DOLPHIN: Development of Pre-operational Services for Highly Innovative Maritime Surveillance Capabilities

Co-financed by EU 7th Framework Programme

SEVENTH FRAMEWORK PROGRAMME

DOLPHIN

e-geos
AN ASI / TELESPAZIO COMPANY

e-GEOS, a joint Italian Space Agency (ASI) and Telespazio company, leads a project involving 20 European players from all over Europe, that aims at bringing significant technological advances in the field of Maritime Surveillance, focusing on three main Policy Areas:

⊙ Border Surveillance

⊙ Traffic Safety

⊙ Fisheries Control,

The project aims at developing key technological and operational gap-filling innovations, leading to the sustainable operational exploitation of Earth Observation Satellites capabilities in the maritime applications.

The DOLPHIN project results from the multi-year experience of its players in dealing with maritime surveillance:

⊙ e-GEOS is in charge of the EMSA CleanSeaNet H24 operational service that monitors oil spill in Mediterranean waters since almost 5 years, leads European projects, like MARISS, and is operating maritime services worldwide

⊙ Consortium partners have large experience from international research and development and the involved services providers have also documented capabilities to develop NRT services for all the Policy Areas addressed.

The DOLPHIN project will specifically aim at developing highly innovative tools, bringing the maritime surveillance into new possibilities: detecting small vessels, bringing vessel classifying into operational use, building intelligence tools to recognize abnormal behaviours at sea.

In order to do so, several technological steps will be made:

⊙ Use of polarimetry and Multi-channel SAR processing to detect small vessels, improve ship target detection and classification.

⊙ Use of Advanced Single Channel SAR processing to better detect small and fast targets, characterize the vessel motion parameters, better identify targets on the sea.

⊙ Use of feature extraction and recognition to recognize man-made features in imagery, detect irregularly shaped wakes produced by manoeuvring vessels, enhance ocean imagery, classify ships based on silhouettes generated from a 3D image.

⊙ Use of multi-sensor data fusion to accurately predict the vessel tracks, icebergs, and shipwrecks, performing also accurate geo location of SAR images in which the positions of the objects of interest are detected.

⊙ Use of sea state modelling to extract sea state and meteorological parameters from high resolution SAR images.

In the end, DOLPHIN will produce 25 software tools and 3 decision support modules that will be used in regular operations and, according to End Users present within the project, will significantly improve their monitoring activities in the selected fields.

Italian tanker Savina Caylin hijacked by somalian pirates

Italian tanker Savina Caylin and several other ships hijacked in front of the Somalian coasts

The DOLPHIN project is led by e-GEOS, with contributions from France's CLS and Thales Alenia Space, UK's Qinetiq, Norway's KSAT and FFI, Portugal's Edisoft, Greece's Space Hellas, Italy's Thales Alenia Space Italia, University Federico II of Naples and La Sapienza University in Rome, Germany's DLR, Netherlands' TNO, and other partners.