

CAPABILITY BRIEF – USA

Military Ground Combat Vehicles

USING OPEN ARCHITECTURE TECHNOLOGIES TO ACCELERATE
MOBILE GROUND SYSTEMS DEPLOYMENT

HIGHLIGHTS

- Data-centric, Zero-Trust software connectivity framework
- Support for GCIA, MOSA, CMOSS, AUTOSAR Adaptive and ROS 2 / ROS-M standards
- Cross platform, interagency, and multi-national data-in-motion capabilities in shared network environments
- Robust TRL-9 safety, security, interoperability and resilience network solution
- Rapid technology insertion, capability integration, maintainability and data extensibility capabilities
- Commercial ISO 26262 ASIL D certification evidence
- Facilitates Modular Open Systems Approach (MOSA)

RTI Connex[®] delivers military-grade connectivity for open GCIA, MOSA, CMOSS and other software-defined vehicle designs. It provides fast, scalable, reliable and secure connectivity between manned and autonomous platforms. Integrating with vehicular software standards, Connex enables rapid insertion of novel technologies and functionalities.

CONNECTIVITY FOR NEXT GENERATION MILITARY GROUND COMBAT VEHICLES

The next generation of military ground combat vehicle designs have evolved into software-defined platforms that require optimized flow of mission and vehicle data. These vehicles run on low latency, high-reliability networks that connect and control the performance, efficiency and safety of key mobility, protection and lethality systems in real-time. These systems need to rapidly scale across manned and autonomous vehicles and be able to integrate capabilities from both legacy and newer platforms.

To meet these intelligent data-centric requirements, military ground vehicles must be able to:

1. Acquire, consolidate and integrate operationally relevant on-vehicle and off-vehicle capabilities while increasing mission readiness and reducing operational costs
2. Provide support for open GCIA, MOSA and CMOSS standards
3. Enable secure, reliable vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications that facilitates manned-unmanned teaming at the speed of combat

Connex supports open architecture military ground systems by providing fast, scalable, reliable and secure connectivity between manned and autonomous platforms. Based on the Object Management Group (OMG[®]) Data Distribution Service (DDS[™]) standard, Connex is the software foundation for existing vehicular software standards such as GVA, NGVA, AUTOSAR Adaptive, ROS 2 and ROS-M, and aligns with current modernization programs using VICTORY and CMOSS.

Through this standards-based integration and support, Connex delivers rapid integration and mission-readiness while increasing the maintainability of vehicle assets. Connex enables rapid reconfiguration for different mission roles while improving vehicle reliability and reducing operational training time. The Connex connectivity framework enables program managers to integrate the GCIA, MOSA, CMOSS and commercial standards such as AUTOSAR and ROS 2 into both new and legacy vehicles, ensuring a smooth transition to a modern vehicle data architecture.

Connex includes a rich set of tools that accelerate module- and system-level development, debugging, testing, integration and optimization. RTI tools provide the ability to visualize system modules, view interconnectivity and system health as well as to record, replay, introspect and inject data into military ground vehicle systems.

STANDARDS-BASED SECURITY FOR DATA-IN-MOTION

RTI Connex[®] Secure enables systems integrators to design military vehicle components that facilitate security, without compromising the ability of the crew and systems to collaborate. This is accomplished by creating data-centric “Zero-Trust” security networks that can apply fine-grained authentication and encryption to individual data elements, enabling the sharing of network resources across multiple security domains, platforms and formations.

Connex Secure is the first commercial solution to comply with the open DDS standard security specification. Connex Secure’s security plugins provide crew authentication, role-based access control, encryption, data tagging and event logging, all without modifying the existing DDS network infrastructure. Connex Secure ensures data confidentiality and integrity, while protecting data-in-motion information across multiple security domains and platforms from unauthorized access and tampering.

STANDARDS-BASED AUTOMOTIVE/AUTONOMOUS SAFETY

RTI Connex Drive[®] delivers a standards-based framework that manages complex data distribution for real-time connectivity across software-defined automotive and autonomous platforms, including support for interoperation with AUTOSAR Adaptive and ROS 2, bringing the full capabilities of Connex to create seamless integrations of these automotive ecosystems.

Connex Drive is designed to meet the Safety Lifecycle requirements set forth by ISO 26262 ASIL D. Connex Drive includes all the necessary Safety artifacts and Safety Manual, which can significantly reduce Functional Safety Lifecycle efforts for system integrators, reducing risk, time and project costs. Connex Drive provides a proven path to the certification needed to put autonomous and electric vehicles into production and on the road.

PROVEN TECHNOLOGY WITH RAPID INSERTION AND MAINTENANCE CAPABILITIES

Connex is built upon a loosely-coupled, publish-subscribe architecture, enabling robust application domain partitioning and accelerated update of novel technologies, and critical capabilities with minimal system impact and re-testing. Connex is a peer-to-peer data connectivity framework designed as a safety-critical, cyber-physical network architecture. Connex also includes a rich set of tools that accelerates module and system-level development, debugging, testing, integration and optimization.

“We are giving our customers a complete solution of armored vehicles with integrated systems and subsystems, all based on the NATO Generic Vehicle Architecture (NGVA) and smart vehicles. We see RTI Connex as an integral part of every solution that we are implementing within the next generation armored vehicles.”

Military Vehicle Protection Developer
RTI Customer

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 Connex[®] is the world’s leading architecture for developing intelligent distributed systems. Uniquely, Connex 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 2,000 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 Connex software today: www.rti.com/downloads.

RTI, Real-Time Innovations and the phrase “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. ©2021 RTI. All rights reserved. CB-004 V1 0922

2 • rti.com