CAE Medallion–6000MR

CAE's Medallion-6000MR image generator builds on the proven features and performance of CAE's long-standing Medallion-6000 family of image generator solutions tailored for the military market. CAE's Medallion-6000MR continues to leverage the latest commercial-off-the-shelf (COTS) graphics processors and includes enhanced features aimed at supporting a highly realistic and immersive synthetic environment for a variety of applications with industry-leading image quality.

The CAE Medallion-6000MR image generator provides the following training benefits:

→ Exceptional image quality and scene density, with detailed environments and realistic night scenes for enhanced fidelity;

→ Realistic 3D ocean, wakes and ocean-to-shore simulation with enhanced whitecap and water illumination effects for improved overall visual cueing;

→ Updated scene densities for runways, taxiways, airport contaminants, aprons and terminal buildings delivering unmatched airport realism;

→ Support for the Open Geospatial Consortium Common Database (OGC CDB) standard enabling more accurate terrain profile and enhanced local terrain features such as rivers and roads;

→ Ability to modify OGC CDB synthetic environments at run-time to change the terrain dynamically (CAE Dynamic Synthetic Environment);

→ Ideally suited for collective and distributed mission operations training (DMO);

→ High-end sensor simulation capabilities.

Key Features

CAE's Medallion-6000MR includes the rich feature set the Medallion family has pioneered for virtual air applications, including fast jet, tanker/ transport aircraft and rotary wing visual training, as well as features that make the CAE Medallion-6000MR ideal for creating realistic, immersive synthetic environments for maritime, land and public safety applications. Features include:

→ Animated 3D grass and 3D trees;

→ Particle-based recirculation and downwash effects;

→ Realistic run-time lighting and shadowing effects based on various light sources;

→ Craters, weapons effects, and localized damage on any three-dimensional (3D) content or vegetation at runtime;

→ Environment reflections on lakes and oceans;

→ Dynamic environment full of moving models, special effects and characters;

→ Support of OGC CDB standard for ease of content reuse (open specification);

→ Reflective model for rainy conditions and fog, including multiple 3D clouds for accurate simulation of weather and the resulting impact on training;

→ Sun, moon and stars ephemeris model, physics-based sky model;

→ Shader-based light points;

→ Smooth dynamic shadows correlated to sun/ moon positions (terrain, moving models, buildings, cloud layers, storm models, lamp posts, projected light lobes);

→ Particle-based weather simulation including rain, hail, and snow;

→ Accurate simulation of weather phenomena's (storm cells, lightning, blowing effects, contaminants, snow scene, wind layers);

→ Full suite of special effects, including tracers, missile trails, explosions, smoke, rotor downwash, and recirculation, conforming craters and bullet impact;

→ Lifeforms simulation with suite of animations for soldiers, marshallers, and landing signal enlisted (LSE);

→ Up to sea state 6 dynamic 3D ocean model with ship wakes, swell and wind lanes and a 2D ocean model for high level flight;

→ Comprehensive mission functions (height above terrain, collision detection, line of sight, laser ranging);

→ Correlated sensor suite for FLIR, NVG, EVS, EO, Day TV and LLTV computed using sensor textures with 16-bit radiance values and advanced video post-processing;

→ Highly scalable visual system entirely based on COTS workstation components;

→ Based on industry standards: Windows 10 Embedded, OpenGL, OpenFlight, OGC CDB, CIGI;

→ Fully backward compatible with CAE Medallion interfaces and databases;

→ Compatible with ultra-high resolution projectors (including 8K projectors);

→ Low latency (< 52 ms).

Common specifications

- Windows 10 IoT operating system (64 bits);
- COTS graphic card;
- Sustainable iteration rate: 60 Hz;
- Supports 120Hz operation with dual-input projectors
- Simulation polygonal capacity: 1M+ at 60 Hz;
- Light point capacity: 250,000 per channel at 60 Hz;
- Internally generated blend zones;
- 1024 addressable moving models;
- Up to 28 level-of-detail (LOD) geo-specific satellite or CAE Motif imagery texturing;

- Advanced texture compression and LOD paging techniques;
- 256-level alpha transparency;
- Fully projected light lobes;
- HUD overlay support;
- Outstanding performance, leveraging latest graphics processor (GPU) technologies;
- Advanced shader-based 3D engine;
- 16-bit radiance computation with advanced sensor post-processor (SPP);
- Embedded non-linear dome mapping (NLIM) for curved surface projection;

- Multiple-inputs projectors synchronization capability;
- OGC CDB content level selected on-the-fly (one run-time database);
- Assured correlation across OGC CDB systems when operating in network;
- Centralized database repository for ease of database maintenance and deployment (automatic updates to multiple simulators and sites;
- Low operating costs.

Capabilities of CAE Medallion-6000MR

Application types	- Full-mission simulator - Mission rehearsal - High-end out the window (OTW) - Stealth view display	- FTD/CPT - Role playing station - Low-end OTW - Sensor simulation - Maritime	- Land - Public Safety - Rear-crew trainer
Number of channels	1 to 64		
Full-scene anti-aliasing	CAE's proprietary AA algorithm combining temporal and multi-sampling tailored to high-end flight simulation		
Anisotropic filtering (max.)	16x AF (angle invariant)		
Resolution/Anisotropic filtering (typical application)	2560x1600 @ 60 Hz 8x AF		
Genlock & frame Lock	Y		