

TECHNOLOGY CAFÉ: SESSION B

7 Immersive Modular Preparedness Intelligent Tutor (IMPRINT)

Austin Crumpton | *Charles River Analytics*

IMPRINT aims to enhance trainee performance and set operational expectations outside of the hot zone in hyper-realistic exercises that challenge physical and psychological capabilities. To do this, we use virtual reality (VR) modules that seamlessly integrate with existing HAZMAT and CBRNe training curriculums and lead to improved outcomes using insights from behavioral science.

Unique challenges to training and trainee engagement have developed in response to the ongoing COVID-19 pandemic. Organizations must offer a combination of in-classroom, online, and hybrid training further challenging the feasibility and sustainability of skills and competencies developed through PowerPoint and Zoom-based case study simulations. As disasters become more numerous and complex (e.g., wildfires during a pandemic) demands for effective training technologies will increase. Matured VR systems enable low-cost, repeatable, functional, targeted exercises. IMPRINT provides a physically immersive mission rehearsal experience that simulates equipment configurations and high-risk scenario settings to support mission readiness. Fully immersive VR exercises additionally benefit trainees beyond standard physical FTX by enabling training in simulated high-risk scenarios within a safe and controlled setting.

While many activities must be performed during hands-on exercises, there are instances in current practice where virtual training must adopt innovative training techniques to remain effective.

IMPRINT provides training organizations with a library of VR case studies that augment standard paper and PowerPoint scenario-based activities used to prepare trainees. IMPRINT VR case studies enhance training organizations' abilities to provide high-quality HAZMAT and CBRNe training to a broad audience at a low cost. IMPRINT extends our existing modules to integrate with physical personal protective equipment (PPE), extending our 3D object haptic interaction and natural walking capability to support spatial skill development, and provide peer user support to allow collaborative learning. Using initial feedback from trainers and trainees we are enhancing our ITS to develop an innovative Behavioral Intelligent Tutoring System (BITS) that augments the development of procedural skills using behavioral science. Additionally, we are enhancing instructor tools to tailor training to curriculum and worksite-specific training needs.

IMPRINT is a complementary training tool to enhance training organizations' e-learning capabilities. By focusing on the integration IMPRINT provides a solution to the developing market demand of hybrid HAZWOPER training. Delivered through the Oculus Quest VR headset IMPRINT closes the gap created by remote learning environments, time constraints, and inadequate access.
