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Author: Mr. Bustanul Arifin
Indonesian Space Agency Secretariat (INASA), Indonesia

Mr. Edward Ross
Gemini Innovations, Canada
Mr. Yuval Brodsky
European Space Agency (ESA), Israel

THE APPLICATION OF AN EXTENSIBLE SHIP DETECTION AND IDENTIFICATION SYSTEM IN REGIONS WITH LIMITED RESOURCES

Abstract

We are currently in the initial design phases of developing a ship detection and identification system (SDIS) which will integrate several data sources that can be used to detect and identify ships in realtime and in any geographic region. The integration performed by the SDIS will exploit space-based data from optical and radar satellite imagery, AIS, VMS, and LRIT and terrestrial-based data from coastal and ship radar networks, coastal AIS networks, vessel registries and underwater acoustic and electromagnetic sensor networks. The system will be useful for many applications including security, monitoring of oil spills and other marine pollution and marine resource management.

This presentation will highlight the system's extensibility and, in particular, the significance of this feature to developing countries. Many developing countries suffer from illegal exploitation of their exclusive economic marine resources and from marine security threats such as piracy. The SDIS can mitigate these issues by detecting and identifying ships in a region and estimating their behavior providing enforcement agencies with a prioritized list of potential of interest.

Many resources are needed to establish and operate an integrated SDIS and these resources may not be available to some regions. Firstly, a certain level of technical expertise is necessary to set up the SDIS, integrate the system with sensor networks and other data streams, and operate it. Regions without these capabilities will have trouble implementing the SDIS while other regions would prefer to locally implement the system due to security and privacy concerns. Our business model offers two modes to address this. A region can subscribe to a service which provides ship detection and identification alerts as they occur. Alternatively, a region can purchase the system in order to implement and operate it locally.

Secondly, a region may not have the infrastructure to provide all the possible data streams that can be used for ship detection and identification. The SDIS attempts to integrate as much data that is available and calculates a confidence level in each ship detection and identification event. This confidence level would increase with more available and frequent data. As a region expands its infrastructure, the SDIS can readily integrate new data streams. Additionally, it architecture allows for easy implementation of upgraded and expanded data processing algorithm.