Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.
NAVSEA #Routing Number# 2026-129

Topic # N241-030
Acoustic Training Data
Arete Associates

WHO

SYSCOM: NAVSEA

Sponsoring Program: PMW 550

Transition Target: AN/SQQ-89A(V)15 Surface Ship Undersea Warfare Combat System. Target is automatic target recognition (ATR) training-data workflows with emphasis on acoustic ATR.

TPOC: (401) 832-8648

Other Transition Opportunities: Navy sonar systems used for mine warfare, unmanned undersea vehicles, acoustic classification and AI/ML model sustainment programs requiring efficient data management including curation, annotation reduction, and retraining optimization.

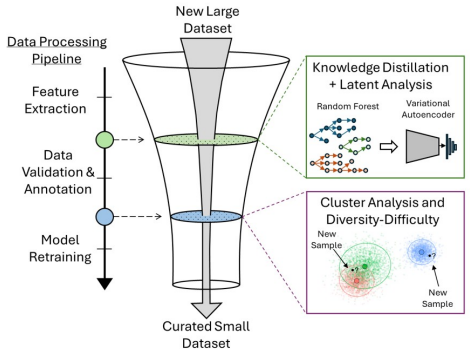


Image courtesy of Areté, 2026.

Notes: Sonar Selective Information Verifier (SonarSIV) is a software tool that prioritizes sonar training data before expensive annotation and retraining. The approach reduces dataset size while preserving informative, diverse, and operationally relevant acoustic samples. Phase I demonstrated 51 percent reduction in new training samples while maintaining nearly equivalent classifier performance.

WHAT

Operational Need and Improvement: The Navy is seeking more efficient methods to sustain sonar AI/ML model performance as new acoustic data, environments, and mission conditions are encountered. SonarSIV supports faster, lower-cost model sustainment by helping identify which collected sonar samples are most valuable for validation, annotation, and retraining. The result is a smaller, prioritized training dataset and a decision-support cue for when retraining is expected to add value.

Specifications Required: Develop and transition a software tool for acoustic training-data prioritization that creates datasets as small as practical for training sonar AI/ML algorithms by intelligently filtering large sonar datasets and identifying if and when to retrain models.

Technology Developed: SonarSIV uses a two-tier data-prioritization architecture. Knowledge Distillation and Latent Analysis identifies low-value or redundant data after feature extraction and before validation and annotation. Cluster Analysis with Diversity-Difficulty pruning then preserves the most informative, diverse, and representative samples after annotation and before model retraining.

Warfighter Value: SonarSIV filters large volumes of acoustic data to determine which samples will be best for training automatic target recognition (ATR) algorithms. SonarSIV reduces the burden and costs from storage, annotation, data-review, and retraining while preserving the acoustic samples most likely to improve operational classifier performance. This optimization of large acoustic datasets improves the effectiveness and cost-efficiency of sonar ATR algorithm training and overall classification model robustness to provide enhanced submarine detection and classification capabilities.

WHEN

Contract Number: N00024-25-C-S255 **Ending on:** Sep 17, 2027

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Phase I SonarSIV proof-of-concept completed	N/A	Demonstrated end-to-end data prioritization using WBFLS surrogate sonar data with 51 percent reduction in new training samples and nearly equivalent classifier performance	3	2nd QTR FY25
Phase II secure data-processing environment and algorithm maturation	Low	Established secure government-data processing path and matured Knowledge Distillation and Latent Analysis and Cluster Analysis with Diversity-Difficulty workflows for operational-data evaluation	4	3rd QTR FY26
Phase II operational-data evaluation and retraining-trigger calibration	Medium	Demonstrate SonarSIV on customer-provided sonar data and quantify dataset reduction, retained classifier performance, and retraining recommendation behavior	5	4th QTR FY27

HOW

Projected Business Model: The business model is software licensing, government-funded integration, and follow-on sustainment through Phase III or program-of-record transition. Areté will support integration as a stand-alone data-prioritization tool or as a module within a larger sonar AI/ML lifecycle, data-management, or model-sustainment environment.

Company Objectives: Areté seeks Navy feedback, operational data access, prime integration partners, and investment support.

Potential Commercial Applications: SonarSIV prioritizes sonar AI/ML training data for undersea warfare, reducing dataset size, annotation burden, and retraining cost while preserving operationally relevant samples. Areté sees this technology being applied to any AI/ML training pipeline and any sensor source (i.e., Visible, IR, Multispectral, Lidar, etc.)

Contact: Andrew Shaughnessy, Senior Data Scientist
ashaughnessy@arete.com (520) 282-7316