



Innovative weather routing and nowcasting for the maritime community based on cooperative collection of meteo-marine data from commercial vessel

Profumo proposes **novel weather-based services** for the Mediterranean navigation, with the aim of granting **fuel saving** and improving **safety** for passengers, crew, goods and ship's structures.

New maritime navigation services

To satisfy the demand of commercial customers, Profumo has conceived innovative services expressly for **middle/short routes**.

Dynamic Routing at Mediterranean scale

The service is conceived to provide pre-voyage route planning and updated information for optimal re-routing for vessels. This is possible by joining Profumo's innovative approaches to weather observations, forecasts and modeling of ship's physical characteristics, for predicting the vessel's specific reaction to weather phenomena. Moreover the frequently refreshed meteo information allow en-route corrections, therefore optimizing speed and course.

Navigation assistance

By using the navigation assistance service the crew is fully supported in the route decision and planning. Profumo, integrating real time meteo-marine conditions increases the safety and the navigation comfort through the application of the most recent operational guidance criteria.

High definition weather products

Thanks to the cooperative meteo data injected in high resolution, local-scale forecasts, Profumo provides detailed predictions with a real resolution of few kilometres.

Why do we need meteorological measurements ?

More data, more reliability

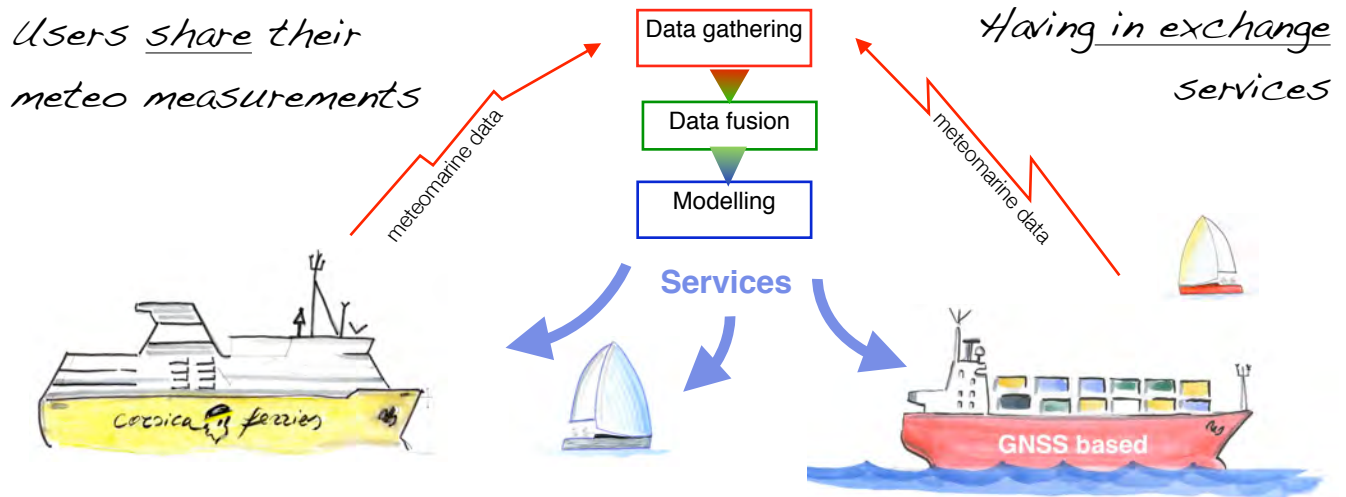
Weather models can produce good nowcasts and forecasts only if "fed" with a good and large amount of actual measured data. **On seas meteorological stations are extremely sparse**: Profumo uses vessels as moving meteorological stations, which continuously provide this precious information.

Cooperative data gathering

Profumo proposes a collaborative model: **end-users cooperate to the Profumo services** providing their own geo-referenced Meteo-marine measures gathered from common on-board sensors. (Pre-installed meteo and GNSS stations).

Innovative data processing

The meteorological data from vessels are not-certified, so unusable as-is in the models. Therefore, a specific data processing technique merges and extracts proper information as input for the high resolution weather models.



A novel concept on weather routing

Profumo combines innovative components.

Collaborative data from private ships and boats is a precious source of information for the meteo-marine monitoring and is profitable for the middle/short weather routing. The advanced data processing and fusion “merges and cleans” measurements extracting proper information for the assimilation into the high resolution nowcasting and forecasting models.

Profumo’s innovative routing algorithm uses these detailed observations and predictions for calculating the optimal route.

On the basis of the different environmental conditions this algorithm is capable of predicting the fuel consumption suggesting the optimal route. It takes in account voyage constrains such as speed, time-windows, and in perspectives, comfort and loading conditions.

What next ?

Profumo Dynamic Navigation for yachting

These services are driven by the needs of leisure navigation. They provide weather-related assistance to yachts based on actual weather conditions and precise short term forecasting.

The outcome is the improvement of navigation safety and comfort in cruising and in coastal and offshore regattas.

PROFUMO in a glance

The initial project idea started in the framework of the ASI project Sestante in 2003. The Cosmemos project (2011), co-funded by the European Commission’s Seventh Framework Programme for Research and Technological Development (FP7), created the bases for experimenting collaborative data collection and processing, as well as the weather routing algorithm.

Afterwards it has been proposed to the ESA ARTES Integrated Applications Promotion (IAP) programme as a feasibility study with the name Profumo. In the Feasibility study the partners, with expert advice from ESA specialists, continued the development of the algorithms and defined the business strategy for the commercialisation of the Profumo products, defining the best way to achieve the future growth.

The next step is to complete the development of the services up to a level of “close-to-the market”.



PROFUMO is a project co-funded by ESA in the frame of ARTES 20 Integrated Applications Promotion (IAP) programme

