Lockheed Martin Successfully Demonstrates Two Open Architecture Capabilities For Aegis Weapon System

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Lockheed Martin successfully migrated two key elements of the Aegis Weapon System to an open architecture environment, a move that will significantly enhance the capabilities and service life of the U.S. Navy's premier surface combat system while also reducing its cost.

"The Lockheed Martin Open Architecture team is making impressive progress," said Capt. Richard T. Rushton, the Navy's chief for the Network Systems & Integration directorate. "The team's innovative engineering approach and commitment to open architecture indicates we are on track for our upgrade timeline."

The first demonstration focused on the multi-mission, multi-sensor capabilities and portability of the Open Command and Decision (C&D) system. The demonstration exercised all sensor and weapon interfaces, data links and engagements across multiple warfare areas in various tactical conditions. Open C&D, comprised of more than 500,000 lines of C++ source code, was demonstrated using a mainstream Open Architecture Computing Environment (OACE) Category 3 infrastructure. OACE Category 3 is the first OACE design allowing a change of hardware infrastructure without requiring changes to the software design.

The second demonstration included the SPY Radar Control Program detect, control and engage functions also operating on a Category 3 OACE. This demonstration built on the previous open architecture tracking capabilities demonstrated in February by adding missile acquisition and guidance capabilities.

Open architecture systems exploit commercial computing technology, allowing the Navy to install software and other technology upgrades faster and more cost effectively throughout the life of a ship, aircraft or submarine. Both demonstrations used Navy-endorsed publish-subscribe middleware for intra- element communications and Network Time Protocol in order to align with OACE guidance.

"These successful demonstrations confirm our continuing commitment to the Navy Open Architecture vision for developing reusable application level components," said Orlando Carvalho, vice president of Lockheed Martin Maritime Systems & Sensors' Surface Systems line of business. "While these results apply to Aegis ships, this approach can be equally applied to the Navy's next generation of warships, such as LCS, DD(X) and CG(X)."

The demonstrations represent key milestones on the disciplined spiral approach to evolve the current Aegis architecture and computing environments. The first step, to be completed next year, will upgrade the radar control architecture and computing environment for all SPY-1 radar systems, beginning with SPY-1B/D radars. In parallel, the Aegis weapon control and display system are also being architected to operate in an open computing environment.

Lockheed Martin's approach to open architecture is built on nearly a decade of "open system, rapid capability" deliveries to the Navy, including the Acoustic Rapid Commercial Off-The-Shelf Insertion (ARCI) Program that provides open architecture solutions for the Navy's submarine force.

Headquartered in Bethesda, MD, Lockheed Martin employs about 130,000 people worldwide and is principally engaged in the research, design, development, manufacture and integration of advanced technology systems, products and services.

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