Boeing Demonstrates Ways To Reduce Joint Strike Fighter Maintenance, Life-Cycle Costs

Boeing last week demonstrated its Joint Strike Fighter autonomic logistics system and key enabling technologies, verifying how they will significantly reduce the aircraft's life-cycle costs.

The four days of demonstrations and technical briefings, for government officials, spanned all elements of the Boeing autonomic logistics system. These include training; mission planning; prognostics and health management, or PHM; the Joint Distributed Information System, or JDIS; the supply chain management concept; and integrated product data management system.

"The Boeing autonomic logistics system will significantly reduce scheduled maintenance and reduce the manpower required to operate and sustain the JSF over its service life," said Dean Hooks, Boeing JSF PHM and JDIS manager. "We demonstrated how our autonomic logistics technologies have been integrated into the weapon system and how they will reduce JSF life-cycle costs by more than 30 percent over legacy systems."

Boeing previously demonstrated a number of its autonomic logistics technologies to government officials in August 1999.

In one of the demonstrations, Boeing simulated how a network of computers and aircraft sensors on board the JSF would trigger an autonomic response to a pending maintenance action. If a failure occurs or is predicted to occur, the Joint Distributed Information System facilitates a series of actions to provide the right maintainer the right repair information and the right replacement part. Human interaction is minimized as data flows from the air vehicle through the maintenance infrastructure and ultimately to the Boeing JSF One Team supplier community.

"Autonomic logistics will make JSF parts deliverable anywhere in the U.S. or U.K. in 24 hours, or worldwide within 48 hours," Hooks said. "Our system will ensure JSF customers have planes ready to fly when required and are not grounded awaiting maintenance or parts."

Another Boeing demonstration showed how training can be done effectively in a virtual environment, significantly reducing the amount of time it takes to train JSF maintainers.

"We successfully demonstrated how using the virtual environment, in lieu of traditional hardware mockups, can lead to equivalent training at drastically reduced development cost," said Dixie Mays, Boeing JSF Training Systems manager. "Using engineering 3-D data throughout our autonomic logistics system for training courseware, as well as interactive electronic technical data, leads to a weapon system that is easy to keep concurrent with the air vehicle design. The military services will no longer suffer from the traditional time lags where they are waiting for their maintenance and technical data to catch up with the air vehicle design."

The Boeing JSF autonomic logistics technologies leverage commercial-off-the-shelf hardware and software. They also build on the Boeing JSF One Team's full range of military and commercial expertise, including the 777 aircraft's proven autonomic logistics capabilities.

"Reducing logistics operations and support costs is a necessity," Hooks said. "These demonstrations showed that we have reduced risk and are ready to move into the next phase of the program."

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