F-16C

The F-16C is a cost-effective multi-role fighter aircraft designed for air superiority. With features such as a frameless bubble canopy for enhanced visibility, a seat which helps reduce the effects of g-forces on the pilot, and a state of the art flight control system, the F-16 is one of the most common currently operational military aircrafts, with over 4500 F-16 aircraft in operation around the world.

Being a strategic asset for air superiority and defensive operations and serving as the backbone for several defense organizations means that minimal downtime is crucial for mission success. Using the latest technologies to create a virtual maintenance trainer, which will augment traditional training for aircraft crewmembers, will ensure that the F-16 will always be mission ready.

Solution

DiSTI developed the virtual training program to fulfill the requirements of an international customer who operates the F-16C Block 52 aircraft. The virtual trainer enhances the users training initiatives for this sophisticated aircraft by effectively reducing overall training time and costs.

The F-16C Virtual Training program consists of two applications to support first and second-line maintenance tasks for flight line crews and maintenance personnel. The first application is the F-16C Flight Line Crew (FLC) Trainer, which supports training of the Flight Line Crew in performing Preflight/Postflight, Thruflight, Launch and Recovery procedures.

The second application is the F-16C Virtual Maintenance Trainer (VMT). This application trains maintenance personnel in second-line maintenance tasks to support a operational checks, fault isolation, and removal/replacement of a failed components, effectively returning the virtual aircraft to an operational state.

Results

DiSTI used the VE Studio toolkit to produce the Virtual Maintenance Training Environment (VMTE) for the F-16C. The toolkit provides the out-of-the-box development framework for managing the

production process and maximizing supportability. The turn-key functionality includes proven navigation and interaction techniques with the 3D virtual aircraft, use of virtual support equipment, 2D interactive aircraft schematics, and display of all cautions and warnings based on the aircraft maintenance documentation. In addition, the F-16C VMTE supports modeling of physical constraints, collision detection, stereo sound cues, and representations of danger areas, such as engine intake and exhaust.

The F-16C training application supports both individual and team training, allowing each student to run a standalone training scenario, or connected via Ethernet allowing two students to operate together in a common scenario. Instructors can control the training scenario, mode of operation, insert faults, and monitor student performance.