

# CAEMAVRC Trainer

(Mission Augmented Virtual Reality/Rear Crew)

## Overview

A key challenge to military organizations is acquiring thorough training in a realistic and safe environment which comprehensively covers the full range of mission scenarios. For rear crew training, this is further complicated by aircraft and pilot availability; external factors such as weather or time of day; and virtual training which offers a conceptual experience versus a contextual one. With over 70 years of experience in training and simulation, CAE is leveraging the latest digital immersion technologies in the CAE MAVRC Trainer, including augmented reality populated by high-fidelity visuals from CAE Medallion MR image generator (IG). The result is a full-fidelity rear crew training solution combining physical and virtual elements to deliver a realistic and immersive training capability for rear crew.

### CAEMAVRC Trainer – Introducing Mixed Reality to Deliver CAE’s Most Sophisticated Tactical Training Device

The CAE MAVRC Trainer integrates mixed reality with advanced hardware, software and an authentic physical environment to deliver a range of benefits:

- › Increases training throughput and quality
- › Reduces need for live aircraft and live flight
- › Provides comprehensive, progressive crew training
- › Enables full operational complexity and realism
- › Offers ability to practice dangerous maneuvers in safe, controlled environment
- › Multi-purpose and flexible configurations for specific training needs:
  - » Hoist
  - » Hatch
  - » Ramp
  - » Gunnery (deployment, loading, recoil, malfunction, wind loading)
- › Ability to train rear crew, whole crew and conduct Distributed Mission Operations (DMO) training
  - » Rear Crew Training:
    - Individual crew members
    - 2- 3 rear crew members
  - » Whole Crew Training:
    - Rear crew members train in unison with cockpit crew
  - » Distributed Mission Training:
    - Enables the whole crew to participate in networked mission scenarios

The CAE MAVRC Trainer provides multiple modes of operation to address different training needs and circumstances:

- › The student controls the aircraft from the fuselage with the Hover Trim Control (HTC), if equipped
- › Standalone Mode: The instructor “flies” the aircraft from the offboard Instructor Operating Station (IOS)
- › Coupled Mode where the fuselage and cockpit simulators operate together

### CAEMAVRC Trainer – Fully Functional and Reconfigurable Replicated Fuselage Satisfies the Full Range of Training Needs

The CAE MAVRC Trainer consists of an elevated, reconfigurable aircraft fuselage mounted on a steel tube-based frame. The trainer can be configured easily using the sliding, folding, and locking panels that are all built into the fuselage cabin. Transforming the gunnery position is accomplished from within the trainer and requires no ladders or special tools. Left, right and ramp gunnery positions can be reconfigured quickly and easily.

- › Functional doors (port, cargo and ramp) and hatch
- › See-through windows (flat and bubble)
- › Replicated stimulated and simulated panels
  - » Multi-Function Displays (MFDs), communications, refueling





## CAEMAVRC Trainer Provides the Environment and Visual Immersion to Achieve Realistic Mission Training

Mixed reality provides the exterior visual world to allow crew to train in a virtual, yet completely realistic mission environment. Terrain, vehicles, weather and high-fidelity scenarios all help ensure crewmembers are fully immersed in the training tasks.

The specially equipped Head Mounted Display (HMD) in the helmet provides the out-of-aircraft immersive virtual environment in perspective through every single opening, while allowing the wearer to see everything, and everyone, inside the aircraft.

- > 3 crewmembers can train simultaneously
- > Specially equipped helmet with HMD
  - » Provides out-of-aircraft immersive virtual environment generated by CAE's Medallion MR
  - » Actual interior visuals: personnel, equipment, communications systems, MFDs, refueling panels
- > Connectivity via crew safety harness

**CAEMAVRC Trainer – For Realistic, Immersive, Safe, and Flexible Rear Crew Training That Helps Ensure Mission Preparedness and Operational Readiness**

### Supporting Technologies:

- > Optical See-Through Mixed Reality with Depth Sensing
- > Camera-based Mixed Reality with Chroma-keying
  - » Enhanced instructor oversight: The instructor has the capability to see each individual crew member's viewpoint
- > Special gunnery dome feature (optional)
- > Motion (optional)
- > Sensor stations

### CAEMAVRC Trainer Enables These Mission Scenarios and More:

- > Cabin/equipment familiarization
- > Situational and spatial awareness
- > Crew Resource Management
- > Variable weather conditions
- > All terrain types
- > Rules of engagement
- > Search and Rescue
- > Refueling
- > Underslung load lifting
- > Reconnaissance
- > Tactical Over-Land/Over-Ship/Rig
- > Weapons handling
- > Ammunition restrictions
- > Firing solutions
- > Air Ambulance
- > Communications
- > Prioritization
- > Timing

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For more information contact us:

milsim@cae.com   [in](#) CAE Defense & Security   [@](#) @CAE\_Defence   cae.com/defense-security

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