URBAN OPERATIONS TRAINING

CUBIC

OVERVIEW

Cubic offers a range of next-generation training instrumentation for urban operations to help prepare troops for combat in urban environments. The systems for live training and analysis incorporate sophisticated automated and semi-automated processes that allow training specialists to focus more on training and less on technology.

Instrumentation System Architecture

The instrumentation system is composed of multiple subsystems that address the full spectrum of tactical operations in urban settings while greatly simplifying the control and analysis of training exercises. The entire architecture is scalable and modular and may be implemented in phases with logical upgrades or expansions at later dates.

Exercise Control Subsystem

The Exercise Control (EXCON) subsystem is responsible for overall control of the multiple subsystems within the instrumentation architecture. The data collected by the system is seamlessly displayed to the end user. This allows for real-time control over all aspects of the entire training system. This subsystem also provides the global interface to external simulations (Constructive – JCATS) and systems (Virtual – CCTT/ Helo) via DIS and HLA interface protocols and standard commercial communications mediums.

Real-time Tracking of all Soldiers, Objects and Weapons Effects

Full Exercise and Facility Control with Audio & Weapons Effects

Hi-Res Video plus 2D/3D Presentations for After Action Reviews

Indoor/Outdoor Position Location

The Indoor/Outdoor Position Location (IOPL) subsystem provides seamless tracking of individual players throughout the entire training environment. It employs GPS for outdoor tracking along with sophisticated IR or UWB based tracking, which supports the deployment of indirect weapons against forces indoors or precision events by players while indoors. Tracking in the shadow of buildings is supported by means of a smooth, fully automated hand-off process between the GPS and IR or UWB based indoor system to ensure no player position is lost. All position data is time-tagged and correlated with all training events and video sequences to significantly improve situation awareness and comprehension during After Action Reviews (AAR). With UWB, updates are 40 times faster than GPS and the analyst has access to fluid oversight of battlefield activities with 6 inch 3D accuracy.

Video Monitoring & Control Subsystem

The Video Monitoring Subsystem (VMCS) enables simultaneous real-time capture and playback of multiple video sources. The collected video can be coordinated with any other data source to easily create relevant AAR briefings. Self sufficient distributed video servers intelligently manage storage and video traffic, keeping maintenance cost low and system usability high. This subsystem also includes all the necessary components for a complete video solution, including cameras, pan/tilt/zoom mechanisms, cabling and user-control software.

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Data Collection, Analysis and After Action Review

The Data Collection, Analysis and After Action Review (DCA-AAR) subsystem receives event data and information for storage during the exercise. This subsystem includes the RF data links necessary to receive event data from player-worn instrumentation components as well as a method of transmitting area weapons effects and system commands to players. The DCA portion also provides the tools for the development and execution of the training scenarios. These scenario events can be triggered on the basis of time, sensor activities and database collection events. These events are also stored in the exercise database and can be used to automatically trigger the creation of AAR materials.

Microsoft PowerPoint is the backbone for automated AAR production. Video segments are retrieved from the video server for direct inclusion in the presentation. Reports on event activities are captured from the relational database through commercial off-the-shelf, or COTS, tools. All AAR materials are stored in a standard file store normally located in the AAR machine. Optionally, AAR storage can be allocated to additional high-capacity devices elsewhere in the system. AAR presentations are displayed via high-definition monitor or large screen display.

Audio Simulation & Monitoring

The Audio Simulation & Monitoring (ASM) subsystem provides for the insertion of realistic audio effects into the training environment. This could include artillery barrage, helo over flight, crowd noises, lightning, wind, local explosions, house noises, etc. This dramatically increases the realism and stress factors on trainees, fully taxing their senses to comprehend the tactical picture. The ASM also includes the audio monitoring and time tagging of tactical voice nets and open air audio within the training complex to support AAR debriefings.

Battlefield Effects & Targetry

The Battlefield Effects & Targetry (BET) subsystem provides the pyro and non-pyrotechnic effects associated with urban combat and weapons employment. Non-pyrotechnic effects consist of compressed air modules that provide explosive sounds and non-toxic dust into the environment as realistic simulations of mines, grenades, plastic explosives and other weapons effects. The targetry consists of advanced manne-quin, live-fire, thermal and video-projected targets to provide realistic and responsive adversaries, including shoot-back capabilities within the training environment.

Tactical Engagement & Area Weapons Simulation

The Tactical Engagement & Area Weapons Simulation (TE-AWS) subsystem consists of MILES-based laser direct fire engagement simulation capabilities, coupled with indirect weapons effects simulations, to repli-cate unique weapons engagements as well as area weapons employment in the urban setting. Direct engagements against structures as well as players are supported. NBC effects are also supported, including the ability to propagate contamination.

Facility Control & Management

The Facility Control & Management (FCM) subsystem provides the control and monitoring of all discrete devices and sensors throughout the training complex. This includes door locks, light switches, ventilation, motion sensors, safety interrupts (panic buttons), environmental controls, smell generators, fog and smoke dispensers, etc. The control over all devices can be integrated into an exercise to add unprecedented levels of reality during training.

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