ISR Full Crew Mission Simulator
Intelligence, Surveillance and Reconnaissance Capabilities for Airborne and Maritime Live Mission Training
ISR Mission Overview

ISR represents the practice of observing, acquiring and combining different tactical information to support intelligence analysis and operations’ command and control.

A wide range of sensors are involved in such missions, including cameras, infrared, ESM (Electronic Support Measures), radar and radio. These sensors are installed on ground, maritime and airborne platforms.

ISR missions are not only typical of the military world; nowadays with the increase in asymmetric threats and crimes such as drug smuggling and illegal immigration, many Police Forces and Homeland Security Agencies use 4x4 vehicles, patrolling ships, helicopters, aeroplanes and even UAV platforms to protect their countries.

The main characteristic, and the main criticality, of ISR missions is that all the information acquired by the different sensors has to be correlated and it must be consistent.
The ISR Full Crew Mission Simulator has been designed to provide, through a single system, advanced ISR (Intelligence, Surveillance and Reconnaissance) training capabilities to a wide number of Organizations and Operators. The simulator increases training effectiveness, optimizes costs, minimizes the number of people needed to carry out a training session and trains crews on different types of platforms and configurations. Because it is a Full Mission, students are immersed in highly realistic tactical scenarios which stimulate their ability to react to unforeseen situations and improve their situation awareness.
System Description

In complete configuration, the ISR Full Crew Mission Simulator is made up of three elements: a Cockpit Trainer, a Rear Crew Trainer and an Instructor Operator Station. Using a glass cockpit style approach together with touch-screen monitors, the Cockpit Trainer can reproduce the instruments and panels available in the cockpits of aeroplanes, helicopters and even ships. The Cockpit Trainer can also replicate the remote control station of an UAV. It is not necessary to change any hardware in order to switch between one cockpit and another.

An image generator and a projection system can be added in order to provide the crew with “out of the window” visibility. The Rear Crew Trainer is made up of one or more Sensor Operator Stations; each one replicates the sensors and the systems available on a specific helicopter or ship. Using the same approach as the glass cockpit, different panels and displays can be replicated on the same Sensor Operator Station. The Instructor Operator Station allows the whole training session to be monitored.
and controlled. The Instructor has automatic functions which reduce the workload. During the simulation the instructor can role-play a crew member of any entities (ships, helicopters and so on) which are available in the tactical scenario. The simulator can operate in stand-alone and combined mode. This feature allows a single student to be trained without needing to involve a full crew. At the same time this feature can be used to create joint training sessions in which the pilots can fly aeroplane A, an operator can be seated in helicopter B and another operator on ship C, all of them in three different positions within the area of operation.

Tactical Scenario
The simulator uses EXERCISE CGF to generate the Tactical Scenario. EXERCISE CGF (Computer Generated Forces) is software which provides non-programmer users the ability to create and simulate complex and realistic operative scenarios. EXERCISE CGF generates dynamic and realistic synthetic scenarios where user-defined entities, like ships, helicopters and humans, interact between themselves and with the trainees according to user-defined doctrines. Entities’ capabilities and physical parameters, sensors and weapons can be defined by the user and controlled through articulated mission doctrines. EXERCISE CGF also simulates environmental situations with realistic evolution including the correlation between weather phenomena and terrain profile. The weather situation in the operative area evolves during the mission and phenomena like tides, sea currents and winds are modelled using state of the art algorithms. Sensor and system simulation takes into account the weather conditions.

General Features
- Glass cockpit and touch screen supporting multiple configurations
- Record, Playback and Restart-at-Point
- Fully HLA (High Level Architecture) for distributed simulation
- Possibility to use electromagnetic emissions recorded during real missions

Training capabilities
- Night Vision (FLIR and NVG) Target Acquisition
- Tactical Communications Management
- SAR (Search and Rescue)
- Borders, Immigration and Smuggling Control
- Crew Resources Management
- Multi Crew Coordination

Flight Training Specific Capabilities
- IFR (Instrument Flight Rules)
- UAV Operations

Military Specific Training Capabilities
- ASuW (Anti-Surface warfare)
- Damage assessment
- Target Reconnaissance
- Battle Space and C4I Resources Management
- High Threat Convoy Escort
- Close Fire Support

Electronic Warfare Specific Training Capabilities
- COMINT, SIGINT, ELINT (Communications, Signals, Electronic intelligence)

Simulated Sensors and Systems
- Daylight Camera
- IR (Infra-Red) Camera
- NVG (Night Vision Goggles) Camera
- ESM (Electronic Support Measures)
- IFF (Identification Friend or Foe)
- AIS (Automatic Identification System)
- HF-VHF-UHF Radio
- Tactical Communications
- ICS (Intercom System)
- Tracking, Searching, Navigation and Weather RADAR
- Direct and Active Guidance Weapon Systems
- Chaff and Flares
- ECM (Electronic Countermeasures)
- Tactical Data-Link

For more information on EXERCISE RF and EXERCISE CGF visit our website.

There can be different configurations of ISR Simulator. In accordance with Italian/English law, the transfer, sale and export of some ISR Simulator configurations may require LOG.IN to apply for an authorization and/or an export permit from the Italian/English Export Control Authorities.