

The background of the slide features a large suspension bridge with two prominent towers and a cruise ship sailing on the water below. The sky is overcast with grey clouds.

# **IHO STAKEHOLDERS FORUM**

## **Hydrographic data and its role in MSDI**

**Thursday 27 September  
Jens Peter Hartmann KMS**



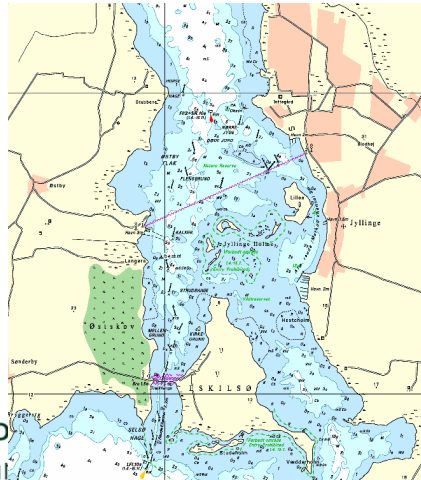
# Agenda

- **Traditional approach to hydrographic data**
- **Expectations within the marine / maritime field**
- **MSDI/SDI**
- **Hydrographic data and its role in MSDI**



# Traditional approach to Hydrographic data

- One primary user, the mariner
- The primary products:
  - Paper chart
  - ENC - S57 data
  - Publications
  - Updates of products
- SOLAS (ECDIS - ENC)
- IHO:
  - standardisation
  - harmonisation
  - recommendations



## 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.**

## Expectations for development within the marine/maritime field:

- Increased activity with multiple uses
- Multiple stakeholders and users with demands for the same area
- Major external impact from “new” organisations e.g. EU:
  - INSPIRE Directive
  - Marine Strategy
  - Maritime Spatial Planning
- Greater user involvement, including the possibility for citizens to track their “case”



- Increased demands for coordination and planning within the maritime area
- Increased demands for coordination of activities on land
- Increased demands for coordination with neighbouring countries



• **Not doing anything will not be an option**



Danish Ministry of the Environment  
National Survey and Cadastre



**MSDI**

**Geo Data of the Sea**





## Coastal tourism



The volume of global tourist arrivals increased more than 20 times between 1950 and 1995, making tourism the world's fastest-growing industry. The present number of tourists is expected to double by 2010 – particularly in the Caribbean and Asia-Pacific regions, where much of the industry is concentrated in coastal areas.

**\$ 161 billion**

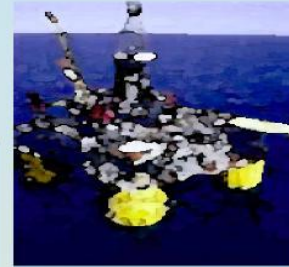
## Trade and shipping



Since the 1950s, the annual volume of shipping and seaborne trade has risen sixfold, to more than 5 billion tonnes of oil, dry bulk goods and other cargo. In 1995, there were 27,000 freighters of over 1,000 tonnes in operation. Industrial countries account for 50% of the cargo loaded – and 75% of that unloaded.

**\$ 155 billion**

## Offshore oil and gas



Since gasoline was first used in California a century ago, the oil and natural gas industry has skyrocketed to meet soaring energy demands. Today, about 20% of the world's oil and natural gas comes from offshore drilling installations in the Middle East, the United States, Latin America, and the North Sea.

**\$ 132 billion**

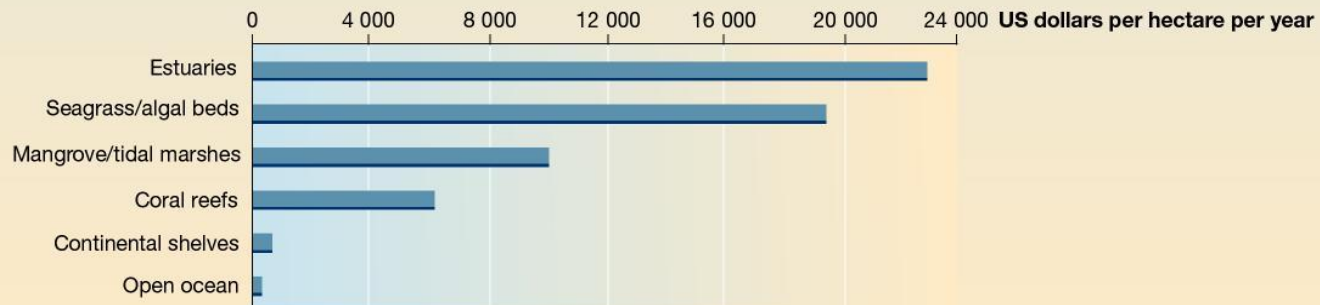
## Fisheries



Between 1950 and 1997, global fish production from capture and culture fisheries grew from 20 million tonnes to 122 million tonnes, with the per capita supply doubling from 8 kg to 15 kg. Over 200 million people rely on fishing for their livelihoods, with more than 80% of all fish (by value) sold in industrial countries.

**\$ 80 billion**

## Estimated Mean Value of Marine Biomes



Source: Anne Platt McGinn, *The Health of Oceans*, *Worldwatch paper 145*, *Worldwatch Institute*, 1999, Washington DC ([www.worldwatch.org](http://www.worldwatch.org)); Costanza, R., et al, *The Value of the World's Ecosystem Services and Natural Capital*, *Ecological Economics*, 1998 ; World Tourism Organization; United Nations Conference on Trade and Development (UNCTAD).



# **”Data is the new gold”**

Neelie Kroes, Vice-President of the European Commission responsible for the Digital Agenda

**And Spatial data glitters especially much**



# What is Spatial Data Infrastructure – SDI?

Global Spatial Data Infrastructure Association (GSDI) defines spatial data infrastructure (SDI) as:

***“the technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve utilization of geospatial data”***

*GSDI Cookbook, 2009*

The definition originates from  
Federal Geographic Data  
Committee, 1994



# Maritime Spatial Data Infrastructure (MSDI)

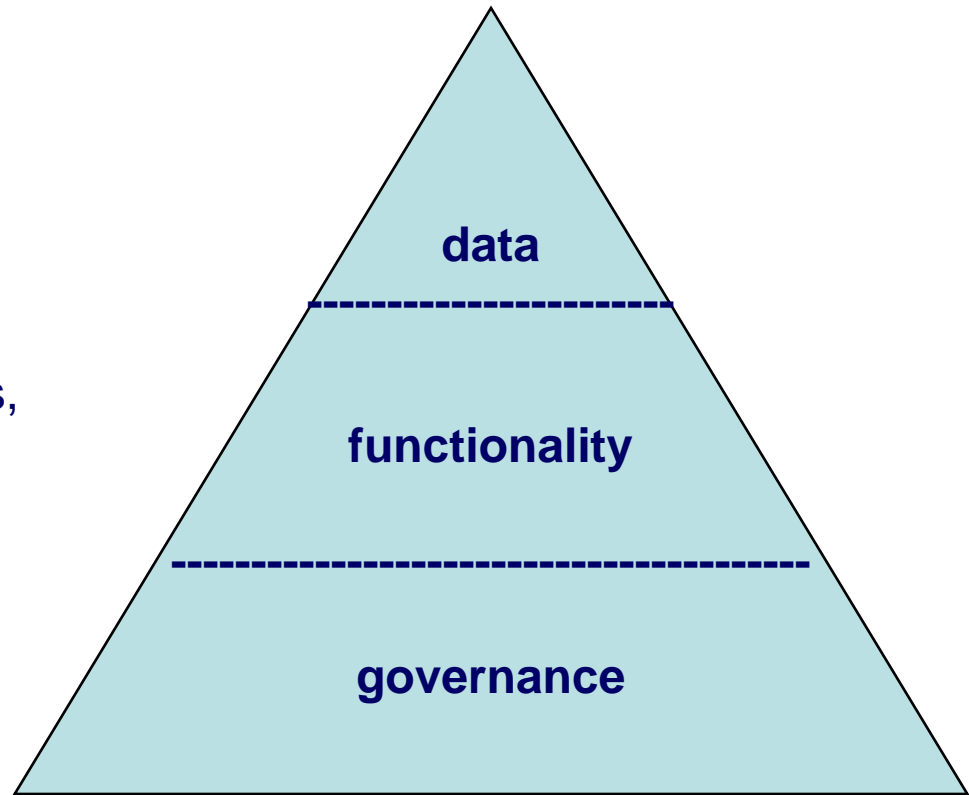
## Geo Data of the Sea

### Components of an infrastructure:

**DATA** - metadata, datasets

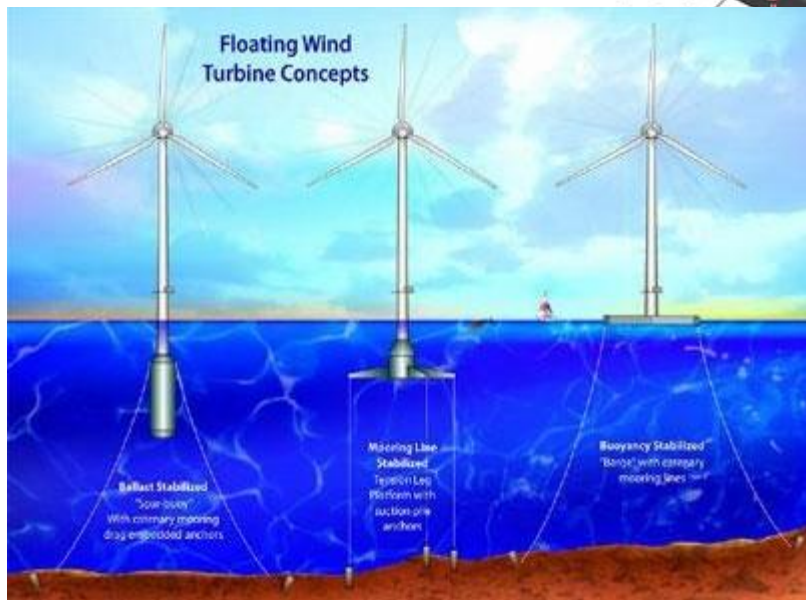
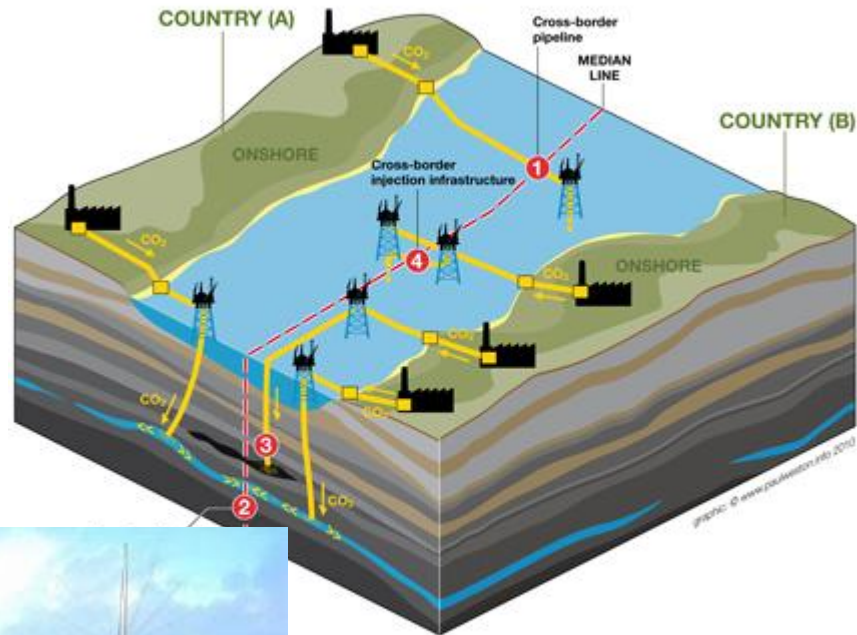
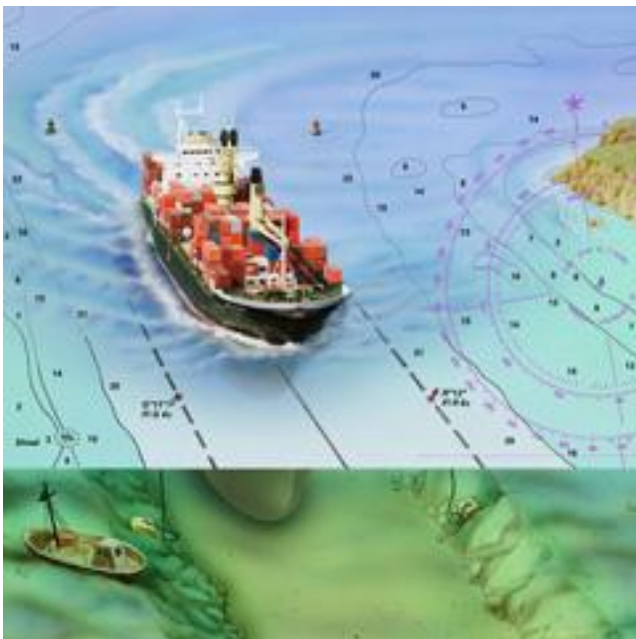
**FUNCTIONALITY** - spatial data services, web services and other technology

**GOVERNANCE** - Agreements and Organisation – rights and access

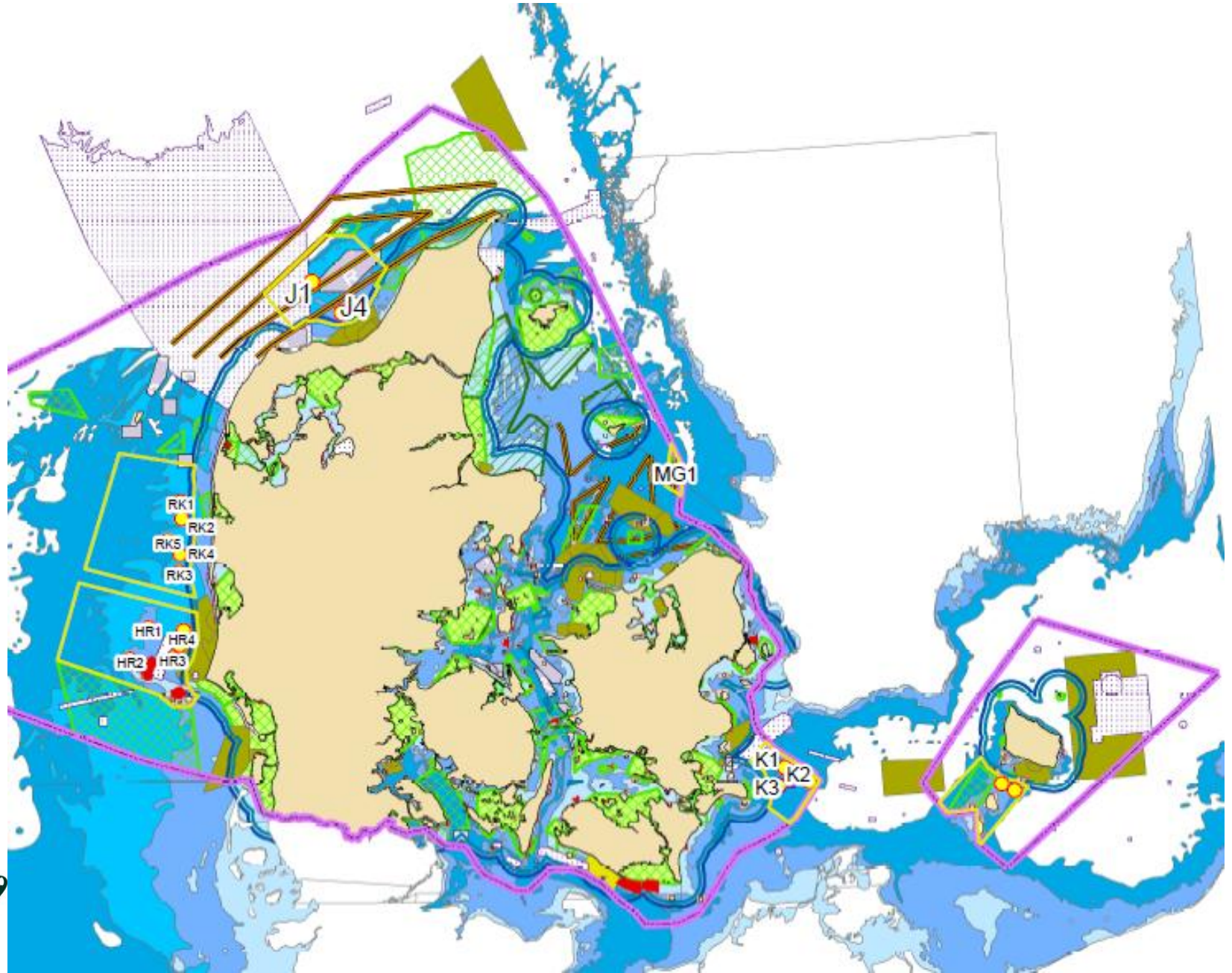




# MSDI - Data

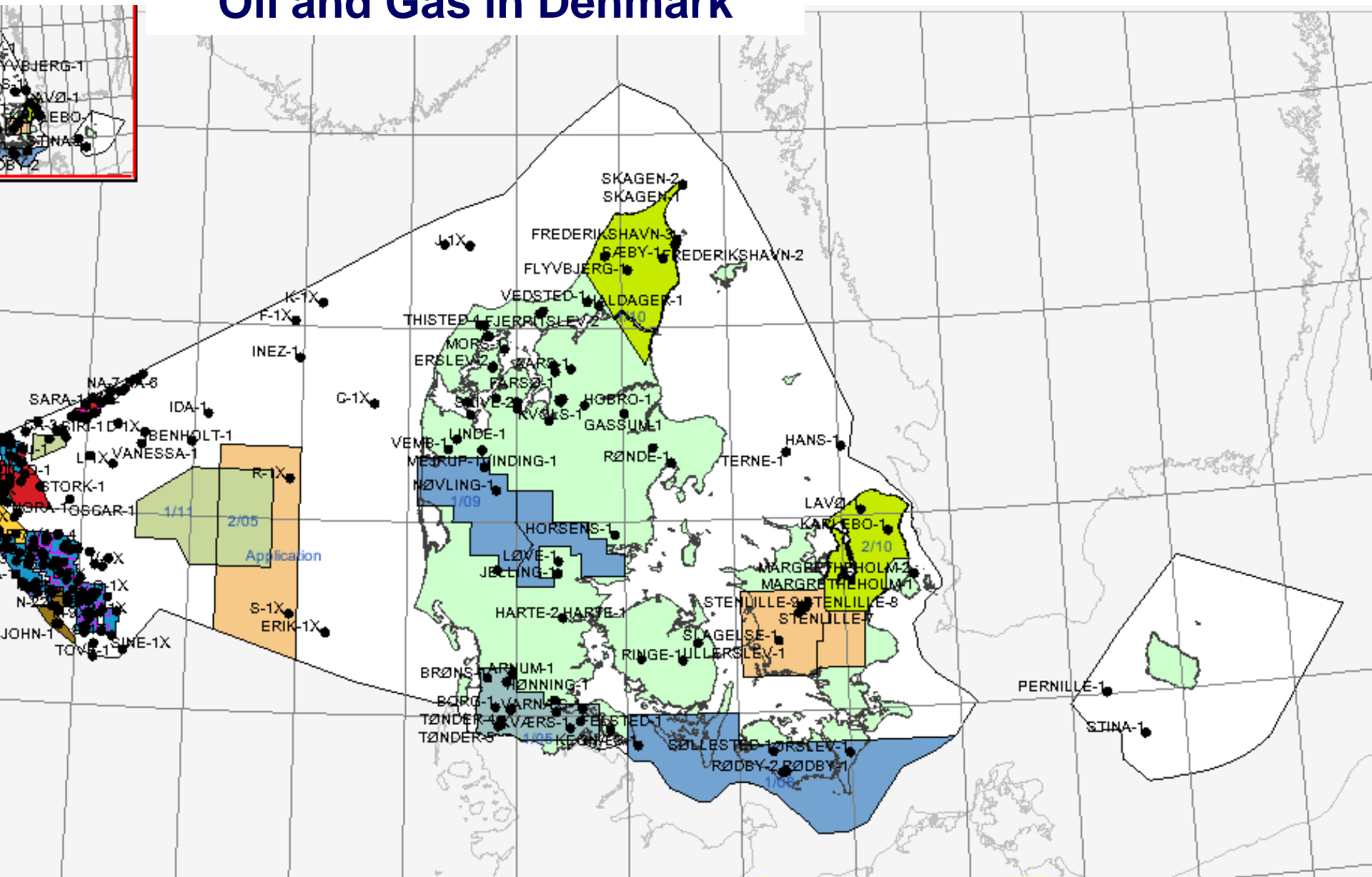


# Planning of wind turbines in Danish waters



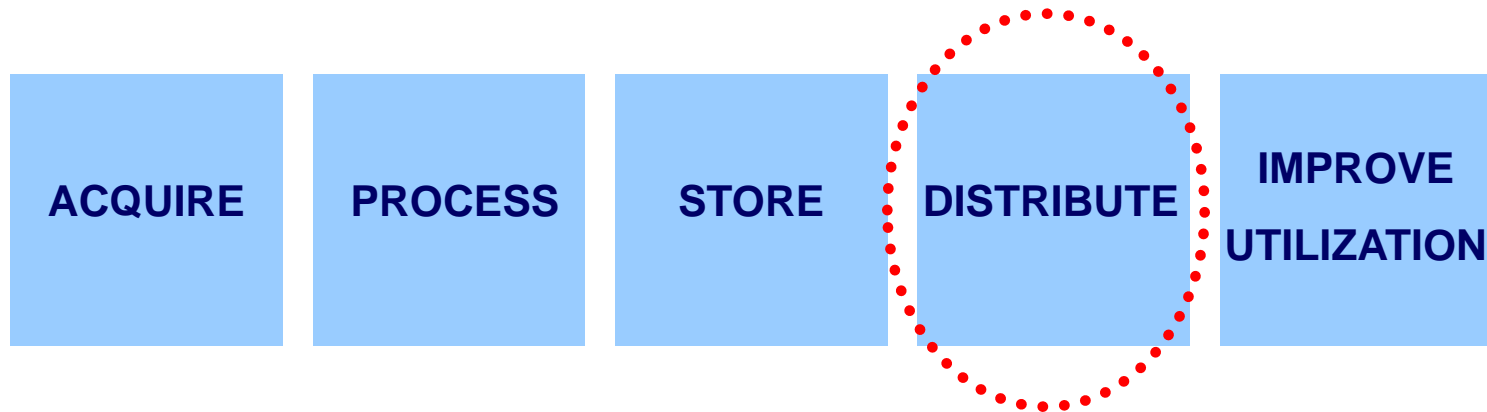


# Oil and Gas in Denmark



# The value chain

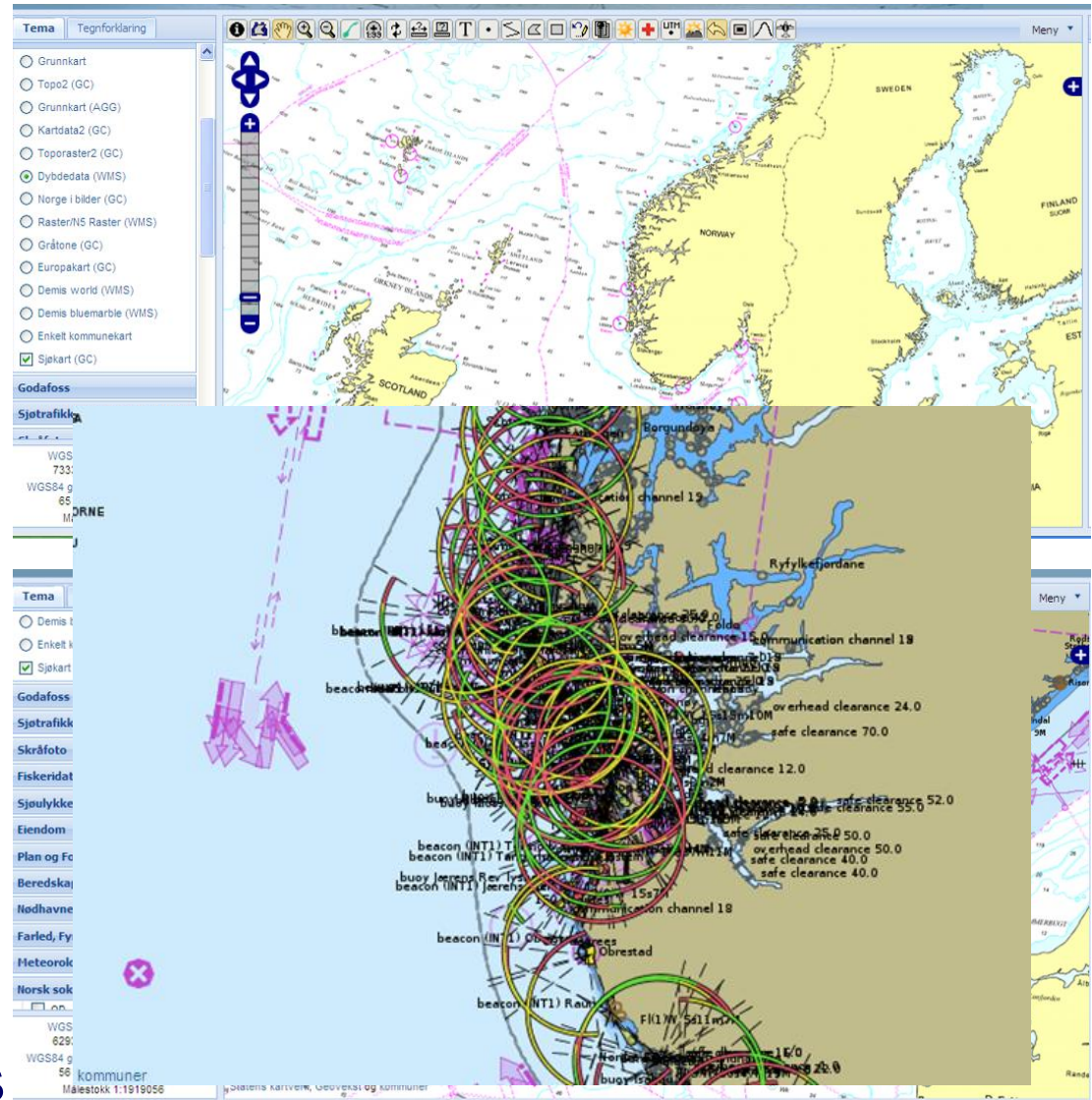
- A value chain describes the activities that adds value to the products produced by an organisation
- An example of a value chain - based on the definition of a spatial data infrastructure – can be defined by the following activities:



# Hydrographic data and its role in MSDI

## Deliverables I GIS:

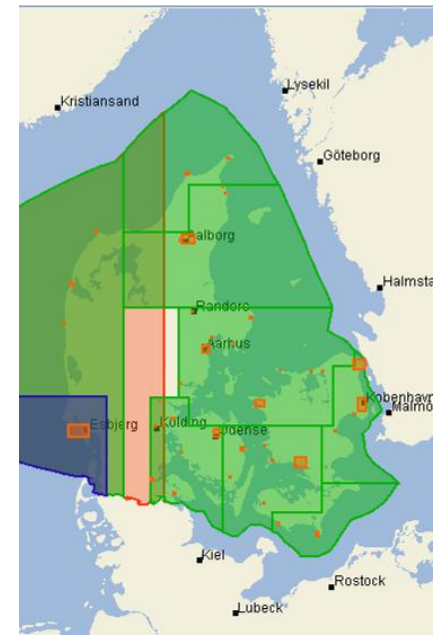
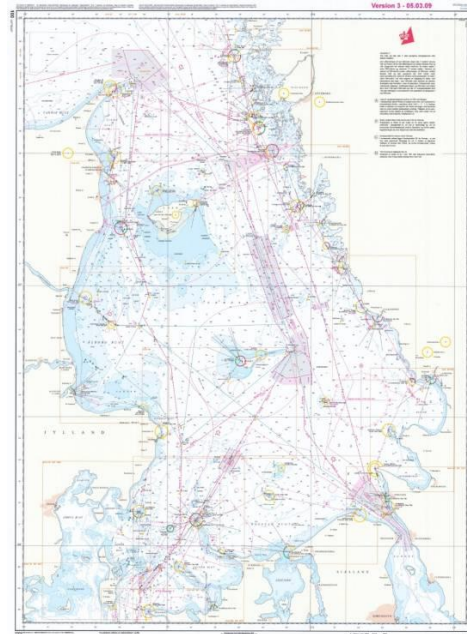
- Raster charts as background map
- ENC - S57 data as additional layer
- Hydrographic data sets



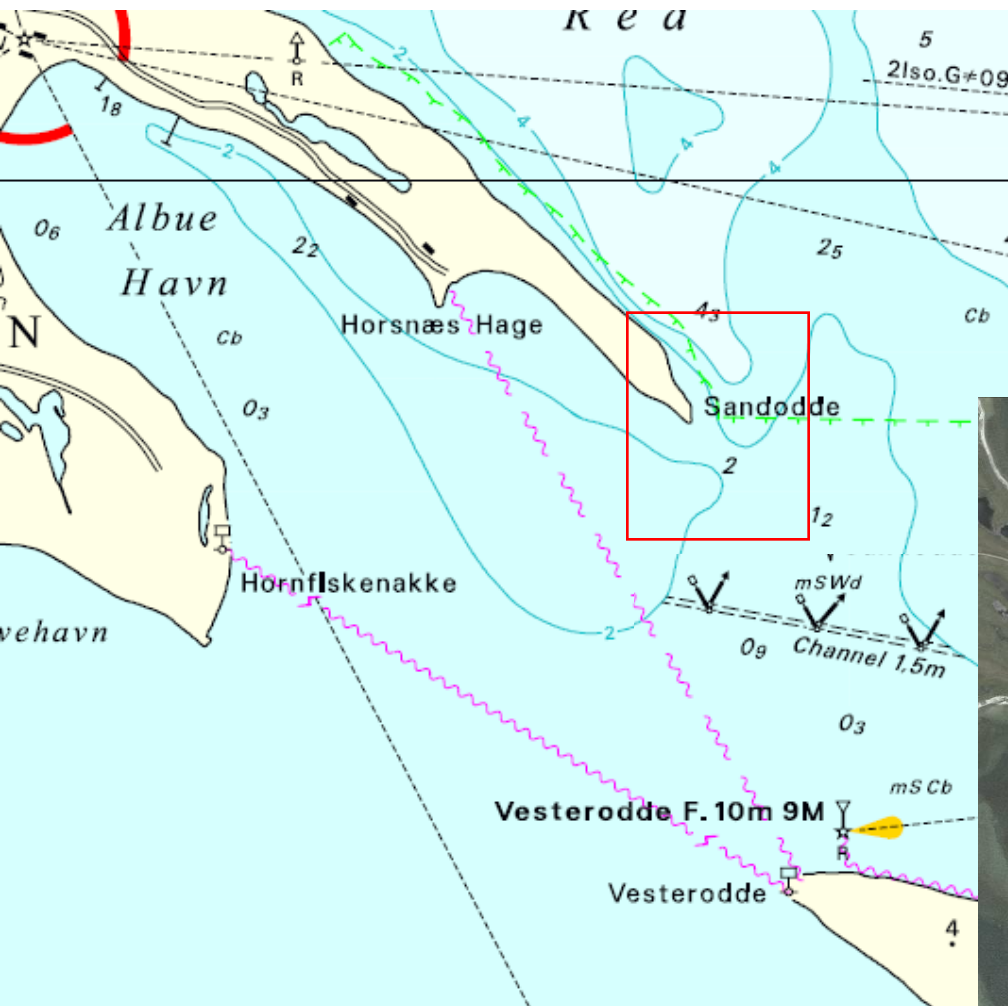


# Hydrographic data sets

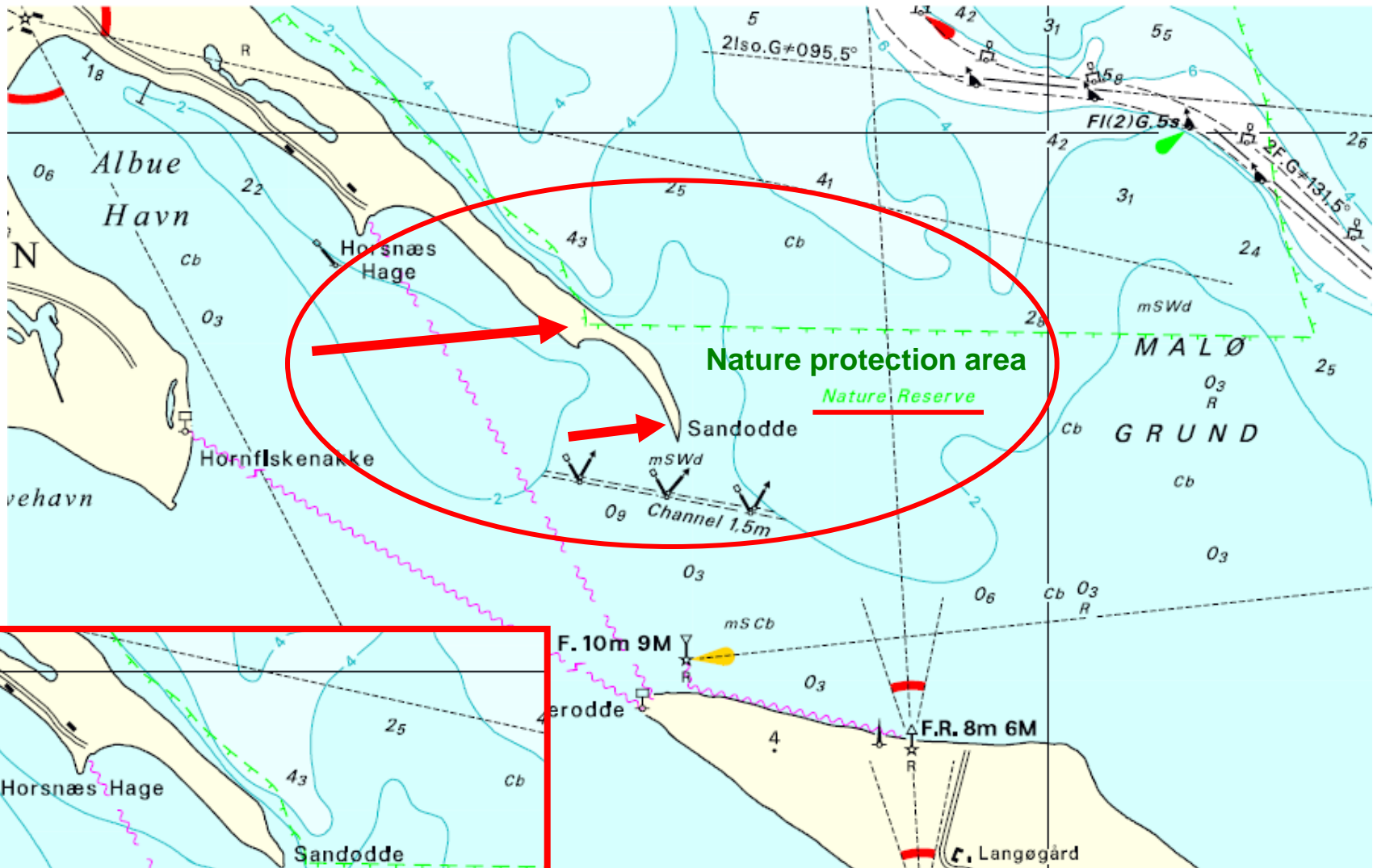
- The legal rights of the owner of data sets
- The need for a national/regional/international governance model
  - Interoperability can only be ensured through clear agreements between contributors
  - National security issues
  - National constructions differ in terms of rights and responsibilities regarding marine data.
- A clear definition of hydrographic data sets
- Definition of key hydrographic data set



# Coast line – a practical example



# Coast line – a practical example

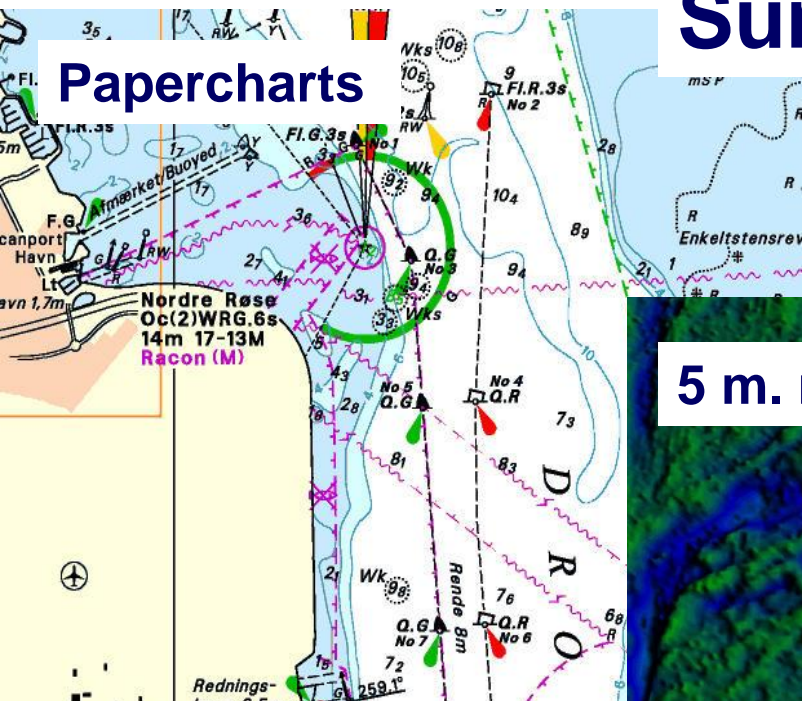


Old version

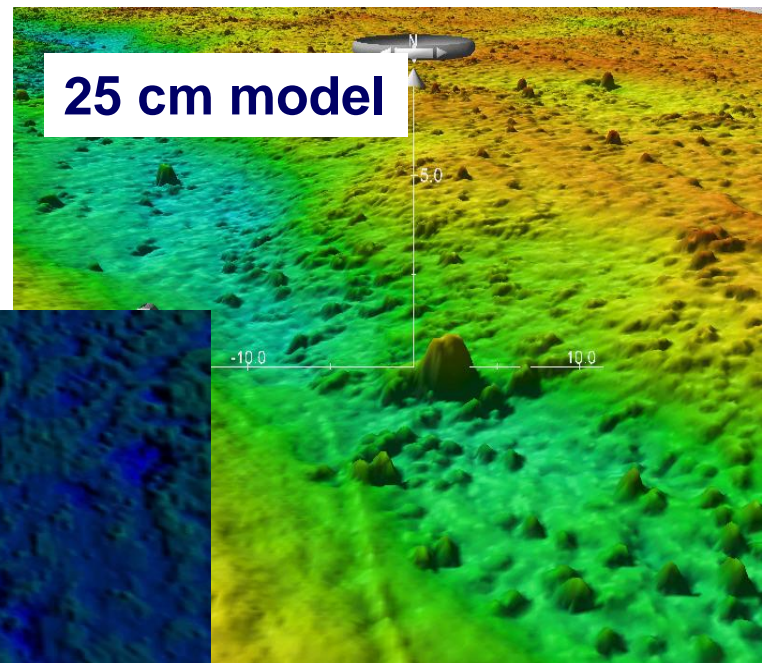


# Surveying

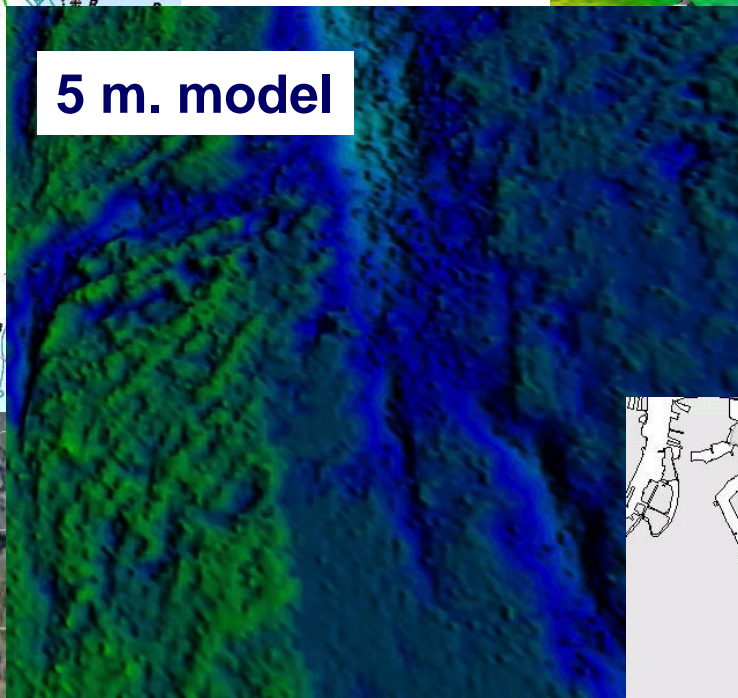
## Papercharts



## 25 cm model



## 5 m. model

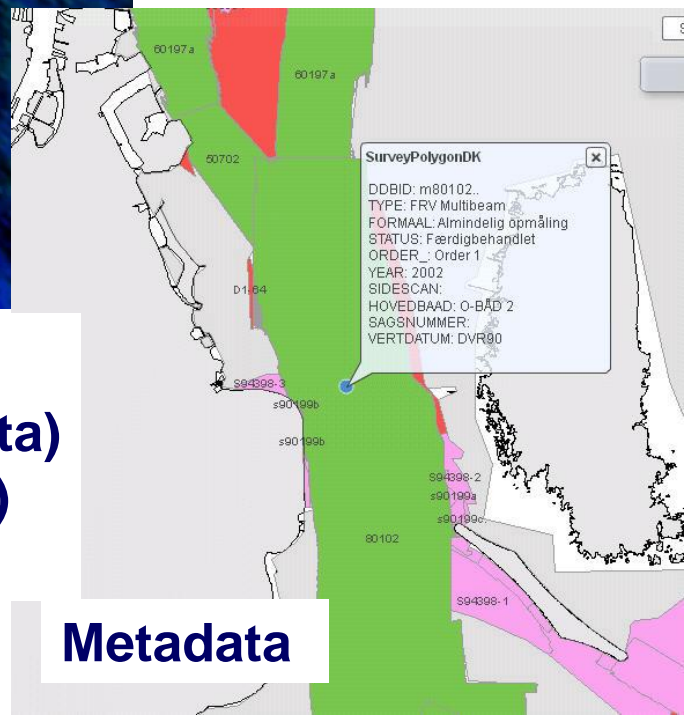


## 50 m model



## Challenges:

- Storages (Raw data)
- Quality (Metadata)
- Harmonisation

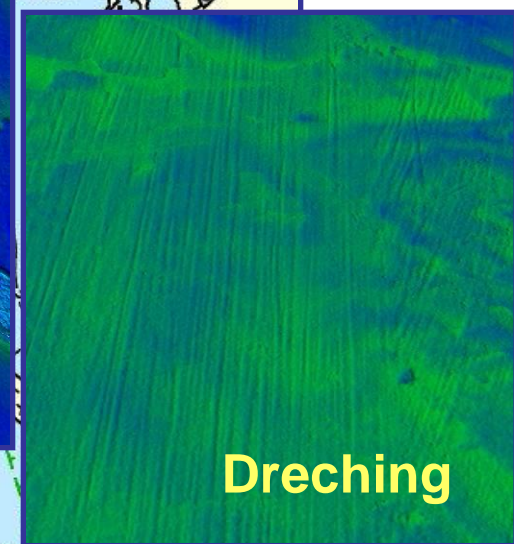
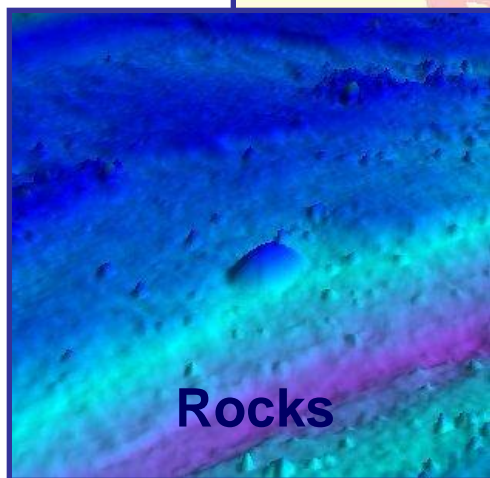
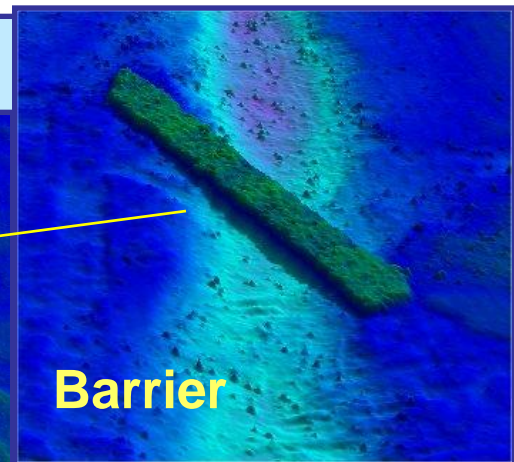
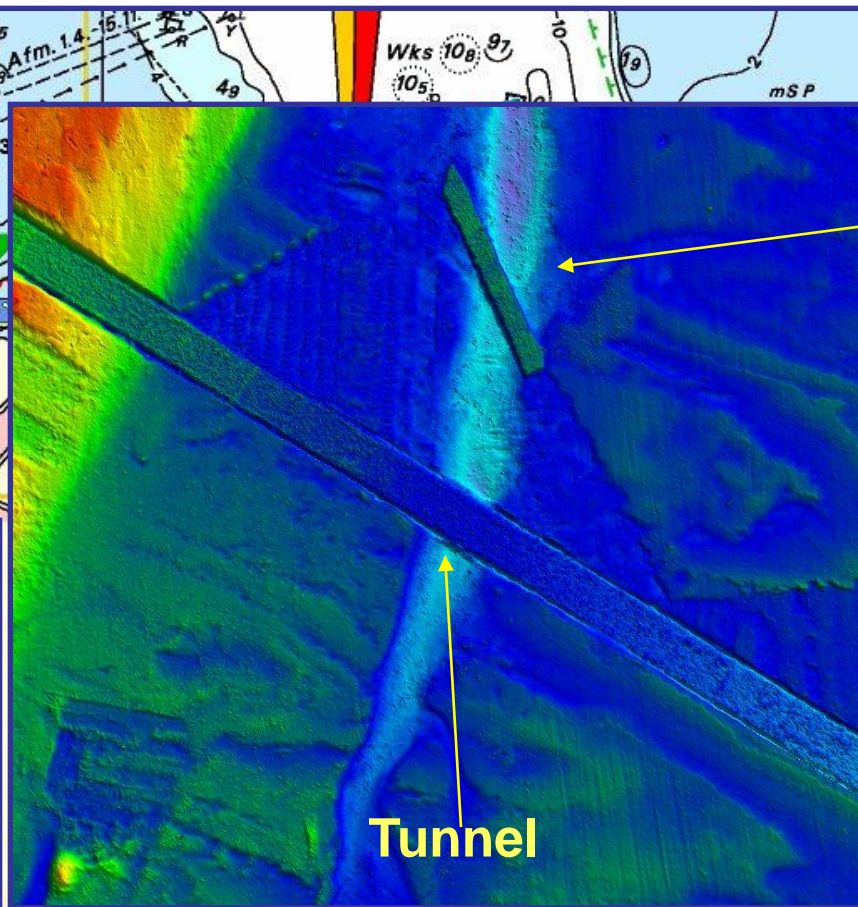
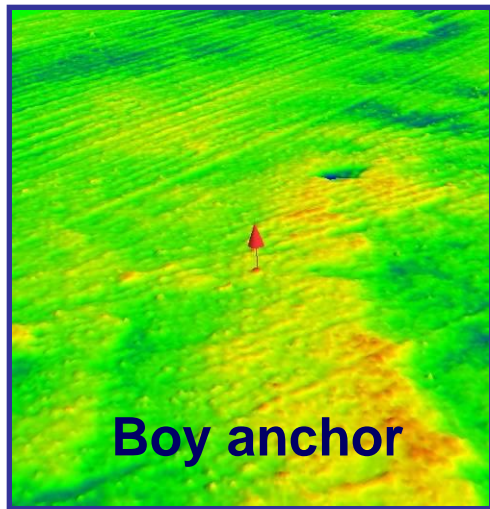


## Metadata

SurveyPolygonDK  
DBID: m80102.  
TYPE: FRV Multibeam  
FORMAAL: Almindelig opmåling  
STATUS: Færdigbehandlet  
ORDER\_: Order 1  
YEAR: 2002  
SIDESCAN:  
HOVEDBAAD: O-BAD 2  
SAGSNUMMER: DVR90  
VERTDATUM: DVR90



# Visualisation of depth data



Da  
Na





# Challenges:

**The IHO and HO perspective, is there a new role for national HO and IHO?**

**(Interregional coordination, international standardisation and IHO services)**

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

**S-100 interoperability with SDI, oceanographic, marine biological, geological and geophysical data structures.**

**Creation of metadatabase.**

## **Governance.**



Danish Ministry of the Environment  
National Survey and Cadastre

## Traditional approach

- One primary user, the mariner
- SOLAS (ECDIS - ENC)
- The primary products:
  - Paper chart
  - ENC - S57 data
  - Publications
  - Updates of products

- IHO:
  - standardisation
  - harmonisation
  - recommendations

## MSDI - Geodata of the Sea

- Multiple users and stakeholders
- ? (e.g. GIS, WMS, WFS)
- The primary products:
  - Data set
  - GovernanceNational constructions differ in terms of rights and responsibilities regarding marine data.

- Many different organisations including IHO

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



INSPIRE is good for me. I will fully embrace it.  
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Questions

