

DEPARTMENT OF THE NAVY
SBIR/STTR TRANSITION PROGRAM
SPOTLIGHT

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From SBIR to \$275M Acquisition Deal: SA Photonics Achieves Exemplary Success

By Julie Scuderi

Silicon Valley has long been an innovation hub and known for its cluster of venture capitalists. As a small business with big ideas, SA Photonics had a built-in local audience for its high-tech solutions. While discussing options around a kitchen table in 2002 on how to bootstrap the company, the founders weighed the pros and cons of the VC path; however, they chose a different path and made a strategic decision that would shape the future of their company.

Instead of pitching to VCs and potentially handing over a portion of their business, they opted to leverage the non-dilutive funding of the Small Business Innovation Research (SBIR) program, and since then have enjoyed tremendous success delivering advanced photonics systems, optical communications and satellite laser systems, and augmented and virtual reality displays to the Department of Defense and commercial industry.

Dr. Michael Browne, president of Vision Products, LLC, and former SA Photonics general manager of Vision Products, recalls that early conversation 20 years ago. “There are just so many advantages of SBIR from a small business perspective,” he says. “We are such huge fans of the program. We had all worked in big defense primes and VC-backed start-ups before, and we knew the disadvantages. With SBIR, you don’t have to



Photo courtesy of US Navy

Pilots of the Boeing V-22 Osprey will soon use Vision Products’ second-generation Wide Field of View Night Vision System (WNVS2). Funded by NAVAIR, the WNVS2 is a digital night vision system with a wide field of view that enhances the pilot’s situational awareness and eliminates the need for separate head mounted display systems for day and night.

give up your company. You own all of your IP. And that made it so we could develop these higher risk technologies that didn’t exist. And we found a number of things that stuck.”

In December 2021, the communications division of SA Photonics, along with the brand name, was acquired by CACI for \$275 million and continues to operate as a stand-alone business unit within the \$6 billion company. Two spin-off companies were also created from its most successful business units—its Vision Products Division, which now operates as Vision Products, LLC and its Sensing Division, which now operates as OneLight Sensing.

Vision Products LLC designs and produces some of the world's highest resolution widest field-of-view augmented and virtual reality head-worn display systems. OneLight Sensing offers wideband spatially coherent supercontinuum lasers powering various products, including lidar and hyperspectral imaging. SA Photonics now focuses exclusively on the design and development of advanced optical communications systems for its military and commercial customers. Much of that work focuses on satellite communications, which also has its roots within SBIR. One of SA Photonics' most recent Phase III contracts was awarded by the Defense Advanced Research Projects Agency (DARPA). The contract, worth \$16.3 million, focuses on Blackjack payloads. The Blackjack program is developing and demonstrating critical elements for a global high-speed network in low Earth orbit providing the DoD with highly connected, resilient, and persistent coverage.

The companies that spun out of SA Photonics continue to develop technologies that are showcased by the Navy SBIR/STTR Transition Program (Navy STP). One of the company's most recent projects, Expanding Helicopter Pilots Field of View with

Spherical Sensing (Contract N68335-20-C-0139), builds upon the core technology that SA Photonics has continually provided for the Navy: enhancing situational awareness for the warfighter using advanced photonics systems. From virtual reality training systems to head-mounted displays that help the pilot see a clear unobstructed picture both at night and during the day,

SA Photonics and its spinout companies have taken dozens of needs defined by the Navy over the years and delivered next-generation solutions.

“We continue to push the envelope for wide field of view systems,” explains Browne. “And the reason

we do this is to keep pilots and users safe. The bigger the field of view, the more realistic it seems. You don't want to fly with a tiny field of view. Normally, you get about 50 degrees for a system that uses augmented reality. We can get 147 degrees—by far the largest available in the industry.”

Head mounted displays are a crucial device for pilots and necessary to enhance situational awareness. It allows the user to instantly see information that is overlaid on the real world. It allows for night vision, the ability to see through sand, fog, dust, snow,



Photo courtesy of SA Photonics

One of the biggest successes that came from SA Photonics' SBIR projects was its head mounted display systems powered by virtual and augmented reality. Today, sales of these systems bring in over \$8 million a year.

or even through the structure of the plane. It's also synced to the user's head position, so if you turn to the left, the imagery moves with you. Head mounted displays are used in both simulation training and in the real world. Over the past 10 years, Vision Products LLC has brought in over \$20 million from its head mounted displays and over \$6 million in 2021.

This technology is based on one of the company's largest SBIR-funded successes called the Low-Cost Augmented Reality System (LARS). LARS provides the U.S. military with the ability to complete training without using live fire. With a high-resolution full color augmented reality display, the system simulates lifelike targets and allows for realistic battle damage assessment for more effective training at a lower cost. All the company's head mounted displays that followed leveraged the technology developed under LARS, including its newest innovation, which made its way through Navy STP this year: the second-generation Wide Field of View Night Vision System (WNVS2).

Funded by NAVAIR, the WNVS2 is a digital night vision system with a wide field of view that will be used in the next generation of rotary wing aircraft, including the Boeing V-22 Osprey. Prior to this technology, pilots would need to take off with either a day-mounted display or night-mounted display. If a transition was needed, a whole new set of hardware would need to be taken. This technology is the first of its kind integrated augmented night vision system that works in both day and night.

"One of the biggest benefits of having the WNVS2 in the Navy STP this year was to gain additional exposure in the Navy community for the groundbreaking work we are doing in the area of degraded visual environment (DVE) mitigation," adds Browne.

Another SA Photonics project that was a part of the 2022 Navy STP was the company's Triton™ technology, developed in tandem with the Office of Naval Research (ONR). Triton enhances the ability to see through highly attenuated highly scattering environments by utilizing new eye-safe hybrid fiber-bulk laser technology. Triton uses high pulse energy at a high repetition rate to produce a scanning imaging lidar system capable of enhanced range in fog. This results in better situational awareness for U.S. Navy ships as well as target recognition, tracking, and identification.

After 20 years of continued success, two spin-off companies, and a highly publicized acquisition, SA Photonics is at the top of its game. The company attributes much of its success to the SBIR program and its distinct path provides a great model for other small businesses to emulate.

"We would not have been able to do what we did without SBIR funding," says Browne. "SBIR is not a give-away. You have to have a good technology. But it can eliminate the hurdles that exist elsewhere. This was the right path for us. The sale to CACI and the \$20 million in product sales really validates that SBIR is a great model."