



TOPIC NUMBER: N141-065

SBIR INVESTMENT: \$889,813

PHASE III FUNDING: \$48,971,407

DEPARTMENT OF THE NAVY

# NAVY SBIR/STTR SUCCESS STORY



## LARGE TIME BAND WIDTH PRODUCT SIGNAL ACQUISITION PROCESSORS

*Azure developed a sought-after signal processing solution allowing the Navy to manage more signals than ever before, optimizing situational awareness.*

**Azure Summit Technology, Inc.**

POC: Daniel Copeland

571.361.3926

Fairfax, VA 22030

<http://www.azuresummit.com>

## THE CHALLENGE

The Navy had an interest in a dynamically reconfigurable, minimal latency and power Digital Signal Processing (DSP) hardware base to simultaneously handle 100s of diverse possibly overlapping signals for multi-functional situational awareness. Their goal was to produce a 500 MHz+ system to manage at least 30 simultaneously signals with the goal of 100. The desired DSP needed to perform an exhaustive search of a specific time/frequency swath to identify new or unknown signals for further classification or tracking.

## THE TECHNOLOGY

Azure leveraged an existing product, SWITCHBLADE and proposed a critical upgrade that would give the Navy the wider bandwidth processing capability they were seeking. Azure's SWITCHBLADE product family provides modular, open-architecture multi-channel RF performance with low cost and SWaP. It includes fully integrated RF, digital, and on-board computing resources in form factors well-suited to small manned and unmanned air, surface, and subsurface platforms. Azure upgraded the circuit board, adding additional channels and modules to increase its bandwidth to the desired 500 MHz. They were able to do this at a very reasonable cost to the Navy because the only work needed was on the front end of the product.

## THE TRANSITION

Azure was awarded a \$48.5M Phase III indefinite-delivery/indefinite-quantity (IDIQ) contract by the Naval Surface Warfare Center, Crane Division (Sponsor ONR Code 31), for support of the Common Chassis Signals Intelligence used on manned and unmanned platforms in support of multiple Navy missions funding prototype demonstration and transition to the full rate production system. This included the supply of four, five and eight-channel Switchblade RF transceivers, the 3Us for smaller vehicles and the 6Us for larger vehicles. Most recently, Azure was awarded a \$22.4M contract modification for production, repairs, engineering services and integration of the Common Chassis AN/ZLQ-1 V2 Derivative Systems digital signal processor, digital tuner modules, switches, as well as maintenance, product improvement and testing. This increased the Phase III total award to \$70.5M.

## THE NAVAL BENEFIT

Achievement of all of the objectives results in better threat detection and increased situational awareness. The main benefit to the Navy from increasing the bandwidth in a digital signal processor involves the ability to detect, assess and classify signals. Azure's technology increased operational frequency ranges and ability to process multiple overlapping streams. Azure's 3U Switchblade receiver provides modular, open-architecture multi-channel RF performance. This allows for the classification of difficult signals like those that may shift their center frequency unpredictably, lie wholly or partially on top of other signals, have inherently low signal to noise ratios, or use non-commercial standard waveforms. Having this ability helps to achieve real-time situational awareness and results in a well-equipped and better prepared warfighter. The other benefit involves cost savings in providing a system with reduced size weight and power (SWaP). Through this successful SBIR transition, the Navy can now handle a lot of processing and increased bandwidth in a very small form factor.

## THE FUTURE

Azure's Switchblade product family provides modular, open-architecture multi-channel RF performance with low cost and SWaP. It includes fully integrated RF, digital, and on-board computing resources in form factors well-suited to small manned and unmanned air, surface, and subsurface platforms. The system is designed to identify and locates targets like communications systems, radars, and weapons systems, and is for forward-deployed Navy platforms. The nature of this technology lends itself toward pervasive application across services and platform types. Azure has developed similar and related technologies for the Air Force, Army, DARPA, the Missile Defense Agency and the US Special Operations Command. In commercial sectors, Azure is looking at possibilities in homeland security and in private sector radar because the technology enables frequency agile radar and in snap-on standard payload pods which bring new mission possibilities to existing small Unmanned Aerial Vehicle (SUAV) deployments.