EFFICIENSEA2 IS DEMONSTRATING MAJOR MILESTONES

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EfficienSea 2 is an EU Funded Horizon 2020 Project, led by the Danish Maritime Authority, with 32 partners and a budget of €11m. It runs from May 2015 - April 2018.

The EfficienSea2 mid-term conference “Getting Connected to the Future” takes place on 8-9 November 2016, in Copenhagen.

Technology and smart concepts are rapidly evolving within the field of maritime navigation, communication and administration. The conference will address the following questions:

- Will The Maritime Cloud solve identity management and foster Big Data at sea?

- With the alpha release of the regional e-Navigation pilot, the BalticWeb platform, can the Baltic Sea become a role model for global roll out of e-Navigation?

- How can standardised, navigational and administrative services reduce the risk of accidents, increase efficiency and create incentives to comply with emission regulations?

Readers are invited to visit the project website to get more information: http://www.efficiensea2.org

The Maritime Cloud – at the heart of information exchange

The Maritime Cloud is a ground breaking communication and service provision framework that will facilitate secure information services, based on the user needs and concepts derived from EfficienSea 2 and previous projects. Today, e-maritime systems depend on the availability of internet connectivity, however, no internet connectivity is guaranteed by the SOLAS requirements. As a result, safety of navigation is often tied to more or less outdated communication links, and IP connectivity is only available if required by business demands or crew welfare requirements. E-mail is the most common way of addressing a ship – but e-mail is not a requirement, and cyber security concerns prevent the utilization of IP connectivity to push Maritime Safety Information onto ships' safety critical navigation systems. The Maritime Cloud development is carried
out by authorities and highly competent IT academic and industrial partners, under the scrutiny of industrial manufacturers of shipboard as well as shore based maritime equipment and systems. With the aid of IALA and CIRM, global harmonization and standardization of the framework will promote adoption within the global shipping community.

**Novel communications technologies – solving weak connectivity and high cost communication**

When introducing e-maritime and e-navigation services, a major challenge to ships relates to communication with systems ashore. Increased availability and robustness of communication systems is a clearly identified user need – in particular in the Arctic. Cost of communication is a concern of shipping companies, with the introduction of modernized information services. Also, there are significant security concerns associated with integrating internet connections into safety critical navigation systems.

Ships subject to the SOLAS (Safety of Life at Sea) Convention are required to carry equipment defined by the GMDSS (Global Maritime Distress and Safety System), depending on their area of operation. INMARSAT is the only satellite service recognized for the GMDSS, although IRIDIUM has applied for recognition into GMDSS and is being evaluated by the IMO. Other satellite systems – for instance GALILEO – provide similar capabilities, and cellular mobile network services can be used in port or coastal environments. However, where such links are used, standards are not in place to integrate ships' navigation systems safely. As a result, shore-to-ship information transfer is typically limited to one specific communication link depending on information content, or has to be based on ships polling for information when capable.

EfficienSea 2, in cooperation with IALA and ITU, is encouraging the development of novel communications technologies, in particular the VHF Data Exchange System (VDES). This employs existing maritime spectrum in new ways to provide enhanced digital communications channels suited to the needs of e-navigation.

**The impact of space weather**

A report on space weather effects on communication and positioning services is due at the time of the conference. Space weather is known to have a significant impact on satellite as well as terrestrial communication systems. Vulnerabilities of communication services in the arctic region is of particular interest when addressing the coverage for broadcast of Maritime Safety Information and the quality of positioning services such as the European GNSS system Galileo. NAVDAT and VDES are also likely to be affected by space weather. For the first time, observation campaigns are being performed to evaluate
simultaneously the level of impact of space weather on maritime positioning and communications multiband systems. Research on the correlation between space weather and the performance of various communication and positioning services will be conducted, with the aim to trial and evaluate provision of a space weather forecast service that may predict limitations in communication or positioning services in the North polar region.

**Common port database to streamline information flow**

Reliable nautical and commercial port information is the foundation for efficient and safe port calls. Standardised templates and reporting forms together with techniques for single reporting will streamline the information flow to ensure efficient exchange of data. This will, at the same time, reduce the time spent preparing and executing the data exchange and thereby reduce the administrative burden.

Port logistics and access to information will establish an easily accessible platform for the industry, building on the Maritime Cloud concept for e-solutions. This will help the shipping industry remain competitive compared to other modes of transport.

The majority of ship collisions and groundings happen when ships are approaching or sailing within port areas due to increased traffic density and navigational constraints. Thus, improved access to information, not only in terms of the content of information, will aid decision-making.

**Delivering nautical charts and updates**

This service will deliver charts in selected areas in which S101 data will be generated. Data will be made available on an e-Maritime Prototype Display (EPD) and commercial prototypes. A prototype service for delivering sea charts and updates will be developed. The service will build on the generic service framework delivered by the developed Maritime Cloud framework and will be based on S101. The task will cover generation of trial S101 data, possibly converted from existing S57 data, the development of a prototype service for delivering the data, and rendering of the information in both the EPD and prototypes of commercial systems. Investigation into the possible provision of bathymetry data based on S102 will also be conducted. This service will implement MSP 11 as defined in the IMO e-navigation strategy implementation plan.

**Join the EfficienSea2 conference**

The ground-breaking EfficienSea2 solutions and their benefits to the maritime industry, are being demonstrated at the conference.

Registration for the conference can be achieved here: http://www.conferencemanager.dk/EfficienSea2