# First expert meeting of the Working Group on Marine Geospatial Information

Busan, Republic of Korea

7 – 9 March 2019

# IHO Marine Spatial Data Infrastructures Working Group (MSDIWG)

**International Hydrographic Organization (IHO)**
**By Jens Peter Hartmann (MSDIWG Chair)**

International Hydrographic Organization
*Organisation Hydrographique Internationale*

# IHO - MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG)

## Objectives of the IHO MSDIWG:

Identify the <u>Hydrographic Community inputs</u> to National Spatial Data Infrastructures (NSDI).

<u>Monitor</u> national and international <u>SDI activities</u>
Promote the use of <u>IHO standards</u> and member state <u>marine data</u> in SDI activities.

<u>Liaise</u>, as appropriate, with other relevant technical bodies

<u>Propose any Technical and/or Administrative Resolutions</u> that may be required to reflect IHO involvement in the support of SDI.

<u>Identify actions and procedures</u> that the IHO might take to contribute to the development of Spatial Data Infrastructure (SDI) and / or MSDI in support of Member States.



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# Principal activities and achievements

**MSDIWG10 topics:**

- Information on MSDI implementation from MSDIWG members
- MSDI training and e-learning
- Marine Spatial Planning (MSP)
- Improving the availability of bathymetric data Worldwide Crowdsourced Bathymetry, IHO CDDB, Seabed 2030
- Guidance for Data Licensing
- UN Sustainable Development Goals from a MSDI perspective
- Outreach Strategy
- Maintenance and update of IHO Publication C-17
- Revision of the MSDIWG Work Plan

- Security and integrity,
- The IHO/OGC conceptual study
- S-100

- Cooperation with UN-GGIM
- Cooperation with OGC
- Cooperation with the International Cable Protection Committee



The four basic components of MSDI

Policy & Governance (People) | Technical Standards (Standards)
Information Systems (ICT) | Geographic Content (Data)

# IHO - MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG)
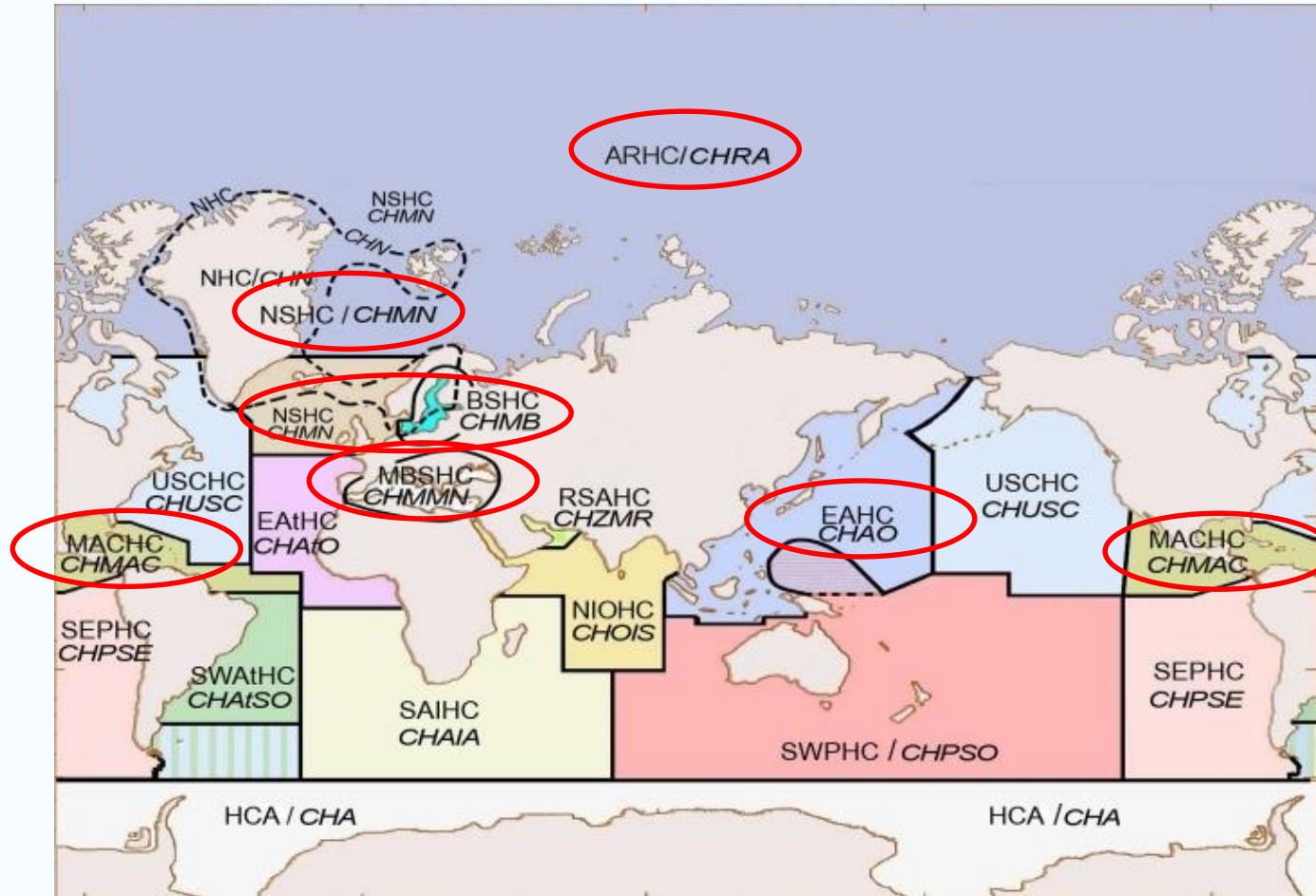


**The IHO - MARINE SPATIAL DATA INFRASTRUCTURE value chain**

IHO → IRCC → MSDIWG
→ RHC → ARHC, BSHC, EAHC, MACHC, NSHC.

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# Marine Spatial Data Infrastructure (MSDI) International



International

UN-GGIM
UNITED NATIONS INITIATIVE ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

Marine Geospatial
Working Group
August 2017

Three Advisory/Contributing
Bodies

ISO International
Organization for
Standardization

Geoinformation
Standards

OGC™
Open Geospatial Consortium, Inc.

Marine Domain
Working Group

IHO:
International
Hydrographic
Organisation

MSDI Working group
+ specific Maritime
Geoinformation
standards

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# Traditional approach to Hydrographic data - Future approach

## One primary user, the mariner

- **The primary products:**
  - **Paper chart**
  - **ENC - S57 data**
  - **Publications**
  - **Updates of products**

- **SOLAS (ECDIS - ENC)**

- **IHO:** - standardisation
  - harmonisation
  - recommendations

## Multiple users and stakeholders

- **? (e.g. GIS, WMS, WFS)**

- **The primary products:**
  - **Data set**
  - **Governance**

- **Many different organisations including IHO**

  *IHO:* - *standardisation*
  - *harmonisation*
  - *recommendations*
  - *Regional coordination*

**SOLAS:**
**Chapter V regulation 19 2.1.4**
Nautical charts and nautical publications to plan and display the ship's route for the intended voyage and to plot and monitor positions throughout the voyage; an Electronic Chart Display and Information System (ECDIS) may be accepted as meeting the chart carriage requirements of this subparagraph;

**Chapter V regulation 27**
Nautical charts and nautical publications, such as sailing directions, *lists of lights*, notices to mariners, *tide tables* and all other nautical publications necessary for the intended voyage, shall be adequate and up to date.
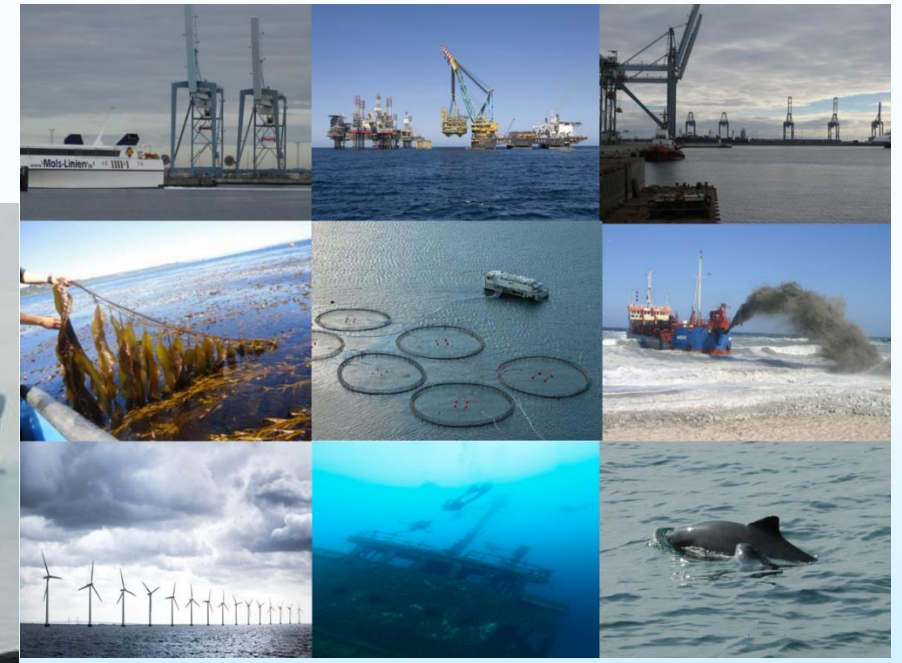
# What is MSDI?

3.3 Marine Spatial Data Infrastructure (MSDI) - the marine dimension of an SDI

MSDI is the component of an SDI that encompasses marine geographic and business information in its widest sense. This would typically include seabed topography (bathymetry), geology, marine infrastructure (e.g. wrecks, offshore installations, pipelines and cables), administrative and legal boundaries, and areas of conservation, marine habitats and oceanography.

**Stakeholders**
**Benefits**
**Funding**
**Education**

**S-100**
**OGC**
**ISO**

Policy & Governance (People)

Technical Standards (Standards)

Information Systems (ICT)

Geographic Content (Data)
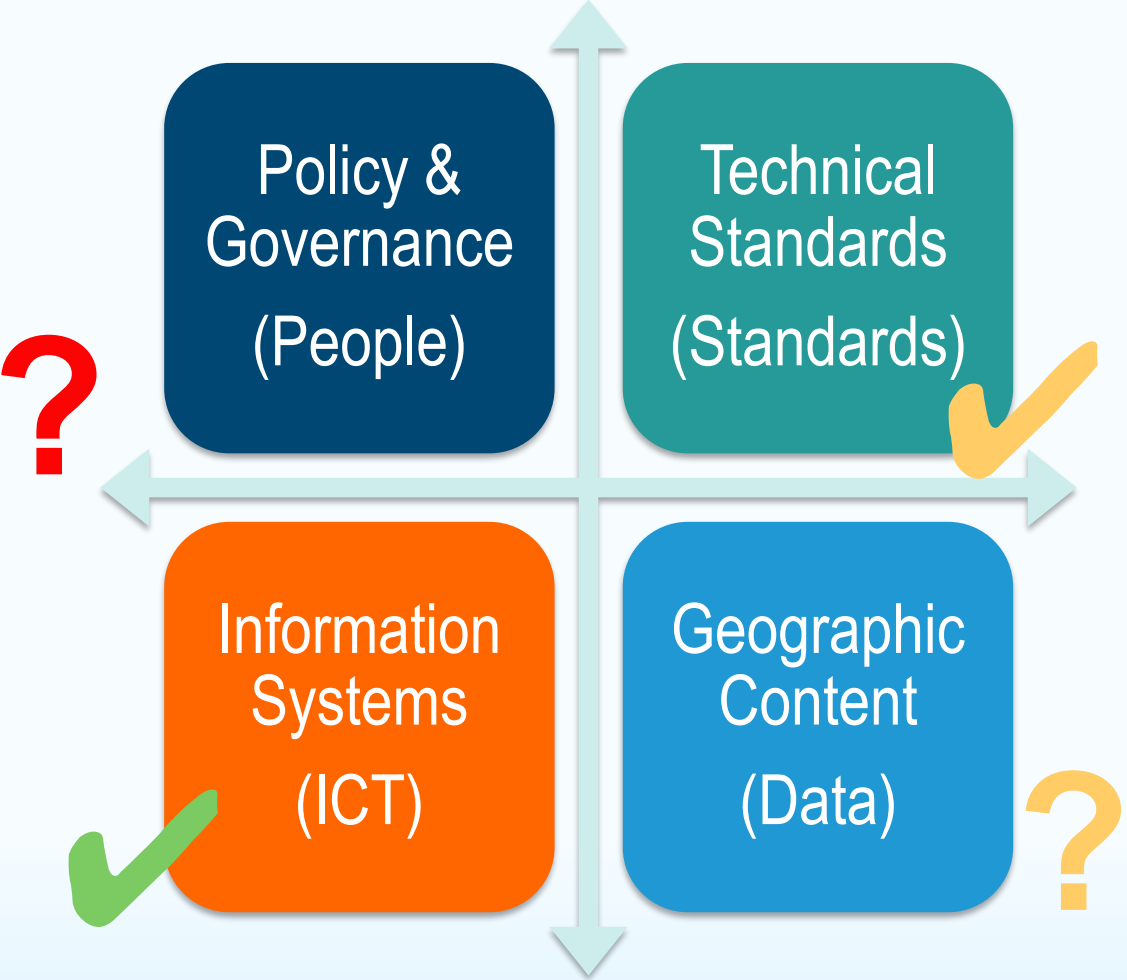
**GIS**
**Internet**

**Data, not products**

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# The importance of authoritative data
## Use Case - Marine Cables
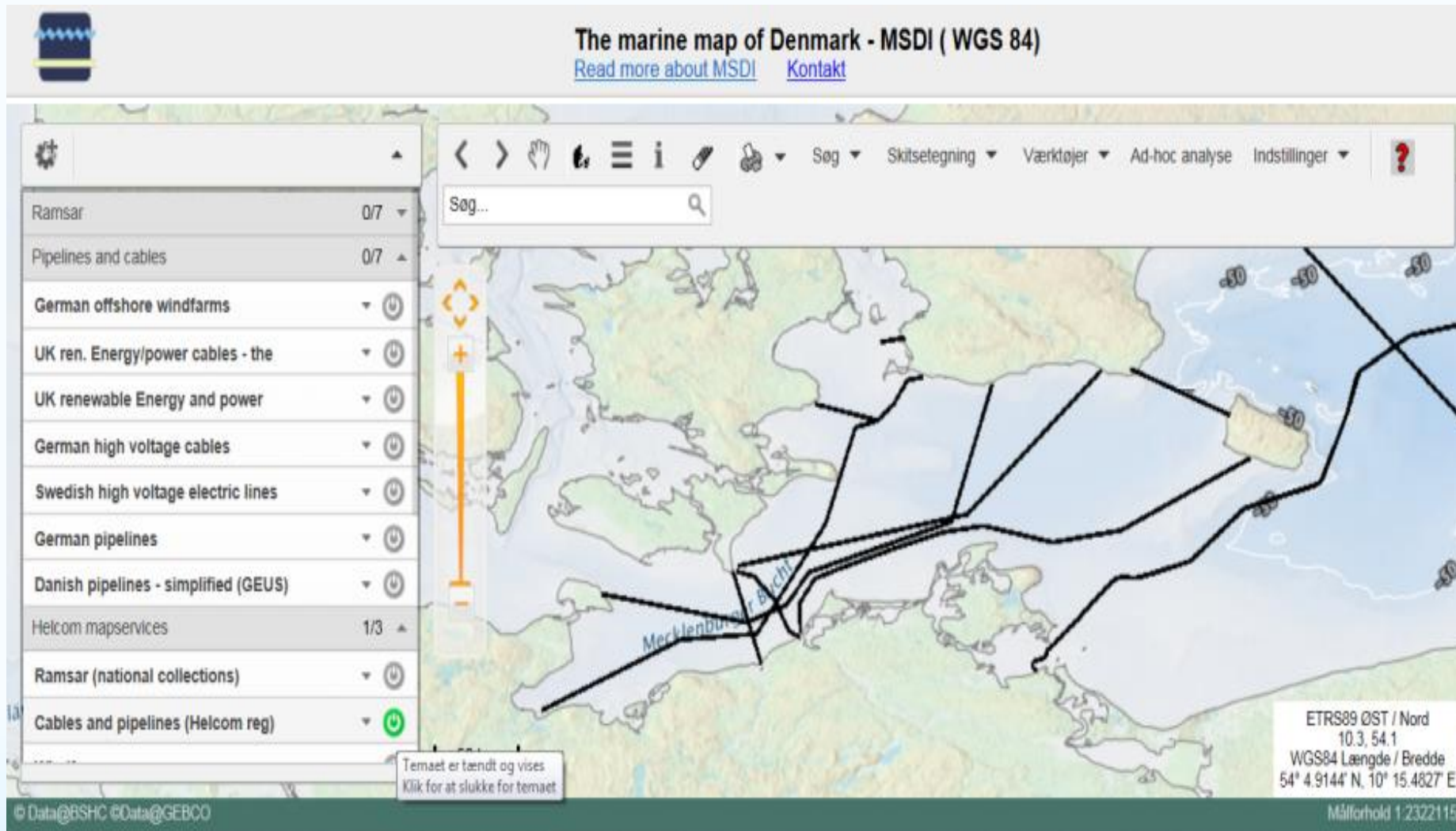
# The importance of authoritative data
## Use Case -  Marine Cables
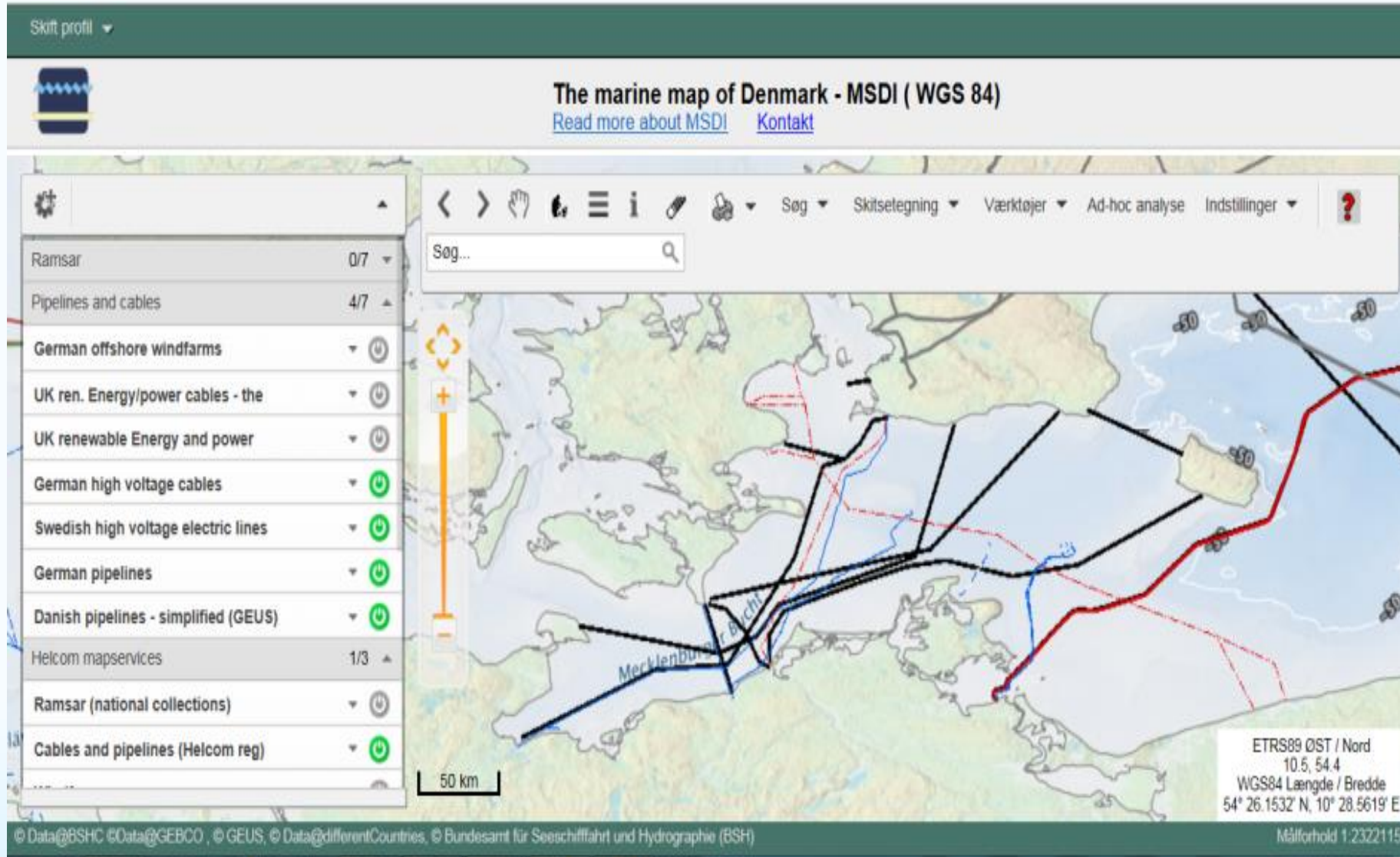
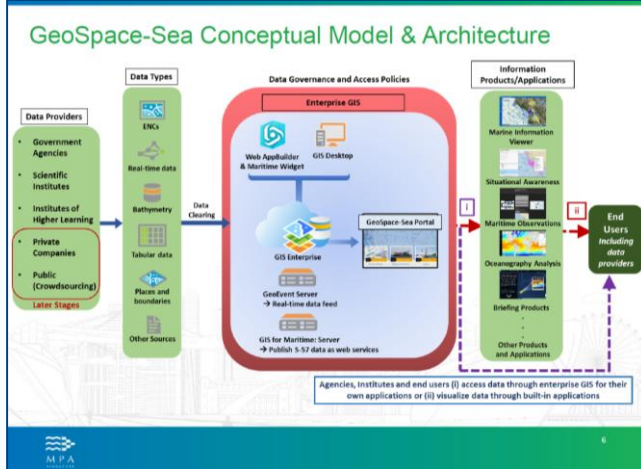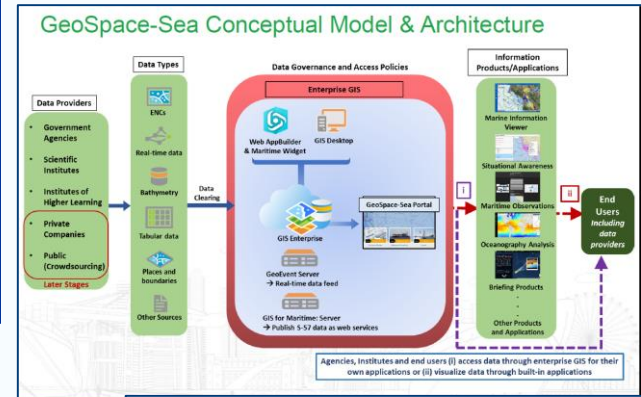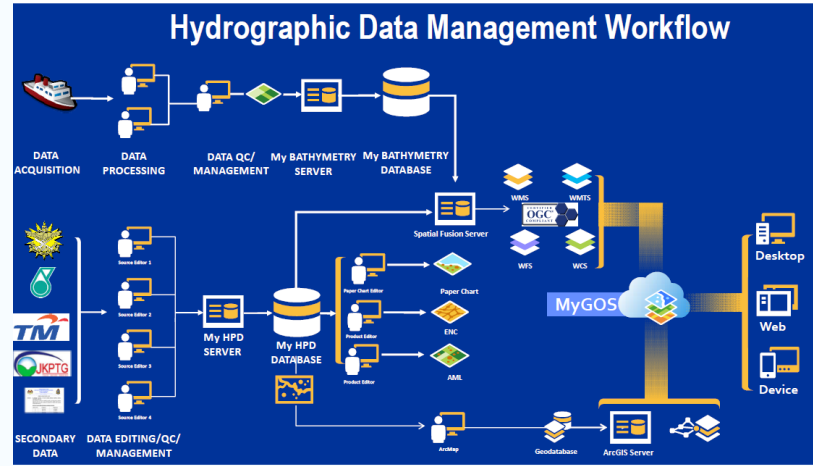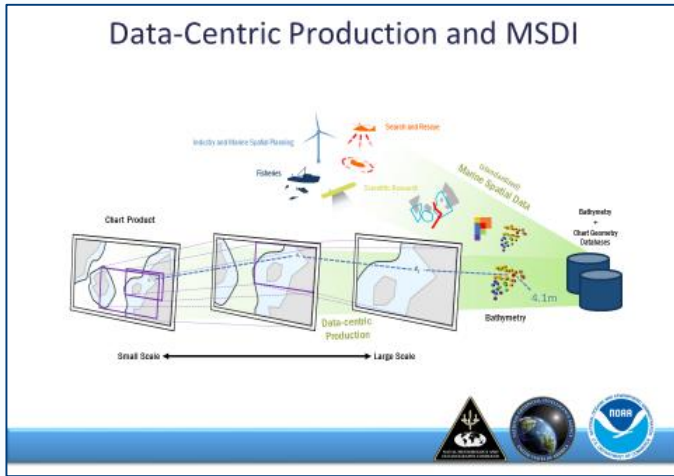# International Cable Protection Committee



Deep Seabed Mining – Threat to Uncharted Cables
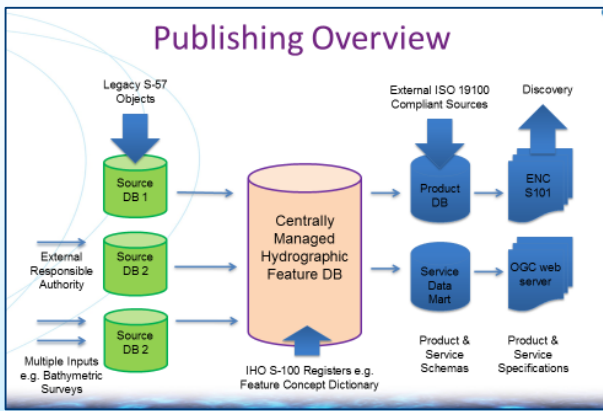
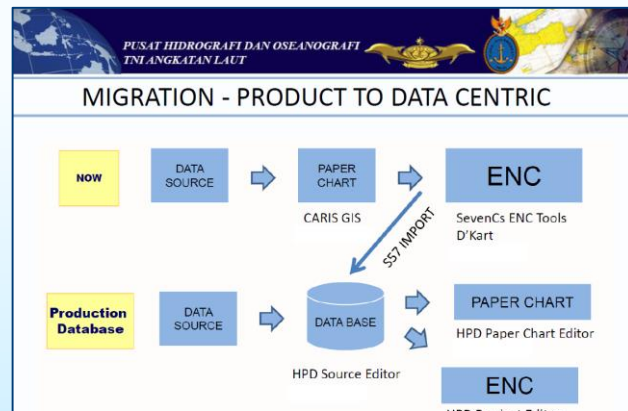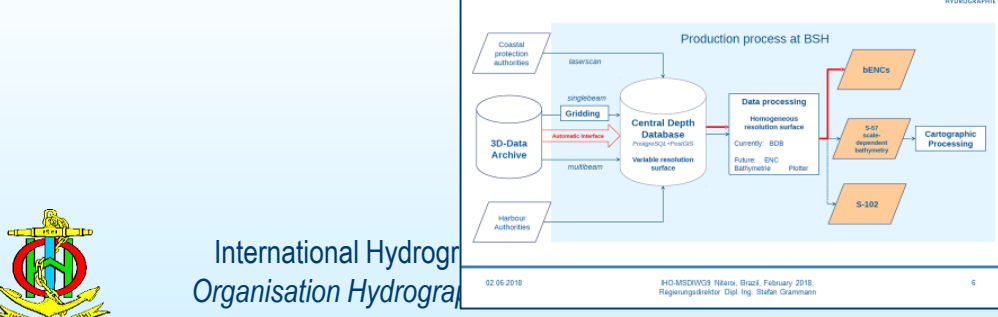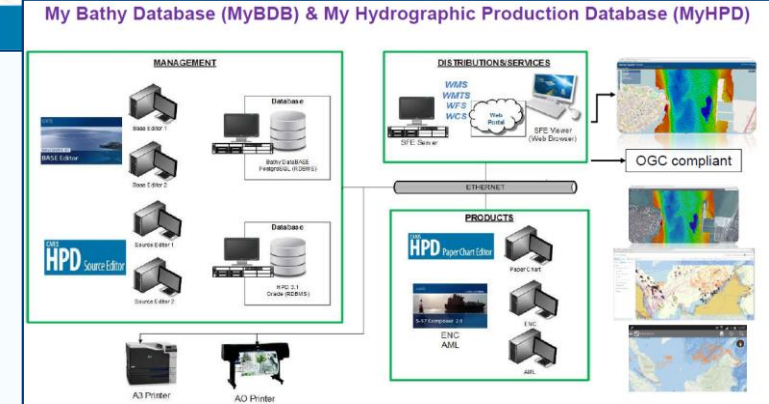Nautilus Minerals Deep Sea Mining Equipment

17mm cable = No contest
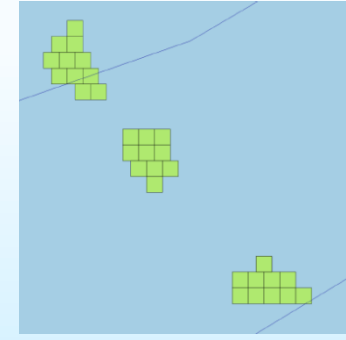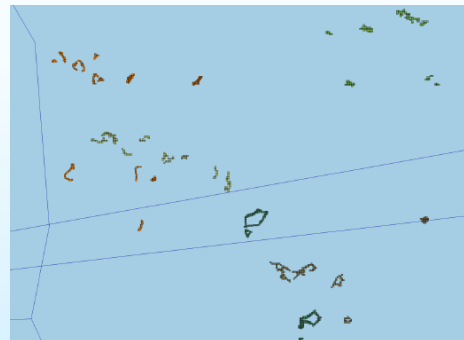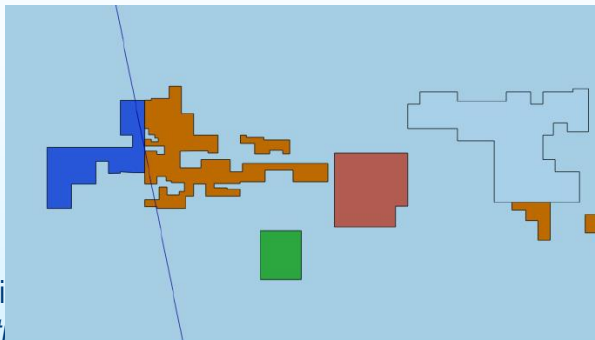
**Data-Centric Information on MSDI implementation from MSDIWG members**

# S-100.

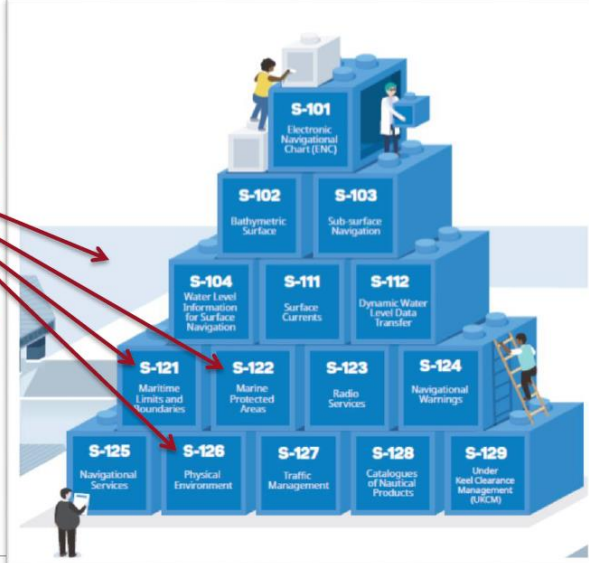## International Hydrographic Organization

S-101 Electronic Nautical Chart (ENC)

S-102 Bathymetric Surface

S-103 Sub-surface Navigation

S-104 Water Level Information for Surface
Navigation

S-111 Surface Currents

S-112 Open - (See Decision HSSC9/38)

S-121 Maritime Limits and Boundaries

S-122 Marine Protected Areas

S-123 Radio Services

S-124 Navigational Warnings

S-125 Navigational Services

S-126 Physical Environment

S-127 Marine Traffic Management

S-128 Catalogues of Nautical Products

S-129 Under Keel Clearance Management (UKCM)

S-1xx Marine Services

S-1xx Digital Mariner Routeing Guide

S-1xx Harbour Infrastructure

S-1xx (Social/Political)

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INTERNATIONAL HYDROGRAPHIC ORGANIZATION

S-100 - UNIVERSAL HYDROGRAPHIC DATA MODEL

Edition 1.0.0 – January 2010

Published by the
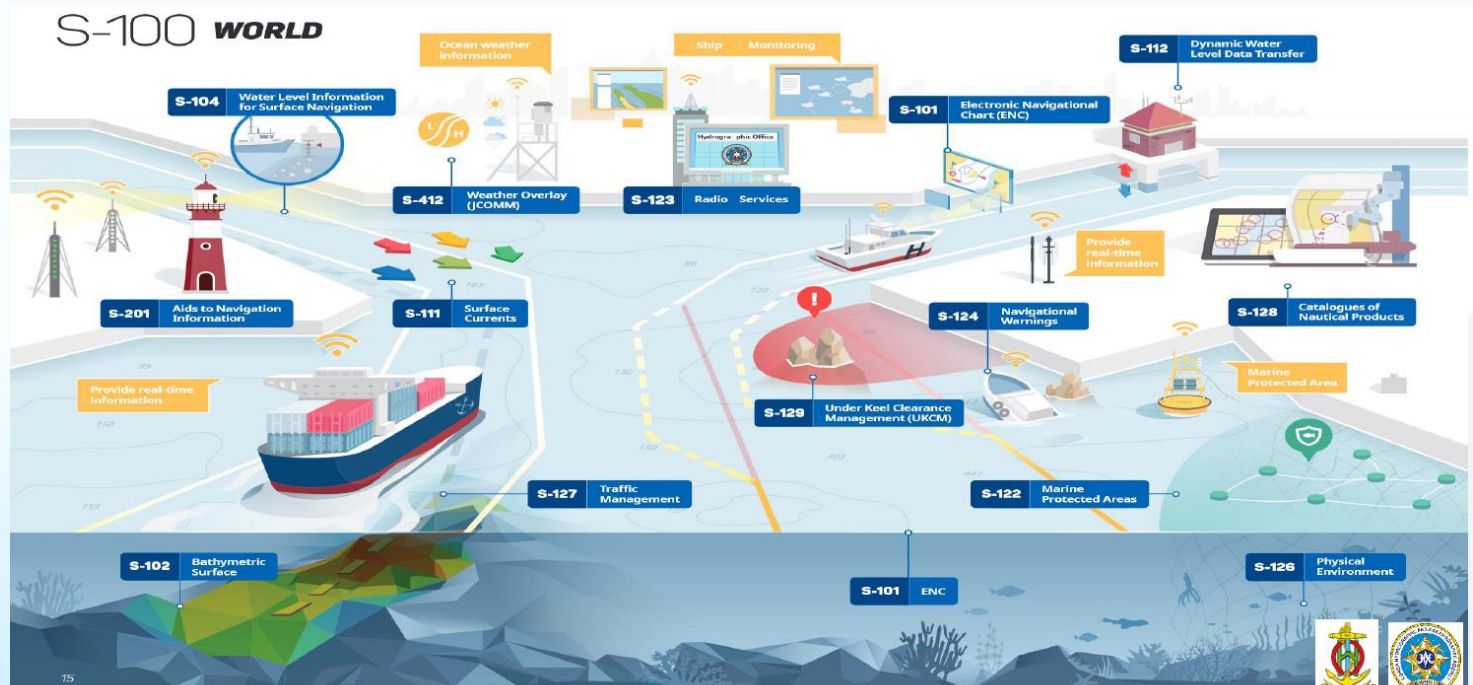International Hydrographic Bureau
MONACO

S-100
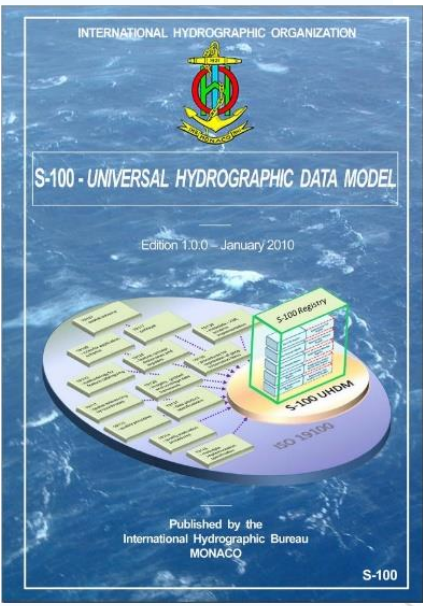
STANDARDIZATION IN HYDROGRAPHY :
MUCH MORE THAN JUST NAUTICAL CHARTS!

...MUCH MORE!!!

Graphic Source: International
Hydrographic Organization
(IHO)
&
Korea Hydrographic &
Oceanographic Agency
(KHOA), Republic of Korea

# Hydrography in MSDI:

✦ Safety of navigation

✦ Protection of the marine environment

✦ National infrastructure development

✦ Coastal zone management

✦ Marine exploration

✦ Resource exploitation – minerals, fishing, energy

✦ Maritime boundary delimitation (UNCLOS, others)

✦ Maritime defence and security

✦ Disaster prevention and response

# "Putting parts of the Marine data puzzle together … "
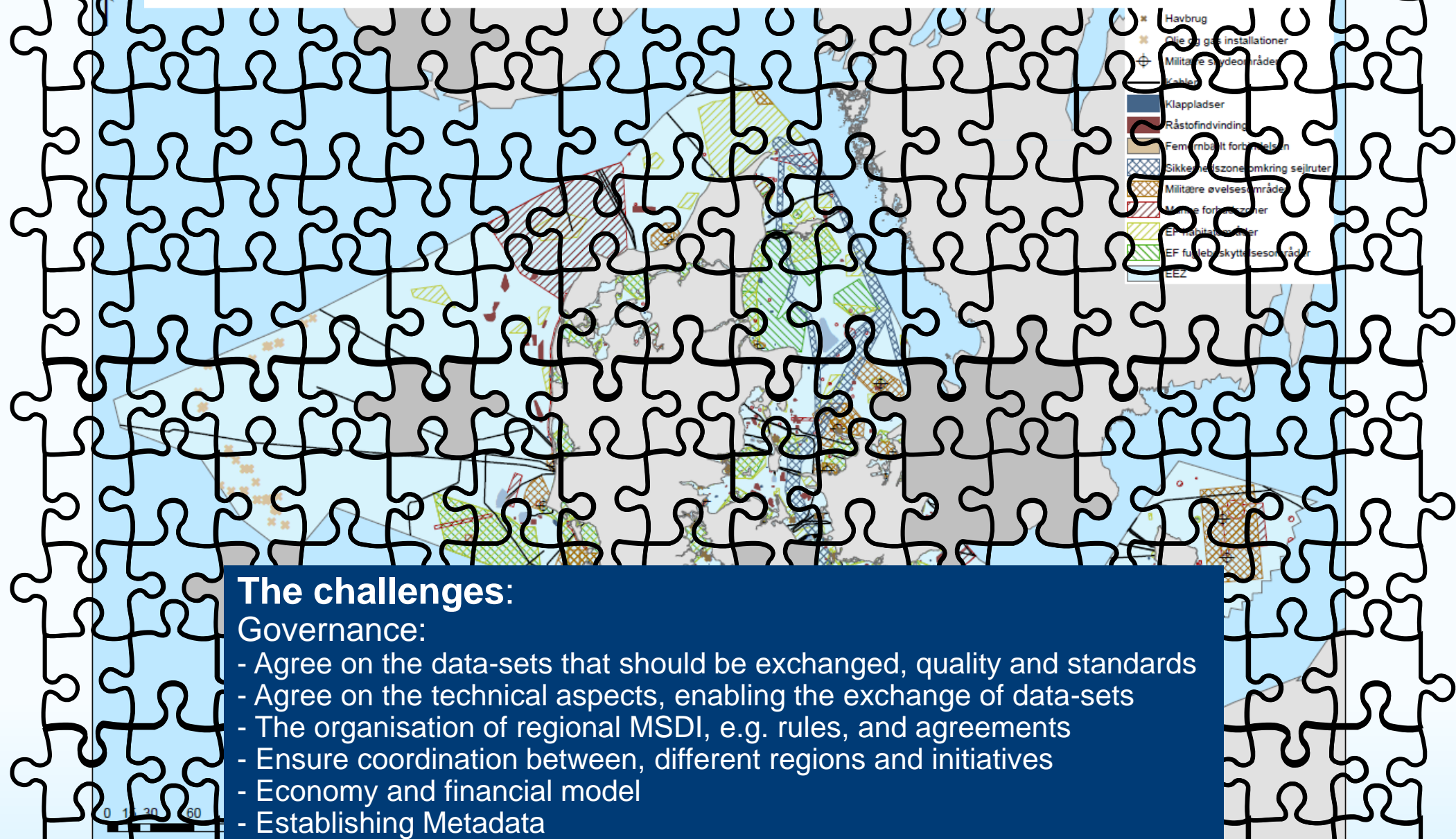


The challenges:

Governance:
- Agree on the data-sets that should be exchanged, quality and standards
- Agree on the technical aspects, enabling the exchange of data-sets
- The organisation of regional MSDI, e.g. rules, and agreements
- Ensure coordination between, different regions and initiatives
- Economy and financial model
- Establishing Metadata

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