13

Being a joint meeting, it was opened by the Chair of the MSDIWG Mr Jens Peter Hartmann, Mr Rafael Ponce Co-Chair of the OGC Marine Domain Working Group and Dr John Nyberg Co-Chair of the UN Working Group on Marine Geospatial Information. All expressed their satisfaction to attend the meeting in-person, and thanked the Maritime and Port Authority (MPA) of Singapore for the organization of the meeting. Mr Thai Low, Chief Hydrographer of Singapore MPA, expressed his pleasure to host the meeting in Singapore and thanked all participants for attending.

New members since the last MSDIWG meeting were welcomed, namely PP Chakraborty (India), Nicola Pizzeghello (Italy), Telmo Dias (Portugal) and Yidda Handal (Honduras) as an observer.

The meeting reviewed the Actions from the last meeting and the outcomes from C-5, IRCC13 and HSSC13. The IRCC Chair invited the MSDIWG to apply ISO 9001 Principles in its work plan, and to discuss how the MSDIWG can liaise with the other relevant IHO subordinate bodies, concluding that it would be necessary to develop a strategy to increase such liaison.

The meeting received the national reports on the status of MSDI and Maritime Spatial Plans (MSP) from USA, Denmark, Portugal, United Kingdom, Singapore, Republic of Korea and Indonesia. In relation with the regions, regional reports were presented from the Baltic Sea and North Sea Hydrographic Commissions, the Arctic Hydrographic Commission, the Eastern Atlantic Hydrographic Commission and the South-West Pacific Hydrographic Commission.



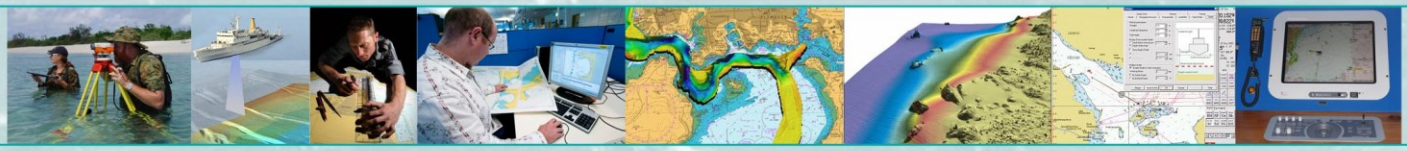
The Seabed 2030 Director enhanced the progress on the coverage of seabed mapping, moved from the 6% at the beginning of the project (in 2017), to the actual 20.6% (June 2021), having almost 4/5 of the seabed still to be mapped. He reported on the latest improvements of the Regional Centres, the development of the statistics routines, the scripts and grids as well as the refinement of the App for data visualization. He also mentioned the Tech Strategy White Paper in preparation, the Grid Stats improvements, and the refined/demo new-generation CSB loggers, describing the most recent mapping activities.

The IHO Data Centre for Digital Bathymetry (DCDB) reported on a data pipeline that allows the public to contribute, discover and download CSB data via a web-based map viewer interface. The importance to respond to IHO CL 11/2019 was highlighted, but the legal problem that several HOs are facing to share their data, was recognized. It was decided that MSDIWG and UNGGIM WG MGI should work together to identify common use-cases for bathymetry data residing in DCDB and Seabed 2030.

The IHO e-Learning Center's main goal is to support the IHO community with e-Learning opportunities and to increase the capacity building activities with its implementation. Four courses are already available in the Center. In 2022 it is intended to proceed with the test phase. The Learning Management System (LMS) was presented and it is expected to have four different kinds of courses, namely Open, Regular, Certified and Special. The system allows to have different languages for the same course in terms of sounds and subtitles. The MSDIWG was asked to test the MSDI training material available at the IHO e-Learning Center.

The IHO-Singapore Innovation and Technology Laboratory was officially launched on 26 October 2021 in Singapore. The Lab developed some improvements to facilitate the presentation of proposals. The future work programme includes 2 projects: S-57 to S-101 conversion and S-131 on marine harbour infrastructure database. A future potential project will be to create a test-bed S-100 ECDIS capable of displaying S-101 and S-102 datasets.

The meeting was informed on the IGIF-MSDI Maturity Roadmap. It is a project involving the IHO, OGC and World Bank, which intends to provide guidance for those within governmental departments or agencies that are actively planning MSDI implementation. The methodology and contribution from each organization, as well as the pathway and balance between governance and technology, were presented. It was also summarized to whom the project is addressed and why it is necessary. The design is based on the World Bank IGIF methodology with the IHO and OGC contribution and aims to have a language that can be understood by non-technical people.



OGC explained its actual priorities, which are the data discovery, land and sea integration, technology solutions, and then authenticity and provenance. The interoperability and use of standards for maximum re-use are considered very important. The IHO/OGC Recipe Book for use cases was mentioned.

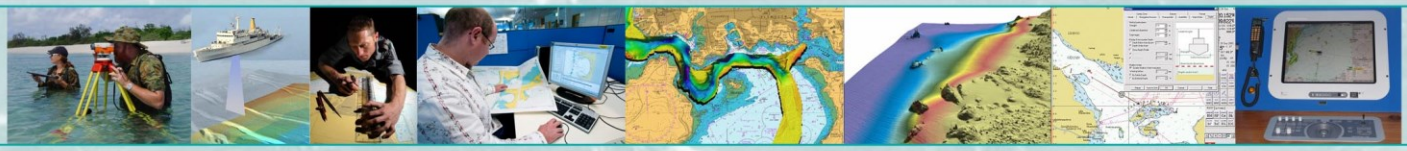
The meeting was informed on the OGC Federated MSDI Baltic use case phase related to "Marine Protected Areas" from an MSDI perspective, the examination of S-122 for broader use cases, the S-122 encoded MPA data via OGC API (Application Programming Interface), and then a better interoperability between IHO and OGC. The question was raised whether the S-122 product specification needs enhancement or if a MSP product specification that includes MPAs with other elements would be necessary. The OGC API Model was explained, as well as that the use of API changes the model bringing authenticity and identifying provenance, data aggregation, data exchange, etc. The OGC update on IGIF-H (Hydro) was mentioned, as well as the need to have a simplification of its content. It was decided that OGC will provide guidelines or a “Recipe Book” and showcase(s) for Hydrographic Offices to implement OGC APIs. An OGC API - Feature Link will be made available in the Body of Knowledge, and OGC will share the links to the latest OGC APIs for dissemination within the MSDIWG.

The FAIR (Findable, Accessible, Interoperable, Re-usable) data principles were discussed, and the different ways on how they can be used to develop a check list for the Member States were described. OGC will propose a FAIR Principles checklist in the next joint meeting. The meeting discussed also on the best way to have common definitions, and OGC will lead this work involving some MSDIWG Members.

The UN GGIM MGI presented the outcomes of the seminar that will be a part of the UN GGIM MGI minutes. More information related to the seminar and respective documents can be found at: https://ggim.un.org/meetings/2022/3rd-WG-MGI.

The draft document IGIF-H - Operational Framework for Integrated Marine Geospatial Information Management was presented. The meeting was divided into groups to discuss the chapters of the strategic pathway of IGIF-H and to provide contributions to be shared with all participants for further contributions.

The need to update Publication C-17 and align it to other IHO publications and UN-GGIM IGIF Water and IGIF-H was discussed. The new C-17 should also refer to other useful information such as the training material, Body of Knowledge, OGC Concept Development study, IHO Strategic Plan and it should include also sections on the FAIR principles and S-100. It was also agreed that the format of the new C-17 should be easy to be updated and maintained. On this regards, a C-17 drafting group was established to provide a first version of the new C-17 by the next meeting.



The meeting received a presentation on the future geospatial information ecosystem and marine digital Twins which “is a virtual representation of an object or system that spans its lifecycle, is updated from real-time data, and uses simulation, machine learning and reasoning to help decision-making”. The MSDIWG will work together with OGC on how this topic can be approached. The EU Digital twin of the ocean was mentioned, as well as the pdf document published to explain “what is it” and how it works and who can benefit from it. The meeting decided that the MSDIWG will investigate the role of MSDI in Maritime Digital Twin, how to proceed and the possibility to establish a pilot project together with the IHO-Singapore Innovation and Technology Laboratory. An input paper is planned to be provided at MSDIWG14.

The WENDWG reported on the work to produce a Product Matrix-Test that will provide metrics related to S-101 and potentially other products, to be shared with RHCs. The Product Matrix-Test is in an early phase and it is based on a questionnaire that will provide information on which stage of implementation the product is. Each area will have a score and in the end the Matrix will compute an overall score related with the product implementation. When the metrics are mature, the WENDWG will provide them to MSDIWG for contributions.

The meeting also discussed the IHO Strategic Plan and the SPI 2.1.1 - “Build a portal to support and promote regional and international cooperation in marine spatial data infrastructures (MSDI)”. Some examples of contents were provided based on the available information such as C-55, S-122, and information available from the INToGIS, etc. Use of this content will require a minimum of resources and can be relatively easy to be implemented by the IHO Secretariat. Since this will reproduce some of the catalogues available in the IHO website, it was suggested by some members to create a data HUB network. MSDIWG decided that the first step will be to build an IHO MSDI Portal with the available data, and then to evaluate the possibility, challenges and resources necessary to create a data HUB network and then to discuss in a future workshop. On the IHO MSDI Portal, a questionnaire will be prepared to be sent to the MS by the IHO Secretariat.

The 14th meeting of the MSDIWG will be also a joint meeting with the UN Working Group on Marine Geospatial Information and OGC Marine DWG, and it will be held in Genoa, Italy from 30 January to 3 February 2023.