



DATASHEET

# Real-Time Innovations in Training and Simulation Applications

## HIGHLIGHTS

- Interoperability for distributed simulations
- Scales to millions of entities with real-time performance
- Proven security
- Works with real systems in the loop
- Open Architecture, standards based - UCS, FACE, SOSA, etc.
- Plug-and-play architecture — focus on the application, not on infrastructure
- Brings real-time performance to HLA- and DIS-based systems

## FRAMEWORK FOR DISTRIBUTED SIMULATIONS'

Real-Time Innovations (RTI) Connex<sup>®</sup> DDS is the communications framework that successfully meets the stringent interoperability and real-time requirements of the defense industry in hundreds of deployed systems. Connex DDS seamlessly stitches together legacy simulations while adding humans and hardware in the loop to create new live, virtual and constructive environments. Share real, augmented and virtual realities in a single lab or across multiple sites while matching physics-speed response times.

## WIDELY DISTRIBUTED, LOOSELY COUPLED

The DDS publish-subscribe paradigm allows simulation subsystems to share data without requiring unique interfaces for each new system — the new system merely needs to “subscribe” to the desired dataset. This frees the application developer from needing to know about the internals of the other subsystems required to share data, making the addition of new systems a breeze.

Real-Time Innovations (RTI) Connex DDS provides secure, high-performance, scalable evolution for distributed simulations. Muscle memory, reaction time, soldier response and unit behavior are honed through consistent repetition. Effective training requires a system that provides true, high-fidelity simulation with response times closely matched to real-world scenarios. Truest fidelity is found by using the same technology used in systems deployed in the real world.

## SECURING COMPLEX SIMULATION ENVIRONMENTS

Modern simulators and training systems must share data with operational systems, presenting new security and performance challenges. Connex DDS Secure is the world's first data-centric platform to address security down to the data item level while maintaining real-time response. Participants in the simulation see only the data they are authorized to see and share information only with specific team members and systems while isolating others.

## USING DDS WITH HLA

Traditional simulation-based standards such as DIS and High-Level Architecture (HLA) are challenged by new requirements for massively distributed systems. DDS provides the plug-and-play interoperability, real-time performance, and fine-grained security lacking in HLA. The two can work together. Existing HLA applications can be bridged to a DDS databus or DDS can be used as a transport for HLA data objects.

## CUSTOMER APPLICATIONS

### National Advanced Driving Simulator

The US Army and University of Iowa cooperated to create several high-fidelity simulators to demonstrate how US Army vehicles and components can be tested and evaluated using virtual proving ground (VPG) technology. They needed a software solution that was truly effective at real-time, low-latency data interchange to manage the large number of simulation components working in conjunction.

### FORCE Multi-Ship Simulation

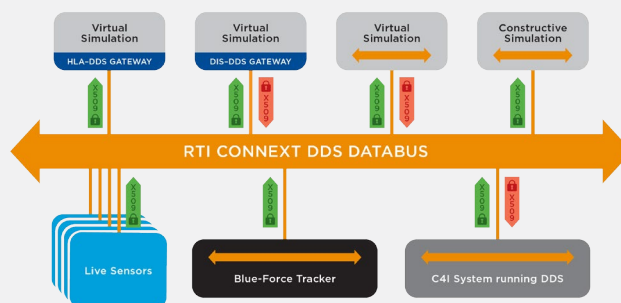
Force Technology, the market leader in the design of multi-ship simulator systems, created the world's first system to provide a complete environment for training tugboat captains in maneuvering large vessels such as oil and gas tankers into restricted spaces using multiple tugs. They required a connectivity framework that would offer real-time data interchange between subsystems without requiring the developers to know about the internals of each subsystem added to the application.

### CAE Sim XXI Full Flight Simulator

RCAE's Sim XXI full-flight simulator is regarded by pilots around the world as the closest simulation of the true experience of flight. It delivers breakthrough visual realism, precise cockpit replication, high-fidelity avionics simulation and flight and ground-handling characteristics indistinguishable from the aircraft. Achieving this level of full-flight simulation involves a variety of complex subsystems sharing and processing data in real-time.

### US Navy HiPer-D

The Naval Sea Systems Command (NAVSEA) Dahlgren Division needed to investigate how to apply advanced technologies and concepts to the Naval Surface Ship Anti-Air Warfare (AAW) problem domain. They tasked the US Navy High Performance Distributed Computing Project (HiPer-D) with creating test bed demonstrations, based fully on COTS technology, that would allow NAVSEA to investigate technologies supporting real-time, distributed, scalable, fault-tolerant, heterogeneous computing systems to be used in combat systems.



## ABOUT RTI

Real-Time Innovations (RTI) is the Industrial Internet of Things (IIoT) connectivity company. The RTI Connexx® Databus is a software framework that shares information in real time, making applications work together as one, integrated system. It connects across field, fog and cloud. Its reliability, security, performance and scalability are proven in the most demanding industrial systems. Deployed systems include medical devices and imaging; wind, hydro and solar power; autonomous planes, trains and cars; traffic control; Oil and Gas; robotics, ships, and defense.

RTI lives at the intersection of functional artificial intelligence and pervasive networking<sup>SM</sup>.

RTI is the largest vendor of products based on the Object Management Group (OMG) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, Calif.

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

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