



LEONARDO ELECTRONICS

MISSION PLANNING AND SUPPORT

SUPPORT SYSTEMS AND CAPABILITIES

Leonardo offers a number of Mission Support Systems designed for the Ground Segment of Airborne Weapon Systems.

The company provides a wide range of capabilities to plan and efficiently execute air missions, Search & Rescue (SAR) operations, mission debrief and the management of logistic support.

Moving towards a Performance-Based Logistics management perspective, these solutions follow the most recent approach for 4th and 5th generation platforms where Operations and Maintenance Management Systems are part of the Air Systems.

Our main customers and partners work with us in a strong relationship and collaboration. Our products have been delivered to National and International Armed Forces. The solutions frequently integrate important third party contribution, being Leonardo the only counterpart for our Customer and fully responsible for system integration.



SET-UP

- Update Support Database (maps, DAFIF, JEPPESEN etc)

PLAN

- Import of Mission Data (ATO, ACO etc)
- Route, Sensors and Equipments Planning

SIMULATION

- Mission Simulation and Rehearsal

DATA UPLOA

- Material Preparation (CMF, Briefing Data)
- Data Transfer on board (DTD)

MISSION PLANNING AND DEBRIEFING

Leonardo has more than 20 years of experience in the delivery of Mission Support Systems (Force-Level and Unit-Level) with the following capabilities:

- Mission Planning, based on Air Force Mission Support System (AFMSS), Joint Mission Planning System (JMPS) and proprietary technologies
- Target modelling and stand-off missile planning
- Mission briefing and debriefing
- Mission rehearsal
- On-board Digital Map Display SW (DMG) and Electronic Flight Bags (EFB)

Our Mission Planning System (MPS) is a state-of-the-art multi-aircraft mission planner designed to allow aircrew to plan a route with minimum time and risk. It supports all phases of the planning activity, from receiving Air Tasking Orders up to pre-flight briefing and preparation of on-board materials.

Our debriefing solution is based on the established RESTM (Representation and Elaboration System) technology, and provides functions for real-time track position monitoring in 2D or 3D. It provides Mission Debriefing Support (mission replay in 2D or 3D) and real-time data analysis including simulation and 'what-if' analysis.

The Mission Planning and Debriefing System (MPDS) suite of products aim to:

- Support both wartime and peacetime operations of the Air Force located at a Main Operating Base or deployed at Forward Operating Base
- Collect all data coming from C4ISTAR systems for tasks generated by high-level commands carried out at wing/ squadron level
- Provide pre-flight study of mission feasibility
- Provide post-flight mission analysis in a short time after mission accomplishment in order to assess the result and share the lesson learned

The company's Mission Support Systems follow a modular approach with a common technological framework (AFMSS, JMPS and proprietary technologies).

This provides tangible benefits for data standardisation, data entry reduction, Wing and Squadron interoperability and cost reductions in training, maintenance and logistic support.

Currently supported platforms include Typhoon, Tornado, AM-X, C-130J, C-27J, MB339, M346, P72A, NH90, HH101 and A129.



- Import of Recorded Data

- Sortie video preview
- Mission Playback
- Report Preparation

SEARCH AND RESCUE OPERATIONS MANAGEMENT SYSTEM (SAROMS)

SAROMS (Search and Rescue Operation Management System) is an advanced operations management and coordination system designed to support all phases of a Search & Rescue (SAR) mission.

Features include information collection, automatic probabilistic SAR area calculation, graphical aided standard search patterns computation, rescue assets planning, operations co-ordination and monitoring to support and manage Aeronautical and Maritime SAR Operations as well.

When a Rescue Coordination Center (RCC) is activated, SAROMS can immediately define the area of operations, gathering the relevant information (weather data, last contact, beacons data, radar tracks etc) to define the SAR scenario.

Employing a 3D/2D geographical area representation, operators can easily define appropriate course of actions and, at the planning stage, SAROMS's algorithms permit the automatic probabilistic SAR area computation to look for survivors with high accuracy.



Operators can use the SAROMS's built-in features to define best SAR search patterns, taking into account terrain orography, vegetation, surface features and manmade features. A variety of different SAR patterns, such as expanding square, sectors and parallel, are supported.

SAROMS manages the rescue units' deployment, generating search plans within the identified areas. In line with its role as a SAR support system, SAROMS carries out a set of functions that generate operational orders for all search units during the planning phase.

The operations co-ordination and monitoring capability supports the implementation of searches on the basis of planned activities.

By using a variety of different communications links (3G/4G/LTE, UHF/VHF, Satellite), rescue crews interact with SAROMS. They both receive planned mission data and send their current operational status to SAROMS that uses updates for synoptical real-time representation of actual operations.



LOGISTIC INFORMATION SYSTEM

Leonardo's products for Maintenance and Logistics Support are the result of experience acquired since the early 80s with the development of the Logistics Information Systems for the Italian Defence Administration (Army, Navy, Air Force and Police services) and with special focus on the complex 'asset management process' following the acquisition of a weapon system.

A wealth of in-the-field experience has been gained which is reflected in the advanced software solution. This utilises state-of-the-art technologies to provide strong flexibility in terms of both tools and future integration potential.

EDIS

The EDIS tool suite has been developed to manage all the aspects of a complex logistics support organization, but it is possible to use EDIS also in contexts where legacy solutions already exist. The integrated use of existing systems preserves past investments.

EDIS is structured according to a multilevel architecture compliant to Java Enterprise Edition (J2EE) standard, developed in:

USER INTERFACE

Access and use is made via a web browser installed on personal computers connected through LAN or internet to the server(s) on which EDIS runs.

APPLICATIONS

The applications concerning the management of the user transactions and the interaction with external systems are allocated on a dedicated system layer.

DATABASE

The database management is made by a single RDBMS which the application objects access to. Various commercial RDBMS can be used.

Some of the basic characteristics of EDIS are:

- Modular and fully integrated SW structure
- Easy data exchange (XML messages, SOA)
- Electronic signature (PKI)
- Work Flow Management
- Multi-language user interface (default: IT and UK/US)
- J2EE Application (MVC – Model View Control)
- Portability on different RDBMS (Oracle, MySQL, SQL Server)

These tools allow an effective use in logistic scenarios where different information systems (Defence and/or commercial) co-exist.

In such scenarios, the opportunity to deploy specific modules for specific applications, the possibility to customise such modules and to exchange data according to market standards methodologies, are the foundation for a cost-effective management of the ILS life cycle.

Main logistic areas include:

- Weapon system configuration management
- Technical Publications
- Material management, supply chain management (including asset tracking and transportation) and procurement
- Maintenance management
- Accounting and budget management
- Personnel (HR, payroll)
- Expenses and cash, financial planning
- Mission data recording and analysis
- Decision support and logistic support analysis
- Life cycle cost analysis
- Training management

SLIM

The Integrated Logistic Information Systems was developed since 2003 and based on a COTS software platform (SAP), this information system involves Shipyards, latest generation Naval Units, the Spare Parts Management Centre, the Naval Logistics Command, the Naval Support and Experimentation Centre and the industry.

SLIM is structured according to a multilevel architecture ERP SAP, developed in:

USER INTERFACE

SAP must be installed on the computers wishing to connect. Interaction is via a proprietary interface that allows direct connection with the system itself (SAP GUI).

APPLICATIONS

The applications concerning the management of the user transactions and the interaction with external systems are allocated on a dedicated system layer. This can share the server of the database management or can be hosted on a dedicated server.

DATABASE

The database management is made by 'n' RDBMS Oracle which the application objects access to. On the Naval Units there is a single Database.

INTEGRATION

The integration among systems was built using a software engine based on the Oracle Data Integrator, a comprehensive data integration infrastructure that covers all data integration requirements, for offline data flow among systems and remote function calls (RFC), the proprietary standard SAP interface for communication between SAP systems, for online requests among systems.

The system takes advantage of the existing computer science infrastructures of Armed Forces (LAN and geographic net Marinet), operates in real time even though there are flows allowing the ship to operate offline. The Navy has allowed the connection from industry remote sites to the SLIM, in agreement with the IT security rules.

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