

F/A-18 Super Hornet



Boeing is the world's largest aerospace company and leading manufacturer of commercial jetliners and defense, space and security systems.

Boeing Defense, Space & Security (BDS) provides end-to-end services for large-scale systems that enhance air, land, sea and space based platforms for global military, government and commercial customers. BDS is developing enhanced capabilities through network-enabled solutions, communications and intelligence, surveillance and reconnaissance technologies in addition to designing, producing, modifying and supporting a wide variety of aircrafts and defense weapons.

Solution

With a history of providing first class services to enhance aerospace operations, BDS was contracted by Naval Air Warfare Center Training Systems Division (NAWCTSD) to upgrade the U.S. Navy F-18E Integrated Virtual Environment Maintenance Trainers (IVEMT) by reusing content previously developed for the Royal Australian Air Force (RAAF) and including the addition of a 2-seat F/A-18F configuration, the E/A-18G Electronic Warfare variant, and numerous avionics upgrades.

BDS then selected DiSTI's next generation 3D virtual maintenance training development solution, VE Studio, to create the Student Aircraft Interface Trainer Station (SAITS). The highly regarded reputation of DiSTI's expert engineering services stems from earlier work completed on virtual maintenance trainers, specifically the F/A-18C Simulated Avionics Maintenance Trainer (SAMT) project that was delivered in 2006 and the F/A-18E IVEMT for the RAAF. These devices set the precedent in fully interactive 3D trainers, allowing students to engage in unlimited "free-play" through any number of training scenarios.

The IVEMT provides training for maintainers on ground operation, maintenance, and testing procedures for the F/A-18E jet aircraft including avionics, environmental control, electrical, flight control, fuel, engines, landing gear, and hydraulic systems.

Results

The IVEMT upgrade is a 3D fully interactive maintenance trainer that allows military personnel to navigate within an immersive virtual environment, interact with the virtual aircraft and support equipment, as well as perform over 400 simulated aircraft maintenance procedures, responsibilities and testing. The 3D touch screen interactive panels, offers a realistic “look and feel” of actual aircraft procedures, such as environmental control, electrical, flight control, fuel, engines, landing gear, and hydraulic systems.

The designers and engineers at DiSTI were able to accurately replicate the entire aircraft, including over 60 unique pieces of support and test equipment, by using their latest in-house maintenance training technology, VE Studio. Core technologies that supported the program’s overall success included the use of Computer Aided Design (CAD) data and advanced development software in production of high fidelity 3D models, physics-based simulation models, use of the actual aircraft Operational Flight Program (OFP) to drive cockpit displays, and fully integrated animated schematics. This application is driven by Boeing’s realistic F/A-18E aircraft simulation software, yielding a maintenance training solution with high physical and functional fidelity. DiSTI’s performance on this contract earned a Boeing Atlas Award Nomination that recognizes outstanding team achievement.