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Visualizing Areas of Engagement and Disengagement to Test and Evaluate Vulnerabilities

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ITEA M&S Conference session most relevant to this abstract:

Homeland Security & Homeland Defense (HLS/HLD) - New tools

High Performance Computing in Test and Experimentation - High-fidelity synthetic environments

Abstract

One of the most important tasks for improved homeland security and defense is the assessment of vulnerabilities. These vulnerabilities come in many forms and very tremendously in complexity. One way to improve the efficiency of these assessments is to provide a high-resolution visualization system that would be cost-effective, intuitive and easy to use. Such an application could be used by analysts to improve their testing and evaluation of military occupied or civilian occupied locations with regards to these vulnerability assessments.

High-Level Purpose:

To provide cost-effective, high-fidelity 3-D synthetic environments of military occupied or civilian occupied locations for intuitive assessments of vulnerabilities.

Objectives:

To provide a cost-effective means to test and evaluate the following vulnerabilities using high-fidelity synthetic environments:

- Aircraft Vulnerability
- Asymmetric Threats
- Battle Group Vulnerability (BGV)
- Blast Zones (Areas of lethality)
- Civilian Occupied Locations
- Coastal Ranges (SONAR)
- History Patterns of the Placement of Improvised Explosive Devices (IEDs)
- (Line-of-Sight) LOS Ranges (impact of small arms and light weapons)
- Military Occupied Locations
- Radar Ranges

Features:

- Cost-effective
- Radar transmissions can be displayed
- Realistic high-resolution 3-D virtual worlds of selected areas of assessment
- Resolutions can be adjusted to meet hardware specifications
- Stand-alone executable application with no distribution limitations or costs.
- Vulnerabilities can be assessed along the full range of azimuth and elevation and at any distance

These objectives will support wide ranging applications in:

- Battle Group Vulnerability (BGV)
- Determining areas of engagement and disengagement
- HLS/HLD training
- HLS/HLD vulnerability assessments
- Mission Planning

Three Sample Screenshots Provided Below:

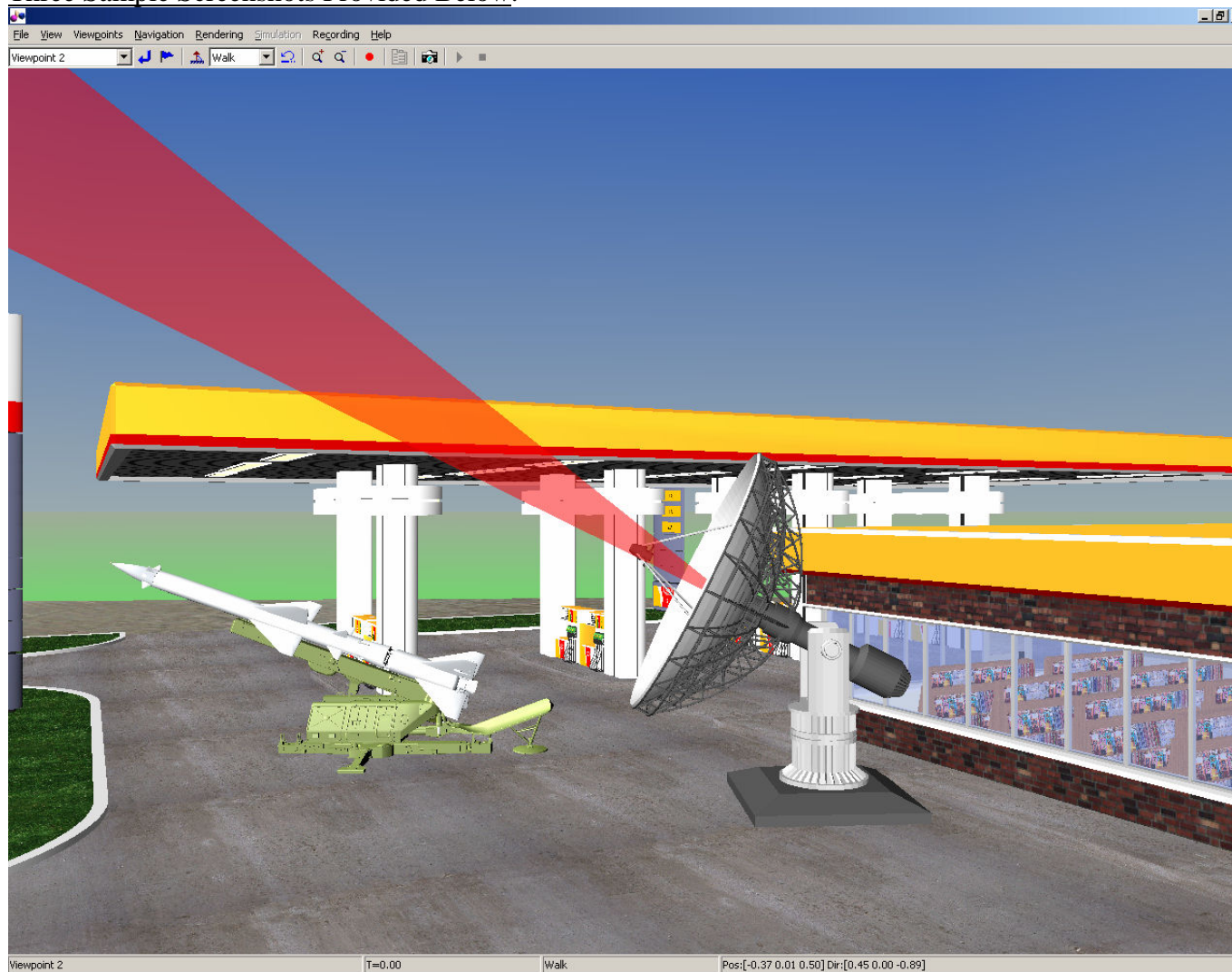


Figure 1: A fictitious area of disengagement to simulate an asymmetric threat of a civilian occupied location

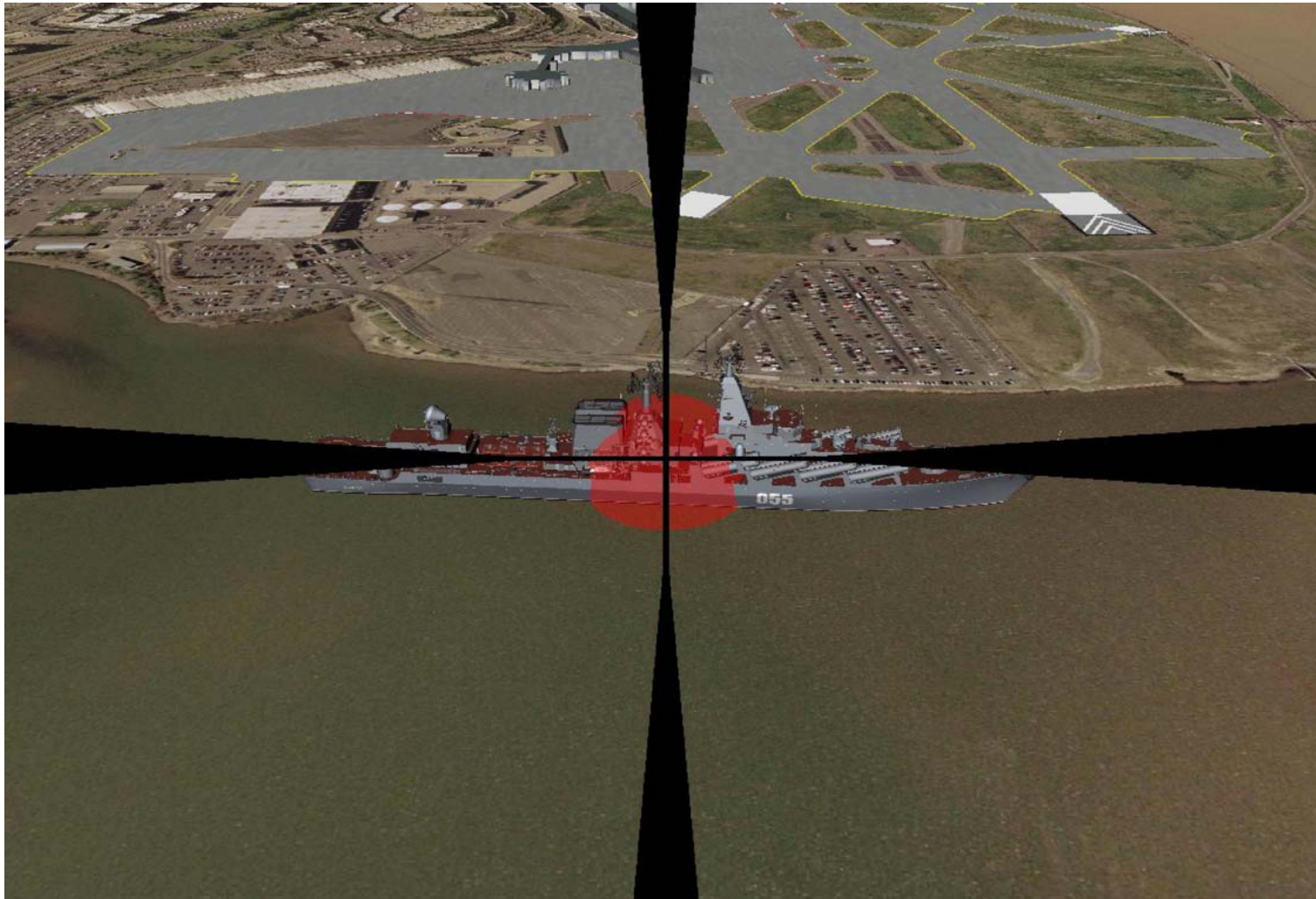


Figure 2: A fictitious area of engagement visualizing a Russian Guided Missile Cruiser (GMC) located near the southern end of Reagan International Airport (DCA)

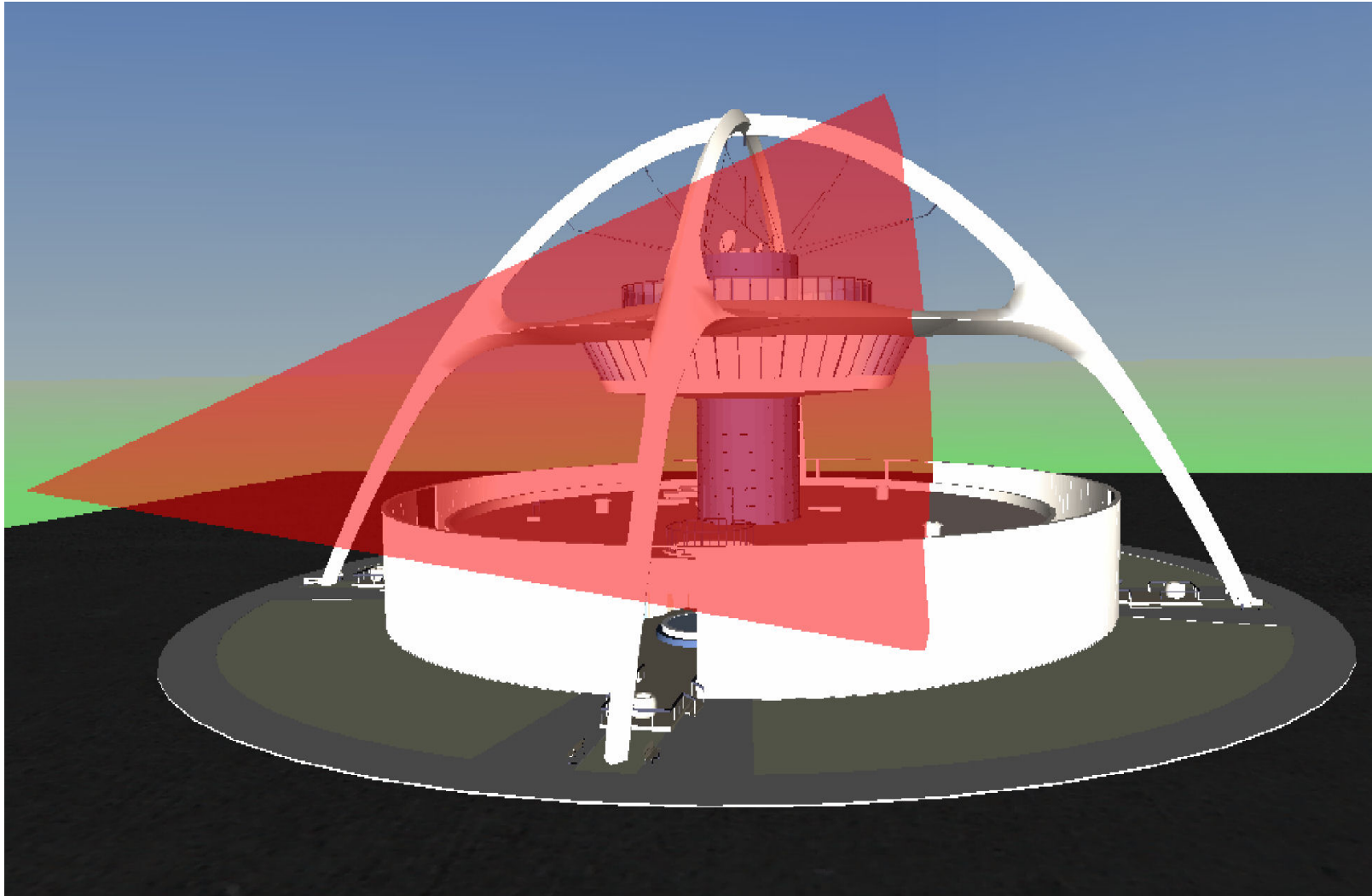


Figure 3: The LAX Theme Building isolated with its LOS 3-D vulnerabilities visualized along azimuth, elevation and range from a selected location

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