



Assessing the player interaction experiences based on playability[☆]



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ABSTRACT

Nowadays, video games are the most economically profitable entertainment industry. The nature of their design means that user experience factors make design and/or evaluation difficult using traditional methods commonly used in interactive systems. It is therefore necessary to know how to apply Playability in order to design, analyse, optimise and adapt it to a player's preferences. In this paper, a strong relationship between user experience (UX) and playability is introduced and justified, a characterisation of player experience (PX) is presented based on playability, and a practical method for player experience assessment is described by using the "Castlevania: Lords of Shadow" video game to be a. The results offers a mechanism for the evaluation (validation and verification) of the quality of the experience and interaction process and acts as a complementary alternative to the traditional tests performed by the video game industry professionals during the Quality Assurance Process (QA Process) to help to share results, reports and have a global point of view to analyse the final game experience.

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1. Introduction

User Experience (UX) is understood as a set of sensations, feelings or emotional responses that occur when users interact with the system. A formal definition for UX has been issued by ISO/IEC 9241-210 (2010, clause 2.15): "a person's perceptions and responses that result from the use and/or anticipated use of a product, system or service". Furthermore, UX manifests itself as a quality of design, interaction and in the value of using a product. UX focuses more on the subjective aspect of the interaction process, and goes beyond the traditional study of the skills and cognitive processes of users and their rational behaviour when interacting with computers (ISO 9241, 2010). UX is a term that covers known multidisciplinary HCI terms and goes a step further in investigating all the sensations experienced by the user when performing a particular task in a particular interactive system. UX covers *pragmatic* and *hedonic* properties of the interaction. UX should be taken into account throughout product development (hardware or software), so as to achieve the optimum experience for the users [1,2].

Video games are highly interactive systems whose main goal is to entertain users (players) that interact with them in order to have

fun. Nowadays, video games are the most economically profitable entertainment industry and there are relevant and meaningful software products where UX achievement is a real challenge. The importance of video games in current society justifies the need to question whether the analysis of user experience is correct or if the interaction experience has a direct impact on emotional reactions, cultural influences or other subjective perceptions and how to measure these with metrics to ensure a desired experience during play time. Player eXperience (PX or User Experience in Video Games) depends not only on the product itself, but also on the user and the situation in which he or she uses the product. The importance of video games experience evaluation justifies the need for models that characterise the overall experience, and mechanisms for designing and analysing the Experience throughout the video game development process become a must [3].

The purpose of this work is to present Playability as measurement of the interactive experience with video games and entertainment systems, and uses it for the evaluation of the enjoyment and entertainment on interaction systems. This work reflects the importance of a Playability to evaluate the final experience for developing more efficient and successful products in terms of entertainment and amusement, a crucial factor to improve the final satisfaction of users. In the second point, we discuss about the User Experience in Video Game, especially how emotions and cross-cultural factors can affect to the overall experience in games. Then (third section), we present a Playability to characterise the user experience in video games. We introduce a Playability Model,

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section forth, to characterise the player experience (Playability) based on measurable and quantifiable attributes and properties and to evaluate and understand the impact of the elements of a video game on user experience across diverse player profiles thanks to a Playability Model. Later, we apply the Playability Model in a Video Game Evaluation to analyse the experience. The main objective with this model is offering *a complementary alternative to the traditional tests* performed by the video game industry professionals during the Quality Assurance Process (QA Process) to help to share results, reports and have a global point of view to analyse the final game experience based in hedonic and pragmatic factors. Finally, we discuss about our proposals in conclusion and future works related with this chapter will be presented.

2. User experience and video games

Software developers should aspire to the attainment of a high level of quality of the interaction experience in the software systems that they develop. User eXperience Evaluation has the main objective of offering information about emotional interaction (subjective values, hedonic properties) to complete the objective information (objective metrics, pragmatic properties) [1,2]. Traditional Video Games Evaluation Methods are based on usability/quality in use or functionality techniques, which analyse the satisfaction property as a consequence of performing a task in an efficient and effective way (pragmatic objectives of the video game). However, there are some properties, such as enjoyment, pleasure, and sociocultural factors that have a crucial impact on the final user's satisfaction with the video game. Hence, UX goes beyond the traditional study of the skills and cognitive processes of users and their rational behaviour when interacting with video games.

There are numerous parameters and variables when designing video games, including cultural features and emotions, which characterise a number of different player interaction experiences.

Cultural features are extracted from sociological models [4–6]. These *social* aspects of the interaction improve the final experiences: Universalism versus uniqueness, Affective versus neutral, Translation, Colour, Directions and symmetry, Feminism versus Male chauvinism or Contextualization.

Emotion is the complex psychophysiological experience of an individual's state of mind, interacting with biochemical (internal) and environmental (external) influences. The user's emotional response to the interactive process is a factor that can cause that user to love or hate a product. Norman [7] has mentioned many features of *emotion* that motivate users. *Emotions* such as beauty, fun, and pleasure work together to produce enjoyment and a state of positive affect. *Motivation* is a key factor in provoking better interaction experiences with products [8]. To measure the emotional response, oral self-tests may be used, where respondents use a numerical scale to record their emotions [9,10]. We can make use of emotions heuristics to analyse facial expressions [11] or use Emoticon cards (Emocards) to identify visually how the user feels about the system and analyse the “emotional feedback”. Also, we may carry out some measurement based on biofeedback such as Emotional Response Analysis (ERA) [12,13].

Therefore, the design and evaluation of the interaction experience should be enriched by these factors in order to obtain more complete information on the quality of the experience in the user interaction process. In this paper, video games are identified as prototypical examples in which the many faces of UX are presented and can be analysed to complete the evaluation of video games. Traditionally, playability has been used to this end, but it is important to consider not only functional values but also a set of specific non-functional values, given the hedonic properties of video games: emotional response, social and cultural background,

etc. User Experience in video games is enriched by the playful nature of game systems, together with the characteristics that give identity to the game, which are unique to each game and make the experience with every game different for each player, who will also have different experiences from one another.

3. Playability and the player experience

Playability is a key factor in the success of the video game due to its ability to ensure that the game engages, motivates and entertains the player during playing time. The most important references on playability are compiled in [3,14–16]. Playability has been studied from different points of view and with different objectives.

From the *design* point of view, there are three key elements for identifying the playability of a videogame: Core Mechanics, Storytelling & Narrative and Interactivity: the elements of a video game that the player can see, hear and interact with in the virtual world [17] and it is improvement thanks to the combination and proper structuring of the game elements during the play-time [18] the platform [19] and the management of emotions, immersion and the motivation of the player [20,21].

Other works on Playability and player experience define playability as “the usability in the context of video games”, in which usability is understood as a traditional pragmatic property of the UX [22] and there are several works about heuristics and evaluation criteria of the playability as pragmatic property of the interaction process [23,24]. Some interesting works focus more on how to evaluate the player experience applying biometric techniques [25] and gameplay metrics [26] or to readapt the experience to the user cross-cultural and location issues or promoting the social game [27,28]. Another important research line is the one, which uses questionnaires to assess the user experience. The most significant is Game Experience Questionnaire (GEQ) [29,30].

As already stated, Playability is based on Usability but, in the context of video games, it goes much further. Furthermore, Playability is not limited to the degree of ‘fun’ or ‘entertainment’ experienced when playing a game. Although these are primary objectives, they are concepts so diffuse as to require definition using a broad set of attributes and properties to measure the player experience. Playability is a crucial factor, because to have the opportunity of combine accessibility techniques to properties to characterise and improve the entertainment of the player with the video game. There is a clear need for a common or unambiguous definition of Playability, attributes to help characterise the player experience, properties to measure the development process of the video game, and mechanisms to associate the impact/influence of each video game element in the player experience. We consider this a significant lack, since the different definitions and models of how to measure the playability. Based in previous works in the field, there are no universals model, properties and definitions, but we can extract a common definition of playability based on them: *‘a set of properties that describe the Player Experience using a specific game system whose main objective is to provide enjoyment and entertainment, by being credible and satisfying, when the player plays alone or in company’* [16,31]. It is important to emphasise the ‘satisfying’ and ‘credible’ dimensions. The former is more difficult to measure in video games than in desktop systems due to the high degree of subjectivity of non-functional objectives. Similarly, the latter depends on the degree to which players assimilate and become absorbed in the game during play time – also difficult to measure objectively. Playability represents *the degree to which specified users can achieve specified goals with effectiveness, efficiency and, especially, satisfaction and fun in a playable context of use*. This Playability definition and the properties to characterises de player

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