

SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)  
Integrated Applications End-to-End Solutions (1)

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SEMAFORS: A SATELLITE-BASED GLOBAL SHIP EFFICIENCY MONITORING, WEATHER  
FORECASTING AND ROUTING SERVICE

**Abstract**

The importance of shipping in Europe is evident, nowadays over 90% of Europe's trade and 43% of intra-European trade is shipped through Europe's seaports. The general concern on emissions of shipping and new legislations imposed on the industry have created an awareness that emissions should be monitored and where possible reduced. A clear example of such regulations is the new IMO (International Maritime Organization) regulation on "Mandatory energy efficiency measures for international shipping" due to enter into force on 1 January 2013 for all ships of 400 gross tonnages and above.

In 2012, BMT ARGOSS – a company specialized in delivering solutions to the maritime sector – and The University of Reading (United Kingdom) started the SEMAFORS (Ship Efficiency Monitoring, Weather Forecasting and Routing service) demonstration project, financially supported by the Integrated Applications Promotion (IAP) programme of the European Space Agency. The SEMAFORS project objective is to develop and pre-operate an integrated ship voyage end-to-end service, using space assets, to help the shipping industry reducing fuel consumption, increasing safety of operations and optimizing port resources utilization. The Port of Rotterdam as well as several shipping companies participate in the project, which will serve as an entry point for the service commercialization by BMT ARGOSS once the project is successfully completed.

The SEMAFORS service concept, the system design and architecture, its key technical challenges, and how these respond to the users' needs are discussed in this paper. In addition, the demonstration trials set-up with the users and a subset of preliminary results are presented.