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3D Simulation Game for Triage Training

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Introduction: Triage is the process prioritizing patients' treatment based on their condition. Proper conduct of triage is crucial for first responders in mass casualty incidents. Such personnel is traditionally trained using a setup of fake body parts designed to simulate casualty injuries. Unexpected situations and variety of cases are hard to provide since creating a large bank of real-life training simulations becomes non-viable. 3D simulation games, however, offer a possibility to create unlimited unique scenarios and 're-playability' as well as support in assessment.

Method: Iterative design method was applied when developing a game that best answered the needs of triage training. Constant user-testing and feedback introduced a co-design model that involved a team of designers from several areas of expertise and a team of professional teachers experienced in triage procedures. The paper describes the design considerations, design iteration and overall development of a 3D virtual environment and game mechanics for JumpSTART triage training based on a real-life accident in Hong Kong with the use of a large database of injuries and casualty descriptions.

Findings: Trainees in three testing sessions felt they were improving their JumpSTART triage skills through gameplay. After multiple simulation runs, the trainees were much more confident in approaching a triage simulation than before. Several specific design considerations increased the usefulness of feedback during gameplay and after game completion. Training log on game server, wide range of scenarios and immersive visual/auditory environment are key advances compared with traditional training.

Conclusion: 3D triage simulation has the major advantage of avoiding recurrence of casualty scenarios, thereby providing a challenging virtual environment. It can be run multiple times without delay between each simulation until mastery of the JumpSTART triage process is gained. Trilateral iterative co-design process involving health-care professionals, developers and designers experienced in serious games development is crucial in achieving high quality gameplay.