

## Boeing Completes 3rd Live, Virtual and Constructive Training Demonstration

---

# Boeing Completes 3rd Live, Virtual and Constructive Training Demonstration

**ST. LOUIS, Dec. 4, 2009** -- Boeing [NYSE: BA] successfully completed its third integrated Live, Virtual and Constructive (LVC) proof-of-concept demonstration on Nov. 3 during a flight test at Edwards Air Force Base, Calif.

As with previous demonstrations of the LVC training concept, an F-15E (live) was networked with simulators (virtual) on the ground to combat computer-generated threats (constructive) that were integrated into both environments. However, this third demonstration focused on use of an encrypted, Internet Protocol (IP)-based data link -- not the Link 16 data link used in the previous demonstrations -- to transmit simulation data to and from the aircraft.

"The performance of the IP-based data link exceeded our expectations," said Rob Lechner, Boeing Research & Technology LVC project lead. "We flew this mission with a new avionics architecture and proved we could conduct a Live, Virtual and Constructive event over this data link with encryption. The main benefit from this is that we'll be able to move from the F-15E to multiple platforms."

The technology behind the LVC demonstrations significantly decreases the number of live assets needed to run a multiship training operation through the integration of the three LVC training domains (live, virtual and constructive).

"With this capability, our customer will be able to increase the effectiveness of aviation training while overcoming range limitations, resulting in cost savings and environmental benefits," Lechner said.

Boeing's work with LVC began in 2007 as an Independent Research and Development (IRAD) project to advance and demonstrate this type of training in the Distributed Mission Operations training environment. Phase 1 of Project Alpine was completed in late 2007 with a demonstration of the capability to perform air-to-air intercepts between a live, friendly aircraft (an F-15E) and a ground-based, virtual/constructive hostile aircraft. Phase 2, completed a year later, demonstrated the capability to perform air-to-ground attacks between a live, friendly aircraft (the F-15E) and ground-based, constructive hostile aircraft; ground moving targets; and surface-to-air threats. The recently completed demonstration on Nov. 3 included air and ground attacks within a robust scenario.

The current effort involves continued IRAD funding to reduce the risks involved with adding LVC capability as it applies to tactical aviation training. This includes development of alternative data links as well as studies of alternative avionics architecture approaches and an approach on crew station training symbology.

Boeing plans to be under contract with the U.S. Air Force soon to continue LVC development, with one demonstration a year over the next three years.

As the advanced, central research and development organization of The Boeing Company, Boeing Research & Technology provides innovative technologies that enable the development of future aerospace solutions while improving the cycle time, cost, quality and performance of current aerospace products and services.

To ensure these enabling technologies are ready when needed, Boeing Research & Technology not only conducts its own development but also works with top government, private and university research centers around the world to quickly find the most innovative and affordable solutions possible.

Contact:

Daryl Stephenson  
Boeing Research & Technology Communications  
314-232-8203  
[daryl.l.stephenson@boeing.com](mailto:daryl.l.stephenson@boeing.com)

Stacey Holloway  
Training Systems & Services Communications  
Office: 314-777-6438  
Mobile: 314-610-3632  
[stacey.r.holloway@boeing.com](mailto:stacey.r.holloway@boeing.com)

---