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NAVY SBIR TRANSITION PROGRAM

SPOTLIGHT

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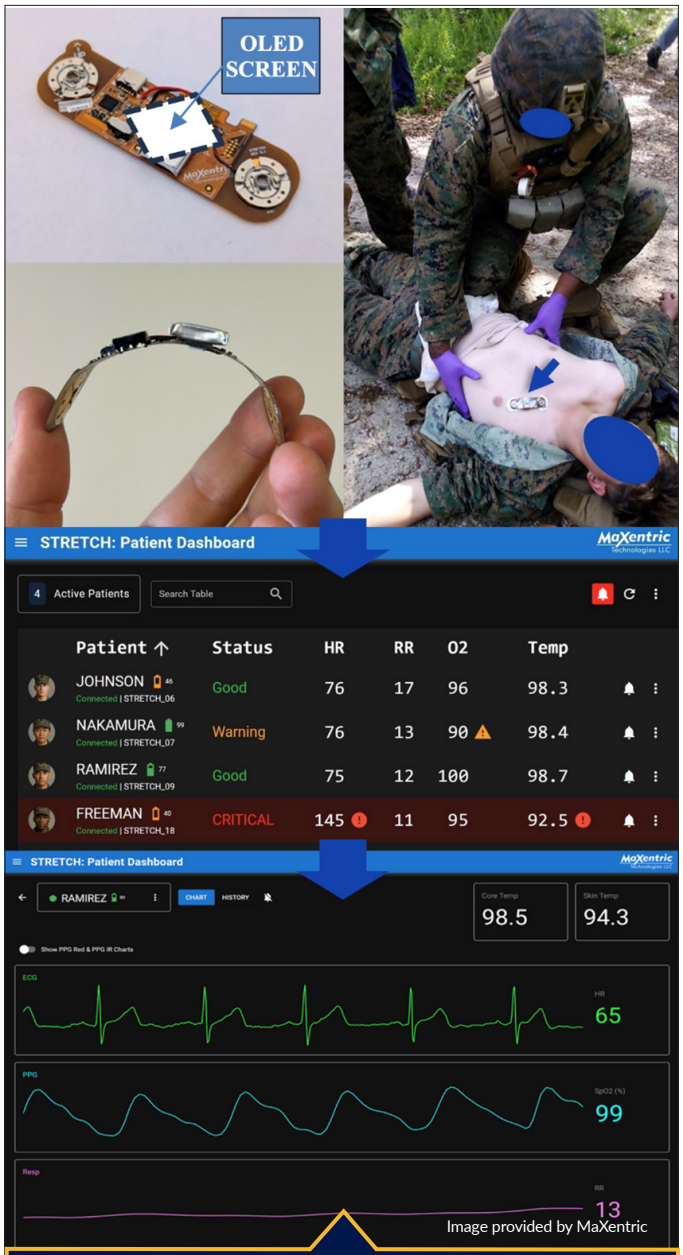
MaXentric Technologies named a top performer at Navy TOEE with two SBIR solutions for expeditionary medicine

In 2025, MaXentric Technologies LLC, a small business that develops high-performance electronics solutions for defense, medical, first responders, and commercial industries, was selected to participate in the Navy's Technology Operational Experimentation Event (TOEE) experimentation campaign series focused on expeditionary medicine.

Designed and executed by the Office of Naval Research Global (ONRG) Experimentation and Analysis (E&A) organization, TOEEs provide technology developers the opportunity to test their solutions with warfighters in operationally relevant conditions and scenarios. Data generated during these events helps both participating companies and the Naval Research & Development Establishment (ND&RE) assess technology performance and inform future science and technology investments.

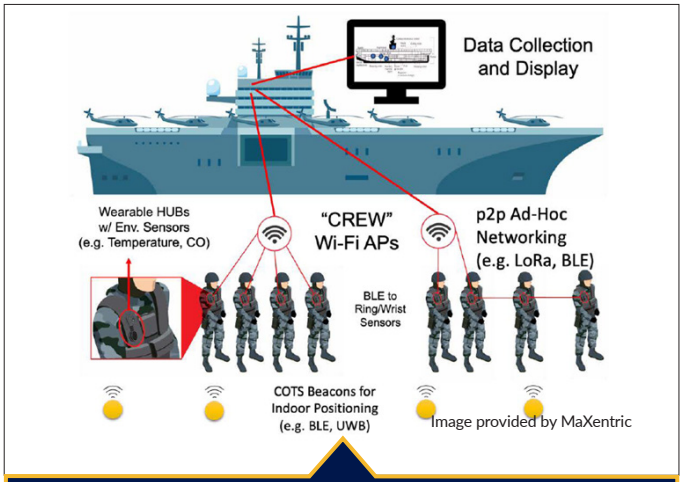
Through its participation, MaXentric gained valuable insight into how two of its innovative SBIR-funded technologies—the Sensor-based Tactical Response and Evaluation for Triage and Continuous Healthcare (STRETCH) and RescueMesh—would perform in the field with the U.S. Marine Corps. Participating in an event series also allowed the company to refine its technology between events and demonstrate



MaXentric's STRETCH wearable monitor allows medics to monitor multiple patients in austere, communications-limited environments.

improved capabilities. At the conclusion of the series, MaXentric was recognized by event organizers as one of the top three performers of the campaign.

"The medical devices group within MaXentric is still relatively new and STRETCH is our most mature technology. It's great that we got this kind of feedback on the first big event we went to," said Bryce Smith, senior design engineer and technical lead for artificial intelligence (AI), data science and medical devices at MaXentric.



MaXentric's RescueMesh creates an ad hoc network of wearable monitors.

STRETCH is a wireless, flexible, low-profile, wearable physiological monitor that provides real-time monitoring of vital electrocardiogram data, temperature, heart rate, motion detection and more. Designed for use in far-forward contested environments with limited communications and austere conditions, STRETCH supports medical personnel who may need to monitor multiple patients for extended periods before evacuation to medical facilities is possible.

"The paradigm of long-term holding has changed," Smith explained. The U.S. military has traditionally focused on evacuating casualties during the "golden hour," the critical initial 60 minutes following an injury. However, future warfighting scenarios, similar to the conflict in Ukraine, may limit U.S. air superiority. As a result, the military is seeking technology solutions that enable medics to monitor and care for injured warfighters in the field for longer durations.

"In a mass casualty event, if you're holding 20-30 people for a long period of time, you're stretching your medical corpsmen thin. Often, there may be more patients than fit inside the tent and some will need to wait outside. STRETCH expands the medics' capabilities by enabling them to monitor people inside and outside the tent on a single platform."

Using alarms set to automated thresholds, STRETCH can alert medics to changes in patients' conditions when they are not directly in view, helping medics identify serious conditions that were not immediately obvious, such as internal hemorrhage or traumatic brain injury.

"These sorts of scenarios were highlighted to me while I was at the TOEEs," said Smith. "Initially, I just knew they wanted a small, lightweight, robust, far-forward medical monitor. I can try to design that in a bench setting, but without understanding the bigger picture it's hard to fully meet the need. There's no replacement for

seeing these simulated casualty events and riding along with the Marines in action."

MaXentric developed STRETCH to fill capability gaps for both the Army and the Navy. While the SBIR Phase I and Phase II awards came from the Army, the Navy provided funding for MaXentric to bring STRETCH to the TOEEs and integrate the physiological monitor into experimentation alongside a second SBIR technology the company is developing for the Navy, RescueMesh.

Morris DeSimone, DoN-SEC

Bryce Smith demonstrates MaXentric's technology to U.S. Marine Corps medical corpsmen during the TOEE experimentation campaign.

RescueMesh creates ad hoc communication networks in complex environments, such as Navy ships where bulkheads and metal panels make connectivity challenging. RescueMesh uses low-frequency radio, which can penetrate walls and corridors more reliably than wi-fi or Bluetooth systems. Each device connected to RescueMesh acts as a repeater, linking the devices together "like a trail of ants going back to a central communication platform," according to Smith.

RescueMesh was developed to meet the Navy's need for shipboard physiological and ambient monitoring of crew members, particularly during disaster scenarios when locating and assessing personnel is critical. When used together with STRETCH, which connects locally via Bluetooth, RescueMesh can relay physiological data back to command.

MaXentric participated in two events at Camp Lejeune in North Carolina. First, the company presented a successful pitch to be included in the Limited Objective Experiment (LOE), a three-day event consisting of three simulated casualty scenarios. Based on its performance in the LOE, the company was selected to participate in the week-long Advanced Capability Experiment (ACE). The two events were only eight weeks apart, giving the team little time to address issues identified during the LOE.

"The LOE was the first time we saw our technology in action, and it was really informative. A lot of things that worked fine in the lab didn't make sense once you watched a medic use it in the field. We knew we had to make big strides to make STRETCH more relevant."

One of the most significant improvements, according to Smith, involved reducing the number of proprietary components required for STRETCH to function. "When we looked at the Authorized Medical Allowance List (AMAL) that battalion aid stations deploy with, we learned they operate under very tight supply constraints. Every proprietary charger, or adhesive, etc., is something that can be lost, rendering the device unusable. We needed to make STRETCH work with what's already in the standard AMAL."

Between the LOE and the ACE, MaXentric engineered a new developmental version of STRETCH that used standard ECG adhesive pads and a ubiquitous USB-C charger.

"I think our ability to quickly adapt and make changes based on feedback was a 'wow factor' that made us one of the top performers," Smith said. "We matched everything they were asking for from the LOE by the end of that eight-week period."

MaXentric was supported throughout the TOEE series by the Department of the Navy SBIR Experimentation Cell (DoN-SEC), which Smith described as MaXentric's "guides to the defense event space." DoN-SEC staff were invaluable, helping Smith navigate the processes and pacing of the events, understand unfamiliar military acronyms and identify key decision makers whose feedback was most critical.

"For lack of a better word, they were our handlers, making sure that we weren't making any major faux pas and that we were aligning our pitches effectively," Smith recalled. "They also helped tailor our terminology. In some cases, we were saying the same things but not using the right jargon, so it felt like we were speaking a different language. They helped refine our message so it was more streamlined and appropriate for the setting."

The TOEEs also created opportunities for networking that led to collaborations with other small businesses. Through the events, MaXentric connected with Tietronix Software, Inc., which is working with NASA to develop technology solutions for crew monitoring, health maintenance, medical care and emergency response during long-duration space missions. MaXentric is now contracted with Tietronix to provide a developmental STRETCH kit that could be included in future missions to Mars.

MaXentric also worked during the TOEEs with Deep Breathe, a Canadian company developing AI-based lung diagnostics and imaging solutions for first responders and military medical personnel outside hospital settings. The two small businesses are now collaborating on a joint proposal.

"I feel like most of the people at these events aren't competitors, they're future collaborators. Nothing is ever a finished product, and working with other innovators can lead to something even better than your individual technologies," said Smith. "At the end of the day, we got into building these technologies to help save lives."

MaXentric Technologies was founded in 2003 as an advanced technology company. Headquartered in Fort Lee, New Jersey, with additional locations in California and Colorado, the company develops and manufactures next generation electronic solutions for defense, medical, and commercial customers. For more information, visit www.maxentric.com.

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