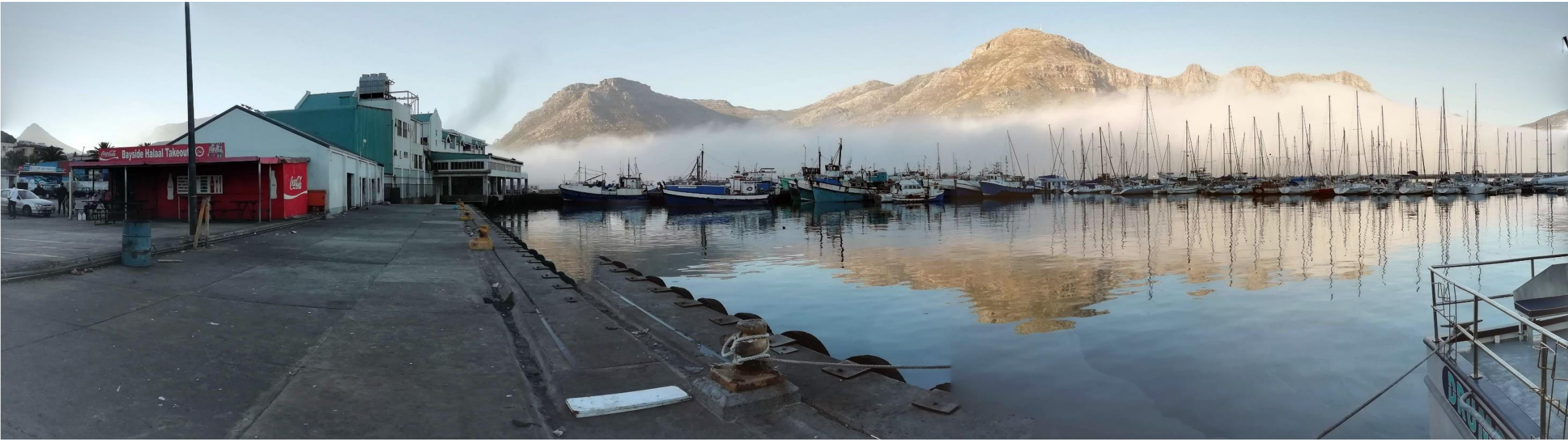
IHO MSDIWG

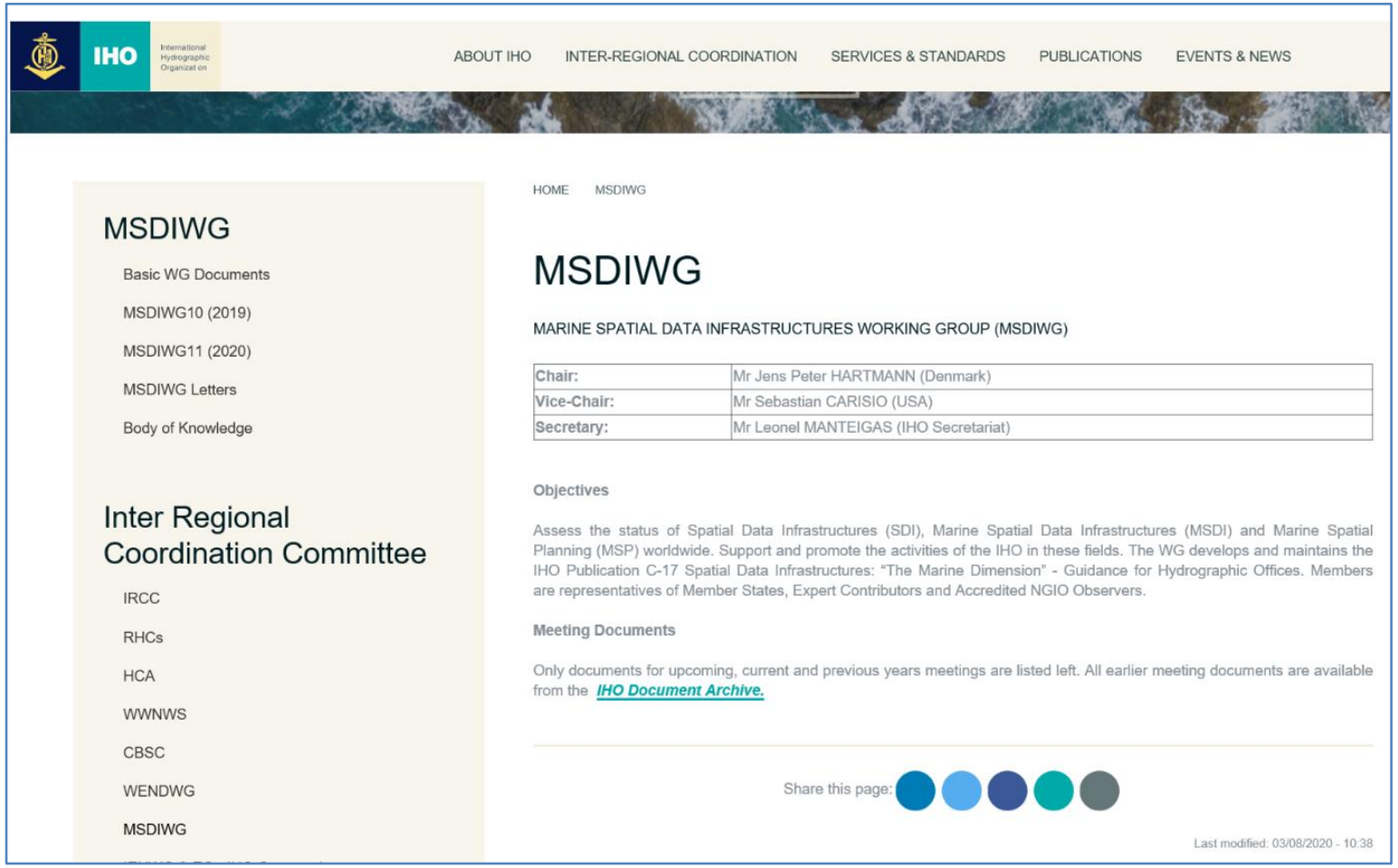
SAIHC17 Working Group
Video tele conference 7th September



Jens Peter Hartmann
Danish Hydrographic Offices
IHO MSDIWG Chair

Danish Geodata Agency

The IHO MSDIWG and relation to RHC



The IHO - MARINE SPATIAL DATA INFRASTRUCTURE value chain

IHO → IRCC ⇄ IHO MSDIWG

RHC (E.g. SAIHC, BSHC, NSHC, ARHC) ⇄ BS-NSMSDIWG

Arctic MSDIWG

RHC MSDIWG

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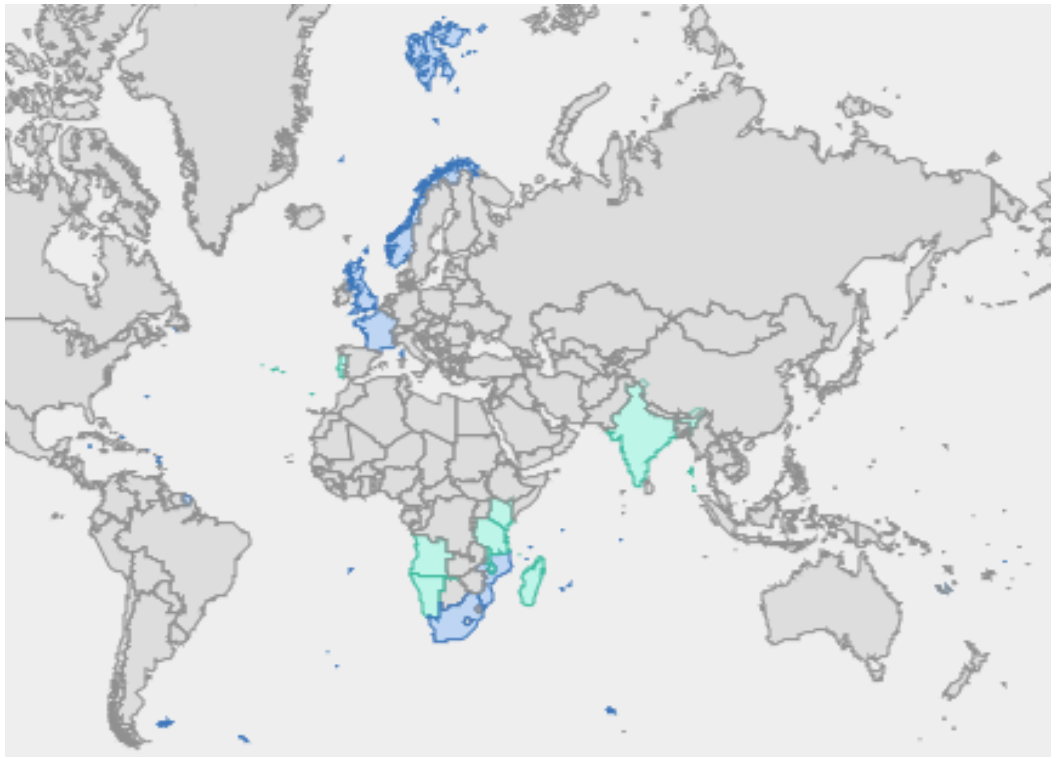
Link to IHO MSDI webpage https://iho.int/en/msdiwg

Southern African and Islands HC

Members of the IHO MSDIWG



France, Mauritius, Mozambique, Norway, Republic of South Africa, Seychelles, United Kingdom

Angola, Comores, India, Kenya, Madagascar, Malawi, Namibia, Portugal, Tanzania

Danish Geodata Agency

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- 29 MS
- 14 Expert Contributors

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Assistant Director	Leonel MANTEIGAS (**Secretary**)	leonel.manteigas(*)iho.int

IHO MSDIWG TERMS OF REFERENCE

1. Objective: **s**upport the activities of the IHO related to Spatial Data Infrastructures (SDI) and/or Marine Spatial Data Infrastructures (MSDI) and/or Marine Spatial Planning (MSP), as far as marine data is involved.
2. Authority: this Working Group (WG) is a subsidiary body of the Inter-Regional Coordination Committee (IRCC). Its work is subject to IRCC approval.
3. The WG should:

3.1 Monitor national, regional and international SDI activities and trends, and present information on those activities to IRCC members by correspondence and at the annual meeting.

3.2 Promote the use of IHO standards and member state marine data in SDI activities.

3.3 Liaise, as appropriate, with other relevant bodies to increase the visibility of marine spatial data.

3.4 Identify actions, procedures and resolutions that the IHO might take to contribute to the development of SDI and/or MSDI in support of Member States.

3.5 Determine any actions that the IHO and individual Member State might take to forge links with other bodies (e.g. OGC, ISO TC211, IOC) to ensure Member States are best placed to meet the developing challenges associated with data management and governance.

3.6 Identify and recommend possible solutions to any significant technical issues related to interoperability between maritime and land-based inputs to SDI, and in particular:

a) Datum issues.
b) S-100 interoperability with SDI.
c) S-100 interoperability with oceanographic, marine biological, geological and geophysical data structures.

3.7 Identify any IHO capacity building requirements related to MSDI.

3.8 Develop a syllabus for MSDI familiarization.

3.9 Follow the development in MSP implementation worldwide.

3.10 Establish a list of relevant MS National MSP Data Contact Points and contact persons.

3.11 Establish a list of additional relevant institutions, contact person/data experts.

3.12 Study the most relevant MSP issues in a cross-border / trans-boundary context in relation to data and information seen from a MS perspective.

3.13 Compile minimum requirements for Hydrographic data for Maritime Spatial Plan Data and recommendations of distribution/sharing of this data.

3.14 Provide an overview on (national / regional) MSP best practice.

3.15 Establish MSP on the IHO website under body of knowledge.

Information from 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 <<<<

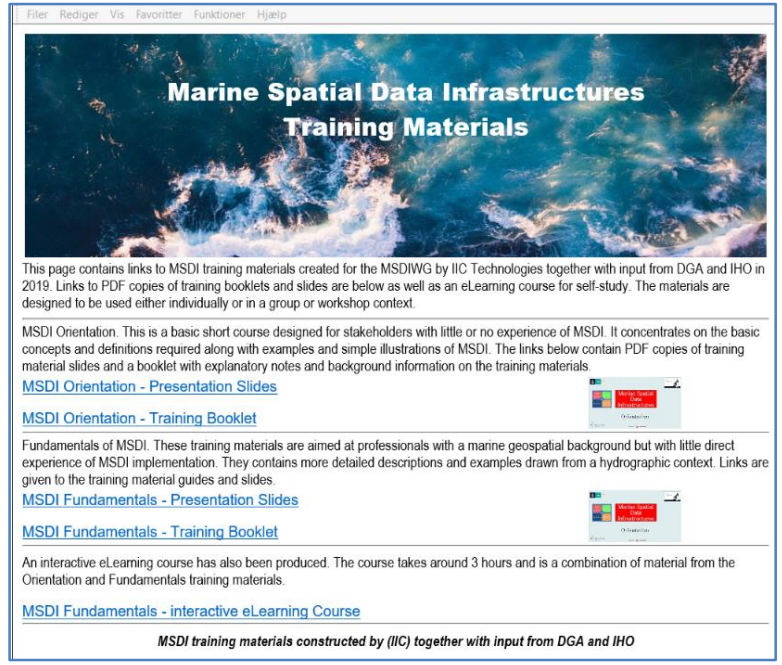
- Download from the IHO website
- Download via Dropbox
- Use the interactive material in Youtube

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

FAQ's on SDI and MSDI

MSDI Case Study Template

Version: 03 April 2018

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
Click here to answer: What is the subject/topic/focus of this case study? (approx. 25 words)
Click here to answer: When and why was it produced/what is its purpose or intended use? (approx. 100 words)
Click here to answer: How is it relevant to MSDI (e.g., list details related to specific MSDI components, access best practices, focus: national/regional/international)? (approx. 200 words)
Click here to answer: Are there any limitations (e.g., restricted access, intended use, licensing)? (approx. 50 words)
Click here to answer: Who are the users or intended users? (approx. 25 words)
Click here to answer: Identify specific recommendations on how the resource could be used, or how users could benefit from the resource. (approx. 100 words)

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

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).

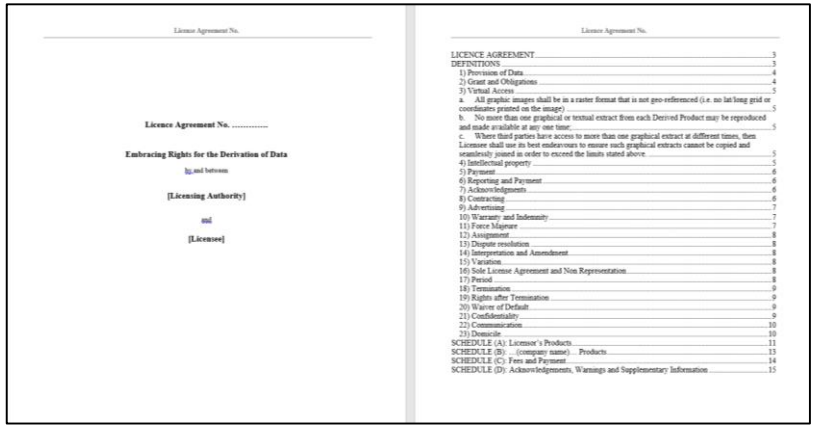
Date Submitted: Click here to enter a submission date.

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	

Danish Geodata Agency

Template for a license agreement



Licence Agreement No. .....

Embracing Rights for the Derivation of Data

by and between

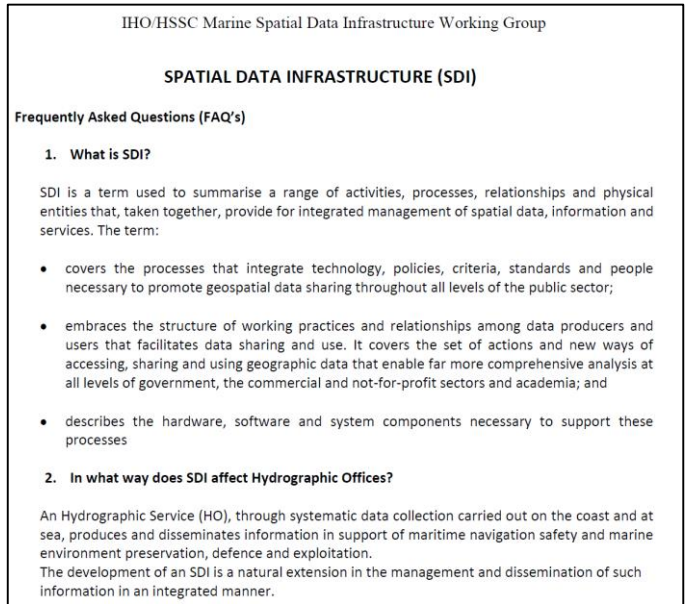
[Licensing Authority]

and

[Licensee]

LICENCE AGREEMENT 3
DEFINITIONS 3
1) Provision of Data 4
2) Grant and Obligations 4
3) Virtual Access 5
a. All graphic images shall be in a raster format that is not geo-referenced (i.e. no lat/long grid or coordinates printed on the image) 5
b. No more than one graphical or textual extract from each Derived Product may be reproduced and made available at any one time; 5
c. Where third parties have access to more than one graphical extract at different times, then Licensee shall use its best endeavours to ensure such graphical extracts cannot be copied and seamlessly joined in order to exceed the limits stated above. 5
4) Intellectual property 5
5) Payment 6
6) Reporting and Payment 6
7) Acknowledgements 6
8) Contracting 6
9) Advertising 7
10) Warranty and Indemnity 7
11) Force Majeure 7
12) Assignment 8
13) Dispute resolution 8
14) Interpretation and Amendment 8
15) Variation 8
16) Sole License Agreement and Non Representation 8
17) Period 8
18) Termination 9
19) Rights after Termination 9
20) Waiver of Default 9
21) Confidentiality 9
22) Communication 10
23) Domicile 10
SCHEDULE (A): Licensor's Products 11
SCHEDULE (B): ... (company name) ... Products 13
SCHEDULE (C): Fees and Payment 14
SCHEDULE (D): Acknowledgements, Warnings and Supplementary Information 15

Link https://iho.int/en/body-of-knowledge



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

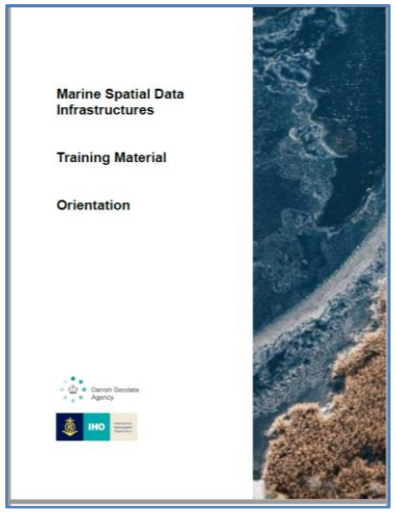
2. **In what way does SDI affect Hydrographic Offices?**

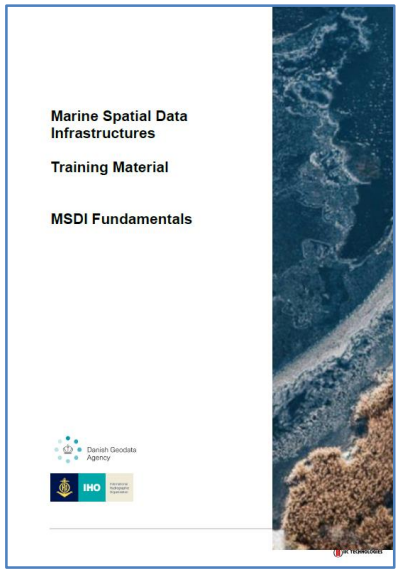
An Hydrographic Service (HO), through systematic data collection carried out on the coast and at sea, produces and disseminates information in support of maritime navigation safety and marine environment preservation, defence and exploitation.
The development of an SDI is a natural extension in the management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

MSDI Training material

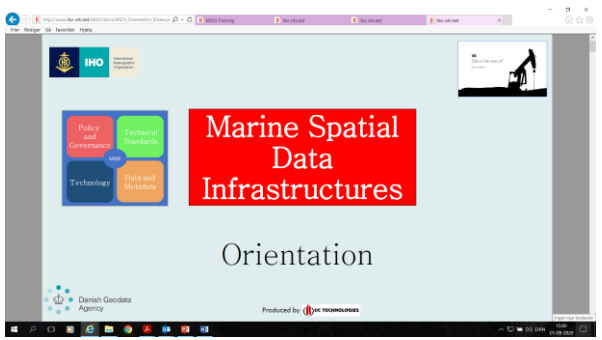
1. Download from the IHO website
2. Download via Dropbox
3. Use the interactive material in Youtube

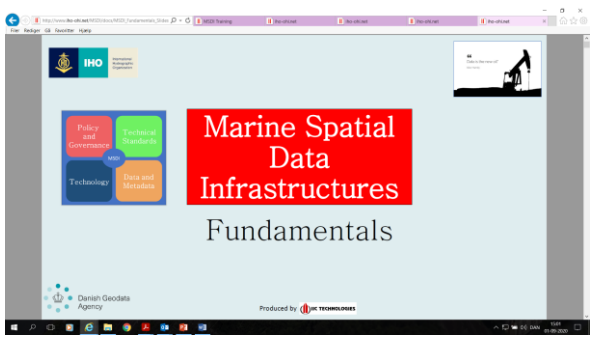
Training Booklet



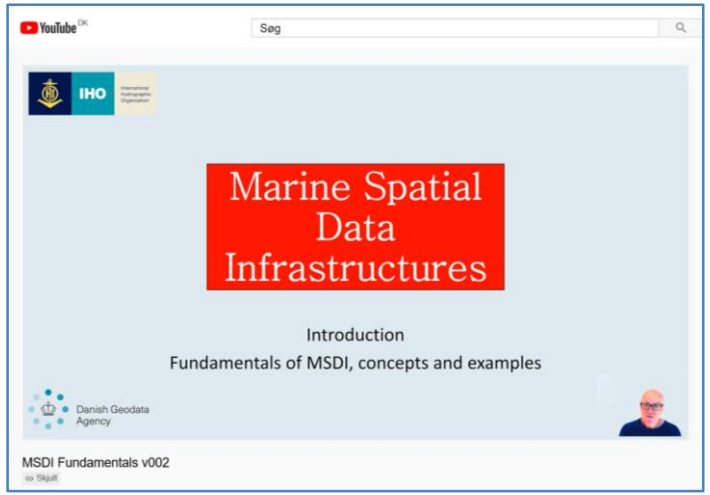


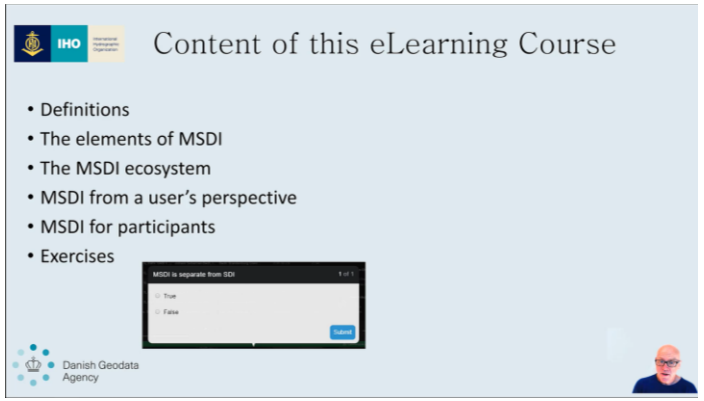
Presentation slides





MSDI Fundamentals interactive eLearning Course





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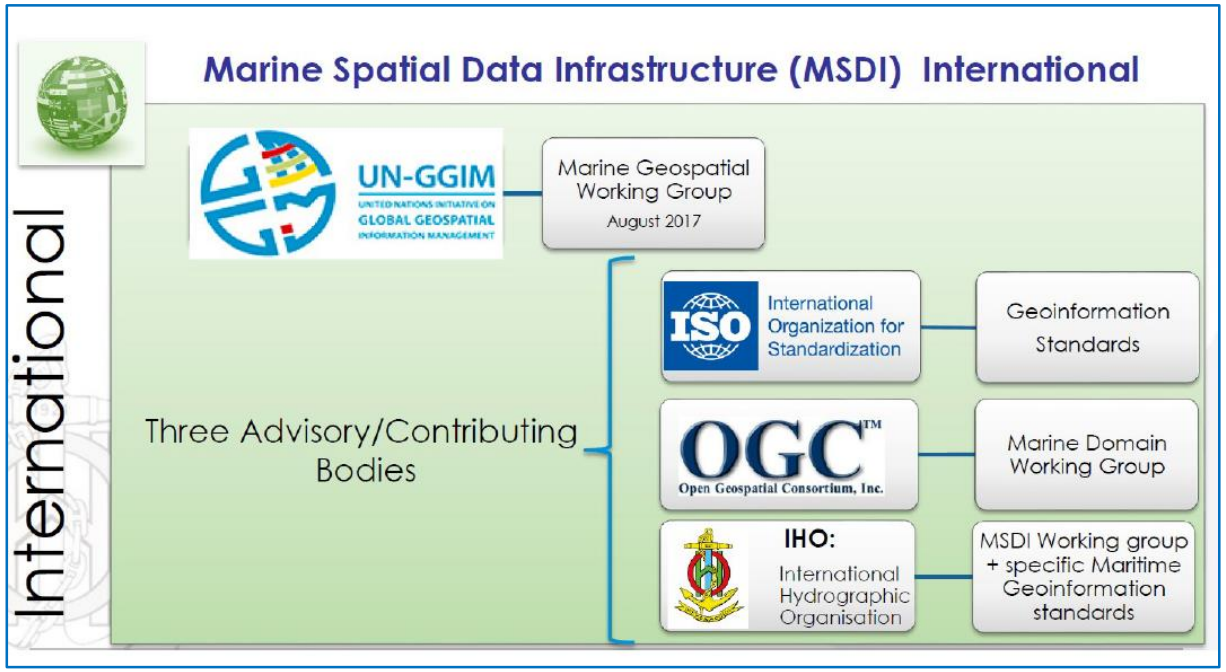
Link https://iho.int/en/body-of-knowledge

The IHO MSDIWG and the relation to UN-GGIM MGWG and OGC MDWG

MSDIWG11 - Rostock-Warnemünde, Germany. 24 to 26am February 2020
A joint IHO-OGC Marine DWG session took place in the morning of 26 February 2020
UN-GGIM WGMGI2 meeting was held from 26pm to 28 February 2020



11th IHO MSDIWG meeting

Danish Geodata Agency

Link https://iho.int/en/msdiwg11-2020

11th IHO Marine Spatial Data Infrastructures Working Group Meeting (MSDIWG11)

Draft goals for this meeting:

- How to actively use the OGC conceptual study
- Security and integrity from a MSDI perspective
- Expectations to the “new” WENSWG from a MSDI perspective
- S-100 and the implementation plan from a MSDI perspective
- MSDI use cases,
- IHO strategy from a MSDI perspective
- The MSDI questionnaire
- MSDI training material
- New work plan 2021-2023

Establishment of working groups:

- MSDI training material, the need for adjustments and updates.
- Development of use cases for the WGMGI
- OGC MSDI Concept Development Study and how to proceed
- Expectations to the “new” WENSWG from a MSDI perspective
- Updating of C-17, the need for update
- UN Sustainable Development Goals (SDGs) and how a MSDI can support the SDGs
- MSDI Governances, e.g. Data policies, funding/financial models
- MSP with relation to IHO MSDI and how to proceed with MSP from a IHO MSDIWG perspective

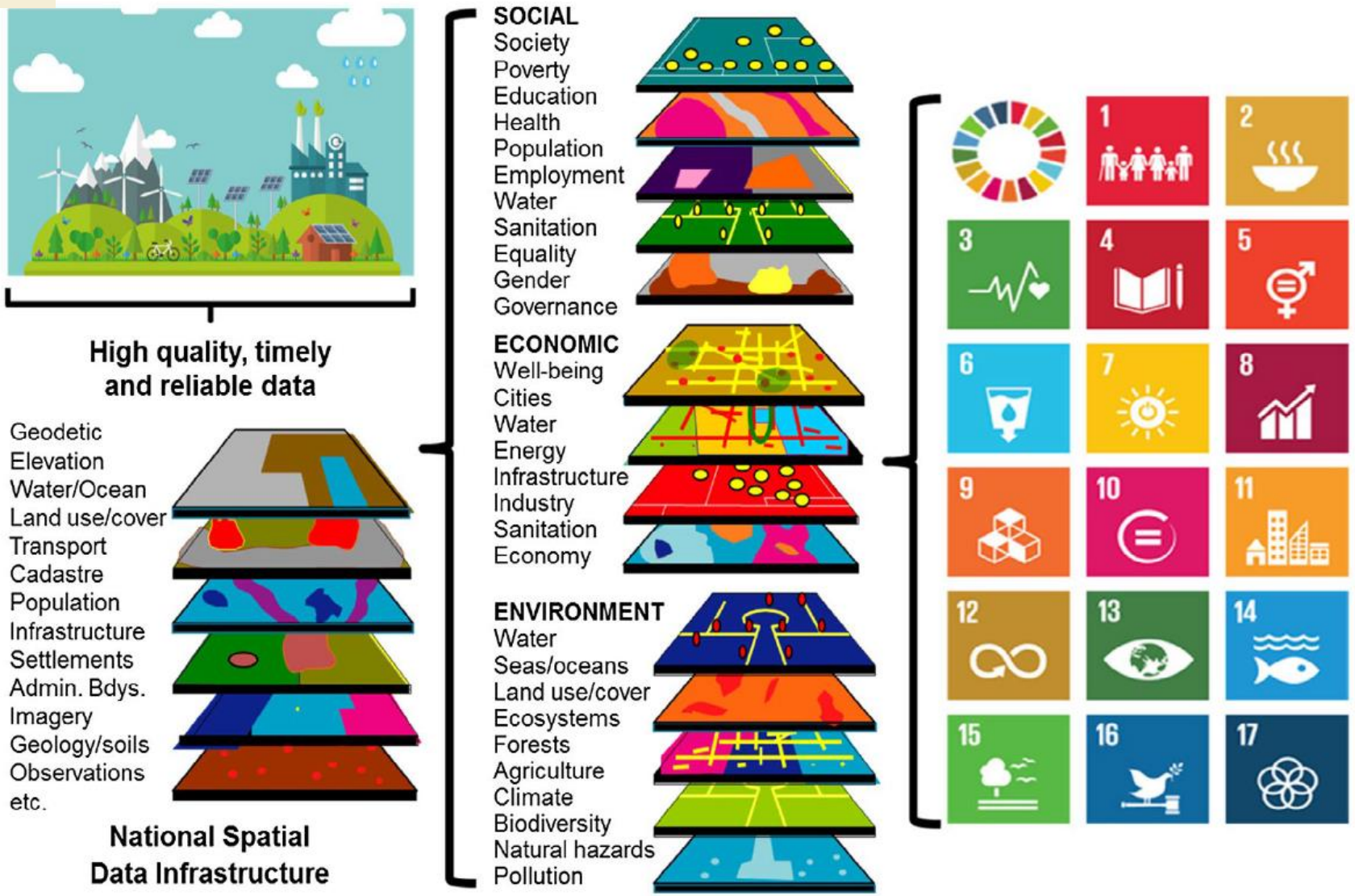
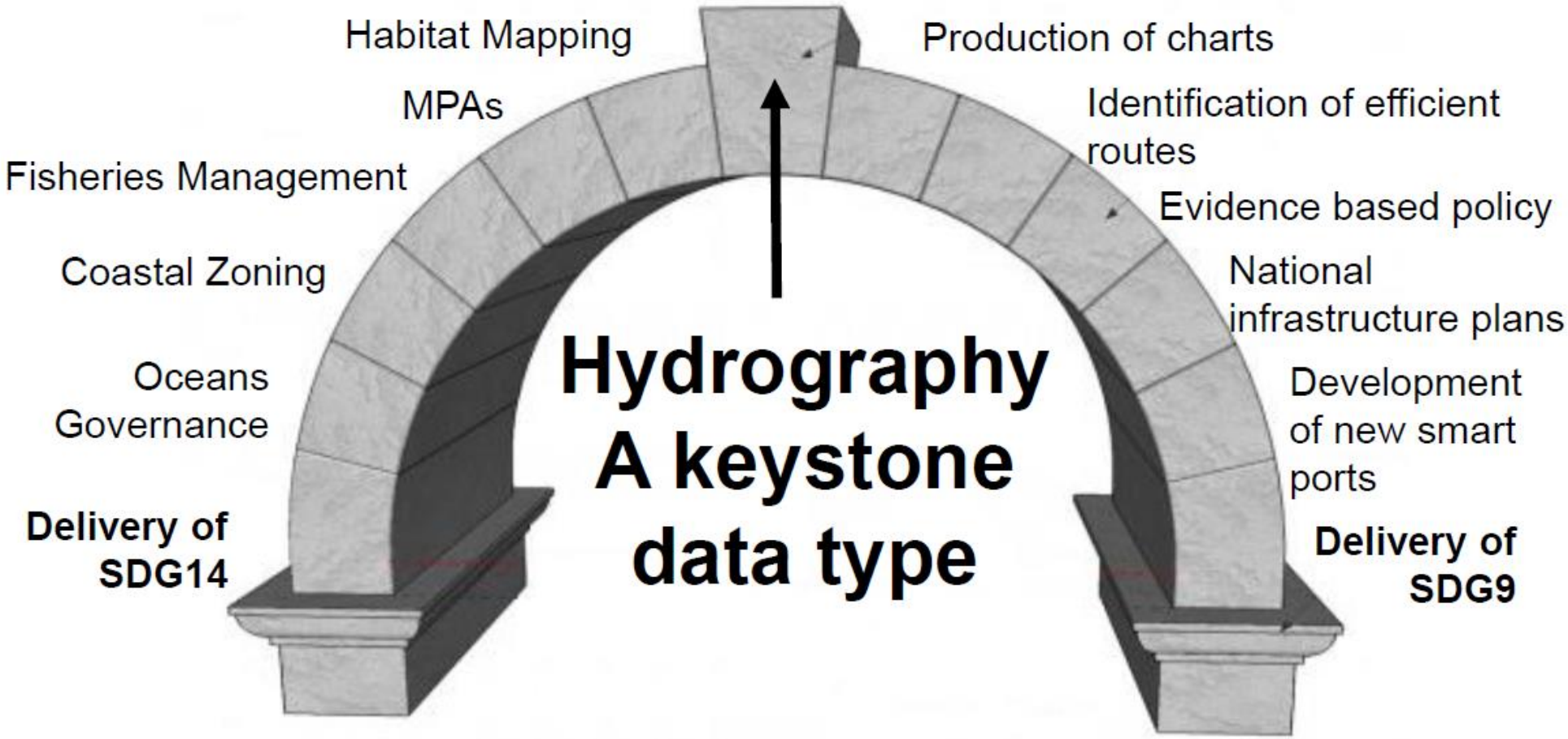


Figure 4. Extending fundamental geospatial data themes within the National Spatial Data Infrastructure (NSDI) to accommodate the SDGs and targets by means of the global indicator framework.

How does Hydrography fit into the SDGs



From UKHO presentation at BS-NSMSDIWG meeting.

Data integrity and security from a MSDI perspective.

From a MSDI perspective one of the main priority is data “integrity”, also dealt with comprehensively by IHO S-63:

- knowing who a piece of data came from
- the knowledge that the data has not changed in its journey to the end user.

This is important from a MSDI perspective because the core concept of MSDI is reuse of marine geospatial data outside its traditional use case of primary SOLAS navigation, and within a much broader sphere of activity.

The nature of some of the datasets may well be sensitive, not because they are confidential, but because there is a high impact cost of them being wrong. If an MSDI provider wrongly attributes a dataset to a particular official body or incorrectly reproduces a dataset (either by visualizing it poorly or providing a copy of the incorrect data), the repercussions can be large.

The challenge technically is to provide the means and mechanisms, therefore, to protect the data integrity and assure the end user of the provenance of the data they are receiving.

- Ongoing the IHO and MSDI community needs to consider this issue
- Consider adapting existing mechanisms:
    - Standards exist but may need adaptation (e.g. Blockchain technology)
    - All data integrity systems require a “trust network” to define identity.

=> Principal discussion about data, official data, authoritative data and legibly binding data/maps

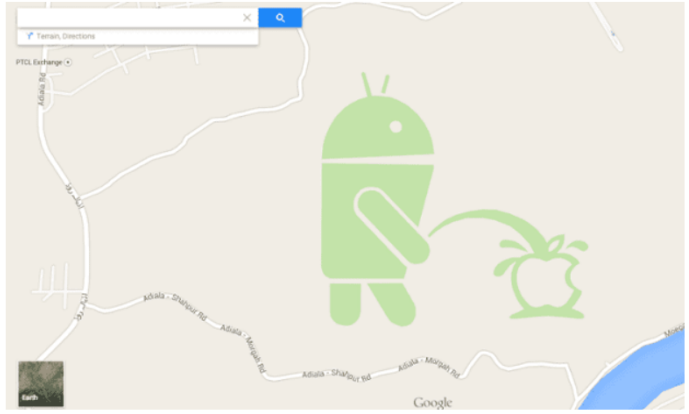
IHO International Hydrographic Organization

Security and integrity:

Guardian
y readers
Search jobs | Sign in | Search | International edi
The Guardian
on | Sport | Culture | Lifestyle | More

Google shuts off Map Maker after urinating robot ruins it for everybody

Company announces prank has forced it to 'take a pause' as it makes changes to how it approves edits made by users



▲ One Map Maker user pictured the Android robot urinating on the Apple logo outside Rawalpindi in Pakistan. Photograph: Google

Google has shut down its Map Maker service after a series of embarrassing oversights allowed vandalism – the most notorious example being an image of a Google Android robot urinating on the Apple logo.

The company said it had been moderating all user-generated edits to try to prevent such pranks, but found it impossible to keep up.

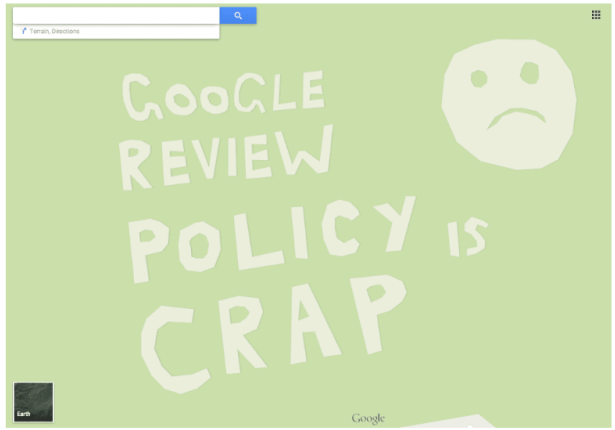
Visitors to the Google site were directed on Monday to a forum post that explained the site would be unavailable for editing until a solution could be found.

Pavithra Kanakarajan, a Google Map Maker product manager, wrote: "As some of you know already, we have been experiencing escalated attacks to spam Google Maps over the past few months. The most recent incident was particularly troubling and unfortunate – a strong user in our community chose to go and create a large scale prank on the Map. As a consequence, we suspended auto-approval and user moderation across the globe, till we figured out ways to add more intelligent mechanisms to prevent such incidents.

Unsurprisingly, the real terrain underneath bears no resemblance to the picture, (loosely) adapted from a famous bootleg of Bill Watterson's newspaper strip Calvin and Hobbes.

The picture is accompanied by another, a few miles to the east, and both were apparently added through Google Map Maker, a feature that lets users contribute to maps by adding useful details such as street names, parks, and places of interest. Information added through Google Map Maker is ostensibly moderated, but in this case, it seems, quite a lot has slipped through the net.

The second image gives a hint as to this origin: "Google review policy is crap," it reads, accompanied by a sad face.



▲ The plot thickens... Photograph: Google Maps

If you find any other treats hidden in Google's maps, let us know in the comments below.

Berlin artist uses 99 phones to trick Google into traffic jam alert

Google Maps diverts road users after mistaking cartload of phones for huge traffic cluster

Google Maps Hacks by Simon Weckert.

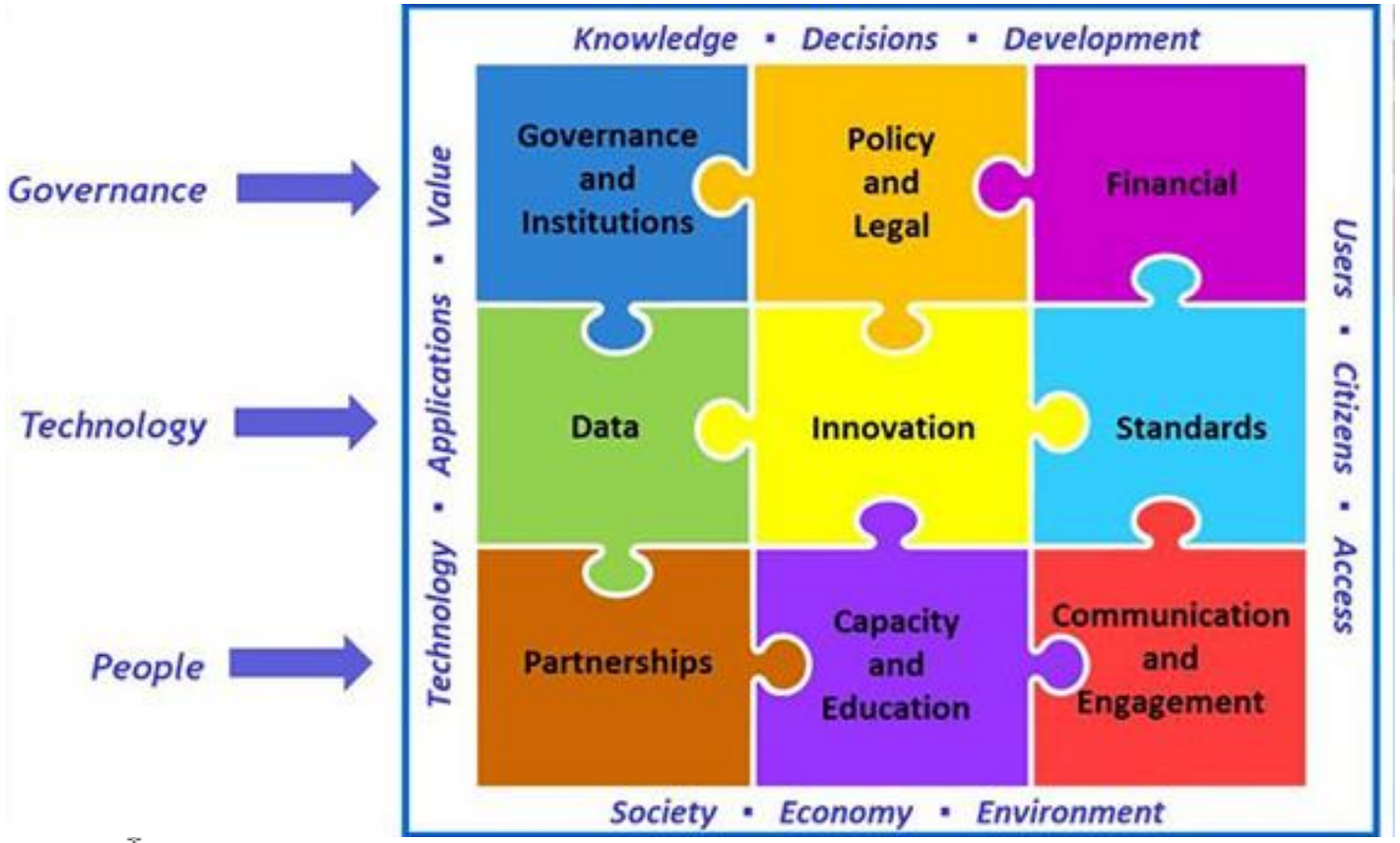
A Berlin-based artist managed to create a traffic jam on one of the main bridges across the Spree with nothing but a handcart and 99 second-hand phones. But one other thing was unusual about the jam: it only existed on Google Maps.

Simon Weckert's artwork Google Maps Hacks involved the artist pulling a small red cart at walking pace down some of the main thoroughfares of Berlin. The 99 phones in the cart, all reporting their locations and movement back to Google's servers, gave the search company the impression of a huge cluster of slow-moving traffic, which was duly reported on the company's maps.

UN-GGIM - Integrated Geospatial Information Framework (IGIF)

The Integrated Geospatial Information Framework (IGIF) provides a basis and guide for developing, integrating, strengthening and maximizing geospatial information management and related resources in all countries. It will assist countries in bridging the geospatial digital divide, secure socio-economic prosperity, and to leave no one behind.
Link https://ggim.un.org/IGIF/

UN-GGIM

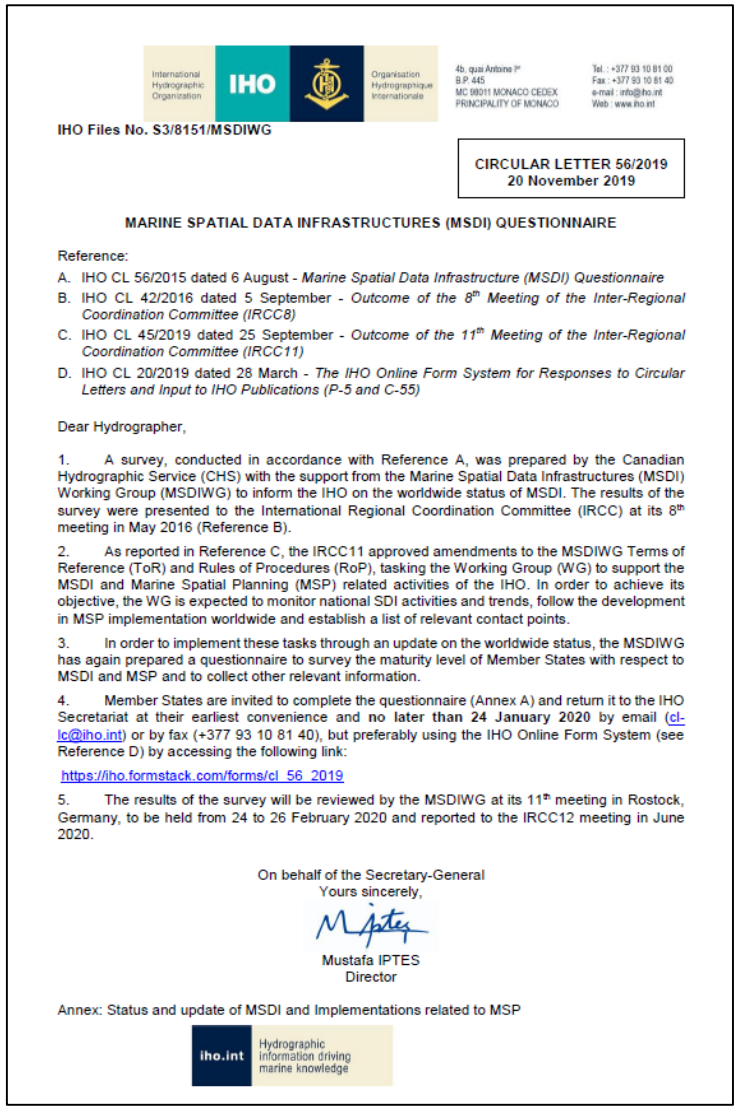


The Four pillars of MSDI
Publication C-17

Danish Geodata Agency

Marine Spatial Data Infrastructures (MSDI) questionnaire

CL56/2019



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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-lc@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_56_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

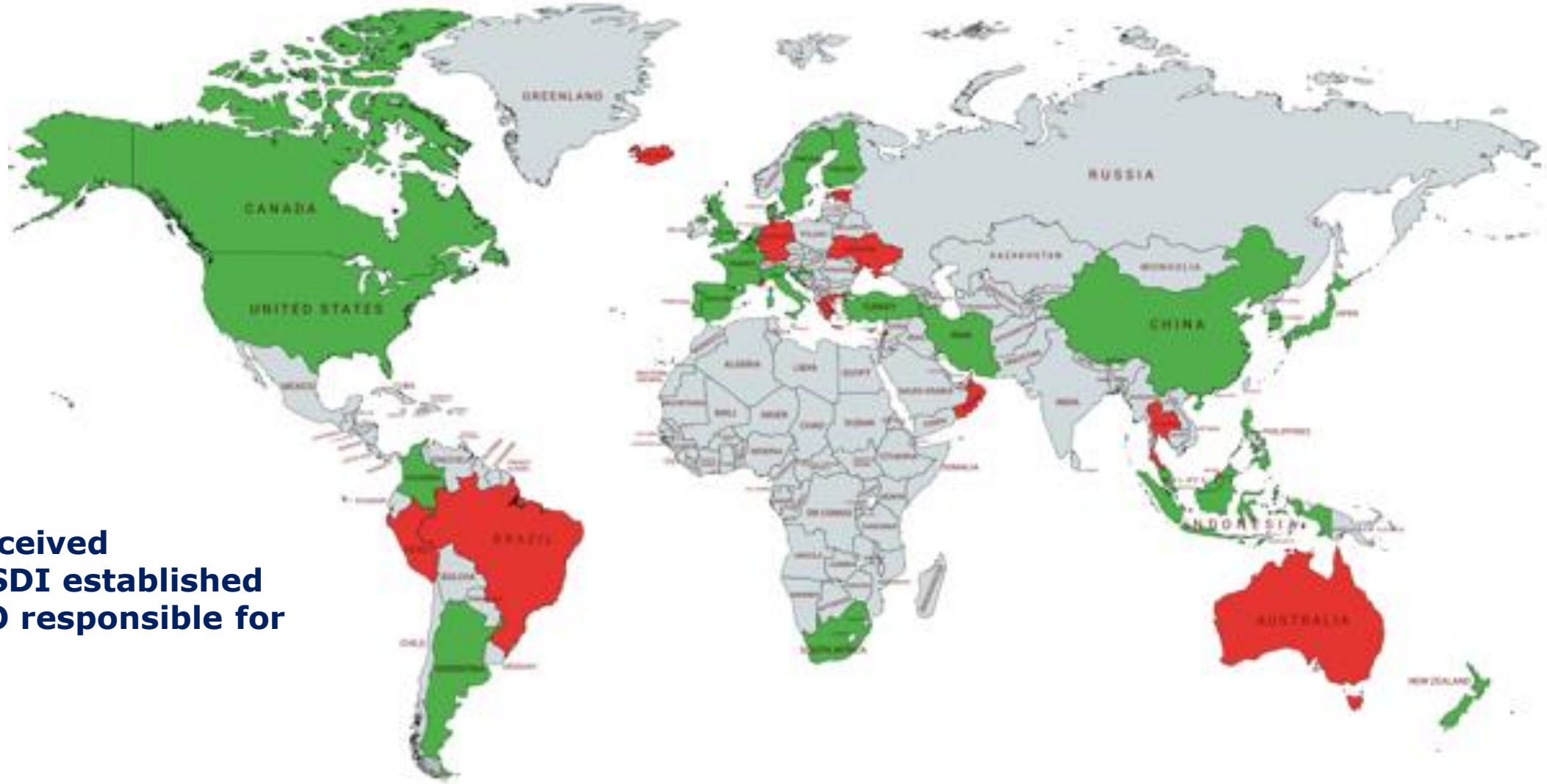
Annex: Status and update of MSDI and Implementations related to MSP

iho.int Hydrographic information driving marine knowledge

Danish Geodata Agency

Identification of the Marine Spatial Data Infrastructures (MSDI)

- Question: Is there a MSDI established in your country? Yes/No

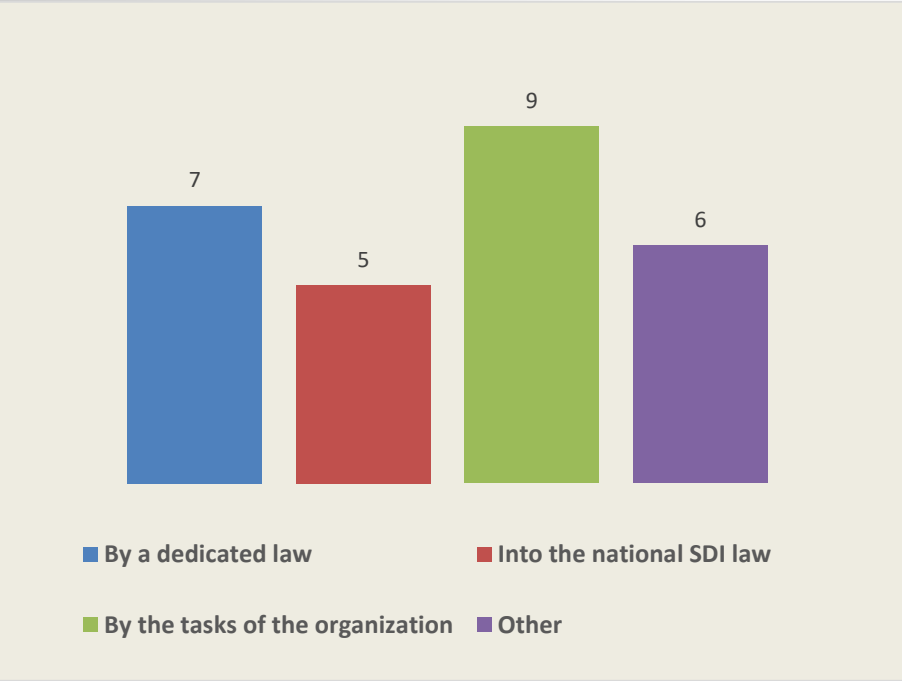


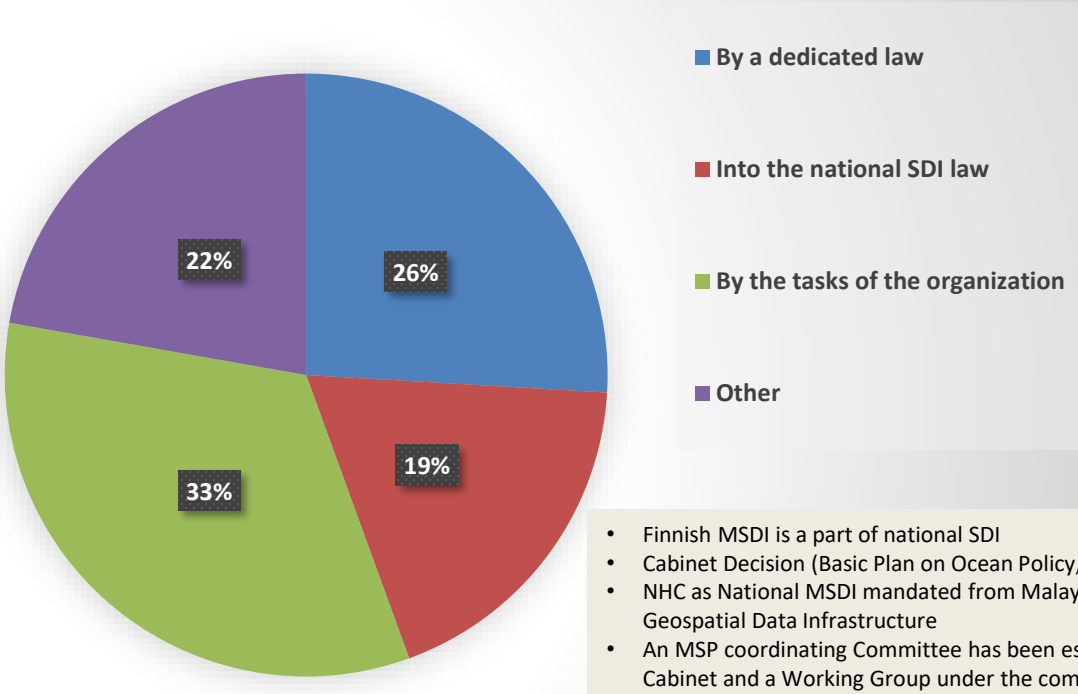
41 answers received
28 national MSDI established
12 national HO responsible for the MSDI

Danish Geodata Agency

Identification of the Marine Spatial Data Infrastructures (MSDI)

Question: If a MSDI is established, please describe in which way it is established.

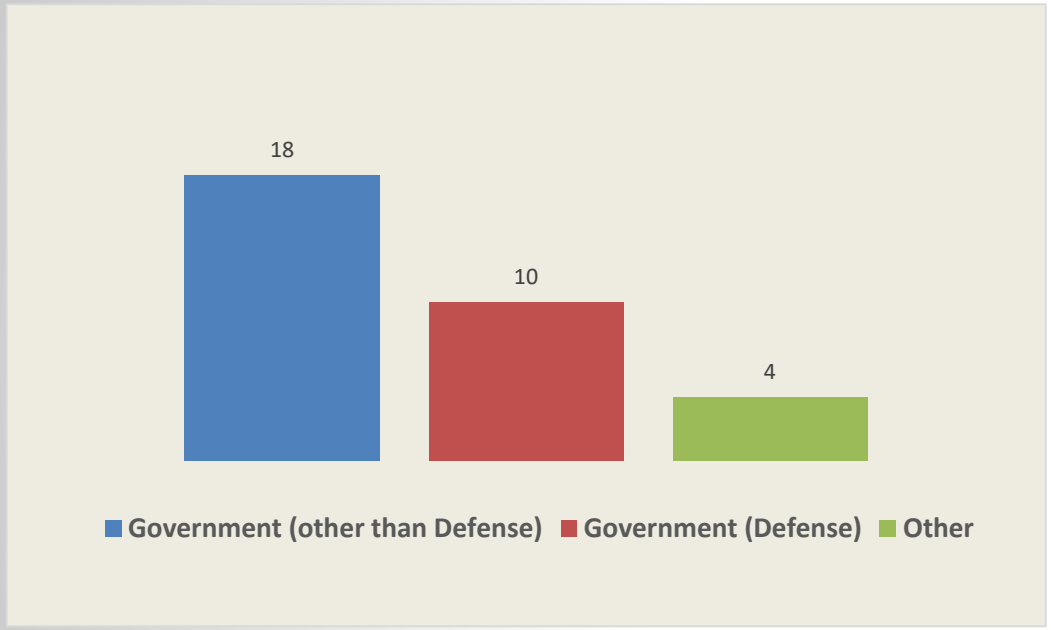


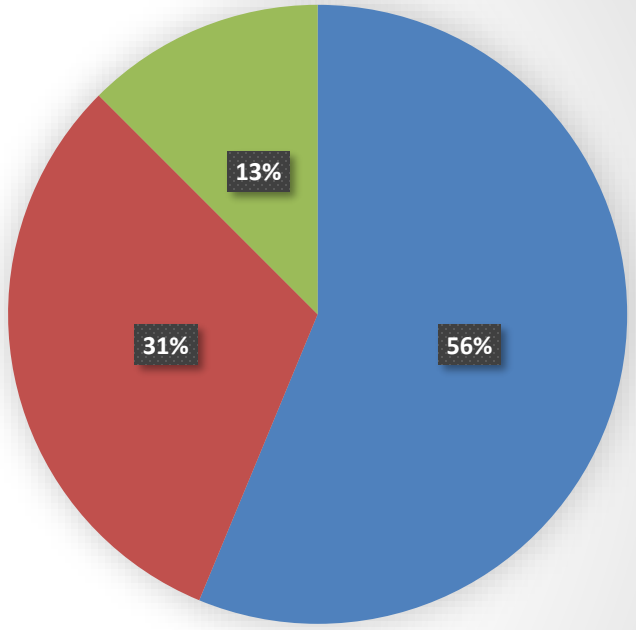


- Finnish MSDI is a part of national SDI
- Cabinet Decision (Basic Plan on Ocean Policy, (May 2018))
- NHC as National MSDI mandated from Malaysia Centre of Geospatial Data Infrastructure
- An MSP coordinating Committee has been established by Cabinet and a Working Group under the committee is tasked to look at data management - MSDI is part of the NSDI, governed by a.o. the national implementation of the INSPIRE Directive.
- New Zealand agencies, led by LINZ, are working in partnership towards an Integrated Geospatial Information Framework (IGIF) for NZ which includes the marine dimension.

Identification of the Marine Spatial Data Infrastructures (MSDI)

Nature of the funding for the MSDI.

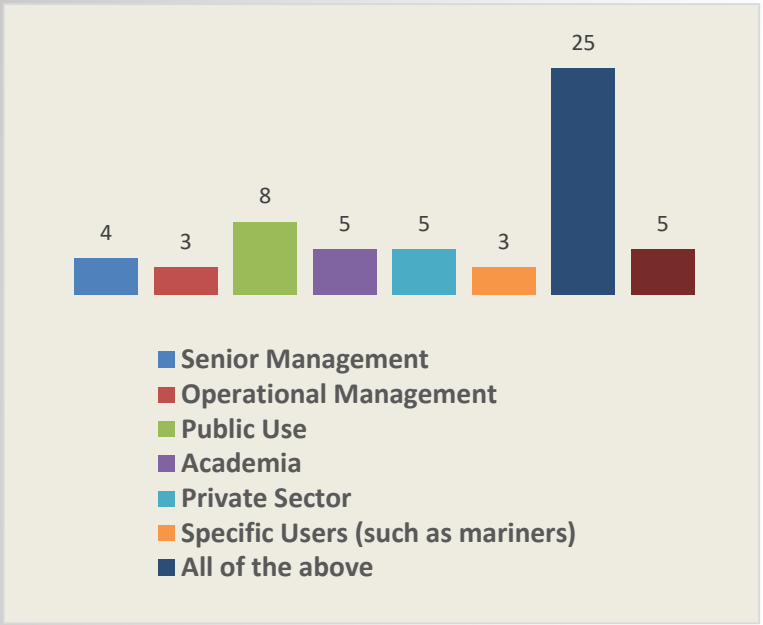


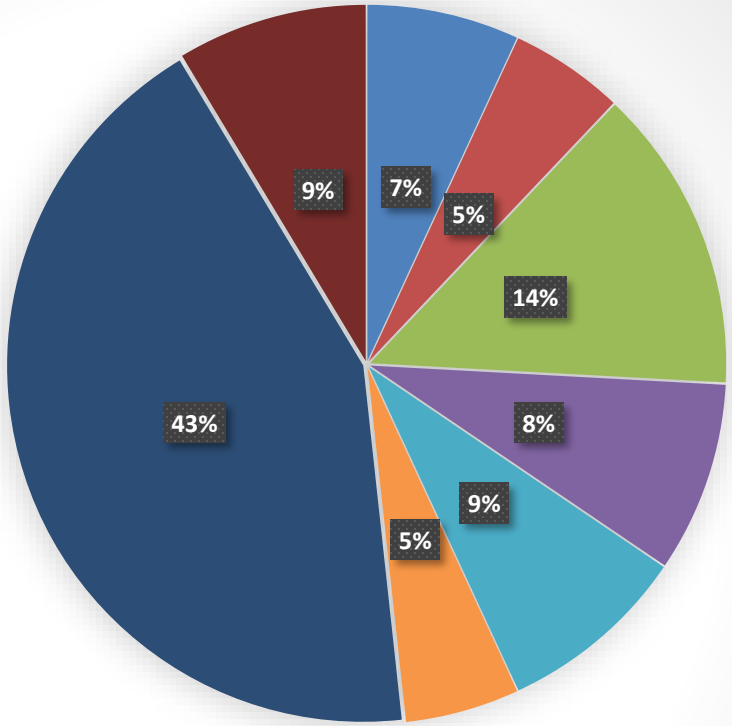


- Government and through projects under IORA & UNDP
- Within existing Government agency and Research Organization baselines
- NAMRIA General Fund
- A self funding government agency

Audience

Question: Who are the target users of the MSDI?

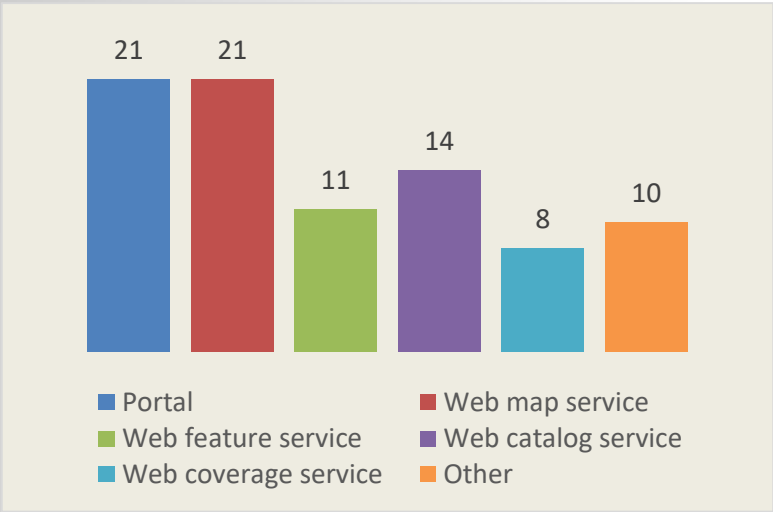


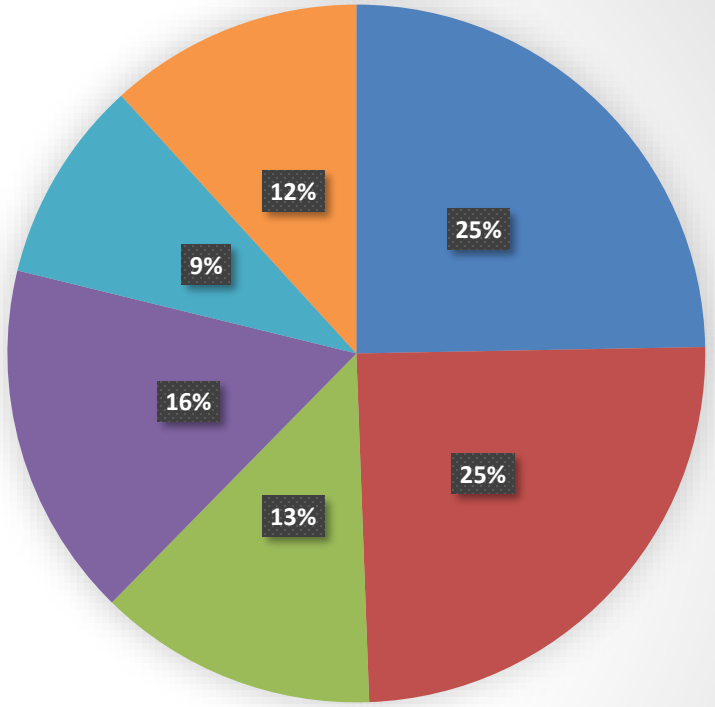


- National Governmental Organizations, Bodies and Institutions and Regional and Local Authorities
- Currently only acces for agencies which co-fund the MSDI (both senior and operational management)
- Because MSDI has not been established, then also the targeted users have not been recognized. However, our understanding is that once MSDI is established, it should be usable for anyone to whom it generates value.
- Public Use, Academia, Private Sector, Specific Users (such as mariners)
- Resticted military used

Support Usage

Question: What are the main applications of your MSDI?





- Web map tile service, Web processing service, Geoservices REST
- Geoserver and Geonetwork
- The applications for MSDI have not been identified
- A first edition of a geoportal is active, but contains no hydrographic data.
- Data are available for download in shapefile or Geotiff from a web portal which is currently accessible on the Government Intranet System. Documents such as PDF can also be tagged to the layers. However, the uploader can decide whether a dataset can be shared publicly or restricted to allow access to only specific users.
- Portal, 2D and 3D Marine Viewers (search catalogue, geoprocessing services and API, web services (e.g. WMS, WFS, WCS))

IHO International Hydrographic Organization

Questions or comments?

Thanks for your attention

Danish Geodata Agency

For more information https://iho.int/en/msdiwg