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Land and Sea Model

E-Navigation in the North Sea

Maritime Traffic Monitoring

Coastal Zone Climate Change

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BLAST – facts and figures

- A regional project under EU's Interreg IVB North Sea Region Programme
- Project period 2009-2012
- Total budget approximately € 6,300,000
- 17 Partners from 7 North Sea countries
- Public, private and university sectors

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BLAST – partners

- **Norwegian Hydrographic Service (lead partner)**
- **Norwegian Coastal Administration**
- **National Survey and Cadastre - Denmark**
- **Danish Coastal Authority**
- **DTU Space (National Space Institute) - Denmark**
- **Local Government Denmark**
- **Aalborg University - Denmark**
- **Federal Maritime & Hydrographic Agency - Germany**
- **Jeppesen GmbH - Germany**
- **Delft University of Technology, Faculty of Aerospace Engineering - the Netherlands**
- **T-Kartor AB - Sweden**
- **Malardalen University - Sweden**
- **Natural Environment Research Council - United Kingdom**
- **Seazone Solutions Ltd. - United Kingdom**
- **UK Hydrographic Office**
- **Agency for Maritime and Coastal Services – Belgium**

- Hjoerring Municipality - Denmark (sub-partner)
- Lolland Municipality - Denmark (associated partner)
- Port of Oslo - Norway (associated partner)
- Swedish Maritime Administration (associated partner)
- Icelandic Maritime Administration (associated partner)
- Kristiansand Municipality - Norway (associated partner)
- National Environmental Research Institute, Aarhus University – Denmark (associated partner)

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Why Bringing Land and Sea Together?

- North Sea nations handle geospatial data independently
- Little integration of land and sea data
- Lack of collaboration between countries
- Increasing pressure on coastal areas
- Threat of climate change and accelerated sea level rise

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Project aims

- Provide new and innovative solutions for the harmonisation and integration of marine and terrestrial geospatial data.
- Improve maritime safety and integrated coastal zone management and planning in the context of climate change.

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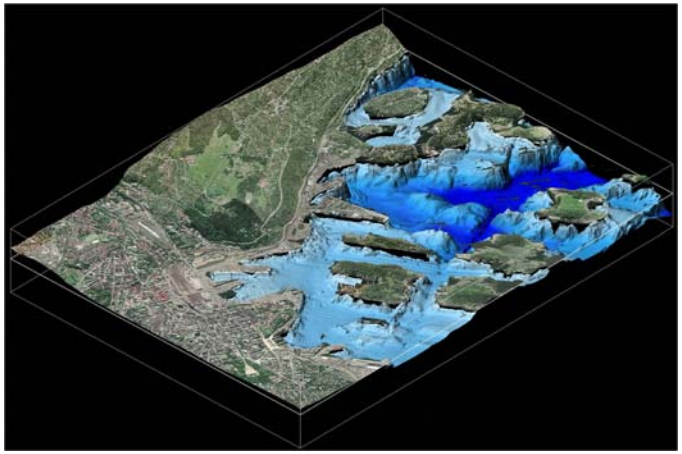
Project characteristics

- Combining skills
- Network of organisations
- Application of modern project philosophy
  - Land and sea approach
  - Transnational approach
  - International standards
  - Service-based architectures
  - Cooperation
  - Public results



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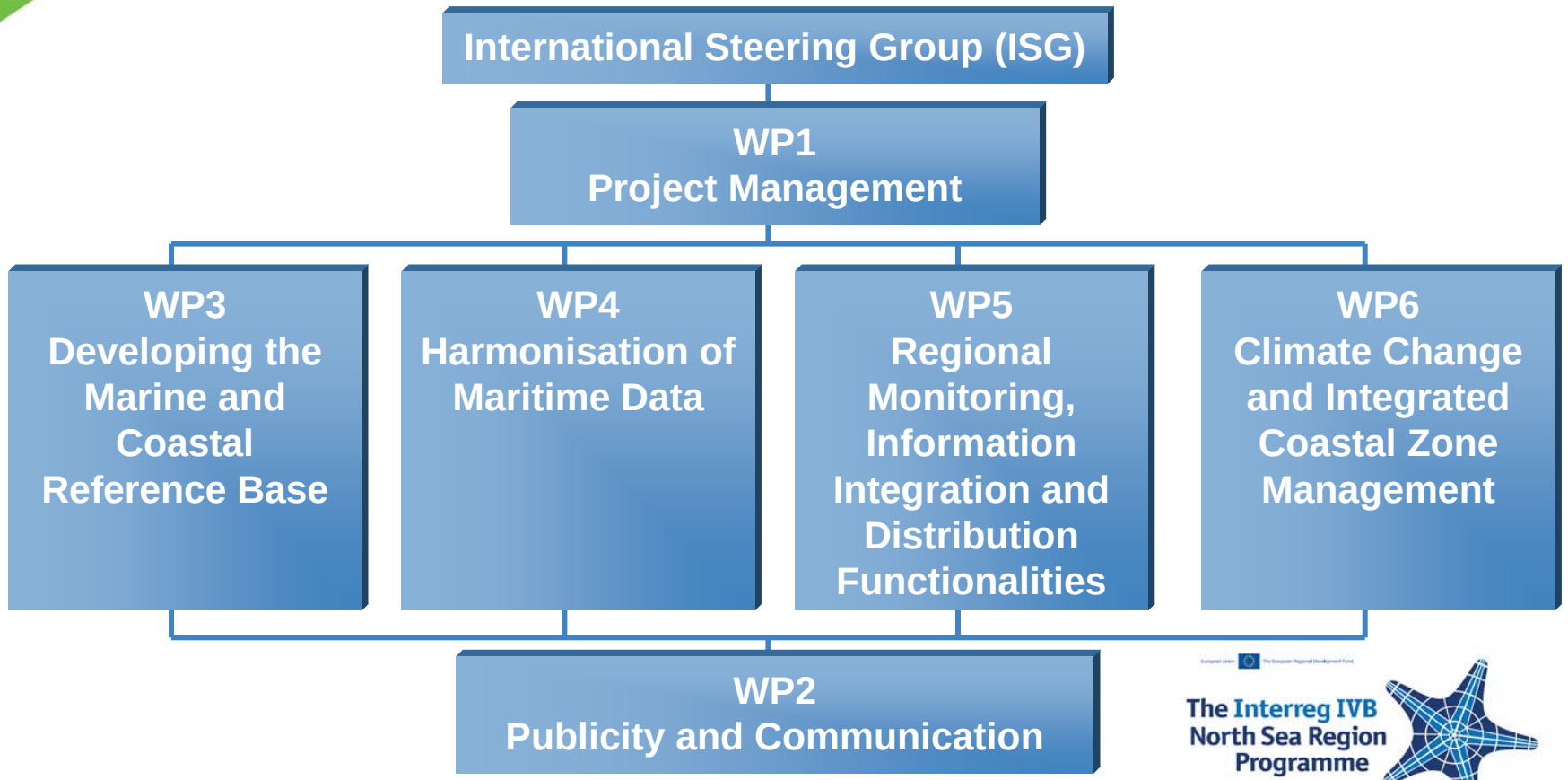
Project organisation



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WP3: Developing the Marine and Coastal Reference Base

- Develop a product specification including maritime and terrestrial features.
- Develop a new vertical datum for the North Sea Region
- Extensive testing of new airborne laser techniques in the coastal zone.
- Deploy, update and test reference base against user requirements.

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WP3: Rationale: Marine & Coastal GI

- New Technical Requirements
  - Bathymetry & hydrographic features replaced by:
    - Vertically Corrected & Integrated Elevation
    - Harmonised Land & Sea Topographic Mapping
- New user groups
  - Marine Spatial Planning (MSP)
    - e.g. Climate Change and Sea Level Rise
  - Situational Awareness
    - e.g. Marine Traffic Monitoring
- New requirements
  - Multidisciplinary Scientific Use in MSP
  - Cross border / Trans-national Applications
    - e.g. North Sea Energy Supply & Management

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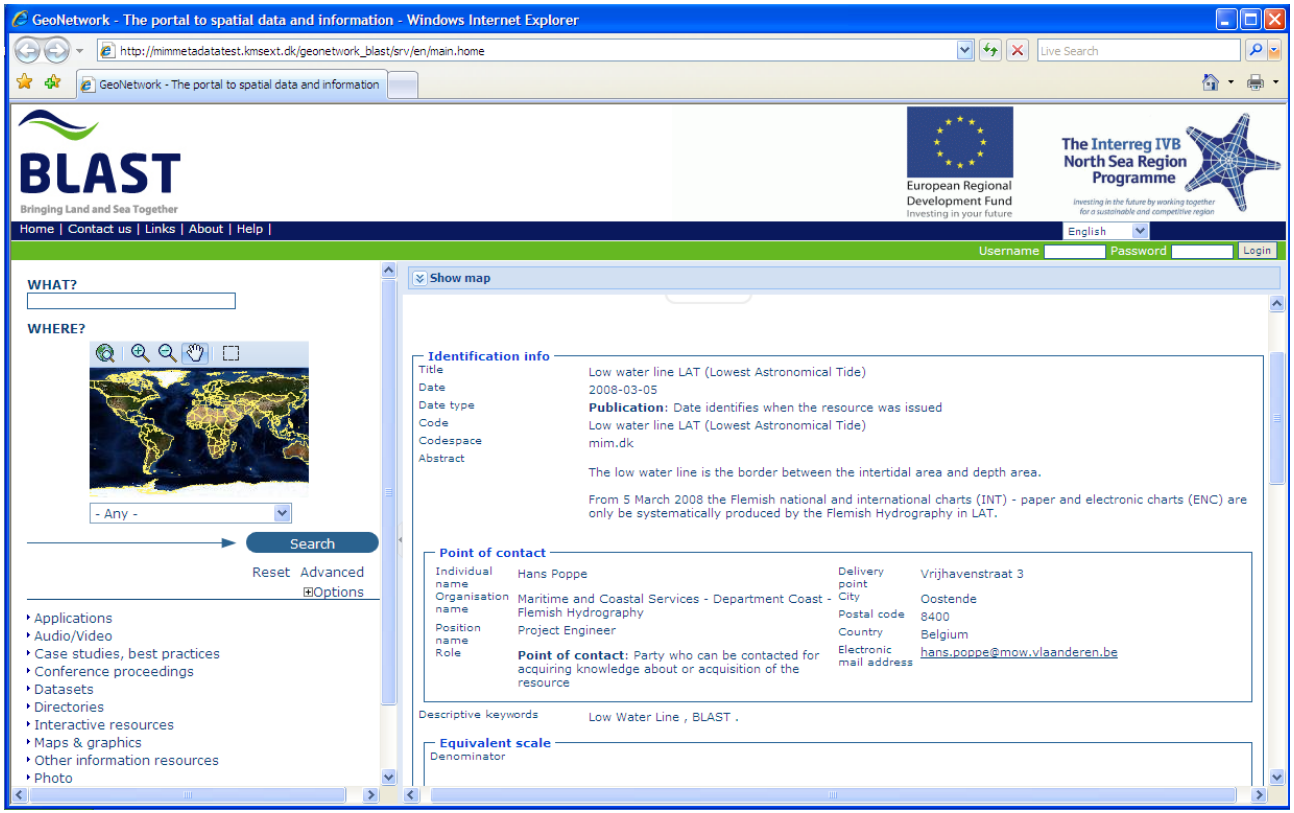
WP3: Metadatabase for BLAST



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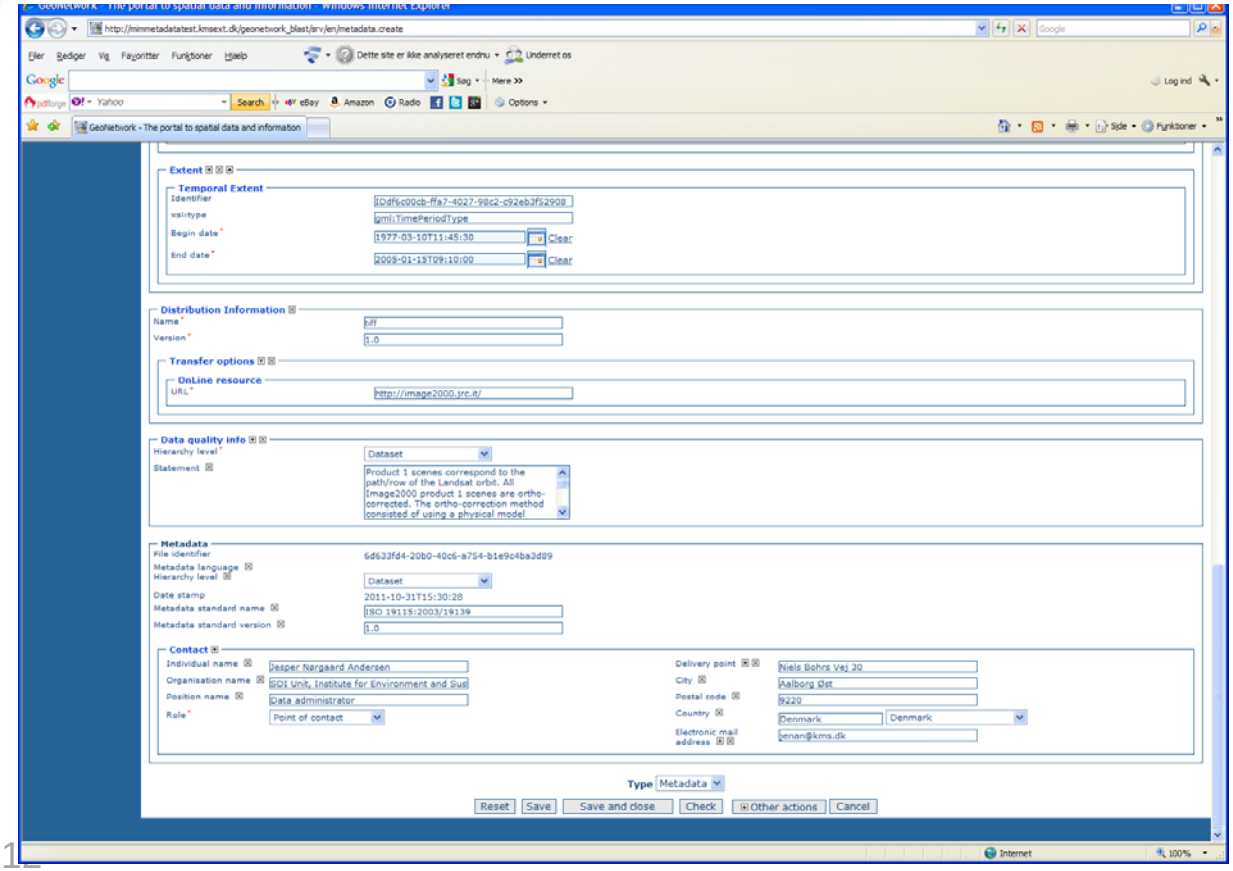
WP3: Metadatabase for BLAST



- Contents of the metadatabase
- Methods for adding metadata
- Integration of metadata in local solutions

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WP3: Metadatabase for BLAST - Benefits

- Single shared collection of all BLAST data – available to all BLAST partners and WPs
- ISO & INSPIRE Compliant
  - Metadata input by data owners
  - Metadata maintenance by data owners
- Built on Open-Source Technologies
- Developed according to best practice and current standards
- Adaptable to future use requirement

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WP3: Vertical Reference Frames (VRF)

- VRF (or datums) are realized relative to a reference surface.
  - National realizations of a vertical datum can differ in the definition and in the choice of a reference surface, which can cause cross-border inconsistencies.
  - In WP3 a transformation tool is developed that links the global and European datums (both marine and land) to the regional and national realizations.
- Based on 12 years data from satellite altimetry (enhanced and modified near the coast), a regional mean sea level model (MSL) for the North Sea area, and a lowest astronomical tide model (LAT) is constructed

- Other vertical datums are the global and the regional geoids (EGM2008, EGG2007), the European height datum (EVRF2007), and linked to the main national land and marine datums in different countries.

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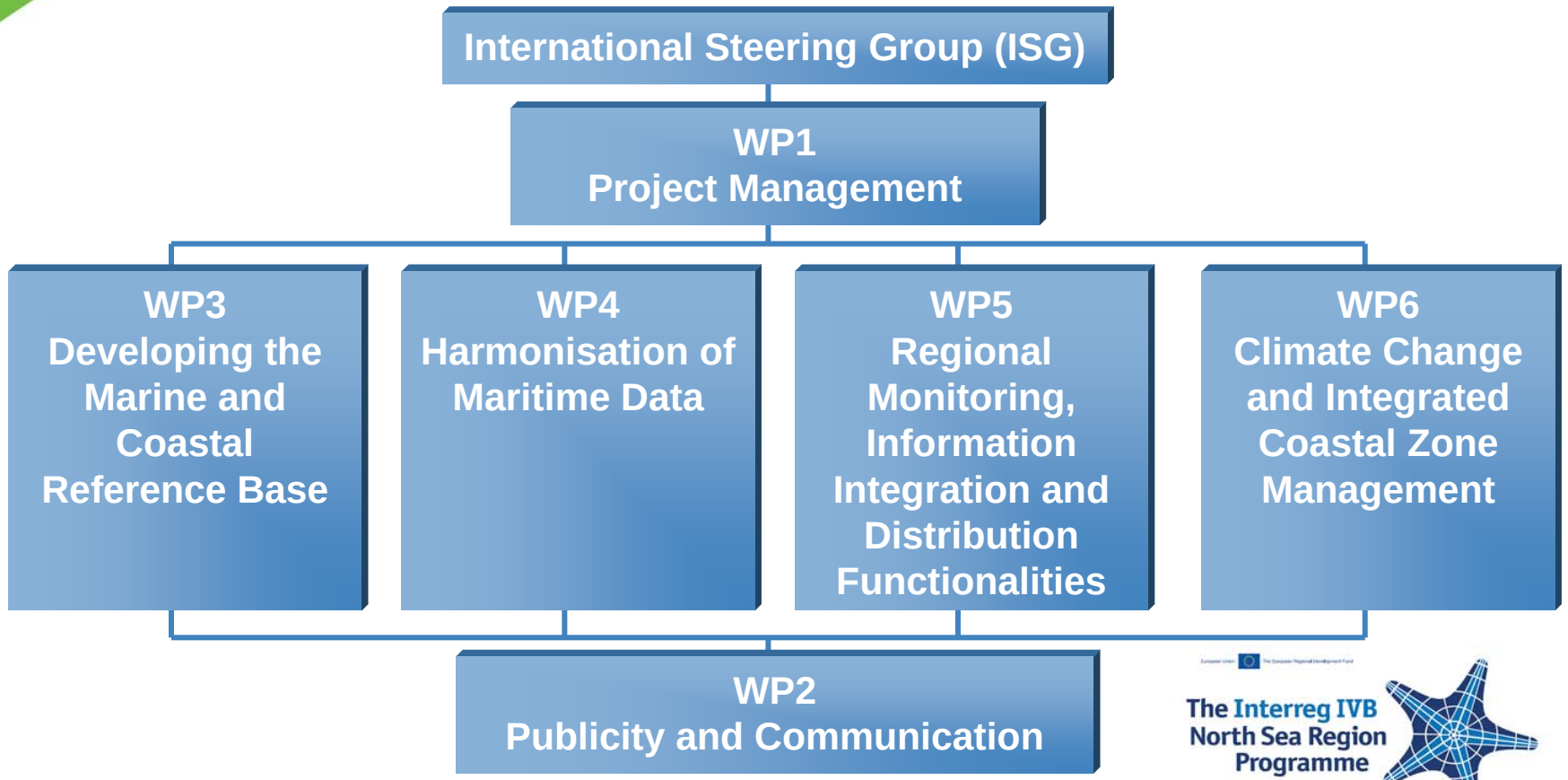

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WP4: Harmonisation of Maritime Information

- Develop a regional basis for harmonisation of maritime information products, give input to IHO.
- Demonstrate and evaluate the use of satellite data and 3D visualization/models in navigational aid displays.
- Demonstrate a web-based port and coastal data collection system.
- Demonstrate digital mariner's routing guide for the North Sea.

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WP4: Rationale

- Maritime information is distributed and presented in a non –standardised way
  - In ports
  - Transnationally

- The latest GIS-technology and state-of-the-art GI are rarely used in navigational aids.

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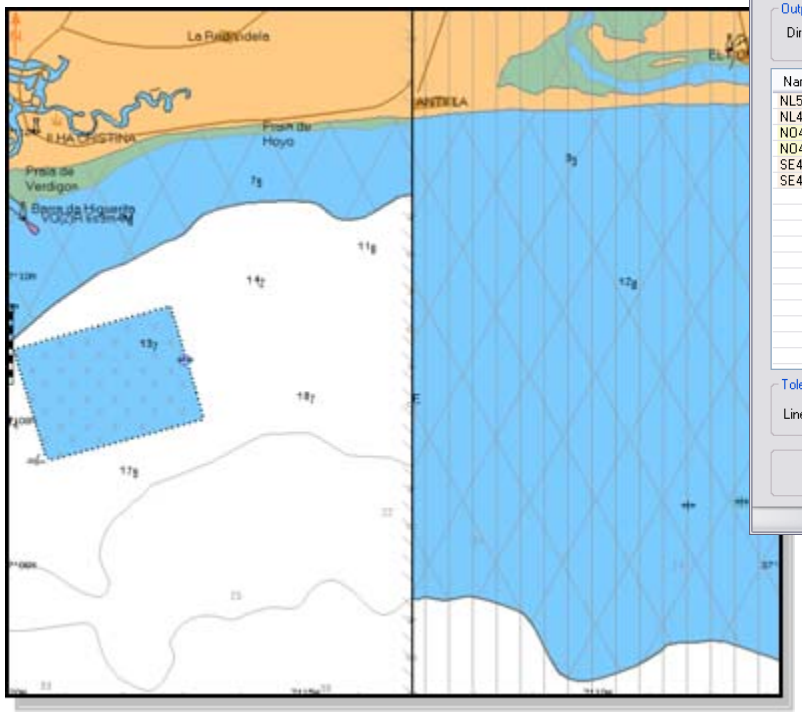
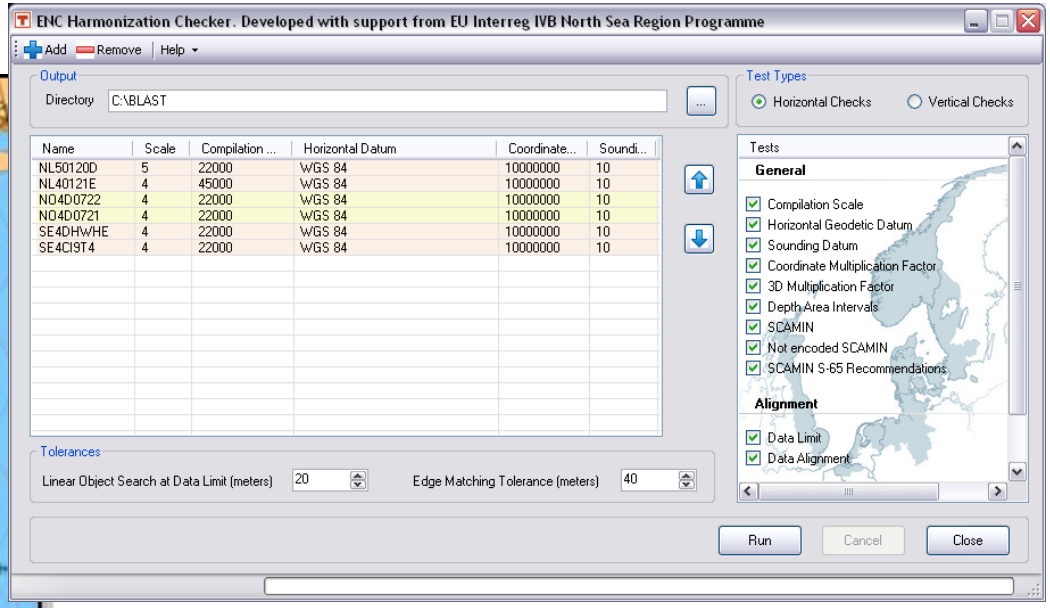
WP4: ENC Harmonisation





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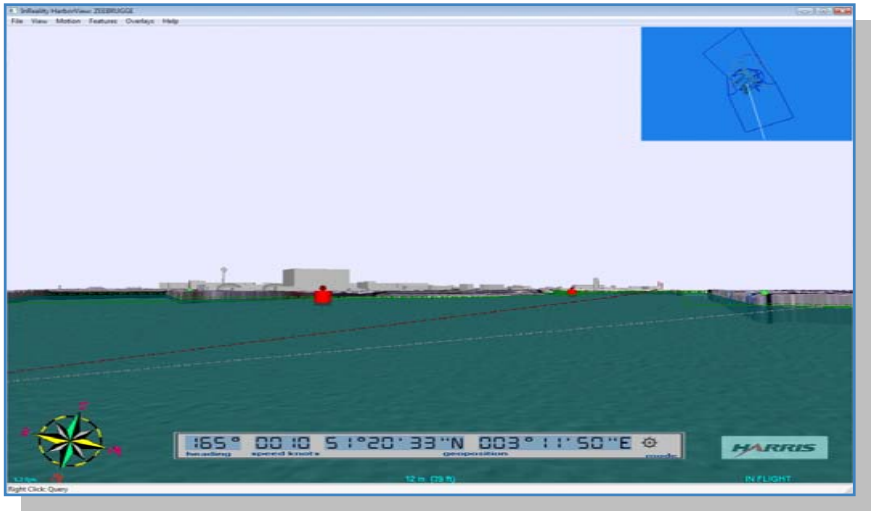
WP4: 3D Visualisation and Navigation



3D model of Zeebruge harbour – tested by navigators in April, 2011

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WP4: Maritime Data Collection System

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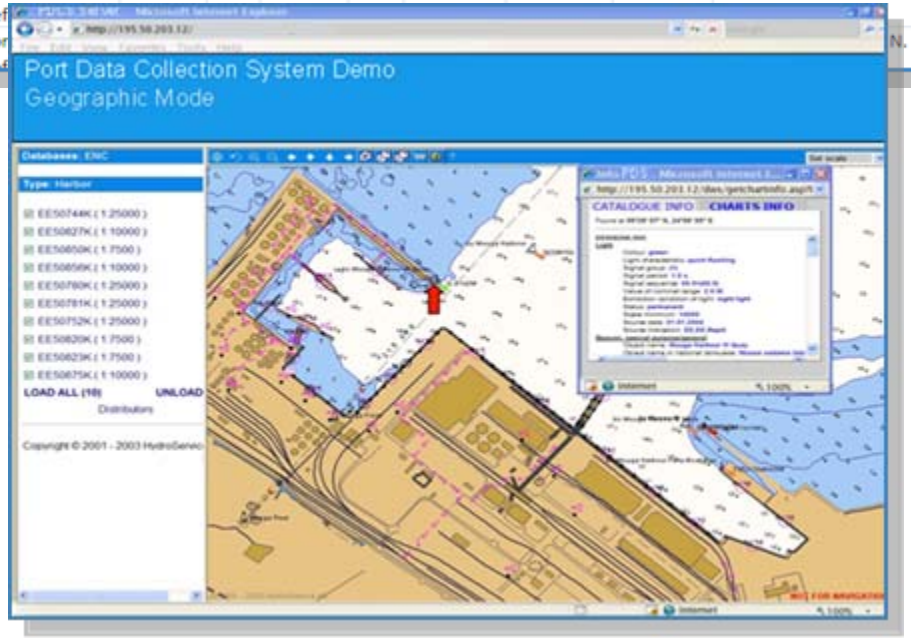
10050 Commerce Square, Micklefirth	c/o Port of Micklefirth, 500 Rimon Bay Road, Micklefirth	Yes	No	No	220	Jussland Cruise Lines	1/10/2010	1/10/2010	Calva Island Light was observed to be unlit at 2015 hrs. LT on January 10 2010.	h.milo@ju	+999 4539	H Milo	SS Proteus	32.3690 S	61.0170 E
200 Main Street, Micklefirth	c/o Port of Micklefirth, 500 Rimon Bay Road, Micklef								Charted depth at this location is 7m but echo sounder reported depth of 3m at high tide	t.roberts@	+999 4539	Theodore	MV Herrin	32.2340 S	61.1020 E
2319 Museum Street, Micklefirth	c/o Por								N. mole at						



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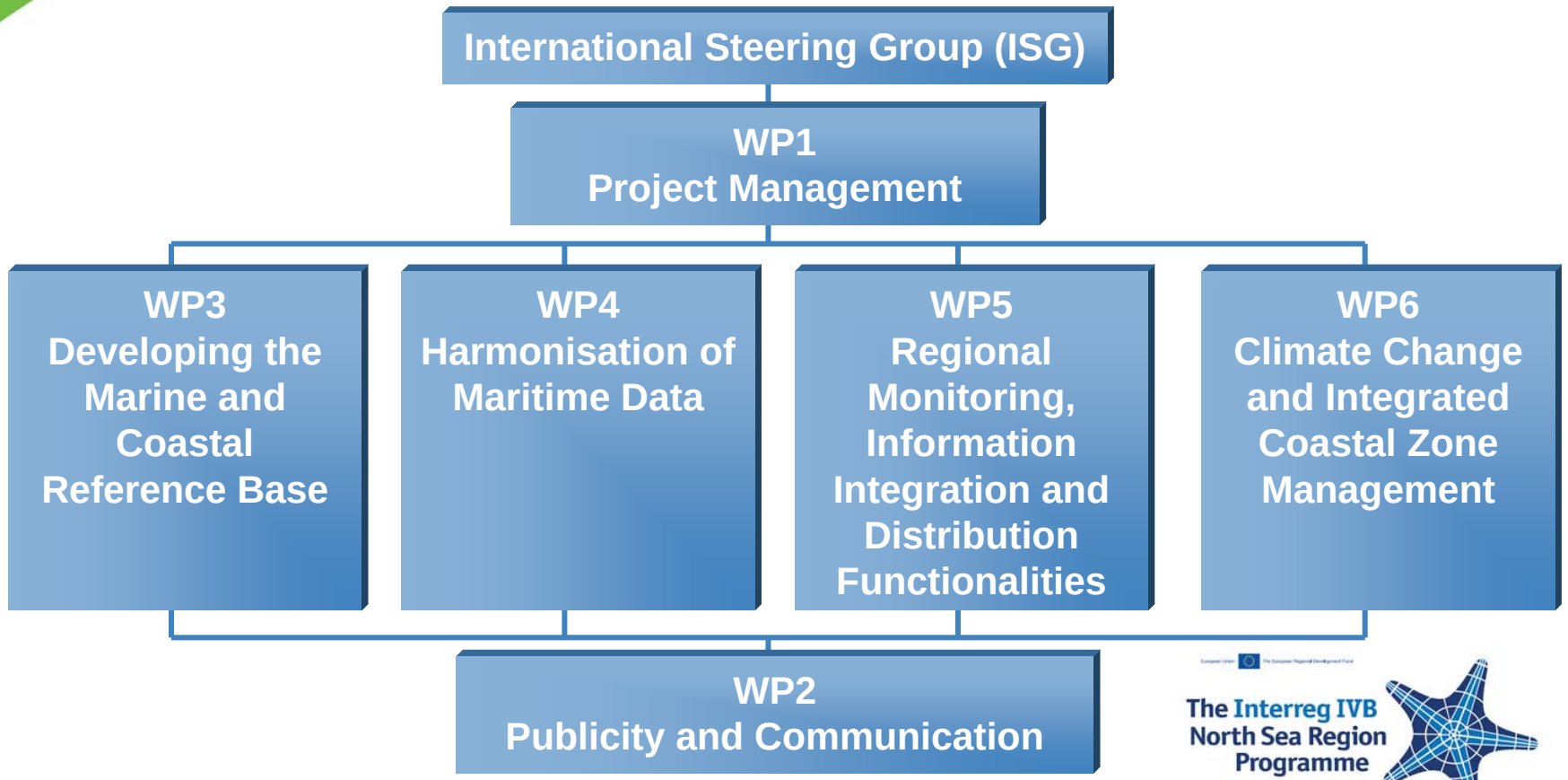

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WP5: Regional Monitoring, Information Integration and Distribution Functionalities

- Design and develop a regional maritime traffic monitoring platform for the North Sea region.
- Harmonise maritime traffic information formats in the region, add new formats where needed.
- Harmonise regional maritime traffic information with SafeSeaNet, propose new functionalities.
- Develop a network and server platform for development and demonstration.

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WP5: Rationale

- GI is rarely used in the operating traffic monitoring systems.
- Limited amount of information is provided by the existing services.
- There is a need for harmonisation of information between different operating traffic monitoring systems.
- Wider range of service interfaces for traffic info is required

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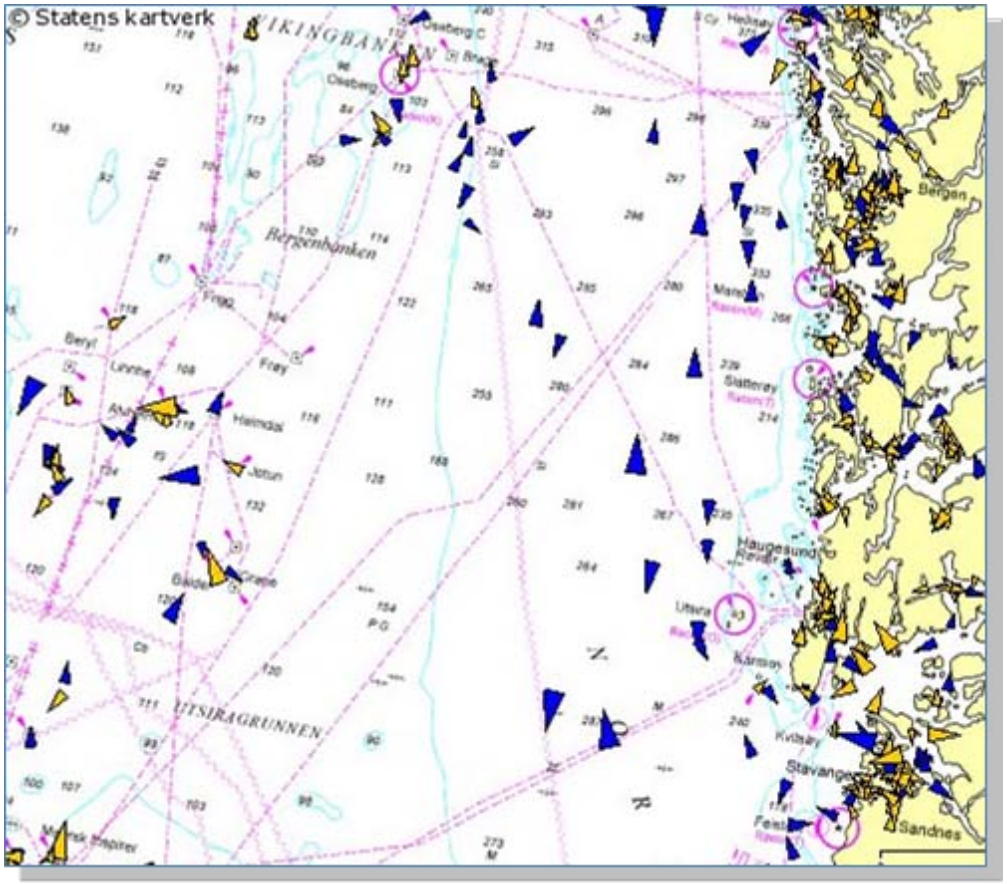
WP5: AIS Traffic Monitoring



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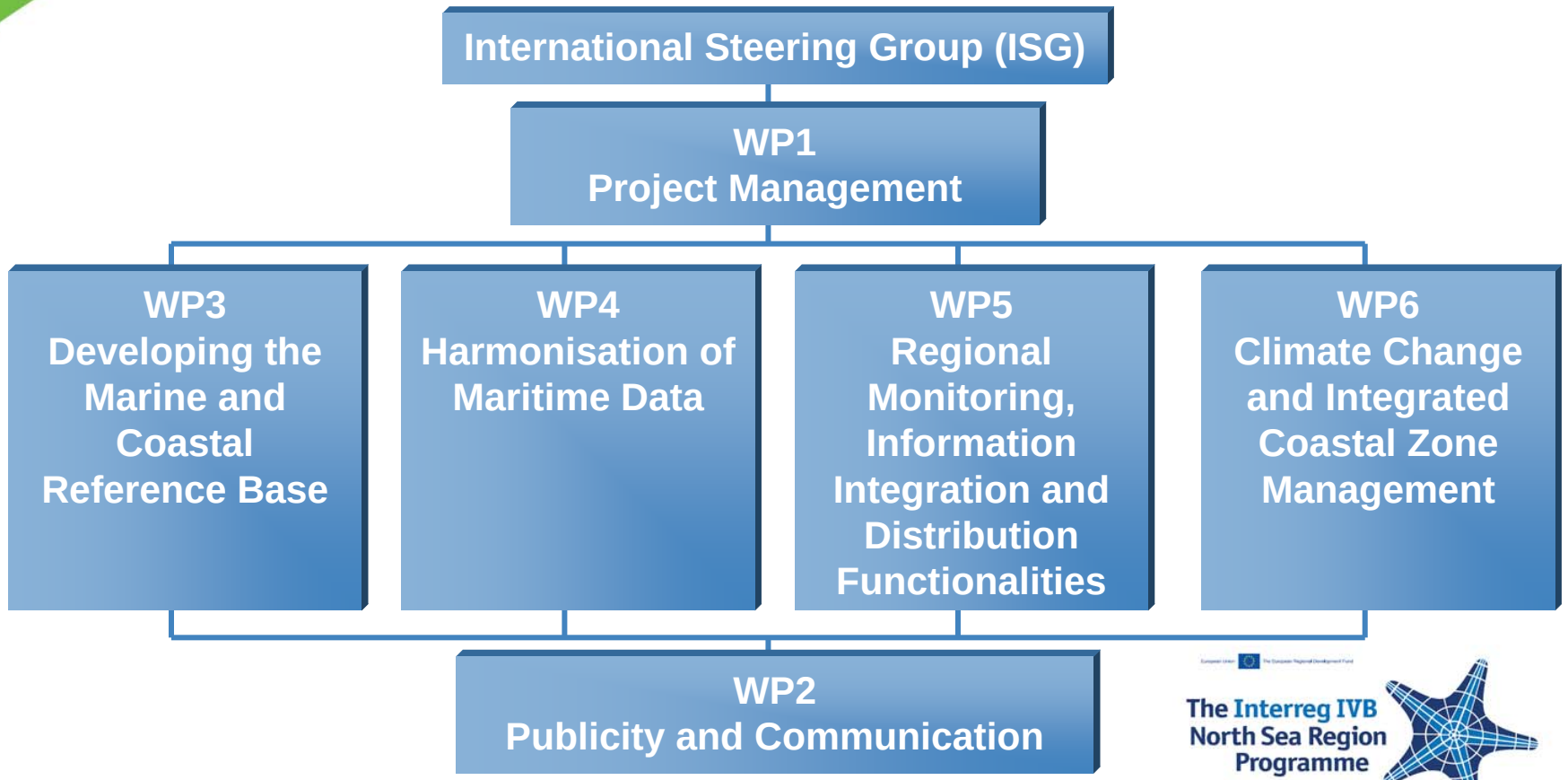

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WP6: Climate Change and Integrated Coastal Zone Management (ICZM)

- Analyse and develop transnational concepts for ICZM design
- Develop a decision-support framework for ICZM in the context of climate change.
- Deploy, update and test the decision-support system in practical planning contexts in different municipalities.

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WP6: Rationale

- Climate change challenges
  - Adaption and mitigation scenarios
- Continuous conflict between several stakeholders in the coastal zone
- Lack of transnational ICZM&P concepts
- Strong needs for harmonised GI for ICZM&P purposes

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WP6: Climate Change Adaptation Scenario

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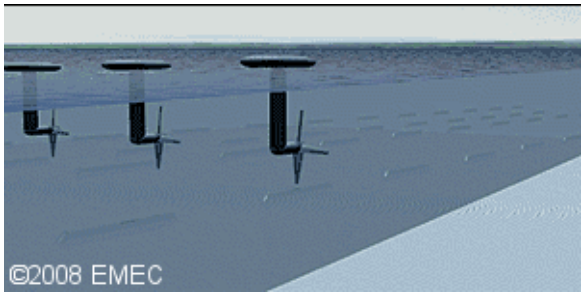
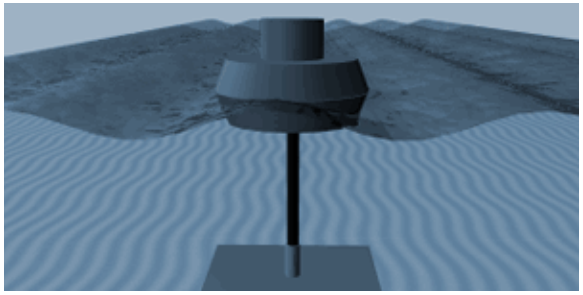
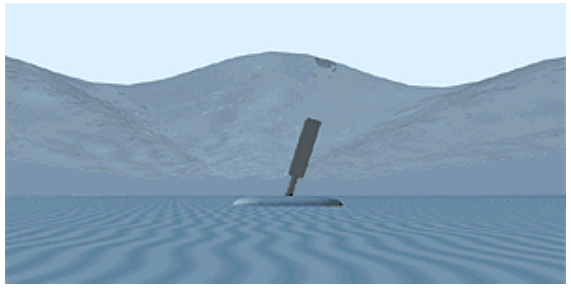
WP6: Alternative Energy Mitigation Scenario







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BLAST is supporting a clean, safe, attractive and sustainable future North Sea region.

Thank you for your attention.

www.blast-project.eu

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