

# Department of the Navy SBIR/STTR Transition Program

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Topic # N131-078

Next Generation Electronic Support Measures Trainer for Submarines

Sonalysts, Inc.

## WHO

**SYSCOM:** SPAWAR

**Sponsoring Program:** PMW-170, Communications and GPS Navigation Program Office

**Transition Target:** Battle Force Tactical Network (BFTN)

**TPOC:**  
(619)524-3501

**Other transition opportunities:** Navy and Department of Defense (DoD) communication network systems

**Notes:** Image depicts the Immersive Virtual Workspace in which the trainee's avatar performs BFTN operational tasks, as seen from the instructor's viewpoint.



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## WHAT

**Operational Need and Improvement:** Maintaining tactical Transmission Control Protocol/Internet Protocol (TCP/IP) communications within a Strike Group in an Anti-Access Area Denial (A2AD) warfighting environment poses an extreme challenge for network operators. A realistic environment for training and developing operator proficiencies to effectively operate complex networks during such uncertain wartime conditions is needed. The training environment must engage operators in a physically and functionally accurate workplace and support performance training objectives, including performance-based training and assessment.

**Specifications Required:** The system shall be simulation-based and be portable or network-hosted to conduct distributed integrated training of multiple afloat units. It shall be adaptable to support training needs of other Navy and Department of Defense communication network systems. The simulation framework shall be designed to be extensible and flexible.

**Technology Developed:** Sonalysts developed a 3D interactive virtual task performance environment replicating operators' physical workspace on-board ship with full fidelity network simulation, all constructed in an extensible, reusable software framework. The immersive virtual space facilitates single-player to multi-unit play with realistic simulation presenting the context, cueing, and interactive behaviors to enrich the trainee's cognitive and psychomotor development. A Unity-based extensible framework supports multi-platform training and application to any Naval unit or networked system. Training can be network-hosted to conduct multi-player and multi-unit distributed events.

**Warfighter Value:** This technology enables uniquely effective development of Network Operators' competencies, which will improve the Network System employment and operational availability across the spectrum of conflict. This training environment helps develop and sustain Operator proficiencies, exposing the trainees to complex job performance experiences not otherwise available. Program affordability and sustainability benefit from its extensible framework scalable to integrated multi-platform training and applicability to any Naval unit/platform or networked system.

## WHEN

**Contract Number:** N00039-15-C-0220 **Ending on:** June 30, 2017

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Fleet Field Trial Application	Med	Satisfactory simulation of network system functions and behaviors; Functional multi-player mode supports distributed interactions and activities	4	February 2017
Conduct Fleet Field Trials	Med	Usable application and collection of Fleet operator feedback; Fleet verification of system requirements	4	June 2017
Initial Operational Trainer	Med	Implementation of initial trainer requirements; Limited training scenario library	6	March 2018
Final Operational Trainer	Med	Implementation of full set of trainer requirements; Complete library of scenarios with scenario generation; Training management data interface ready	8	December 2018

## HOW

**Projected Business Model:** Our business model is to primarily direct sell training environment software development, and associated human performance engineering services, to the Government. Alternatively, like sales to system integrator Primes will be pursued.

**Company Objectives:** We anticipate the Navy SBIR/STTR Transition Program (STP) Forum will facilitate connections with Government and industry decision-makers that have training needs and consider training an investment, not a cost. Our short term objective is to earn and solidify a Phase III agreement with the BFTN program and at least one other DoD program of record. The deliverable product based on our technology is malleable to a wide range of human-to-machine performance requirements, but since the technology is maturing in a communications network "skin" it makes sense to target that application type in the short term. In the long term we envision re-engineering and virtualizing the training system to centralize administrative tasks while improving its scalability, distributability, and work load management.

**Potential Commercial Applications:** This technology would be applicable to other wireless communications networks, such as commercial maritime systems or mobile phone cellular networks. Development and provision of virtual training environments to commercial cellular network providers would support training to any human operator performance needs, although their higher level of system automation is less reliant on operator performance. Additionally, the training system would be capable of preparing commercial network providers to respond to potential denial of service scenarios.

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