

SBIR/STTR TRANSITION PROGRAM

SPOTLIGHT

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Daniel H. Wagner Associates: Over 40 Years of SBIR Success

By Julie Scuderi

Each year, billions of dollars are invested into the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, with the overarching goal of providing sought-after solutions to the U.S. government. The driving forces behind these innovations—the small businesses that take an out-of-the-box idea and turn it into something viable—have an arduous journey from the Phase I concept to transitioning to a program of record (PoR). Many never see the finish line.

While there is no perfect path to follow for success, certain companies, time and time again, take a novel idea and leverage government funding to deliver a final product that supports and improves the world's finest fleet.

Daniel H. Wagner Associates (DHWA) is one of those efficacious successes, having transitioned its SBIR-funded technologies to eight Navy PoRs and multiple heterogeneous autonomous vehicles.

The Exton, Pa.-based small business, which also has offices in Hampton and Vienna, Va., focuses on data fusion and mission planning solutions that all contain the common theme of mathematical algorithms. To date, the company has amassed \$64M in Phase III revenue that has resulted from

its Navy-funded SBIR and STTR technologies.

“There should always be a defined transition, so you never have to wonder where it’s going to end up,” says Reynolds Monach, president and CEO of DHWA. “SBIR is one of the only ways by which a breakthrough technology is going to make a

difference in how things are done. But you need to have that success mapped out in your head from the beginning.”

DHWA credits the Naval Air Systems Command (NAVAIR) SBIR program with providing the sort of tools a small business needs to succeed—mainly the superior job of the technical points of contact, who work closely with the company and provide



U.S. Navy Photo

Through SBIR, DHWA developed its Acoustic Mission Planner (AMP), which generates an optimal search plan for locating target submarines. Today, AMP can be found on all the Navy's MH-60R Romeo Anti-Submarine Warfare helicopters.

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Daniel H. Wagner Associates: Over 40 Years of SBIR Success...Continued

real-world data. One of the biggest successes for DHWA started when NAVAIR was developing a new anti-submarine warfare (ASW) helicopter, the MH-60R, and needed a tactical decision aid.

DHWA used the SBIR program to design and develop a prototype acoustic mission planner (AMP), which used all relevant data from the helicopter to estimate where a target submarine was likely to be located, then generated an optimal search plan. This mission planning technology was so successful that Lockheed Martin provided the additional funding needed to integrate AMP into the MH-60R's avionics and shipboard Joint Mission Planning System (JMPS). Today, Wagner's AMP can be found on every MH-60R "Romeo" ASW helicopter.

Drawing on that same principle of using custom mathematical algorithms and environmental data

to calculate likely target location and generate optimal search plans, DHWA used NAVSEA PEO IWS SBIR funding to develop a Mission Optimization Configuration Item (MOCI) web service and Operational Route Planner (ORP), which transitioned into the Navy's Undersea Warfare Decision Support System (USW-DSS) PoR.

In the realm of the company's other core capability, data fusion to create an accurate Common Operating Picture (COP), DHWA's single platform and distributed multiple hypothesis data fusion engines have been integrated into more than 10 different types of unmanned surface vehicles (USVs), many of which were used in a series of Office of Naval Research (ONR) USV swarm demonstrations and experiments from 2014 to 2020. These engines have also transitioned to the MK18 Mod 2 Inc 2 Unmanned



U.S. Navy Photo

Through SBIR, DHWA developed its single platform multiple hypothesis data fusion and Bayesian classification engines, which are used on the MK18 Mod 2 Inc 2 Unmanned Underwater Vehicle (UUV).

Underwater Vehicle (UUV), the SQQ-89A(V)15 Torpedo Defense Functional Segment, and USW-DSS.

While these tools and technologies developed through SBIR differ in their applications, the Naval benefit remains constant: the ability to know and immediately assess one's surroundings. This increase in situational awareness and wherewithal contributes to a stronger, more knowledgeable and equipped warfighter.

Although Monach will be the first to tell you that DHWA's top priority is to design and deliver key innovations to the U.S. Navy, that doesn't mean others haven't wanted to get in on this target location prediction and mission effectiveness optimization technology.

Employing a highly skilled team where most employees have an advanced degree in mathematics or computer science, DHWA has used its technical savvy in other sectors as well. Before working with the SBIR program, the team developed a specialized search theory, that in 1989, led a famed team of treasure hunters to nearly \$150 million in sunken gold at the bottom of the Atlantic Ocean. These search algorithms were further developed with SBIR funding and transitioned to the Navy's Mine Warfare and Environmental Decision Aids Library (MEDAL). The company also attracted the attention of NASA and the Air Force through several SBIRs and other contracts that capitalize on DHWA's ability to utilize environmental data to optimize unmanned aerial vehicle (UAV) routes and minimize risk.

However, with multiple Navy Phase I, II and III projects, DHWA continues to focus on the task at hand. And while others might move the goalpost after more than 40 years working within SBIR, DHWA isn't one to mess with a proven formula for success.

"SBIR gives you the freedom to pitch ideas that have really interesting applications and turn them into useful technologies," adds Monach. "When we were looking at variations in acoustic search performance in the ocean and figuring out how we could apply this data to detailed planning for Navy missions, nobody had ever done that before. But SBIR allowed us to do the R&D work that would eventually transition."

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Reynolds Monach, president and CEO of DHWA

Their corporate goal has also stood the test of time: to combine the power of mathematical theory with operational experience to address complex problems encountered in operational analysis. If past performance is any indication, DHWA's future is very bright.

For more information, visit DHWA's website at <http://www.wagner.com>.



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