C4I SYSTEMS

LEONARDO
LAND & NAVAL DEFENCE ELECTRONICS

C4I SYSTEMS

INTRODUCTION

As a recognised role as system leader for Armed Forces transformation, Leonardo offers a complete family of C4I solutions for the digital battlefield.

These include:
- Coalition and Multinational Systems
- C4I systems for Joint Operations
- Single Service Operational C4I Systems
- Tactical and Battlefield C4I Systems

The companys C4I solutions provide battle management support across a wide range of functions. They create, disseminate and display the common operational picture and report the battlefield situation in real-time.

For all applications, mission-focused C4I solutions are tailored to the specific requirements of the customer. Moreover, given the 'local' nature of C4I applications in terms of organisation and doctrines of operation, we are positioned to collaborate across a wide range of partners.

The company has a strong track record working with local companies, universities, small business, European funded projects and NATO. This is testament to our ability to nurture innovation within a collaborative environment.

KEY REFERENCES

Coalition and Multi-National Systems

EUCCIS
The 'European Union Command and Control Information System' is operated by the military and civilian staff of the European Union for supporting planning, deployment and execution of EU-led operations. The system is located in Brussels with the flexibility to be deployed anywhere in the world within a subordinated deployed headquarter.

MAJIIC
The 'Multi-Sensor Aerospace-Ground Joint Interoperable ISR Coalition' program is an international multilateral initiative aimed at defining a common architecture allowing the development of intelligence, surveillance and reconnaissance capabilities (ISR). Within the program, the company has developed MAJIIC's technology and dedicated ISR applications for the Italian MoD.

Joint Operations

C2I Advanced
C2I Advanced is the latest release of the Joint Command and Control and Intelligence system used within the Italian Defence Joint Operations Centre. The system has been certified by the NATO Communications and Information Agency and it is now listed on the NATO Approved Fielded Products List, meaning that it is approved for use on NATO's highly secure military networks.

FORZA NEC
The company is Prime Contractor, Design Authority and Lead System Integrator on the 'Forza NEC' project, which has been running since 2006 with the objective of modernising the Italian Armed Forces. The contract covers the manufacture and integration of command posts in shelters and vehicles, communications, C4I devices for soldiers, combat and tactical platforms and unmanned vehicles. It offers full interoperability between the Italian and coalition forces.

Single Service Operational Systems

SIACCON
SIACCON is the Italian Army Command & Control Automated System used from Divisional to Battalion levels. The system is integral to many multi-national missions thanks to its ability to be integrated with NATO and other multinational networks. SIACCON automates command posts procedures in the operational theatre and allows effective battle management support for multiple functional areas (Maneuvre, Artillery, ISTAR, EW, Air Defence etc).

DIISM
DISSIM (Integrated Interagency Surveillance System for Maritime Surveillance) is a maritime surveillance system operated by the Italian Navy. It collects, fuses and analyses different sources of intelligence in order to build and share a comprehensive operational picture with different agencies and organisations such as Ministry of Foreign Affairs, Ministry of the Interior, Ministry of Transportation, Ministry of Environment, Intelligence and others.

Tactical and Battlefield Systems

SICCONA / BFSA
SICCONA and BFSA (Blue Force Situation Awareness) are two Command, Control and Navigation Systems developed for the various combat and tactical/logistic vehicles used by the Italian Army. SICCONA and BFSA include the latest generation of communications and networking systems and provide the crew with precise and updated information on the area of operation. This objective is achieved through the collection, integration and distribution of tactical data such as position of friendly and enemy forces and the condition and status of all the other units involved in the operation.

ATHENA CMS
The company has over 50 years of proven leadership in naval combat systems and products, which are today installed in more than 100 naval units for customers spread across the world. ATHENA is a Combat Management System (CMS) that ensures effective evaluation of naval operational scenarios together with the management of available resources, thus ensuring rapid and effective decision-making.

FOB PROTECTION
The Italian Ministry of Defence has been provided with a number of protection systems for the Forward Operating Bases (FOB) and the Forward Support Bases (FSB) that are currently in-service in Afghanistan. The system consists of command and surveillance posts, surveillance systems, robotic platforms in combat version for base protection and acoustic systems to help pinpoint enemy fire sources.

SOLDATO FUTURO
The Soldato Futuro programme addresses the complete modernisation requirements of dismounted soldiers in the Italian Army. The company is prime contractor and has developed a number of solutions to address the evolving needs of integrated soldier systems. These solutions includes a C4I component which enables real-time information sharing using networked data applications designed to significantly enhance battlefield situational awareness, Command & Control and other soldier functionalities common to the dismounted close combat environment.

C4I SOLUTIONS

C2I SYSTEMS FOR JOINT AND MULTI-NATIONAL OPERATIONS

An integrated Command, Control & Intelligence system (C2I) has been developed to support joint and coalition military operations and top level/ strategic Command & Control Centres.

The company has delivered a complete C2I system to the Italian Defence Joint Operations Centre (JOC) - C2I Advanced. Another system (EUCCIS) has been supplied to the European Union, which is operated by the General Secretariat of the Council to the European External Action Service (EEAS).

These C2I systems exploit a proven family of sub-systems which can be selected and configured according to specific requirements and doctrines of operation. They are suitable for operation within national joint/strategic/multi-national Command & Control centres.

Joint Common Operational Picture (JCOP)
A key feature of the company's C2I offering is the ability to interoperate with external systems and remote applications for the collection and dissemination of battlefield intelligence via a Joint Common Operational Picture (JCOP).

External system may belong to subordinated military services (Army, Navy, Air Force, Military Police etc) in addition to external organisations and coalition partners.

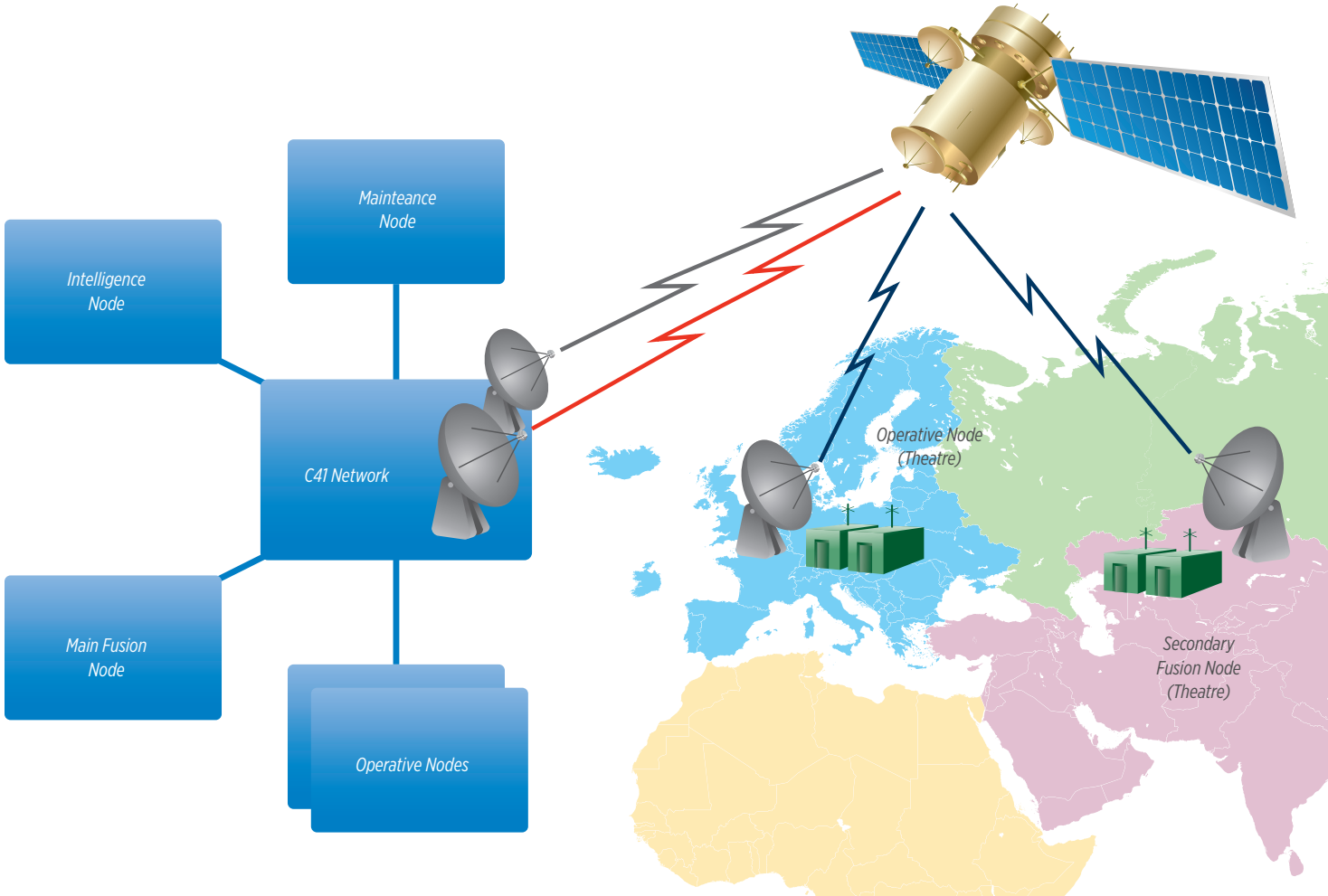
The JCOP provides strategic decision makers and operational commanders with improved situational understanding, both within a single theatre of operation and at a global level. The JCOP also facilitates collaborative planning among the different areas of a command centre, during both crisis or routine operations.

Network Enabled Operations
The C2I system allows the coherent integration of large amounts of intelligence, surveillance and reconnaissance data made available through external systems and applications. The aim is to make commanders better aware of the evolving military situation in different areas of operation, in order to improve the ability to react to evolving events in a timely manner.

The system is presented as a web application running through a conventional browser. Typically, a number of servers run the system application while multiple client stations can simultaneously access the functions via browser.

Security and Information Assurance
This system has been designed to be certified and accredited against to the highest standards of security classification. The solution delivered to the Italian Defence has been certified by the NATO Communications and Information Agency and is now listed on the NATO Approved Fielded Products List (AFPL), meaning that it is approved for use on NATO's highly secure military networks.

Compliant with the INFOSEC standard (ITSEC2), the C2I system leverages a security architecture which minimises the number of access points with the external network infrastructure.



C4I SOLUTIONS

INTERAGENCY C2I SYSTEM FOR MARITIME SURVEILLANCE

The company has developed an Integrated Interagency Command, Control and Intelligence System for Maritime Surveillance designed to collect, consolidate and interrogate disparate data collected from multiple sources.

The system builds and shares a comprehensive operational picture with different agencies and organisations such as Ministry of Foreign Affairs, Ministry of the Interior, Ministry of Transportation, Ministry of Environment, Intelligence and others.

This solution ensures the integration and interoperability of information gathered from the Control Centres of numerous government bodies and provides full support to both local or National Maritime Surveillance Centres.

It may be complemented or integrated with a network of surveillance sensors to provide safety and security of both territorial waters and Exclusives Economic Zones (EEZs).

Through the collection and processing of all information made available by surveillance and maritime agencies, the C2I system allows the early detection, identification and response to threats including terrorism, piracy, smuggling, narcotics, people trafficking, sabotage of critical economic installations and disruption of trade.

Operators and decision makers are provided with the information to quickly discriminate and identify potential threats.

Multi-Layer Maritime Surveillance

This solution consists of an extended suite of command and control applications, each using a variety of different maritime surveillance sensors. It can interoperate with multiple government bodies and external databases.

The system is typically located in a National Maritime or Coastal Surveillance Centre, where Commanders and their staff maintain constant situational awareness over the area of interest. The applications facilitate strategic planning of maritime surveillance and homeland defence as well as overall management of available resources, which include platforms, systems and assigned teams.

All data required to maintain maritime situational awareness converge into the maritime centre either directly from connected sensors and surveillance platforms, or though peripheral centres and agencies that share intelligence data or other types of relevant information.

The system compiles the maritime picture using techniques typical of multi-sensor tracking. Using identifiers such as MMSI (Maritime Mobile Service Identity), IMO numbers (International Maritime Organisations), or Call Signs, the system establishes automatic associations between live tracks and non-real-time information.

The maritime picture is presented to system operators and commanders in the maritime centre. The maritime picture, or selected portions thereof, are also distributed and shared with local surveillance centres and external agencies.

The system may also include a communications centre for supervising and managing all available communications systems and networks that provide persistent and secure exchange of data among centres and remote agencies.

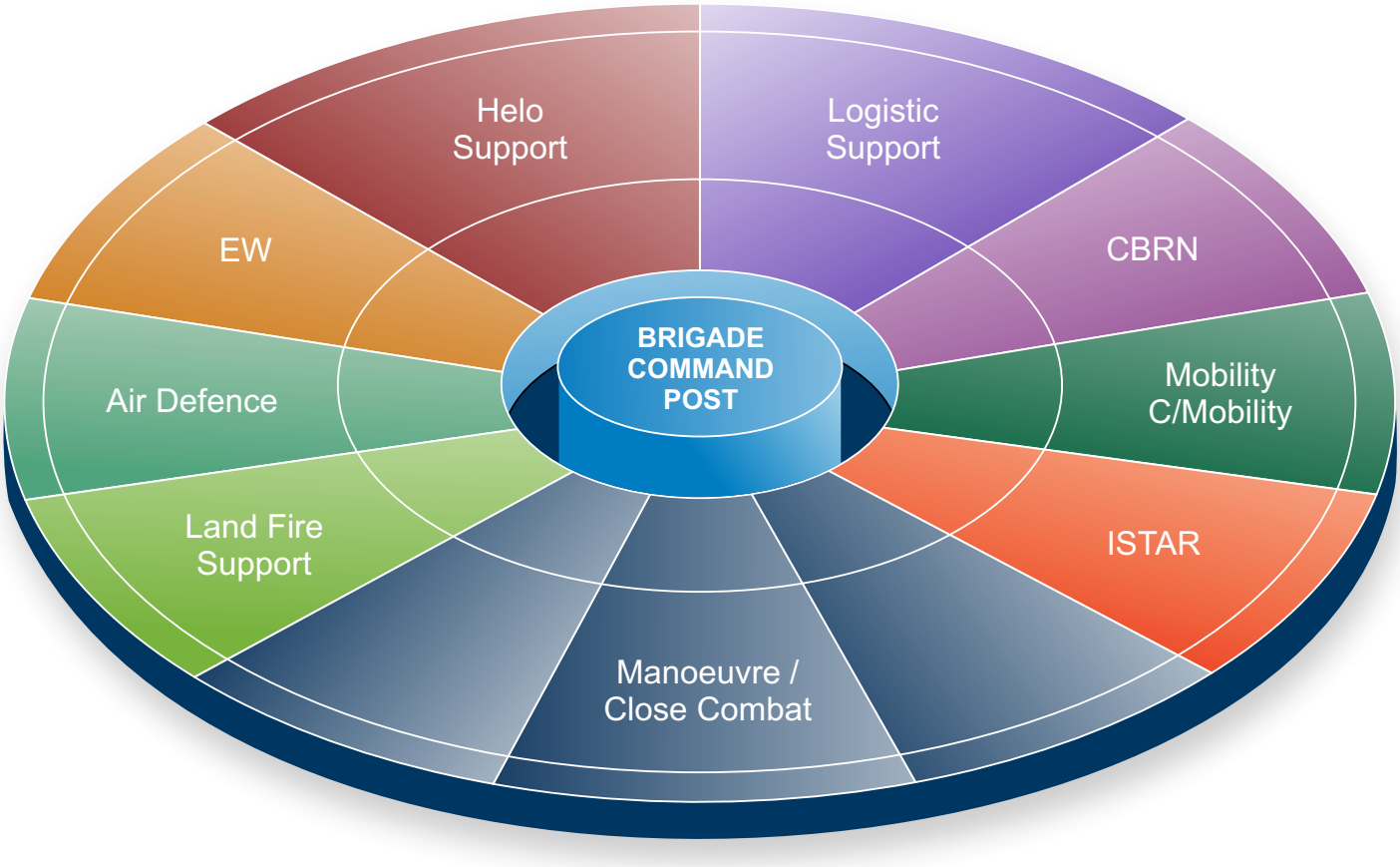
C4I SOLUTIONS

THE DIGITAL BRIGADE

Digitally interconnected units, or 'digitalised units' can achieve a substantial increase in capacity to exchange critical battlefield information and achieve a shared situational awareness. From a technology point of view, a 'Digitalised Brigade' is created when all the units of a Brigade are integrated into a single C4I infrastructure (Command, Control, Communications, Computer, Intelligence). Units can then receive, process and disseminate digital battlefield information in real or near-real time.

The units of a Digitalised Brigade typically include command posts in shelters and vehicles, combat platforms, tactical and logistic vehicles, soldier equipment, unattended sensors and remotely piloted systems.

Within a Digitalised Brigade, every platform or command post work as a 'battle centre' to enable the exchange of secure and reliable information among soldiers and decision makers.



Through the design and delivery of complete and turn-key Integrated Digital Brigade solutions, commanders are provided unprecedented tactical clarity. This allows the full scale integration of fixed, mobile and dismounted units.

The company is Prime Contractor, Design Authority and Lead System Integrator of the Forza NEC programme. The objective of Forza NEC is to deliver three Digitalised Land Brigades, an Amphibious Landing Force and a family of combat support and combat service support units.

The Forza NEC contract covers the manufacture and integration of command posts in shelters and vehicles, communications, C4I devices for soldiers, combat and tactical platforms and unmanned vehicles. These systems will offer full interoperability between the Italian and coalition forces.

Operational Advantages

- All units of a Digital Brigade can better identify the location of friendly assets and reduce the risk of blue-on-blue incndents
- Land forces can move faster and more effectively when updated views on friendly and enemy forces are available at both operational and tactical levels
- Command posts synchronised with lower echelons provide enhanced reinforcements in terms of intelligence data and fire support
- Deployed forces maintain a better understanding of their position in the battlespace with more effective land navigation
- Commanders on the ground are more aware of friendly combat forces moving or fighting adjacent to each other, not only for prevention of fratricides but also to make full use of all the available resources in the battlefield

C4I SOLUTIONS

LAND C4I

The LAND C4I system is a battle-proven solution for land forces, designed to provide commanders and fielded units with a wide range of enhanced capabilities for command, control and communications.

The system provides effective and prompt sharing of tactical information among all deployed units and command post, together with advanced command and control applications aimed at increasing the automation and effectiveness for all commanders at different operational levels.

Through the implementation of our LAND C4I system, command posts and selected field units can be equipped with a set of hardware and software applications to support the planning, execution and reporting phase of a mission.

The LAND C4I system offers effective Situational Awareness in terms of the completeness and integrity of the information available to all units. Advanced algorithms allows the generation of a common operational picture and the management of the shared situational awareness.

The solution for Land Forces is based on the implementation of a digitised, network-enabled C4I infrastructure that can support typical operational areas of a modern land brigade, such as:

- Maneuvre
- Intelligence
- Surveillance, Reconnaissance, Target Acquisition
- Artillery
- Mobility and counter-mobility
- Electronic Warfare (EW)
- Transmissions and Signals (C4)
- Logistic Support (Supply/Maintenance/ Transportation)
- Field Services

The system exploits advanced core digitisation services which realises the interoperability among all interconnected units and also provide a set of automatic functionalities such as distributed alignment of databases, alarms management, and protection of the information exchanges.

Through the digitisation services, all units on the ground operate as nodes of a unique network in which both operational and tactical data are exchanged in a secure and reliable way.

The system integrates with external systems and applications for improved situational awareness and mission coordination. It implements a family of standard interoperability mechanisms such as MIP/ DEM, for easy integration with external systems.

The system has already been integrated with many coalition systems and its modular architecture allows for customised extensions and integration with legacy and third party systems. Our solution can be customized against any doctrine and extended in terms of functionality in order to be fully integrated with National Joint Command Centres.

C4I SOLUTIONS

C4I TRAINING

C4I Training consists of a customisable combination of simulation components and real systems, which provide Armed Forces with an effective method of improving operational effectiveness as well as a way to introduce new systems or new operational concepts within a military organisation.

The company's C4I Training solutions allows commanders and their staff to improve the ability to make decisions in complex situations since system operators will be trained in an equivalent manner to the real operating environment of the C4I infrastructure.

Our tools provide the highest degree of situational battlefield realism, while mitigating the risk of compromising the real equipment or making mistakes which could cause injury or harm.

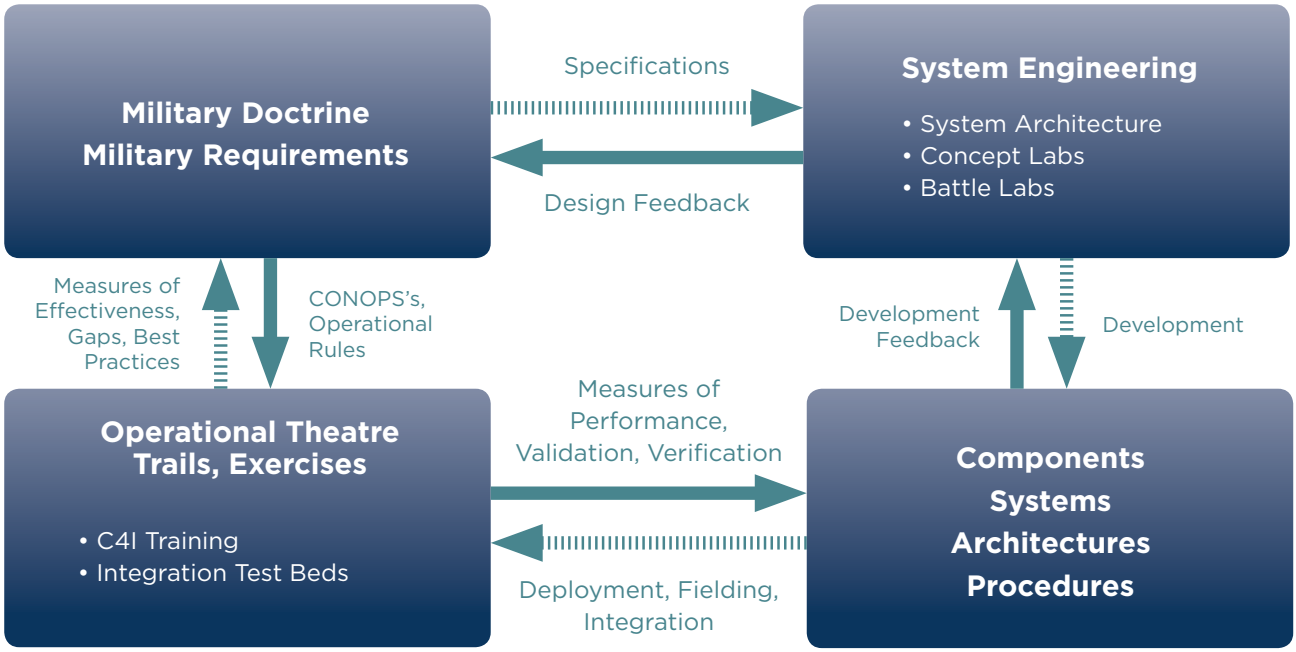
Our C4I Training can support different applications and customer requirements, including:

- Training courses for the C4I staff with varied and customisable training paths
- Support to functional and operational integration of heterogeneous C4I tools
- C4I system testing and support to C4I system acceptance
- Validation of complex C4I architectures
- Mission preparation, mission rehearsal, mission analysis, mission debriefing
- Support to concept development and experimentation
- Support to doctrine development
- Training and expert certification
- Education courses, conferences, seminars and workshops

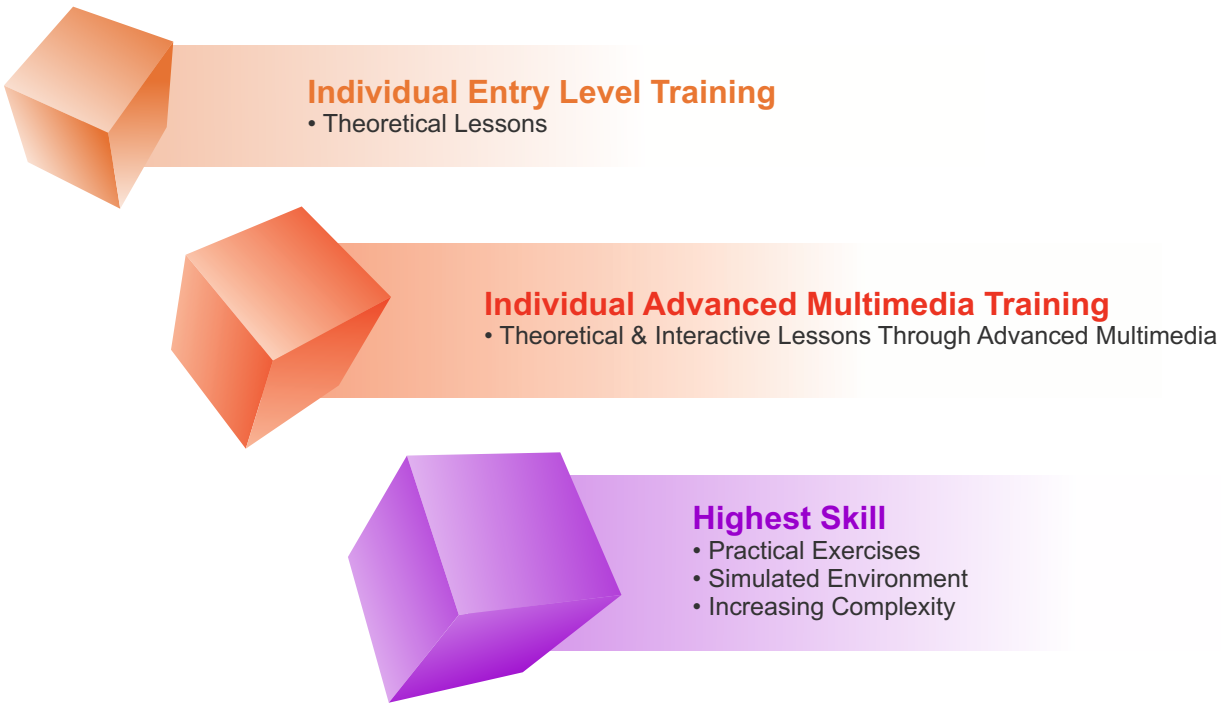
The company's C4I Training can be offered by a single physical environment as well as by several geographically distributed centres connected to each other with the ability to interoperate.

Secure networks and the usage of standard mechanism for data sharing, make our systems suitable to be used in military organization and to manage the highest levels of security and classification of information.

THE INTEGRATED OFFER FORC4I MODELLING AND SIMULATION



THE TRAINING PATH



C4I SOLUTIONS

VEHICULAR C4I

As a world leader for battlefield and land forces digitisation programs, the company supplies the best of breed C4I vehicle-oriented solutions that are available in today's marketplace.

The Vehicular C4I system operates as the 'SW engine' of the Vehicular System. It ensures an excellent level of automation, satisfying a wide variety of end-user needs, including effective integration of all types of vehicle communications devices. Our products are built upon an intuitive user interface optimised for new generation multi-touch screens and provide the crew with automatic mechanisms for the efficient dissemination of tactical information.

Vehicular C4I can operate with a single radio, as well as in more complex systems consisting of IP routers and several tactical radios, operating in different bands and supporting a wide-range of nodes.

Our military vehicle solutions provide commanders and crew with an updated tactical picture of the area of operation.

The combination of information acquired by on-board sensors and data provided by other friendly units (from Battalion/Regiment/Brigade Command Posts down to Platoons and single Squads) enables on-time and effective coordination of Command & Control operations.

The company's vehicular C4I solutions provide a common set of key functionalities for commanders and crew operators, including:

- Integrated support of digital maps, cartography and standard symbols (e.g. APP-6), with terrain analysis capability
- Mission planning, data preparation and definition of the tactical scenario and mission profiles
- Configuration and management of networking and communications facilities
- Management and configuration of C2 Application and on-board equipment
- Monitoring of the status of the vehicle and selected assets
- Acquisition and presentation of the Operational Scenario and Situational Awareness information
- Navigation aids (e.g. routes, waypoints)
- Integration of voice, messaging and data services
- Management of orders, messaging and reports (adapted to the land tactical scenario)
- Automatic dissemination of data and information among designated networked vehicles
- Interoperability (e.g. VMF messages formats, STANAG 5527/NFFI, automatic data dissemination, message aggregation)
- External interfaces with tactical HF, VHF, UHF, as well as military/civil satellite terminals
- Full integration with company C4I applications for dismounted soldier and deployable command posts, or other solutions based on standard messaging and exchange protocols
- Specialised C2 applications for land commanders operating in a network-enabled architecture

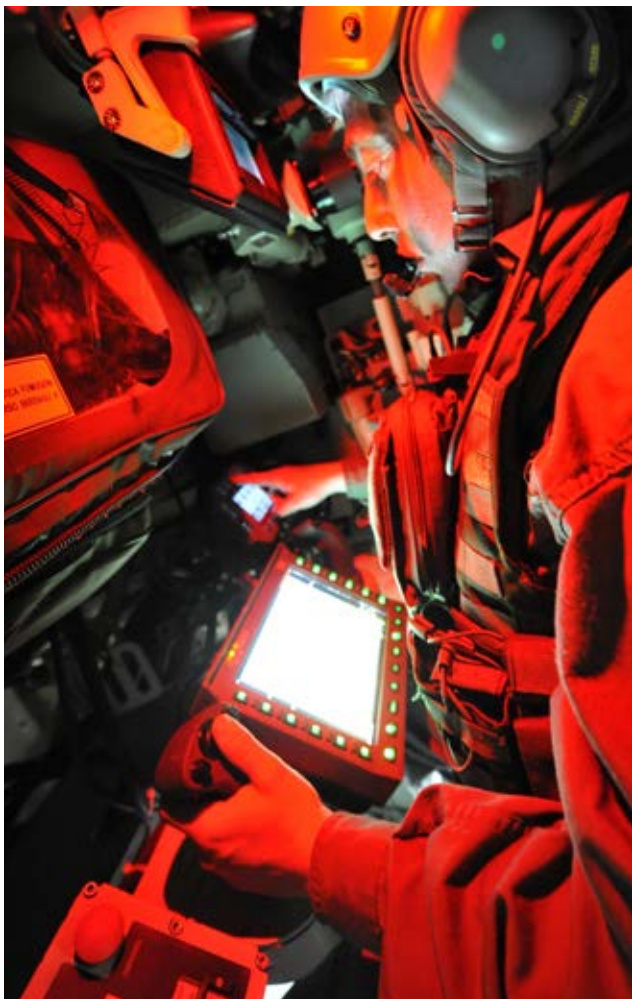
C4I SOLUTIONS

GVA VEHICLE MISSION SYSTEMS

GVA (Generic Vehicle Architecture) is an initiative established by UK MoD and refers to an open, modular and scalable architectural approach applied to the design of the electronic and power architectures for military vehicles. UK Def Stan 23-09 addresses GVA integration for the entire electrical system, meaning everything from C4I component to the automotive control systems, power management, sensors, human machine interfaces, health and usage monitoring systems, weapons.

GVA is increasingly being adopted by other nations since its standard and modular approach is expected to reduce the cost of ownership of military platforms by allowing mission-specific configurations and simplifying through-life upgrades.

The company started working on GVA as leading supplier of mission equipment for the British Army's Protected Mobility vehicle fleet, a position that was established through successes in a series of rigorous competitions. Based on the experience achieved with UK MoD, the company was then selected by others as the chosen supplier for design, delivery and integration of GVA mission systems onto multiple classes of military platforms.

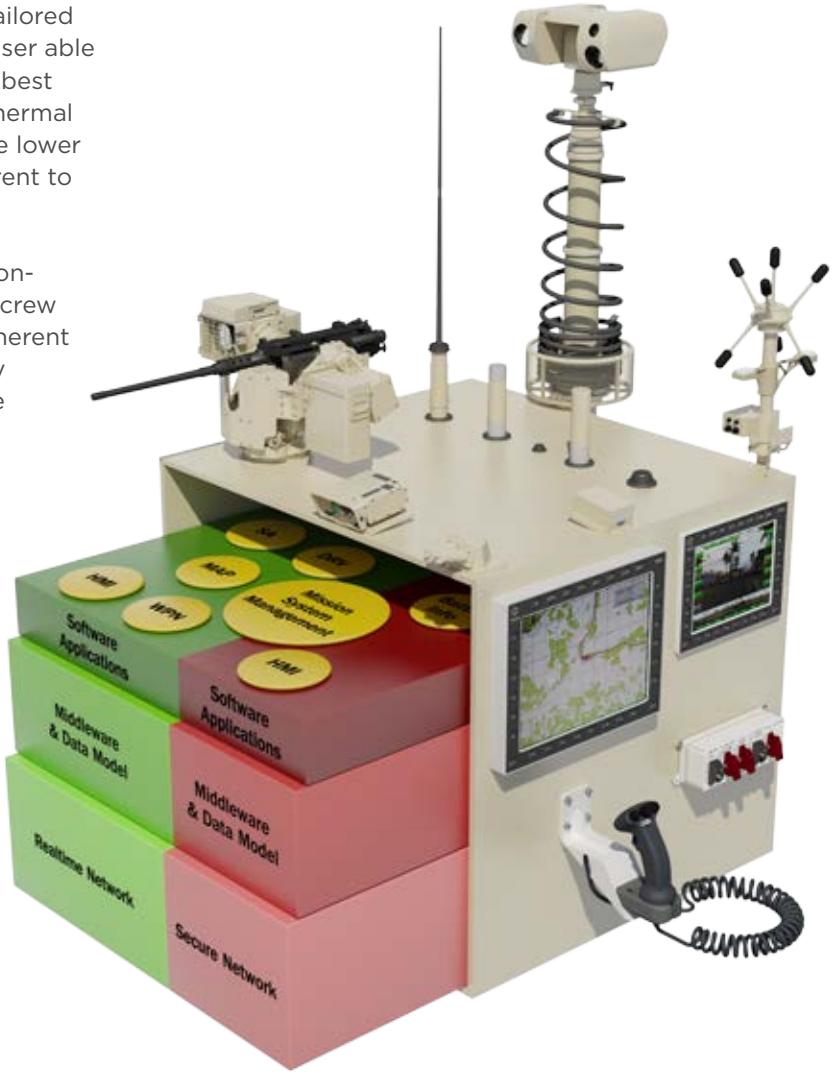


Scalable GVA solutions
The company's GVA mission systems offer a configurable, scalable suite consisting of sensors, effectors, processing and data storage, communications, and HMI modules. A typical GVA configuration includes a number of driver's vision sensors and other local situational awareness sub-systems, a set of multi-function displays and crew stations and self-defence weapon systems.

Our modular GVA mission systems may be tailored to each vehicle type and role, with the end-user able to select the mix of rugged imaging sensors best suited to the job (up to full 360° color and thermal imaging coverage) while benefitting from the lower maintenance costs and ease of training inherent to modular systems with common elements.

Our GVA common user interface is used for on-board operation of all subsystems, from any crew station. This approach reduces the clutter inherent with multiple dedicated devices in a typically cramped workspace and helps towards more economic cross-fleet user training.

Through the application of our GVA-compliant product family and field-proven GVA systems integration expertise, a low-cost conversion solution has also been developed that may be fitted to the majority of military vehicles. Conversion, as opposed to replacement of the existing mission equipment, is the most cost-effective mechanism by which existing fleets can be made GVA compatible.



C4I SOLUTIONS

BASE PROTECTION

Current operational deployments are exposing armed forces to threats which are difficult to identify and locate. In such situations, military bases are a constant target for hostile forces. The aim of the Base Protection product is to strengthen surveillance and detection, increase the safety of personnel (anti-intrusion), enhance active protection (using more effective weapon systems) and improve the ability to exercise Command & Control to respond to potential threats.

As an experienced prime contractor and system integrator, the company is able to provide Base Protection solutions which are configured according to the type of installation to be defended.

They adapt to the geography of the terrain, the operational situation and the required level of security. Each solution is supplied with dedicated surveillance and defense systems, customised to reflect the characteristics of the base.

Key features include:

- Constant monitoring
- Alarm intruder detection
- Threat analysis
- Option checking
- Decision making
- Threat verification
- Data exchange with other C4I systems

System overview

Our Base Protection systems employ a common software architecture and assets such as radar, thermal cameras and other sensors. These are selected and configured depending on specific operational requirements and special needs of the customer.

Standard configuration includes fixed and mobile CCTV cameras, intrusion detection systems, ground surveillance radars, thermal imaging cameras, and acoustic-based systems for locating enemy fire.

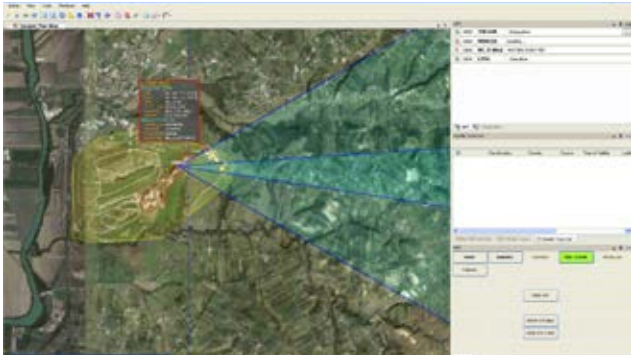
Once integrated into the common architecture, all the system components interact and cooperate as a single overall system. Sensors alert system operators to the presence of vehicles, drones, helicopters, as well as walking or crawling people, even at a range of several kilometres.

Information gathered by the sensors combines to create a geo-referenced Common Operational Picture (COP) through aggregation, correlation and automatic merging of information. Automatic algorithms support the identification and classification of possible threats, allowing the system to react against possible threats, either automatically or via operator control.

Armed vehicles and fire control systems can be engaged directly by the operators to react to attacks. The system is provided with a C4I centre from which operators monitor and control all systems. The centre hosts several multi-functional consoles that can be configured according to different operational roles, thus assuming different functions and capabilities.

All subsystems are fully integrated at the C4I centre so that operators work only on the multifunctional console without the need to access specific subsystems management interfaces.

Subsystem interconnection is based on an innovative network-enabled solution that allows sensors and cameras installed across different points of the base to be connected into a single system. Subsystems don't need to connect to different networks to send and receive different types of information. All subsystems are accessible through a single virtual network across which all information can be transported.



C4I SOLUTIONS

SOLDIER C4I

Field proven solutions for the modern soldier
The company's battle-proven C4I systems for the dismounted soldier are operated by many Armies in the most challenging scenarios.

Based on experience with Soldier Modernisation programmes such as The Italian Army 'Future Soldier', the company provides one of the most advanced and complete C4I solutions available in today's marketplace. Our offer is fully scalable, modular and configurable to support different doctrines of operation and to cover a wide range of operational and technical requirements.

The Soldier C4I consists of two key components: the command and control module (Land Tactical C2SA) and the Communications Subsystem.

Together they provide dismounted commanders and individual soldiers with a method for the secure transmission of voice and data as well as situational awareness, navigation aids, reporting and planning functions. The system provides automatic dissemination of tactical information among team members, including location and status for each soldier, updates of the tactical scenario and other information such as alarms, orders and reports.

Through interoperability with external C4I systems, such as the company's vehicular C4I solutions, information can also be shared at force level.

Optronics sensors such as night vision cameras and target locating systems may be integrated into the C4I to provide additional capabilities of surveillance, reconnaissance and target acquisition.

Our Soldier C4I system is optimised for operation with narrow band radio channels. It also fully supports high data rate transmissions such as video streaming when broadband communications are available.

If required, our soldier C4I solution may integrate external GFE components that may already be in service with the end user.

Land Tactical C2SA
Land Tactical C2SA is a suite of software applications offering the most complete solution for mission planning and execution. C2SA is provided as a combination of desktop and soldier application.

The desktop application takes care of the pre-deployment phases including mission planning, configuration of the radio devices, preparation and loading of digital maps. The soldier application provides battlefield functions such as update and presentation of the operational scenario, support to positioning and navigation, reception and management of orders, messaging and reports, as well as the integration of voice and data services and interoperability with external C4I systems.

The soldier application consists of a set of lightweight and easy to use applications running on a rugged smartphone platform. Dedicated command and control functions may be assigned to distinct operational roles, ranging from Commander to team members.

C4I SOLUTIONS

TCCK

TCCK (Targeting and Communication Command Kit) is battlefield management solution for the JTAC (Joint Terminal Attack Controller) and the JFO (Joint Forward Observer).

TCCK provides effective and safe cooperation among airborne assets, ground assets, naval assets and combat controllers by integrating, into a single solution, situational awareness management tools and joint fire coordination features.

TCCK is able to interact with the coalition assets by means of the Variable Message Format (VMF) protocol to provide a number of tactical features.

Key features

- Generation and sharing of Situational Awareness intelligence
- Discovery and targeting of tactical entities through integration with Laser Range Finder (LRF) devices
- Digitally-aided Close Air Support (DaCAS) for the coordination of fire support provided by an airborne platform
- Digitally-aided Artillery Support (DaARTY) for the coordination of artillery fire
- Digitally-aided Naval Fire Support (DaNFS), for the coordination of naval fire missions
- Exchange of still images among coalition assets

Typical configuration
A typical kit configuration consists of the following elements:

- Ruggedised tablet or laptop running the TCCK application
- GPS receiver (internal or external, military or civilian)
- Target Acquisition System
- A Combat Net Radio
- Data Modem (optional)
- Laser Target Designation system (optional)

Technical features
The TCCK software application is developed to be easily installed on any Windows® based rugged tablet or laptop.

It is built around a highly modular and scalable architecture which is the key factor to provide a flexible solution to meet different operational needs.

The tactical communication between TCCK and cooperating assets is provided by the participation to one or two independent VMF networks for both terrestrial (HF/VHF/UHF) and Satellite data exchange. Interoperability with coalition agencies is granted by a VMF-over-Combat Net Radio interface compliant with the following standards:

STANDARDS	VERSIONS
MIL-STD-6017	A and B (STANAG 5519 Ed.1)
MIL-STD-2045-47001	C and D /w Change Notice 1
MIL-STD-188-220	C and D /w Change Notice 1

Compliance with communication standards is verified by the participation to events and operations involving national and coalition assets.

The Kit is designed to be integrated with the most common Laser Range Finders and allows the operator to easily and accurately acquire position of targets in order to enrich the operational picture that can be shared between the cooperating units.

C4I SOLUTIONS

ATHENA® COMBAT MANAGEMENT SYSTEM

Naval Combat Management
As design authority on today's most advanced naval combat systems, the company provides combat systems that are installed on board vessels from small patrol boats to large aircraft carriers as well as minehunters and submarines.

With more than 40 years in the supply of combat system architectures, our solutions are proven to meet the most demanding requirements.

ATHENA (Architecture and Technologies Handling Electronic Naval Applications) is a Combat Management Systems (CMS) resulting from the development of CMS for major national and international naval programs including:

- NUMC Italian Fast Patrol Boats
- Italian Navy Refitting programs (Maestrale Frigates, Ammiragli Destroyers)
- Horizon Destroyers
- Cavour Aircraft Carrier
- FREMM Multi Mission Frigates
- UAE Navy vessels such as Baynunah class corvettes
- Abu Dhabi class corvette
- Falaj Stealth Vessels
- Ghannatha Fast Patrol Boats.

ATHENA CMS provides 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.

System performance and reliability meet the demanding requirements arising from the most advanced naval programs, including continuity of operational functions with no loss of data in case of faults. Flexibility and modularity of the system architecture enable potential growth and upgrade capabilities, as well as easy implementation of specific customer requirements.

ATHENA CMS is provided with a customisable number of multi-functional consoles, typically depending on the required number of simultaneous operators. These consoles are installed in the Combat Operation Centre and enable operators to conduct tactical operations. The ATHENA CMS supports the Command Team in the management of on board Combat Systems and force assets to achieve the assigned missions.

From CMS to net-centric operations
The company is uniquely placed to lead the delivery of Network Enabled Capability for naval applications. ATHENA CMS and the company's wide portfolio of naval communications products provide effective distribution of information throughout the entire fleet.

Each of our Combat Management Systems provides advanced tactical and planning decision support features and can be easily integrated with external Command & Control applications and maritime C4I systems.

The company played a leading role in several naval communications programs and today we provide strategic communications systems and satellite communications, messaging and information systems, cryptographic equipment, naval radios, maritime networks, navy shore stations, specialist antennas and electromagnetic modeling.

C4I SOLUTIONS

NAVAL TACTICAL TABLE

Modern naval Command & Control centres require advanced C4I solutions to achieve operational advantages through the robust networking of geographically dispersed naval forces.

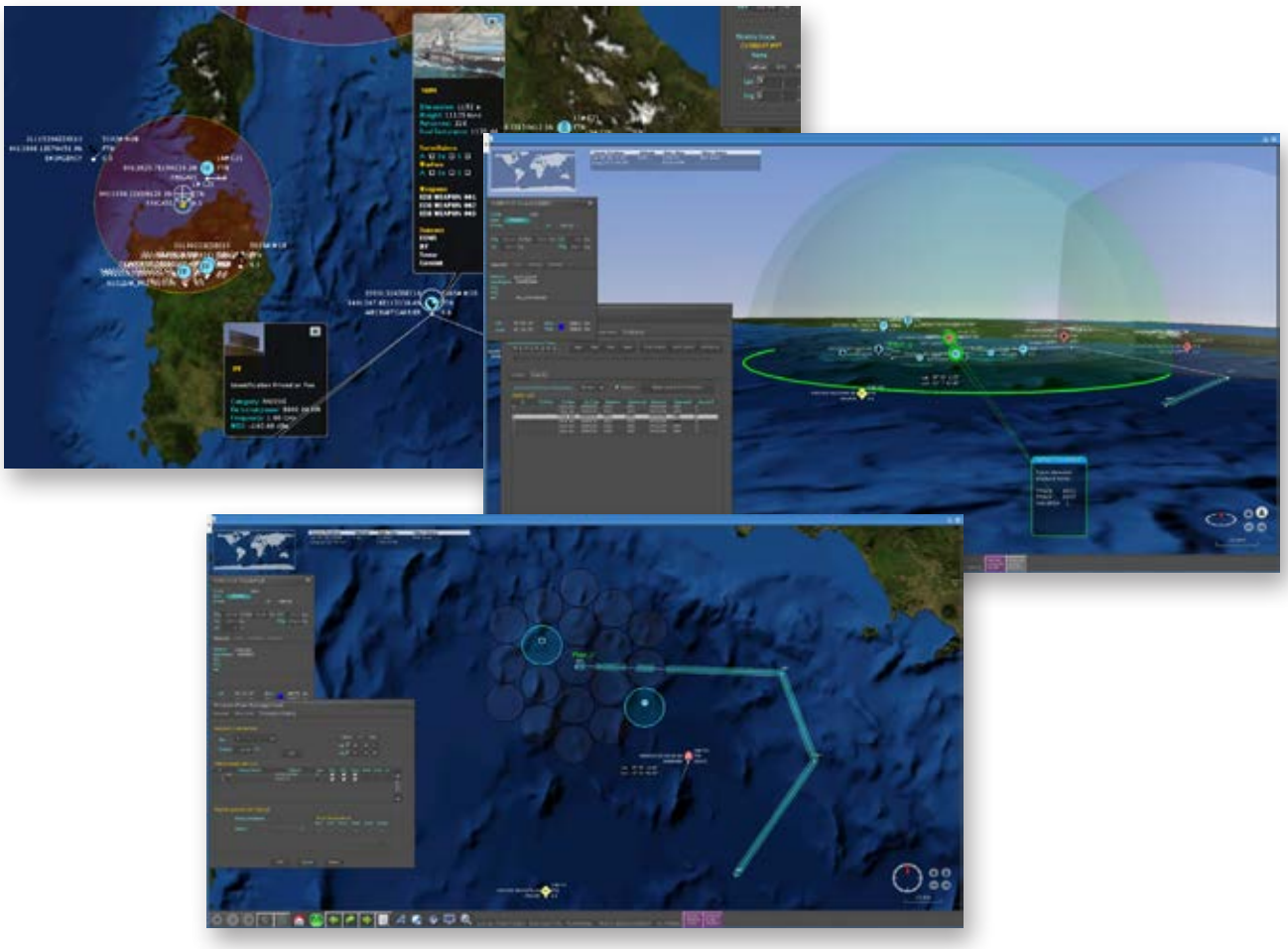
The complexity and distributed nature of naval operations require in fact the precise coordination among all elements of the force, together with the ability to collect, process, and disseminate relevant information in near-real-time to support distributed fires and manoeuvring.

The Naval Tactical Table provides strategic decision support in network enabled ashore command centres and onboard naval unit commands.

Once deployed and interconnected within the naval communications network, the system supports Force Commanders and associated staff in the analysis of the maritime situation, as well as in the decision making process and for the planning of long and medium term naval mission.

The system, which comprises field-proven and cost effective components, supports the generation of a Common Operational Picture by fusing and merging local data coming from heterogeneous sensors and CMS coming from different Naval Units.

The system facilitates collaborative planning and shared knowledge supporting decision makers in compressing decision cycles.



The Naval Tactical Table has been designed to provide full support to the wide range of activities and tasks that are executed within a C4I centre operating at the strategic and operational levels of command, including:

- Auxiliary management planning, i.e. navigation calculations, approach routes, navigation and blind pilotage planning interacting with the naval map charts
- Management and planning at force level, in order to plan operative tasks and support the supervision of mission plans' execution and to provide the de-briefing documents in order to evaluate the mission plan results
- Management of Non-Real-Time (NRT) and Real-Time (RT) information and 3D presentation of the wide area picture through automatic integration of tactical objects with encyclopaedic database information
- Encyclopaedic Database, based upon data-fusion of multiple source data, as Jane's, Lloyd's, etc.

The system provide the operators with planning functions to be executed both before and during the real missions, inclusive of what-if analysis and specialised applications for supporting decision making at the strategic level.

The Naval Tactical Table is based on a New Generation Console (NGC), that has been designed in order to exploit 'touch input' features and to provide smart and friendly use. Through the NGC, the system provides a graphical, form-oriented' environment to produce different kinds of plans, according to the specific operational role.

LEONARDO
LAND & NAVAL DEFENCE ELECTRONICS

leonardocompany.com
For more information please email infomarketing@leonardocompany.com
Leonardo S.p.a.
Via Tiburtina, Km 12.400 - 00131 Rome - Italy - Tel: +39 06 41501 - Fax: +39 06 4131133

LNDE MM08781 7-17