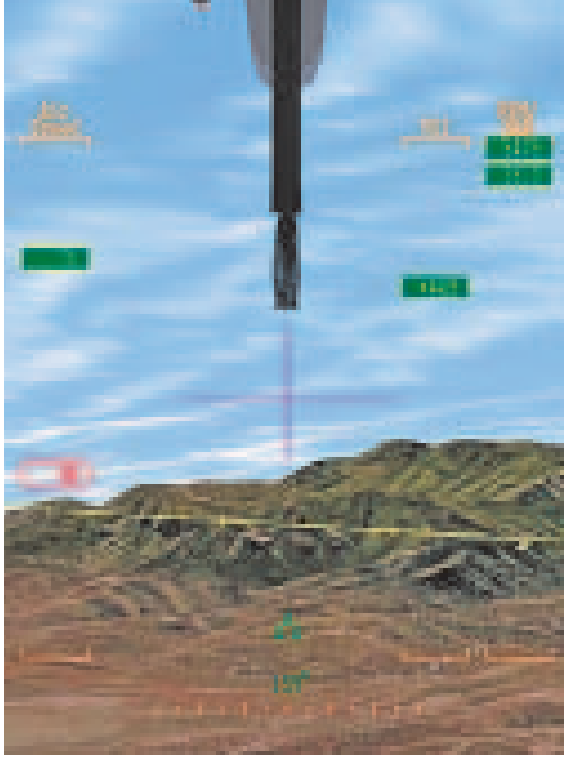
URS

FEDERAL



X-TUAS™ Tactical Unmanned Aerial System Trainer

BRINGING REALITY TO THE VIRTUAL WORLD...

Tactical Unmanned Aerial System Trainer, X-TUAS™, is the latest generation technology for training both payload and air vehicle operators. X-TUAS™ is based on URS' proven X-IG™ image generator software for real-time rendering of the UAS sensor view. It includes controls, displays, and a 2D tactical map for air vehicle operations. The X-TUAS™ system accurately reproduces the GCS hardware within a smaller footprint.

X-TUAS™ has been designed to support various types of training including initial, sustainment, and tactical explorations. Additionally X-TUAS™ has been designed to operate in both virtual and constructive training environments.

Air Vehicle Operation Features

- Automatic Flight Control System (AFCS)
- Flight symbology
- 2D tactical map display imported from up to 250 different file formats
- Route planning
- Route database
- AV checklist operations
- Air space situational awareness
- High fidelity fixed-wing and rotary-wing air vehicle modeling

Payload Operation Features

- UAS vehicle specific HUD symbology
- IR - TV - EO payload sensor views - pan and zoom
- Multiple electronic/digital zoom and focus
- Geo-stabilized point and target tracker
- Sensor fusion IR & TV - IR & EO
- Laser ranging and designation
- Realistic weapon and target effects
- Contrast based Image Auto-Tracker (IAT)
- Multiple integrated SAF for realistic threat environment

Instructor Operating Station (IOS)

- Network control of up to eight independent X-TUAS™ stations
- Mission rehearsal
- Scenario and lesson plan selection
- Atmospheric effects control
- Multiple cloud, fog, and haze layer models
- Continuous time of day based on geographic location
- Activation/deactivation of emergency procedures either manually or through pre-selected criteria

- Automated monitoring and logging of trainee action under emergency procedures
- Easy export of logged data into multiple formats
- After Action Review (AAR) record/replay capability

Standard Interfaces

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

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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