

F-16 Training Systems

Overview

Customers worldwide are benefiting from CAE's expertise as the leading provider of F-16 training devices, ranging from concurrency and technology upgrades of fielded systems to delivery of new F-16 pilot and maintenance trainers.

CAE's F-16 simulation solutions start with the highest fidelity F-16 flight and aero models, integrated with the complete range of F-16 aircraft systems, weapons and sensors.

This capability is underscored by three tiers of commonality, high-fidelity image generators, scalable visual display technology, distributed training networks and human factors-engineered instructor operator stations.

CAE's breadth of capabilities and experience enables the company to deliver customer-unique F-16 simulation systems built on proven common hardware and software solutions. The result is a suite of reliable simulation systems that enable pilots to develop and enhance their tactical skills in operation of this multi-role fighter aircraft.



Key Facts

- › #1 provider of F-16 simulators for the U.S. Air Force
- › 80% of high-fidelity F-16 simulators in use
- › F-16V CAE simulators are training pilots on the new F-16V platform

The Solution

CAE's first tier of commonality – our Common Training System Architecture (CTSA) – is the foundation for our F-16 training devices, providing the majority of system hardware and software commonality across various aircraft configuration baselines. The CTSA supports Distributed Interactive Simulation (DIS) interoperability, local and long-haul networking, mission management, data recording for replay/debrief, and interfaces for a common synthetic combat environment, simulator cockpit and image generator.

Common Software Architecture

High functional fidelity software solution for the ownship air vehicle, avionics, targeting, Communication, Navigation and Identification (CNI) and electronic warfare, our second F-16 tier of commonality – CAE's Common Software Architecture (CSA) – includes a library of training-proven and portable hardware-independent training system models that fully support migration to future hardware platforms. The CSA includes commonality across simulation software for flight, systems and weapons models, synthetic combat environments and instructor operator stations, as well as interfaces to multiple image generation systems.

Common Hardware Architecture

Supporting the CTSA and CSA, CAE has incorporated a common hardware architecture across the suite of F-16 training devices as a third tier of commonality. For our F-16 training devices this open and standardized hardware architecture has been designed to fully support F-16 training and minimize logistics requirements.

Core to this common hardware is the high-fidelity cockpit which is a form, fit and function replica for specific F-16 block simulators, including blocks 10, 15, 30, 32, 40, 42, 50 and 52.

The SimuView® image generation system and scalable SimuSphere® visual display are combined to provide exceptional visual cueing realism necessary to support F-16 pilot training. SimuView employs off-the-shelf personal computer hardware and video cards, in addition to hardware independent image generation software. SimuSphere partial dodecahedron frame design – which is marked by seamless facet tolerances – allows for 3, 5, 7 or 9 display panels that provide pilots anywhere from 180 to 360-degree horizontal field of view.

Virtualized Viper

Evolving requirements to provide higher quantity of mission training systems in existing space, standard system software updates at a rapid pace, and ensuring concurrency force a shift in approach to physical simulators. We do this through virtualization of current hardware focused simulators to a software focused simulators.

Virtualized Viper is the CAE answer for F16. Virtualization enables platform utilization of common applications while also reducing the training system physical footprint and eliminating the burden of old and unique hardware. Virtualization is achieved by running legacy platform source code on common COTS hardware while also adhering to SCARS Government Reference Architecture (GRA) and SCARS Standards. SCARS GRA and Standards are a set of consensus-based rules largely founded on existing collections of interoperable standards and architecture such as MOSA, FACE, OMS and JSE GRID. Through virtualization and the utilization of common applications, full distributed and even local training

interoperability is achieved between all platforms. Only then can precise training and tactical development be achieved through analytic analysis of high fidelity and accurate data.

Instructional Systems

A modern and intuitive Instructor Operator Station (IOS) provides a workstation designed for efficient and effective training scenario execution. The IOS provides individual control over a single device or can control multiple devices in a distributed training environment.

When combined with a scalable video wall consisting of plasma displays, the IOS becomes an integral part of a mission observation facility. The IOS includes an entity station consisting of a stick, throttle, and visual display.

Distributed Training Networks

Our F-16 trainers are designed to support both local and wide area networking, enabling multiple simulators to participate in an exercise scenario. Depending on customer requirements, CAE also can provide a distributed briefing, mission observation and debriefing capability.



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