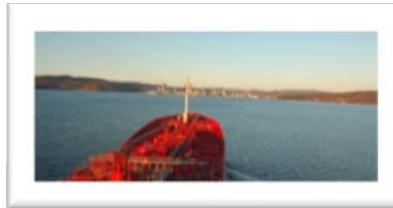


## Bringing Land and Sea Together



Jens Schröder-Fürstenberg  
BSH, Germany

## Background

- Technological development
- New user groups
- 2008 – Danish National Survey and Cadastre
  - Improve cooperation between hydrographic offices in the North Sea region
- Other organisations included
- Land and climate change aspects added
- Project approved summer 2009 by Interreg IVB
  - Norwegian Hydrographic Service lead partner

## What is BLAST?

- A regional project under the Interreg IVB North Sea Region Programme
- Project period: 2009-2012
- Total budget: 6.3 million €
- 16 main partners, one sub-partner and six associated partners from seven countries around the North Sea:
  - Governmental organisations
  - Private companies
  - Universities

## Overall Aim:

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



European Union  The European Regional Development Fund

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Programme**



*Investing in the future by working together  
for a sustainable and competitive region*

## Network of Organisations

- Mapping Agencies
- Hydrographic Offices
- Coastal administrations
- Geological surveys
- Universities
- Local communities
- Private companies





WP3 Land and Sea Model



WP4 Navigating the North Sea



WP5 Maritime Traffic Harmonisation

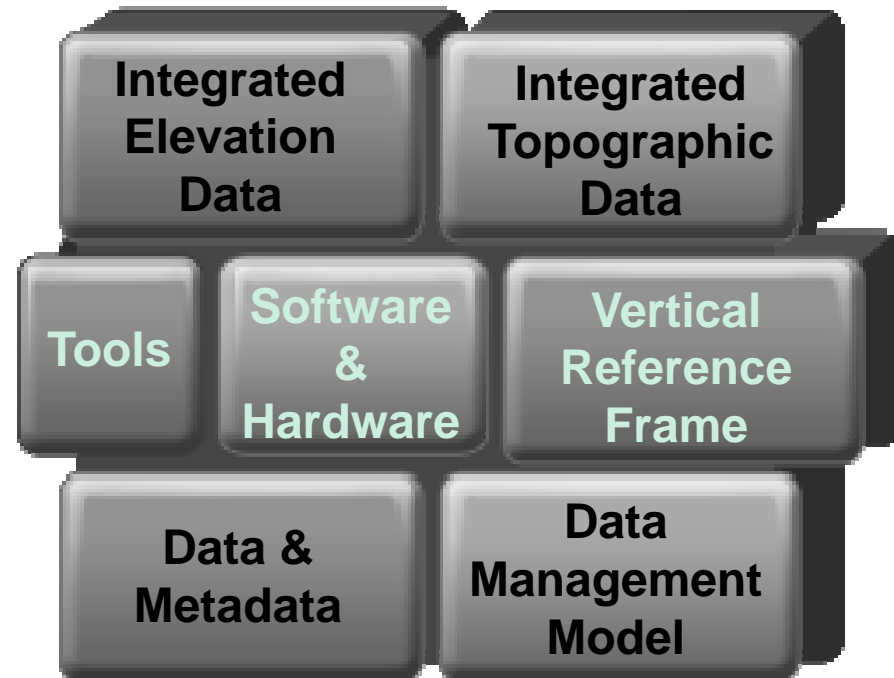


WP6 Climate Change in the Coastal Zone

Four BLAST work packages

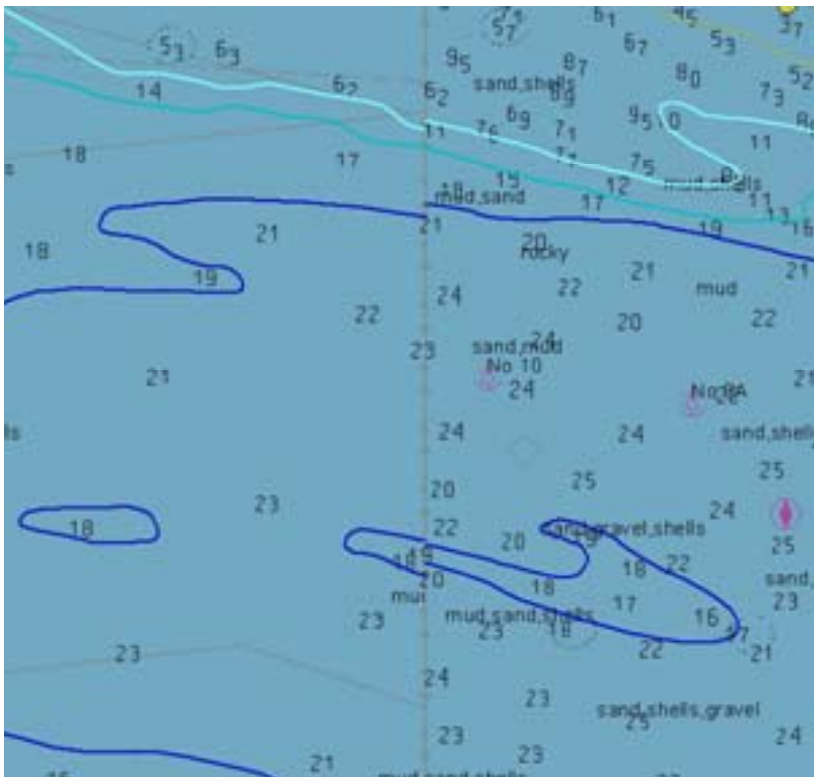
## WP3 Contents

What are the building blocks for an  
Integrated Land-Sea  
Base Reference Map?



## Edge matching features across boundaries

Matching geometries from equivalent  
features across ENC boundaries





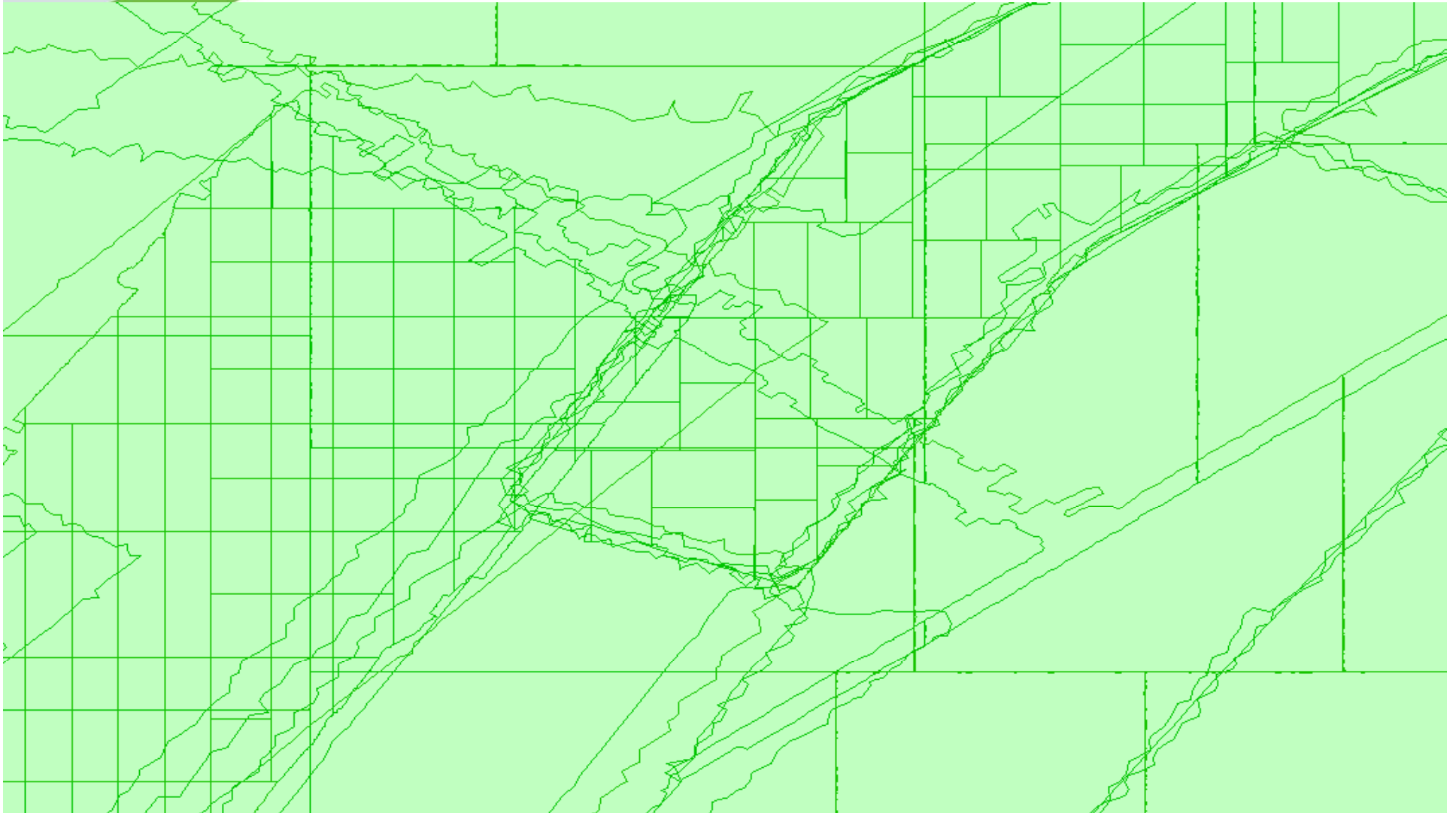


**BLAST**

Bringing Land and Sea Together

Building Block: *Integrated Elevation Surface*

## Survey deconfliction - *before*



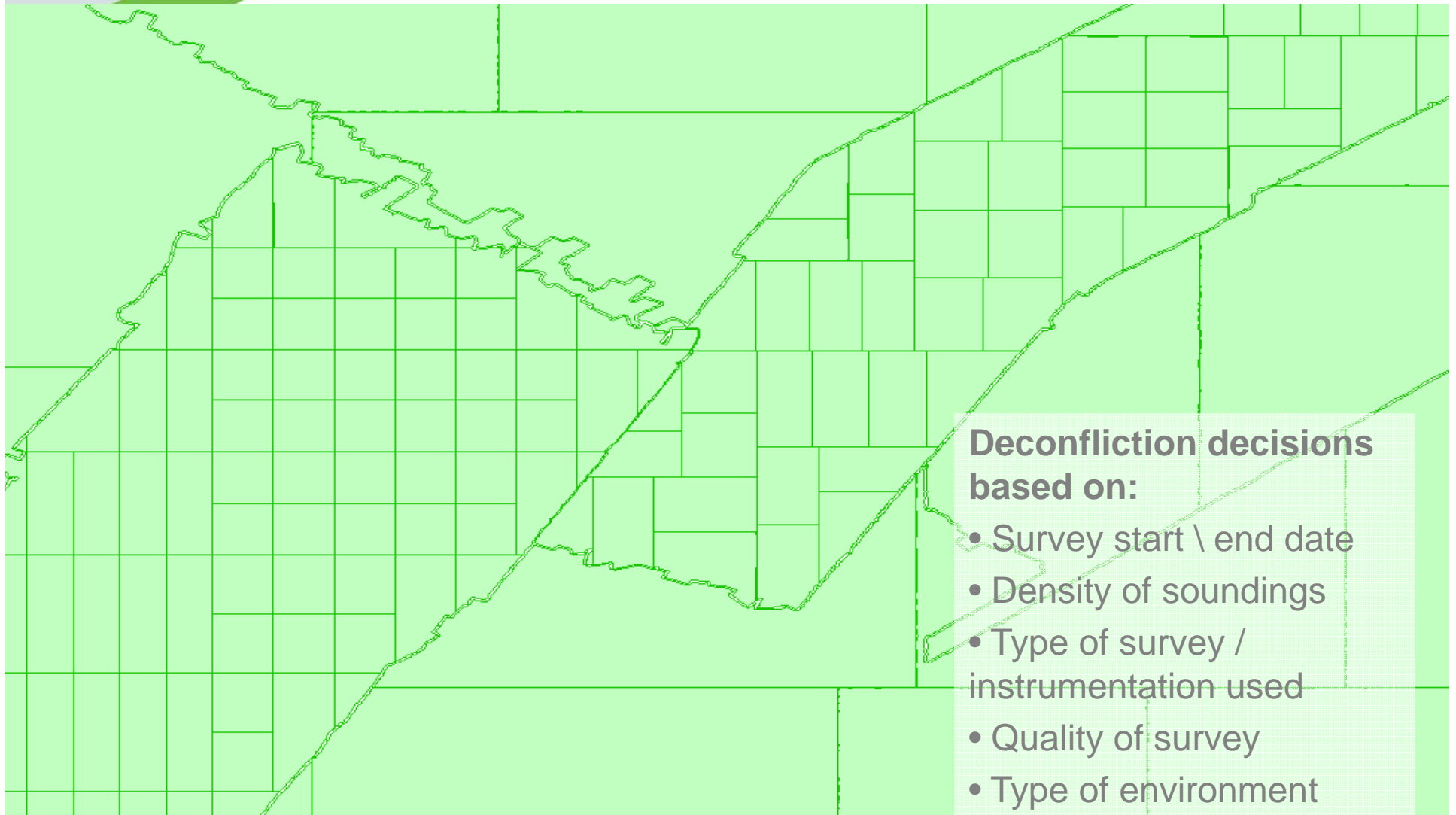


**BLAST**

Bringing Land and Sea Together

Building Block: *Integrated Elevation Surface*

## Survey deconfliction - *after*



### Deconfliction decisions based on:

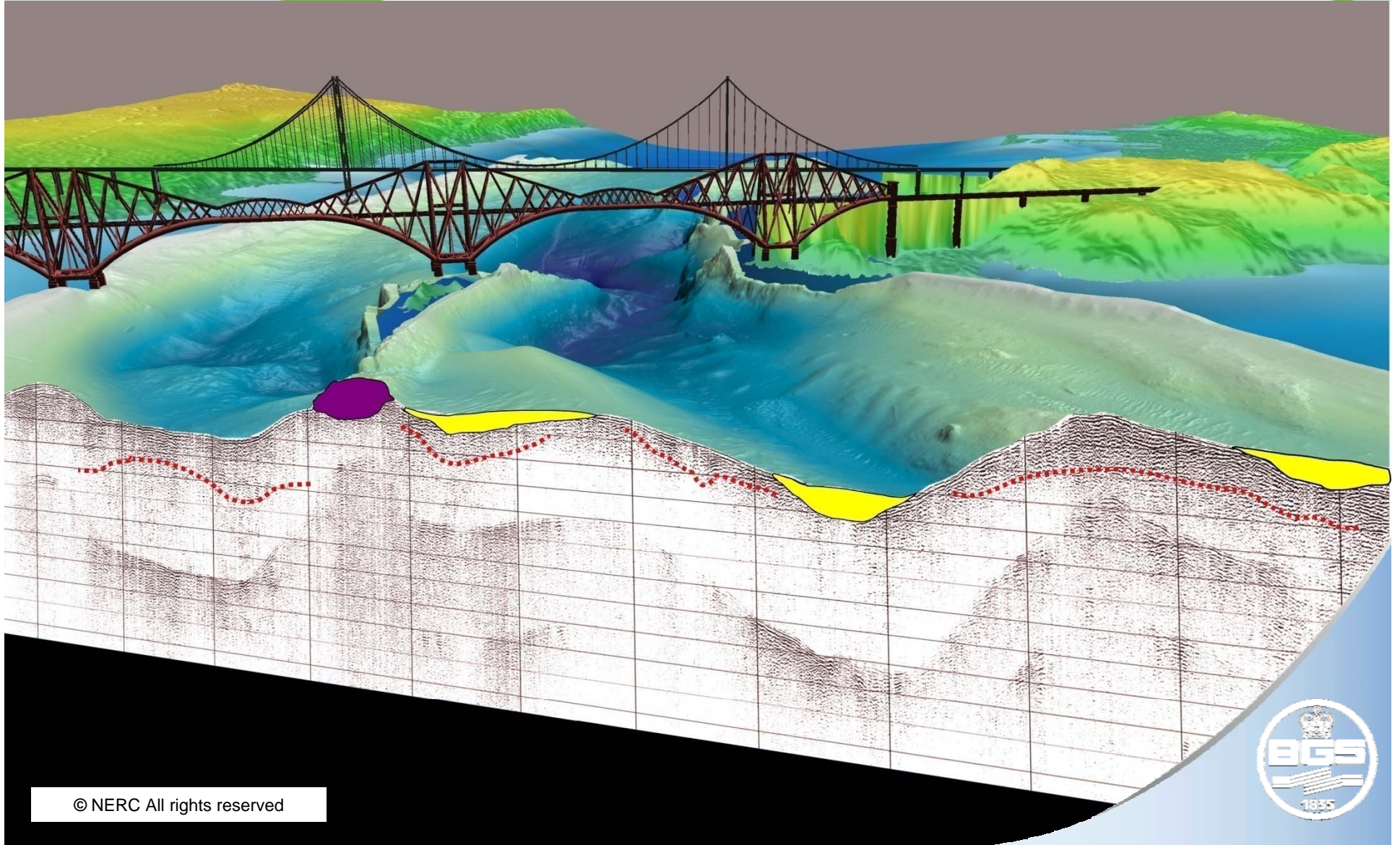
- Survey start \ end date
- Density of soundings
- Type of survey / instrumentation used
- Quality of survey
- Type of environment



# BLAST

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Building Block: *Integrated Geology Layer*



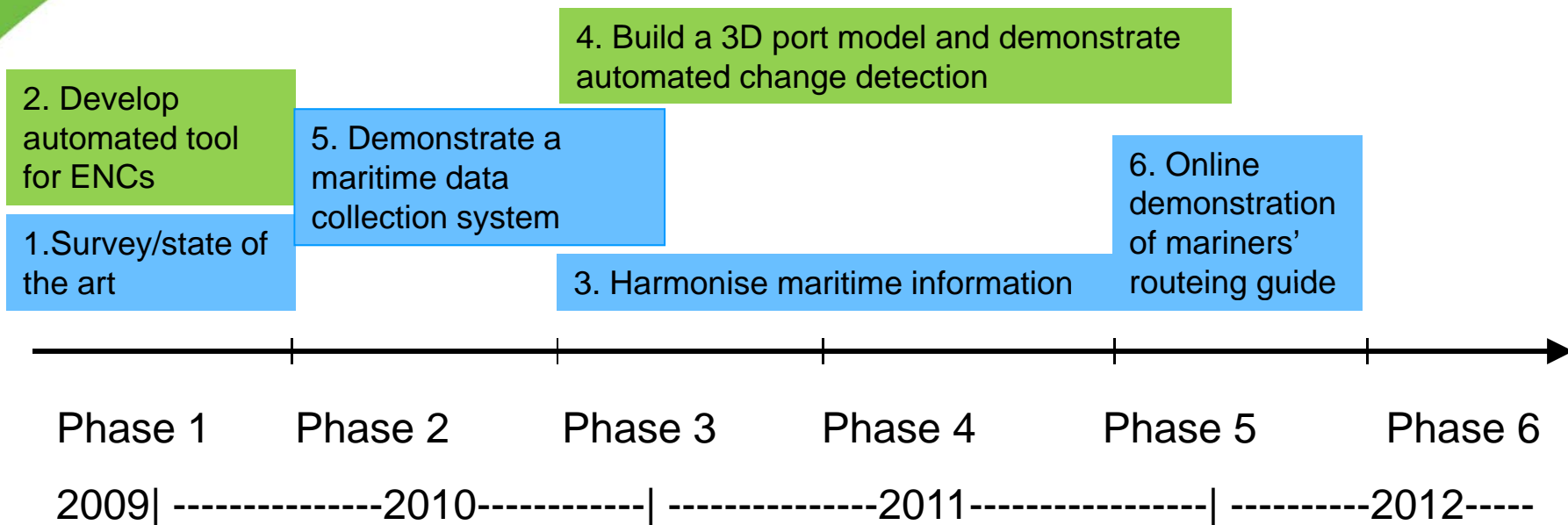
© NERC All rights reserved

## WP4 – Main objectives

- 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
- Automatic change detection of topographic ENC features in harbours
- Demonstrate a web-based maritime data collection system
- Demonstrate digital Mariners' Routeing Guide for the North Sea



## WP4 time line and activities



## WP4/Act 2 – Develop an automated tool for ENC's checks

- HOs produce valid ENCs according to S57 Product Specification
- Inconsistencies in the encoding practices for ENCs exist between Hydrographic Offices
- This leads to differences in displayed information when used in ECDIS
  - This happens particularly where ENCs from different producers are adjacent in the display.
- Inconsistent display makes the mariner mistrust the data.



## Inconsistent ENC Coding

- PRIMAR Stavanger and IC-ENC Expert working group recommendations has been included in IHO S65
- Baltic Sea Hydrographic Commission working group (BSHEWG) presented a report in June 2008 on the findings of an analysis of the situation in the Baltic Sea
- BSHEWG recommendations has contributed to the recent revision of S65





# BLAST

Bringing Land and Sea Together

# SOME EXAMPLES

European Union  The European Regional Development Fund

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for a sustainable and competitive region*

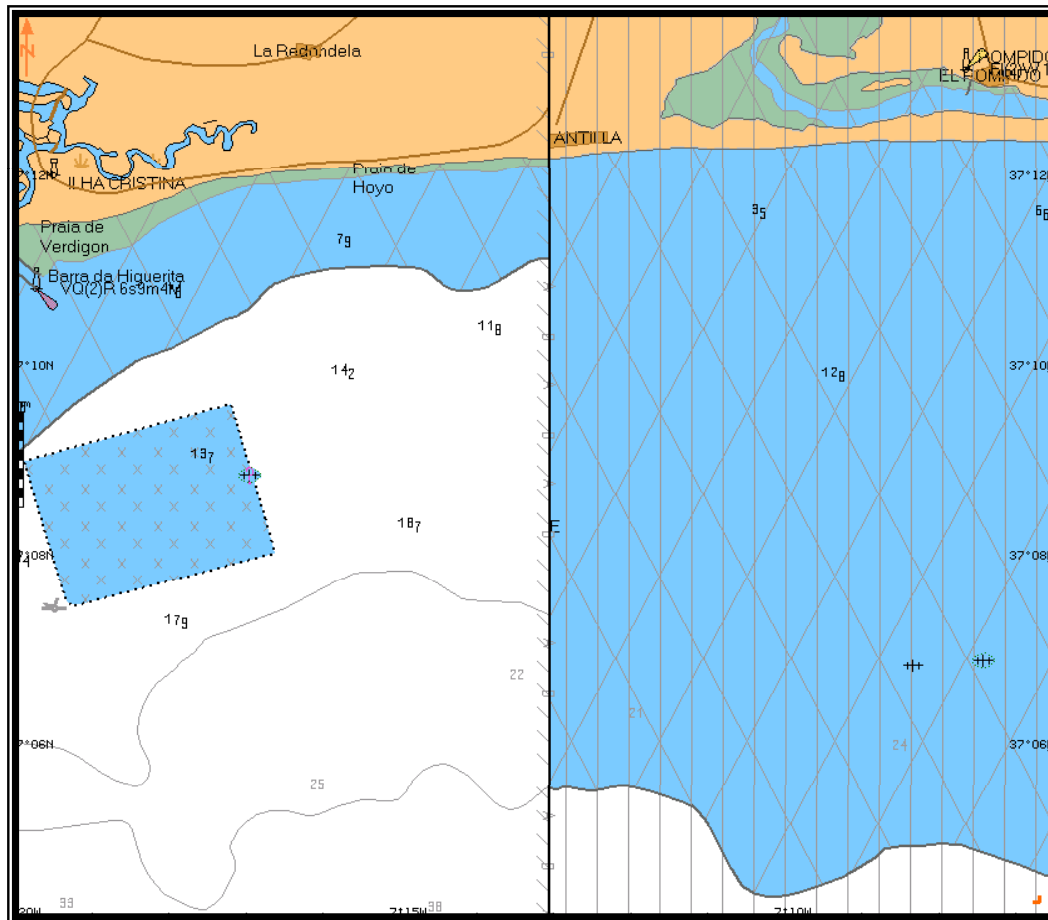




# BLAST

Bringing Land and Sea Together

## Contour Intervals



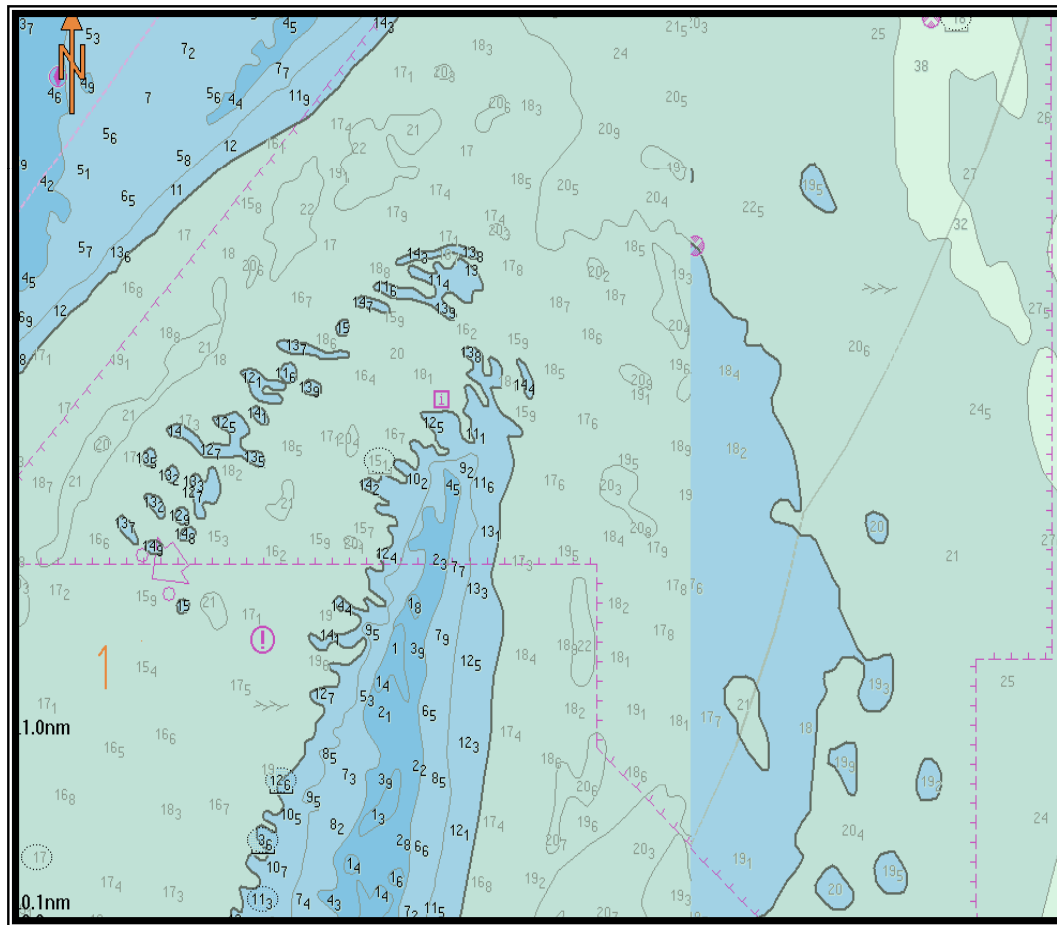
European Union The European Regional Development Fund

**The Interreg IVB  
North Sea Region  
Programme**

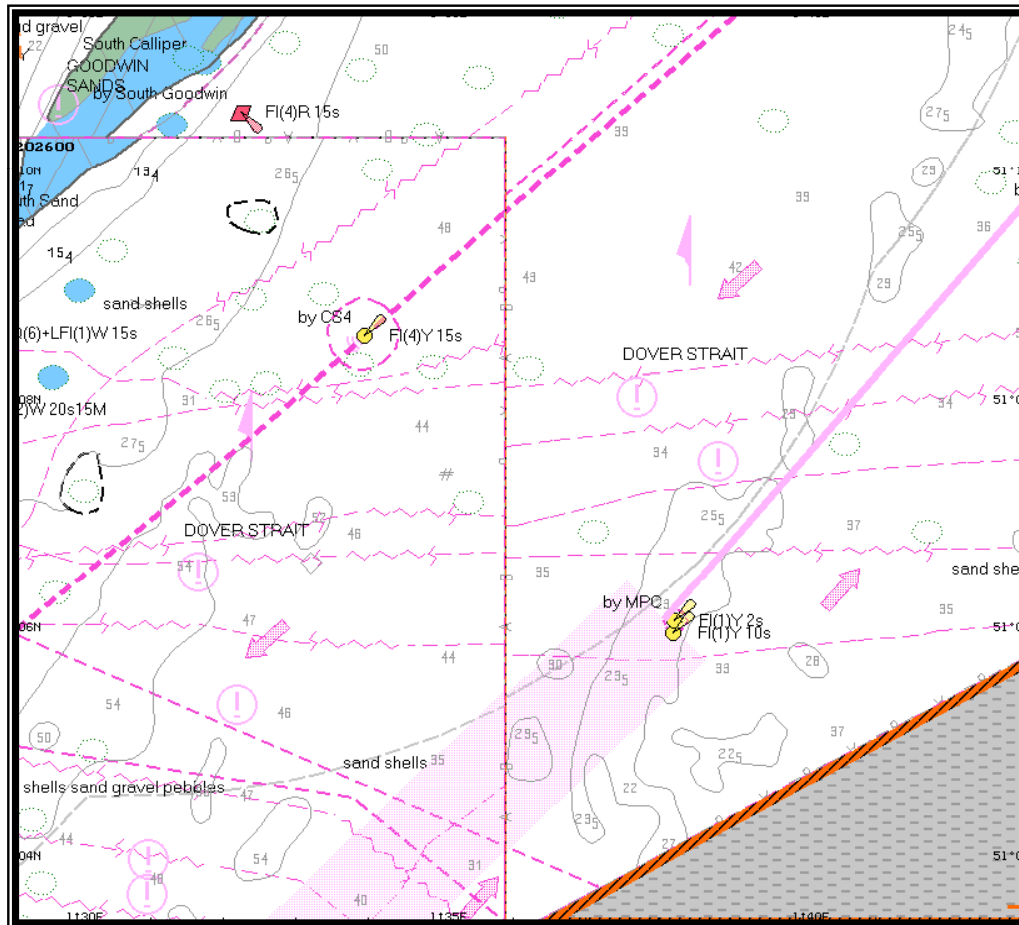


*Investing in the future by working together  
for a sustainable and competitive region*

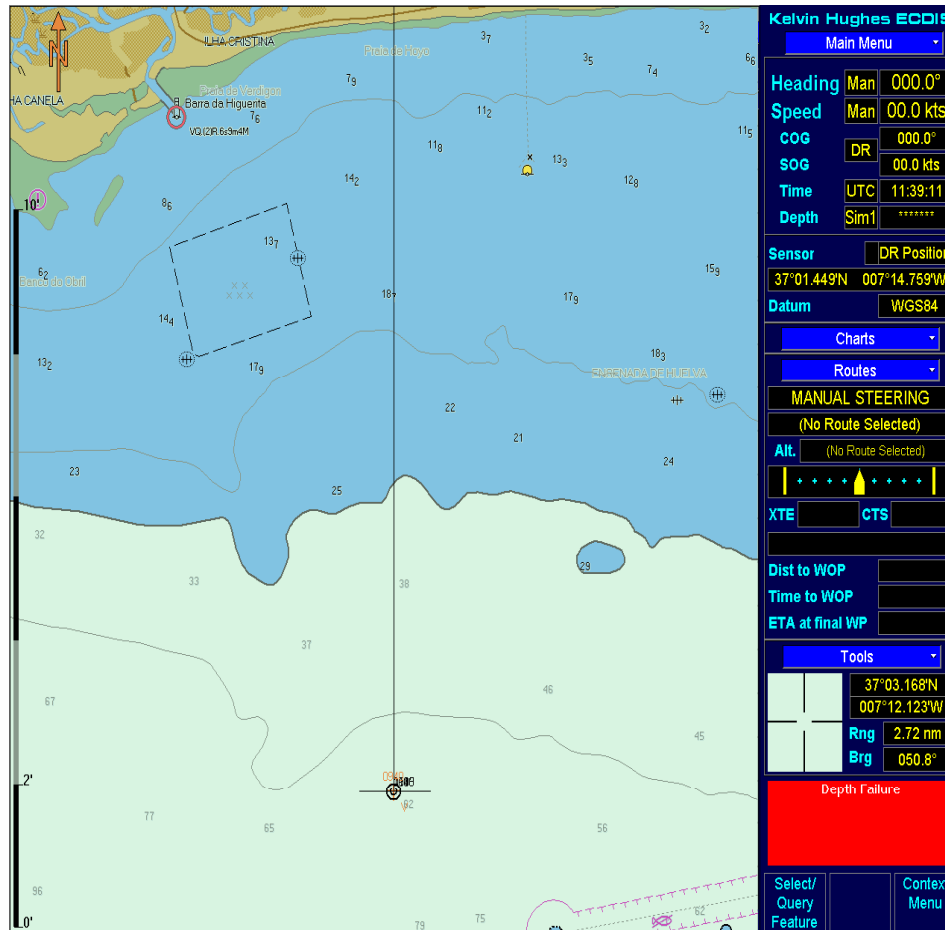
## Contour Intervals



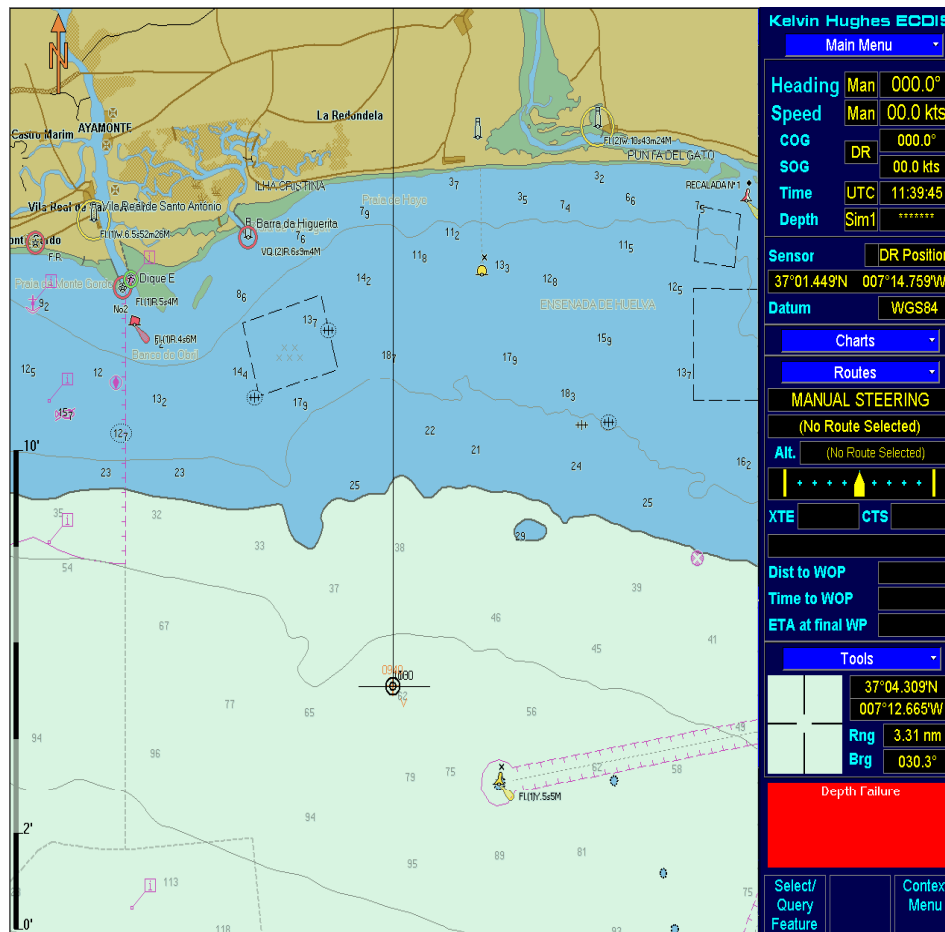
## Inconsistencies at Cell Boundaries



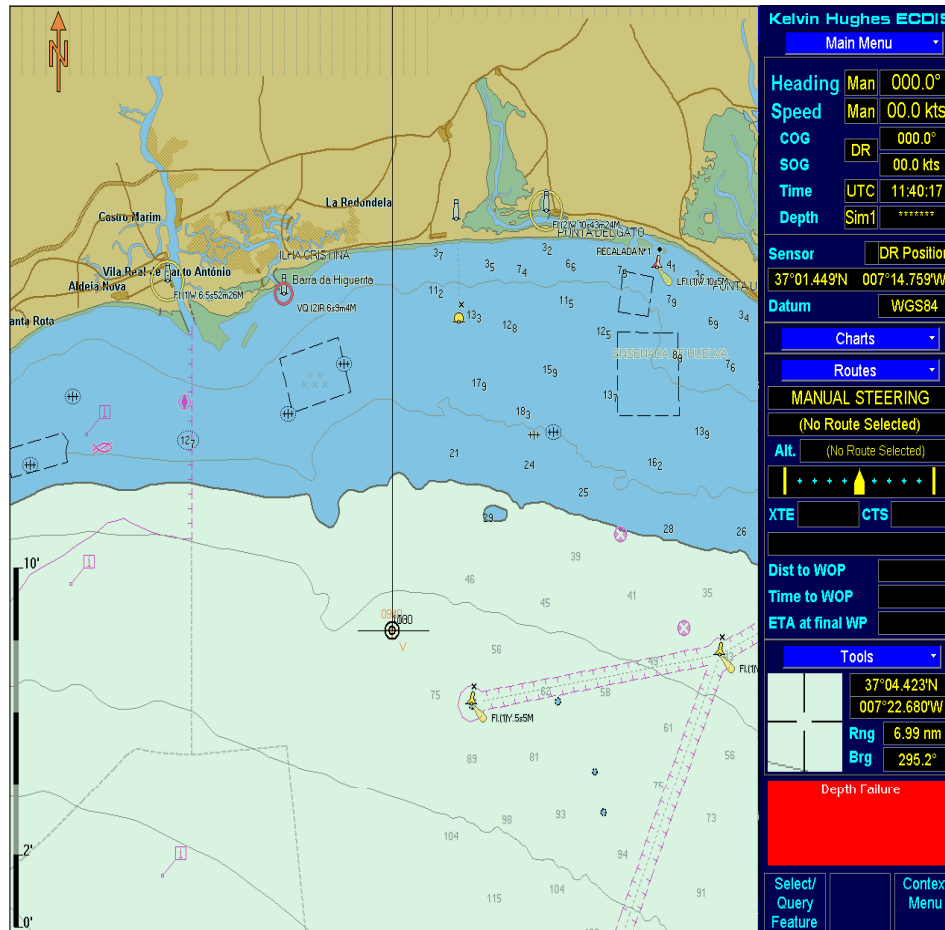
1: 150 000



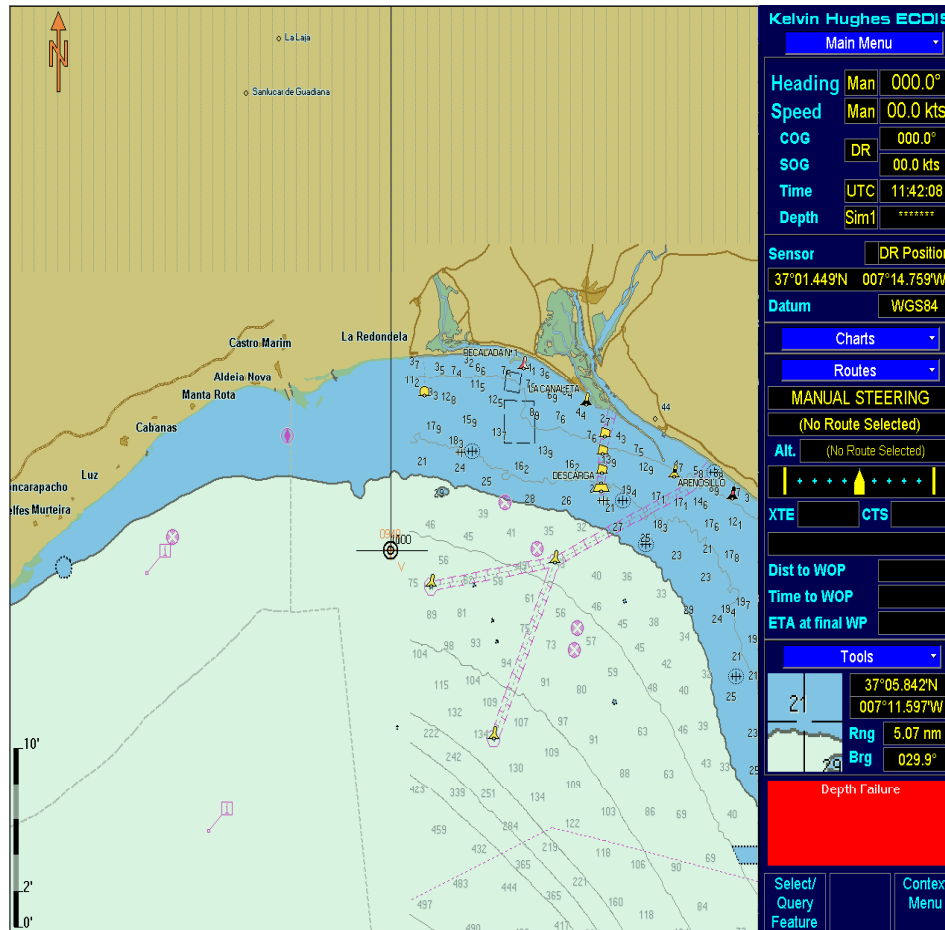
## 1: 200 000



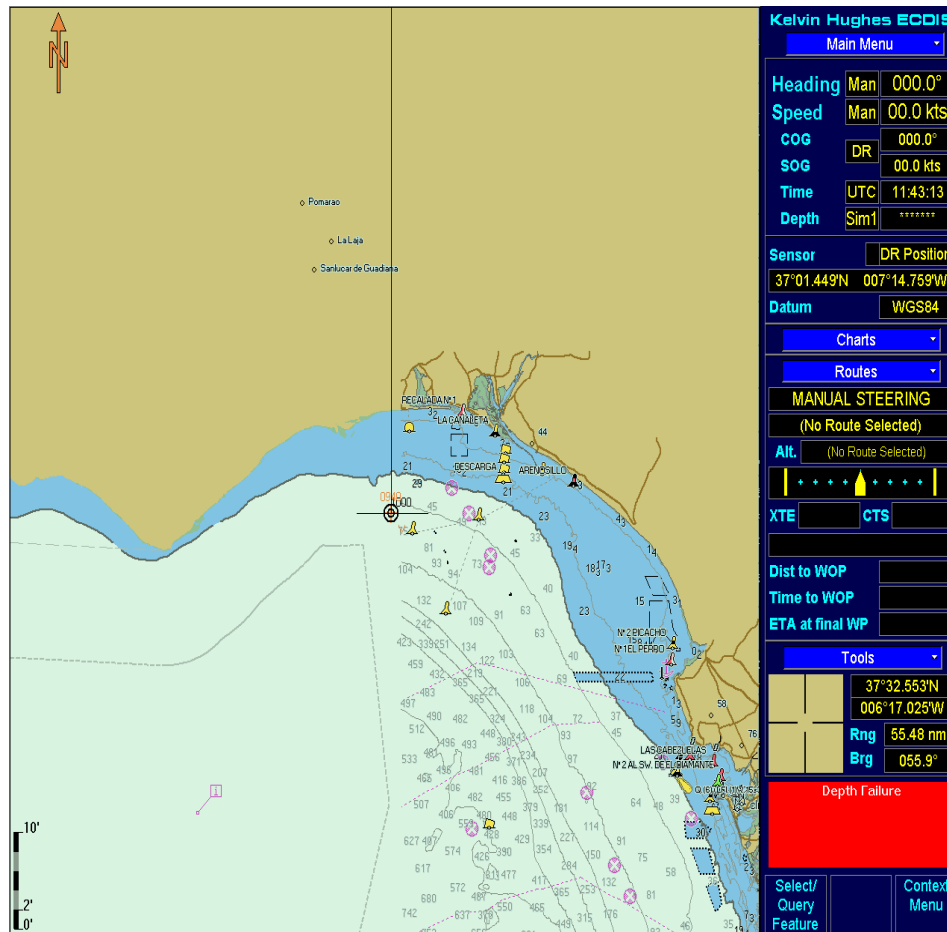
1: 250 000



## 1: 500 000

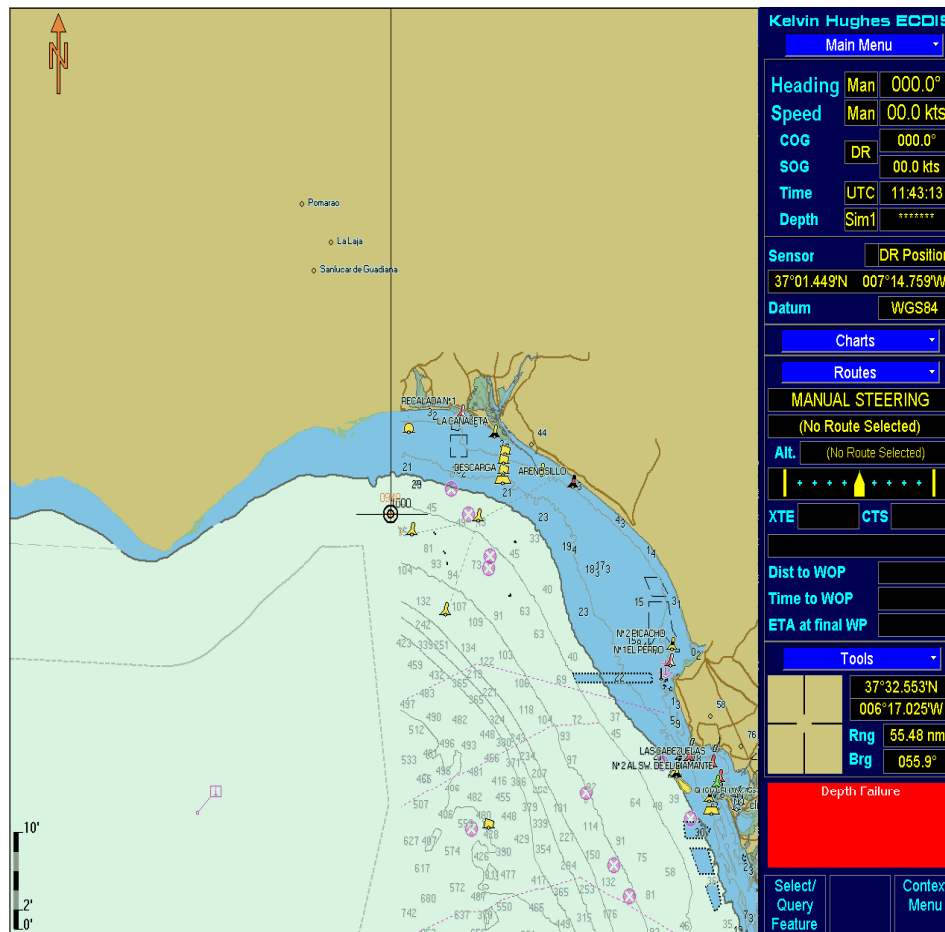


1: 750 000





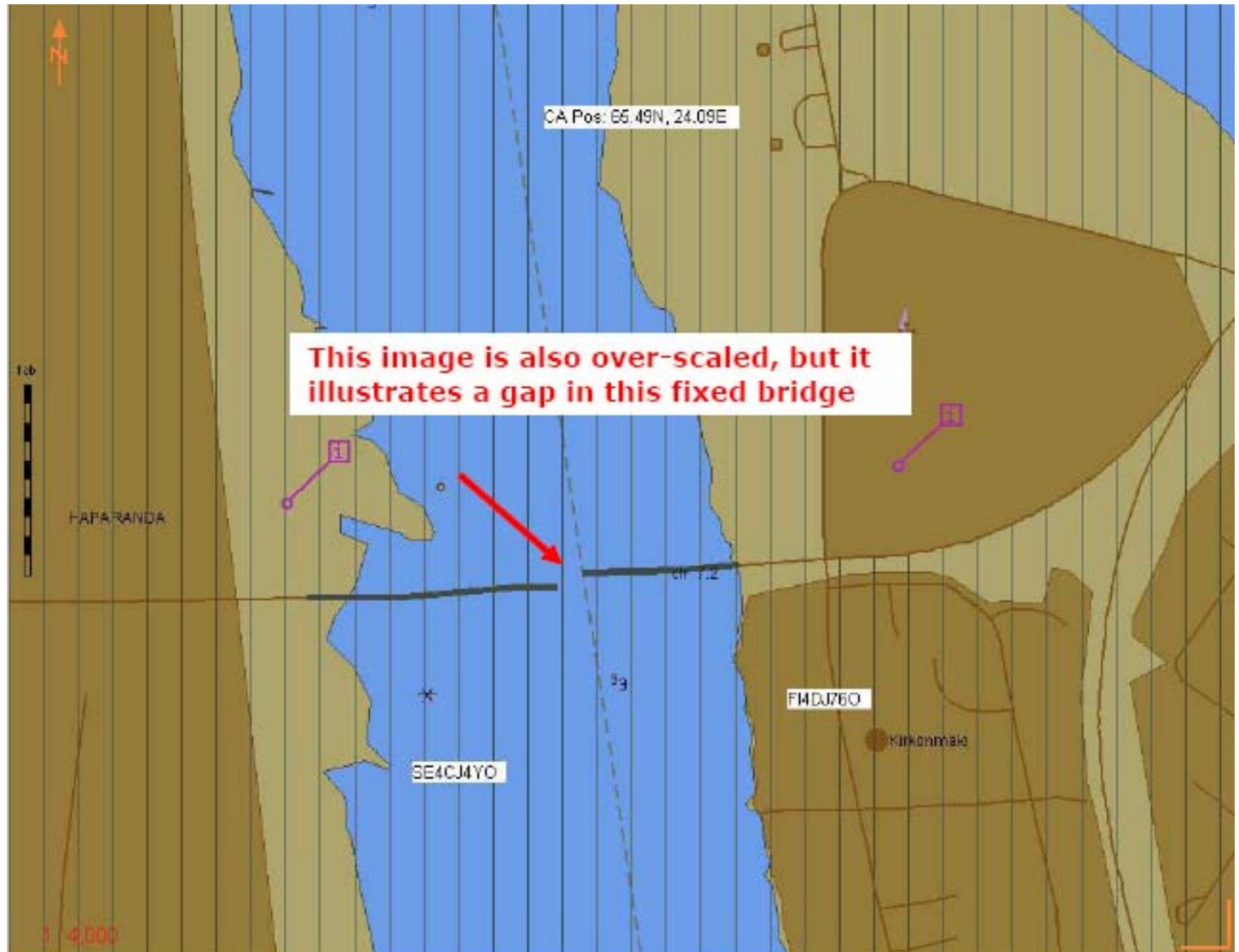
1: 1 000 000





# BLAST

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- Determine the object classes – work shop
- T-Kartor developed a tool to check adjacent ENC's
- Tested at hydrographic offices:
  - Norway
  - Denmark
  - UK
  - Belgium
- Completed within time and on budget
- Will be extended to vertical checks





**BLAST**

Bringing Land and Sea Together

WP4/Act 5 :

Demonstrate a  
Maritime Data Collection System

European Union  The European Regional Development Fund

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North Sea Region  
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## WP4/Act 5 – Demonstrate Maritime Data Collection System

### Objectives:

*”Demonstration of a secure online system for North Sea governments to collect maritime information”*



## Goals identified in market research

Harmonize forms used to collect information

Improved web user interfaces to help people report effectively

**Make it easier to report to the right agency**

**Make it easier to specify what's being reported**

Better feedback to reporters

Better information flow between groups



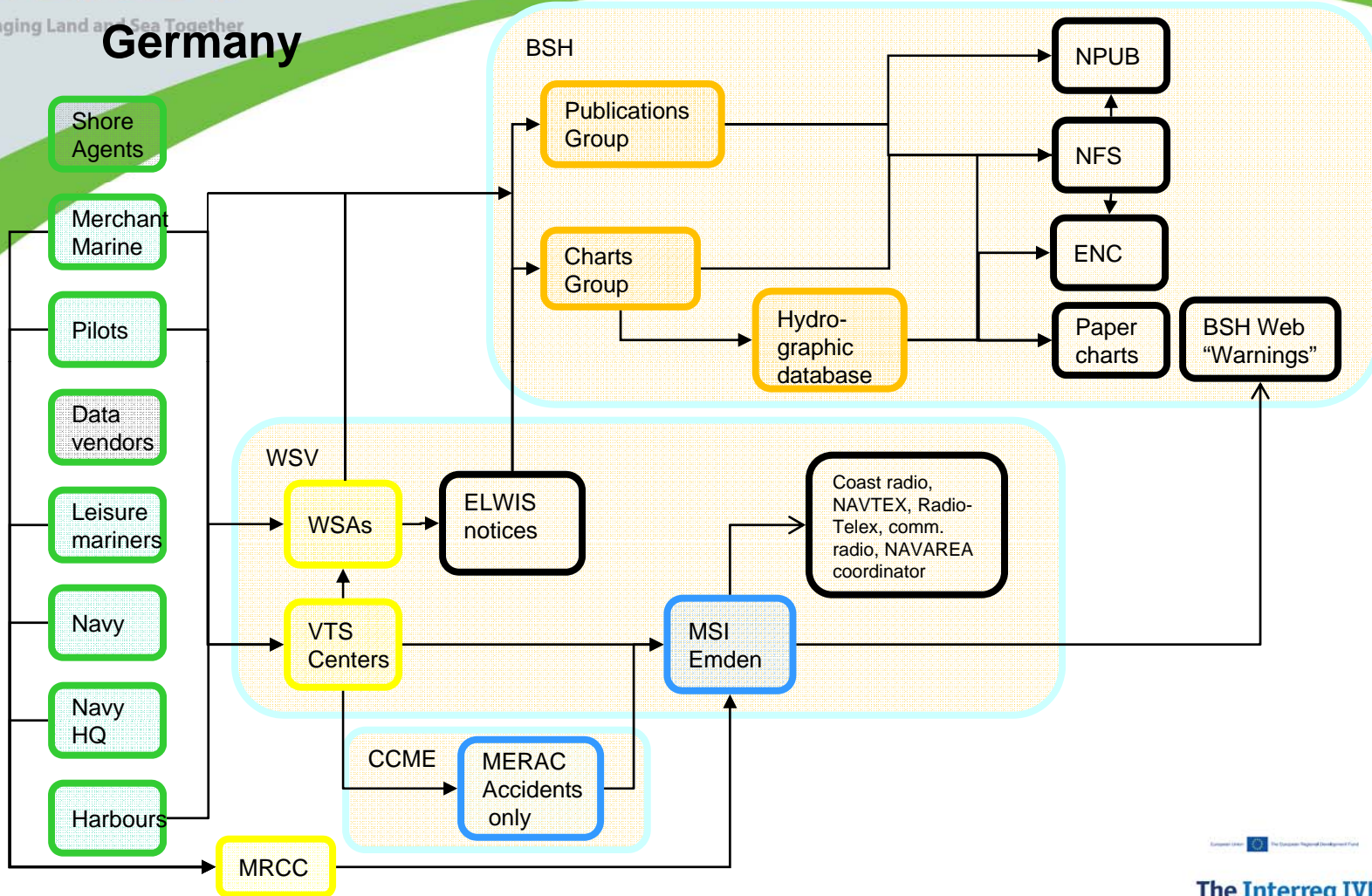


# BLAST

Bringing Land and Sea Together

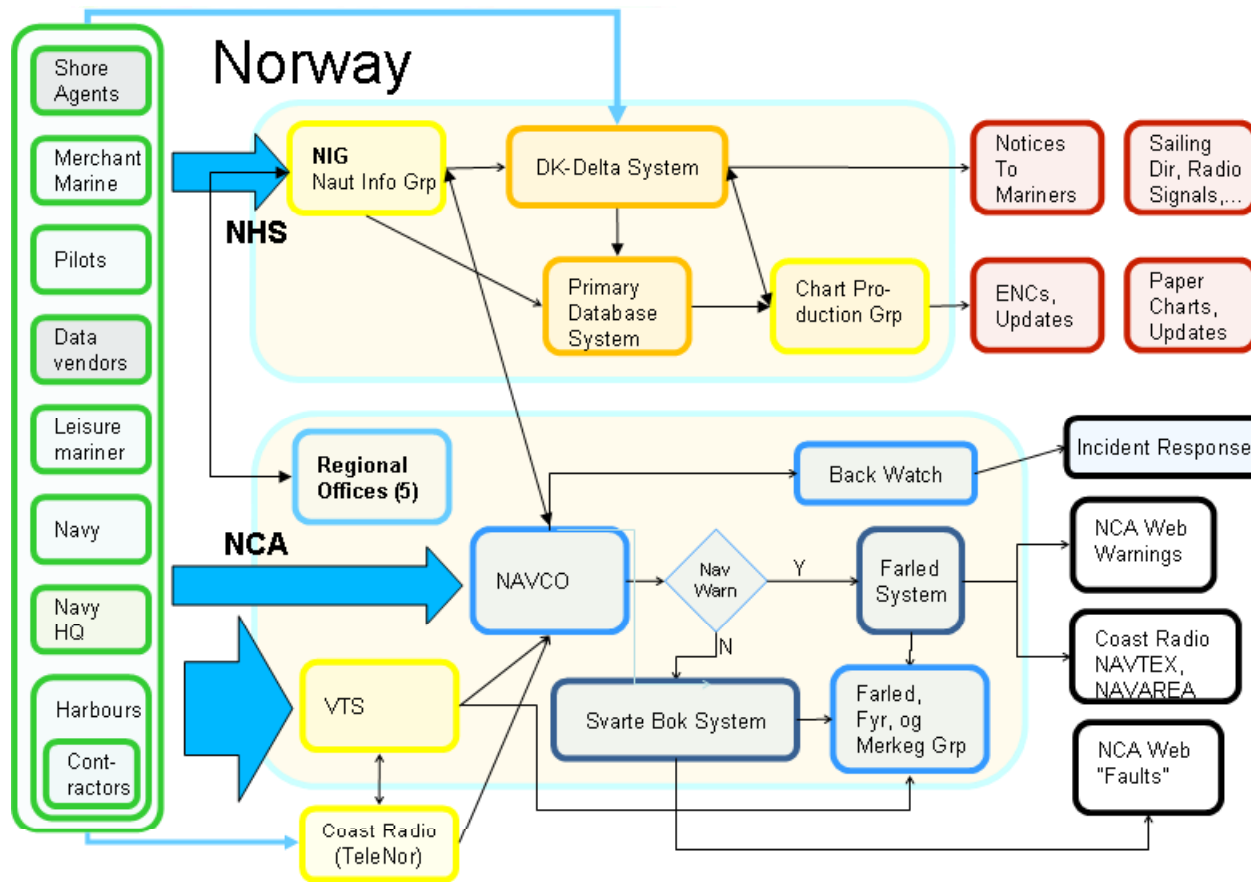


## Germany

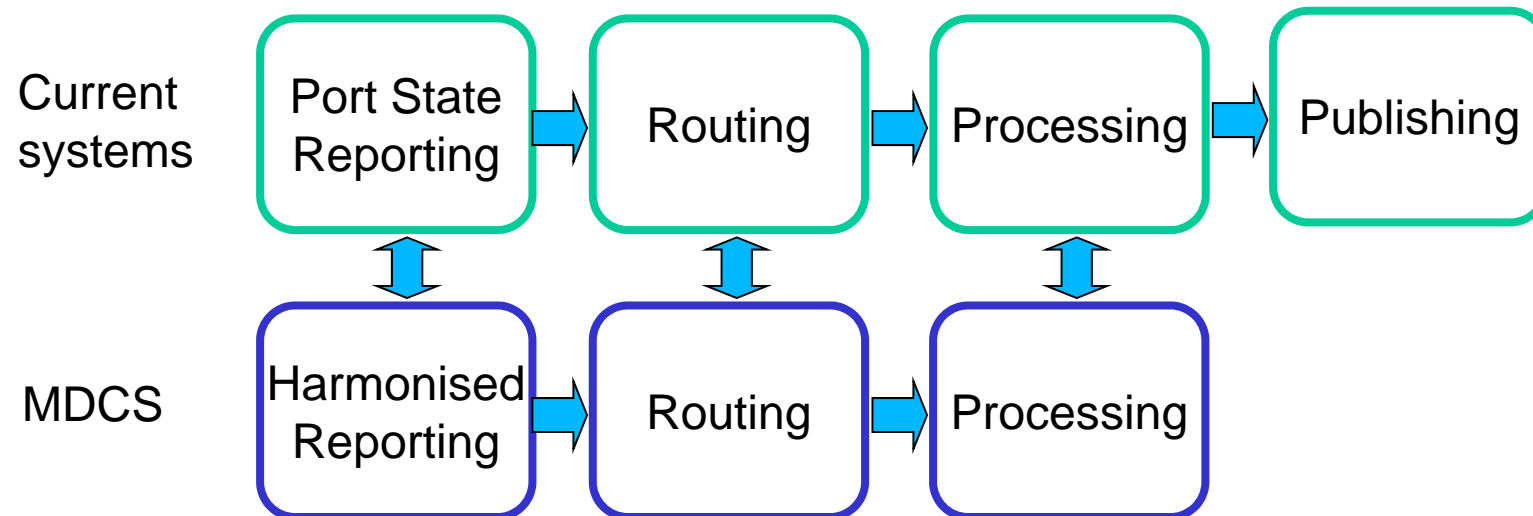




## Current state of the art



## MDCS demo parallels existing systems



## Scope

### Display of transnational maritime data

- Nautical publications

- Nautical charts

- Planned event notifications

### Reference information in MDCS:

- ENCs and nautical publications for the 3 test areas

### Information collected by MDCS:

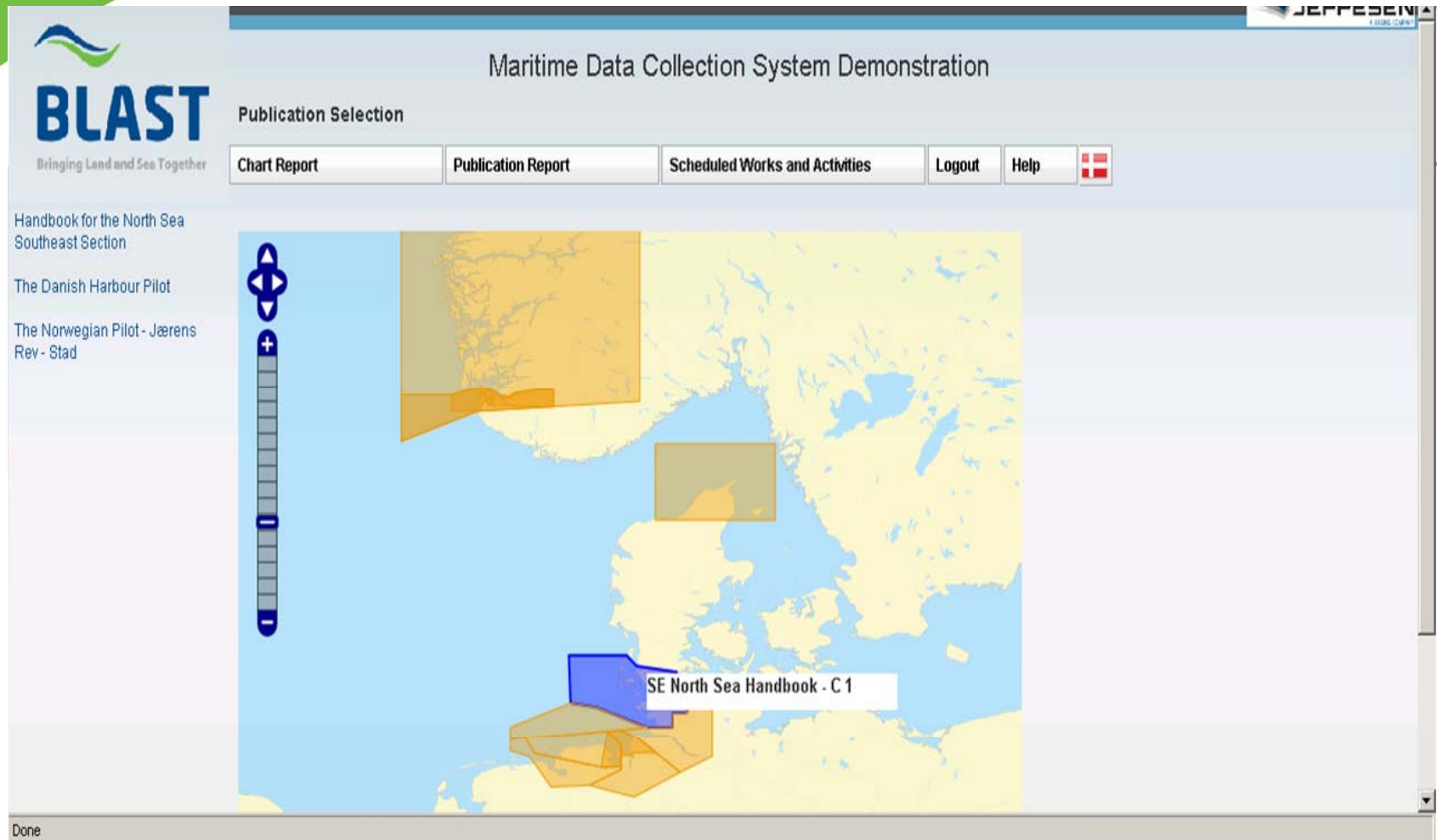
- Chart Defects

- Publications Defects

- Notice of Planned Activities


- Safety Information


# Nautical Publications



The screenshot displays the 'Maritime Data Collection System Demonstration' interface. At the top left is the BLAST logo with the tagline 'Bringing Land and Sea Together'. The main title 'Maritime Data Collection System Demonstration' is centered at the top. Below the title is a 'Publication Selection' section with four buttons: 'Chart Report', 'Publication Report', 'Scheduled Works and Activities', and 'Logout'. To the right of these buttons are 'Help' and a Danish flag icon. On the left side, there is a list of publications: 'Handbook for the North Sea Southeast Section', 'The Danish Harbour Pilot', and 'The Norwegian Pilot - Jærens Rev - Stad'. The central part of the interface features a map of the North Sea region with a blue callout box pointing to a specific area, labeled 'SE North Sea Handbook - C 1'. A vertical navigation bar on the left of the map includes a compass rose and a zoom control. The bottom left corner of the browser window shows the text 'Done'.


# Nautical Charts

 **BLAST**  
Bringing Land and Sea Together


 **JEPPESEN**  
4. EDITION 2010

Maritime Data Collection System Demonstration

Chart Selection

[Chart Report](#) [Publication Report](#) [Scheduled Works and Activities](#) [Logout](#) [Help](#) 

DK5HIRSH  
DK2SKARK  
DE421030  
DE421070  
DE521700  
NO4D0710  
NO4E0711  
NO4E0810  
NO4E0811  
NO4F0810  
NO4G0711  
NO4G0811  
NO4H0810  
NO4Q0810  
NO4R0810  
NO4S0810  
NO4T0810



The image shows a screenshot of a web application interface for nautical charts. The interface includes a header with the BLAST logo and tagline, and the JEPPESEN logo. The main content area is titled 'Maritime Data Collection System Demonstration' and features a 'Chart Selection' section with several menu items: 'Chart Report', 'Publication Report', 'Scheduled Works and Activities', 'Logout', and 'Help'. A list of chart identifiers is displayed on the left side of the page. The central part of the interface shows a nautical chart map of the North Sea region, with a specific area highlighted in orange and labeled 'NO4G0711'. The map includes a compass rose and a zoom control on the left side.

# Planned Event Notifications

**Scheduled Works and Activities**

**For safety emergencies or other urgent reports, contact the appropriate office (Rescue, Maritime Assistance, etc.) by radio or telephone. Do not use this form.**

**Confirmation Number** (for updates to previous reports; leave blank if unknown):

<p style="text-align: center;"><b>Observer Information</b> (leave blank if unknown)</p> <p>Date Observed <input type="text" value="02.09.2010"/></p> <p>Last Name of observer <input type="text"/></p> <p>First Name(s)/Initials <input type="text"/></p> <p>MDCS User ID <input type="text"/></p>	<p style="text-align: center;"><b>Sender Information</b> (leave blank if same as observer)</p> <p>Date Sent <input type="text" value="02.09.2010"/></p> <p>Last Name <input type="text" value="Racer"/></p> <p>First Name(s)/Initials <input type="text" value="Speed"/></p> <p>MDCS User ID <input type="text" value="admin"/></p>
--	---

---

**Dates**

Start date  End date and time   Recurring

---

**Details** Please provide information about the works or activities. Enter descriptions or additional information in the **Additional information** area. Attach copies of blueprints, plans, or other materials from which detailed information may be obtained.

**Regatta, holiday closure, etc.**

Brief description of event (regatta etc.)

---

**Area coordinates** (click + to add more)

Lat/Long  N/S  E/W

[+]


If coordinates are not known, describe location in words

---

**Location Identity** (Provide any known location and/or identifying data for the feature affected. Use the Additional Information area for other kinds of location or identifying information).

Light List Number (if applicable)  Feature/Object Name (if known)

## Chart Defect Selection



Object Selection

Chart Report

Publication Report

Scheduled Works and Activities

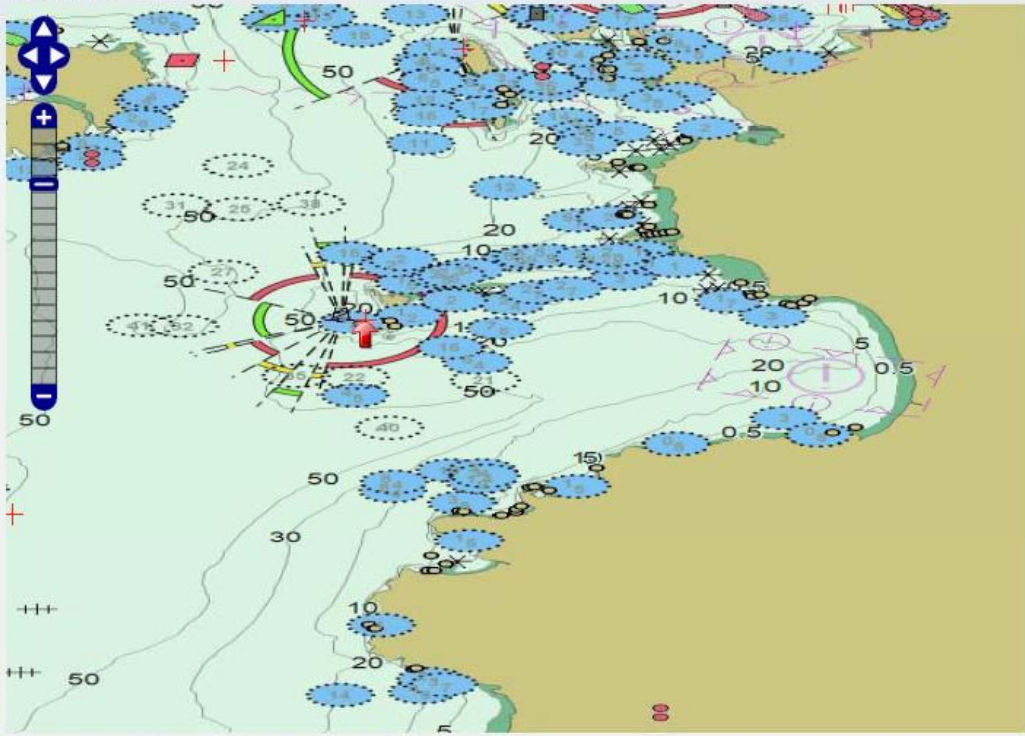
Logout

Help

🇪🇺

Select/unselect all **NO4G0711**

- Anchorage area
- Beacon, isolated danger
- Beacon, lateral
- Building, single
- Built-up area
- Buoy, cardinal
- Buoy, isolated danger
- Buoy, lateral
- Caution area
- Control point
- Land area
- Land region
- Landmark
- Light
- Marine farm/culture
- Mooring/warping facility
- Pile
- Radar transponder beacon
- Radio station
- Sea area / named water area
- Sea-plane landing area



Position	Latitude	Longitude
Current	58.914941	5.58983646
Clicked	58.890261	5.54395

Signal group	(1)
Signal period	5
Status	1,17
Value of nominal range	5.9
Source date	20100326

Light:	
Category of light	
Colour	4
Height	18.2
Light characteristic	2
Sector limit one	14.4
Sector limit two	24.2
Signal group	(1)
Signal period	5
Status	1,17
Value of nominal range	3.8
Source date	20100326

Green sector has intermittent failures.

Back to Charts list

Submit Now

Preview report

# Chart Defect Report

### Charts Discrepancy Report

For safety emergencies or other urgent reports, contact the appropriate office (Rescue, Maritime Assistance, etc.) by radio or telephone. Do not use this form.

**Confirmation Number** (for updates to previous reports; leave blank if unknown):

	Observer Information (leave blank if unknown)	Sender Information (leave blank if same as observer)
Date Observed	<input type="text" value="02.09.2010"/>	Date Sent
Last Name of observer	<input type="text"/>	Last Name
First Name(s)/Initials	<input type="text"/>	First Name(s)/Initials
MDCS User ID	<input type="text"/>	MDCS User ID

**Charts affected:**

Charts Number(s)  Date of last update  Last Notice applied

ENC Number(s)  Date of last update applied

**Common discrepancies** (Check any applicable boxes and provide details in the **Additional Information** section. If none of the choices applies, leave this section blank).

<input type="checkbox"/> Unlit light	<input type="checkbox"/> Irregular light	<input type="checkbox"/> Structural damage	<input type="checkbox"/> Add feature
<input type="checkbox"/> Buoy missing	<input type="checkbox"/> Buoy out of position	<input type="checkbox"/> Wrong depth	<input type="checkbox"/> Change feature location

**Requested Actions** Is repair or maintenance work needed in response to this report?

---

**Location/Identity** (Provide any known location and/or identifying data for the feature affected. Use the Additional Information area for other kinds of location or identifying information).

Light List Number (if applicable)

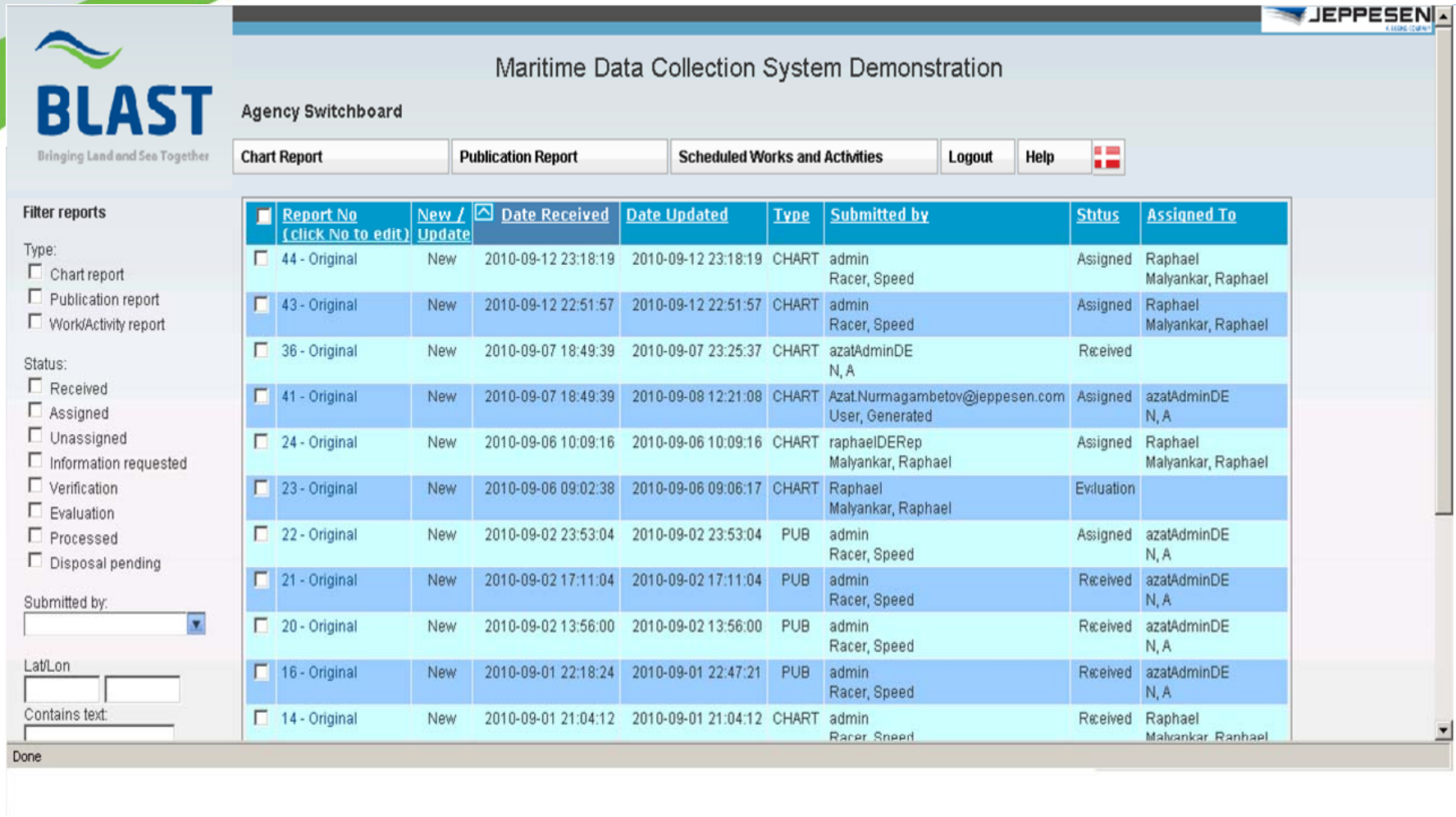
Feature/Object Name (if known)

Location in words (e.g., buoys 11-15, entrance fairway):

Scrolling down will display sections for attaching Information and for submitting form via web



# Switchboard



**Maritime Data Collection System Demonstration**

**Agency Switchboard**

Chart Report | Publication Report | Scheduled Works and Activities | Logout | Help

**Filter reports**

Type:

- Chart report
- Publication report
- Work/Activity report

Status:

- Received
- Assigned
- Unassigned
- Information requested
- Verification
- Evaluation
- Processed
- Disposal pending

Submitted by:

Lat/Lon

Contains text:

<input type="checkbox"/>	Report No (click No to edit)	New / Update	Date Received	Date Updated	Type	Submitted by	Status	Assigned To
<input type="checkbox"/>	44 - Original	New	2010-09-12 23:18:19	2010-09-12 23:18:19	CHART	admin Racer, Speed	Assigned	Raphael Malyankar, Raphael
<input type="checkbox"/>	43 - Original	New	2010-09-12 22:51:57	2010-09-12 22:51:57	CHART	admin Racer, Speed	Assigned	Raphael Malyankar, Raphael
<input type="checkbox"/>	36 - Original	New	2010-09-07 18:49:39	2010-09-07 23:25:37	CHART	azatAdminDE N, A	Received	
<input type="checkbox"/>	41 - Original	New	2010-09-07 18:49:39	2010-09-08 12:21:08	CHART	Azat.Nurmagambetov@jeppesen.com User, Generated	Assigned	azatAdminDE N, A
<input type="checkbox"/>	24 - Original	New	2010-09-06 10:09:16	2010-09-06 10:09:16	CHART	raphaelDERep Malyankar, Raphael	Assigned	Raphael Malyankar, Raphael
<input type="checkbox"/>	23 - Original	New	2010-09-06 09:02:38	2010-09-06 09:06:17	CHART	Raphael Malyankar, Raphael	Evaluation	
<input type="checkbox"/>	22 - Original	New	2010-09-02 23:53:04	2010-09-02 23:53:04	PUB	admin Racer, Speed	Assigned	azatAdminDE N, A
<input type="checkbox"/>	21 - Original	New	2010-09-02 17:11:04	2010-09-02 17:11:04	PUB	admin Racer, Speed	Received	azatAdminDE N, A
<input type="checkbox"/>	20 - Original	New	2010-09-02 13:56:00	2010-09-02 13:56:00	PUB	admin Racer, Speed	Received	azatAdminDE N, A
<input type="checkbox"/>	16 - Original	New	2010-09-01 22:18:24	2010-09-01 22:47:21	PUB	admin Racer, Speed	Received	azatAdminDE N, A
<input type="checkbox"/>	14 - Original	New	2010-09-01 21:04:12	2010-09-01 21:04:12	CHART	admin Racer, Speed	Received	Raphael Malyankar, Raphael

Done

Every report is routed to someone – an administrator as last resort.  
MDCS is not intended to replace workflow systems used by partners

## Visit of IHMA representative during BLAST conference at Hirtshals /DK

Last Update	
Fairway / Basin / Berth	
Terminal	
ISPS	
Berth name	
Berth number	
Position (lat / lon)	
Depth in meters	See chart
Chart datum	See chart
Minimum density	
Manoeuvre	Arrival
UKC policy	
Size restriction	
Tidal restriction	
Wind restriction	
Visibility restriction	
Speed restriction	
Tug requirements	
Operational Issues	
Mooring requirements	
Free text option	
Manoeuvre	Departure
UKC policy	
Size restriction	
Tidal restriction	
Wind restriction	
Visibility restriction	
Speed restriction	
Tug requirements	
Operational Issues	
Mooring requirements	
Free text option	



## Visit of IHMA representative during BLAST conference at Hirtshals /DK

Port Sections Guide	
ANCH 1	
Read user guidelines first. Always check all adjoining sections.	
Port	Rotterdam
Section	Cloudy Berth <sup>1</sup>
Date	01.11.2010
Position (lat / long)	
Minimum controlled water depth	
Chart datum	
Range of water densities	
Tidal range	
UKC policy alongside	
Bottom type	
Dredging regime	
Distance pilot station to berth	
ISPS	
Loading / unloading requirements	
Free text	
Manoeuvre	
Arrival	
UKC policy	T 100,00 < 17,40 m: UKC = 0,50 m T 17,40 < 22,01 m: UKC = 1,00 m under the most unfavourable circumstances (normally more), calculated in accordance with a probabilistic method. T 22,01 < 22,55 m: UKC = 1,50 m under the most unfavourable circumstances (normally more), calculated in accordance with a probabilistic method. T mas 22,55 meter.
Size restriction	
Tidal restriction	
Wind restriction	
Visibility restriction	
Speed restriction	
Passing requirements	
Tug use	If for vessels with more than 20,00 m draught 4 tugs have been ordered, at least 3 tugs should have 145 T BP. If for vessels with a draught of 17,40 m up to 20,00 m draught 3 or 4 tugs have been ordered, at least 2 tugs should have 145 T B. For shifting vessels the same conditions apply as for vessels on arrival.
Berthing requirements	
Free text option	
Manoeuvre	
Departure	
UKC policy	T 100,00 < 17,40 m: UKC = 0,50 m T 17,40 < 21,20 m: UKC 1,00 m
Size restriction	T mas 20,75 m (vessel is sailing against incoming tide). Only in special conditions and after contacting Traffic Control draught on departure can be increased up to 21,20 m.
Tidal restriction	
Wind restriction	
Visibility restriction	
Speed restriction	
Passing requirements	



## Visit of IHMA representative during BLAST conference at Hirtshals /DK

### Result

SNPWG to develop the data model

IHMA representative have been invited to next  
SNPWG meeting

Harbour Master to implement and maintain the  
information

New product - similarities to Port ENC





# BLAST

Bringing Land and Sea Together

## WP4/Act 4 – Build a 3D port model and demonstrate automated change detection

Demonstrate and evaluate the use of satellite data and 3D visualization/models in navigational aid displays

European Union  The European Regional Development Fund

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*Investing in the future by working together  
for a sustainable and competitive region*

## WP5 Contents

Design and develop a regional maritime traffic monitoring platform beneficial for all Member States in the North Sea region.

Harmonise maritime traffic information formats in the North Sea region and add new formats where needed.

Harmonise regional maritime traffic information flow with SafeSeaNet and propose new functionality.

Develop a network and server platform for development and demonstration.

## WP6 Contents

Climate change

Integrated Coastal Zone management

Decision Support Systems



### Coastal strategy Furreby ?

Year 0-20

Coastal protection can be done. Hard protection can be allowed where houses are endangered in year 0.

Year 20-50

Hard protection are removed and only sand nourishment can be allowed. Herby can newer houses in year 0 still reach their lifetime.

Year 50-100

No permit for coastal protectin because the lifetime of houses are passed.



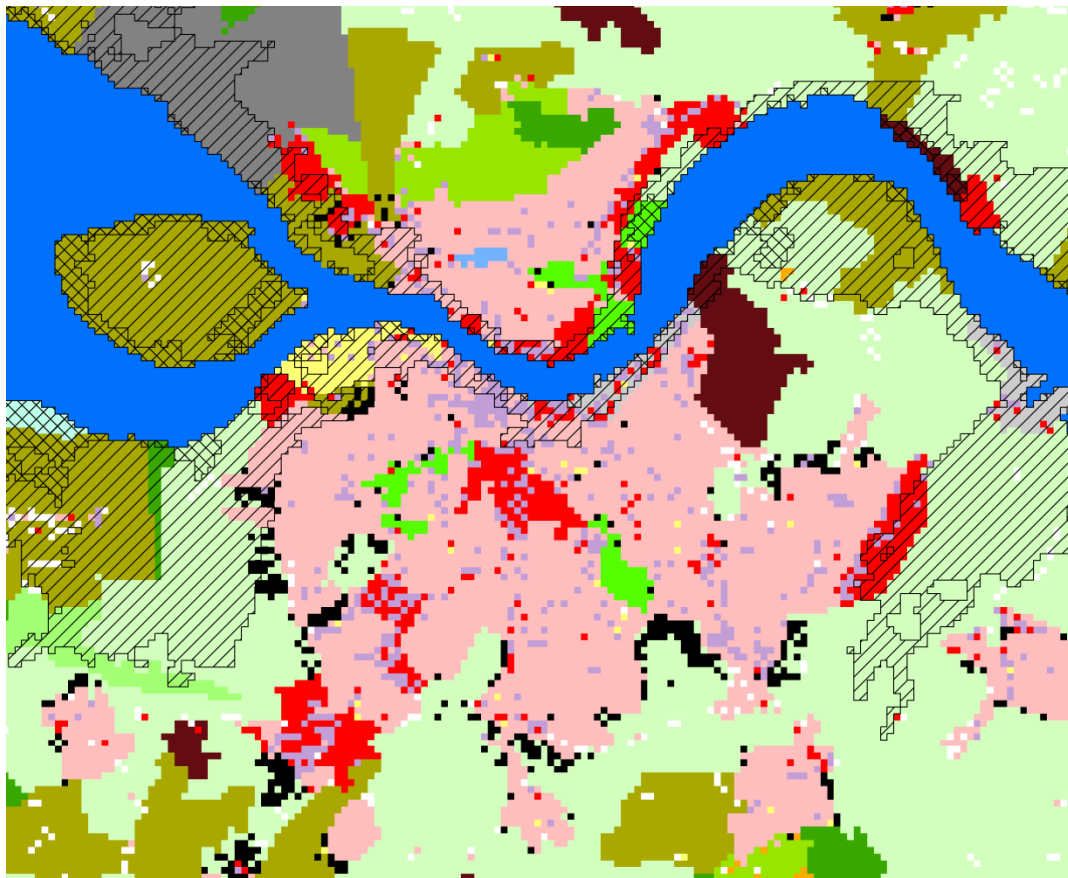
## Land-use and Climate Change Adaptation

A spatial planning case study

The first (baseline) scenario is just a projection of current trends in land-use development

Scenario A and B simulates an urban development as presumed in story lines A2 and B1, which – regarding climate change - represent the most pessimistic and optimistic of the SRES scenarios.

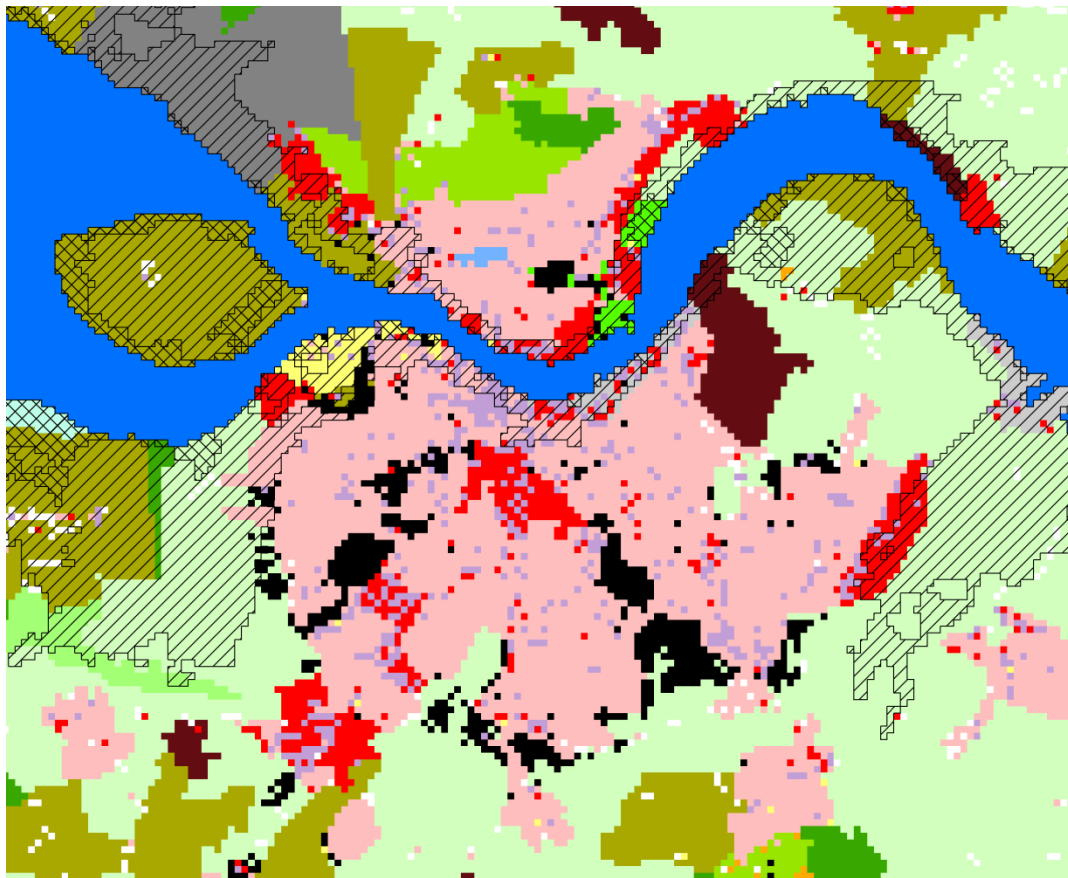
## Flood risk and land-use - 1



Land-use in 2040 according to Policy scenario A. Black cells represent new urban areas.

The cross-hatched and hatched areas represent the 80 cm and 280 cm flooding zones respectively

## Flood risk and land-use - 2



Land-use in 2040 according to Policy scenario B. Black cells represent new urban areas.

The cross-hatched and hatched areas represent the 80 cm and 280 cm flooding zones respectively



# BLAST

Bringing Land and Sea Together

Danke! Tak! Thank you! Aligato!

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