

ATHENA®



**LEONARDO**  
LAND & NAVAL DEFENCE ELECTRONICS

# NAVAL COMBAT MANAGEMENT

## ATHENA®

ATHENA® (Architecture & Technologies Handling Electronic Naval Applications) is the company's solution for advanced Combat Management Systems (CMS) from patrol vessels up to aircraft carriers, as well as for refurbishment or refitting programs. The ATHENA® CMS integrates all the functions required for surveillance, sensors and tactical picture management, navigation support, threat evaluation and weapon assignment, weapon system management, mission planning, multi tactical data link and on board training.

The greater integration among Navies in international scenarios implies new requirements and constraints on threats, interoperability and flexibility. In the area of Naval Combat Systems, this results in more integrated systems able to reduce operational personnel and to maintain operational efficiency at the same time.

## THE SOLUTION

ATHENA is the state-of-the-art Combat Management System solution designed to meet all new demanding requirements from the most advanced naval programs. Suitable for any class of vessel, ATHENA CMS is based on a fully redundant modular and scalable architecture that can be customized to fit specific customer need.

The ATHENA CMS supports the Command Team in the management of the on board Combat Systems and Force assets to achieve the assigned missions. ATHENA enables the effective appreciation of the tactical situation and supports planning and execution of the following operations:

- Tactical Information Management
- Fulfilment of Force Duties
- Management of Naval Missions in the AAW, ASuW and ASW domains
- Combat System Resource Management
- System Interoperability through Tactical Data Links and Strategic Data Exchanges
- Command Strategic Support
- Operator On board Training
- Data Recording and Analysis

Thanks to advanced and high performance applications, ATHENA covers all Combat System functions through the automatic integration of sensor data, the automatic compilation and assessment of the tactical picture together with the automatic coordination of weapon systems through threat evaluation and weapon assignment. The optimised management of Combat System resources and the extensive support to medium and long term strategic activities also play a role.

The ATHENA CMS framework encompasses the reference architecture for the company's Combat Management Systems with infrastructures and utilities ensuring system performances and reliability.

This framework also ensures both tactical and strategic interoperability in net-centric scenarios, through the following capabilities:

- TEWA decision aids to support the coordination of military assets, including surface combatants and combat aircraft.
- Compilation of the Common Operational Picture and exchange of tactical information, controls and orders through the Multi-Data Link Processor over Link 11, Link 16, Link 22, satellite data links and J-REAP.
- Handling and processing of operational messages to provide automatic reformatting of messages from Ashore and Fleet Commands and to extract relevant data for processing and display.

## THE SYSTEM

The ATHENA CMS is decomposed into functional segments, each providing a suite of services:

- CMS Infrastructure, providing data communication and distribution, data display and input device management, system configuration and monitoring, video distribution, data recording, replay and analysis, generation and animation of simulation scenarios.





- Local Area Picture and Surveillance, providing sensor management and data processing, tactical picture compilation based on sensor data, operator inputs and data link information, as well as situation assessment in terms of target identification and classification.
- Mission Applications, providing command and control for the execution of operational missions in AAW and ASuW domains, on the basis of the tactical picture, through the coordination of own ship effectors and force resources.
- Tactical Data Link, providing data link initialization, surveillance data exchanges and weapon command order exchanges through tactical data link.
- Command Strategic Support, providing situational awareness at wide area, mission planning aids, operational message management, collaboration tools, secondary data display.
- Combat System Equipment Management, sensors and effectors command and control, including their simulation during training.

The ATHENA CMS is based on an architectural framework which consists of an open system that uses cutting edge hardware and software technologies characterized by:

- High level of system integration and automation
- Wide range of mission operations supported
- Large number of infrastructure and utilities
- Open, distributed and modular architecture
- Wide adoption of suitable COTS components
- Advanced tactical and planning decision support
- Integration with Maritime C4I systems
- Video digitisation (Radar, TV), distribution and presentation

The system places a high emphasis on 'plug and play' designs, using an open architecture concept to modify the configuration without affecting the overall architecture. The ATHENA hardware includes C/S Data transfer Network, Tactical Computer Units, Multi

Data Link Processor (M-DLP), Multi Function Consoles (MFC), Video Distribution Unit (VDU), Data Recording and Management Unit (DRMU).

## KEY FEATURES

ATHENA is the result of more than forty years company's experience in the development of Combat Management Systems for the major national and international naval programs. Early CMS product lines included NUMC (Italian Fast Patrol Boats), Italian Navy Refitting (Maestrone Frigates, Ammiragli Destroyers) and Horizon (AAW Destroyers for Italy and France).

The latest main deliveries enclose all the Italian Navy vessels, in particular the Aircraft Carrier Cavour and Multi Mission Frigates (FREMM frigates) and the UAE Navy vessels such as Baynunah class corvettes, the Abu Dhabi class corvette, Falaj Stealth Vessels and Ghannatha Fast Patrol Boats.

This expertise includes the development of IPN series up to the deliveries of CMS for surface combatant ships, including patrol boats, mine-hunter, corvettes, frigates, logistic ships, destroyers, aircraft carriers, all of them characterized by the following outstanding features:

- Advanced operational capabilities, through the compilation and distribution of the tactical picture, coordination of ship missions and management of Combat System resources
- High level of automatic integration of sensor data and automatic coordination of weapon systems
- System performances and reliability for guaranteeing continuity of operational functions with no loss of data
- Flexibility and modularity with growth potential and upgrade capabilities, implementation of national options and maximum commonality between different configurations.



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