

## BENEFITS TO THE SHIPPING INDUSTRY

EfficienSea2 provides a new generation of standardised services based on contemporary technology:



### Navigation

To ease navigation, the project develops, matures and where possible standardises services for Maritime Safety Information and Notices to Mariners, Meteorological Information on Route, Ice Charts, Crowd Sourcing of Ice Information, Nautical Charts based on S100 Standards, Smart Buoy Interaction, Route Optimisation, Route Exchange, No-go Areas and Comfort Zones.



### Administration

To reduce administrative burdens, the project develops, matures and where possible standardises services for improving the exchange of information between ship and shore and vice versa. Standardised templates and reporting forms facilitate an efficient, uniform, streamlining of information. Moreover, services for automated reporting to e.g. VTS/SRS form part of the solution together with enhanced distribution of port information.



### Arctic

To strengthen safety for operating in remote areas like the Arctic, the project develops, matures and where possible standardises services for Arctic Live Position Sharing, Arctic SAR Tool for coordinating SAR operations and Space Weather Forecast to predict GPS fall out.



### Emissions

To ensure a level playing field for ships operating in a Sulphur Emission Control Area (SECA), the project develops and matures a service for Sulphur emission monitoring.

## PARTNERS

EfficienSea2 is lead by the Danish Maritime Authority and has 32 dedicated partners from 12 countries in the Baltic Sea region and beyond, all carefully selected to ensure maximum impact of the developed solutions:

### BIMCO

Chalmers University of Technology

### CIRM

Cobham SATCOM

Collecte Localisation Satellites

Danelec Marine

Danish Geodata Agency

Danish Maritime Authority

Danish Meteorological Institute

DTU Space

Estonian Maritime Administration

Finnish Transport Agency

FORCE Technology

Frequentis

FURUNO

GateHouse

### IALA

Latvian Maritime Academy

### LITEHAUZ

Lyngsø Marine

Maritime Development Center of Europe

Maritime Office of Gdynia

MARSEC-XL

OFFIS

Polish National Institute of Telecommunications

Rocketbrothers

Swedish Maritime Administration

SSPA

Transas Marine

UCPH - Department of Computer Science

United Kingdom Hydrographic Office

Vissim

### Duration

The project runs from May 2015 to April 2018 (36 months duration all together).

### Contact

Learn more about EfficienSea2 and how we work for efficient, safe and sustainable traffic at sea at:

[www.efficiensea2.org](http://www.efficiensea2.org).

### Budget

EfficienSea2 has a budget of 11.5 million euros of which 9.8 million euros is granted from The European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 636339.



Join our EfficienSea2 LinkedIn group to get project updates.

# GETTING CONNECTED FOR EFFICIENT, SAFE AND SUSTAINABLE TRAFFIC AT SEA



The EfficienSea2 project has received funding from The European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 636339

## GETTING CONNECTED

Today, information exchange between ships and shore is unstable, costly and marked by old technology and non-standardised solutions. This increases the risk of accidents, inefficiency and administrative burdens. Furthermore, incentives to comply with emission regulations are limited, which adversely impacts the environment. The need for operational solutions in the maritime domain is significant. The overall aim of the EfficienSea2 project is to deal with these challenges by creating and deploying innovative and smart solutions for efficient, safe and sustainable traffic at sea through improved connectivity for ships.

### From testbed to real-life implementation

EfficienSea2 develops the essential solutions that are the prerequisites for taking e-Navigation from testbeds to real-life implementation. EfficienSea2 is a demonstrator in the Arctic and Baltic Sea and the first generation of a coherent e-Navigation solution. Through global collaboration, use of open source software and an explicit aim for standardised solutions, EfficienSea2 is paving the way for a global roll out of e-Navigation.

## PROJECT SCOPE

The EfficienSea2 four areas of focus are:

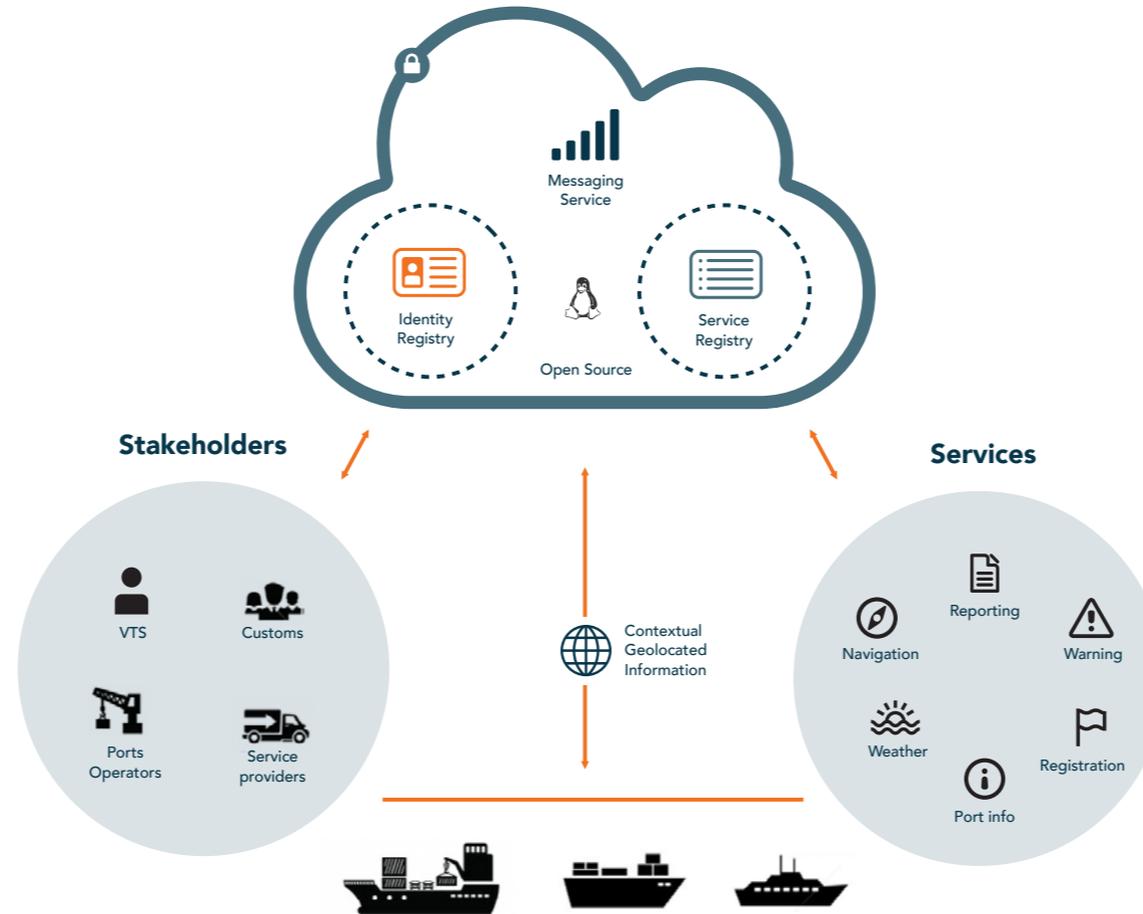
### 1 End user services – smart navigation and administration

EfficienSea2 identifies, develops, tests and, where possible, standardises and implements solutions that reduce the risk of accidents, increase the efficiency of the transport chain and lower the administrative burdens and environmental impacts.

#### Output: 15 e-Navigation and e-Maritime services

EfficienSea2 develops more than 15 end user services, though at different stages of maturity. Some services, like basic navigation and weather solutions, will be tested and implemented in real world platforms. Other more advanced services will be tested at experimental levels. Focus is on open source software and providing input to relevant standardisation bodies. Services, such as Maritime Safety Information and Notices to Mariners, are anticipated to reach new global standards within the project scope.

## THE MARITIME CLOUD



### 2 Platform displays – web and onboard equipment

EfficienSea2 makes services available for the end user by developing web-based platforms focusing on the Arctic and Baltic areas. For the long term roll-out, services will also be prototyped and tested in commercial onboard and shore equipment.

#### Output: Implementation of BalticWeb

EfficienSea2 provides a working prototype of a cloud embedded single point of access to e-Navigation and e-Maritime services in the Baltic Sea (based on the existing ArcticWeb). With five to six integrated e-Navigation services, BalticWeb will be accessible on all internet connected systems, e.g. tablet and PC.

### 3 Communication framework – The Maritime Cloud

EfficienSea2 creates and implements a communication framework that enables efficient, secure and reliable information exchange in and around the maritime sector. The Maritime Cloud connects all maritime stakeholders with maritime information services of all kinds. The Maritime Cloud includes an Identity Registry for secure identity management, a Service Registry for registering, discovering and using relevant services and a Messaging Service for intelligently exchanging information between communications systems connected to the cloud. The Maritime Cloud has potential to break ground by enabling the maritime internet of things.

#### Output: Implementation of The Maritime Cloud

EfficienSea2 provides a working prototype of the communication framework with operational functions such as a single logon for all services, identity management and discovery of maritime services. Elements of The Maritime Cloud will be made operational in the Arctic and Baltic Sea.

### 4 Communication channels – smart roaming and VDES

EfficienSea2 develops, prototypes and tests concepts for cost-effective and seamless roaming between communication channels, as well as, the new communication channel VDES (VHF Data Exchange System). Thereby, it addresses the challenge of weak connectivity and high cost communication.

#### Output: Maturation of VDES – VHF Data Exchange System

EfficienSea2 provides field testing of the on-air parameters performed on a dedicated test platform of a new, globally interoperable and potentially cost free ship-to-ship and ship to shore digital communication link that is dedicated to data transfer via radio channels.