

The logo for URS FEDERAL, featuring the letters 'URS' in a large, bold, white sans-serif font above the word 'FEDERAL' in a smaller, white sans-serif font, all set against a blue background.The word 'FEDERAL' in a white sans-serif font, positioned below the 'URS' logo on a blue background.

X-IG™ Image Generator System

URS image generator systems are the ideal choice for the visualization of simulation training systems. Since 1997, URS has been providing unparalleled rendering performance through advanced software algorithms and optimizations.

URS' 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 both real-time out-the-window and sensor scenes for training and simulation, creating real-world high resolution photorealistic gaming environments. X-IG™ includes complete physics-based modeling for atmospheric, NVG, DTV, and IR simulations. X-IG™ additionally includes special effects which add richness and realism to 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.

Real-Time Rendering Engine

- Renderings of 400,000 fully-textured, shaded and anti-aliased polygons per channel, peak performance of over 1,500,000 polygons at 60 Hz
- Renderings of 100,000 light points in day/night/dusk
- Synchronized multi-channel capability
- Auto-alignment and channel edge blending
- Database paging and texture compression
- Full scene anti-aliasing for superior artifact control
- Anisotropic texture filtering increasing texture resolution
- Shader-based light point simulation increasing realism
- Pixel level procedural and texture based light sources
- Multiple light sources (ambient light, 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 simulation

Special Effects

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

Semi-Automated Forces (SAF)

- Multiple SAF Support
- Fully correlated SAF

Standard Interfaces

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

Sensor Modeling

- Realistic sensor simulation
- IR - TV - EO payload sensor views
- Sensor Fusion IR & TV - IR & EO
- Electronic/digital zooms and focus
- ROC-V modeling with controllable IR hotspots
- Tunable device specific effects; noise, focus, brightness, AC coupling, polarity, auto/manual gain and level
- Contrast based Image Auto-Tracker (IAT)
- NVG simulation night imagery

Atmospheric & Weather Effects

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

Mission Functions

- Tactical terrain server processes up to 160,000 concurrent requests per second
- Surface material code feedback to host for ice, rain, etc.
- 100,000 height of terrain calculations per second
- 11,000 collision detection calculations per second
- 20,000 laser range calculations per second

Application Programming Interface

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

Databases

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



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