Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.
NAVSEA #2024-0427

Topic # N201-050
Real-time Insights for Combat System Integration and Testing
Altron, Inc.

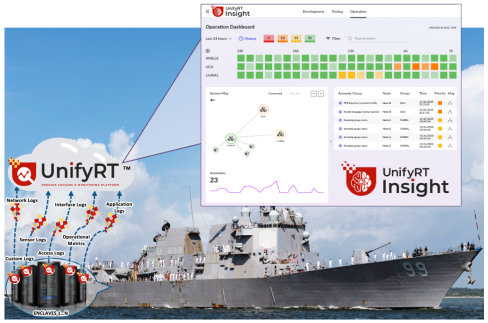
WHO

SYSCOM: NAVSEA

Sponsoring Program: NAVSEA, PEO Integrated Warfare Systems (IWS-5)

Transition Target: AN/SQQ-89 A(V) 15 Test and Evaluation (T&E) Infrastructure

TPOC: (202) 781-4233



U.S. Navy Photo by Mass Communication Specialist 2nd Class Anderson W. Branch/Released, Public domain, via Wikimedia Commons

Other Transition Opportunities: UnifyRT Insight™ targets transition from its initial Navy Combat System application to various government and commercial markets, such as aerospace, transportation (automotive, aviation, maritime), industrial automation, telecommunications, and energy infrastructure. ALTRON will partner with leading system integrators, equipment manufacturers, and technology providers in these domains to facilitate rapid transition and adoption. Additionally, the modular architecture and data-driven approach make UnifyRT Insight™ well-suited for research and development environments, leading to opportunities for licensing to universities, national laboratories, and corporate R&D centers.

Notes:
As an advanced automated test tool, UnifyRT Insight™ achieves the following capability improvements:
- Accelerated anomaly detection and root cause analysis through real-time system monitoring
- Improved diagnostic precision by correlating disparate subsystem data streams for holistic assessment
- Quantifiable reduction in integration and testing timelines, enabling more rapid capability deployment
- Intuitive visualization interfaces, to enhance situational awareness for operators and engineers, allowing data-driven decision-making and proactive fault management.

WHAT

Operational Need and Improvement: The integration, testing, and certification processes for Combat Systems are characterized by high resource consumption, extended timelines, and significant costs, impeding the velocity of capability enhancements. There is a operational need for an automated diagnostic and analysis tool capable of real-time monitoring, visualization, and assessment of Combat System anomalies during the integration and testing phases. Combat System architectures lack comprehensive system-level health monitoring capabilities, leaving operators without timely insights into performance degradation or emergent fault behaviors across the integrated system. This deficiency results in prolonged troubleshooting cycles and suboptimal resource allocation during the verification and validation stages. UnifyRT Insight™ will augment the efficiency and thoroughness of the integration and testing workflow, expediting the fielding of critical system upgrades while maintaining rigorous performance standards.

Specifications Required: To achieve the stated objective of streamlining integration, testing, and certification across diverse domains, UnifyRT Insight™ is designed with a highly modular and scalable architecture. This enables seamless integration with a wide range of systems, platforms, and testing environments, while providing the flexibility to adapt to evolving requirements and industry-specific standards. Additionally, the specification prioritizes robust data fusion capabilities, leveraging advanced analytics and machine learning techniques to correlate disparate data streams and deliver comprehensive system-level visibility and insights.

Technology Developed: UnifyRT Insight™ provides an automated real-time monitoring, visualization, and assessment capability for integrated combat systems during testing, integration, and operations. Through advanced system monitoring, data fusion, and intelligent diagnostics, and machine learning, it enables accelerated anomaly detection, root cause analysis, and comprehensive evaluation of system health and performance. By streamlining integration and testing workflows, the technology facilitates rapid deployment of new capabilities while ensuring system reliability and operational readiness.

Warfighter Value: UnifyRT Insight™ directly contributes to the warfighter's ability to deploy with technologically superior, highly reliable, and well-understood combat systems. It ensures that these complex systems perform as intended when it matters most, giving warfighters a decisive edge in the Battlespace. The increased speed of capability deployment, coupled with enhanced system performance and reliability, translates into tangible operational advantages, potentially saving lives and improving mission success rates.

WHEN

Contract Number: N68335-22-C-0207 **Ending on:** Feb 20, 2024

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Integration and Test of technology prototype in lab environment	Low	Successful prototype validation in an AN/SQQ-89 lab environment	3	3rd QTR FY24
Integration and Test of technology prototype in operational environment	Low	Successful prototype demonstration of more mature technology in AN/SQQ-89 lab environment	4	4th QTR FY24
Technology Seminal Transition Event	Medium	Test conducted in an operational environment	5	4th QTR FY24
Seminal Transition Event	Medium	Successful integration and qualified test event	6	2nd QTR FY25

HOW

Projected Business Model: Employ a hybrid licensing and subscription model, offering perpetual licenses for the core UnifyRT Insight™ platform supplemented by renewable subscriptions for advanced features and support. Provide professional integration and customization services to seamlessly deploy UnifyRT Insight™ within clients' environments. Establish a managed services offering for remote monitoring and analysis. Explore usage-based pricing models based on data volume or testing duration. License the core technology to strategic partners and major vendors for product integration.

Company Objectives: Establish ALTRON as an industry leader in providing innovative solutions that streamline integration, testing, and certification of complex systems across diverse domains, from defense and aerospace to transportation and industrial automation. By delivering unparalleled real-time monitoring, visualization, and AI/ML enabled assessment capabilities, ALTRON aims to empower clients with accelerated anomaly detection, enhanced system reliability, and rapid deployment of new capabilities.

Potential Commercial Applications: UnifyRT Insight™ has widespread commercial applications in industries dealing with complex, integrated systems where reliability and rapid capability deployment are critical. These include automotive manufacturing (autonomous vehicle testing), aerospace (aircraft and satellite integration), and telecommunications (5G/6G network deployment and testing), industrial automation, smart infrastructure (smart cities, power grids), and process control environments by enabling real-time monitoring, fault detection, and system optimization for improved operational efficiency and safety.

Contact: Mike Gercken, Vice President, Engineering and Technology Solutions
mgercken@altroninc.com (843) 984-9369