

AIR COMBAT TRAINING SYSTEMS

Preparing air combat pilots for real world conflict.

BE READY FOR THE NEXT ACT

PRODUCT OFFERINGS

Leonardo DRS produced and fielded more airborne instrumentation systems than all other suppliers combined.

Fifth-generation ACTS and EW threat simulators that prepare combat-ready pilots for real-world conflict through live, virtual and constructive training.

Leonardo DRS' Air Combat Training Systems (ACTS) draws on more than 60 years of innovation in the development of training systems to prepare pilots for combat. These ACTS are designed as the premier, stateof-the- art, high performance test and training instrumentation systems available in the world today. The business has produced and fielded more airborne instrumentation systems than all other suppliers

combined, with more than 5,000 developed for military services throughout the world.

As the world's premier provider of high-tech airborne and ground system air combat training technologies, Leonardo DRS offers a low-risk solution that exceeds customer requirements. ACTS provide air forces the capability to autonomously test and train anywhere, anytime with proven, reliable, range-less capability.



Pods & Subsystems

Air Combat Maneuvering

Instrumentation (ACMI)

improve air combat and

our global customer set.

survival capabilities of

pods and subsystems







Display & Debrief

The interactive system provides live monitoring during mission training and a complete debrief to pilots once a training mission is complete.



Electronic Warfare Threat Simulators

The simulators range in size and complexity from hand held, low cost/low fidelity RWR stimulators to full ERP 5th gen digital threats.

Leonardo DRS delivered more than 250 electronic warfare threat systems to date.

CAPABILITIES FOR COMBAT AIR FORCES



- Live, Virtual & Constructive (LVC) Training: From an environment involving real people operating real systems, to a completely simulated environment involving imitation systems, a combination of LVC capabilities can enable a complete training solution.
- Embedded Aircraft Training: Leonardo DRS and our partners work together to integrate embedded training (ET) software applications with our Live Air Combat Training products. For example, our M346 aircraft Embedded Tactical Training System (ETTS) enables ET through interoperability with the P5 Combat Training System (CTS).
- Encryption Integration: A unified approach to cybersecurity through the protection of unclassified, sensitive, or classified information with focused efforts in securing associated systems and resources. Leonardo DRS is uniquely-qualified to deliver low risk solutions to meet user cyber requirements for airborne network instrumentation and ground system applications.
- Sustainment / Depot: On-site or depot-level maintenance and repair of parts, assemblies, or sub-assemblies for all Leonardo DRS air combat training products. This includes conducting engineering investigations; conducting analyses and diagnostics of failures and deficiency reports submitted by end users; deriving corrective measures; and incorporating modifications and enhancements into end items.
- Custom Solutions: All of our air combat training systems can be tailored to meet specific customer requirements as well as designed to meet U.S. export requirements. We work directly with aircraft prime contractors to collaborate on solutions for seamless integration on platforms.

Pods & Subsystems



FEATURES

- Based on the next generation of U.S. Government air combat training system designs, ACTS provide higher reliability, lower support costs, and future upgradeability
- Flexible features are included to capture test and evaluation information for customer weapon system and avionics testing
- Since Leonardo DRS is the manufacturer of the next generation U.S. system, ACTS will provide interoperability with U.S. Government forces now and into the future
- A high fidelity data link system provides longer ranges, improved throughput, and relay functions not provided by other training systems
- The systems support 100+ simultaneous from airborne and ground participants
- Provide high fidelity weapon simulations for air-to-air and air-to-ground applications, based on SimBuilder[™] which supports customer configured simulations







ACMI CAPABILITIES



- Air-to-Air Range Infrastructure System
- Tactical Combat Training System Increment II
- P5 Combat Training System
- Joint Strike Fighter P5CTS Internal Subsystem
- Multi-Range Instrumentation System
- Advanced Jet Trainer





Flight Certified Airborne Instrumentation

Leonardo DRS pods are configured to adapt to any launch rail at any fighter aircraft launch rail position. Our airborne instrumentation pods have been flight certified on: F-4, F-5, F-15, F-16, A-10, E/A-6B, CV-22, EF-2000, AMX, Hawk, IDF, Jaguar, MiG-29, Mirage, Tornado and T-38. Our internal subsystems are configured to support a variety of fighter aircraft (F/A-18, AV-8, F-22, and F-35) as well as a number of helicopter and heavy aircraft platforms (P-3, B-1, B-2, B-52, C-130s, C-9, C-12, C-17, CH-53, MH-60, CH/MH-47, and SH-2G). All Leonardo DRS airborne instrumentation hardware and software configurations, regardless of aircraft platform type, are test and training mission scenario interoperable and have been designed to support future technology insertions.

Interoperability

To allow coalition training interoperability, Leonardo DRS designed and developed the Universal Data Exchanger. This system uses a Common Data Format standard allowing the transfer of unclassified Time-Space-Position Information (TSPI) data between the ACTS and the Common Data Format. This format allows the exchange of TSPI data from

dissimilar ACTS for merging data with live command and control and display of post mission debriefing data. The Universal Data Exchanger has successfully supported joint ACTS missions with data from two or more dissimilar ACTS for U.S. Government forces and coalition partner exercises.

Accurate Tracking on Any Tactical Aircraft

An integrated GPS solution provides accurate full-state vector-tracking through the full range of motion, tactical aircraft dynamics. The solution is a 12-channel, allin-view, C/A or P(Y)-code receiver capable of differential correction for test missions.

Aircraft Interface

The airborne instrumentation pods integrate with all AIM 9/AMRAAM and MAGIC-type launch rails and supports signal/power connection to both launcher types. They provide programmable interface to MIL-STD-1553, Digibus and other weapons data busses on applicable host aircraft. The internal subsystems are also standalone systems connected to the weapons data bus. In general, the airborne instrumentation pod components are re-packaged into a form, fit and factor to support aircraft specific configurations.

Data Link Transceiver

The data link subsystem provides a range-less operational capability using our unique data link. Leonardo DRS's data link does not require pre-mission log-in or set up. It provides autonomous direct pod-to-pod communications at more than 80 nm and an optional pod-to-ground range of more than 125 nm to monitor aircraft training activities in real time. Our data link ensures 99% message reliability at extreme ranges by employing a combination of techniques as well as a data link range extending relay capability. The pods and subsystems will accommodate any of our family of interchangeable data link transceivers operating in the L-Band (1350-1450 MHz, 1710-1850 MHz) or S-Band (2200-2400 MHz) frequencies.

Intelligence Flash Solid-State Recorder (IFSSR)

The IFSSR reliably records digital data in the harsh external store environment of high performance fighter aircraft. The IFSSR also provides the means to upload pre-mission data to configure the pods and subsystems external/

internal instrumentation to support a variety of test and training mission requirements. The data is transferred in a DOS-compatible file format on a data transfer device, consisting of a solid-state flash memory card enclosed in a protective metal cartridge. The data transfer device capacity of 1 gigabyte is sufficient to record all data from every participant in a 100-player exercise for over 1.5 hours (higher capacities are available).

Weapon Simulations

Equipped with a suite of generic, unclassified, air-to-air and air-to-ground weapons simulations, ACTS provides real-time weapon flyouts and scoring to support Real Time Kill Notification to the shooter and target pilots and records simulation results for post-mission debriefing. Additionally, the customer can develop unique weapon simulations using a user-friendly weapon simulation development tool called SimBuilder™. This software simulation product provides air-to-air and air-to-ground weapon simulation models for use in the training environment.

Display & Debrief



The ACTS Ground Station contains a real-time monitoring station (RTMS) and a debriefing station. The RTMS allows the user to exercise positive, real-time command and control of any test or training mission. The debriefing station (also referred to as the Air Combat Training integrated Visualization Environment or ACTiVE) provides a comprehensive display of both real-time and post-mission mission data. ACTiVE includes: reconstruction of all mission events, simulated weapon flyouts and adjudication of all simulated air-to-air and airto-ground weapon events with synchronized, simultaneous playback of up to four heads-up displays or radar video sources.



High fidelity terrains and participant models are presented on the ACTiVE display and debriefing system.

EW Threat Simulators

A Comprehensive **Debriefing System**

A display and debriefing system for air combat training featuring 3D solid-fill graphics and alphanumeric data displays for real-time operations and post-flight replay.

(U.S. Air Force photo/ Airman 1st Class Trevor T. McBride)

More than 250 Electronic Warfare threat simulators have been delivered to date. Leonardo DRS provides real-time open air emulation of threat simulators for combat training and tactics development. These simulators range in size and complexity from hand held, low cost/low fidelity radar warning receiver stimulators to full effective radiated power (ERP) 5th gen digital threats. The product line is almost fully exportable, and can be configured or modified to meet specific customer training and operational test & evaluation (OT&E) requirements.



Enabling "Rangeless" Live Air Combat Training

Leonardo DRS test and training products set the standard for interoperable, joint, multi-service and coalition test/training ranges and EW training systems. Our systems are fielded globally and on all major combat aircraft. The EW training systems can be interfaced to our test/ training ranges proving our customers a full spectrum of air combat training capabilities.



OUR LEGACY

Providing dependable Air Combat Training Systems for over 60 years.

The Air Combat Training and Range Systems business began in 1957 as Metric Systems Corporation. In 2004, Metric Systems was purchased by DRS Technologies, now Leonardo DRS, and now has more than 60 years of innovating electronic warfare pilot and aircrew training systems. Over these years, we leveraged our core RF/IR/UV technology and experience to meet training solutions for emerging warfighter requirements.

Our instrumentation is cleared for flight on domestic and international aircraft.

Leonardo DRS provides the standard air combat management instrumentation for the F-35 for the United States and international partners. Other aircraft include the F-4, F-16, F-22, Mirage, C-12, CH-53E, MH-47 and many more.

More than 250 electronic warfare threat systems delivered and deployed throughout the globe.

Leonardo DRS is the only air combat training OEM that provides a turnkey air combat training system integrating EW and air combat pilot training capability. Our EW simulators and air combat test and training instrumentation can be customized to our customer's unique requirements with low risk and minimum integrations effort.

CUSTOM-TAILORED SUPPORT & SERVICES

Customized solutions have successfully supported coalition training for the United States and our allies.

Leonardo DRS provides comprehensive operations and maintenance support for ACTS to ensure maximum availability and reliability. Support and services are tailored to meet customers' requirements from a total turnkey system to any level of field/ depot support and include:

- Loading of ACTS external and internal instrumentation on all aircraft in support of each squadron's daily flying schedule
- Operation of all pre-mission set-up and post-mission debriefing activities
- Complete depot support

Manufactured in Florida.

Headquartered in Fort Walton Beach, Florida, this division employs more than 300 engineers, craftsmen, and specialists in six modern plants that occupy more than 175,000 square feet. These level-three certified facilities include product development, assembly, manufacturing, engineering, laboratory, and test departments.

The Fort Walton Beach facility achieved and maintains a quality management system certified as AS 9100C and ISO 9001:2008; and also maintains a CMMI maturity level 3 for systems, software & hardware engineering.



• On-site maintenance of all airborne and ground-based system components

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