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COASTAL SURVEILLANCE SYSTEMS (CSS)

The control over the maritime scenario is closely related to the borders protection, territorial integrity (EEZ), as well as to the safety and security at Seas. Coastal Surveillance Systems (CSS) cover these needs with integrated sensors and functionality toprotect borders, lifes, the environment and off shore critical assets.

Introduction

Indra designs, builds and integrates state of-the-art border surveillance systems for coastal supervision.

These systems can be integrated with legacy systems and networks to improve detection and to coordinate functionality.

The CSS System

The CSS is a sophisticated border surveillance system providing command and control capabilities and integrating state of- the-art technologies in radar, electro optical systems and AIS as well as other sensors.

The CSS system consists of one or multiple Command & Control Centers (CCC) and a set of Sensor Stations (SS) forming a hierarchical architecture.

The sensor stations are deployed across the surveillance area and can be fixed or mobile stations.

Applications

The CSS system is specialized in:
• Detection of small boats.
• Coordination of interception units.
• 24h/365d operation (day and night).

Therefore, it is the ideal solution for:
• Protecting the country's borders against:
- Terrorism / Piracy.
- Illegal immigration.
- Drug Trafficking / smuggling.
- Illegal Fishing.
• Guarantee sea traffic safety within national waters, coasts and ports.
• Protect strategic off-shore installations–oil platforms especially.
• Control its waters to prevent environmental disasters and act accordingly in case these take place.

Our solution

MODULAR DESIGN
- Scalability: the number of sensor stations can grow up easily.
- Sensor independent design: any commercial type of radar / optronic sensor can be integrated.

CENTRALIZED OPERATION
- Hierarchical design of CCC: The information from several Regional CCC can be centralized in a National CCC.
- Remote control of sensor stations from the CCC.
- Sensor stations can also be operated locally.

GRAPHIC USER INTERFACE
- Organized GUI allowing access to different functionalities through graphic buttons and Pop-up menus.
- Integration with GIS, displaying all the information over the cartography.
- Simultaneous display of visible and IR video.

COMMAND AND CONTROL CENTRES
- Centralization of all the information received from the different SS's. It processes, integrates and displays all the information in real time.
- National, Regional and local CCCs.

INTEGRATION WITH GIS
- Radar tracks and interception units are represented over the cartography of the area.
- Measuring and analyzing tools are available for the operators.
- Blanking and alert areas can be defined and customized.

DIGITAL VIDEO DISTRIBUTION
- Use of MPEG-4 video coding.
- Distribution via IP multicast streaming.
- Digital video processing with a wide variety of processing algorithms.

MOBILE SENSOR STATIONS
- Vehicles with radar, optronics and communications integrated that can be used as a mobile CCC.

INTEGRATION WITH TACTICAL COMMUNICATION NETWORKS
- Use of the IP protocol.
- Secured communications via encryption algorithms.
- Adjustable transmission bandwidth depending on system requirements.
- Flexible network communications architecture: microwave links, SATcom links, leased lines...

SECURITY SYSTEM INTEGRATION
- Security system available at each SS.
- Management and control of security centralized at the CCC.
- Possibility to customize the type and number of sensors to be installed at each SS.

HIGH SYSTEM AVAILABILITY
- 24h / 365d operation.
- Minimum system life of 15 years.
- System MTBF > 5000 hours.
- Minimum availability of 95%.

VTS INTEGRATION
- Easy integration with Vessel Traffic Services (VTS) systems sharing many of the CSS component.

Main references

Indra provides Coastal Surveillance System solutions based on our experience protecting over 4.500 km of borders around the World.

The SIVE project, developed for the Spanish Border Police, is a world pioneer maritime traffic control & monitoring & surveillance project. The system integrates state-of-the-art technologies in monitoring vessels, radar and electro-optical systems. This system has been installed in several locations of the coast of Spain and in different islands of the Country.

The types of Systems installed and operated are the following:
- Control Centre.
- Monitoring vessels in the responsible area of Centre.
- Integrates state-of-the-art technologies in radar and electro-optical systems.
- System can be adapted for ground or coastal surveillance.

- Fixed and mobile Sensor Stations.
- Integrated with tactical communication networks.
- Other sensors: AIS devices and meteorological stations.

Besides the SIVE Project, Indra's CSS have been deployed at:
- Hong Kong SAR CSS.
- Latvia CSS.
- Romania CSS. (SCOMAR Project).
- Portugal CSS (SIVICC Project).

All the said references share most of the technology with Vessel Traffic Services (VTS). In this field, Indra's systems can be found at:
- Port of Southampton (UK).
- Polish Port Authority (Poland).
- Port of Mohammedia (Morocco).
- Port of Cadiz (Spain).
- Port of Valencia (Spain).