HIGHLIGHTS

Rapid simulation integration using open architecture technologies
Integrates HLA, DIS, CIGI and gaming simulation standards
Natural hardware-in-the-loop (HIL) integration with deployed systems
Maintainable multi-domain and multi-level security (MLS) architecture
Efficient technology insertion, maintainability and extensibility capabilities
Robust safety, security, interoperability and resiliency

DEVELOPING NEXT GENERATION MS&T SYSTEMS

Today’s Modeling, Simulation, and Training (MS&T) systems require a next-generation platform in order to prepare warfighters for future missions against near-peer adversaries. The systems must optimize the flow of multi-domain data in real-time with millisecond precision in order to support high-fidelity simulations. Above all, the systems require multi-domain access to authenticated, secured data in order to enable multi-national participation, with protection against cybersecurity threats.

Meeting these MS&T operational demands requires three capabilities:

1. To develop, acquire and consolidate unique MS&T functions from a diverse pool of assets, integrating both industry standards and proprietary solutions according to specific training mission requirements.

2. To continually improve simulation value by integrating and evolving simulation, gaming and actual deployed systems in order to increase fidelity and effectiveness.

3. To enable global participation in implementing sensitive assets with appropriate levels of communications security, which protect simulation intellectual property and mission confidentiality.

SECURE, SCALABLE AND HIGHLY-RELIABLE MS&T PLATFORM

RTI Connext DDS supports open architecture MS&T systems by providing fast, scalable, reliable and secure connectivity within and between all forms of real and simulated land, sea, air and space-based systems. Based on the Object Management Group® (OMG®) Data Distribution Standard (DDS™), Connext DDS is the first solution to comply with the new DDS standard security specification. Its security plug-ins provide authentication, access control, encryption, data tagging and event logging without modifying the existing DDS network infrastructure. This ensures data confidentiality and integrity while protecting information from multiple security domains from unauthorized access and tampering.
In addition, RTI Connext DDS integrates with MS&T and A&D industry standards, including:

- High-Level Architecture (HLA)
- Distributed Interactive Simulation (DIS)
- Open Group Future Airborne Capability Environment (FACE™)

Connext DDS includes a rich set of tools that accelerate module- and system-level development, debugging, testing, integration and optimization. These tools provide the ability to visualize system modules, view interconnectivity and monitor system health. They also allow developers to introspect and inject data into MS&T systems.

**MULTI-SUPPLIER MS&T INTEGRATION CHALLENGE**

The optimal way to prove interoperability is through the actual integration of disparate MS&T systems built on multiple standards. At I/ITSEC 2018, a group of RTI technical engineers became the first to integrate multiple platforms from Harris, VT MAK, Microsoft, National Instruments and SimBlocks.io using RTI Connext DDS. The demonstration created an integration of the HLA standard with DIS standard simulation platforms containing different data formats. These were then integrated with a FACE standard avionics platform using actual avionics hardware designed for hardware-in-the-loop (HIL) environments. Additional components were Microsoft Flight Simulator for hands-on interaction, the Harris FliteScene and the SimBlocks.io One World SDK for Unity gaming platform.

This demonstration proved that military training scenarios can be rapidly assembled and reconfigured in an agile, ad-hoc manner from ready-made, commercial-off-the-shelf (COTS) components. Systems based upon the Connext DDS connectivity framework can integrate a wide range of real-time simulation environments to efficiently deliver Live, Virtual and Constructive (LVC) training. These integrated multi-vendor training and simulation systems reduce risk and drive down costs, using proven methodologies and components.

**ABOUT RTI**

Real-Time Innovations (RTI) is the largest software framework provider for smart machines and real-world systems. The company’s RTI Connext® product enables intelligent architecture by sharing information in real time, making large applications work together as one.

With over 1,500 deployments, RTI software runs the largest power plants in North America, connects perception to control in vehicles, coordinates combat management on US Navy ships, drives a new generation of medical robotics, controls hyperloop and flying cars, and provides 24/7 medical intelligence for hospital patients and emergency victims.

RTI is the best in the world at connecting intelligent, distributed systems. These systems improve medical care, make our roads safer, improve energy use, and protect our freedom.

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 headquarters in Spain and Singapore.


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