

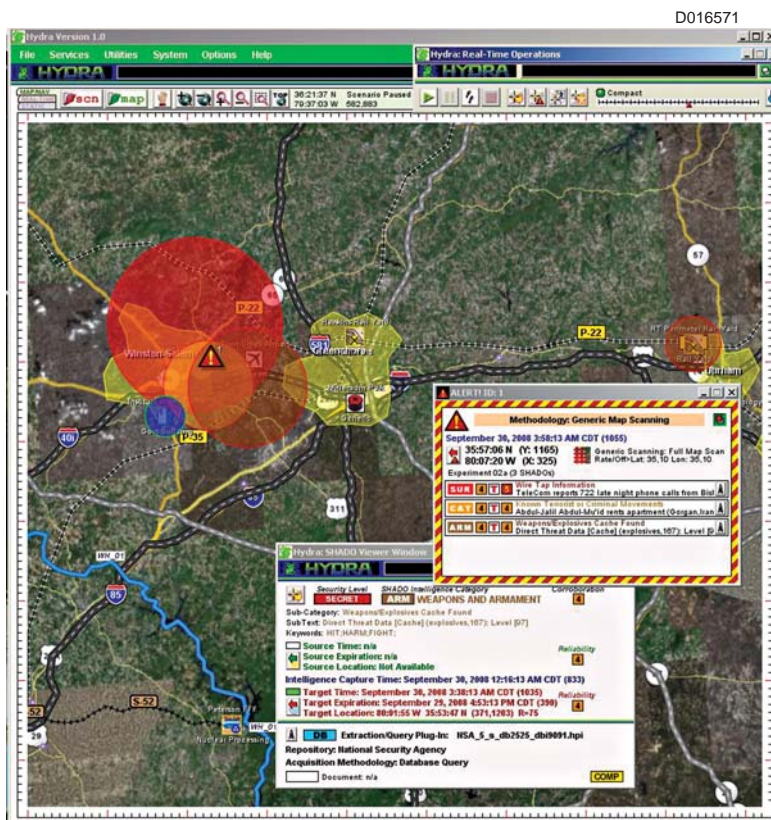
Training, Simulation and Performance Improvement

Despite cuts to government and industry training budgets, Southwest Research Institute continues to win contracts to develop efficient, low-cost training solutions that integrate multiple approaches for effective knowledge retention.

To minimize technical risks to our clients, SwRI funds internal research programs to develop promising technologies that can later be leveraged by clients. One effort, funded in part by the U.S. Air Force Headquarters Air Mobility Command, resulted in a game-based learning project for that agency. Mimicking the runway and surrounding structures of an Air Force flight line, we developed a prototype PC game aimed at influencing aircraft mechanics to complete aircraft maintenance forms and documentation. Our assessments showed trainees preferred the game-based learning approach over traditional e-learning.

Another internal research effort, called Hydra, integrates simulation, analysis and data fusion technologies to detect and assess security risks. The application's processing stream takes in raw data in a variety of formats from multiple intelligence sources and processes the data into a standard format using plug-in technology. The system correlates the fused data of many contextual dimensions in time and space. Detected threats are presented as warnings or alerts providing an analyst with immediate feedback as to location and threat content. Drill-down features provide additional detail about the threat, the target and the information leading to the alert.

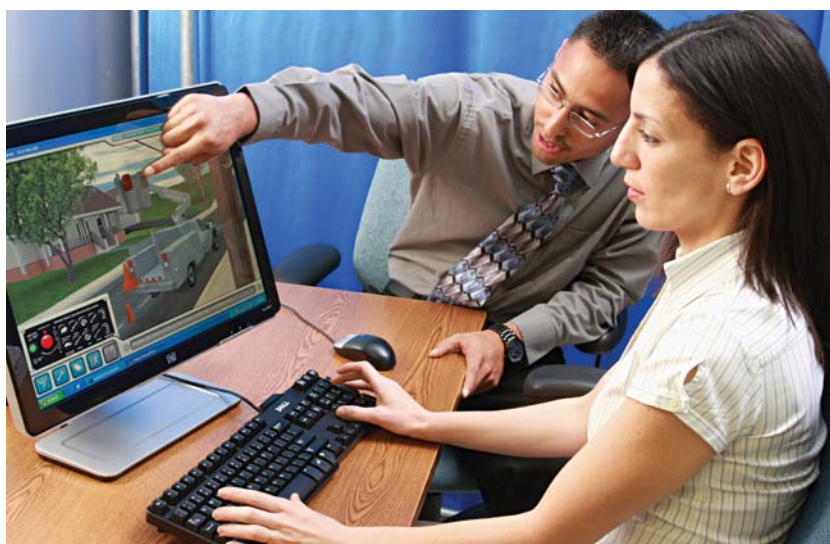
For a telecommunications client, we are converting more than 500 hours of traditional classroom courses to various levels of e-learning and desktop simulation.



Our Hydra threat detection, analysis and assessment prototype gathers disparate intelligence data from multiple sources and processes them into a standard format. The data streams are merged and correlated to identify potential threats with known locations of potential targets, displayed as an alert, as shown at left.

We applied many of the concepts from our Generalized Operations Simulation

Environment, a system that has been used to create three-dimensional simulations for F-15E and A-10C training, to a large-scale training system for an industry client (simulation.swri.org). We are currently developing a "course builder" tool to allow clients to create their own courses using a wizard-type interface.



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*operations & maintenance training devices & simulators • performance & decision support systems
 web-based simulation • instructional systems development • physics-based modeling • blended learning
 behavior modeling • certification programs • structured on-the-job training • distributed simulation
 virtual reality & environments • enterprise training solutions • game-based learning • visual analytics
 network-centric programs • SCORM • expert knowledge transformation • mobile learning technologies
 e-testing • massive multilearner online (MMO) environments • web 2.0 technologies*

GOSE and other SwRI-developed systems use our graphics engine, GRaIL™, to provide high-quality, 3-D simulations at significantly lower cost than commercial engines.

The commercial markets are replacing traditional courseware with web-based and immersive simulation formats (courseware.swri.org). For a large telecommunications client, we are converting more than 500 hours of instructor-led classroom courses to various levels of e-learning and desktop training systems. We also developed an excavator operator training simulator, the first in a line of heavy construction equipment simulators.

SwRI operates offices across the country to support our clients' onsite training needs. Our Layton, Utah, office is focusing on emerging training and performance technologies to serve as a research and performance liaison among academia, industry and government.

One problem associated with the aging workforce is retaining valuable corporate knowledge lost through retirement and attrition. SwRI is developing techniques for capturing knowledge before it is lost and using a "just-in-time" approach for reuse, providing the information a person needs when and how it is needed.

In O'Fallon, Illinois, staff members support the Air Mobility Command at Scott Air Force Base with enterprise training solutions (instructional.swri.org). We recently completed the development of an Instructional Systems Review module for the AMC Maintenance Training Enterprise System. The new module aids the command-level standardization and review of organic training courses at each of the operational bases.

We are expanding our expertise in blended learning and immersive simulations with multiple research initiatives that use

SwRI leveraged its commercial excavator operator training simulator to support military excavator operator training.



SwRI developed a single-person game that tasks a jet engine mechanic to complete aircraft maintenance actions. SwRI used internal and Air Force funding to create the game to measure the impact of game-based training as compared to traditional e-learning approaches.

Sharable Content Object Reference Model, or SCORM, standards and specifications developed by the U.S. Advanced Distributive Learning initiative. ❖

Visit tssystems.swri.org for more information or contact Vice President Dr. Katharine Golas at (210) 522-2094 or katharine.golas@swri.org.

