Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2018-0563

Topic # N111-054

DDS System Designer and Emulator

Real-Time Innovations, Inc.

WHO

SYSCOM: NAVSEA

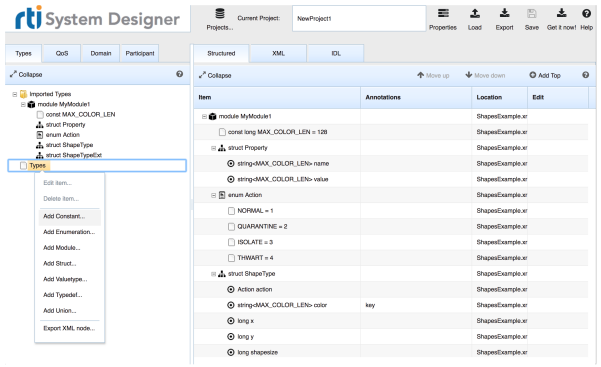
Sponsoring Program: PEO IWS

Transition Target: AN/SPY-6 Air and Missile Defense Radar (AMDR)

TPOC:
(812)854-4804

Other transition opportunities: All current RTI Connext Data Distribution Service (DDS) users, including hundreds of Department of Defense (DoD) customers, are potential users. There are over 1000 projects using RTI Connext DDS worldwide.

Notes: RTI System Designer Product Screenshot



WHAT

Operational Need and Improvement: Navy distributed software systems are often loosely coupled. Different components are developed at different times and by different teams. Emulated components are necessary to test interfaces not yet available in final implementation. The US Navy needs the ability to rapidly create realistic scenarios in DDS-based command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) and combat management systems to simulate and test functionality. This is currently a manual process. The RTI System Designer automates this process.

Specifications Required: The Navy requires an expedient and generic approach to emulating software system components on the Data Distribution Service (DDS) communications bus for AN/SPY-6 AMDR. Efficient, flexible, and test-driven message traffic emulation allows for the early integration of multiple software components, thus ensuring interoperability and performance while reducing AMDR program cost and risk. The Navy requires integration and testing of multiple and interrelated software components, each with varying development timelines, maturity, and availability. The RTI System Designer and RTI Scenario Editor will provide this message traffic emulation in-place of the missing software components.

Technology Developed: The RTI System Designer software product was partially developed through this SBIR. This product is currently an advanced prototype.

Warfighter Value: The AN/SPY-6 AMDR Program will have a potential $9M in NRE cost avoidance because of this technology and its companion product, the RTI Scenario Editor. Another non-Navy DoD user asserted that the two products would save man-months of development, integration and testing time.

Full system testing will be possible by executing emulated scenarios for components under development Automation and regression tests to ensure the correctness of the system under development. Rapid development and faster final integration of system components.

WHEN

Contract Number: N68335-18-C-0267 **Ending on:** March 20, 2020

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Scheduler to execute scenarios with 10 ms accuracy.	N/A	Product Released	7	July 2016
Dynamic scripting language (Lua) to support the data types defined in OMG DDS XTypes specification.	N/A	Demonstrated	7	December 2016
Configuration Editor GUI tool to graphically define end edit the system information model.	N/A	Demonstrated	7	June 2017
Support teams of 10+ concurrent users	Low	Demonstrated	7	December 2018
RTI System Designer fully supported as standard product.	Low	Product Released	7	March 2020

HOW

Projected Business Model: RTI will fold the results of this SBIR effort into our standard RTI Connext DDS product offering. RTI has successfully used this business model several times in the past to transition SBIR developed technology. As a result, RTI has an industry leading 100% percentile DoD Commercialization Achievement Index (CAI).

Company Objectives: RTI seeks additional organizations to evaluate RTI System Designer and provide feedback.

Potential Commercial Applications: Nearly all RTI Connext DDS commercial customers can benefit from RTI System Designer. RTI customers span diverse Internet of Things (IoT) markets, including healthcare and medical devices, energy, mining, air traffic control, trading, automotive, unmanned systems, supervisory control and data acquisition (SCADA), ground stations, and big science, scientific research that is expensive and involves large teams of scientists.

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