



## IPN-S COMBAT MANAGEMENT SYSTEM

**The Combat Management System (CMS) plays an important role in functional integration of Combat Systems.**

The operational battlespace environment is dense and complex. The need to take or suggest the best decision in real time, the capability to make the best use of all the information and resources can be satisfied only by an effective, efficient Combat Management System.

### PRIME CONTRACTOR ROLE

SELEX Sistemi Integrati brings the continuous experience of more than 30 years activity for about 15 Italian and foreign Navies acting as Prime Contractor or as one of the major systems providers.

The CMS is the starting point and the key element for Combat System integration.

SELEX Sistemi Integrati has already demonstrated its capability to minimise risks by integrating the IPN-S in Combat Systems.

The ILS support is provided in all life cycle, to assist the final user of an Integrated Combat System.

### CMS OVERVIEW

The Combat Management System (CMS) gathers, correlates and filters data and information coming from own ship's and co-operating forces' sensors, communications and data networks, and C4I systems, to compile, maintain and clearly display the tactical situation.

The CMS concepts is based on an architectural backbone, consisting of an open system using modern software and hardware technologies.

The human interfaces are designed to optimise the use of multipurpose consoles and to satisfy the demanding requirements for reduced manning. Assistance to the command functions is provided in these main areas:

- Evaluation of battlespace tactical situation
- Threat evaluation and weapon assignment
- Management of Combat Systems Resources (Sensors and Effectors)
- Aircraft and Helicopter Control
- Conduct of ASW, AAW and ASuW Operations
- Management of Tactical Data Links
- Navigation
- Force co-ordination
- Database management
- Message handling management
- Recording and playback

## MAIN FEATURES

- A versatile Display System, based on multifunction display consoles (MFC) for very demanding requirements, is available as well as in full MIL-STD version; these consoles, based on PCI or VME architecture and commercial board, belong to the well proven MAGICS (Modular Architecture for Graphic and Imaging Console System) family.
- A powerful state-of-the-art Computer Complex based on PCI or VME architecture and on commercial board is available as a stand-alone equipment or as a housed in the Display Console cabinet.
- A high performance Data Transfer System based on a standard open architecture.
- A very high configurability (both from the HW and SW point of view) according to the operational requirements of the customer.
- Easy Growth Capability consequent to the use of standards and of Commercial-Off-the-Shelf (COTS) HW (PCI or VME standard) and SW components.
- High percentage of HW Commonality with SELEX Sistemi Integrati produced Weapon Control Systems (common logistic: spare parts and manpower).

The IPN-S is based on proven technology and is suitable to be integrated both with latest generation Combat Systems and with already in service Combat Systems by means of specific interconnecting units (gateways) allowing the Combat Systems equipment to be integrated without any modification.

## STATUS

Several IPN/S Combat Management Systems are under development, in production and in service with Italian Navy as well as with foreign Navies.

## TECHNICAL CHARACTERISTICS

### Computing complex

Command and Control systems based on the MAGICS 2-MFC or NUM-MFC ruggedized consoles; redundant data processor housed in the console cabinet or in stand-alone naval cabinets.

### Processing boards

- Based on Intel Pentium/Xeon Cpu or Power-PC RISC CPU

### I/O boards

- Ethernet controller
- Giga ethernet controller
- FDDI controller for Data Transfer System
- NTDS A-B-C (MIL-STD-1397 and Stanag 4146)

- Serial lines RS-232C and RS-422
- Analogue interfaces (synchro-to-digital, digital-to-synchro, logic-to-digital, digital-to-logic) Mass Memory
- DAT
- Hard Disk
- CD-ROM/DVD

### Display System

Available in ruggedized version and in full MIL version Based on the same processing and I/O boards of the Computing Boards

Up to three interchangeable Flat Panel Display (FPD) monitors (20")

Multifunctional keyboard based on LCD touch input device

Capability of interfacing a Large Screen Display

Configurability of the Operational Desk

Multifunctionality: the same console can be used as common resource for different equipment in the same time

Reconfigurability: the same console can be used as common resource for different equipment in different times

Multisensor interface capability (Radar, TV/IR, etc.)

Multisensor display capability on the same screen (dedicated windows)

### Typical types of presentation

- Only PPI radar raw video
- Mixed PPI radar raw video and synthetic
- Only synthetic on PPI
- Alphanumeric presentation on dedicated areas and windows
- Graphic presentations on dedicated windows
- Live TV/IR presentation on dedicated windows

### Console software at the state-of-the-art

- Operating System of the UNIX-LINUX family (IEEE POSIX 1003 compliant)
- X11/MOTIF graphic libraries
- C++ language
- Modular, portable, configurable

### Data transfer system (DTS)

Ethernet IEEE 802.3/Giga ethernet

Data rate of 100/1000 Mbit/sec.

Communication protocol

Redundancy (fail-over technology)

Very fast reconfiguration

FDDI network based on optical fibres

- data rate of 100 Mbits/sec
- communication protocols compliant to international standards (ISO/OSI layers 0-4 and XTP)
- redundancy and survivability (tolerance of up to 4 failures)
- very fast reconfiguration