

SUCCESS STORY

TOPIC NUMBER: N05-163

SBIR INVESTMENT: \$3,182,776

PHASE III FUNDING: \$14,071,754



THE INNOVATIVE APPLICATION OF COMMERCIAL AUTOMATED TESTING TOOLS FOR RAPID INSERTION OR ADAPTION OF COMBAT SYSTEM CAPABILITIES

Through SBIR, Innovative Defense Technologies developed an automated testing capability resulting in a more reliable system, improved testing quality, and reduced test effort and schedule.

Innovative Defense Technologies

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THE CHALLENGE

Navy systems today are largely software based, growing in complexity, and becoming more and more dependent on the successful re-use of software developed from other programs. Despite advances in development practices and tools, the goals of accelerating the rate at which systems can be delivered and reducing their costs cannot be met by simply writing software faster without comparable improvement in the practices and tools for testing the software. There must be a significant improvement in practices and tools for testing software. Through SBIR, the Navy sought a novel technology providing a technical advantage over conventional methods and resulting in significant cost savings.

THE TECHNOLOGY

Innovative Defense Technologies (IDT) leveraged emerging testing methodologies and commercial off-the-shelf (COTS) tools to develop rapid, affordable and comprehensive automatic testing for combat system developments and modifications. These automated testing processes and tools enable swift insertion of innovative and advanced combat system technologies into the complex open-architecture framework of naval tactical and surveillance operations. The company's leading-edge solutions are based on its patented Automated Test and ReTest (ATRT) technology, a U.S. Navy initiative originating from the SBIR program. ATRT enables the rapid and affordable delivery of higher quality software and supports mission-based testing and analysis, virtualization, and systems integration for complex software-driven tactical naval systems.

THE TRANSITION

After successful Phase I and Phase II SBIR projects, IDT was awarded a \$14,071,754 cost-plus-fixed-fee contract for its automated test and analysis capability supporting Navy surface combatant combat system development. This contract includes options, which if exercised, would bring the cumulative value of this contract to \$90,490,587 with a completion date of November 2025. The Naval Sea Systems Command, Washington, is the contracting activity (N00024-21-C-5100).

THE NAVAL BENEFIT

The benefits of automated testing include a more reliable system, improved testing quality, and reduced test effort and schedule. A more reliable system is achieved from improved performance testing, improved load/stress testing, and improved system development life cycle through automated testing. The quality of the test effort is improved through better regression testing, build verification testing, multi-platform compatibility tests, and easier ability to reproduce software problems. Test procedure development, test execution, test result analysis, and documentation and status of problems are also reduced with automated testing, resulting in less overall test effort needed. Real-time analytics also provide continuous feedback and recommendations to optimize system and crew performance when deployed. The innovative technologies developed for the Navy by IDT enable the delivery of software-based warfighting capabilities, resulting in a more well-equipped fleet at a lower cost. These benefits support the Navy's objectives of more rapid spiral development and system deliveries.

THE FUTURE

IDT has been hugely successful in securing Phase III contracts that extend from its SBIR work with the Navy. In April 2022, the company was awarded a potential three-year, \$98.6 million cost-plus-fixed-fee contract ((N00014-22-C-1042) from the Office of Naval Research (ONR) for the rapid and affordable software development supporting Distributed Maritime Operations (DMO). IDT will use its prototype environment designed to accommodate software development and simultaneous monitoring of change-driven effects in the software's physical and cyber aspects. This contract provides for the delivery of this transformational and essential environment to the Navy enterprise and its frontline fleet platforms. The Navy has leveraged IDT capabilities across more than 125 projects in support of NAVSEA, NAVAIR, NAVWAR, and ONR. Through the doors that have opened from its successful history with the Navy SBIR program, IDT is now working with the U.S. Army and Air Force, hoping to leverage its state-of-the-art automated software testing technologies on major programs throughout the DoD.