PROTECT

Piracy PRevention and COmmercial NavigaTion in InsECure WaTers

The aim of the PROTECT project is to improve security within the maritime transport sector, with emphasis on the Gulf of Guinea region where piracy is a persistent menace to commercial vessels and their crew. The PROTECT solution achieves this by augmenting existing piracy information using a combination of real-time sensors such as shipborne radar, and space based assets such as GNSS services and S-AIS. The resultant solution provides cost-effective integrated services to improve situational awareness for both on-board personnel (vessel master and crew) and shore based stakeholders (shipping companies and maritime piracy centres).

The Motivation for the PROTECT Project

The importance of maritime transport cannot be overstated. Around 90% of global trade is carried by the ~50,000 merchant ships in the world vessel fleet. Trade between the European Union and the rest of the world represents 45% by value and 70% by tonnage of global trade and is growing at over 10% per annum. Given this context, maritime piracy has serious economic ramifications. Armed pirates in the Gulf of Guinea were responsible for all 30 crew kidnappings reported in 2013. Geopolitical instability and the absence of concerted effort amongst the countries in the Gulf of Guinea region to fight piracy are often cited as the main reasons for the rise in maritime piracy activity. Factors such as lack of adequate infrastructure and no region-specific centre with the responsibility to act as a single point for information to be shared between regional naval forces, commercial ship-owners and policy-makers are seen as salient factors. Additionally, use of armed force which has proven successful elsewhere (such in the Gulf of Aden) is not generally permitted in the Gulf of Guinea, and the cost is exorbitant.

User Needs and Requirements

In the absence of effective international agreements and a ban on armed guards in the Gulf of Guinea, stakeholders are looking to advanced technological solutions to improve decision making. Shipping companies, in particular, express a need to provide long range monitoring along the proposed route to provide information about suspicious activity and support operational decisions such as the need to reroute. A wealth of data exists, e.g. ships' own radars, historical data on incidents of piracy and pirate ships, satellite imagery, GNSS, AIS/S-AIS but each source of information only provides part of the overall picture and none provides the overall wide area operational picture, updated regularly to inform decision making. There are particular challenges in high risk areas where data sources such as AIS are generally turned off by vessels in order to remain unidentifiable to pirates.

European Space Agency
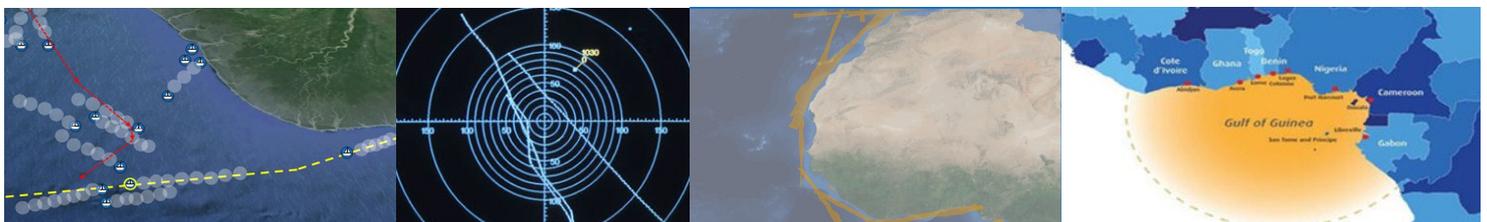
The PROTECT Solution

By aggregating data from various sources and exploiting a combination of shipborne radar, GNSS services, S-AIS and SatComs, the PROTECT solution provides a number of end-user services that are accessible from web based and smartphone/tablet device client applications. PROTECT enables crew on-board vessels, primarily masters, and shore based personnel, as well as maritime counter-piracy authorities to have access to improved situational awareness services that include the following; capability to identify suspect vessels or mother ships based on Pattern of Life (POL) analysis, capability to track and monitor pirate boats/vessels once identified including long-range monitoring of vessels along a route, and capability to predict threat levels and suggest actions in advance, such as rerouting. The solution utilises optimised data compression techniques to minimise bandwidth usage over satellite communication links.
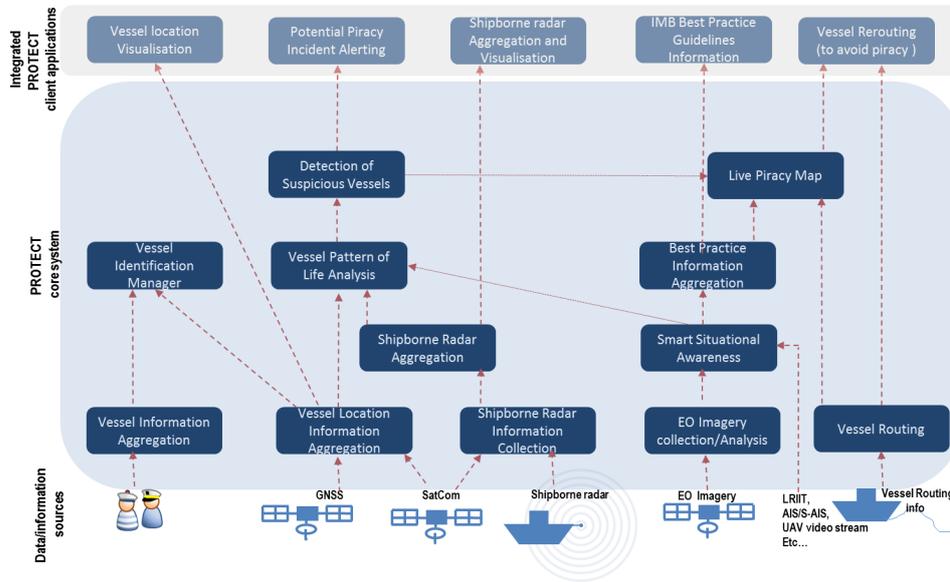
Outcome and Way Forward

The PROTECT solution will provide a comprehensive, cost-effective and unique tool to improve situational awareness in the maritime transport sector to reduce fatalities and the economic ramifications of piracy. A number of users and stakeholders in the sector are supporting the project and will validate the solution - these include Herning shipping, Gardline shipping, and South Asia and Africa Regional Port Stability Cooperative (SAARPSCO). Upon successful completion of the current phase of the project, a demonstration phase will commence during which the Proof of Concept services that have been developed will be further enhanced into an integrated pre-operational commercial offering.

Project details

The PROTECT consortium is led by Avanti Communications (UK), with Thales and Assimila (UK), Brimatech (Austria) and StormGeo (Norway) as subcontractors.

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The project is further described on
http://artes-apps.esa.int/projects/protect

Collaborating with ESA

The Integrated Application Promotion (IAP, or ARTES 20) programme funds feasibility studies and demonstrations. It aims at generating sustainable services which meet the needs of public and private organisations. PROTECT is just one example of IAP applications. Do you think that space technologies and services such as space imagery, satellite navigation, satellite communication, manned space technologies might help you better address your operational challenges? ESA's IAP programme can make it happen. For further details please contact us at
Email: iap@esa.int

Website: http://iap.esa.int