

Jam session: New ONR technology helps sailors on the digital frontier

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The Arleigh Burke-class guided missile destroyer USS Spruance (DDG 111) departs Pearl Harbor on July 8, 2014 for the at-sea phase of Rim of the Pacific (RIMPAC) 2014. Twenty-two nations, more than 40 ships and submarines, about 200 aircraft and 25,000 personnel are participating in RIMPAC from June 26 to Aug. 1, in and around the Hawaiian Islands and Southern California. The world's largest international maritime exercise, RIMPAC provides a unique training opportunity that helps participants foster and sustain the cooperative relationships that are critical to ensuring the safety of sea lanes and security on the world's oceans. RIMPAC 2014 is the 24th exercise in the series that began in 1971. Credit: CU.S. Navy photo by Canadian Armed Forces Sgt. Matthew McGregor/Released

During the world's largest international maritime exercise last month, Sailors demonstrated a new system that could transform the future of electronic warfare and defense of ships at sea.

Sponsored by the Office of Naval Research (ONR), Electronic Warfare Battle Management (EWBM) for Surface Defense will help Sailors and Marines coordinate electronic countermeasure responses to inbound threats faster than is possible through traditional voice communications, reducing the need to respond with expensive munitions.

With the explosion of digital technologies, control of information in the electromagnetic spectrum is more important than ever when it comes to military campaigns. To achieve information dominance, Navy leaders are emphasizing the use of [electronic warfare](#), in which operators can deny or deceive adversary sensors and radars with electronic signals.

"We have to figure out how we can beat things electronically first," Chief of Naval Operations Adm. Jonathan Greenert said at a 2013 conference hosted by the Association of Old Crows. "Why do we spend all this money kinetically if we can jam, spoof or do otherwise?"

ONR's EWBM system makes it easier for personnel on ships and in aircraft to share information digitally about adversary sensor and radar threats using available communication networks. In turn, naval forces can coordinate countermeasures both onboard and remotely with the help of optimization software, adding speed and precision to a process that normally takes place over just radio communications.

"Electronic warfare is about controlling and using energy while taking away our adversary's ability to use it," said David Tremper, ONR program officer for electronic warfare. "With this system, Sailors and Marines will be able to exchange spectrum and threat information between platforms so they can make more informed decisions in

situations where time and accuracy are crucial."

The EWBM program, which began last year and builds upon previous networked electronic warfare experiments, completed its most extensive demonstration yet last month in and around the Hawaiian Islands at the 2014 Rim of the Pacific (RIMPAC) exercise.

The system was used by multiple ships from the United States and coalition partners, who conducted several electronic warfare engagements against a variety of threats to surface vessels.

"Our forces need to be able to deny adversary sensors the ability to track our ships, but if that fails, they need to be able to rapidly coordinate the optimal countermeasures across multiple ships and aircraft which will provide protection to everyone in the line of fire," Tremper said. "This system provides our Sailors and Marines the tools they need to do just that."

ONR will continue to work with partners at the Navy's Program Executive Office (PEO) Integrated Warfare Systems and PEO Command, Control, Communications, Computers and Intelligence to make improvements to the system based on fleet requirements.

The system is being developed under ONR's Future Naval Capabilities program, which brings proven technology to military acquisition programs in rapid fashion, going from research and development to delivery in five years.

U.S. Pacific Fleet hosts RIMPAC every two years. The theme for this year's exercise—the 24th—was "Capable, Adaptive, Partners." The event featured 49 ships, six submarines, more than 200 aircraft and 25,000 personnel from more than 20 nations.

Provided by Office of Naval Research

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