Sandia Serious Gaming Consortium

Advancing national security through serious gaming technologies

Introduction

Solutions to critical national security issues benefit from a variety of approaches. Sandia's Serious Gaming Consortium (SGC) is enabling Sandia's unique multi-disciplinary capability to be expressed through gaming. The SGC advances the art of serious gaming knowledge and technology through game-centric collaborative research in computer science, psychology, education, cognitive science, and neuroscience. The SGC also hosts game designers, 3D modelers, animators, and programmers within Sandia who develop game environments for R&D and applied national security solutions used by various government agencies

Gaming Focus Areas

Four primary areas comprise focus for the Serious Games Consortium. ***Cyber*** concentrates on the use of game technologies for enhancing cyber security, ***Physical*** focuses on these technologies for visualization and analysis of physical phenomena, and ***Behavioral*** addresses the use of game technologies for modeling human behavior and training applications. Synergies between all these domains leads to the fourth area, ***Complex Systems.***

Basic research areas have included adaptive training, improved learning, realistic behavior, and non-traditional applications of commercial game hardware.

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Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000

SAND 2012-10196P

Cyber

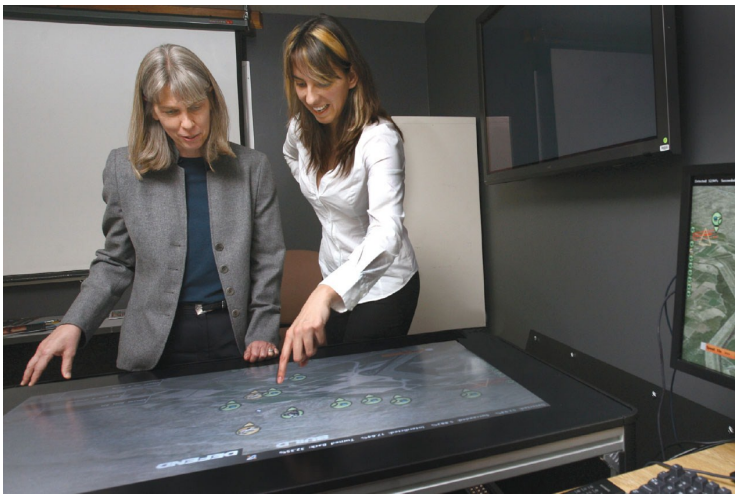
Sandia National Laboratories has employed game design techniques for creating more engaging and accessible training to make analysts more adaptive in this environment. Furthermore, the Serious Games Consortium continues to bring together researchers and cyber security professionals to determine how serious games can aid in simulating network attacks and devise new methods for analyzing large volumes of network traffic.

Physical

Sandia has been at a forefront of the science and engineering behind modeling physical phenomena for high-consequence national security. Sandia employs this expertise modern game technologies for new applications such as: physical site security walkthroughs, games for training security and incident response, and constructing more engaging scientific visualizations.

Behavioral

Within the medium of serious games, Sandia has developed new technologies that focus on better understanding and adapting to the end user. Advancements include: more realistic decision making by non-player characters, improving neurological inputs for systems, programming-by-example scenario authoring, and automated techniques for observing and adapting game-based training.



Complex Systems

The confluence of cyber, physical, and behavioral areas generates a unique set of problems in systems engineering. The SGC includes expertise from a variety of disciplines to utilize game technologies for studying emergent behaviors that arise within complex systems. This work includes designing, developing, and analyzing data from virtual worlds where human behavior is simulated or played by thousands of people interacting within the environment.