CAPABILITY BRIEF

# Urban Air Mobility (UAM)

USING PROVEN OPEN ARCHITECTURE TECHNOLOGIES TO ACCELERATE UAM SYSTEMS DEPLOYMENT

## HIGHLIGHTS

Proven technology with rapid platform certification, technology insertion and maintenance capabilities

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

Loosely coupled architecture supports robust partitioning

Powerful partner ecosystem enables rapid certified systems prototyping, development and deployment

Standards-based security for data-in-motion

The Connext DDS framework is now designed into over 250 autonomous vehicle programs

RTI works with the world's leading autonomous systems companies to provide the highest levels of safety, security and reliability for mission-critical, DDS-based open architecture systems. RTI Connext DDS improves both performance and system affordability through rapid interoperability with other land, sea, air and space systems with rich, real-time Quality of Service (QoS) capabilities and loosely coupled architecture.

### CONNEXT DDS IN UAM ENVIRONMENTS

As today's Urban Air Mobility (UAM) systems grow in capabilities and utilization with a focus on commercial deployment, they face challenges in achieving safety certification and proving security while enabling the rapid insertion of new capabilities into deployed systems and operations.

Meeting these UAM operational demands requires the following three capabilities:

1. To develop, acquire, integrate and deploy unique UAM capabilities from a diverse pool of autonomous assets that support both required industry standards and regulatory demands.
2. To rapidly achieve safety certification for operation in both civilian airspace and urban canyons.
3. To ensure system-wide control and security at all levels of UAM operations.

RTI Connext® DDS provides fast, scalable, reliable and secure connectivity within and between land, sea, air and space systems. Based on the open Object Management Group® (OMG®) Data Distribution Service™ (DDS) standard, Connext DDS supports both airborne platform industry standards and evolving autonomous industry platforms. Connext DDS can help accelerate UAM system development and the rapid integration of both new and legacy UAM assets.

### PROVEN TECHNOLOGY WITH RAPID CERTIFICATION, INSERTION AND MAINTENANCE CAPABILITIES

RTI Connext DDS provides a proven data connectivity software framework that supports safety-critical and cyber-physical systems. The naturally parallel, resilient architecture of Connext DDS allows multi-supplier interoperability, rapid technology insertion, ease of deployment and low cost of operations with minimal network and compute overhead.

In addition, Connext DDS is built upon a loosely coupled architecture, enabling robust application partitioning and an accelerated update of critical technologies with minimal system impact and re-test.

### COTS RTCA DO-178C AND EUROCAE ED-12C DAL A CERTIFICATION EVIDENCE

Connext DDS 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 all documentation required for achieving airworthiness and safety certification by aviation certification authorities. The availability of this evidence as a COTS product vastly reduces UAM program costs and project risk.

### POWERFUL PARTNER ECOSYSTEM ENABLES RAPID CERTIFIED SYSTEMS DEPLOYMENT

RTI's avionics partner ecosystem consists of microprocessor manufacturers, COTS board vendors, real-time operating system (RTOS) suppliers, graphics driver providers, control design tools vendors and HMI graphic design tool suppliers that couple COTS certification evidence with their products. Complete avionics standards-based solution stacks with certification evidence can be quickly assembled with confidence, freeing up UAM application software teams to focus on differentiating business logic and speeding up time-to-market for their products to gain a competitive advantage.

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

Connext DDS Secure is the first commercial solution to comply with the OMG DDS Security specification. Connext DDS Secure includes security plugins that provide authentication, access control, encryption, data tagging and event logging without modifying the existing DDS network infrastructure. Connext DDS Secure ensures data confidentiality and integrity, while protecting data-in-motion information from unauthorized access and tampering across multiple security domains.

### RTI IN MISSION-CRITICAL UNMANNED/UAM PROGRAMS

RTI Connext DDS now has over 1,500 design wins and is in use in over 250 autonomous systems throughout the world, including the following mission-critical unmanned/UAM programs:

General Atomics Aeronautical Systems, Inc.
The General Atomics (GA) Advanced Cockpit Ground Control Stations deliver real-time data acquisition, analysis and response for unmanned aircraft systems. GA selected RTI Connext DDS to simplify application code and speed development. The solution was delivered in less than 14 months, significantly faster than relying solely on in-house development or alternative software.

Aurora Flight Sciences
The Aircrew Labor In-cockpit Automation System (ALIAS) is a minimally-invasive robotic copilot. It combines manipulation and machine vision to actuate aircraft controls and perceive aircraft instruments. RTI Connext DDS integrates advanced software and controls into an open, adaptable architecture.

Airbus Group
The Airbus A$^3$ Vahana was the first certified, electric self-piloted vertical take-off and landing (VTOL) passenger aircraft. RTI Connext DDS was implemented as the airframe connectivity framework, integrating the aircraft's diverse systems with an open standard technology, greatly simplifying platform modularity and design integration.

National Aeronautics and Space Administration (NASA)
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 those characterized by low-bandwidth/high-delay communications. Connext DDS provides these systems with one common architecture to optimize communication integrity and throughput.

**COMPLIANCE**

DUNS: 797735883
CAGE: 03FH8

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

## ABOUT RTI

Real-Time Innovations (RTI) is the largest software framework company for autonomous systems. RTI Connext® is the world's leading architecture for developing intelligent distributed systems. Uniquely, Connext shares data directly, connecting AI algorithms to real-time networks of devices to build autonomous systems.

RTI is the best in the world at ensuring our customers' success in deploying production systems. With over 1,500 designs, RTI software runs over 250 autonomous vehicle programs, controls the largest power plants in North America, coordinates combat management on U.S. Navy ships, drives a new generation of medical robotics, enables flying cars, and provides 24/7 intelligence for hospital and emergency medicine. RTI runs a smarter world.

RTI is the leading vendor of products compliant with the Object Management Group® (OMG®) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, California with regional offices in Colorado, Spain and Singapore.

Download a free 30-day trial of the latest, fully-functional Connext DDS software today: https://www.rti.com/downloads.

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CORPORATE HEADQUARTERS
232 E. Java Drive, Sunnyvale, CA 94089
Telephone: +1 (408) 990-7400
Fax: +1 (408) 990-7402
info@rti.com

rti.com
rti_software
rtisoftware
company/rti
connextpodcast
rti_software