Chapter 36
Model for Effective Collaborative Learning in Virtual Worlds with Intelligent Agents

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ABSTRACT

The predecessors of virtual worlds are the multiplayer online role playing games; they appeared in the mid-nineties and have been studied since then. Virtual worlds are part of the shared spaces technologies and are applied to strengthen the weaknesses of teamwork, allowing identifying a direct relationship with the intellectual capital. Theoretical models have attributes that differentiate them from other digital media and allow getting more effective team collaboration. A feature of virtual worlds that allows such collaboration is that unlike 3D games, virtual world's user actions lie on their interests, which vary from meeting people to manage business. Based on the information about virtual worlds, intellectual capital, collaborative knowledge management, intelligent agents, and MPLM3D platform, this work proposes a model through which to demonstrate how the interaction with intelligent agents allow to achieve an effective collaborative learning into a controlled distributed computer environment using the platform Second Life.

INTRODUCTION

The diffusion and global recognition of virtual worlds starts in 2007 with the popularity of Second Life in the blog "Medical Library Tech Trends 2007" as part of technology trends, and the first was precisely Second Life (Lara, P., & Martinez, J., 2004). Virtual worlds are part of the broad field of "shared space" technologies with Augmented Reality, Telepresence and Virtual Reality, all discrete spaces represented and executed by computers which are accessed exclusively through the Internet. On virtual worlds people interact through their avatars, the process of knowledge

is managed by the users themselves through their avatars, through new ways to transmit and share information on a global scale, in an apparent local environment, generating collaboration networks and information ecosystem. Virtual worlds like Second Life have limitations to its mass use because of the significant hardware and software resources that requires to those wishing to use them, however there are many promising applications of these virtual worlds, including distance education. The research have reviewed the state of the art of Virtual Worlds, Intellectual Capital, Collaborative Knowledge Management, Intelligent Agents and MPLM3D Platform and proposes a model that shows how the capabilities of virtual worlds allow getting an effective collaborative learning by experimenting with agent avatar interaction in Second Life, which can answer frequently asked questions from the participants avatars.

STATE OF THE ART

The state of the art includes the field of 3D virtual worlds involving intelligent agents and collaborative learning with emphasis on the environment and interactivity. Its content draws on two sources, the first ones are the experiences in the virtual world Second Life and the second one is the intellectual capital and collaborative knowledge management.

Intellectual Capital

Intellectual capital, according to Benavides Benavides, E. (2012), "is everything that cannot be touched but it can make money for the company." "Intellectual capital is the search for effective use of knowledge," "represents the collective intangible assets that can be identified and measured" "is the set of company assets, although not reflected in the financial statements that generate or will generate value for it in the future, as a result of aspects related to human capital and with structural capital as the innovation ability, customer relations, quality of processes, products and services, cultural capital and communications that allow to a company to take a better advantage of the opportunities than others, resulting in the generation of future benefits."

"Intellectual capital is the product of the interplay of Human Capital (knowledge workers, the ability to learn and adapt, etc.), Structural Capital (trademarks, patents, copyrights, product names and other assets intangible internal processes and research and development, etc.) and Relational Capital (business relationships with customers, suppliers, distributors, investors and other stakeholders: government and society in general), which is reflected on the ability of the human talent to add value not only to tangible assets but also to intangible assets of an organization which generate or will generate future value on which the organization can consolidate a sustainable competitive advantage over time." Benavides, E. (2012).

Furthermore the research analyzes the model DirCCI, "Collaborative Management of Intellectual Capital" in which, from the perspective of intellectual capital, a way of integrating collaborative business rules is presented. Bernuy A. (2007)

Bernuy Bernuy A. (2007) presents: (1) the direction as an entity; (2) the indicators of intellectual capital as a result of learning; (3) the environment that always releases changes or delivers rules of play, (4) a collaborative system as the main component that instructs, shares and supports the decisions. This new system is based on agents and the processes of transformation from human resources to structural capital and relational capital. Then is when the organization creates knowledge and the most important elements are the innovation, competitive skills and human development. Transformation processes are studied in other research called "intellectual Capital navigator." Bontis N. (1998). The transformation is based on rules called "workflow" Bernuy A. (2007).

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