

Chapter 18

Transferability of Voice Communication in Games to Virtual Teams Training for Crisis Management

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ABSTRACT

A crisis is an emergency event that can lead to multiple injuries and damage to property or environment. Proper training of crisis management personnel is vital for reducing the impact of a major incident. In search for knowledge on how best to implement communication for virtual environments for training, communication in online games was studied. Findings on voice communication in online games were researched and formulated as a set of statements. By asking participants in an empirical study of crisis management, the statements were either confirmed or refuted. Results show that multiplayer games are highly similar to the requirements for crisis management training in virtual environments. Approximately two-thirds of the statements proved coherent in both domains. The practical significance of this work lies in the provision of design implications for a virtual environment for crisis management training. Thus, this paper contributes to demonstrating the transferability between these domains. Finally, the paper reflects the results in theories of communication and engagement.

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INTRODUCTION

A crisis is an emergency event that can lead to multiple serious or fatal injuries and can cause structural failure or damage to a property. A plane crash, an explosion or a fire at an airport are examples of such events in the aviation sector. To minimise personal injury and limit damage, any such emergency situation should activate a rapid and well-organised crisis management response. In scale and complexity, crisis events far exceed the cognitive and communicative resources of an individual (Greef & Arciszewski, 2007). Therefore, the response to a crisis must be managed by persons who are organised in teams that belong to emergency services such as Rescue and Fire fighters, Police or Paramedics. During crisis events information is provided in face-to-face conversation or by telecommunication channels, including radio and telephone systems and multimodal information technology.

Communication and data flow between team members, e.g. first responders and commanders, is paramount and plays a crucial role through all levels of coordination (Cooke, Gorman, Myers, & Duran, 2013). A coordination structure is based on effective communication and must be deployed to drive the operation into the successful recovery of a normal situation. Examples of communication in crisis management include reports about incident scale and progress, requests for resources or information and task delegation. First responders and commanders on the scene share this information with each other and with remote command centres. Research has shown that training teams in communication skills and strategies can help them overcome hindrances in coordination (Salas, Cooke, & Rosen, 2008) but to achieve good team performance the communication training needs to be carefully designed (see (Adelman, Christian, Gualtieri, & Bresnick, 1998) and a meta-analysis of which factors improve team performance (Salas, DiazGranados, et al., 2008)) and that the design of technology needs to be founded in the needs and abilities of teams (Salas, Cooke, et al., 2008).

Motivated by the need for training of communication during crisis management, where the use of heterogeneous media and the requirement of reliable information delivery in crisis management is emphasised, we aimed to investigate the design of communication in a virtual training environment for crisis managers and first responders. Because real-life training for crisis management is expensive due to its complexity, temporal criticality and demands for resources, training in a virtual environment can be a favourable option. Predecessors of virtual environments were so called micro worlds that have been used for simulations and training (Brehmer & Dörner, 1993). Previous results of training in virtual environments have been obtained in domains such as crisis communication, decision making and emergency

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