



EP®-80 IMAGE GENERATION SYSTEM

HIGH-PERFORMANCE AVIATION TRAINING

Realistic, adaptable and affordable

Today's immersive military and commercial aviation training requires high-definition synthetic visual simulations with highly representative flight and ground environments to achieve maximum training value.

These complex environments demand realistic, adaptable and affordable commercial off-the-shelf (COTS) PC image generation, delivering near eye-limited picture quality databases while protecting your significant investments in database development and ownership.

Our EP®-80 image generation system fully leverages the latest COTS PC and graphics technologies to give you scalable performance from desktop brief/debrief stations to full field-of-regard simulators.

The system employs breakthrough, second-generation EP2™ real-time software for full functionality within a high resolution, whole-earth environment.

Ideally suited for applications requiring high scene fidelity and complex graphic effects, the EP-80 is used in the industry's most complex simulation environments, such as the F-35 Lightning II.

The EP-80 is compatible across our entire line of image generators, so you can combine multiple systems at appropriate price points. You can also share common, real-time software, databases and host interfaces to support varying training requirements.

KEY FEATURES

- The most realistic scene fidelity, image quality and performance available using COTS PCs and graphics cards
- Integration with existing host systems through common host interfaces
- Continuity with other EP products/ common databases, and short conversion path for other databases
- Deterministic update rates (30-60 Hz) and robust scene load management
- Mission function engine option for high frequency and accuracy of mission function tests
- Highly realistic regional weather and environmental simulation using textured, layered and 3D clouds, ground fog, storm effects and atmospheric light scattering



CONFIGURATIONS

- **EP-80 Desktop** – Uses a single computer to perform non-deterministic, real-time computing and scene processing for less demanding applications
- **EP-80 Standard** – Uses a single PC for real-time, deterministic computing and a separate PC for each channel, with a commercial graphics card for scene processing
- **EP-80 Combiner** – Uses a single PC for real-time, deterministic computing and two PCs per channel for scene processing, which are combined in a Video Stream Manager (VSM) for increased channel performance

TERRAIN PROCESSING

- Continuous, multiple level-of-detail terrain created from source-elevation data in real time
- Models and 3D features that automatically conform to the terrain

DATABASE MANAGEMENT

- Elevation data, terrain texture, vector features and 3D models are created, edited and stored as independent source-data layers
- EP2 real-time software composes the scene in real time, eliminating lengthy compilation offline
- Rapid database updating with new source data and only edited files copied to the image-generation database directory

ATMOSPHERIC EFFECTS

- Real-world lighting with advanced, physics-based atmospheric light scattering and particle effects

- Regional weather, including storm fronts and weather patterns localized to areas of the database
- Pixel rate, wind-effected cloud shadows

TEXTURE

- Up to 32 gigabytes unified memory (8 gigabytes typical) with optional texture compression
- Continuous texture with automatic, multiple-resolution texture blending
- Two to 16 sample selectable anisotropic filtering

OCCULTING/ANTIALIASING

- Configurable from eight to 16 samples per pixel
- Full-screen antialiasing with selectable filter methods

LIGHTING

- Gouraud or Phong lighting model (Phong lighting typical)
- Pixel-rate landing lights, steerable searchlights, flares and headlights
- Pixel-rate area light maps to render multiple light illuminations over large areas

MISSION FUNCTIONS

- Collision detection, including swept-line segments against any object
- Height above terrain and height of terrain
- Line-of-sight ranging
- Laser range finding
- Intervisibility calculation
- NAVAIR public release, SPR-2016-186 Distribution Statement A, approved for public release, distribution is unlimited

HIGH-PRECISION SENSOR SIMULATION

- Sensor and radar domains that are fully correlated with the out-the-window environment
- Long and medium wave infrared, enhanced vision system, night vision goggle, electro-optical and low-light television simulation
- Contrast and target area tracking with image stabilization
- Sensor video format up to 1920 x 1080
- 16-bit resolution video output to optional device effects generator

DISPLAY FORMAT

- Non-interlaced raster
- Programmable output to 2560 pixels x 1600 lines (Wide Quad Extended Graphics Array)
- DisplayPort video output (typical)

INTERCHANNEL SYNCHRONIZATION

- Collins Aerospace's EPLock™ software, COTS add-on sync module or video stream manager genlock

HARDWARE

- Real-time computer: COTS dual hex-core CPUs
- Scene processor: COTS hex-core CPU (typical), COTS PCIe graphics card

Specifications subject to change without notice.



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