



DATASHEET

RTI in Aerospace and Defense

OPEN STANDARD CONNECTIVITY FRAMEWORK FOR CRITICAL SYSTEMS

RTI Connex[®] provides an open architecture connectivity framework that is fast, scalable, reliable, and secure, both within the network and between land, sea, air, cyber and space-based systems. With its interoperability, portability, loose-coupling and real-time Quality of Service (QoS), Connex is the preeminent software connectivity framework for mission-critical aerospace and defense systems.

HIGHLIGHTS

- » Ideal for integrating manned, unmanned and machine-to-machine (M2M) systems
- » Rapid technology insertion, maintainability and extensibility capabilities
- » Robust TRL 9 safety, security, interoperability and resilient network solution
- » Easy-to-deploy, standards-based layered security
- » Commercial RTCA DO-178C DAL A certification evidence
- » Open standards support, including DDS, FACE, GVA, OMS, SOSA, UCS, and UMAA

Connex in Challenging Aerospace & Defense Applications

RTI Connex, based on the open [DDS standard](#), is the commercial leader in real-time software frameworks for Aerospace and Defense systems. It provides fast, scalable, reliable, and secure connectivity within and between land, sea, air, cyber, and space-based systems. Based on the open Object Management Group[®] (OMG[®]) Data Distribution Service (DDS[™]) standard, Connex advances the Modular Open Systems Approach (MOSA) and accelerates systems development by rapidly integrating both new and legacy system assets.

Connex is proven in a wide range of application segments. In Defense systems, Connex is deployed in:

- Naval surface vessels and systems
- Military Avionics with Future Airborne Capability Environment (FACE[™]) and/or DO-178C certification requirements
- Integrated Air & Missile Defense (IAMD) systems
- Joint All-Domain Command and Control (JADC2) systems
- Military Networks with Multi-Domain Operations (MDO) and Pan-Domain Capability (PDC) requirements
- Military Ground Vehicles based upon the Generic Vehicle Architecture (GVA) and NATO GVA standards (based on DDS)
- Modeling, Simulation, and Training (MS&T) systems using HLA, DIS, and TENA standards, and Unity[®] and Epic Games[®] Unreal Engine[®] gaming engines
- Special Operations Forces (SOF) training and deployment environments
- Autonomous undersea robotics and Unmanned Maritime Autonomy Architecture (UMAA) platforms

Connex prioritizes interoperability as a primary business attribute, which promotes innovation and competition for Defense systems. The data-centric architecture of DDS naturally enables the efficient delivery of secure data-in-motion information from multiple security and operational sources. This multi-supplier and multi-domain interoperability increases cross-service collaborative efforts and reduces the total lifecycle costs and total cost of operations of networked platforms, making Connex ideal for MDO and JADC2 deployments.

Connex is also used in Commercial Aerospace systems, including:

- Commercial Avionics
- Space Systems, including Launch Systems and Vehicles
- Urban Air Mobility (UAM) and eVTOL Vehicles
- UAM and eVTOL Infrastructure

Standards-Based Security for Data-in-Motion

Connex is the first solution to comply with the OMG DDS Security specification. Connex provides authentication, access control, encryption, data tagging and event logging without modifying the existing DDS network infrastructure. Connex's security configuration can be deployed dynamically into operational systems, allowing for rapid responses to changes in the security threat landscape.

Connex has an optional SDK that provides support for custom crypto modules and hardware such as crypto accelerators and TPMs. These capabilities ensure data-in-motion confidentiality and integrity while protecting information across multiple security domains from unauthorized access and tampering.

Proven in Mission-Critical Deployments

General Atomics Aeronautical Systems, Inc.

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

U.S. Navy

The U.S. Navy's Ship Self Defense System (SSDS) is the "last line of defense" coordinating high-speed radar systems, targeting defensive missiles and directing 1,000+ rounds/second at incoming cruise missiles. Connex delivers these critical messages in real-time.

Zumwalt DDG 1000

Connex software coordinates and manages complex, diverse onboard hardware and software systems. These include hundreds of computers, thousands of applications and more than 10 million publish-subscribe pairs.

General Dynamics Littoral Combat Ship (LCS)

RTI's software connects disparate systems, interoperates across multiple programming languages and operating systems, and handles disadvantaged links and legacy interfaces for the US Navy LCS.

Raytheon Ship-Wide Area Network (SWAN)

The SWAN on the US Navy LPD-17 runs machinery, damage control, steering, magnetic signature, mission control, navigation and communications. Connex supports redundant networks, data and sensors without servers.

National Aeronautics and Space Administration (NASA)

RTI Connex provides communications software that is a critical core component of the launch-certified Spacecraft Command and Control System (SCCS) for NASA's Artemis 1 Mission. During loading and launch, Connex delivers command and status data in real-time, meeting the demanding availability, reliability, and latency requirements of the SCCS.



NASA's Artemis 1 Launch

NASA's Human-Robotic Systems Program prototypes robots for extraterrestrial surfaces. The project coordinates four NASA centers building different robots to operate in realistic environments including over low-bandwidth, high-delay communications. Connex provides these systems with one common architecture.

ABOUT RTI

RTI is the software framework company for physical AI systems, with a mission to run a smarter world. RTI Connex® provides the data architecture for over 2,000 designs, running in more than \$1T of total deployed systems worldwide.

RTI, Real-Time Innovations and the phrases "RTI Runs a Smarter World" and "Your systems. Working as one," are registered trademarks or trademarks of Real-Time Innovations, Inc. All other trademarks used in this document are the property of their respective owners. ©2025 RTI. All rights reserved. 20002 V17 0925

2 • rti.com