



RDU Model dedicated to evaluate needed counsels for Serious Game projects



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ABSTRACT

This paper aims at identifying the counsels that are necessary to achieve the Realization, Dissemination and Use of a Serious Game. In our opinion, these counsels are an additional facet for all Serious Game projects in order to target their ownership adoption and appropriate use (as intended by its designers) in a dedicated ecosystem (School, Hospital ...). We propose to classify all these counsels in three main categories: R for Realization, D for Dissemination, and U for Use. By this way, we obtain a model named RDU. In a second step, we explain in detail the methodologies used to identify the fifteen counsels of the RDU model by using seven examples of Serious Games projects taken from a collection of 150.

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1. Introduction

Achieving the pedagogical objectives associated with any given Serious Game is a complex matter. The design of a Serious Game addresses technical, artistic, ergonomic, educational, marketing, economic, or legal issues, as explained by different authors such as Adams (2006), Bogost (2007), Crawford (2003), Frasca (2001), Salen and Zimmerman (2004), Stolovitch and Thiagarajan (1980), Zyda (2005) and Wee Hoe (2010). Of course, this list is not exhaustive. Designing games in a school context with learners is studied as well, see for instance: Triantafyllakos, Palaigeorgiou and Tsoukalas (2011). Any kind of game could also call specific sub-target areas. For instance, teaching medicine involves cardiology, psychiatry, strokes ... Thompson et al. explore, in their case, game designs in the diabetes and obesity domains (Thompson et al., 2008). All these parameters must be understood and dealt with the idea of the complexity of design and implementation for a Serious Game. Most current researches try to optimize the design of such an object by providing engines, dedicated editors and models; see for instance: Arnab et al. (2015), Carvalho et al. (2015), Cano, Munoz, Collazos, Gonzalez, and Zapata (2016). All these models

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are focused on the realization of the Serious Game object and mostly on the technic aspects. But to maximize the success of a Serious Game project, it is not enough: the complexity of the matter does not end there as the study of [Calderon and Ruiz \(2015\)](#) tells us for instance. Indeed, it is necessary at the same time to take into account the issue of the dissemination and use of the object in the ecosystem for which it is intended. It is difficult to imagine that a Serious Game simply introduced into an ecosystem will fulfill its objectives without any form of support as already confirmed in the works of [Smith, \(2006\)](#) or [Bourgonjon, Valcke, Soetaert, de Wever, & Schellens \(2011\)](#). By “ecosystem”, we mean the Gaël Gueguen and Olivier Torrès's approach: “*The set of relationships (vertical, horizontal and transversal; direct or not; formalized or not) between heterogeneous actors guided by the promotion of a common resource and an ideology that leads to the development of shared competences (skills ecosystem).*” ([Gueguen & Torrès, 2004](#)). Thus, it is necessary to ensure suitable counsels as explained by [Zellweger Moser \(2007\)](#) for instance. We consider counsels as resources, capabilities, or supports that improve effective Serious Game Realization, Dissemination and Use (by targeted users or ecosystems). In our opinion, a model associating these three domains and detailing different counsels for each of them, in the Serious Game case, does not exist and deserves to be explored. This is what we propose to do within the framework of this paper.

Thus, after defining “Serious Game”, “Appropriation” and “Counsel” terms, this paper aims at identifying the counsels that are necessary to archive the Realization, Dissemination and Use of a Serious Game. In our opinion, these counsels are an additional facet for all Serious Game projects in order to target their ownership adoption and appropriate use (as intended by its designers) in a dedicated ecosystem. We propose to classify all these counsels in three main categories: R for Realization, D for Dissemination, and U for Use. In doing so, we obtain a model named RDU. In a next step, we will explain in detail the methodologies used to identify the fifteen counsels of the RDU model by using seven examples of Serious Games projects taken from a collection of 150. After the discussion, we will present conclusion and research perspectives.

2. Definitions

Serious Game

Serious Game application fields are related nowadays to many sectors such as health, defense, education, policy, training and ecology, and keep on expanding as exposed by [Sawyer and Smith, \(2008\)](#). Serious Game therefore addresses a set of markets. This position is counseled by a very rich typology to refer to the object: Advergimes, Political games, News games, Educational Games, Edutainment, Datagames, Digital Game-Based Learning, Immersive Learning Simulations, Social Impact Games, Persuasive Games, Games for Change, Games for Good and so on. This inventory reflects the numerous actors showing interest in the Serious Game and the different ways to name the concept according their point of view. Despite this diversity of names, several contemporary definitions of Serious Game are proposed. The more general definition seems to be the definition proposed by the game designers Sande Chen & David Michael: “*games whose first purpose was not mere entertainment.*” ([Michael & Chen, 2005](#)). At the same time, Professor Michael Zyda, currently Director of the USC GamePipe Los Angeles laboratory, proposed a more specific definition: “*A challenge brain against a computer involving compliance with specific rules, and based on the entertainment to achieve goals related to institutional or professional training education, health, domestic policy or communication.*” ([Zyda, 2005](#)). In the early ‘70s, Clark Abt ([Abt, 1970](#)) offered a definition of the term “Serious Game” which not only concerns video games (computer games): it could also be a board game, a role-playing game or even outdoor games ([Michael & Chen, 2005](#)). Today, this link with computer support appears to be a constant in the Serious Game industry. Nevertheless, professionals do not agree around common definition of the object.

Aware that there are a multitude of different approaches to the Serious Game, we know that to register in one of them implies limits. However, to move forward in our discussion, we must find our position. Thus, in the context of this paper, a Serious Game is understood as a digital object involving gameplay associated with an utilitarian function. A market segment that deviates from sole entertainment sponsors it. In this paper, we propose this definition of the Serious Game, developed during our previous work ([Alvarez & Djaouti, 2012](#)):

“A Serious Game is an artifact, digital or otherwise, for which the original intention is to combine with consistency, both serious aspects such as non-exhaustive and non-exclusive, teaching, learning, communication, or the information, with playful elements from the game. Such an association is made by embedding the utilitarian functions within the story, graphics and audio elements of the game, which no longer only focuses on pure entertainment”

We can extract three conditions from this definition:

Formally, we could thus define Serious Games as follows:

- 1) Serious Games combine utilitarian functions and game;
- 2) Serious Games escape from the pure entertainment market;
- 3) Serious Games are artifacts, digital or otherwise.

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