3D Visualization System and Behavior Synthesis

BASE-IT system includes real time 3D visualization - a playback - of the data recorded in an exercise. The visualization can be annotated to indicate possible problems in Marine unit behavior. A user can request the playback to be converted at any time to a free play (synthetic behavior) mode to enable exploration of alternative courses of action. The behavior synthesis of BASE-IT has been further extended into a small unit leader training prototype tool called the Urban Warfare Planning Tool (UWPT).

Visualization infrastructure: Delta3D game engine.

Annotated 3D Visualization
The image at upper right shows BASE-IT 3D visualization together with several types of behavioral annotation. At top, a time line and a row of special icons show the type and time of behavioral problems. A red colored ray traced from the gun of a Marine at the left of the image indicates that his weapon was pointed at a friend (off screen). Colored disks on the ground show where some recent issues with dispersion and passing too close to a door have occurred.

Behavior Synthesis and UWPT
BASE-IT behavior synthesis uses new algorithmic technology intended to raise the bar for realistic Marine fire team modeling. The image at lower right shows the visualization as a heat map of one fire team’s subjective belief in where threats are likely to be located. Detailed fire team movement is generated by a novel opportunistic hierarchical optimization approach.

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