



The 'Global Monitoring for Environment and Security' (GMES) represents a concerted effort to bring data and information providers together with users, so they can better understand each other and make environmental and security-related information available to the people who need it through enhanced or new services.

GMES

LIMES (Land and Sea Monitoring for Environment and Security) systematically develops for the first time applications and services relating to security, applying innovative solutions based on Earth Observation systems and satellite communication and positioning technologies. It has applications in the surveillance of European seas and the monitoring of borders and critical infrastructure (nuclear power stations, pipelines, etc) in Europe and beyond. It also provides support for humanitarian missions, such as the management of humanitarian relief, the consequences of natural disasters such as tsunamis or earthquakes, the movement of refugees, reconstruction and development aid. The LIMES project supplements the **GMES** (Global Monitoring for Environment and Security) program until 2008 by providing expertise in the security area. GMES will be able to provide operational services from 2008, and will continue to develop new applications and to consolidate existing services, partly through the launch of new Earth Observation satellites and services. GMES will increase the capacity of geospatial information, through integration with satellite telecommunications and positioning technologies (Galileo), to support European and global environment and the security of its citizens. The LIMES project has started on 1 December 2006, it has a budget of around EUR 20 million over four years, and involves around 50 European partners. Its purpose is to define and develop prototype information services based on satellite technology to support security management efforts at European and global levels in the following political and thematic interest areas: Organization and distribution in the fields of humanitarian relief and reconstruction. Monitoring the EU's external borders (land and sea), and critical infrastructures. Monitoring and protecting ship traffic (sensitive freight). Protection against future threats to security (terrorism, trade in drugs, weapons and human beings, proliferation of weapons of mass destruction).

LIMES Consortium

LIMES Consortium, led by Telespazio, involves 3 EU and International Agencies, 22 Industrial Companies, 15 Research Institutions from 11 European countries. Moreover the Consortium includes around ten User Agencies at International level and from EU Member States. Beyond user Organisations that are Consortium Partners, LIMES involves around 20 external Institutional User Organisations, that provide service requirements and participate in service set up, demonstration and validation.

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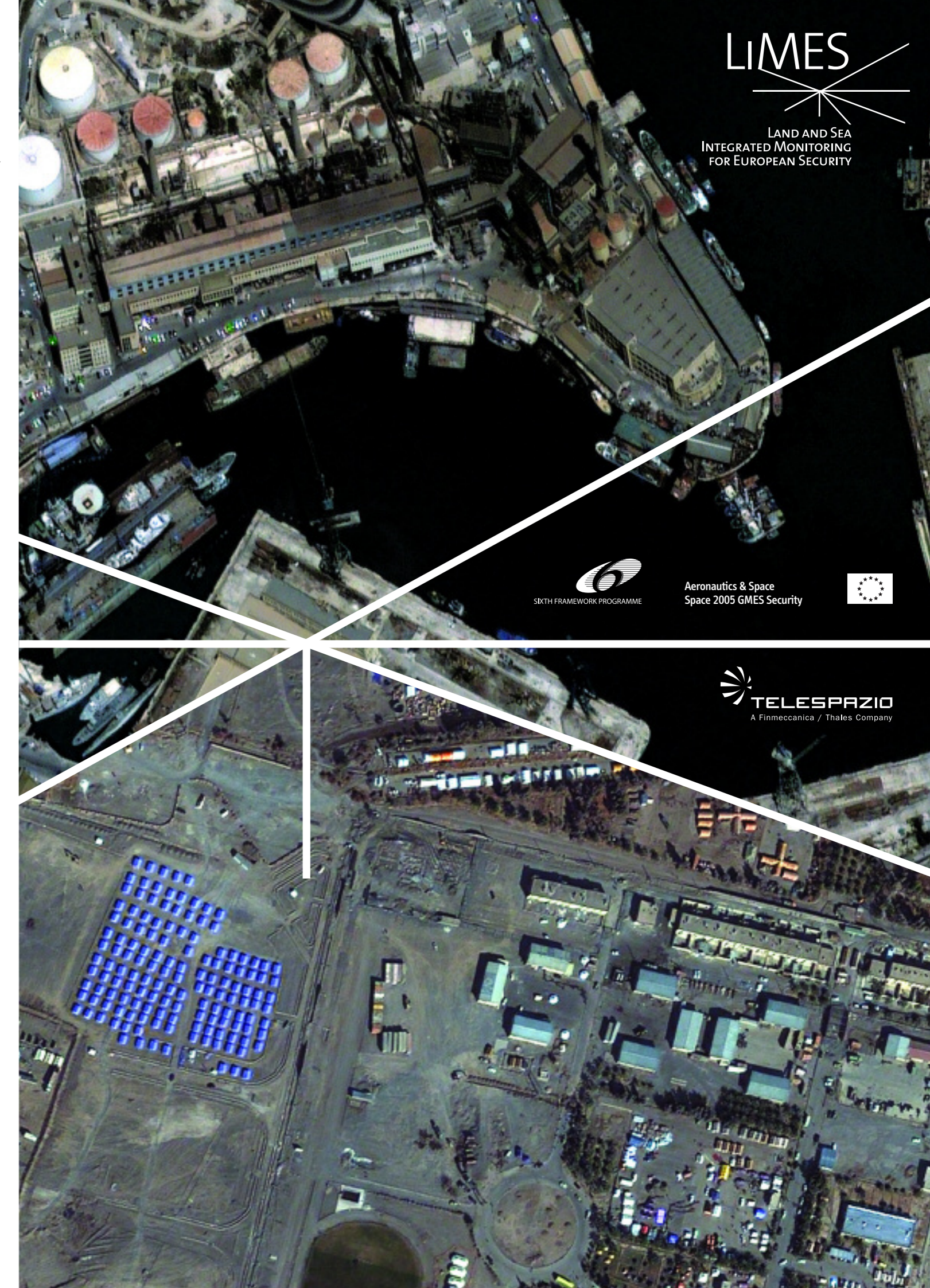
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LIMES
LAND AND SEA
INTEGRATED MONITORING
FOR EUROPEAN SECURITY

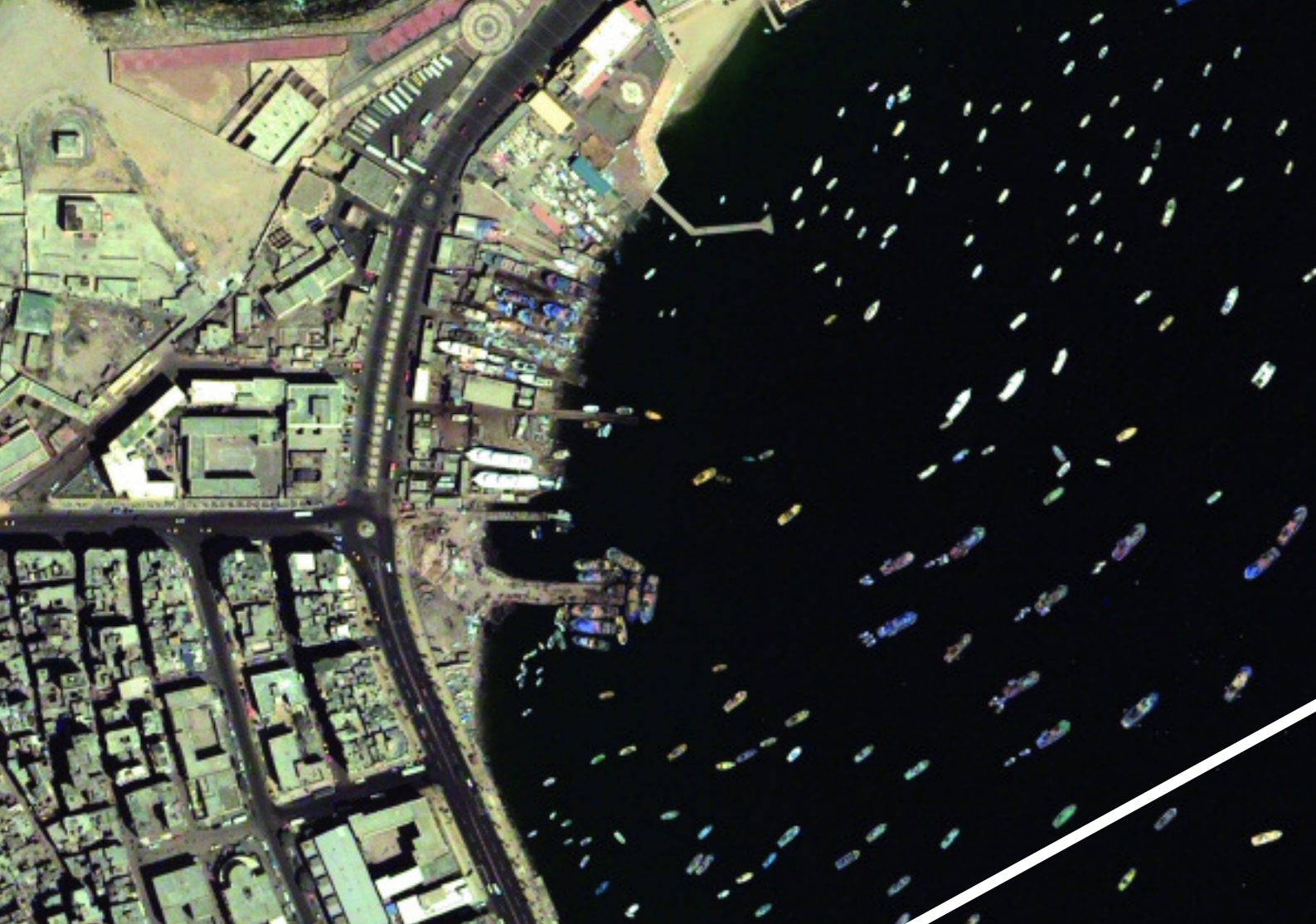


SIXTH FRAMEWORK PROGRAMME

Aeronautics & Space
Space 2005 GMES Security



TELESPAZIO
A Finmeccanica / Thales Company



The Services are clustered in three groups:

Maritime Surveillance

Monitoring of both vessel and cargo movements for reasons of maritime safety, policing and border security both over coastal and open ocean areas. The services include Open, Coastal Water and Sensitive Cargo surveillance. The services are based on satellite Synthetic Aperture Radar and include the integration of other monitoring systems, such as VMS, AIS, vessels and aircraft, and are developed and tested in the Mediterranean, North Sea, Atlantic and over areas outside EU. Main Users are Coast Guards, Customs, Police Departments, EU Agencies.

Land and Infrastructure Surveillance

Includes Land Border Monitoring, Critical Infrastructure Surveillance, support to Event Planning and to Non Proliferation Treaty (NPT) monitoring. The services are based on the capacity of Very High Resolution satellites, used in conjunction with medium to high resolution data and aerial imagery, to enable critical 4D spatial analysis of updated reference data with the aim to assess risks, improve security and enhance preparedness. Test areas are Eastern EU land borders, Spain and UK for Infrastructure Surveillance, a big event for Event Planning and a NPT Monitoring Area. Among the main users are Land Border Police, Civil protection, EU (e.g. FRONTEX) and International Agencies.

Humanitarian Relief and Reconstruction

Includes the improvement and extension of the existing services that cover the whole crisis cycle. For Disaster Preparedness and Support of Reconstruction after a crisis, the information services supports population distribution and resource (food, water, infrastructure, etc) monitoring, as well as the contribution to an information system to support planning. For Operational Support of Humanitarian Relief, the fast provision of updated geospatial information and set up and validation of emergency satellite communication and navigation mobile systems are foreseen. Test areas are Yemen and Nigeria and Tsunami affected areas in Indonesia for Preparedness and Reconstruction support. For Operational Support of Humanitarian Relief, the geographical areas are selected during the first phase of the project based presence/absence of crisis situations. Among the main users are EU and International Agencies, Civil protection, NGOs.

Common Tools • Solutions

The services that are developed make use of specific innovative solutions/tools (e.g. EO data processing SW, algorithms, standards) that are often common to many services. This is the reason why LIMES has devised an activity strand that generate such common tools and solutions. Horizontal, common solutions/tools development activities close the technology gaps identified in the service development with innovative solutions that have a shared applicability to different services and themes, thus optimising R&TD efficiency. Non exhaustive examples of such common solutions are:

- Exploitation of new data sources (e.g. CosmoSkymed, RSAT-2, TerraSAR-X TopSat, UAV etc.)
- Improve existing fusion techniques of multispectral, hyperspectral and SAR data.
- Integration and fusion of space-borne and other sources of surveillance data and information in order to improve the added value information provided to the user (e.g. real-time sensor output with archived geospatial data).
- Detect, classify, and analyse temporal and spatial changes through: Data Mining, Feature extraction and Change detection
- Emergency satellite communication and navigation mobile systems
- Service architecture design based on Multiple Secure Access approach

