Integrated Electronic Warfare System

Own the Enemy’s Battlespace

Leonardo DRS
NOBODY WANTS A FAIR FIGHT

DRS offers an Integrated Electronic Warfare (EW) System, with comprehensive training and maintenance, that provides complete situational awareness of the enemy and their communications, fires and weapons systems.

COMPREHENSIVE AND EFFECTIVE EW PLANNING
• Establish and adapt your EW plans
• Plan and execute EW targeting, attack and exploit missions
• Centralized command and control plans

ELECTRONIC SUPPORT (ES)
• Target, gain situational awareness and gather intelligence

ELECTRONIC ATTACK (EA)
• Attack across the spectrum to deny, degrade, deceive and neutralize their combat capability

ELECTRONIC PROTECTION (EP)
• Protect your communications and ensure knowledge of their systems

FIND, FIX, FINISH, EXPLOIT, ANALYZE, AND DISSEMINATE

A FULLY INTEGRATED SOLUTION TO A COMPLEX CHALLENGE

OPTIMIZED ELECTRONIC ORDER OF BATTLE
• Determine sensor utilization to create real-time dynamic blue/red Common Operating Picture (COP)

MAXIMIZATION OF ASSETS
• Plan sensor locations based on maximum geographic coverage
• Remotely reassign based on changing intel assessments

INTELLIGENCE GATHERING, ANALYSIS AND DISSEMINATION
• Ensure the right information flows to the commanders who need it... when they need it

TARGET, TRACK, EXPLOIT
• Spectrum utilization, direction finding and geolocation and record intelligence

DENYING THE ENEMY
• Own spectrum utilization and determine jamming effectiveness

DRS brings a completely networked, collaborative and integrated set of Electronic Warfare capabilities enabling you to dominate the spectrum in complex terrain. Multiple platforms and COTS/GOTS hardware and software to locate, surveil, collect on and attack your enemy electronically, while denying him the ability to do the same to you.
The DRS Integrated Electronic Warfare System has a modular, IP based architecture. This allows subsystems such as portable manpacks to “plug and play” with each other to increase robustness.

The system has been deployed and demonstrated with subsystems configured 35 km from each other and with target ranges greater than 100 kilometers. The networks have been proven using a variety of physical links to include high and low bandwidth radio, microwave and SATCOM.

**Network Connectivity**
- IP-based Architecture
- LOS and BLOS Communication Links
- HF, V/UHF, Microwave, SATCOM
- Compatible with existing IP-based Networks
- Ad Hoc Networks, Relay, Redundancy
- COTS/MOTS Equipment
- Modular Design for Ease of Maintenance and Future Upgrades
INTEGRATED ELECTRONIC WARFARE SYSTEM
Dominating The Spectrum

- Multi-platform
- Hardware and Software to Detect, Exploit, Attack
- Fully interoperable
- “Plug-and-play” into existing networks

Mission Planning → Tasking → Target Acquisition → Collection
  → Direction Finding → Geolocation → Attack
  → Reporting → Analysis → EOB

HF Transportable
- VHF/UHF Transportable
- VHF/UHF Mobile
- Manpack Systems
- VHF/UHF Jammer

EWOC
- EWOC
- HF TOC

EW Trainer
- Signal Analysis Laboratory
ELECTRONIC SURVEILLANCE (ES)
Locate, Target & Exploit

The Electronic Surveillance subsystem utilizes extremely accurate Direction Finding and state-of-the-art receivers and radios. The co-channel interference is mitigated through sophisticated direction finding algorithms.

- Independent Sovereign Capability
- Strategic Intelligence
- Mission Planning
- Analysis
- Developing EW Doctrine, Tactics and Techniques
- Mission Data Sets
- Hardware Programming

The DRS Raven CDF-6000 provides superior COMINT performance through detection, interception, DF, collection, geo-location, measurement, analysis, signal recognition, and the identification of conventional, modern, and agile signals.

This robust system offers wideband performance that features a wideband intercept capability with simultaneous DF measurement. It utilizes fast scanning receivers with an instantaneous bandwidth (IBW) of 40 MHz to scan all or part of the 20 MHz to 6,000 MHz band at 10+ GHz/second.

Along with Wideband Direction Finding, the system offers 36 DDC channels (18 per each of the independently tunable 40 MHz front ends) with selectable bandwidth filters. Each DDC supports an independently selectable DF bandwidth streaming over 10 GB Ethernet in VITA-49 format. The CDF-6000 Raven offers state-of-the-art capabilities for operations in peace and wartime environments such as early threat warning support, electronic order of battle development, spectrum management plus search and rescue.

ELECTRONIC ATTACK (EA)
Blind & Deafen the Enemy

Upon receipt of a jamming mission, the Electronic Attack subsystem performs an analysis of the battlefield environment to ensure the most effective disruption of the enemy’s C2.

- Electronic Attack subsystem performs an analysis of the battlefield environment to ensure the most effective disruption of enemy C2.
- Collaborative ES systems work together to refine and enhance the jamming mission.
- Uses unique EW and tactical comms functions to ensure that a direct path to the target.
- High powered amplifiers across 4 major frequency bands ensure disruption of robust C2 target sets: Hi-power, long-distance and freq-hopping radios - 1.5 MHz to 6 GHz
- Simultaneous jamming on multiple threats in different frequency bands – attacks frequency agile threats
- Proven Design operates in Manual or Look-through Mode
- COTS/MOTS Modular Design for ease of maintenance and future upgrades (i.e. higher power PAs or frequency extensions)

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ELECTRONIC WARFARE OPERATIONS CENTER (EWOC)

- Mission supervisor capability to direct large contingent of Electronic Surveillance (ES), Manpack and Electronic Attack (EA) units
- Distributes mission tasking, dynamically retasks as needed based on intel
- Collects results into a Data Management subsystem to review overall mission effectiveness and future mission planning
- Continuous mission-assessment feedback-analysis processes

Our system provides a robust information management of the mission data, that provides a strategic view of the battlespace.

Strategic & Tactical Capabilities

- Command and Control
- Mission Planning
- Mission Tasking
- GIS - 2-D and 3-D maps
- Line of site communications path analysis
- Coverage analysis
- Jamming effectiveness analysis
- Post collection signal analysis
- Signal replay and demodulation
- Database storage and processing
- Status and Report

HF/VHF/UHF Acquisition  DF  GIS

Mission Planning & Analysis  HF DF/Geolocation

Monitor & Collection  Tasking & Reporting  EOB Target Analysis
ELECTRONIC SUPPORT
ESM/ELINT Land

The non-Comms Electronic Support System consists of the latest Digital Receiver Technology to provide a highly effective EW System

- Wideband Digital Receiver (0.5 MHz to 18 GHz)
- Quadrant Antennas for Full Azimuth Coverage
- Analysis and Operating Software

ESM/ELINT LAND CAPABILITIES:
- Automatic or Manual Search
- Signal Analysis
- Automatic Emitter Identification
- Automatic Data Recording for Later Analysis
- High-accuracy Direction Finding Interferometer (HADF) Antenna
- EW Situational Awareness Map Display

MANPORTABLE SOLUTIONS
Including Manportable Counter IED

- COMINT/DF Manpack System
- Body Worn COMINT/DF
- Performs High-speed Scanning, Monitoring DF
- Covers Communications Band of 1.5 MHz to 3 GHz
- Wide Instantaneous Bandwidth (Wideband) Technology
- High-speed Search, Acquisition, Monitoring and DF
- Fielded Systems
DRS has installed COMINT DF systems on various fixed wing platforms. The latest system has a state of the art Signal Recognition capability with the ability to demodulate over 100 signal types - in two seconds.

DRS has a variety of solutions and capabilities that can be tailored to meet specific customer needs and available platforms. DRS also has the capability to conduct the necessary analysis to position the DF COMINT array on the airplane of choice to maximize system performance.

• Provides high Communications Intelligence (COMINT) performance
• Functions include: detonation, interception, collection, geo-location, measurement, analysis, identification and database storage
• Capable of handling conventional, fixed-frequency and frequency hopping signals

DRS has installed and deployed systems on platforms in a number of countries. These systems are designed to be used on a different class of surface ships and have the ability to support ELINT operations. The Systems are designed to allow geo-location, utilizing multiple platforms to increase accuracy of determining the position of the enemy.
TRAINING
Our Most Important Component

Our Electronic Warfare System is a component of a modern EW capability and is tied directly to an EW training system. This allows users to keep their skills honed and practice real missions in the classroom using software that is recognizable when in the field.

Electronic Warfare Fundamentals
- RF Fundamentals
- Electronic Support
- Communications
- EW Operation Concepts

COMINT EW
- COMINT Simulator
- HF DF Simulator
- Threat Builder (COMINT Signals)

Mission Planning EWOC
- Mission Planning System
- EWOC Simulator

ELINT EW
- Threat Builder (ELINT Signals)

LP Signals/Network Analysis
- Threat Builder (ELINT Signals)

A Comprehensive Curriculum

INSTRUCTOR WORKSTATIONS
Instructor workstations provide a host of tools that enable the creation of realistic scenarios through the geographic placement of friendly and hostile emitters, as well as Direction Finding (DF) and other Electronic Surveillance (ES) and Electronic Attack (EA) assets.

MISSION PLANNING POSITION
The mission planning position provides a deployment planning tool typically utilized at an Electronic Warfare Operations Center (EWOC). This graphic intensive tool enables students to plan the deployment of intercept receivers, including intercept coverage assessment and gap identification, thus maximizing the efficiency of deployed sensors or minimization of assets assigned to a given objective.

V/UHF WIDEBAND DIRECTION FINDING POSITION
The V/UHF wideband DF position accepts Pulse Descriptive Words (PWDs) generated through instructor scenarios to simulate a number of virtual emitters and networks employing push-to-talk and/or frequency hopping transmissions with hop rates up to 500 hops per second within the frequency range of 20 to 3,000 MHz. The application simulates a true-wideband DF system that features a wideband search capability along with the ability to perform simultaneous wideband DF measurements.

ELINT TRAINER (OPTIONAL)
The ELINT trainer integrates powerful scenario and emitter creation tools with emulations of receivers, pulse analyzers, antenna systems, DF displays and entire EW consoles spanning the frequency range of 0.5 to 18 GHz, simulating the EM environment and the behavior of a fully interactive Radar Warning Receiver (RWR), Electromagnetic Support Measures (ESM) and ELINT hardware elements. The student can work with a highly accurate simulation of an ELINT signals environment and progress from a static training situation to a dynamic 3D scenario that operates in real-time with a variety of land, sea and air target emitters that behave consistently with their respective platforms.

STUDENT WORKSTATIONS
Student workstations present trainees with Graphical User Interfaces (GUIs) that replicate real-life collection operator and narrowband High-Frequency (HF) DF application software. Students are able to perform signal collection and DF tasks, can enter transcribed text, recorded and archive demodulated audio and store completed intercepts as database records for subsequent analysis and review.
DRS KNOWS THE ELECTRONIC BATTLEFIELD

• DRS is a proven leader in EW technology - but our advantage is a unique, proven ability to train your warfighters into experts.

• We cover every aspect needed to own the electronic battlefield – from training to long-term support.

• We will train operators on Electromagnetic Spectrum fundamentals from Wave Propagation to Optimized System Use and Maintenance and Logistics.

• Our integrated approach spans multiple platforms to form a hierarchical system that optimizes the effectiveness of the EW commander.

For more than 25 years, we have provided state of the art Electronic Warfare Systems and capabilities to the United States government and to international partners via FMS, FMF and Direct Military Sales. We also provide the operator manuals, training and technical support in order for the end users to utilize the systems in the most effective manner possible.