

Topic: N101-004

Sonalysts, Inc.

Air Anti-Submarine Warfare Modeling and Simulation Tool

Current state-of-the-art undersea warfare modeling and simulation (M&S) tools most often focus on detailed engineering or high-level campaign analysis. None satisfy the operational requirement for a scalable and accessible 2D and 3D cross-domain warfare analytical tool in support of operational experimentation. TRIDENT is a M&S software solution that provides a unique cross-domain bridge connecting systems engineering and mission/campaign-level models in support of experimentation and analysis. This innovative solution is a domain package “plug-in” leveraging Sonalysts’ commercial-off-the-shelf (COTS) physics-based Simulation Engine II (SEII) framework. It includes a unique 2D/3D “Seabed-Space” global domain for visualization, PDS real-time data access and more. TRIDENT will enable warfare analysts to quantify and qualify an understanding of revolutionary future warfare concepts in an operational environment.

### Technology Category Alignment:

Synthesis/Analytics/Decision Tools

Collaborative Analysis and Decision-making

Survivability

Modeling, Simulation & Test Infrastructure

Modeling and Simulation Technology

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**SYSCOM:** ONR

**Contract:** N68335-17-C-0214

Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

ONR Approval #43-4388-18

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WHO

SYSKOM: ONR

Sponsoring Program: ONR Code 32

Transition Target: ONR Code 32, NAVAIR (Air ASW), SPAWAR (PMW150), NAVSEA (Virginia/Columbia POR), DARPA CDMAT, OPNAV N97, US NAVWARCOL

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Other transition opportunities: This flexible and portable technology is applicable across the spectrum Operations Analysis, Decision Support, Training, War Gaming, and CONOPS development.



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WHAT

**Operational Need and Improvement:** Current state-of-the-art undersea warfare modeling and simulation (M&S) tools are limited in number and most often focus on detailed systems engineering or high-level campaign analysis. **None satisfy the operational requirement for a *scalable and accessible warfare analytical tool* in support of operational experimentation** that bridges this gap with unparalleled 2D and 3D visual fidelity.

**Specifications Required:** Develop a PC-based Test Range Simulator (TRS) to enable Operations Analysis (OA) of operational utility within a relevant operating environment, visually communicating technical functions, extend the scope of a prototype live demonstration, and provide stakeholders with an interactive experience of capabilities.

**Technology Developed:** “FATHOM” domain plug-in to the Sonalysts COTS Simulation Engine II (SEII)/Global Tactical Simulation (GTS) domain plug-in. SEII/GTS is a PC-based multi-level, multi-domain, and multi-threaded open architecture framework of reusable of discrete and scalable self-contained functional modules. The “FATHOM” domain package solution includes full 2D/3D cross-domain visualization, a robust scenario editor (including UUV route planning), and a physics engine; as well as a database, object and state attribute definitions, events and component framework messaging

Warfighter Value:

- **Low-risk** physics-based “Seabed-to-Space” 2D and 3D global cross-domain experimentation, analysis, and visualization environment across all warfare domains.
- Interoperable open architecture reusable framework for **lower cost** future development of additional domain plug-ins and integration of 3rd party tools.
- “**Capability multiplier**” enabling OA, training, rehearsal, decision support, War Gaming, and CONOPS development on same framework.

WHEN

Contract Number: N68335-17-C-0214 Ending on: May 16, 2019

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Successful Base Year Proof-of-Concept Development	Low	Training Range Simulator (TRS) V&V & use in Base Year Operations Analysis	6	2nd QTR FY18
Option Year TRS Prototype System	Low	Use in support of additional detailed Option Year analysis	8	4th QTR FY18
Government Demo	Low	Stakeholder communication & operational experience	N/A	4th QTR FY18
Prototype System Media Production	Low	Ability to generate raw uncompressed HD video	8	3rd QTR FY19

HOW

**Projected Business Model:** Brand and market “Fathom” solution in support of multiple functional areas with a focus on warfare operational experimentation. License Sonalysts’ COTS SEII/GTS framework and propose requirements-based services solutions to overcome challenges.

Company Objectives:

1. Support Government and commercial mission readiness by leveraging lower cost Intellectual Property (IP) with professional expertise.
2. Work in concert with Government, other industry partners, and 3rd party technology to produce innovative, effective, and lower cost customer solutions.
3. Provide end-users with intuitive solutions and tools to enable long-term flexible technology sustainment and relevance.

**Potential Commercial Applications:** Primary focus on commercial game title development and Oil & Gas industry experimentation, training, and decision support. Additional experimentation, training, and decision support focal areas include Disaster relief (wildfires, flooding) , Cyber decision-making under stress, handicap driver education, and others.

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