IHO MSDIWG

Report to SWPHC18 (FEB 2021)

presented by:

Sebastian Carisio (USA), Vice-chair IHO MSDIWG

IHO MSDIWG Chair:

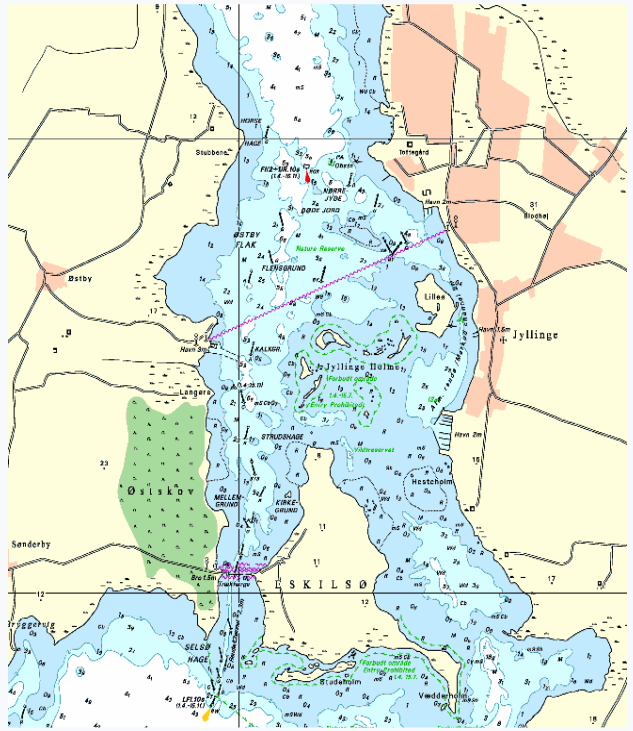
Jens Peter Hartmann (DNK)

Overview

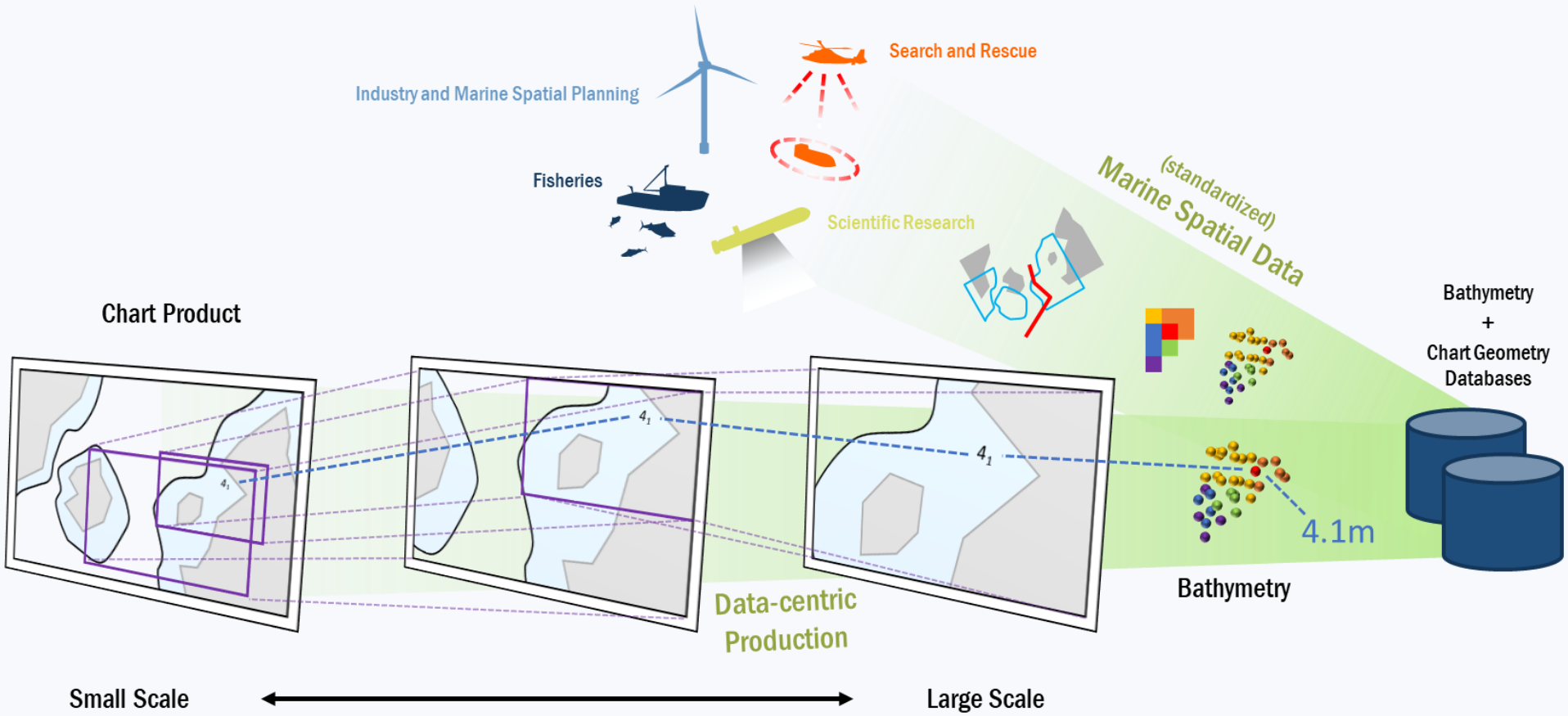
- IHO MSDIWG overview and resources
- Work completed to date
- Forthcoming activities
- Cross-community engagement

Traditional Approach to Hydrographic Data

- One primary user: the mariner
- Primary Products
  - Paper chart
  - ENC - S57
  - Publications
  - Product updates
- SOLAS (ECDIS)
- IHO
  - Standardization, harmonization, recommendation

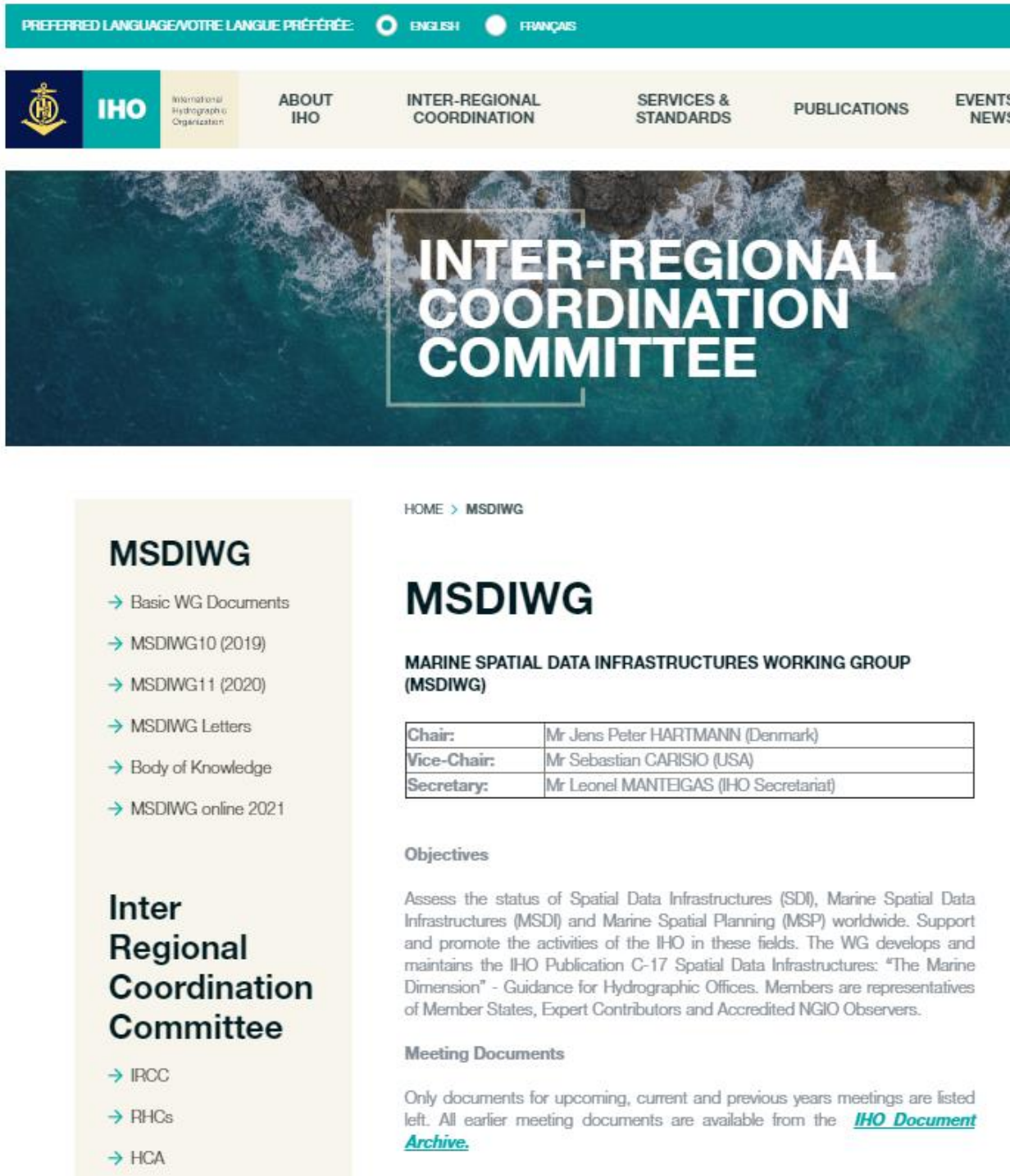


Modern Hydrographic Data Approach: Data-Centric Production and MSDI



IHO MSDIWG

- 30 Member States
- 15 Expert Contributors
- IHO
  - IRCC
    - IHO MSDIWG
    - RHCs
      - BSHC & NSHC: BS-NSMSDIWG
      - ARHC: ARMSDIWG
      - MACHC: MMSDIWG
      - EAHC: EAHC-MSDIWG
      - SWPHC: SWPHC MSDIWG
      - And other regional initiatives…

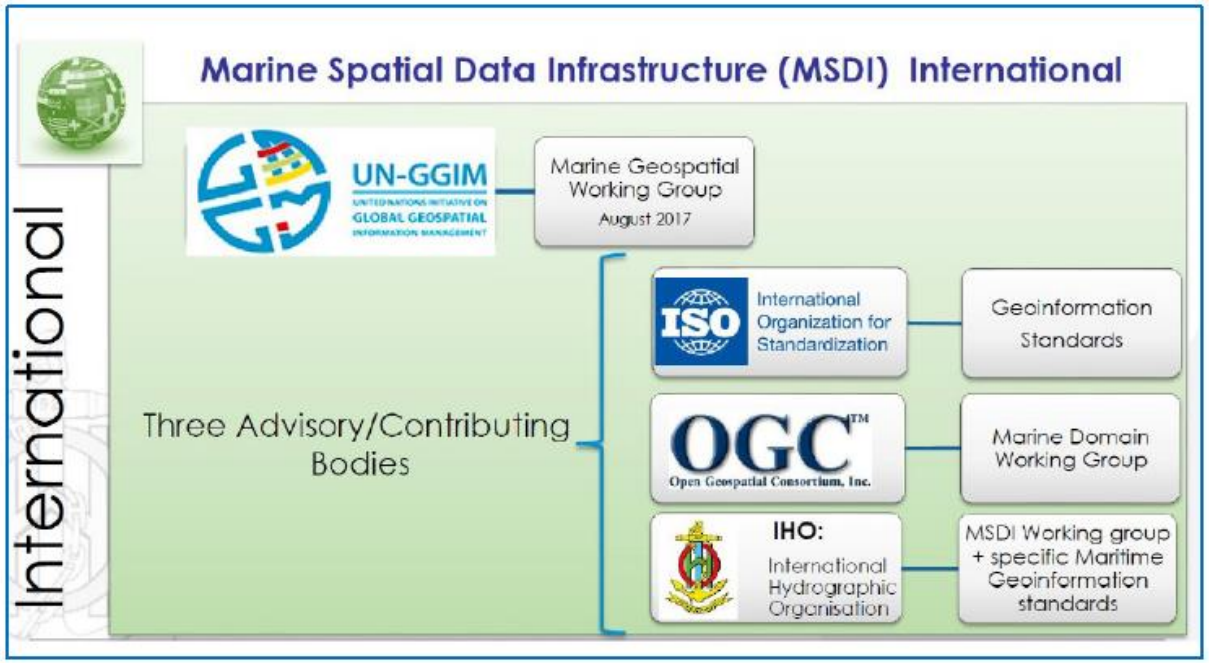


IHO MSDIWG Functions

- Identify the **hydrographic community inputs** to the National Spatial Data Infrastructures (NSDI)
- **Monitor** national and international SDI activities
- Promote the use of **IHO standards** and Member State **marine data** in the SDI activities
- **Liaise**, as appropriate, with other relevant technical bodies
- **Propose and technical and/or administrative resolutions** that may be required to reflect IHO involvement in the support of SDI.
- **Identify actions and procedures** that the IHO might take to contribute to the development of the SDI and or MSDI in support of Member States/

IHO MSDIWG, UN-GGIM WG-MGI, and OGC Marine DWG

MSDIWG11 - Rostock-Warnemünde, Germany 24-26 February 2020 + **Joint IHO MSDIWG-OGC Marine DWG session** on 26 February 2020 + **UN-GGIM WG-MGI2** 26-28 February 2020



IHO MSDIWG Body of Knowledge

INTERNATIONAL HYDROGRAPHIC ORGANIZATION

Marine Spatial Data Infrastructures Working Group (MSDIWG)

SDI/MSDI Related Standards

Last update: 6 April 2020

Tier 1 Standards

Visualization & Portrayal

OGC/ISO 19128 Web Map Service (WMS)

OGC Web Map Tile Service (WMTS) 1.0

OGC Styled Layer Descriptor 1.1 (SLD)

OGC Web Map Context 1.1 (WMC)

OGC KML 2.2

Catalogue & Discovery

ISO 19115, Geographic information – Metadata

OGC Catalogue Services Specification 2.0.2 (CSW)

ISO Metadata Application Profile

OGC (ISO19115 Metadata) Extension Package of CS-W ebRIM4 Profile 1.0

Tier 2 Standards

Distributed Maintenance & Use (Technology)

OGC/ISO 19136 Geography Markup Language (GML)

OGC/ISO 19142 Web Feature Service 2.0

OGC/ISO 19143 Filter Encoding 2.0

OGC Web Coverage Service (WCS) 2.0

Domain Model standards (Content)

OGC CityGML

ISO 19144, Geographic information -- Classification systems

ISO 19152, Geographic information -- Land Administration Domain Model (LADM)

GeoSciML – Geological structure and bore holes

OGC WaterML 2.0 - Sharing in-situ sensor water observations

S-57/S-100 - IHO Transfer Standard for Digital Hydrographic Data

Tier 3 Standards

Geospatial Processing

OGC Web Processing Service (WPS)

Mobile Devices

OGC Open GeoSMS

OGC GeoPackage

Real Time

Standards

Training

Body of Knowledge

MSDI Training material (in-kind contribution from Denmark) >>>> NEW <<<<

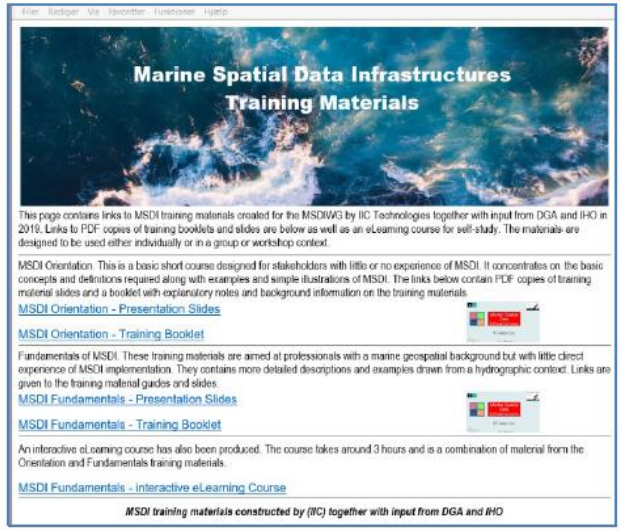
- Download from the IHO website
- Download via Dropbox
- Use the interactive material in Youtube

Marine SDI Documents:

- IHO-OGC Marine SDI Concept Development Study (CDS) >>>> NEW <<<<
- White Paper - Realizing the benefits of Spatial Data Infrastructures in the Hydrographic Community
- SDI/MSDI Related Standards
- Frequently Asked Questions on SDI
- SDI Stakeholders
- Hydrographic Data Policy for SDI (Best practices for Hydrographic Offices)
- White Paper - The Hydrographic and Oceanographic Dimension to Marine Spatial Data Infrastructure Development
- Developing the capability (A contribution from the MSDIWG Experts Contributors)

Miscellaneous:

- Arctic SDI prepared by the Norwegian Hydrographic Service >>>> NEW <<<<
- IHO MSDIWG Case Study Template
- Template for a license agreement embracing rights for the derivation of data
- New Zealand Bathymetry Investigation Report (2015)
- MSP Governance Framework Report (2014)
- Links to the SDI/MSDI portals worldwide (access in the MSDIWG Basic Documents)
- UN-GGIM: A Guide to the Role of Standards in Geospatial Information Management (2015)
- UN-GGIM: A Guide to the Role of Standards in Geospatial Information Management - Companion document
- UN-GGIM: Future trends in geospatial information management: the five to ten year vision (July 2013)
- BLAST [Bringing Land and Sea Together] Project



This page contains links to MSDI training materials created for the MSDIWG by IIC Technologies together with input from DGA and IHO in 2019. Links to PDF copies of training booklets and slides are below as well as an eLearning course for self-study. The materials are designed to be used either individually or in a group or workshop context.

MSDI Orientation. This is a basic short course designed for stakeholders with little or no experience of MSDI. It concentrates on the basic concepts and definitions required along with examples and simple illustrations of MSDI. The links below contain PDF copies of training material slides and a booklet with explanatory notes and background information on the training materials.

MSDI Orientation - Presentation Slides

MSDI Orientation - Training Booklet

Fundamentals of MSDI. These training materials are aimed at professionals with a marine geospatial background but with little direct experience of MSDI implementation. They contains more detailed descriptions and examples drawn from a hydrographic context. Links are given to the training material guides and slides.

MSDI Fundamentals - Presentation Slides

MSDI Fundamentals - Training Booklet

An interactive eLearning course has also been produced. The course takes around 3 hours and is a combination of material from the Orientation and Fundamentals training materials.

MSDI Fundamentals - interactive eLearning Course

MSDI training materials constructed by (IIC) together with input from DGA and IHO

MSDI Case Study Template

International Hydrographic Organization (IHO)
Marine Spatial Data Infrastructures Working Group (MSDIWG)
MSDI Case Study Summary Information Sheet

Case Study
Click Here To Enter Case Study Title

Case Study Type: Click here to choose an item.

Summary

Sources: Click here to provide URLs for this case study's sources.

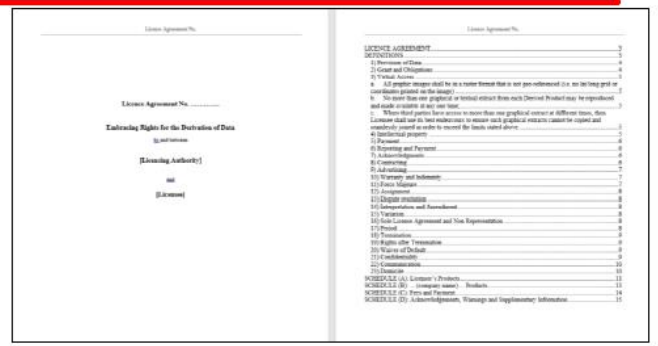
Submitted by: Click here to provide name. Click here to provide title. Click here to provide affiliation. Click here to provide contact information (e.g. email address).

Date Submitted: Click here to enter a submission date.

Data Governance & Infrastructure Components Exemplified by Case Study:
(Checked ☑ components apply.)

☐ Access, Data Sharing & Exchange	☐ Policy & Organization, Strategy
☐ Data Assurance	☐ Quality Control Procedures
☐ Data Quality	☐ Standards
☐ Documentation	☐ Storage
☐ Information Control Technologies	☐ User Needs & Response
☐ Interoperability	

Template for a license agreement



Licence Agreement No. .....

Embracing Rights for the Derivation of Data

[Licensing Authority]

and

[Licensee]

FAQ's on SDI and MSDI

IHO/HSSC Marine Spatial Data Infrastructure Working Group

SPATIAL DATA INFRASTRUCTURE (SDI)

Frequently Asked Questions (FAQ's)

1. What is SDI?

SDI is a term used to summarise a range of activities, processes, relationships and physical entities that, taken together, provide for integrated management of spatial data, information and services. The term:

- covers the processes that integrate technology, policies, criteria, standards and people necessary to promote geospatial data sharing throughout all levels of the public sector;
- embraces the structure of working practices and relationships among data producers and users that facilitates data sharing and use. It covers the set of actions and new ways of accessing, sharing and using geographic data that enable far more comprehensive analysis at all levels of government, the commercial and not-for-profit sectors and academia; and
- describes the hardware, software and system components necessary to support these processes

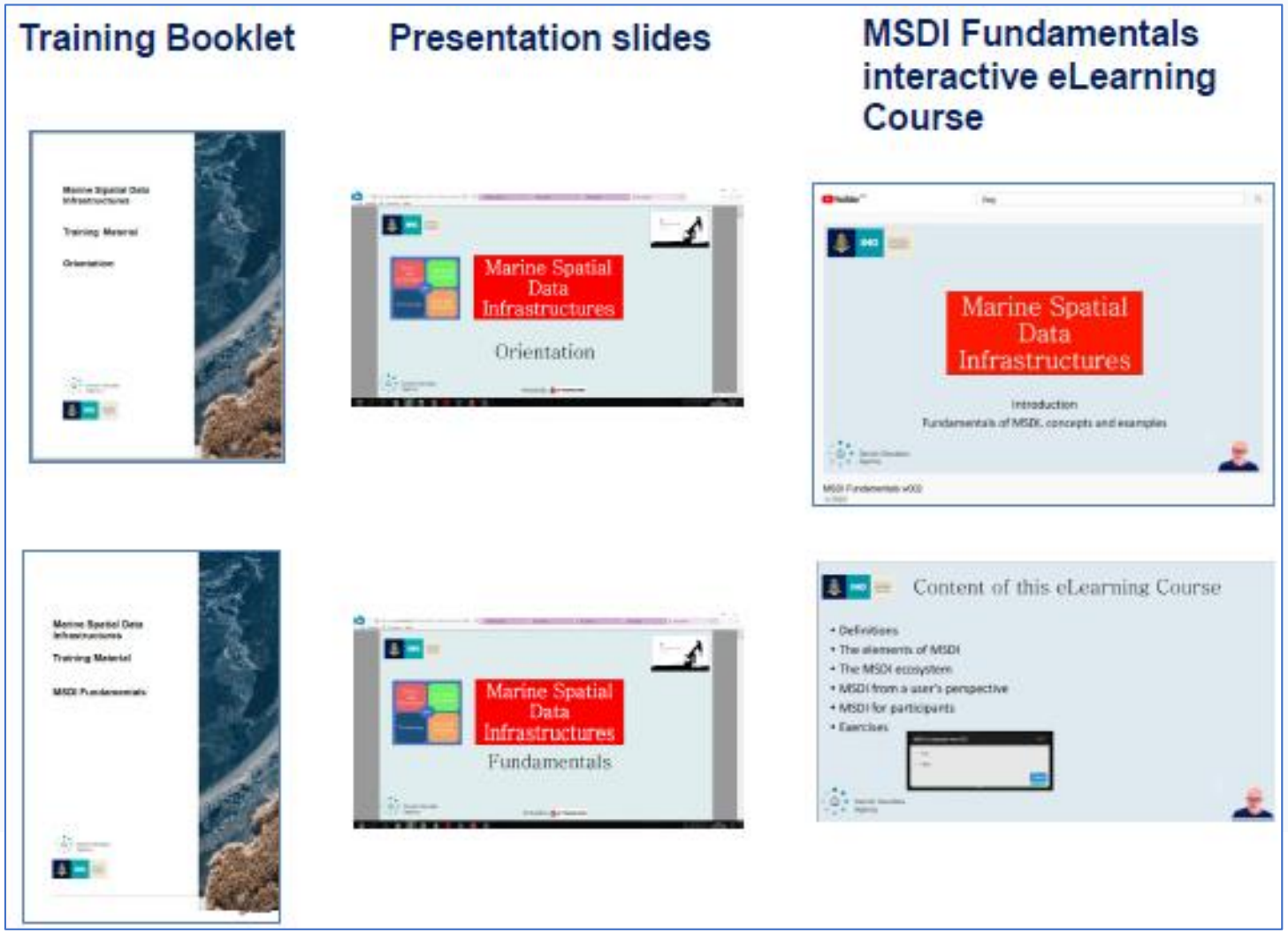
2. In what way does SDI affect Hydrographic Offices?

An Hydrographic Service (HO), through systematic data collection carried out on the coast and at sea, produces and disseminates information in support of maritime navigation safety and marine environment preservation, defence and exploitation.
The development of an SDI is a natural extension in the management and dissemination of such information in an integrated manner.

IHO

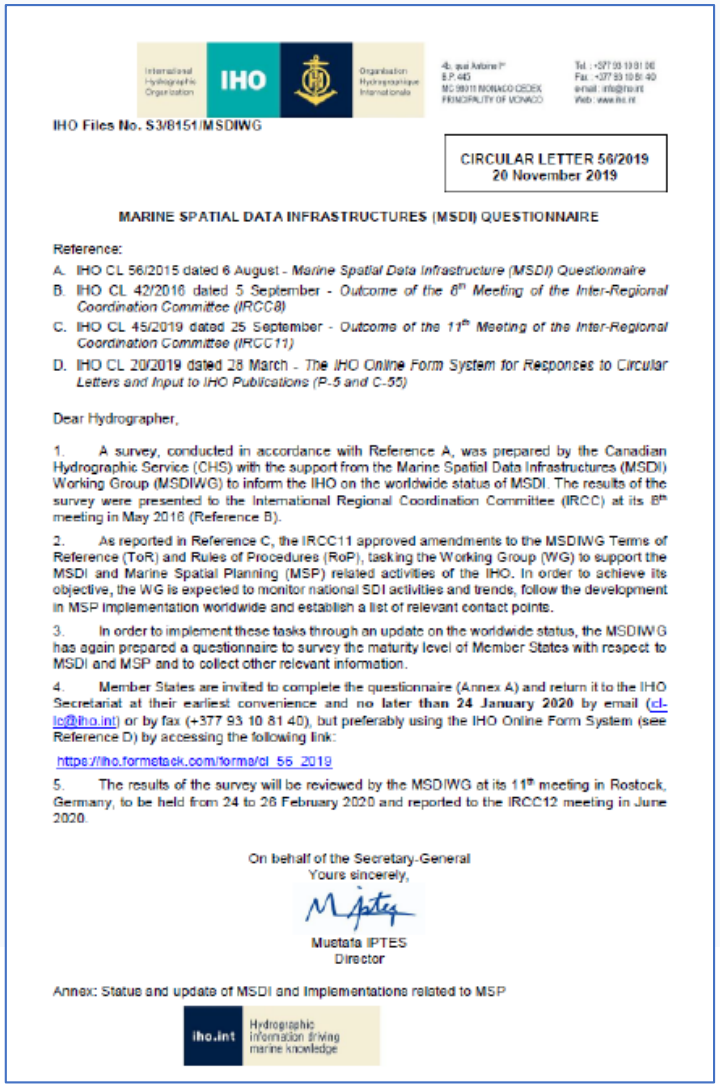
MSDI Training Material

- Options:
  - Download from IHO Website
  - Download via Dropbox
  - Use the interactive material in YouTube



MSDI Questionnaire and IHO National Geoportal

- CL56/2019
  - 41 answers received
  - 28 National MSDIs established
  - 12 National HO responsible for the MSDI



IHO Files No. S3/8151/MSDIWG

CIRCULAR LETTER 56/2019
20 November 2019

MARINE SPATIAL DATA INFRASTRUCTURES (MSDI) QUESTIONNAIRE

Reference:

A. IHO CL 56/2015 dated 6 August - *Marine Spatial Data Infrastructure (MSDI) Questionnaire*
B. IHO CL 42/2016 dated 5 September - *Outcome of the 8th Meeting of the Inter-Regional Coordination Committee (IRCC8)*
C. IHO CL 45/2019 dated 25 September - *Outcome of the 11th Meeting of the Inter-Regional Coordination Committee (IRCC11)*
D. IHO CL 20/2019 dated 28 March - *The IHO Online Form System for Responses to Circular Letters and Input to IHO Publications (P-5 and C-55)*

Dear Hydrographer,

1. A survey, conducted in accordance with Reference A, was prepared by the Canadian Hydrographic Service (CHS) with the support from the Marine Spatial Data Infrastructures (MSDI) Working Group (MSDIWG) to inform the IHO on the worldwide status of MSDI. The results of the survey were presented to the International Regional Coordination Committee (IRCC) at its 8th meeting in May 2016 (Reference B).

2. As reported in Reference C, the IRCC11 approved amendments to the MSDIWG Terms of Reference (ToR) and Rules of Procedures (RoP), tasking the Working Group (WG) to support the MSDI and Marine Spatial Planning (MSP) related activities of the IHO. In order to achieve its objective, the WG is expected to monitor national SDI activities and trends, follow the development in MSP implementation worldwide and establish a list of relevant contact points.

3. In order to implement these tasks through an update on the worldwide status, the MSDIWG has again prepared a questionnaire to survey the maturity level of Member States with respect to MSDI and MSP and to collect other relevant information.

4. Member States are invited to complete the questionnaire (Annex A) and return it to the IHO Secretariat at their earliest convenience and **no later than 24 January 2020** by email (cl-ic@iho.int) or by fax (+377 93 10 81 40), but preferably using the IHO Online Form System (see Reference D) by accessing the following link:

https://iho.formstack.com/forms/cl_55_2019

5. The results of the survey will be reviewed by the MSDIWG at its 11th meeting in Rostock, Germany, to be held from 24 to 26 February 2020 and reported to the IRCC12 meeting in June 2020.

On behalf of the Secretary-General
Yours sincerely,

Mustafa IPTES
Director

Annex: Status and update of MSDI and Implementations related to MSP

iho.int Hydrographic information driving marine knowledge

IHO-OGC MSDI-Concept Development Study (CDS)

- Started MSDI-CDS (Summer 2018)
  - http://www.opengeospatial.org/projects/initiatives/msdi-cds-2018/
- MSDI-CDS Workshop (23 OCT 2018), US CMTS at the US Department of Transportation (USDOT).
- Request For Information (RFI) (07 FEB 2018)
  - RFI posted on OGC's website and distributed broadly throughout the international marine community.
  - Responses were gathered to help build the final technical report.
  - https://portal.opengeospatial.org/files/?artifact_id=81715
- MSDI-CDS Roundtable (27 MAR 2019)
  - Group of OGC members to review study findings and a draft of the final report.
- **Engineering Report published (05 AUG 2019).**
  - *19-025r1, Development of Spatial Data Infrastructures for Marine Data Management*
  - https://www.opengeospatial.org/docs/er

IHO-OGC Federated Marine SDI (FMSDI) Demonstration Pilot

*As recommended by the successful **OGC-IHO MSDI Concept Development Study (CDS)**, and as evidenced by the success of the OGC-IHO collaboration in the **OGC-IHO Maritime Limits and Boundaries Pilot**, we are seeking support to initiate a full-scale Pilot to demonstrate a multi-country, federated MSDI under a **land/sea boundary use case**.*

The FMSDI Pilot will demonstrate:

The value of MSDI can unlock data and information for use beyond traditional providers and consumers of hydrographic data, across borders, and across domains inclusive of improved connections between the terrestrial and marine foundational communities.

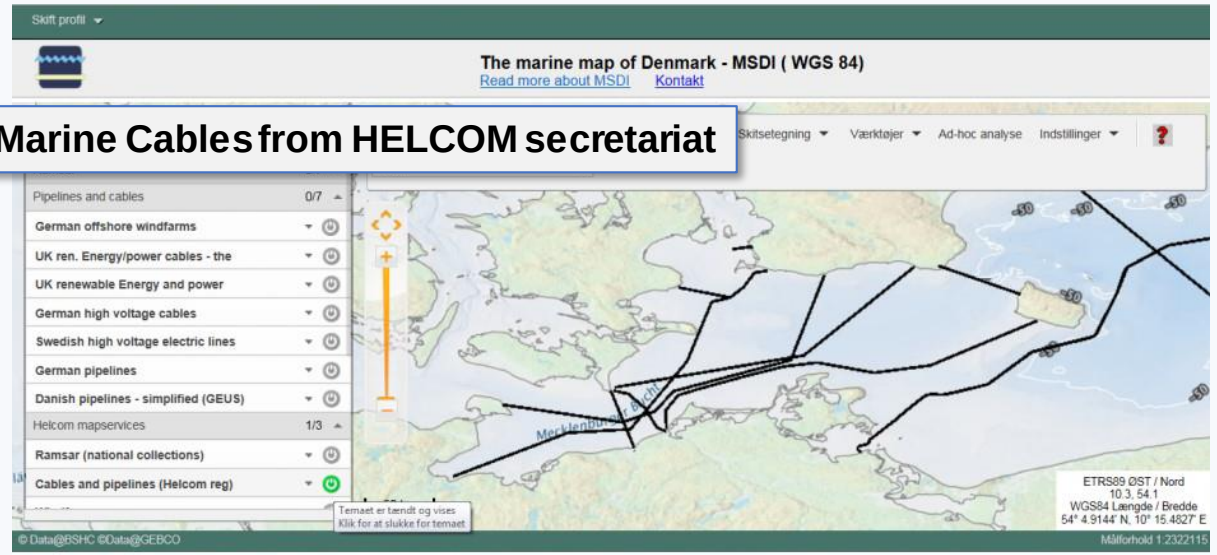
Potential Benefits:

- **Improve discovery and sharing of data** within your organization and other government agencies
- Ensure the results of the pilot are **fit for purpose** for your organization
- Builds on **best-of-breed standards and conventions** for sponsoring and participating organizations in a highly collaborative environment
- **Test governance** within and between organizations
- Experience how **automated techniques reduce labor-intensive/manual tasks** and **increase staff productivity**
- Include **new, current, and historical spatial data assets**
- Work with **data and users** from **outside the traditional hydrographic domain**
- **Prototype functional MSDI architectures and tools** in your operational environment
- Maximize **return on investment** by collaborating and **sharing costs with other sponsors**
- Sponsor an **agile, adaptive, well-governed process** inclusive of **new data sources** and **technologies**

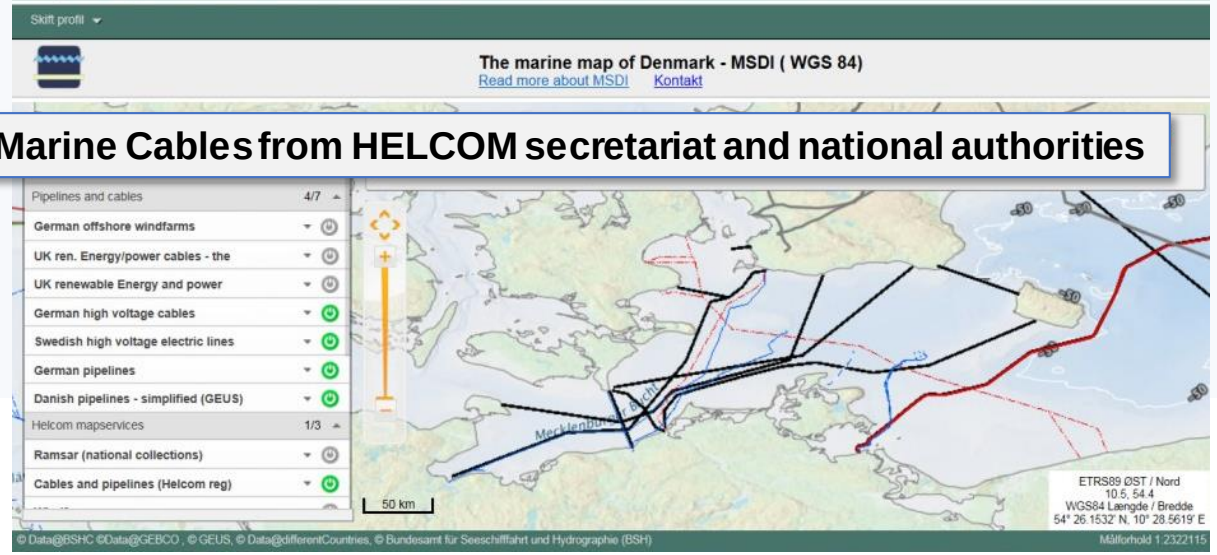
IHO International Hydrographic Organization

MSDI from a Regional Perspective

- Considerations
  - Planning across sectorial interests
  - Planning across sea/land (coastal zone)
  - Focus on establishing a common operating picture (e.g., MSP, environmental protection, SAR)
  - Accessibility for citizens, firms and organizations
  - Supporting coordinated digitization among maritime authorities

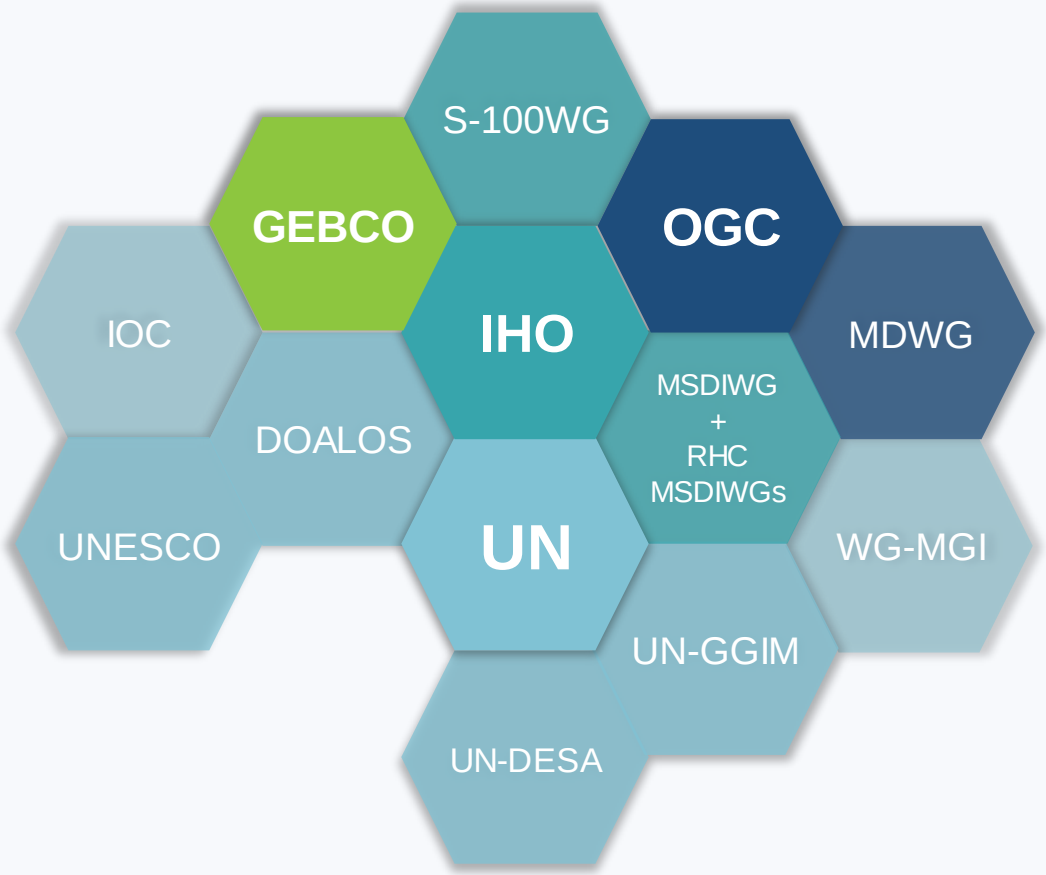


Marine Cables from HELCOM secretariat



Marine Cables from HELCOM secretariat and national authorities

Related, International MSDI Activity



Next IHO MSDIWG Meeting: 17-18 March 2021 (Online)