



CAPABILITY BRIEF

# Military Avionics

USING MOSA TECHNOLOGIES TO ACCELERATE AIRBORNE SYSTEMS DEPLOYMENT

## HIGHLIGHTS

Commercial RTCA DO-178C and EUROCAE ED-12C DAL A certification evidence

Certified Conformant FACE® Transport Services Segment (TSS)

Direct support for Sensor Open System Architecture (SOSA™) Interaction Bindings

Unparalleled Modular Open Systems Approach (MOSA) expertise

Rapid technology insertion, maintainability and extensibility capabilities

Open avionics standards expertise, including DDS, FACE, ARINC 653, POSIX, SOSA, OMS/UCI and UCS

Robust safety, security, interoperability and resiliency solutions

RTI Connex<sup>®</sup> enables the real-time data connectivity that runs modern airborne systems. Its military-grade software connectivity framework reliably and securely exchanges real-time data from all airborne sensor platforms, control systems and mission platforms. Connex provides Commercial RTCA DO-178C and EUROCAE ED-12C DAL A certification evidence for accelerated airworthiness and aircraft platform deployment.

## SECURE, REAL-TIME CONNECTIVITY FOR MILITARY AVIONICS

As global adversaries continue to accelerate their airborne capabilities, there is a growing demand for continuous military avionics upgrades to remain competitive in airborne systems. These upgrades are challenged to support rapid technology insertions and the achievement of both commercial and military airworthiness certification.

Meeting these military avionics operational demands requires three capabilities:

1. To develop, acquire and consolidate a unique and competitive set of the latest airborne capabilities that are based upon proven military avionics standards
2. To rapidly integrate new capabilities and achieve platform airworthiness for operations in both military and civilian airspace
3. To assure that all levels of mission communications are secure

RTI Connex, built on the Data Distribution Service (DDS™) standard, supports open architecture military avionics systems by providing fast, scalable, reliable and secure connectivity within and between land, sea, air, cyber and space-based systems. Connex is conformant with military avionics standards, including The Open Group Future Airborne Capability Environment® Consortium FACE Technical Standard. RTI developed the first certified conformant FACE Transport Service Segment (TSS) solution, and this solution is aligned to support SOSA Interaction Bindings as required. Both of these capabilities enable the rapid insertion of new FACE and SOSA avionics applications into data-centric avionics environments, as well as rapid integration of both new and legacy airborne assets. This accelerates mission-readiness and time-to-deployment, while reducing program cost and risk.

Connex's inherent loose-coupling is ideal for updating critical military avionics systems that need to insert updated or new capabilities to counter an ever-evolving battery of adversary threats.

## STANDARDS-BASED SECURITY FOR DATA-IN-MOTION

RTI Connex is the first solution to comply with the OMG® DDS Security™ specification. These security plugins provide authentication, access control, encryption, data tagging and event logging without modifying the existing DDS network infrastructure. The RTI Security Plugins are configured via XML and can be deployed dynamically into operational systems, allowing for rapid responses to changes in the security threat landscape. RTI offers an optional Software Development Kit (SDK) that provides custom plugins, crypto modules and support for custom hardware such as crypto accelerators and Trusted Platform Modules (TPMs). These capabilities ensure data confidentiality and integrity, while also protecting information within multiple security domains from unauthorized access and tampering.

The layered security of DDS domains, partitions and individual topics supports defense-in-depth requirements for data-in-motion and integrates with other hardware, software, virtualization and network security deployments, creating robust Multi-Domain Operations (MDO) solutions.

## STANDARDS-BASED, CERTIFICATION-READY SOFTWARE

To accelerate airworthiness, Connex offers commercial-off-the-shelf (COTS) RTCA DO-178C and EUROCAE ED-12C DAL A certification evidence containing over 5,000 hyperlinked files audited by a third party for rapid and reliable review. This evidence contains design documents, high- and low-level requirements, project documents, audit memos, test results, and more, which drives down the airworthiness risk in programs requiring safety certification.

RTI Connex conforms to the U.S. Department of Defense (DoD) / SAE AS-4UCS Unmanned Systems (UxS) Control Segment (UCS) architecture and data model. The UCS Open Architecture (OA) enables an open business model based on Service-Oriented Architecture (SOA) principles. In addition to FACE, SOSA, and UCS, Connex and Connex® TSS support other avionics and MOSA standards, including ARINC 653, ARINC 661, POSIX, and OMS/UCI.

## PROVEN IN MISSION-CRITICAL DESIGNS

RTI is the market leader in DDS technology, with systems deployed at leading organizations such as:

### General Atomics

Advanced Cockpit Ground Control Stations by General Atomics Aeronautical Systems, Inc. deliver real-time data acquisition, analysis and response for unmanned aircraft systems. General Atomics selected Connex to simplify application code and speed development. The solution was delivered in less than 14 months, significantly faster than with alternative software or in-house development.

### Boeing

Boeing's AWACS provides airborne surveillance, command & control for battle management. The company used Connex in the AWACS upgrade design, which is more open and supportable. Open and extensible connectivity software lowers maintenance costs.

### U.S. Army

The U.S. Army Ground-Based Sense and Avoid (GBSAA) system enables Unmanned Aerial Systems (UAS) to safely operate in FAA-controlled U.S. National Air Space (NAS) with other commercial, private and military aircraft. Connex is used to separate UAS flights from Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) aircraft. The system is certified using RTI's RTCA DO178C DAL A safety certification evidence for Connex.

## COMPLIANCE

- DUNS: 797735883
- CAGE: 03FH8

## NAICS Codes:

- 511210 Software Publishers
- 541511 Custom Computer Programming Services
- 541512 Computer Systems Design Services

## INDUSTRY CERTIFICATION:

- DO-178C DAL A: Avionics Functional Safety

## ABOUT RTI

Real-Time Innovations (RTI) is the infrastructure software company for smart-world systems. Across industries, RTI Connex® is the leading software framework for intelligent distributed systems. RTI runs a smarter world.

RTI is the market leader in products compliant with the Data Distribution Service (DDS™) standard. RTI is privately held and headquartered in Silicon Valley with regional offices in Colorado, Spain, and Singapore.

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