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Boeing [NYSE: BA] successfully linked an airborne Boeing F/A-18F Super Hornet, three simulation labs, and multiple virtual war-fighting platforms, demonstrating the ability to provide a high level of network-centric capability to the U.S. military with existing, fielded systems over the next two to three years.

The demonstration, conducted November 13, proved the capability to re-task a strike package using real-time target imagery to prosecute a time-critical virtual "target." The strike package included an actual flying Boeing F/A-18F, two simulated F/A-18E's, three simulated F-15's and an EA-18G electronic attack support aircraft -- all linked into a networked virtual battlespace. The demonstration involved Boeing simulation centers in Anaheim, Calif., St. Louis, and Seattle, with officers of the U.S. armed forces viewing in Anaheim and St. Louis.

"This demonstrates a next step in Boeing's leading edge, enterprise-wide network-centric capability, and our ability to grow it into an operational solution in the near future for our joint customers," said John Lockard, senior vice president, Naval Systems, for Boeing. "Our customers need network-centric operations now, not ten or fifteen years from now. We demonstrated today that we understand their requirements and know what to do to help them move quickly into a more productive, effective battle space environment."

One of the largest hurdles in moving into such a network-centric environment has been integrating the enormous number of existing, or "fielded," systems in today's battle space. Even though the U.S. military has a "transformational" vision for the future, that vision necessarily includes those fielded systems.

Today's demonstration was the first of a series that Boeing has planned during the coming year. Together, the demonstrations will showcase an architecture that integrates "best-of-industry" solutions to enhance the joint network-centric capabilities of fielded systems within the next two to three years. The goal is to achieve improved capabilities at reduced cost for the war fighter sooner than other, longer-term "transformational" solutions.

"From the Navy's and joint warfighter's perspective, this is a capability we need," said Rear Admiral Mark Fitzgerald, director of Air Warfare for the U.S. Navy. "It's the way ahead for military operations, and we need to decide how to go forward from here."

Using a Boeing Phantom Works-developed "Infosphere" publish-and-subscribe architecture, today's demonstration involved information sharing among simulated Navy, Air Force, Army and other command, control, intelligence, surveillance and reconnaissance systems; two simulated Boeing F-15C Eagles; two simulated Boeing F/A-18E/F Super Hornets; one simulated F-15E Strike Eagle; a ground force element of the Army's network-centric Future Combat Systems; and the airborne Super Hornet. Internet-based, the architecture allowed tactical information to be shared among these currently fielded systems with little to no need for hardware changes.

The scenario -- which Boeing carried out successfully twice during the course of the day -- proved that these systems can collaborate in real time with new data to redirect an aircraft's mission. In this case, simulated assets identified a new "target," exchanged imagery, "launched" a counteroffensive, redirected the flying Super Hornet, and resulted in successful prosecution of the "target."

"Connection to the Infosphere significantly enhanced the value of Link-16 for the F/A-18F," said Boeing pilot Michael Wallace after the demonstration. "We demonstrated real-time retargeting by receiving target images and a nine-line brief over the link. This enabled me to quickly divert from a preplanned 'mission,' then locate, designate and simulate delivering a precision weapon on a time-critical 'target' within minutes.

The resulting bomb damage 'image' from the F/A-18 was then linked to the simulated AWACS for immediate assessment. With this system, time is on our side, not our adversary's."

Don Farr, a Technical Fellow with Boeing Phantom Works, discussed the challenge of network-enabling today's "fielded" systems: "These assets historically operate in tightly controlled missions using limited-throughput tactical data links. Our approach to this challenge is to develop technology that effectively connects multiple fielded platforms into one common network-centric environment with a 'spiral' approach. Our approach incrementally inserts network-centric technology into today's currently fielded platforms. Given this 'spiral' approach, today's demonstration represented initial work that we intend to build upon, eventually delivering full capability to our customers."

The network-centric demonstration was hosted by Boeing's Phantom Works and Integrated Defense Systems business units. Phantom Works is the advanced R&D unit and catalyst of innovation for the company. Working with the business units, it provides advanced systems and breakthrough technical solutions that improve the affordability, quality and performance of aerospace products and services. Among its many initiatives is the Network-Centric Operations technology thrust, focused on developing, acquiring and adapting technologies for world-leading network centric solutions.

A unit of The Boeing Company, Integrated Defense Systems is one of the world's largest space and defense businesses. Headquartered in St. Louis, Boeing Integrated Defense Systems is a \$25 billion business. It provides systems solutions to its global military, government and commercial customers. It is a leading provider of intelligence, surveillance and reconnaissance; the world's largest military aircraft manufacturer; the world's largest satellite manufacturer and a leading provider of space-based communications; the primary systems integrator for U.S. missile defense; NASA's largest contractor; and a global leader in launch services.
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