TOPIC NUMBER: N02-024, N98-122 | **SBIR INVESTMENT:** $137,372 | **PHASE III FUNDING:** $41,500,000

COMMERCIAL OFF THE SHELF (COTS) REPLACEMENT OF VERSA MODULE EUROPE (VME) TECHNOLOGY

Progeny Systems developed a new digital processing architecture for use on Navy ships and subs that results in improved operational paradigms and reduces the time between target acquisition and line of fire.

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THE CHALLENGE

Current development of Navy tactical systems is based almost exclusively on the Versa Module Europe (VME) backplane hardware bus architecture. This architecture has been an embedded computer systems staple for over a decade and has provided adequate functionality for commercial and military system development. While VME performance advances have been largely stagnant over the past five years, commercial systems have made great advances, eclipsing the bandwidth performance of the Navy's VME system. Since commercial development tools are more widely available and less expensive, system programmers can be more productive and produce better code. Commercial desktop-based hardware components have better longevity and are easily upgraded to newer technologies without significant system change. New cost-effective portable processing options can have a dramatic impact on boat operational activities, making submarine information available to appropriate personnel anywhere on the boat. The goal of this SBIR is to utilize current and emerging commercial-off-the-shelf (COTS) products on a best-value basis in appropriate combinations to provide a cost-effective, equivalent or better set of computer information processing environment capabilities for submarines as well as other Navy, military, government, and commercial users.

THE TECHNOLOGY

Progeny met this objective by researching and selecting a new more efficient and cost-effective digital processing architecture for inclusion in the Navy's existing submarine tactical system. Progeny also leveraged another SBIR—topic N02-024 (Automated/Simplified Weapons OMI)—to meet the NAVSEA identified need for reducing the timeline from target acquisition to time of fire. Progeny Systems combined these two SBIR-funded technologies and spearheaded the development of streamlined displays, a knowledge-based computing tool kit, and remote display access for achieving these goals.

THE TRANSITION

Progeny Systems was awarded a $51,071,180 firm-fixed-price, cost-plus-fixed-fee Phase III contract (N00024-19-C-6118) for the procurement of Navy systems engineering services, hardware and software related to this SBIR technology. $41.5 million has been obligated to date. This contract includes options, which if exercised, would bring the cumulative value of this contract to $93,171,904. The Naval Sea Systems Command, Washington Navy Yard, Washington, is the contracting activity.

THE NAVAL BENEFIT

This development provides enhancements for improved operational paradigms for tactical, maintenance, and training uses for SSN 688/688I and USS Virginia Class submarines as well as other Navy, military, government, and commercial customers. It also enhances weapon employment by focusing on several key factors: (1) Decluttering/streamlining current combat control displays to enhance user friendliness and speed weapon employment; (2) Shortening the number of manual steps required by an operator; (3) Integrating disparate data sources into a machine recommended set of tactics that can be approved/modified by an operator; (4) Updating current displays into a more modern/adaptable display software language; and (5) Providing remote/wireless access to decision makers both within the attack center as well as at other locations.

THE FUTURE

Work within the Phase III contract is ongoing and will continue until 2027. The concepts and COTS implementations proposed are important for the enhancement of computer information interaction for a very broad set of customers. These SBIR-proposed capabilities have potential applicability everywhere cost-effective mobile information interaction enhancements are needed. The results of this SBIR are also applicable to commercial facilities using expert system technology as well as all current U.S. and foreign maritime assets.