X-IG™ Image Generator System

URS image generator systems are the ideal choice for the visualization of simulation training systems. For over twelve years, URS has been providing unparalelled rendering performance through advanced software algorithms and optimizations.

The X-IG™ image generator is a Commercial Off-the-Shelf (COTS) product for PC-based visual simulations. X-IG™ is specifically designed around industry standard OpenGL™, a high performance graphics Application Programming Interface (API), and OpenFlight™, the 3D standard format for the visual simulation industry.

X-IG™ is designed to render real-time Out-the-Window (OTW) and sensor scenes for training and simulation, creating real-world high resolution photorealistic visual and sensor scenes. X-IG™ includes complete physics-based modeling for atmospheric, NVG, DTV, and IR simulations. X-IG™ also includes special effects which complement the image generator enhancing scenes.

Currently in use with various military, civilian, and commercial customers, X-IG™ provides high fidelity visualization for flight simulators and a variety of other training systems. Advanced data compression, optimization, and paging algorithms allow X-IG™ to render high density, geo-specific databases of unlimited coverage.
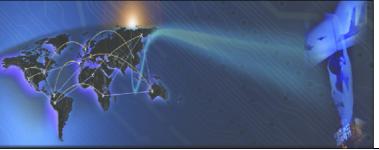
Bringing Reality to the Visual World...

Real-Time Rendering Engine

- Renderings of 50,000 fully-textured, shaded and anti-aliased polygons per channel, peak performance of over 100,000 polygons at 60 Hz
- Renderings of 30,000 light points in day/night/dusk at 60 Hz
- Synchronized multi-channel capability using hardware Genlock solutions
- Auto-alignment and channel edge blending for continuous multi-window applications without performance penalty
- Database paging and texture compression for uninterrupted training through high resolution geo-specific databases
- Full scene anti-aliasing for superior artifact control
- Anistropic texture filtering increasing texture resolution
- Shader-based light point simulation increasing realism and preventing overlapping lights from bunching
- Multiple light sources (ambient light, spotlights, steerable search lights. landing lights, etc.)
- Dynamic scene management
- FOV based dynamic LOD control
- Real-time texture animation
- Unlimited levels of occulting
- Integrated Boston Dynamics' DI-Guy real-time human simulation

Special Effects

- 30 highly-realistic tactical and cultural effects
- Emissive and reflective surfaces
- Multi-layer order-independent transparency
- Dynamic shadow rendering of scene entities
- Effect, color, and size characteristics correlated to associated database material
- GUI-based special effects (XFX) composer

SAF

- Multiple SAF format
- Fully correlated SAF

Standard Interfaces

- Distributed Interactive Simulation (DIS)
- High-Level Architecture (HLA)
- Common Image Generator Interface (CIGI)

Sensor Modeling

- Realistic sensor simulation based on LOWTRAN thermal environment model
- ROC-V modeling
- Controllable IR hotspots
- Tunable device specific IR effects: noise, brightness, gain, AC coupling, polarity, auto/manual gain, and level focus
- NVG simulation night imagery viewable with the unaided eye
- Tunable NVG attributes
- LLTV camera model

Atmospheric and Weather Effects

- Comprehensive weather and atmospheric effects
- Multiple lightning and thunderstorm models
- Directional and dynamic snow/rain models
- Multiple clouds, fog, and haze layer models
- Continuous and static time of day
- Ephemeris models

Mission Functions

- Tactical terrain server processes up to 80,000 concurrent requests per second
- Surface material code feedback to host for ice, snow, rain, etc.
- 50,000 height of terrain calculations per second
- 5,500 collision detection calculations per second
- 10,000 laser range calculations per second
- Contrast based Image Auto-Tracker (IAT)

Application Programming Interface

- API portable source available
- After Action Review (AAR) record/replay capability
- 3D sound

Databases

- Extensive libraries of world-wide, geo-specific, high resolution databases
- Rapid placement of database features using the Environmental Modeling Editor (EME™) for fast turnaround and reduced cost
- Stenciling of air fields
- Real-time tessellation