

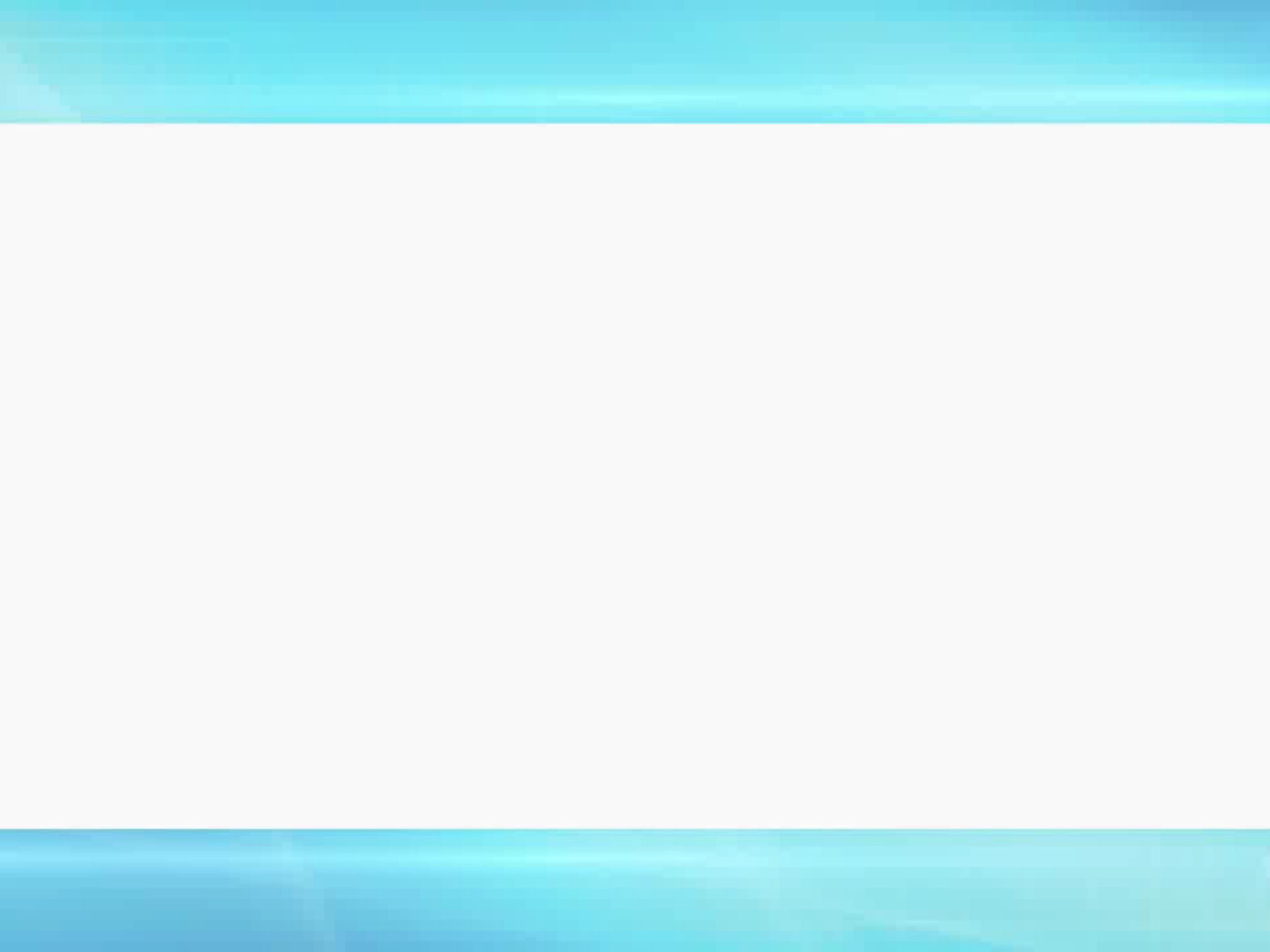


ACCSEAS: e-Navigation Test-Bed in the North Sea Region

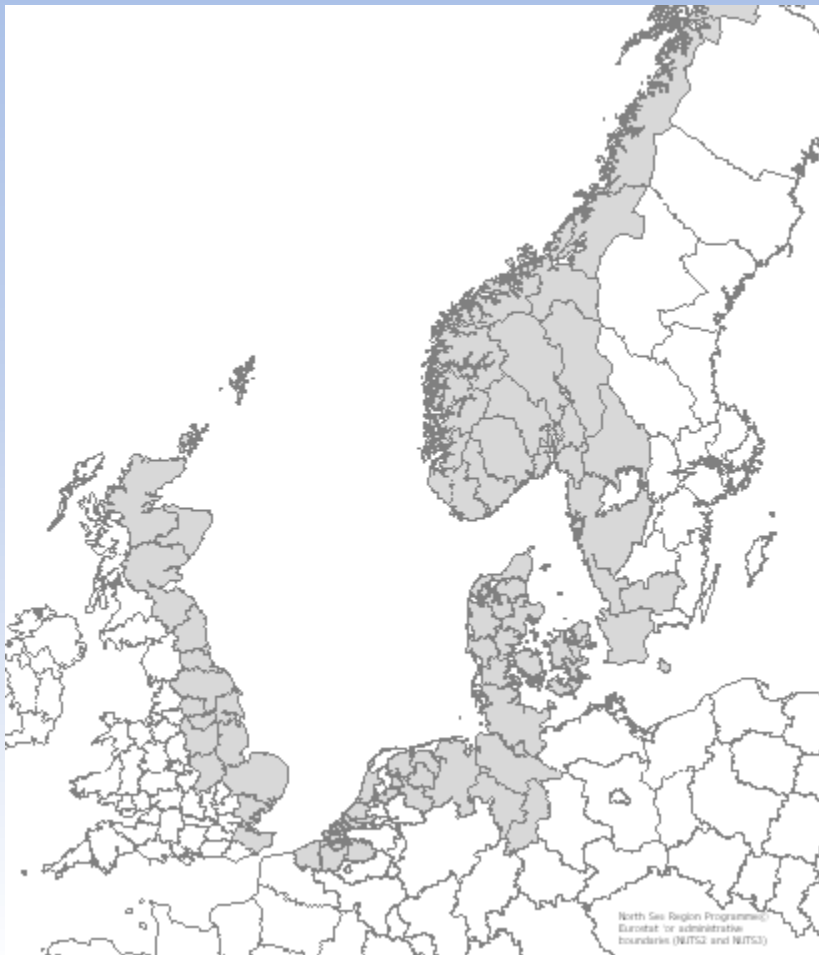
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ACCSEAS Conference
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Shipping Challenges of the North Sea Region



- Increased density of shipping
- Reduced sea space / manoeuvrability
- Growth of offshore installations
 - Windfarms
 - Oil and gas platforms
- Traffic pinch-points at approaches to:
 - major ports and constrictions
 - Baltic/Skagerrak, Dover Straits
 - inland waterways (e.g. Kiel Canal)
- Risks of collision and grounding
- Safe and efficient access to the North Sea Region



What is the ACCSEAS project?

- **ACC**essibility for **S**hipping, **E**fficiency **A**dvantages and **S**ustainability
- Part of the EU INTERREG IVB North Sea Region Programme
- Key theme of the INTERREG programme: Improve accessibility of places in the North Sea Region
 - reducing congestion
 - developing sustainable transport
 - promoting transmodal solutions

ACCSEAS Aims and Objectives

- ***Aim: Implement and demonstrate an e-
Navigation test-bed in the North Sea Region to
improve regional maritime accessibility***
- Establish prototype solutions based on IMO's e-
Navigation concept to 'bring maritime navigation
into the digital age':
 - accessibility of congested and remote North Sea ports
 - safe maritime navigation
 - environmental protection by reduction of accidents
 - efficiency of berth-to-berth operations
 - sustainable solutions

ACCSEAS Overview

- April 2012 to February 2015
- €5.6M budget
- 11 partners from Denmark, Germany, Netherlands, Norway, Sweden and UK
- Extends 'EfficienSea' and 'Monalisa' projects
- Develop an innovative test-bed of e-Navigation solutions
 - Resilient positioning, navigation and timing (PNT)
 - Robust e-Navigation services
- Safe and efficient berth-to-berth operations
 - dynamic route planning, information exchange, display and decision aids



Systems Engineering Approach

Requirements

Focus on mariner

Traffic analysis and prediction

Risk analysis

IMO, IALA, EU Initiatives

Architecture

Integrated ship and shore systems

IHO S-100 data standard

Implementation, Verification and Validation

Real & simulated environments

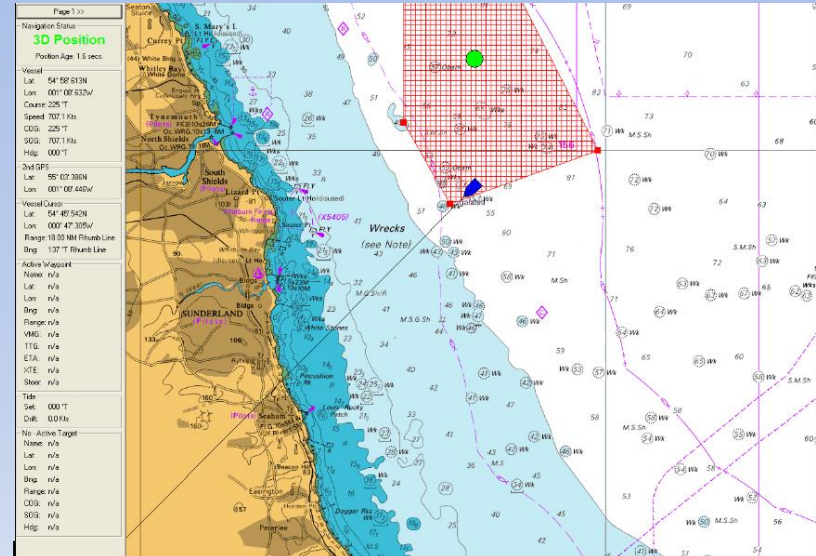
User experiences

Early detection of areas of improvement

Influence institutional standards and policy

Test-Bed: Resilient PNT

- Mitigation of GNSS vulnerability to natural and deliberate interference
- Independent and complementary backup system to GNSS
 - seamless positioning in GNSS outages
 - avoid giving hazardously misleading information
- Prototype an Integrated Navigation System (INS)
 - radar positioning and DGNSS “R-Mode”
 - recognising multiple GNSS constellations (including Galileo)
 - integration of existing positioning sources (e.g. eLoran)



Test-Bed: e-Navigation Services

- ‘Berth-to-berth’ applications of the Maritime Service Portfolio for safety, efficiency and environmental protection
- vessel route planning / update, exchange and display:
 - ship-to-ship: route and intended manoeuvre
 - ship-to-shore: VTS interface and elements of ‘Sea Traffic Management’
 - port operations
 - exchange of data and information ship-to-ship and ship-to-shore:
 - seamless exchange of static vessel and dynamic voyage data
 - IHO S-100 format
 - Inter-VTS Exchange Format (IVEF)



ACCSEAS Outcomes

- Geographic Information System (GIS)
 - traffic patterns, priority locations, restricted areas, route topology models, route optimisation in open seas, infrastructure, resilient PNT coverage, service coverage areas
- Ship equipment and shore infrastructure prototypes
- Evaluation of the technology and training on the human factor
- Training Needs Analysis and training packages
- Annual ACCSEAS conference
- Legacy for future coordination of North Sea e-Navigation services
- Develops e-Navigation sustainability plan (2015 to 2020)



Conclusion

- Potential for making a real positive impact on maritime accessibility and safety in the North Sea Region and potentially, worldwide
- Many questions remain to be answered
- You can help us answer the important questions for the North Sea Region



Thank you

