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Transferring an educational board game to a multi-user mobile learning game to increase shared situational awareness.

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Author Biographies
Dr. Roland Klemke is assistant professor at CELSTEC. He leads national and international research projects in the TEL field. Research topics include serious gaming, mobile learning, open architectures, emerging standards, web-based collaboration, and collaborative content production. He is experienced in the fields of Software Development, E-Learning, Knowledge Management, Mobile Solutions and Web-based Systems. Until 2002 he contributed as scientist at Fraunhofer Gesellschaft to national and international research projects. Additionally he is CEO of Humance AG, where he is responsible for the research and development area. He received his degree in Computer Science in 1997 from University of Kaiserslautern and a doctoral degree from RWTH Aachen in 2002.

Shalini Kurapati has a bachelor in Mechanical Engineering from College of Engineering, Guindy, Anna university and a Masters in Engineering and Policy Analysis from the Delft University of Technology. She is currently pursuing her PhD at the faculty of Technology, Policy and Management in the field of transportation and logistics. Her research topic is focussed on shared situational awareness in intermodal transportation networks. Her research utilizes serious games as both data collection and training tools to explore and enhance the decision making and behavior of stakeholders in transportation networks during disruptions.

Dr. Gwendolyn L. Kolfschoten is an assistant professor at Delft University of Technology in the Netherlands. Her research focuses on how teams, experts or stakeholders can effectively collaborate, and use collaboration support tools, in problem solving tasks. She is an experienced facilitator of Group Support System workshops and sessions, having worked with numerous public and private organizations. Her current research focuses on cognitive perspectives on collaboration effectiveness, and implications for the design of collaboration support systems. She also works in several projects on the design of intelligent collaboration support systems, and worked on Collaboration Engineering and the thinkLet concept to capture patterns in effective collaborative effort. She was also a visiting scholar at the Massachusetts Institute of Technology in 2011.

Abstract

Decision-making in sociotechnical systems is complex and error-prone due to inter-dependencies and lack of information [de Bruyn & ten Heuvelhof 2008]. Situational information might help to improve shared situational awareness [Kurapati et al., 2012]. Therefore, it is crucial to understand the role of communication among stakeholders [Salmon et al., 2008]. While most game-based learning approaches focus on skill development and motivational aspects, little work is reported that focus on multi-user learning situations.

We designed a multi-user board game about decision processes in a port environment in order to sensitize stakeholders in a value chain about their communicative behaviour. Five players in different roles play three levels of five rounds, taking decisions based on incomplete information. New levels give access to (limited) communication means to foster shared situational awareness. A game master controls rules and scores. The game's goal is to balance several scores: individual scores and an overall performance score. Decisions taken affect scores either positively or negatively.

To simplify applicability and to provide more realistic situations, we created a computerized version using the ARLearn-platform for mobile games [Van Rosmalen et al., 2011]. ARLearn allows designing multi-user process-oriented games binding content, tasks, and interactive questions to game-logic dependencies [Ternier et al., 2012]. This allows players to be physically separated while playing together.

The mobile game-design follows the board game. However, the game engine automates the game master's role. First user feedback indicates positive acceptance. Main challenges are to better balance the game-design fostering effective communication.

Attendees learn from this work-in-progress presentation how the ARLearn platform allows for multi-user game-designs, which help in complex decision training situations.

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