Asgard

Advanced Spectral Scene Generator

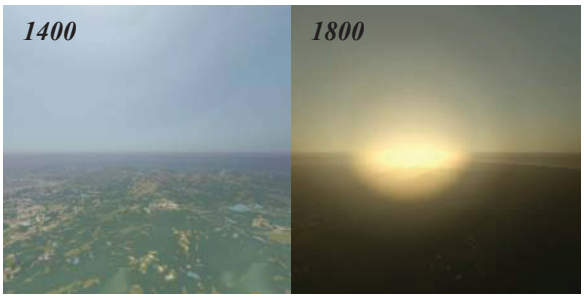
JRM Technologies

Real Physics • Real Sensors • Real-Time

Asgard™ is an advanced, physics-based spectral scene generation software package. Its highly realistic image output is ideal for advanced training system applications and tactical sensor studies.

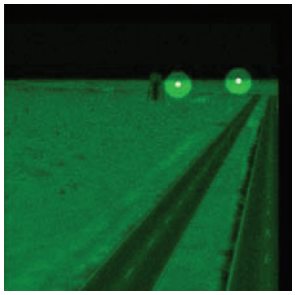
Full Spectrum Simulation

Asgard provides high-fidelity simulation of arbitrary imaging sensors in the UV through far IR (0.20 – 25.0um) spectrum with highly-optimized, physics-based signature synthesis and Modtran 4.0-based atmospheric propagation modeling.



Asgard Visible Atmospheric Scattering

Asgard supports passband-integrated, multispectral, and full-spectral output, for arbitrary passbands, including ultraviolet (UV), color visible, shortwave (NVG, SWIR) and infrared (IR).



Asgard also supports an increasing variety of radar mode outputs, including SAR, ISAR, Wide-Area Scan, MTI and Ladar/ Millimeter-wave.

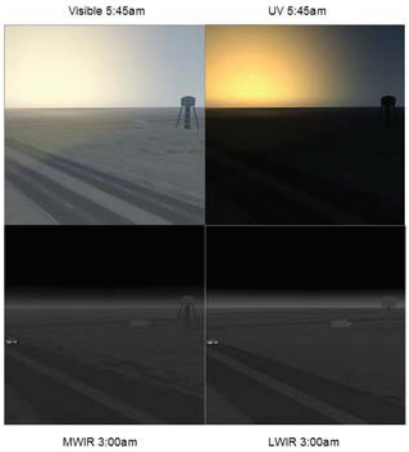
Signature Synthesis

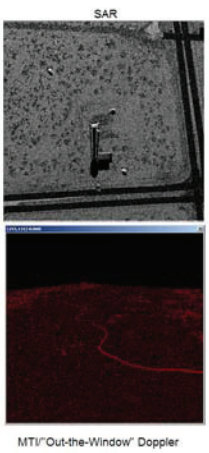
Asgard leverages JRM's signature synthesis and atmospheric propagation run-time library, SigimRT™, along with material encoded textures produced by JRM's Genesis™, to provide accurate, physics-based signatures.

At-Aperture Radiance Scenes

Using JRM's SigSimRT signature synthesis and atmospherics propagation library, Asgard computes the at-aperture sensor-pass band radiances of complex scenes under *dynamic environmental and object conditions*:
Such as

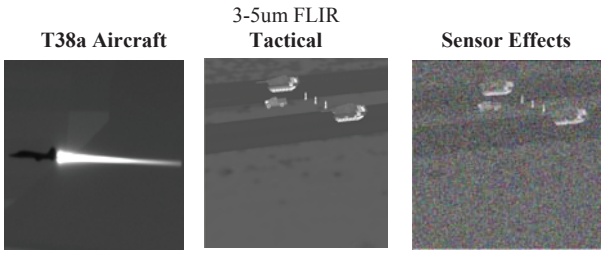
- Time of day
- Time of year
- Geolocation
- Weather
- Trajectory
- Speed
- and more





Sensor Effects

Using JRM's SenSimRT™ engineering-level sensor modeling library, **Asgard** provides component-level simulation of optics, detector arrays, signal processing and displays for realistic appearance.



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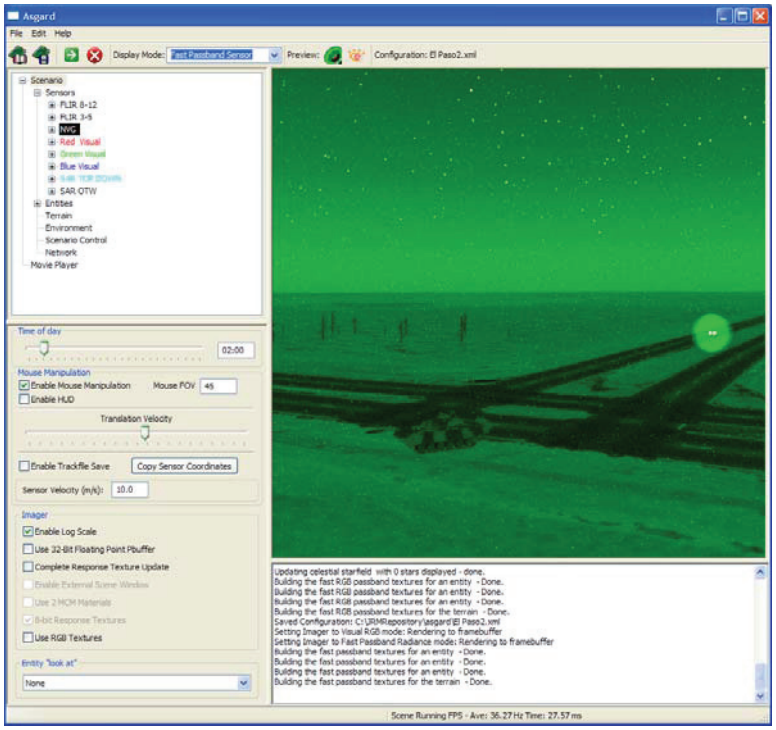
GUI Based Interaction

Asgard allows the user to easily create and simulate a dynamic tactical sensor scenario. With its easy-to-use GUI, one can load a 3D terrain database, completely specify any number of arbitrary sensors, atmospheric and weather conditions, place 3D vehicle models in the scene, and create track files to establish entity motion.

Mouse and joystick controls allow you to fly or drive your sensor as attached to a model throughout the database and the software allows you to capture still images or full movies at the scenario frame rate.



Features

- Material and atmospheric science based physical property assignments of the scene element: 3D objects, vehicles, terrain and atmosphere
- Fast transient thermal models for accurate surface temperatures reactive to changes in atmosphere/ weather and dynamic states
- Physics-based, spectral signature calculations for UV, visible, NIR, SWIR, MWIR, LWIR and FIR (.20 – 25 um)
- Various Fidelity vs. Performance Modes controllable by user in the GUI
- Accurate, very fast Modtran 4.0 atmospherics for realistic scattering, transmittance and path radiance
- Supports standard open database formats such as OpenFlight and Terrapage
- Extensible development environment through flexible SDK

Scalable Fidelity

Various modes of operation allow the user to trade off phenomenological accuracy for frame-rate performance, ranging from highest-fidelity, full spectral near real-time to medium-fidelity, fast pass band real-time.

All modes use 32-bit floating point GPU processing for Signatures and Atmospherics with Frame rate performance ranging from about 1 Hz for full spectral rendering into a 32-bit float frame buffer to real-time 60-200 Hz for fast passband rendering to a standard 8-24 bit integer frame buffer.

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