Dependable cooperative systems for maritime safety and security

PROJECT FACTS
Partners: Thales Naval Systems
VU University Amsterdam
Radboud University Nijmegen
Eindhoven University of Technology
Delft University of Technology
Embedded Systems Institute
Period: September 2011 - August 2015
Capacity: 10.5 fte/year, 3 PhDs, 1.5 PostDocs

INDUSTRIAL CHALLENGE
Efficient monitoring and management of maritime activities is a critical task for all coastal states. It is necessary for collision avoidance, enforcement of fishing policies, pollution control, deterring criminal activities such as smuggling and terrorism and guidance in cases of bad weather or unexpected obstacles. However, as the volume of transported goods grows and the range of activities expands, so too do the risk and impact of accidents, pollution and criminal activities. The challenge today is how to effectively monitor and manage coastal areas with a minimum of resources in terms of skilled manpower and active enforcement.

RESEARCH OBJECTIVES
The objectives of the Metis project are to develop systems-of-systems techniques to combine multiple sources of information, analyse them, provide risk factors and deliver the results to operators controlling maritime areas.

Thales Naval Systems aims to continuously improve its Tacticos product functionality, including advanced situation awareness capabilities for monitoring maritime areas. The Metis project will focus on merging diverse sources of information such as: suspicious manoeuvres, ports recently visited, image data, and history of the vessel’s owner and crew, together with novel ways of displaying uncertain data.

Using this analysis, operators will be able to automatically monitor large numbers of vessels. They will be alerted to any suspicious or dangerous situations together with the rationale for the warnings. With this information they will be able to determine the best course of action to take.

EXPECTED RESULTS
By developing advanced system-of-systems techniques to automatically monitor and determine risk factors for all vessels in the region of interest, the expected results are as follows:

- Techniques to combine multiple sources and types of information and to assign risk factors to objects and behaviours
- Methods to predict the likelihood of undesirable events taking place, thus assisting authorities to reduce the number of accidents and criminal activities
- An intuitive visual representation of complex and uncertain information allowing for fast decision making

INFORMATION
For further information, please visit the website www.esi.nl