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Team Collaboration in Virtual Worlds: Introduction to the Special Issue

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Special Issue

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Team Collaboration in Virtual Worlds: Introduction to the Special Issue

1. Introduction

In his famous science-fiction novel *Snow Crash*, Neal Stephenson envisioned the evolution of the Internet into what he called a "Metaverse", a three-dimensional (3D) virtual reality-based space where people interact with each other through their avatars (i.e., graphical representation of themselves) and manipulate virtual artifacts. Since the last few years, Metaverses have become a reality with the development of virtual/mixed reality applications, called 3D virtual worlds. A growing and strong interest has emerged in the field of information systems (IS) around the characteristics and possibilities of these virtual worlds. Virtual worlds have now evolved into sophisticated social systems, such as massively multiplayer online role-playing games (MMORPGs), where millions of people chat, collaborate, and compete with each other through their avatars. Beyond the entertainment and game play features, virtual worlds are evolving towards business needs, where social, organizational, and economic interactions are the main drivers. In fact, today's virtual worlds bring a variety of opportunities to organizations with respect to team collaboration. Several companies such as IBM, Intel, Cisco, Microsoft, e-Bay, Accenture, and others are already using virtual worlds for team collaboration (i.e., for meetings and seminars, and for training/certification, recruitment, and socialization (virtual events)). Because collaboration has become the predominant modus in which organizations accomplish work, it is important to understand how virtual worlds can best be used as an environment for organizational teams to collaborate.

Successful performance is by no means a guarantee for teams that employ collaboration techniques and technology. Teams have to align their work processes and procedures, their personalities and motivations, their leadership styles and approaches, their information and knowledge resources, and their technology support to create value. As such, virtual worlds present both challenges and opportunities for organizational teams. For example, teams using virtual worlds may have to overcome limitations that originate from not sharing the same physical space, but they may also perform activities that are impossible in the real world. Virtual worlds provide a visual window to a persistent and synthetic world inhabited by avatars that are deeply involved in social interactions and economic and commercial activities. More specifically, the vivid and interactive features of virtual worlds lead users to experience flow states that may influence their subsequent behavior. Moreover, these virtual worlds enhance the user perceptions of presence and co-presence. They are immersive by nature and reinvent the notions of "being together" and awareness for distributed teams. Finally, these virtual worlds provide a tangible "physical" environment with geographical boundaries (comprising homes, furniture, streets, trees, landscapes, etc) that inhabitants can use to situate their social interactions and behaviors.

To study issues of team collaboration in virtual worlds, we require different disciplines and theoretical perspectives. Existing theories from IS/IT, communication, psychology, education, and other fields may help to explain and predict relevant phenomena related to team collaboration in virtual worlds. However, new theories and theoretical perspectives are required because our existing body of knowledge regarding collaboration in physical "face-to-face" worlds is insufficient to address all relevant issues and perspectives. We are pleased to present this Special Issue of the Journal of the Association for Information Systems as a significant step towards a deeper theoretical understanding of factors, processes, and techniques to support team collaboration in virtual worlds. Eighteen teams of authors submitted papers for the initial round of reviews. After several rounds of development and review, five of the papers were accepted for publication in the special issue. Each addresses an important topic in this growing area of research.

The special issue opens with an editorial by Imed Boughzala, Gert-Jan de Vreede, and Moez Limayem, which is entitled "Team collaboration in virtual worlds: Editorial to the special issue". This paper highlights the current state of knowledge in the area of virtual world research as it relates to pertinent issues concerning team collaboration. The editorial summarizes key research findings and questions related to five dimensions of virtual world collaboration: technology, people, information, process, and leadership. The editorial further outlines the key research challenges that lie ahead in this area of study, which include (but are not limited to) the antecedent to virtual-world acceptance,

adoption, and user motivation, the expansion of theoretical perspectives concerning virtual worlds' communication and collaboration capabilities, and the expansion of leadership theories to explain and guide team performance in virtual worlds.

The first paper, "Hype or help? A longitudinal field study of virtual world use for team collaboration" by Viswanath Venkatesh, lays an important foundation for discourse about the value of virtual worlds for team collaboration. The author proposes a model that investigates the relationship between a team's disposition towards IT, their general disposition (i.e., personality), and their virtual world use in influencing team cohesion and performance. Results from a year-long comparative field study of two teams (one using traditional collaboration technologies, the other one using a virtual world) demonstrate that the use of the virtual world environment positively influences the relationship between technology use and team cohesion, which, in turn, predicts team performance. The author also finds that agreeableness, conscientiousness, extraversion, openness, and computer self-efficacy interact with time and technology type to positively influence team technology use.

The second paper, "Valuing virtual worlds: The role of categorization in technology assessment" by Luciara Nardon and Kathryn Aten, continues the theme of Venkatesh's paper. The authors report on a qualitative study to explore how individuals' interpretations of virtual worlds influence their judgments of the value of the technology. Their study in an organization that was in the process of adopting virtual worlds uncovered three mental categories to assess the value of this type of technology: virtual worlds as a medium, virtual worlds as a place, and virtual worlds as an extension of reality. Their study demonstrates that an individual's assessment of a technology varies by their interpretations and mental categorizations of the technology.

The third paper, "Cognitive absorption and trust for workplace collaboration in virtual worlds: An information processing decision making perspective" by Shalini Chandra, Shirish C. Srivastava, and Yin-Leng Theng, investigates the adaptive use intention decisions that individuals make when considering to use virtual worlds for workplace collaboration. They propose "reduction of perceived cognitive burden" and "minimization of risk" as the two key motivations for adaptive use intention (AUI). They further identify "cognitive absorption" and "user trust" in virtual worlds as the mechanisms leading to the individual level AUI decision. An empirical test finds support for their model and demonstrates the significant roles played by cognitive absorption and user trust in virtual worlds' usage as a collaboration tool.

The fourth paper, "A structured approach for designing collaboration experiences for virtual worlds" by Andreas Schmeil, Martin J. Eppler, and Sara de Freitas, is positioned in the design science paradigm and reports on the development and application of a structured approach for the combined design of 3D virtual environments and the collaborative activities within them. Based on semiotics theory, the authors' avatar-based collaboration framework (ABC framework) draws from best practices in instructional design and game design, research in HCI, and empirical research on collaboration patterns in virtual worlds. A case study in a global collaborative learning project illustrates how the framework supports the process of creating rich collaboration and collaborative experiences for virtual worlds.

The fifth and final paper, "The effects of leader-member exchanges on member performance in virtual world teams" by Samuel H. Goh and Molly M. Wasko, argues that the relationship between leader and team member influences the degree to which the team member is allocated resources by the leader and develops relational resources with the team. The authors further argue that the extent to which a team member receives or develops resources results in higher levels of individual performance. A longitudinal study in the massively multiplayer online game EverQuest finds support for these assertions: The authors found that the leader-member relationship impacted members' allocation and development of resources. Moreover, they found that it is not just the quantity of members' resources, but the type of resources that has a direct influence on performance. Surprisingly, the authors found no relationship between leader-member exchange, trust, and performance, which suggests that trust may not be as vital in virtual teams where everyone's actions are visible.

Each of these papers brings attention to a unique and valuable perspective for virtual world researchers. Each advances knowledge and understanding of the field. Each provides a foundation for many follow-on research efforts. We commend them to your reading.

We would like to conclude by acknowledging the support from Kalle Lyytinen, the *Journal of the Association for Information Systems*' past editor-in-chief, and Shirley Gregor, the current editor-in-chief. We are grateful to our team of reviewers who provided excellent and constructive feedback on the submitted manuscripts. Finally, we are also thankful for our editorial assistants, Triparna de Vreede and Benjamin Wigert, who kept the special issue process organized and on track.