

4.6 Virtual Worlds and Homeland Security



October 13–15, 2010
Hampton, Virginia

Virtual Worlds and Homeland Security

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SAIC

October 15, 2010



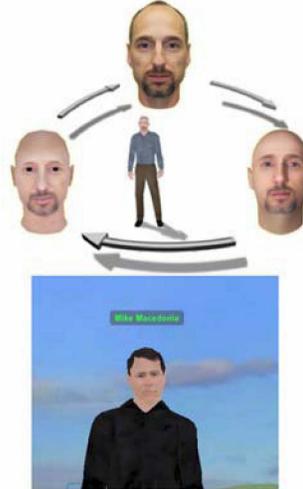
Agenda

- Overview
- Requirements
- Applications



Avatars

- Avatars mimic natural human movement
 - Controlled via simple keyboard or controller input
 - Avatars use realistic animations and advanced blending techniques
 - Emotion and expression framework combines user input and scripted behavior to mimic culturally specific movement patterns
 - Integrated physiology model
 - FaceGen integration provides photo-specific avatars



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Physics

- Programmable physics engine adapts to network latency
 - The physics engine can be programmed to simulate real-world dynamics
 - Simulation is accurate, validated on the server



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Networking

- Supports distributed operations
 - Users login to the virtual environment from remote locations across the globe and participate just as they would if they were co-located
- Networking engine minimizes bandwidth requirements
 - Efficient communication protocol minimizes necessary bandwidth, allowing simulation to run over LANs, WANs, and the Internet (such as long-haul networks)



LANs = large area networks WANs = wide area networks

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In-World Communication

- Multiple forms of communication between users
 - Spatially accurate voice-over-IP (VoIP)
 - Highly integrated voice communications with lip sync, automated gesticulations and speaker attention
 - Instant messaging (broadcast or person to person)
 - Built-in radio communication
 - Manual hand signals and gestures
 - Culturally specific library integration
 - Telephony for external access



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Collaboration Features

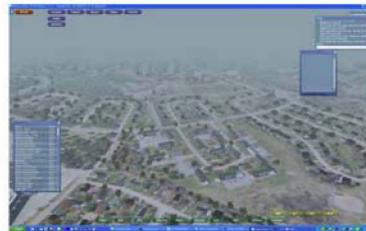
- Supports in-world presentation screens that support a variety of rich media
 - PowerPoint®
 - Streaming video
 - Live streaming video
 - Application sharing
- Multiple screens can be placed throughout the world
- Prompter, zoom support
- Laser pointers
- Presence indicators



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Geospecific Terrain

- Supports large-area, geospecific terrain
 - CDT SE CORE databases
 - WGS-84 Datum
 - OpenFlight interoperability
 - Double precision processing

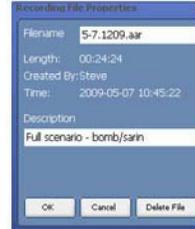


CDT SE CORE = Common Driver Trainer Synthetic Environment Core

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Session Replay

- Built-in distributed replay
 - Collects all voice, keyboard/mouse and controller inputs across the system
 - Plays results back through system, allowing free-cam
 - Full data mart for external analysis
 - VCR playback features
 - Distributed camera control



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Non-Player Characters

- General, open API for integrating external artificial intelligence
 - Ability for external application to instantiate and control entities
 - API provides information on in-world activity to external application
 - Support for low-level-of-detail avatars for crowd scenes
 - Can also be used to support real-time telemetry



API = application programming interface

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Special Effects

- Supports a variety of special effects to add realism to the scene
 - Particle-based effects for natural phenomenon
 - Hold tools to build items with which avatars can interact
 - Time of day and weather support
 - Full suite of weapons, including small arms and rocket-propelled grenades (RPGs)



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Enterprise IT

- Working to support deployment challenges
 - Full support for behind the firewall operation
 - Port multiplexing to support single port communication through firewalls
 - Lightweight Directory Access Protocol (LDAP) integration
 - Integration with eAuthentication to support Level 2 authentication
 - Secure Socket Layer (SSL) encryption available between server and client

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Group Meetings



- Branded rooms and accessories
- Identity
 - Personalized avatars
 - Profiles
- Media sharing
 - PowerPoint®
 - Video
 - Desktop applications



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Events



- 3D models
- Event roles
 - Organizer
 - Moderator
 - Presenter
- Optimized attendee experience



Team Project Management



- Persistent room
- Screen placement optimized for team use
- Team documents



Training



- Realistic and hypothetical scenarios
 - Scenes
 - Simulations
 - Role players
 - Non-player characters (NPCs)
- Scenario and Scene Editor
- CBT or SCORM® integration
 - Instructor-led
 - Self-paced
- Record and replay
- Data mart



CBT = computer-based training
SCORM is a registered trademark of the Department of Defense in the U.S. and/or other countries.

Operational Solutions



- Virtual emergency operation centers
- Common operating picture
- Context-specific operation centers
- Connection to real world - GPS, RFID and other sensors
- Embedded rehearsal environments



GPS = Geographic Information System
RFID = radio frequency identification