DEFENSE AND MUNITIONS

Connecting the warfighter

Fuse Integration is using military experience and the latest technology to improve real-time communication for active service members.

The average person still gets upset if their cellphone doesn't have a strong signal or if the Internet goes down at their house; however, for the warfighter, losing communications, network connectivity, or computing function is a matter of life and death. Sumner Hunt Lee knows about the latter firsthand after flying helicopters in the Navy through two deployments and multiple other duties as a naval aviator including leading the SPAWAR Systems Center Pacific airborne networking team. So after serving his country, Lee joined an industrial design firm and realized he could combine his two areas of expertise.

"When it came down to it, I really missed working with the DOD (Department of Defense)," says Lee, founder and CEO of Fuse Integration. "There was a lot more fulfillment in my life if I was providing solutions to the guys flying B-52s over the middle of the Pacific in the middle of the night, having to navigate their way across a horizonless ocean, supporting the Hornets flying off the pointy end of an aircraft carrier in the middle of the ocean, and supporting the Marines fighting on the ground. I created an opportunity to start a DOD-focused company. I really wanted to bring the best practices of commercial design thinking back into DOD tech."

That's where Fuse Integration began, and Lee now oversees 100 employees and a 22,000ft² facility in San Diego, California, where they manufacture networking solutions for the U.S. Air Force, Navy, and Marine Corps. The solutions are much better than the ones Lee was using in the Navy while he flew 40-year-old CH-46 helicopters with a GPS he had to physically hold out the window. Now, Fuse makes sure all their solutions fall under the Joint All Domain Command and Control (JADC-2) umbrella which connects the data sensors, shooters, and related communications devices of all U.S. military services.

"The way we fight wars is no longer a single platoon or squad going out into the dark of the night and fighting its way to the objective," Lee says. "Now, the way we fight wars is a squad or platoon on the ground must talk to three different aircraft providing close air support, two bombers, and three ISR (Intelligence, Surveillance, and Reconnaissance) platforms looking at where the bad guys are. Your networked capabilities, that ability to communicate with each other in real time has become absolutely critical."

Fuse manufactures the CORE multifunction network controller which brings together multiple radios with computing capabilities in a complex, secure network. They also support the DOD with the Tactical Technologies Toolset (T3), a software for remote monitoring and management, giving visibility into what's going on in networks
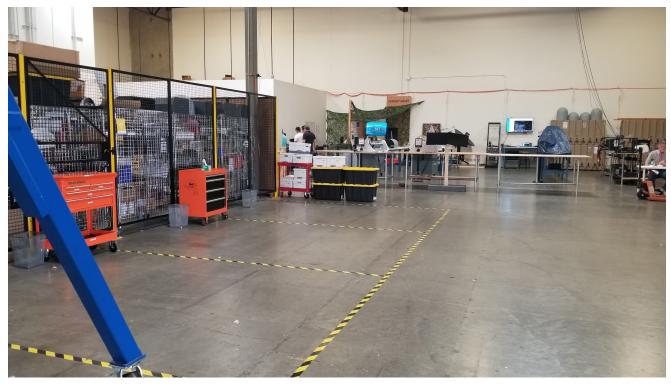
Fuse leadership team (left to right) including CEO Sumner Lee, Director of Operations Natalie Caruso, Director of Product Engineering Allen McAfee, Director of Programs Dennis Wojcik, Director of Technology Dell Kronewitter, PhD, and President Scott Rosebush.

and sensors, and several other integrated systems. All their offerings receive constant input from active military personnel as Fuse runs warfighter workshops at their facility and has recently tested their products at the Fallon Naval Air Station in Nevada and with the 49th Test Squadron for the Air Force. The latest technology, however, isn't only being installed with Fuse's military customers, it's also made its way onto their shop floor.

"We have our products in a digital form, everything is a 3D CAD file. We can play with it and take it apart and put it back together," Lee says. "We've applied that to our production line, we can lay out what we're doing in a 3D model, our engineers can put on some VR (virtual reality) or AR (augmented reality) goggles, and discover, 'We don't have enough space to be able to move this around, or we can fit three of these in this space where we thought we would have fit two.' This digital engineering process has helped a small business such as Fuse sprint to building more products and maximizing efficiency and use of space."

Fuse has also been able to get up close and personal with the users of possible projects thanks to the DOD's Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) programs. Because of that SBIR partnership, Fuse currently has more Phase II military contracts than Phase I along with multiple Phase III contracts.

"SBIR is an excellent vehicle. It benefits the government because they're able to reach into the innovation and agility of small businesses, and it benefits small businesses because it gives us a window to take risks on good ideas," Lee says. "Silicon Valley likes to say fail fast; well, we take that same approach, get in there, experiment, fail fast, pivot, adjust, re-attack and we're able to deliver capability whether it's hardware for our CORE systems or software with T3 or flying our integrated systems. We can make it less expensive and more efficient for the DOD and we can move faster so we can put working solutions in the hands of users more rapidly."

Fuse production space cleared out for setup in transition to low-rate initial production (LRIP).

There are still hurdles to clear when working for military contracts as Lee says it'll still take an average of seven years for a product to get cleared for military use through typical contracts. Although some of their technologies and products could possibly be spun off into civilian and commercial markets, Lee says Fuse will continue to focus exclusively on improving connectivity for the warfighter.

"I started Fuse because I loved being able to give functional products to guys living out of a fighting hole in the middle of the jungle, guys camping next to their aircraft when they park overnight before they go to the next day's missions, users in these arduous situations," Lee says. "It's more important for me to be focusing on solving their problems than somebody who wants their cellphone to work better." ∎