Integrating Personnel Tracking and Video Capture For Emergency Response

Mission Need
Many emergency response units are currently faced with restrictive budgets which prohibit their use of technology both in training and in real-time situations. Our work focuses on creating an affordable, mobile, state-of-the-art emergency response training capability and real-world testbed through the integration of low-cost, commercially available products. We have developed a command, control, communications, computer, intelligence, surveillance and reconnaissance system that will allow small-unit exercises to be tracked and recorded for evaluation purposes. Our system can be used for first responder training providing the nexus for decision making through the use of computational models, advanced technology, risk communications, situational awareness and command. During a training session, data is streamed back to a central repository allowing commanders to evaluate their squads in a live action setting. In order to effectively analyze this data, an interactive visual analytics system has been designed in which commanders can track personnel movement, listen to radio traffic, and view streaming video of the exercise. This system provides both 2-D and 3-D views of the environment while showing previously traveled paths, responder orientation and activity level. Data can be visualized real-time, and in both hot wash and after-action review.

Benefits: PURVAC is developing low-cost integrated sensor and video systems for increasing situational awareness in emergency response situations. This work furthers the creation of new visual analytics techniques and analyzes their benefits in terms of improved first responder training, situational awareness and in-field analysis.

Collaborators:
• Purdue Homeland Security Institute (PHSI)
• Indiana Department of Homeland Security (IDHS)
• Indiana National Guard
• Muscatatuck Urban Training Center (MUTC)

Funded by:
• US Department of Homeland Security
• US Army CERDEC

(From left to right) Screenshot of the command control center view showing agent and camera positions in the scenario. Agent outfitted for emergency response training in our integrated tracking and video capture environment.

For more information, contact: Dr. David S. Ebert, ebertd@purdue.edu
http://www.purvac.org