Lise Schrøder (AAU),
Lena Hallin-Pihlatie (SYKE) &
Manuel Frias Vega (Helcom)

INSPIRE
– a backbone in spatially enabling the digital maritime society in the Baltic Sea region
Agenda

• The Baltic LINes project
• Helcoms map and data service
• Data needs of MSP in the Baltic Sea Region
• Available data versus the INSPIRE Directive
• Prototype – BASEMAPS
• Next steps
• Conclusions
Baltic LINes

Interreg Project 2016-19:

Development of pan-Baltic planning solutions for shipping routes and linear energy infrastructure and integration of these in national plans.

Further developing Helcoms map and data service is a central element in the project as a means of enabling collaboration in the ongoing national maritime Spatial Planning (MSP) processes.

http://www.vasab.org/index.php/balticlines-eu/about
HELCOMs map and data service

http://maps.helcom.fi/website/mapservice/index.html
HELCOMs map and data service

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HELCOMs map and data service

http://maps.helcom.fi/website/mapservice/index.html
Existing centralised database

Freely available
Datasets from various sources – stored at Helcom
A new distributed solution

Access to data and services from various sources – displayed by Helcom.

To be searched for, viewed, and downloaded
Survey among planners

- Very important to be able to plan across the borders
- Big differences among the countries
- Fit for purpose approach
  - From the planners' perspective it is not necessarily important to have a lot of complex datasets
  - Need for focussing on semantics and especially, which attributes are important

http://maps.helcom.fi/
Data needs of MSP in the Baltic Sea Region

In 2016 by the HELCOM-VASAB Data Group members defined a long list of important datasets.

The planners among the Baltic LINes project members were asked to select the most relevant for MSP, which resulted in 27 datasets.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of datasets in each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative borders</td>
<td>5</td>
</tr>
<tr>
<td>Fishing areas</td>
<td>2</td>
</tr>
<tr>
<td>Installations and infrastructures</td>
<td>3</td>
</tr>
<tr>
<td>Maritime transport routes and traffic flows</td>
<td>2</td>
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<tr>
<td>Nature and species conservation sites and protected areas</td>
<td>6</td>
</tr>
<tr>
<td>Military training areas</td>
<td>2</td>
</tr>
<tr>
<td>Raw material extraction areas</td>
<td>3</td>
</tr>
<tr>
<td>Submarine cable and pipeline routes</td>
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<td>Total</td>
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</table>
Availability of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and as network services:

- downloadable as shapefile from the HELCOM Map Service
- OGC format
- when EU countries are expected to deliver INPIRE compliant dataset
## Availability of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and as network services.

### Table: INSPIRE dataset availability

<table>
<thead>
<tr>
<th>Category</th>
<th>Dataset</th>
<th>Available from HELCOM map service</th>
<th>WMS Countries with data in OGC WMS</th>
<th>WFS Countries with data in OGC WFS</th>
<th>Inspire Annex I: INSPIRE compliant end of 2017</th>
<th>Inspire Annex II: INSPIRE compliant end of 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative borders</td>
<td>National</td>
<td>Now</td>
<td>4 DK, EE, FI, PL</td>
<td>3 DK, EE, FI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regional</td>
<td>Now</td>
<td>3 DK, EE, PL</td>
<td>2 DK, EE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Local</td>
<td>Now</td>
<td>4 DK, EE, FI, PL</td>
<td>3 DK, EE, FI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Territorial waters</td>
<td>Now</td>
<td>4 DE, DK, EE, FI</td>
<td>3 DE, DK, FI</td>
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</tr>
<tr>
<td></td>
<td>EEZ</td>
<td>Now</td>
<td>4 DE, DK, EE, FI</td>
<td>3 DE, DK, FI</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Additional tables:

- **Natural Gas**: July 2017
  - WMS: 0
  - WFS: 0
  - Inspire Annex I: INSPIRE compliant end of 2017: 0
  - Inspire Annex II: INSPIRE compliant end of 2020: 0

- **Oil**: July 2017
  - WMS: 0
  - WFS: 0
  - Inspire Annex I: INSPIRE compliant end of 2017: 0
  - Inspire Annex II: INSPIRE compliant end of 2020: 0

- **Submarine cable and pipeline routes**
  - Telecommunication/Data cables: July 2017
    - WMS: DK, FI
    - WFS: DK, FI
    - Inspire Annex I: INSPIRE compliant end of 2017: 0
    - Inspire Annex II: INSPIRE compliant end of 2020: 0
  - High Voltage Cables: July 2017
    - WMS: DK, EE, FI
    - WFS: DK, EE, FI
    - Inspire Annex I: INSPIRE compliant end of 2017: 0
    - Inspire Annex II: INSPIRE compliant end of 2020: 0
  - Pipelines: July 2017
    - WMS: DK, EE, FI
    - WFS: DK, EE, FI
    - Inspire Annex I: INSPIRE compliant end of 2017: 0
    - Inspire Annex II: INSPIRE compliant end of 2020: 0

- **Underwater cultural heritage**
  - Underwater cultural heritage: July 2017
    - WMS: DK, FI
    - WFS: DK, FI
    - Inspire Annex I: INSPIRE compliant end of 2017: 0
    - Inspire Annex II: INSPIRE compliant end of 2020: 0
Availability of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and as network services.

<table>
<thead>
<tr>
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<th>WMS Countries with data in OGC WMS</th>
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<th>II: INSPIRE compliant end of 2018</th>
<th>III: INSPIRE compliant end of 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Administrative borders</td>
<td>National</td>
<td>Now</td>
<td>DK, EX, FI, NL</td>
<td>DK, EX, FI, NL</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Regional</td>
<td>Now</td>
<td>DK, EX, FI, NL</td>
<td>DK, EX, FI, NL</td>
<td>i</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Local</td>
<td></td>
<td>DK, EX, FI, NL</td>
<td>DK, EX, FI, NL</td>
<td>i</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Territorial waters</td>
<td>Now</td>
<td>DK, EX, FI, NL</td>
<td>DK, EX, FI, NL</td>
<td>i</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EEZ</td>
<td>Now</td>
<td>DK, EX, FI, NL</td>
<td>DK, EX, FI, NL</td>
<td>i</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Fishing areas</td>
<td>Fishery area (where BSA nation fish)</td>
<td>Now</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spawning and nursery areas</td>
<td></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Fishery area (where BSA nation fish) is expected to deliver INPIRE compliant dataset.
Availability of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and

Available from HELCOM map service
Now: already available July 2017: After HOLAS II is published

Category | Dataset | Available from HELCOM map service | WMS Countries with data in OGC WMS | WFS Countries with data in OGC WFS | Inspire Annex
---|---|---|---|---|---
Installations and infrastructures | Offshore wind farms | July 2017 | 2 | 1 | III
| Safety Zones / Construction Fields | July 2017 | 1 | 1 | III
| Platforms | July 2017 | 2 | 1 | III

INSPIRE compliant dataset

Interreg Baltic Sea Region
Availability of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and as network services:

- Downloadable as shapefile from the HELCOM Map Service
- OGC format
- When EU countries are expected to deliver INSPIRE compliant dataset
Availabilty of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and as network services.

<table>
<thead>
<tr>
<th>Dataset</th>
<th>Available from HELCOM map service</th>
<th>WMS Countries with data in OGC WMS</th>
<th>WFS Countries with data in OGC WFS</th>
<th>Inspire Annex</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2000</td>
<td>Now</td>
<td>2 FI, PL</td>
<td>1 FI</td>
<td>I</td>
</tr>
<tr>
<td>National MPA</td>
<td>Now</td>
<td>5 DK, FI, LIT, PL, SE</td>
<td>0</td>
<td>I or III</td>
</tr>
<tr>
<td>Important Bird Areas</td>
<td>July 2017</td>
<td>1 FI</td>
<td>0</td>
<td>I</td>
</tr>
<tr>
<td>Porpoise distribution</td>
<td>July 2017</td>
<td>0 FI</td>
<td>0</td>
<td>I</td>
</tr>
<tr>
<td>Bird migration routes</td>
<td>July 2017</td>
<td>1 FI</td>
<td>0</td>
<td>III</td>
</tr>
<tr>
<td>Bird wintering grounds</td>
<td>July 2017</td>
<td>1 FI</td>
<td>0</td>
<td>III</td>
</tr>
</tbody>
</table>

3.1 Administrative borders
- National: Now
- Regional: Now

Downloadable as shapefile from the HELCOM Map Service.

OGC format when EU countries are expected to deliver INSPIRE compliant datasets.
Availability of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and expected to deliver INSPIRE compliant dataset.
### Availability of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and as network services.

#### INPIRE compliant dataset

<table>
<thead>
<tr>
<th>Category</th>
<th>Dataset</th>
<th>Available from HELCOM map service</th>
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<th>WFS Countries with data in OGC WFS</th>
<th>Inspire Annex</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw material extraction areas</strong></td>
<td>Sand and Gravel</td>
<td>July 2017</td>
<td>2</td>
<td>1</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>Natural Gas</td>
<td>July 2017</td>
<td>0</td>
<td>0</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>Oil</td>
<td>July 2017</td>
<td>0</td>
<td>0</td>
<td>III</td>
</tr>
<tr>
<td><strong>3.7 Raw material extraction areas</strong></td>
<td>Sand and Gravel</td>
<td>July 2017</td>
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<td>Natural Gas</td>
<td>July 2017</td>
<td>0</td>
<td>0</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>Oil</td>
<td>July 2017</td>
<td>0</td>
<td>0</td>
<td>III</td>
</tr>
<tr>
<td><strong>3.8 Submarine cable and pipeline routes</strong></td>
<td>Telecommunication/Data cables</td>
<td>July 2017</td>
<td>2</td>
<td>1</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>High Voltage Cables</td>
<td>July 2017</td>
<td>0</td>
<td>0</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>Pipelines</td>
<td>July 2017</td>
<td>2</td>
<td>1</td>
<td>III</td>
</tr>
<tr>
<td><strong>3.9 Underwater cultural heritage</strong></td>
<td>Underwater cultural heritage</td>
<td>July 2017</td>
<td>2</td>
<td>0</td>
<td>I</td>
</tr>
</tbody>
</table>

*Note: The data includes EU countries where the information is available.*
### Availability of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and as network services.

**Downloadable as shapefile from the HELCOM Map Service**

- **OGC format**
- **when EU countries are expected to deliver INSPIRE compliant dataset**

#### Table: INSPIRE Compliant Data Availability

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<tbody>
<tr>
<td><strong>Submarine cable and pipeline routes</strong></td>
<td><strong>Telecommunication/Data cables</strong></td>
<td>July 2017</td>
<td>2</td>
<td>1</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DE, FI</td>
<td>FI</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>High Voltage Cables</strong></td>
<td>July 2017</td>
<td>3</td>
<td>1</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE, DE, FI</td>
<td>FI</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Pipelines</strong></td>
<td>July 2017</td>
<td>3</td>
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</tr>
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<td>DE, EE, FI</td>
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<td>2</td>
<td>1</td>
<td>III</td>
</tr>
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<td></td>
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<td>DE, H</td>
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<tr>
<td><strong>Submarine cable and pipeline routes</strong></td>
<td><strong>Telecommunication/Data cables</strong></td>
<td>July 2017</td>
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<td>1</td>
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<td>DE, H</td>
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<td></td>
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<td></td>
<td>EE, DE, FI</td>
<td>FI</td>
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<tr>
<td></td>
<td><strong>Pipelines</strong></td>
<td>July 2017</td>
<td>3</td>
<td>1</td>
<td>III</td>
</tr>
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<td></td>
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<td></td>
<td>DE, EE, FI</td>
<td>FI</td>
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<tr>
<td><strong>Underwater cultural heritage</strong></td>
<td><strong>Underwater cultural heritage</strong></td>
<td>July 2017</td>
<td>2</td>
<td>1</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DE, H</td>
<td>H</td>
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</tbody>
</table>
Availability of INSPIRE data

Relation to the INSPIRE Directive, and their availability in general and as network services.

- downloadable as shapefile from the HELCOM Map Service
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Challenges

- most countries do not have yet data available in WMS or WFS.
- Cross-border issues
  - data sets are not harmonised
  - Metadata aspects - different languages
- The availability of linear infrastructures, fixed installations and shipping lanes open format datasets, focus of this project, is not optimal (ending 2019).
  - According to INSPIRE Installations and infrastructures datasets should be ready in each EU country by the end of 2020 since they belong to Annex III
  - The same applies to the category Submarine cables and pipeline routes and Maritime transport routes and traffic flows.
BASEMAPS – Baltic Sea Map Service

Prototyping process

- Web based application supporting a broad range of devices and platforms
- Based on open components and standards
- Distributed database systems
- User friendly to support several user communities – often with little GIS experience
How to proceed

• keep following closely the data availability in each country
• Meanwhile, project partners can work with the data provided by HELCOM including the newly published data from the HOLAS II project.
• Taking these conditions into account when building the new system – a pragmatic approach
Conclusions

• Most countries still do not have datasets available in open standard format necessary for implementing a MSDI (not even one single dataset covered by all countries).
• WMS is available in more countries than WFS since the latter is much more difficult to implement and complete support in commercial products is still lacking.
• The availability of linear infrastructures, fixed installations and shipping lanes open format datasets, focus of this project, is not optimal (ending 2019).
• Data is available due other project
• HELCOM can provide data from July 2017 thanks to the HOLAS II project).
• HELCOM can already provide shipping traffic density maps since they were the focus of a previous project called Baltic Scope. HELCOM processed 10 years of raw AIS data
Acknowledgements

This part of the Baltic LINes INTERREG project has been carried out as in close collaboration among partners from the Finnish Environment Institute (Lena Hallin-Pihlatie), the Helcom Secretariat (Manual Frias, Florent Nicolas and Andžej Milos), and Aalborg University (Henning Sten Hansen and Lise Schrøder).

Furthermore the work built on results from Helcoms HOLAS II project and working groups as HELCOM-VASAB Baltic Sea Region MSP Data Expert Sub-Group the Baltic Sea - North Sea Marine Spatial Data Infrastructure (MSDI) Working Group as well as project other Interreg projects as the Baltic Scope Project and the ongoing Baltic Integrgrid project.
Baltic LINes – partners
Thank you for your attention

Mail: lisesch@plan.aau.dk