

AVIATION TRAINING

CAE 700MXR



Immersive, high fidelity, mixed reality flight simulation training device

The CAE 700MXR series leverages decades of CAE's advancements in extended reality technologies to deliver a high fidelity, physics-based mixed reality flight simulator. The CAE 700MXR will provide cost-effective, realistic, and scalable flight training for the next generation of aviators.

Introducing the CAE 700MXR

Mixed Reality (MR) is a technology that combines physical reality and digital environments to enable interactions with the real-world amongst virtual objects. The CAE 700MXR emulates flight characteristics and operational programs for single pilot operations, initially launched for electric Vertical Take-off and landing (eVTOL) aircraft. The training device utilizes enhanced reality, high-precision head & hand tracking, and the accurate, tactile feel and physical experience of the aircraft's flight controls and flight instruments and displays. Along with the compact mini-motion platform and 360° Field of View visuals that deliver high-fidelity, physics-based simulation, the CAE 700MXR will revolutionize flight training for single-pilot operations in complex urban settings.

Key Features

- CAE's level D aircraft & immersive environment simulation
- Unlimited out-the-window field of view
- High scene density immersive environment with AI-enabled air and land traffic built on high-resolution satellite imagery
- Integrated with exact replica flight deck components or flight deck LRUs for a fully representative tactile experience
- Real-time, predictive head tracking
- Compact motion platform
- Virtualized computing
- Mixed reality head-mounted display
- Combined audio and 3D sound simulation
- Optimized off-board Instructor Operating System (IOS)
- Individualized training feedback and Improved training curriculum using CAE Rise™ data-driven insights

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CAE 700MXR

CAE 700MXR Benefits

The CAE 700MXR was carefully developed with the launch customer in mind, specifically tailored to eVTOL aircraft and optimized for single-piloted operations. As a result, the CAE 700MXR consists of modular simulator architecture that can be developed in parallel to the aircraft, providing flexibility while aircraft programs evolve as they work towards entry into service.

The device is compact with reduced facility requirements allowing for easy and scalable deployment across global operations. Trainees will be immersed in a synthetic environment or virtual world while they experience haptic feedback through a real or replicated flight deck, supporting the crucial development of muscle memory. The CAE 700MXR offers enhanced realism by providing a stereoscopic experience while eliminating all parallax errors due to head movement. The device also leverages artificial intelligence and machine learning capabilities to provide a highly-representative training environment, in terms of urban scene density, 3D content, ground and air traffic, including pedestrians. The use of Mixed Reality technology provides complete flexibility of the virtual world with the reliability of the real world.

The highly representative environment allows trainees to train for complex maneuvers in high-risk environments (city centers, extreme weather, emergency procedures) that would be difficult to practice in a real aircraft, de-risking pilot training programs and elevating trainee confidence. Lastly, the CAE 700MXR leverages advanced data analytics to capture live maneuver-based insights for statistical analysis through the CAE Rise™ platform to make training more objective, efficient, and effective.

The CAE 700MXR will provide ultra-realistic training simulation with enhancements in productivity, scalability, and cost-efficiencies while maintaining the highest training standard and levels of safety.

Next-generation synthetic environment

The CAE 700MXR will provide a higher-fidelity visual solution built upon the Prodigy IG image generator and Unreal Engine, offering enhanced features including highly realistic textures, lighting effects, and much more. The Unreal Engine is a state-of-the-art gaming engine that delivers high-fidelity graphics, physics-based simulation, and the ability to support a thousand-fold increase in the number of entities such as pedestrians, drones, and other air taxis with which a pilot may need to interact in a virtual environment. This is further enhanced by a new offering that will combine AI with satellite imagery to reproduce buildings of accurate height, at their exact location, with architecture that is representative of the training location within the virtual environment. This allows for highly representative low-altitude flight training in cities around the world, without the need for costly hand-modeling of buildings. By moving the out-the-window experience from a dome to an individual's head-mounted display, the CAE 700MXR combines a highly immersive synthetic environment with real-world flight-deck interaction.



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