



Vessel Traffic Services (VTS)

Designed to improve the safety and efficiency of vessel traffic and to protect the environment

Integrated Solutions

Indra's solutions for the implementation of Vessel Traffic Services provide an integrated operational traffic scenario in real time that enables the improvement of navigation safety, the efficiency in traffic planning, the water environmental protection and the security of port infrastructures. Our technological solution covers the integration of a wide variety of sensors such as:

- Radars.
- CCTV (day/night).
- AIS.
- RDF.

- Radio Communications & voice integrator.
- GMDSS.
- Meteo/hydro stations.
- Other sensors per customer request.

VTS service levels

iMare has the ability to provide three different service levels for vessels within the area.

Information service (INS). Provides relevant information for safe navigation, hydro / meteo information, or upcoming vessel routes in the VTS area.

Traffic Organization Service (TOS). It is a service to support the efficient flow of traffic in the VTS area. The information that is transmitted are berth clearances, arrangements regarding lock times, speed limits, or other information that can be used to organise traffic.

Navigational Advice and Assistance Service (NAS). It is the active support service to the decision-making process, not only transmits information, but also closely monitors its effect. NAS is provided through notices, traffic location, course and speed of a vessel, or warnings to a specific vessel.

Our Solution

iMARE. iMARE is our software product, it has been fully developed by Indra in order to cover all the VTS functionalities.

It provides the operator with a clear and concise vision of the maritime scenario that gathers and fuse all the sensor information on a friendly user Man-Machine interface. It provides the necessary automatic tools to track vessels, aid the navigation and generate automatic alerts.

Sensor Integrator. Module that makes the connection, driver and interface with the VTS sensors.

MST. Multi sensor tracker, module that connects with all the radars and AIS information to fuse it in a unique scenario.

ENC. Electronic Navigation charts based on IHO standards: S-57, S-63 and future S-100. Other standards are integrated into our solution.

Automatic Alarms. Real-time intelligent alarms calculation to avoid risky situations: collisions, grounding lines, security areas, anchoring, speed limits, etc.

Routing Monitor. Real-time routing monitoring and reporting at port areas.

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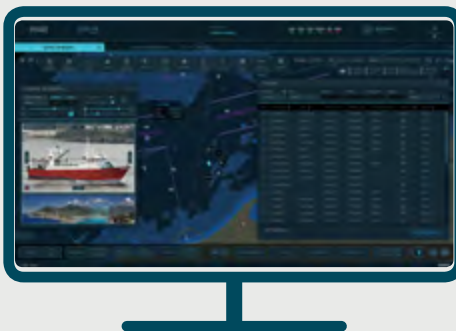
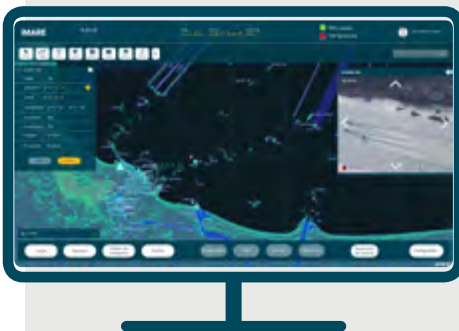
Recording Subsystem. Synchronized live recording: radar/AIS, CCTV video, radio communications, meteo/hydro data and user actions for replaying and inspection.

Training Simulator. Recreation of different scenarios for operator's training.

External System Connector. iMARE is ready to interconnect other systems such as different VTS, PMIS, Pilots systems, etc.



Data Base and PMIS. Reporting based on the VTS data base. Port Management Information System connected to real VTS scenario: pre-arrival, invoicing, cargo operation, etc.



Indra has experience, expertise, commitment and innovation in solutions for safety and maritime management

Main references

Indra provides VTS solutions based on our experience in several ports, among of which, the **Port of Southampton** is one of the busiest and most successful deep-water ports in the World.

In this project, iMare system is gathering all the information provided by the radar sensors (where Indra provides 4 new and integrates an existing one) and integrating it with the data provided by the Automatic Identification System (AIS), the Digital

Selective Calling (DSC) mayday system, as well as the weather and hydro stations. It also access to various cameras that have been installed in order to visually verify the information provided by sensors.

Another main reference is the National VTMS solution for the Polish Coast. Indra's VTMS solution was chosen by the **Polish Maritime Authority** to manage the maritime traffic, safety and PMIS of three different areas (all the coast and 100km. of Oder river), with 4 Coordination Centers, one back up Center and up to 11 ports.

Besides the two references already described, Indra has deployed VTMS solutions for different Ports along worldwide: In Europe, South America, Africa and Asia

All the said references share most of the technology with Coastal Surveillance Systems (CSS). In this field, Indra is a World reference after having integrated over 100 radars in more that 20 Command and Control Centers located in several countries: as Hong Kong SAR CSS, Latvia CSS, Romania CSS (SCOMAR Project), Portugal CSS (SIVICC Project), Spain CSS (SIVE Project), ...

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Indra reserves the right to modify these specifications without prior notice



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