

Simulator and Game-based Multi-level Training of Cognitive Skills and EMS Teamwork in Multi-casualty Incident Management

Avi Parush

Israel Institute of Technology
aparush@ie.technion.ac.il

Adva Shpringer

Israel Institute of Technology
vagolan44@gmail.com

Ruth Libkind

Israel Institute of Technology
ruthlib66@gmail.com

Shani Laendler

Israel Institute of Technology
shalen2@gmail.com

Tal Solomon

Israel Institute of Technology
talsolomon21@gmail.com

Alex Nicola

Israel Institute of Technology
alexnicola07@gmail.com

Ksenia Kaganer

Israel Institute of Technology
ksenia.kaganer@gmail.com

ABSTRACT

This paper introduces a simulator to train cognitive skills and teamwork of EMS teams engaged in a multi-casualty incident. It focuses on the multi-level EMS management of the incident: the collaborative training of the onsite paramedics and offsite dispatch operators in a flexible manner. The simulator's configuration consists of two primary modules: 1. The multi-casualty incident site module, consisting of a fully interactive 3D serious game for a single trainee playing the role of the onsite paramedic in charge of managing the EMS; and 2. The EMS dispatch center module for two trainees, one playing the dispatch supervisor and the other playing a dispatch operator. This module includes also a situation display to facilitate situational awareness skills, predictive thinking, natural decision making, and team transactive memory systems.

Both modules are inter-connected and synchronized via a simulated cloud-based micro-world. The micro-world includes variables and parameters such as the geographic location of the incident, event parameters including casualties, information about ambulances, paramedics, hospitals, and the dynamic characteristics of the various elements. This simulator provides the following training capabilities and benefits:

1. Creation of diverse multi-casualty incident scenarios and events;
2. Providing in-scenario breaks to test cognitive aspects such as situational awareness and provide opportunities for collaborative learning activities such as team briefings and debriefings;
3. Supporting a co-located and distributed training, anywhere and anytime;
4. Having Non-Playing Characters (NPCs) through the implementation of simulated agents for any of the key roles to allow for various training configurations;
5. Providing the necessary functional and experiential fidelity for effective training and outcomes.

Poster Session

*Proceedings of the ISCRAM 2016 Conference – Rio de Janeiro, Brazil, May 2016
Tapia, Antunes, Bañuls, Moore and Porto de Albuquerque, eds.*