

# SUCCESS STORY

**TOPIC NUMBER: N99-100**

**SBIR INVESTMENT: \$819,901**

**PHASE III FUNDING: \$10,036,281.81**



## COST EFFECTIVE METHODS FOR INTEGRATION OF COMPLEX SYSTEMS

*Progeny Systems Corporation, a wholly owned subsidiary of General Dynamics Mission Systems, developed a Data Analysis Reporting Tool Set (DARTS) used to collect combat systems data on submarines.*

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## THE CHALLENGE

Since multiple companies develop the components for major ship systems, there may be challenges in how the different components interface, especially when integrated into these systems. The components' interface impacts all elements of integration and test (I&T). Hardware and software are needed for component integration, specifically for highly elaborate ship system developments, such as those on the Virginia-class attack submarine (SSN-774).

## THE TECHNOLOGY

Progeny Systems developed hardware and software systems to join the different components used in ship systems. The majority of the Virginia Class Non-Propulsion Electronics System (NPES) subsystems, which include the Virginia Class Command, Control, Communications and Intelligence (C3I) subsystems, were connected for the first time as part of the technology. The purpose of having these systems interface is to collect combat systems data.

## THE TRANSITION

During Phase I, Progeny developed cost effective methods for integration of complex systems. Initially, their technology focused on interfacing various Virginia Class NPES subsystems that were utilizing commercial-off-the-shelf (COTS) components. Following this successful effort, Progeny was awarded a Phase II SBIR contract in 2000. Subsequently, an initial Phase III contract in 2011 was awarded to Progeny to mature, adapt and utilize the Data Analysis Reporting Tool Set (DARTS). DARTS represents the evolution of the original project aimed at achieving cost effective methods for the SBIR topic "Integration of Complex Systems."

In 2015, NAVSEA awarded a follow-on contract for DARTS to support the Naval Undersea Warfare Center (NUWC) Division test program. Under this contract, Progeny tailored the DARTS to the needs of individual test events. Progeny also provided DARTS installation and removal services and operational support throughout the test events. Additionally, Progeny established and maintained the DARTS test database, provided configuration management of DARTS variants, and maintained and stored the DARTS equipment. In 2021, Progeny was awarded an additional follow-on contract to collect and analyze submarine NPES data for test and evaluation (T&E) reporting purposes. In August 2022, General Dynamics Mission Systems acquired Progeny.

## THE NAVAL BENEFIT

Progeny's technology demonstrates how to best integrate large complex systems developed by multiple companies that utilize COTS products. Using commercial software and hardware products allow for quick setup and deployment with minimal administrative overheads. Additionally, DARTS can be easily adapted to other submarine systems.

## THE FUTURE

DARTS was originally developed for the Virginia-class submarine program. Because of the technology's success, Progeny will be providing DARTS hardware, software, and engineering support for variants of each type of U.S. submarine.