

### ***Multiplayer Simulation Game Training***



Image courtesy of Army Game Project 2004

#### **The Problem**

Complex problem solving approaches and novel strategies employed at the squad, team, and commander level are often best learned experientially. Although live action exercises can be costly, advances in simulation training technology offer exciting alternatives. Since 2003 Sandia National Labs has led a team in the design, development, and deployment of multiplayer simulation games that foster cultural awareness, adaptive thinking, and leadership development.

Sandia's objective is to share lessons learned via experiential training environments that hone participants' critical thinking, mental agility, interpersonal adaptability, cultural acumen, and observational skills. We create interactive environments that sharpen participants' focus by unleashing their cognitive abilities, and compelling them to make critical decisions. We carefully consider the efficacy of technology-enhanced training in the context of existing training programs and focus on training personnel to think on their feet while confidently and consistently making good decisions—especially when faced with novel situations and ambiguous phenomena.



Image courtesy of Army Game Project 2004

#### **The Approach**

- Sandia provides expertise, content design for developing and deploying culturally relevant multiplayer problem solving training simulations & games
- An immersive multiplayer environment is utilized leveraging both the Unreal Tournament game engine and America's Army Game Platform
- After Action Review of individual or team performance leverages UCF IST research
- Instructors and students are provided an initial set of mission scenarios and may build their own and/or modify in real-time
- Students hone their ability to anticipate the ramifications of different courses of action to problems that may not have a "right" answer by using this unique product

## Adaptive Thinking & Leadership Project Results

During the first phase of project work, Sandia conducted an in-depth study of the organization's training program in order to best reinforce existing efforts with the innovative approaches designed by Sandia. The second phase consisted of collaborating with the Army Game Project (America's Army Government Applications) and University of Central Florida Institute for Simulation & Training and leading the team to design & develop a training simulation and AAR for use in the classroom. The third phase involves deployment and evaluation of the multiplayer, experiential simulation game training.

### Applications

- Mission rehearsal
- Future Combat Systems
- CONOPS development
- Embedded training
- Strategy in communication
- Cultural awareness training
- Homeland security • Intelligence
- Decision-making in stressed environments • Hypothesis testing

Immersive, single-player and multiplayer scenarios provide opportunities to develop adaptability along the following dimensions:

- Critical thinking
- Problem solving
- Increased situational awareness
- Mental model development to understand novel situations & strategies
- Interpersonal adaptability
- Cross-cultural sense-making
- Application of cultural knowledge
- Communication competence
  - Collaborative (identify common goals)
  - Competitive (persuasion)
  - Effective written communication and situation analysis
- After Action Review (AAR) dynamically allows for review, analysis, and discussion using time-stamped, synchronized sound and video sequences.



## Benefits

Sandia's innovative design method benefits the participant by its focus on problem-solving in open-ended, culturally relevant environments in which participants build awareness of the problem domain, internalize strategic thinking and hypothesis building, develop cultural recognition skills, and hone the perceptual sensitivity to confidently navigate complex phenomena. The uniqueness and benefit of Sandia's approach lies in the design of unobtrusive reasoning principles that guide participants to have "aha" experiences in context.

## Contact

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