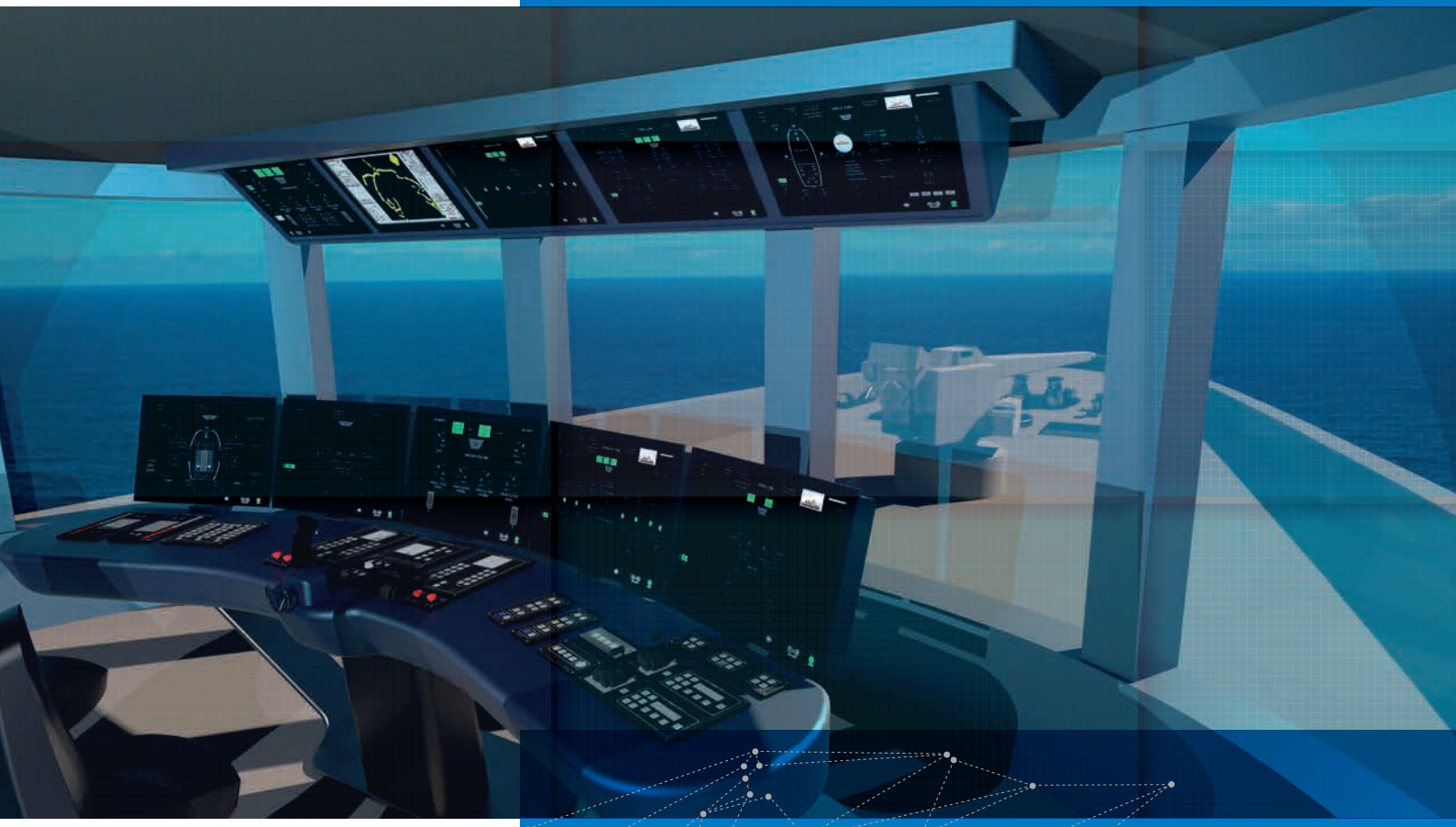
SEASTactics™

FULLY INTEGRATED, HIGH-PERFORMANCE
MANAGEMENT AND CONTROL SYSTEM



SEASTEMA

a FINCANTIERI company

SEASTactics™

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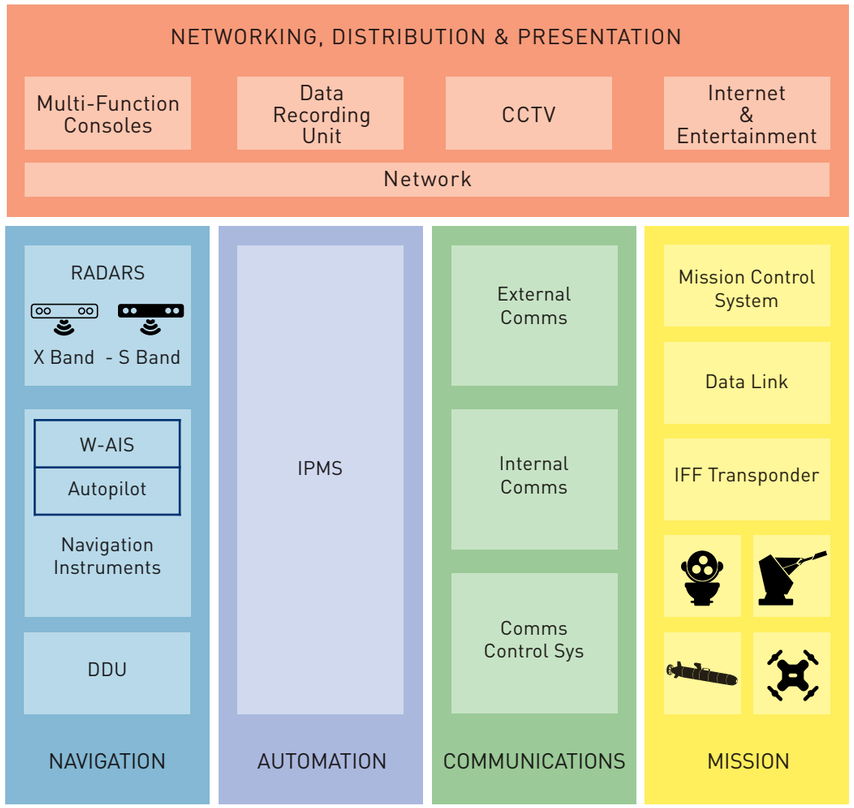
— SEASTactics™ is the new edge of whole ship integration for Patrol Vessels and, more in general, for units operating in low intensity warfare scenarios. It is a fully integrated solution providing improved standardization, minimal manning and high performances.

Leveraging SEASTEMA outstanding experience in all system domains, SEASTactics provides a low cost solution, optimized to fulfil all the operational needs of Patrol Vessels.



SEASTactics™ goals

— SEASTactics™ modular and scalable architecture fulfils the following goals:

_ Simplification of system architecture and installation
_ Optimization of HW resources through maximum sharing
_ Standardization of electronic components
_ Extensive use of COTS devices
_ Reduction of maintenance and training costs
_ Low cost of ownership

Vessels Types and Missions

— SEASTactics™ has been designed for the following vessel classes:

_ Off-Shore Patrol Vessels
_ Littoral Patrol Vessels
_ In-Shore Patrol Vessels
_ Fast Patrol Boats

to support the following missions:

_ Patrolling
_ Anti-Smuggling
_ Anti-Piracy and Terrorism
_ Fishing Protection
_ Illegal immigration control
_ Law Enforcement
_ Search & Rescue
_ SLOC protection
_ Deterrence & Self Defence
_ Pollution monitoring
_ Navigation Safety and Control
_ Protection of Maritime Environment
_ EEZ Control (application of international treaties)

Vessel Management & Control

— The SEASTactics™ provides operators with a complete control of all vessel functionalities during the different phases of a mission:

Planning

_ Planning at a naval base with moored ship
_ Plans transfer from naval base via data link
_ On-board plan preparation
_ Plans variations during the mission

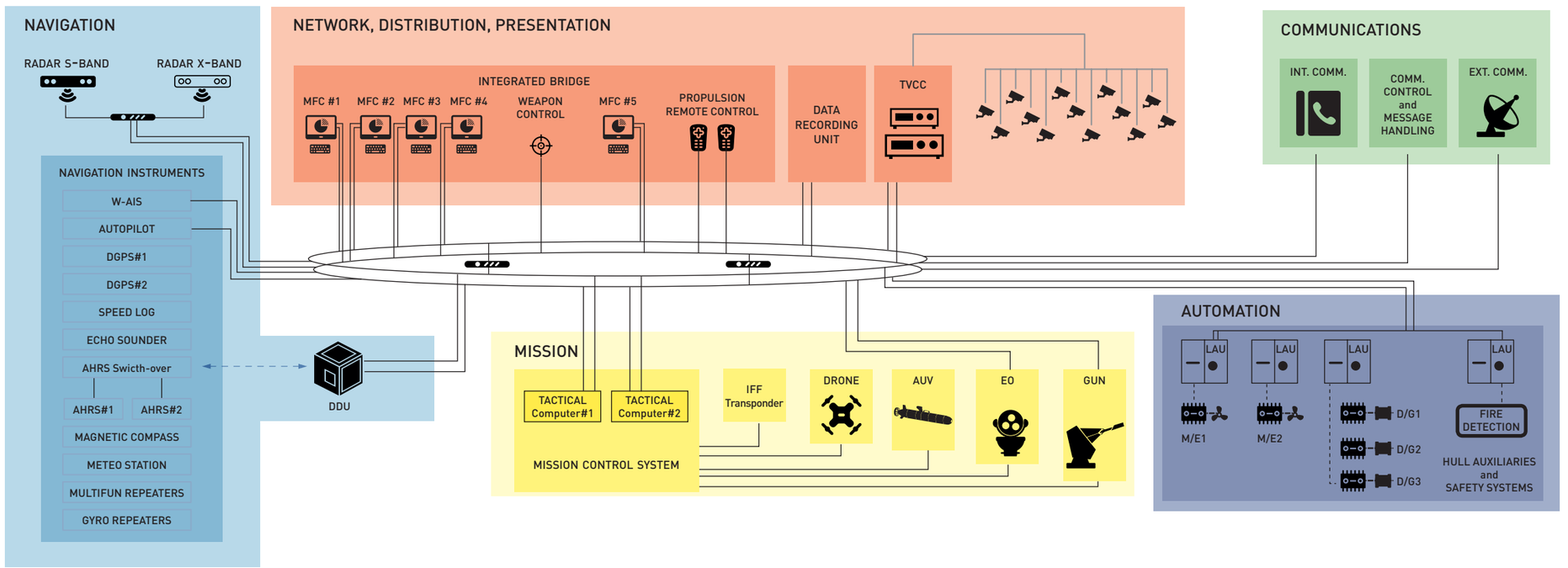
Execution

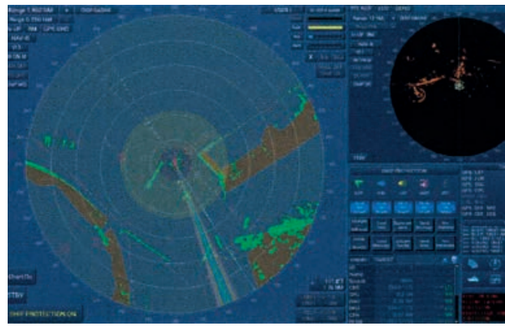
_ Configuration of navigation systems, sensors and devices
_ Representation and update of the tactical situation around the ship
_ Control of the ship motion
_ Monitoring of platform systems
_ Tracking of surface targets
_ Support for all mission profiles
_ Recording of mission data and video
_ Communication with other ships and ashore base

Evaluation

_ Analysis and assessment of recorded data
_ Statistics on all data collected
_ Reporting

SEASTactics™ Architecture





NETWORKING, DISTRIBUTION & PRESENTATION

— The Networking, Distribution & Presentation Segment is the key integration element of SEASTactics allowing all sub-systems to effectively contribute to the management of the ship. It provides:

- Data transfer and interface of all the modules through a redundant Ethernet Lan
- Distribution of videos from CCTV system and from Mission Control Sensors
- Recording of all data and videos for playback and analysis
- Presentation through Multifunction Consoles

Any Multifunction Console can be configured as:

- ARPA
- WECDIS
- Conning Station
- Mission Management
- IPMS with propulsion remote controls

NAVIGATION

— The **Navigation Segment** allows the safe conduction of the ship, distribution of reference data from navigation sensors to ship systems and operators. The main functions include:

- Navigation Aids
- Route planning
- Targets Tracking
- Collision and grounding avoidance
- Manouvering
- Docking
- Monitoring of internal safety systems
- Automatic identification of other vessels
- Distribution of Navigation Data

The Navigation Segment includes:

- Navigation Radars
- Autopilot
- Inertial Navigation System
- DGPS
- Speed Log
- Echo sounder
- Magnetic Compass
- Meteorological Station
- Gyro and Repeaters
- W-AIS
- Data Distribution Unit (DDU)

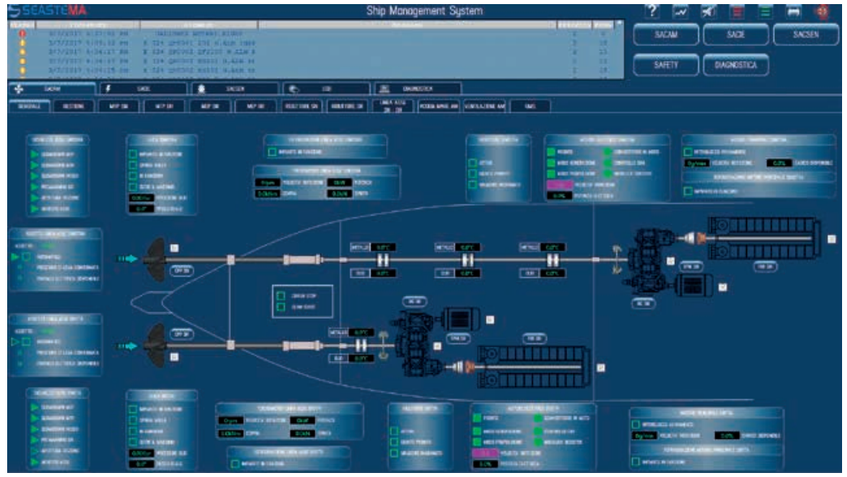
The Data Distribution Unit (DDU) acquires and processes all navigation data from the on-board sensors to compose a consistent and accurate set of information (navigation, attitude and environmental) to be continuously supplied to the ship systems and users.

AUTOMATION

— The **Automation Segment** is based on the Integrated Platform Management System (IPMS), an open multiprocessor architecture, with distributed controls and database. The Segment manages:

_ Propulsion system (engines, reduction gears and controllable pitch propellers)
_ Electric power generators and main electricity distribution
_ Ship ancillaries, hull services and safety systems

Supervision and control of the platform and its machinery is performed through the MF consoles.



The Local Automation Units (LAUs) perform control functions at the sub-system level (propulsion system, electrical system, ship auxiliary systems). They consist of modular electronic boards microcomputers, based on Marine Type Approved PLC (programmable logic controller) technology or industrial controller.

COMMUNICATIONS

— The **Communications Segment** consists of an Integrated Communication System (ICS) including all external and internal communication facilities. It allows voice and data communications between the ship and external assets. It is composed by:

External Communications Includes radio equipment for tactical and strategic communication links

_ VLF-HF Communications allow the communication beyond line of sight for reception and transmission in voice, digital data and Teletype

_ V/UHF Communications represent the "Line of Sight" (LOS) communication in military V/UHF bands and civilian VHF marine, police and air bands, for transmission in voice and digital data

Internal Communications provides communication lines for voice or data distribution between positions and equipment on-board the vessel. It also allows acces to the external communications and allocation of radio equipment to various voice and data units.

Control & Message Handling provides applications to control all critical componentst components of the ICS. It allows the exchange of message in the required format (military or civilian) in clear or encrypted.

MISSION

— The **Mission Segmen**t allows the execution of the operational tasks to **fulfil the missions assigned** to the ship. The Mission Control System (MCS), provides the tactical picture and manages the on-board sensors and effectors.
Surveillance is granted by the navigation radars and by the E/O system for night and day vision.

The **exchange of tactical data**, with cooperating vessels and shore bases, occurs through the W-AIS. Self-defence and deterrence is ensured by the vessel small caliber gun, with its own E/O fire director, designated and controlled by the MCS. An IFF transponder answers to friendly enquiries.

The Mission Segment can be expanded with unmanned systems for extended surveillance, intelligence, data gathering or specialized mission profiles.

Flying, vertical take-off and landing (VTOL) drones, provide short range aerial reconnaissance and Improve the vessel targets identification capabilities.

Underwater autonomous or remotely operated vehicles expand the ship operational range below the surface level, providing scouting, mapping and surveillance without the need of a crew complement of divers.

The Mission Segment allows:

_ On board sensor data processing
_ Manual tracking and multi sensor tracking
_ Tactical picture management
_ Threat Evaluation & Weapon Operation
_ Sensors & weapons control
_ Support to Navigation and SAR operations
_ Mission Planning
_ Interoperability with other ships
_ Operation of auxiliary aerial or underwater vehicles

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