The Mission of a State in securing its borders is complex and diverse. To face this complexity, Indra designs, builds and integrates state-of-the-art border surveillance systems based in a complex network of integrated sensors that provide information in real time, enabling the early detection, identification, tracking and finally interception and capture of intruders.

Indra provides systems to protect all kind of border areas, both land and maritime in the fight against different types of intruders.

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**Introduction**

The main objectives of a border surveillance system is to Protect the country’s borders against intruders who attempt to conduct illegal or criminal activities, as well as the protection of strategic infrastructures such as oil platforms or oil pipelines.

Indra systems are fully adapted to each particular environment, and can integrate all type of sensor from any manufacturer, besides having its own technology. These systems are modular and easily scalable, giving them the highest flexibility.

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**Architecture**

A border surveillance system is a sophisticated system providing command and control capabilities and integrating state-of-the-art technologies in radar, electro optical systems, underground sensors, as well as other type of sensors, physical barriers and integrated communications.

The border surveillance 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.

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**Applications**

Border surveillance systems are specialized in:

- Detection of threats and intruders.
- 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.
Our solution

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

**PROPRIETARY CONTROL SOFTWARE**
- Control software developed by Indra that covers all the functionalities of a border surveillance system.

**IMARE | iBORDER**

**CENTRALIZED OPERATION**
- Hierarchical design of CCC: The information from several Regional CCC can be centralized in a National CCC.
- Remote or local control of sensor stations from the CCC.

**GIS INTEGRATION**
- 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.

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

**SECURITY SYSTEM INTEGRATION**
- Customized Security system available at each SS.
- Management and control of security centralized at the CCC.

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

**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 TACTICAL COMMUNICATION NETWORKS**
- Use of the IP protocol.
- Secured communications via encryption algorithms.
- Flexible network communications architecture: microwave links, SATcom links, leased lines...

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

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

Besides the SIVE Project, Indra’s Border Surveillance systems have been deployed at:
- Hong Kong SAR CSS.
- Latvia CSS.
- Bulgaria Green Border Surveillance
- Romania CSS. (SCOMAR Project).
- Portugal CSS (SIVICC Project).
- Poland National Vessel Traffic System

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 Mohammeda (Morocco).
- Port of Cadiz (Spain).
- Port of Valencia (Spain).

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All the said references share most of the technology with Vessel Traffic Services (VTS). In this field, Indra’s systems can be found at:

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