Homeland Security
Science and Technology

TechNote

U.S. Department of Homeland Security
SAVER
System Assessment and Validation for Emergency Responders

The U.S. Department of Homeland Security (DHS) established the System Assessment and Validation for Emergency Responders (SAVER) Program to assist emergency responders making procurement decisions.

Located within the Science and Technology Directorate (S&T) of DHS, the SAVER Program conducts objective assessments and validations on commercial equipment and systems and provides those results along with other relevant equipment information to the emergency response community in an operationally useful form. SAVER provides information on equipment that falls within the categories listed in the DHS Authorized Equipment List (AEL).

The SAVER Program is supported by a network of technical agents who perform assessment and validation activities. Further, SAVER focuses primarily on two main questions for the emergency responder community: "What equipment is available?" and "How does it perform?"

For more information on this and other technologies, contact the SAVER Program Support Office.

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SPAWAR Systems Center ATLANTIC

Team Skills Training Simulators

Emergency responders use team training simulators to learn and practice skills as a group for on-the-job preparedness. Team training simulators provide interactive, audio-visual simulation of various situations in computer-controlled configurations ranging from a video game displayed on a screen to an immersive simulation of a tactical operation. Simulators can replicate emergency situations that may be too costly or too dangerous to reproduce with live scenarios.

This TechNote describes team skills training simulators designed for law enforcement and firefighting. Incident command simulators, which allow responders from multiple agencies to participate jointly in training exercises, are also discussed.

Law Enforcement Simulators

Live and virtual tactical law enforcement training simulators are portable training systems that allow teams of officers to rehearse tactical operations. With live tactical simulators, training events can be conducted in various, real-world settings such as vacant schools and hospitals or decommissioned ships. These tactical simulators can provide human target models and special effects, such as smoke, sound, and smell, to simulate shooter and hostage situations. Laptop computers allow users to control both the special effects and cameras included with these systems. Live tactical law enforcement training simulators range from $15,000 to $200,000 or more, depending on customization.

Live Tactical Training Simulator

Virtual tactical law enforcement team training simulators consist of customizable, video-game style software that can be operated by multiple users on different computers with standard monitors or in stalls equipped with large screens. Users participate in the training simulation using video game style controls. Users collaborate as a team as suspects and bystanders move through various indoor and outdoor environments. Prices range from $50,000 to $500,000.

Other highly customizable team training simulators include command officer simulators that replicate an agency's information flow and common operating picture. These simulators may include scenarios for natural disasters, counterterrorism operations, and large-scale investigations. Scenarios often run in real time and can last for days or weeks. Information generated by the system for use during the scenarios can include newscasts, radio dispatch traffic, and intelligence briefings. Due to setup expenses that can reach $500,000, not including additional licensing costs, these systems are primarily used by departments in large metropolitan areas.

Firefighter Simulators

Team training firefighting simulators may use video-game style software programs or controlled live-fire replications to allow teams of firefighters to participate in various firefighting scenarios.

Video-game style simulators are available in instructor or department editions. Instructor editions usually consist of a software program that allows users at different computers to participate in the same firefighting scenarios, which are controlled and manipulated by an instructor. The scenarios may be preprogrammed by selecting architecture, water supply, vehicle staging, and victim placement. In some software programs, simulated fires are designed to react to ventilation and fuel conditions in real time. Teams of users participate in the scenarios by giving and following commands. Most simulators generate debriefing reports to analyze actions and response time. Some manufacturers charge per license from $1,000 to $2,000. Others charge an initial fee of $1,000 to $2,000 plus $100 to $200 per license.

Department editions are designed specifically for firefighting agencies or regional institutions with training centers and are customizable to a department's standard operating procedures. Scenarios in department editions are highly customizable, incorporating user photographs and videos. These systems are suited to unified command and all-hazards incident management training. Prices begin at $30,000 and include on-site training fees.

Live-fire simulators generally include computer-controlled smoke and fire to simulate interior and exterior fires. Interior fire simulators may be fixed structures or mobile trailers used by a team to practice extinguishing, ventilation, and search and rescue techniques. Many are equipped with props representing furniture and stoves. In addition to interior live-fire simulators, building-collapse and forced-entry

Interior Live-fire Simulator

simulators are available in trailers for firefighting and rescue training. Prices begin at $250,000 and increase based on customization.

Exterior fire simulators are used outside and include props, such as cars, helicopters, or gas tanks, that can be fixed or mobile depending on size and fueling requirements. Hazardous material response trainers simulate flammable liquid and gas incidents, such as fuel spills and overflows. Pricing for exterior fire and hazardous material trainers begins at $12,000 plus the cost of props, which range from $4,000 to $50,000.

Incident Command System Simulators

The Incident Command System (ICS) is a standardized, scalable all-hazards incident management approach that is used by all levels of government and private entities such as hospitals and universities. ICS is structured into five functional roles: command, operations, planning, logistics, and finance/administration. ICS simulators allow responders from one or multiple agencies to fill these roles in a number of scenarios, ranging from floods to chemical disasters. Pricing for software-based simulations that employ ICS varies widely based on graphics, interface, scalability, and level of customization. Training on ICS simulators is typically offered at training centers, where tuition rates vary from $200 to $2,000.

Resources

Incident Commander 1.0, an ICS simulator free to the emergency responder community.
http://www.incidentcommander.net

McGrath, D. and S.P. McGrath. Simulation and Network-Centric Emergency Response.
http://www.ists.dartmouth.edu/library/163.pdf

Sanjay, J. and C.R. McLean. Modeling and Simulation for Emergency Response: Workshop Report, Standards and Tools.
http://www.mel.nist.gov/msidlibrary/doc/nistir7071.pdf