Chapter 8
Agent-Based Virtual Environments for Marketing: Processes in Commercial Sector

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ABSTRACT

This chapter investigates the use of SecondLife as a virtual environment to help the commercial sector in marketing process. It presents the use of Immersive Virtual Reality concept to design a distributed marketing system for commercial sector based on the Benford’s Mixed Reality boundaries theory and Motivated Learning Agents model. System framework has been proposed in this chapter and boundaries as well as agents factors in this framework have been discussed.

INTRODUCTION

Virtual Environments (VEs) are currently being used in an increasingly wide range of areas such as simulations (Snowdon, Churchill, & Munro, 2001), games (Torres, 2008), business (Lanier & Biocca, 1992) and decision making (Lurie & Mason, 2007). One of the most popular commercialized shared virtual environment systems is SecondLife (Linden Lab, 2003). SecondLife is an Internet-based virtual world video game, which was launched on June 2003, developed by Linden Research, Inc. Although SecondLife is sometimes referred to as a game, this description does not fit the standard definition. It does not have points, scores, winners or losers, levels, and end-strategy, or most of other characteristics of games. However, there are a variety of systems, which have been created within the Second Life environment. John Gage, vice president and chief researcher at Sun Microsystems, has proposed the concept that make it possible for people to build virtual products and sell them inside SecondLife (Lee, 2007). Many users have already begun to build clothes, houses and entire islands that other users can buy with Linden dollars, which can be converted from U.S. dollars. (Figure 1) shows a shopping scenario in SecondLife.

During this virtual shopping process, sellers and consumers could see each other’s avatars’
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location and body gestures, from which they know where and what other people are doing. Users could design their own avatars to make them unique and recognizable to others. They are also able to make their avatars have some, such as waving arms or doing a little dance, which could help express users’ feeling. Second Life provides a shared virtual environment for distributed users to collaborate with certain tasks or doing business, during which users are able to communicate with each other either by text messages or verbally chatting. Currently products sold in SecondLife are generally virtual objects that are designed and created in the virtual environment; however, it is possible to connect the virtual shopping system with web based e-commerce system and further facilitate consumers’ online shopping process through interfaces between SecondLife platform and web based programming languages such as php (Linden Lab, 2003). In that way, the virtual and physical worlds could be connected and products would be sold in both virtual and physical worlds.

This chapter investigates the potentials of SecondLife as a virtual environment to help the commercial sector in marketing process. The following is a working scenario: SydneyToys is a local company that produces and supplies toys to most supermarkets (retail stores) in Sydney. To make sure that each retail store has enough goods, and those products are well presented, SydneyToys has to send a number of agents to each retail store and check the status, which unavoidably costs lots of labor, time and money.

Furthermore, due to different understanding, different agents might have different criterion when they check the situation of products in retail stores. In order to solve these problems, the work presented in this chapter develops an agent-based virtual marketing network in SecondLife environment. This virtual world connects the real world suppliers and retail stores together based on Benford’s Mixed Reality boundaries theory (Benford, Greenhalgh, Reynard, Brown, & Koleva, 1998). This virtual world adopts motivated learning agent model. The purpose of adopting the agent model is to enable the system with intelligence so that it could monitor the status in each retail store and analyze their requirements in a real time manner.

BACKGROUND

Mixed Reality Boundaries Theory

Benford et al. (Benford, et al., 1998) introduced the concept of classifying shared-space technologies by the dimensions of transportation, artificiality and spatiality. (Figure 2) offers a detailed classification of shared spaces according to the dimensions of transportation and artificiality with specific technologies.

The illustration of the broad classification of shared spaces according to transportation and artificiality highlights the close relationships between the various approaches and in turn raise the issue of how they might be integrated. Therefore it was suggested that a more systematic approach to joining physical and synthetic, and connecting local and remote spaces (Benford, et al., 1998).

As a promising approach to tackle this issue, Benford et al. (Benford, et al., 1998) broadened the definition of Mixed-Reality as “the joining together of whole environments” rather than “the

Figure 1. Shopping scenario in SecondLife