Chapter 31
Exploring Serious Games from Service Science Perspective

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ABSTRACT

Nowadays, serious games increasingly attract public interest, and many applications of serious games in education, business, politics, healthcare, and social issues are reported. Serious games offer unlimited number of opportunities for experiments and training, where different experiences become possible, without cost, time, or physical limitations. Serious games offer various services to their end-users, combining entertainment with additional serious elements. The present chapter aims to discuss serious games from the service science perspective. Service science explores the model of value-creation in complex and technology-enabled services. Therefore on one side, serious games are discussed from three service science perspectives, highlighting the end-user involvement in the process of value co-creation. On the other side, different application domains of serious games are reviewed in the context of services they provide to users and stakeholders. The last section discusses the benefits of service science approach, developing a new set of considerations for improving SG value for customers.

INTRODUCTION

Nowadays, serious games (SG) transformed into increasingly popular complex technological applications with high potential use in education and business (Antonova&Martinov, 2010). Serious games offer many benefits for learning, enriching real-world experiences. Serious games learning is based on the learning cycle of Kolb and enables users to develop complex competences which lead to high-order thinking models (Antonova&Todorova, 2010). Thus, the main advantage of SG is put on the trial-and-error method and first-hand experiences. However, there is still no clear understanding of the differences between developing serious and entertainment games. In order to build successful serious games, people need to consider them as complex platforms for service creation. In the scope of service science and service-dominant logic, value in services is co-created with end-users (Vargo&Lush, 2004). By combining both fields – serious games and service science, we aim to propose a model that

will enable developers and designers of SG to provide better value-offering for end-users.

While entertainment games have to meet high end-users requirements for quality design and computer interaction, serious games need to deliver additional value for users in terms of educational or business service. The present chapter will develop further the idea of value co-creation (or value-in-use) with end-users and discuss how serious game design and delivery should engage with customer usage processes in order to support the customer's value creation (Gronroos, 2010). Therefore the findings of this study will help us develop a new concept for the services delivered by serious games and to identify the model of user co-creation in SG experiences. So the main research question is to discuss serious games from the point of view of sophisticated IT infrastructure, providing complex services to its end-users.

Thus the objectives of the present research are as follow:

- To review serious games from service science perspective and to identify value-delivering mechanisms;
- To model the system of SG from the point of view of service science;
- To identify the variety of services provided by serious games;

The first part of the chapter provides a background overview of serious games types, their characteristics, classifications and uses. Then a theoretical framework of service science will be presented, highlighting the main concepts for value creation, value-in-use and user-co-creation. Afterward three basic views of SG from service science perspective will be presented – knowledge-centered view, user co-creation view and system view. Different knowledge flows, value co-creation mechanisms and the service-value network model will be analyzed in the context of SG. The second part of the research will identify the main application areas of serious games, de-

scribing specific service-provision models. Finally the chapter discussion part will propose a model for increasing serious games service value, introducing value-in-use and user co-creation in the process of game design. Along the chapter, several examples and cases for SG design process will be provided, illustrating the theoretical concepts. The conclusion part will provide a chapter summary and will describe areas for further research.

BACKGROUND

Serious Games Overview

Numerous definitions of serious games exist in literature, often overlapping or extending the terms of e-learning, edutainment (coming from education and entertainment), and game-based learning (Susi, Johannesson & Backlund, 2007; de Freitas, 2008). With slight variances among authors, serious games are commonly described as (digital) games used for purposes other than mere entertainment or fun. Serious games usually refer to games used for training, advertising, simulation or education that are designed to run on personal computers or video game consoles. Nowadays the emergence of sophisticated mobile applications proposes even more dynamic mobile gaming experiences. Thus serious games gain increasingly popularity in education and business, entertainment and research.

Three main classes of computer games can be distinguished: casual games, advergames and serious games (Susi, Johannesson & Backlund, 2007). As the authors further specify, casual games are developed purely as entertainment platforms, and thus the learning outcome is not intentionally foreseen. Advergames are identified as tools designed and delivered for promotion and marketing of new coming movie or TV series. Serious games are especially designed for learning purposes and the learning process is expected by the players. Another distinction of computer games is made

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