# DIAMOND VISIONICS



# GenesisIG
## THE SOLUTION FOR RENDERING GIS DATASETS DIRECTLY AT RUN-TIME

GenesisIG is built on our GenesisRTX rendering engine which leverages GPU architectures and multi-core processors to provide high-fidelity real-time visualization from GIS source data.

**GenesisIG takes 3D visualization one step further.** With GenesisIG, 3D scene data elements are built and rendered as your raw source data is loaded from disk. No offline construction of a static database from the source data is required. Generation of the scene during runtime allows GenesisIG to execute concurrently and take full advantage of GPU and CPU parallelism.

- Avoid pre-computation on data; GenesisIG provides the unique ability to maximize the utility of the GPU cores to process the data at runtime saving pre-compilation time and cost.

- Using some simple rules, GenesisIG retrieves relevant data for your area of interest anywhere on the globe and constructs a scene during runtime complete with a continuous level of detail.

- Generating the scene during run-time tremendously reduces computational workload that would otherwise be required to load an entire database as well as allowing for quick and simple updates of data or adding additional data.

- Generating the scene during run-time allows for the abstraction of using the data for different abilities that could not be done otherwise with precompiled systems. (e.g. the addition of obstruction light points on tall buildings or adding moving traffic to roadways).



**Diamond Visionics®**
## GENESIS RTX
### Virtual Worlds in Real Time
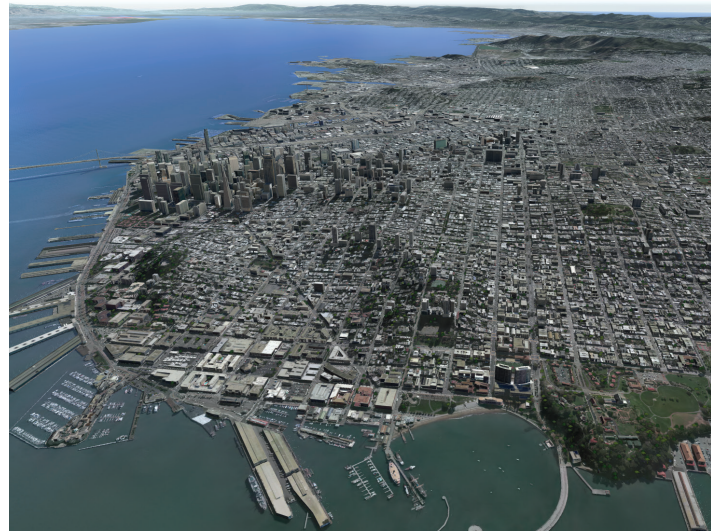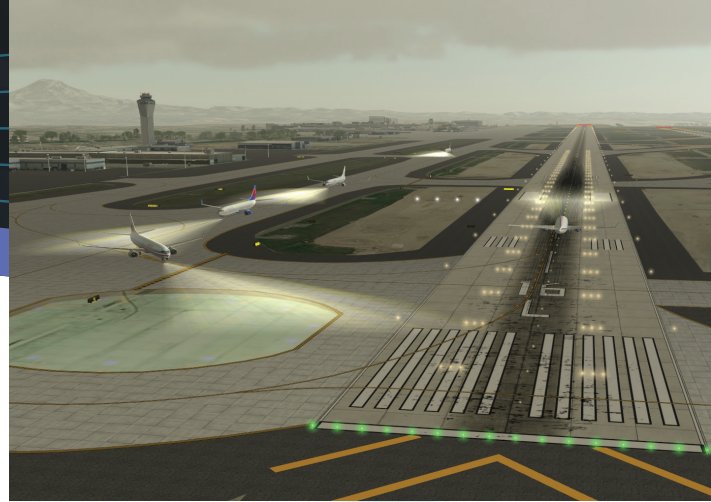
- Allows for true scalability of your hardware, a few simple rule changes or small configuration file modifications allow for increased scene density with improved computer hardware.

- Hardware and display system capabilities – Seamless, multi-channel (projector) support. Single GPU or multi-GPU IG computer capable; multiple displays from single IG; multiple views within single display.



**Diamond Visionics®**
**GENESIS RTX IG**
Image Generation

## GenesisIG (Image Generator)

Whole Earth, CIGI3.3 compliant, 60Hz, Day/Night/Sensor multiple channel visualization software for flight, maritime, and ground simulation with run-time full-scene shadows. Available for 64-bit Windows and Linux.



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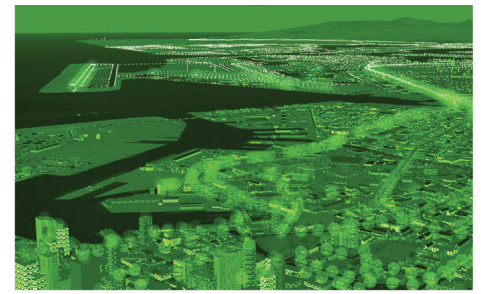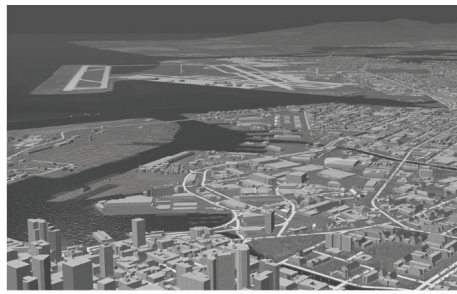**GENESIS RTX SN**
Physics Based Sensors

## GenesisSN (Sensors)

Integrates JRM Technologies' SigSim and SenSim with GenesisIG to provide advanced signature synthesis and atmospheric propagation simulation for radiometrically correct sensors simulations and stimulations. Supports EO, NVG, and FLIR.



**Diamond Visionics®**
**GENESIS RTX SDK**
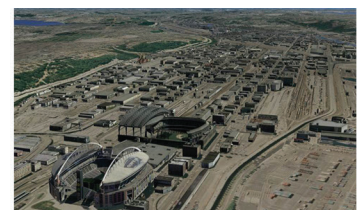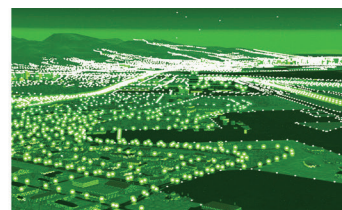Embedded Visual Power

## GenesisSDK (Extend)

APIs and source code examples to integrate GenesisRTX inside your custom visualization application and make custom extensions and assemblers. Create applications for image generation, synthetic visualization, Semi-Automated Forces (SAF), and mission planning with complex dynamic 3D scenes.

## GenesisRTX Features

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|---|---|---|
| **Formats Supported** | • Elevation: DTED, GeoTiff, GridFloat, Jpeg2K<br>• Imagery: ECW, JPEG2K, TIF<br>• Vectors: ESRI Shape | • Models: OpenFlight<br>• Misc. GDAL supported formats |
| **60Hz Dynamic Construction** | • Elevation: Gridding and real-time modification<br>• Imagery: Filter, select, clip, feather, contrast<br>• Vectors: Filter, construct, attribution translation<br>• Models: Scaling, construction, and sprite generation<br>• Lights: Size, attributes, light pools<br>• Selection of highest data resolution for every location where overlapping source files exist | • Synthesizing of multispectral imagery into geo-generic high-res imagery and model representation<br>• Run-time publishing for many features including light points and pools, models, roads, sprites (auto billboard/3D transition) for trees and other similar features, power-lines, land/water masks, grass, airfields, traffic strings, static and dynamic 3D models, and generic buildings |
| **Visualization Features** | • Level-D compliant IG<br>• CIGI 3.x and DIS support<br>• CIGI Symbology<br>• Whole Earth Viewer (WGS-84 Geoid based)<br>• Time of day (stars, moon, sun)<br>• Physics weather (2D/3D clouds, fog, visibility)<br>• Smog/sandstorm<br>• Uniform and regional weather<br>• Maritime simulation (sea states, wakes and reflections)<br>• IG controlled vehicle paths<br>• Entity tracking<br>• Uniform and regional weather<br>• Time of day (stars, moon, sun)<br>• Airfield, optical landing system, projected, cultural, and vehicle lights<br>• Full scene shadows | • 3D oceans and 3D lakes with sky reflections<br>• Line-of-sight, collision, height of / above terrain<br>• Configurable viewpoint<br>• AVDAFIF, shapefile parametric airports with host control<br>• OpenFlight moving models 6-DOF position and rate control; switches, articulations and animations<br>• OpenFlight airport models with LOD and lights<br>• Feature transition independent of the terrain<br>• Multiple sub-windows per channel<br>• Offset zoom for all windows<br>• Stereo displays<br>• Test patterns<br>• 3D particles: Smoke, explosions, fires, wakes, rotor wash/dust, contrails, chaff, flares<br>• Pitched and flat roofs on extruded buildings |
| **3rd Party Plug-Ins** | JRM Physics based E/O, IR, and NVG module, Di-Guy™, Scalable Display, RPA, Calytrix LVC Game™ DIS/ HLA, DiSTI GLStudio™, RSC SimHDR/SimHDR-EO™. Interfaces to VT Mak VRForces™ and Ternion FLAMES™. Users can also develop their own Overlay, Image Processing, and Shared memory plugins. | |
| **Operating Systems** | • Windows 64-Bit | • Linux 64-Bit |
| **Export** | The Commodity Jurisdiction determination for Diamond Visionics Genesis family of software products, including Genesis IG, RTX, SDK, SN, RDR are Non-ITAR and classified as EAR99. | |
| **License** | • Per instance | • License includes GenesisIG, GenesisRTX, and non-physics SN |






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Physics Based Sensors

**GENESIS** RTX SDK
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