



# SUCCESS STORY

**TOPIC NUMBER: N96-278**

**SBIR INVESTMENT: \$674,742**

**PHASE III FUNDING: \$189,550,462**



## TECHNOLOGY INFUSION METHODOLOGY FOR COTS-BASED SYSTEMS

*Through several SBIR Phase III awards and options, Progeny Systems is reducing lifecycle costs for the Navy by providing key updates to existing torpedo programs and delivering MK 54 MOD 1 lightweight torpedo kits.*

### Progeny Systems Corporation

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## THE CHALLENGE

As technology advances, system components become quickly dated and experience end-of-life issues. Through the SBIR program the Navy sought a small business that could apply discipline in design and solve the migration effort for various architecture systems. This project provides infusion assessment and management tools, strategies, and methodologies for creating resilient system designs, thus significantly reducing lifecycle costs and aiding the developer in ensuring future infusibility.

## THE TECHNOLOGY

Progeny Systems is developing innovative methods for facilitating commercial off-the-shelf (COTS) technology infusion into embedded computer systems with a focus on affordability and ease of transition. Since a main goal was to significantly minimize future migration efforts for differing architecture systems, the technology has applicability across many platforms and through a straight-to-Phase-III path, found its home on the MK 54 MOD 1 Lightweight Torpedo program. In addition, Progeny is leveraging this same technology to enhance electronic subsystems on the Navy's Common Broadband Advanced Sonar System (CBASS) version of the MK 48 MOD 7 heavyweight torpedo.

## THE TRANSITION

Progeny Systems was awarded several Phase III contracts related to this SBIR effort. The first (N00024-19-C-6408) came in September 2019 as a \$115,736,303 cost-plus-incentive-fee, firm-fixed-price contract for an upgrade to the MK 48 MOD 7 CBASS heavyweight torpedo program, of which \$34,026,417 has been obligated. This contract includes deliverables for associated subsystem electronic systems including detail design, engineering development models, proof-of-design units, proof-of-manufacturing units, low-rate initial production units, and factory test equipment. Shortly after, Progeny was awarded contract N00024-18-C-6410 of which \$140,311,587 has been obligated, including a \$44,276,348 option for the production of MK 54 MOD 1 Lightweight Torpedo kits, associated spares, and engineering services and hardware support. Work is ongoing and is expected to be completed in 2024.

## THE NAVAL BENEFIT

Progeny is helping to modernize military platforms rapidly and cost-effectively with its open-standards solutions. The MK 54 MOD 1 is the newest version of the Navy's MK 54 Lightweight Torpedo—the primary anti-submarine warfare (ASW) weapon for U.S. surface ships, fixed-wing aircraft, and helicopters. The MK 54, produced by Raytheon, is used in both deep and shallow waters, as well as in acoustic environments, and it is capable of tracking, classifying and attacking underwater targets. The ability to operate in both littoral and deep-water environments enables the torpedo to hit any target irrespective of water depth. Progeny's technology, which is instrumental in upgrading the MK 54 program, will help to significantly increase shallow water counter-countermeasure capability at reduced lifecycle costs. The upgrades to the system provide performance improvements in the most challenging littoral scenarios. On the MK 48 heavyweight torpedo platform, Progeny's technology is also providing critical electronic system upgrades. The CBASS broadband sonar enables the torpedo to be more effective against emerging submarine classes in harsh acoustic environments.

## THE FUTURE

Progeny's Phase III contracts could reach \$303.1M if all options are exercised. The company will continue to produce MK 54 MOD 1 Lightweight Torpedo kits and provide complementary test tools, spares and technical services for the U.S. Navy and foreign military sales customers. The MOD 1 upgrade includes a new sonar array assembly and bolstered processing capacities for the MK 54 torpedo. It also boasts a new sonar array assembly and improved processing capability. Meanwhile, Progeny continues to upgrade and enhance electronic subsystems on the Navy's CBASS version of the MK 48 MOD 7 heavyweight torpedo, produced by Lockheed Martin. In addition, Progeny has been awarded \$28,677,401 under Contract N00024-19-C-6115 to develop information assurance tool kit products, controlled interface devices and cross-domain solution technical insertions. This contract leverages work performed under this SBIR topic and topic N98-115, Commercial Off-The-Shelf (COTS) Approach to Information Security.