

# SimHDR-EO™

## Real-time sensor device simulation and sensor-in-the-loop stimulation



### High-fidelity. Physics-based. Superior real-time performance.

SimHDR-EO by Renaissance Sciences Corporation delivers real-time, high-dynamic range rendering, synthetic sensor simulation and sensor-in-the-loop stimulation for a wide range of electro-optical sensor systems. SimHDR-EO, a drop-in module consisting of a linkable software library with supporting sensor performance data, easily integrates with existing visualization applications and Image Generators (IGs). SimHDR-EO combines signature predictions anchored in the physical sciences with the expanding power of commercial graphics hardware technologies to deliver complex GPU-based optical sensor simulations in real-time.

**Compatibility** SimHDR-EO's non-invasive architecture processes each scene frame rendered by the IG into sensor frames entirely onboard the GPU and without becoming entangled in your application's scene generation. SimHDR-EO can be offered as a drop-in module for existing supported IGs or as an SDK for Microsoft Windows® and Linux®-based operating systems.

**Application** SimHDR-EO's flexible architecture accommodates a wide range of applications. Common use cases include full-fidelity sensor training systems, desktop computer-based training, classroom-based multimedia systems, ready-room mission briefing systems, in-cockpit sensor displays and multi-channel immersive visuals.

**Industry leading Night Vision Goggle (NVG) stimulation** SimHDR-EO distills RSC's scientific and engineering know-how accumulated over years of industry leading experience in IG and display systems integration for NVG stimulation applications. RSC's solutions have been deployed within numerous client applications ranging from classroom NVG training to 360-degree NVG stimulation mission trainer visuals.

**High dynamic range rendering** SimHDR-EO's illumination and parametric atmospheric effects are provided for all scene surfaces. When combined with SimHDR-EO's fully-featured sky, ephemeris, and cultural lighting rendering models, SimHDR-EO provides high dynamic range rendering in natural radiometric units for your entire scene. SimHDR-EO's multispectral environment also provides a key enabler of next-generation common virtual environments within cross-platform distributed visual and sensor simulation architectures.

**Six-color output modes** SimHDR-EO is delivered with the ability to render its output video to up to six separately-processed outputs across two video streams on the same graphics card. This capability was first developed to accommodate emerging four-color NVG projector technology but also offers compelling solutions to sensor fusion, multi-sensor output, and other systems integration challenges.

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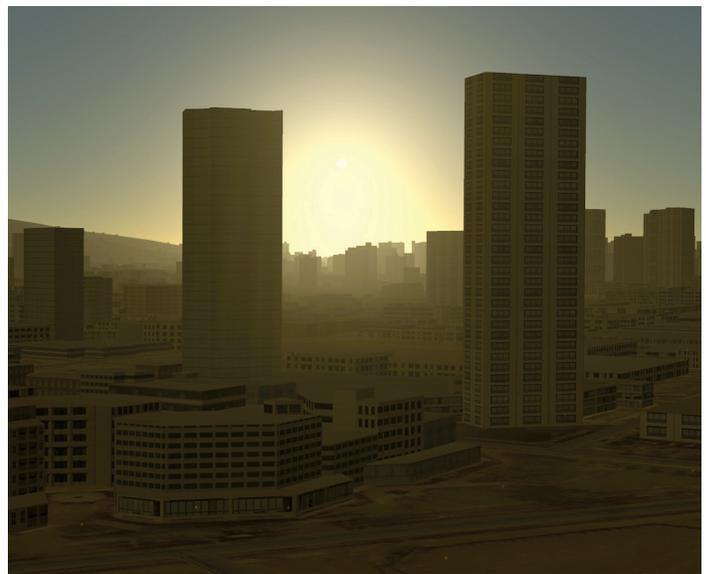
Cultural Lighting SimHDR-EO provides highly realistic nighttime cultural light rendering thru physics-based light maps and light points



NVG stimulation SimHDR-EO provides video output calibrated for NVG stimulation in three- and four-color output modes.



NVG simulation SimHDR-EO provides fully-simulated sensor video for a wide range of real-world image intensification devices.



Physics-based visible simulation SimHDR-EO provides physics-based Out-the-Window (OTW) output calibrated to accurately stimulate the human vision system (HVS) adding dramatic realism.

Renaissance Sciences Corporation is a privately-held, entrepreneurial technical services and products company committed to excellence, agility, and a customer-oriented culture. Our Modeling and Simulation Services unit also combines a broad range of scientific and engineering disciplines to deliver synthetic environments, virtual training, and mission rehearsal solutions.

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