CAPABILITY BRIEF

eVTOL

USING PROVEN OPEN ARCHITECTURE TECHNOLOGIES TO ACCELERATE ELECTRIC VERTICAL TAKE-OFF AND LANDING SYSTEMS DEPLOYMENT

HIGHLIGHTS

Data-centric real-time software connectivity framework for eVTOL platforms

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

Loosely coupled architecture enables an accelerated update of eVTOL innovation

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

Standards-based security for data-in-motion from multiple operational domains

Proven airborne connectivity framework 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, open architecture eVTOL systems. RTI Connext® improves both performance and system affordability through rapid interoperability with autonomous infrastructure systems that share critical real-time eVTOL flight information within a scalable, loosely-coupled architecture with rich Quality of Service (QoS) capabilities.

CONNEXT IN eVTOL ENVIRONMENTS

As today's electric Vertical Take-Off and Landing (eVTOL) 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 eVTOL operational demands requires the following capabilities:

1. Develop, acquire, integrate and deploy unique eVTOL capabilities from a diverse pool of autonomous assets that support both required industry standards and regulatory demands.

2. Rapidly achieve safety certification for operation in both civilian airspace and urban canyons.

3. Ensure system-wide control and security at all levels of eVTOL operations.

RTI Connext provides fast, scalable, reliable and secure connectivity within and between eVTOL flight and control systems. Based on the open Object Management Group® (OMG®) Data Distribution Service (DDS™) standard, Connext supports both airborne platform industry standards and evolving autonomous industry platforms to reduce risk and accelerate development and deployment. This open standards approach means that Connext can help accelerate eVTOL innovation, system development and the rapid integration of both new and legacy eVTOL assets.

PROVEN TECHNOLOGY WITH RAPID CERTIFICATION, INSERTION AND MAINTENANCE CAPABILITIES

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

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

Connext offers commercial RTCA DO-178C and EUROCAE ED-12C DAL A certification evidence 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 commercial product vastly reduces eVTOL 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 both certification evidence and RTCA DO-330 qualified tools with their products. With this ecosystem, complete standards-based avionics solution stacks with certification evidence can be quickly assembled with confidence, freeing up eVTOL application software teams to focus on differentiating business logic and accelerating time-to-market for their products to gain an early competitive advantage.

STANDARDS-BASED SECURITY FOR DATA-IN-MOTION

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

RTI IN MISSION-CRITICAL UAM AND eVTOL PROGRAMS

RTI Connext is in use in over 1,800 global design wins and over 250 autonomous systems, including the following mission-critical aerospace programs:

Airbus Group: The Airbus A^3 Vahana was the first certified, electric self-piloted vertical take-off and landing (eVTOL) passenger aircraft. Connext 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.

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. Connext integrates advanced software and controls into an open, adaptable architecture.

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 Connext 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.

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 provides these systems with one common architecture to optimize communication integrity and throughput.

ABOUT RTI

Real-Time Innovations (RTI) is the infrastructure software company for smart-world systems. Across industries, RTI Connext® 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.

Your systems. Working as one.

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