ONR opens a gateway to improved network data sharing on Navy ships

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An Office of Naval Research (ONR) universal gateway that gives Sailors access to more accurate, secure, real-time information will be delivered to the fleet in just three years from the project's inception at ONR officials announced July 11.

On any Navy destroyer, cruiser or carrier today, there are two networks: one for combat systems (weapons and sensors) and one for command and control, or C2, which also encompasses intelligence, surveillance and reconnaissance. There are some 30 interconnections between the two networks, making it difficult to integrate data into a real-time common operating picture, as well as expensive to maintain.

In response, ONR developed the Universal Gateway, which collapses the 30 connections into a single portal, rapidly automating data integration, enhancing information assurance and reducing manpower workloads and costs.

The gateway can be put between any different networks, despite their classification levels, so information is available in a timely and effective way for warfighters. A recently released video illustrates how this works.

One example of how this will help Sailors is by automating air tasking orders. Currently, an air tasking order comes to a ship on the C2 side. The only way to link the information into a combat system—such as Aegis—is for a Sailor to download the information from the C2 network CD and then manually upload it into the combat system.

"Now, with the Universal Gateway, the data is uploaded automatically, and it's secure—no more moving data between networks," said Wayne Perras, director of experimentation for ONR's Command, Control Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Department. "This vastly improves accuracy, eliminating mistakes almost entirely."

The objective for the gateway is to produce a shared situation display for ships that goes beyond showing just force and unit locations—who and where—to showing a full common operating picture—who, what, when, where, why and how.

"This is important not just for today's Navy, but for how we will fight in the future with autonomous systems," said Bobby Junker, department head for ONR's C4ISR Department. "Autonomy is nothing more than decision making, and this is easier and faster when all the data is packaged together in a common C2 environment. It is also a significant move toward achieving the goals of a truly network-centric naval force."

Between 2010 and 2011, ONR completed a series of limited technical evaluations that proved the gateway could integrate the various technologies that run on it. ONR also has been working on connecting data from unmanned aerial systems, which involves combat systems and surveillance information, into the gateway. This would help achieve a networked force, which is key to the Department of the Navy's goals for information dominance. The next phase is to move the data into a cloud environment and add analytical capability to save time and manpower.

For another future initiative, ONR has established partnerships with the Army and Air Force to advance the Universal Gateway as means of developing a common C2 system for tracking and accessing unmanned vehicles in a joint environment.

The Universal Gateway is the product of a unique rapid prototyping collaboration between ONR; Program Executive Office Integrated Warfare Systems; and Program Executive Office Command, Control, Communications, Computers and Intelligence. The partnership has been extremely successful, primarily due to increased communication, which has resulted in more rapid transitioning—quickly getting items into prototyping, experimentation and, ultimately, Sailors and Marines.

"We now have lots of partners and opportunities for moving forward," Perras said.

Provided by Office of Naval Research