



## OPTIROUTE

### TAKING ACCOUNT OF SEA STATE TO OPTIMISE SHIP ROUTING

The energy consumption and security of ships are major issues both as regards profitability for ship owners and competitiveness for shipyards and also as regards the environment. The OPTIROUTE project follows on from OPTNAV, which introduced tools for optimising the hydrodynamic performance of vessels during construction or refit phase.

OPTIROUTE is aimed at reducing ships' energy consumption, improving their security and enhancing their life expectancy by making routing software take particular account of a ship's response to the environment in which it is moving – sea state, wind, etc.

To this end, the project involves introducing a routing tool capable of taking into account the hydrodynamic, aerodynamic and hydro-structural behaviour of a ship. Prospective developments relate to moving from a global oceanic-meteorological model to a representative deterministic model for studying ship performance in a given sea state, downscaling the model to define the overall performance of a ship using minimal calculations, or developing innovative routing algorithms integrating all the objectives and constraints of multi-purpose routing.

As an example, it will be possible to define the optimum route for a ship that minimises energy consumption while operating under the constraints of a specific destination arrival time by exploiting the effects of the wind, at the same time as avoiding areas with potential critical safety issues – parametric rolling, slamming, green water, etc.

The work resulting from this project will also, from design stage, improve performance and safety in a real-life environment including waves and wind.

Target markets are ships under construction and those in service.

**The OPTIROUTE project is recognised jointly by the Pôle Mer Bretagne Atlantique and Pôle EMC2 clusters.**

#### Partners

##### Companies

HydrOcean, Nantes [Project Developer]  
Adrena, Nantes  
Bureau Véritas, Nantes  
CMA CGM, Marseille  
Nextflow Software, Nantes  
STX Europe, Saint Nazaire

##### Research centers

Ecole Centrale de Nantes (ECN), LHEEA, Nantes  
École Nationale Supérieure Maritime (ENSM), Nantes  
Ifremer, Brest

#### Funder

Fonds Unique Interministériel

#### Labelisation

21/11/2014

#### Overall budget

2 218 K€