

## Air Combat Training Systems (ACTS)



## BE READY FOR THE NEXT ACT.

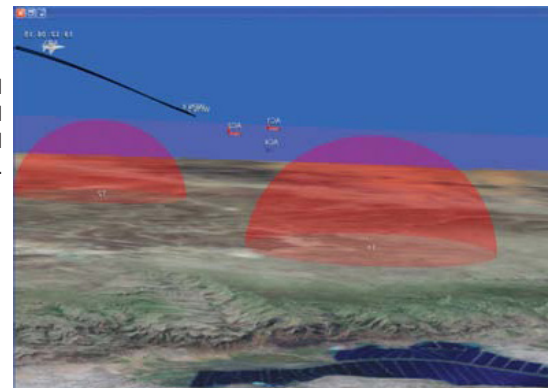
Leonardo DRS' Air Combat Training Systems (ACTS) draws on more than 60 years of experience in the Air Combat Training business and are designed to be premier, state-of-the-art, high performance test and training instrumentation systems available in the world today. This equipment has been delivered to military customers worldwide and customized versions have successfully supported coalition training for the United States Government and multiple countries in Europe, the Middle East and the Pacific.

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. ACTS features include:

- Based on the next generation US Government air combat training system designs, ACTS provide higher reliability, lower support costs, and future upgradeability
- Perform as test and evaluation systems; flexible features are included to capture test and evaluation information for customer weapon system and avionics testing

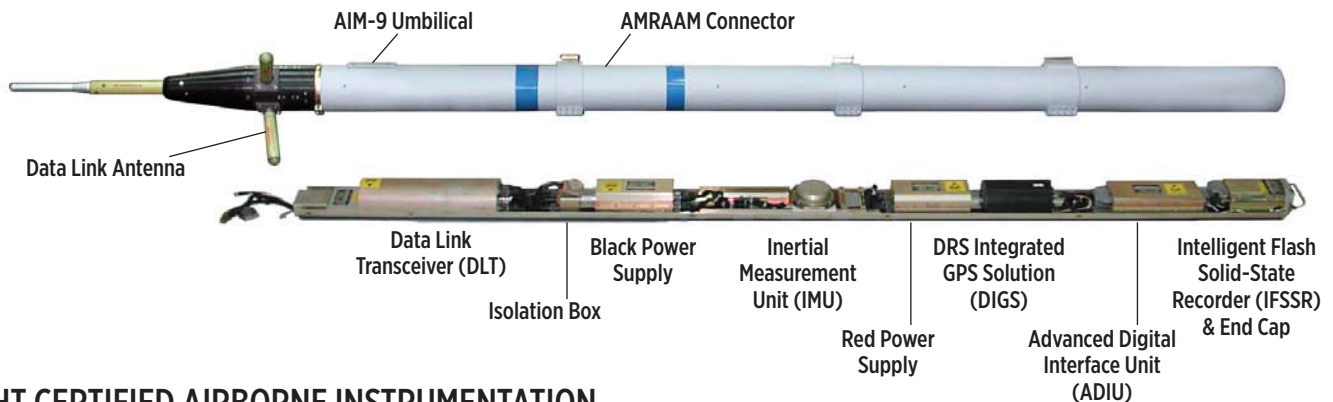
- Since Leonardo DRS is the manufacturer of the next generation US system, ACTS will provide interoperability with US Government forces now and into the future
- A high fidelity data link system provides longer ranges, improved throughput, and relay functions not provided by other training systems
- The systems support 100+ simultaneous 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

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



# AIR COMBAT TRAINING SYSTEMS

## EXTERNAL AIRBORNE INSTRUMENTATION POD



## 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. Leonardo DRS 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 DRS Universal Data Exchanger (DUDE). 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. DUDE has successfully supported joint ACTS missions with data from two or more dissimilar ACTS for USG forces and coalition partner exercises.



The ACTS instrumentation can also be configured in an internal package for specific platforms such as the F-35 or F/A-18.

## ACTS GROUND STATION

The ACTS Ground Station contains the Real-Time Monitoring Station (RTMS) and the 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 air-to-ground weapon events with synchronized, simultaneous playback of up to four heads-up displays or radar video sources.

The Real-Time Monitoring Station is the link to real-time command and control.





# AIR COMBAT TRAINING SYSTEM

## ACCURATE TRACKING ON ANY TACTICAL AIRCRAFT

The DRS Integrated GPS Solution (DIGS) is a 12-channel, all-in-view, C/A or P(Y)-code receiver. It is capable of differential correction for test missions and is tightly coupled with the inertial measurement unit via a 24-state Kalman filter. The receiver provides accurate full-state vector-tracking through the full range of modern, tactical aircraft dynamics.

PARAMETER	C/A-code Differential GPS	C/A-code Non- Differential GPS	P(Y)-code Differential GPS	P(Y)-code Non- Differential GPS
Horizontal Position	2.8m	8.24m	1.5m	1.8m
Vertical Position	4.2m	12.44m	2.5m	3.0m
Velocity	0.5m/sec	0.5m/sec	0.5m/sec	0.5m/sec

## AIRCRAFT INTERFACE

The airborne instrumentation pod integrates with all AIM 9/AMRAAM and MAGIC-type launch rails and supports signal/ power connection to both launcher types. It provides a 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 ACTS internal 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 ACTS 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.

Mission playback can be accomplished on the ACTIVE Debriefing Station desktop or a portable laptop computer.



## INTELLIGENT 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 ACTS external/internal instrumentation to support a variety of test and training mission requirements. ACTS data is transferred in a DOS-compatible file format on a Data Transfer Device (DTD), consisting of a solid-state flash memory card enclosed in a protective metal cartridge. The DTD 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 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. This software package consists of weapons simulations which can be created and changed on a standard Personal Computer Windows platform. The pod provides a "Kill" or "Miss" audio message to the shooter pilot depending on the result of a missile shot. The shooter's pod also transmits a kill notification via the data link to the target's pod which tells the target pilot that he has been "Killed" after a successful missile shot. No Drop Weapon Scoring can be provided for use in conjunction with weapon simulations for air-to-surface guided and unguided weapons, as well as guns to provide the means to assess, maintain, and improve weapon delivery proficiency.

# AIR COMBAT TRAINING SYSTEM

## WORLDWIDE DEPLOYMENT

International customers recognize Leonardo DRS's experience and expertise in providing both test and training capabilities, as evidenced by our selection to instrument eight test ranges and numerous training ranges around the world. Many of our customers requested theater interoperability and coalition exercise capability; Leonardo DRS responded with range equipment that has successfully supported coalition training in Europe, the Pacific, and the Middle East, combining real-time monitor and control with squadron and theater level exercise after-action debriefs. In addition, some customers wanted to combine test and training functionality on their ranges and Leonardo DRS delivered customized range instrumentation systems with tailored software that integrated both capabilities into a single hardware configuration.



## CUSTOM-TAILORED SUPPORT AND SERVICES

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

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



Leonardo DRS has delivered more air combat training pods than all other manufacturers combined.



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