



HAZARD, EMERGENCY, & ACCIDENT TRAINING

## What is HEAT?

The Hazard, Emergency, & Accident Training (HEAT) simulation is an interactive 3D instructional computer game that will provide first responders to a fire with the necessary training and background to handle a similar scenario in a real-life environment professionally, safely, and effectively.

## How did we use Open Source Libraries?

We integrated several open source libraries including:

- Ogre3D for graphics and animation
- CEGUI for the user interface
- WxWidgets for user input events
- PostgreSQL as a database storage backend
- Libpqxx for interaction with the PostgreSQL database

We've also contributed back to the open source community by answering questions on user forums based on our experience with HEAT. We've asked a lot of questions on the forums and have received valuable feedback

## Features:

- Robust facilitator interface for debriefing with features including review, replaying and regenerating a simulation.
- Network capabilities involving multiple learners and VOIP.
- Fluid effects using the hardware-accelerated physics for realistic fire, smoke, and hose spray. The hose can whip around using jointed constraints via water pressure as it would in reality.
- Triangle collision meshes are used for a house allowing the player to move inside it, and ray queries allow the game engine to keep the camera from getting stuck behind a wall in third-person mode.
- Multiple capsule, sphere and box constraints are used on the characters to allow for realistic collision detection within the environment. The physics library is used to easily move the characters around the ground, house, etc.



## What is unique about our application?

The group at Utah State University, partnering with IESHS, will provide support in the form of expertise, design and development of the prototype simulation. IESHS is innovative in the use of knowledge modeling and human-computer interaction to assess the communications and procedures of emergency response.

## What are the customer benefits?

HEAT increases experience for emergency leadership. It provides a safe environment to improve teamwork and communication in an emergency. HEAT is a prototype that can be adapted into many different types of educational simulations. The opportunities are endless, and can include brush fire scenarios, avalanche search and rescue, hazardous materials response, police training, etc.

## Want to Learn More?

Please take a few moments to look at the IMRC web site showcasing what HEAT can do and some of our future plans like a mall scenario: <http://imrc.usu.edu/index.php?page=HEAT>

