ACCSEAS:
Striving to develop efficiency and accessibility for shipping in the North Sea Region

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5th Optimising Port development
London 24th October 2012
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
Great Gabbard Offshore Wind Farm (opened 7 Sep.)
140 turbines, 500 MW
Ormonde Offshore Wind Farm (opened 19 Sep.)
30 turbines, 150 MW

http://www.4coffshore.com/offshorewind/
Sheringham Soal (opened 27 September 2012)
88 turbines, 317 MW
(220 000 houses electrical power consumption)

http://www.4coffshore.com/offshorewind/
Dogger Bank (planned)
2000 turbines
13 GW (10 % of UK electrical power consumption)

http://www.4coffshore.com/offshorewind/
Wind Farm sites under investigation: UK, DK and NO
Planned Wind Farms UK, DK and NO
Oil and gas installation
western part of North Sea

http://www.4coffshore.com/offshorewind/
Density Statistics Plot
Number of ships during December 2011
If you put it all together

http://www.4coffshore.com/offshorewind/
Do we need to build an route network?
What is the ACCSEAS project?

• ACCessibility for Shipping, Efficiency Advantages and Sustainability

• Part of the INTERREG IVb North Sea Region (NSR) 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

Aims:
• To implement and demonstrate an e-Navigation test-bed in the North Sea Region to improve regional maritime accessibility
• To contribute significantly to the resilience of the Region's critical infrastructure by improving safety, security, environmental protection and economic growth
• To support cohesion and efficiency through the provision of enhanced maritime access to remote and peripheral parts of the Region.

Objectives:
• 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 (GLA, WSV, DMA, RWS, SMA, NCA, FUAS, NHL, CTH, SSPA, WMU)
• Cooperate with and build on the achievements of the ‘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

• Guided by IMO, IALA and European (e.g. e-Maritime) framework
• Requirements
  – Focus on mariner
  – Traffic analysis and prediction
  – Risk analysis
• Architecture
  – Integrated ship and shore systems
  – IHO S-100 data standard
• Implementation, Verification, 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, R-Mode, CSAC & inertial technologies
  - 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)

• extended functions of virtual/AIS Aids-to-Navigation
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
  – the 2013 conference will be at Flensburg, Germany, 5-7 March
• Legacy for future coordination of North Sea e-Navigation services
• Develops e-Navigation sustainability plan (2015 to 2020)
ACCSEAS NSR Outreach

• ACCSEAS recognises the importance of outreach to stakeholders in the North Sea Region
• WP2: Coordination of communications (led by UK, GLA)
• WP4: Information to advise further development of regulations, recommendations & standards for e-Navigation provision in NSR (led by Germany, Flensburg University of Applied Sciences)
• WP 8: Future Coordination of NSR e-Navigation (led by Netherlands, RWS)
  • North Sea e-Navigation Coordination Group of service providers and competent authorities
  • NSR e-Navigation Users Forum (open to all stakeholders)
  • NSR e-Navigation Transnational Advice and Guidance Group
ACCSEAS Global Outreach

• ACCSEAS recognises the importance of outreach to key global stakeholders: IMO, IALA, IHO, ITU, EU etc

• WP4, Activity 4.7: Provides outreach information to maritime stakeholders and decision makers (led by Germany, WSV)
  – merging results/‘lessons learned’ into outreach documents
  – ‘liaison notes’ of practical outcomes, solutions and methods
  – advice on what works and what does not
  – documents scheduled for submission to the relevant international bodies
Project Activities

• Currently establishing the baseline and priorities
  – Data collection
  – Existing services
  – Existing concepts

• Some e-Navigation services being investigated already

• Analysis of data and architectural design due to start in near future
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
• Buy-in from ports, service providers, ship-owners and international e-Navigation community
• Good progress so far, with a lot more to come!