Doctor Who: Legacy, an Analysis of Usability and Playability of a Multi-platform Game

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Abstract. Doctor Who: Legacy is a multiplatform game, available for web and smartphones, which pays tribute to the sci-fi adventure serial Dr Who from the British Broadcasting Corporation (BBC) as part of the 50th anniversary comemorations of the program. The game is a Puzzle Quest, in which the user has to destroy blocks by turns, full of collectible characters. The central plot features the "Doctor" who has to travel through time and space to bring together all his friends and ex-assistants so as to prevent a war that threatens the universe. This study sets out to investigate the gameplay and usability of the game on mobile and web platforms, grounded on the concepts set out by Preece, Rogers and Sharp, and by observing the interactions that users engaged on.

Keywords: Multi-platform · Social games · Usability and gameplay · User's experience · Doctor who

1 Introduction

Multi-platform games are games created for more than one medium, ranging from those for consoles to games for mobile devices. An example of multiplatform game was Miner 2049ers, created in 1982 by the company, Big Five Software [1]. In it, the player needs to control Bounty Bob, a member of the Royal Canadian Mounted Police, and the mission is to search through all of Nuclear Ned's abandoned uranium mines for the treacherous Yukon Yohan. The mine is full of futuristic obstacles, and Bob has to avoid the radio-active creatures which live in the mine.Miner was released at the time of Apple II, Atari 2600, Atari 5200, Atari 8-bit, Commodore VIC-20, Commodore 64, ColecoVision, Fujitsu FM-7, NEC PC-8801, PC Booter, Sharp X1, Sony SMC-777, Thomson MO5 Thomson to7, TI-99 / 4th, Super Cassette Vision, Game Boy. Later, in 2012, it was re-launched by Magmic Inc for the iPhone, Apple's smartphone, in which it received a new visual style both in the character and the graphics besides new scenarios.

Casual games are simple, easy-to-learn games that are successful among people with no experience in games. Unlike console games, they do not require the player to be very skillful nor to commit and dedicate time to evolve in the game [2]. The first game to be considered casual was Pac-man, created by Tohru Iwatani for Namco in 1980, in the golden age of arcade games (Pinball) [3]. The first game to be considered casual for the computer was Microsoft Solitaire (Patience), which is still played today by over 400 million people. [4]

In addition to their success on consoles and computers, casual games have also achieved good results when released for mobile phones. The first game in this sense to achieve widespread acceptance from the public was Snake in its late 1990 s version, though originally it had been created by Gremlin Industries, an arcade game manufacturer, in 1976. Another factor that motivated the production of games for mobiles is to make it possible for people to be able to use their phones in different situations e.g. when standing in line at banks, in waiting rooms and during long-distance journeys.

With the advance of mobile technology, simple phones were transformed into mini-computers, whether when using more complex operating systems, or when improving storage capacity and processing images with 16 million colors (24-bit). Furthermore, there has been the advance of touchscreen technology, which enables games to be finger-controlled. Currently two operating systems for mobile devices stand out worldwide and there are specific stores for selling and distributing software and games for smartphones and tablets: the IOS system (Apple) which uses the ITUNES Store and Android (Google) which has Google Play.

Games such as Candy Crush Saga from the developer King, released on April 12, 2012 on the social network Facebook and on November 14 of the same year for smartphones; Clash of Clans, from Supercell, August 2012, and Subway Surfers, from Kiloo and Sybo Games, on May 24, 2012, are some of the most successful casual games today. Besides the use of simple mechanisms for gameplay, they are fun and allow users to compare points and compete with each other. Another aspect of this market are the micro-transactions within the games, in which players can buy special items with real money.

2013 saw the launch of the multiplatform game Doctor Who: Legacy, available on the web via the Facebook page and via the iTunes store and Google Play for smartphones with iOS and Android operating systems. The game is a tribute to the BBC's sci-fi adventure series as part of the TV program´s 50th anniversary. [5] Doctor Who is a Puzzle Quest, adventure and puzzle in which the user must destroy blocks by turns, full of collectible characters. The central plot features the Doctor on a journey through time and space to re-unite all his friends and ex-companions in order to prevent a war that threatens the universe.

2   The Game Doctor Who: Legacy

The storyboard, characters and all the content of the game Doctor Who: Legacy, the object of study of this research, is based on the BBC television series Doctor Who which premiered on November 23, 1963, on BBC TV. Doctor Who is the longest-running science-fiction television series in the world. It is still being broadcast

today, after more than 30 seasons and has generated a film and various special broadcasts. The first six years of the series were transmitted in black and white, and it was only in 1970, by then in its seventh season that it began to use a color system (Fig. 1). One of the reasons for the great longevity of the series is the fact that the producers, on realizing that the main actor (William Hartnell) would leave the program due to illness, developed the concept that the race of the protagonist regenerates into a new body when it dies and thus has several "lives", thereby permitting a constant change of the main actors [5].

To date, 13 actors have played the Doctor (the protagonist of the series) on television. On November 23, 2013, the 50th anniversary of the series, a special episode of celebration was transmitted, and shown in the cinemas of over 200 cities around the world, thus earning the record for the most extensive simultaneous transmission in its history. Following in the wake of this huge success, the developer Tiny Rebel Games launched the game Doctor Who: Legacy [6]. The game is a puzzle in the match 3 style, in which the user has to match pieces on a board to meet objectives (Fig. 2). In the game in question, the combinations serve to attack enemies because the game has fighting, unlike most games of the same style. In addition to fighting, the player can find and create teams with different characters from the TV series and from derived media such as comic books, audiobooks, and so forth.

Fig. 1. A. The first doctor, interpreted by William Hartnell. B. Scene in the cold war episode of the commemorative series. (source: site bbcamerica.com).

The game has a storyboard developed especially for this, thereby allowing the characters from all eras and media of the Doctor Who franchise to interact with each other. It also has an RPG (Role Playing Game) aspect because the player can evolve, improve and change the appearance of the characters that he/she has. The game has more and more content and variety, and in one of its updates there is a separate adventure, fully produced in the pixel art style. The game is going from strength to strength and despite there being no download fee, it offers the sale of a "fan area", which allows the user access to various advantages, such as items to accelerate improving its characters, as well as to get new characters or different appearances for them. Despite this paid facet, everything can be achieved after playing the game for some time, which makes the "fan area" attractive for those who really like the game and want to contribute to its growth, and not a necessity, as is the purchase of items in many games that are free of charge.

A.   B.

Fig. 2. A. The interface of the game on the social network facebook. B. Interface of the game on the mobile platform. (source: screens captured by the author).

3   Methodology Used in the Test of Usability and Gameplay

For the study of usability and playability of a multiplatform game, the concepts of the Jennifer Preece diagram (Fig. 3) on the user's goals of usability and experience were used as the basis. The objective is to understand specific criteria of usability (e.g. efficiency) and to explain the quality of the experience undergone. According to Preece et al. [7], making this experience enjoyable and effective in the design of interactive media has led to the ever greater involvement of psychologists, sociologists, graphic designers, photographers, artists and entertainers, etc.

The concepts of being fun, easy to understand, efficient to use, aesthetically pleasing and motivating were used. The objective was to analyze if a game is more efficient on one platform than on another and also how the user feels with regard to the interaction of the platform used.

As to the goals of usability used, they are linked in the user's perspective: they are easy to use, efficient and pleasant. As to the goals focusing on the user's experience, they refer to how the user will feel in the human-machine interaction, considering subjective aspects such as satisfaction. This interaction aims to develop designs from the application of Preece's concepts, based on observing the experiences and tests with users.

According to Walter Cybis [8], currently there is enough accumulated knowledge on how to perform usability analyses and usability tests involving the user. In this case the focus of the analysis is to verify whether or not the interface of two platforms is an
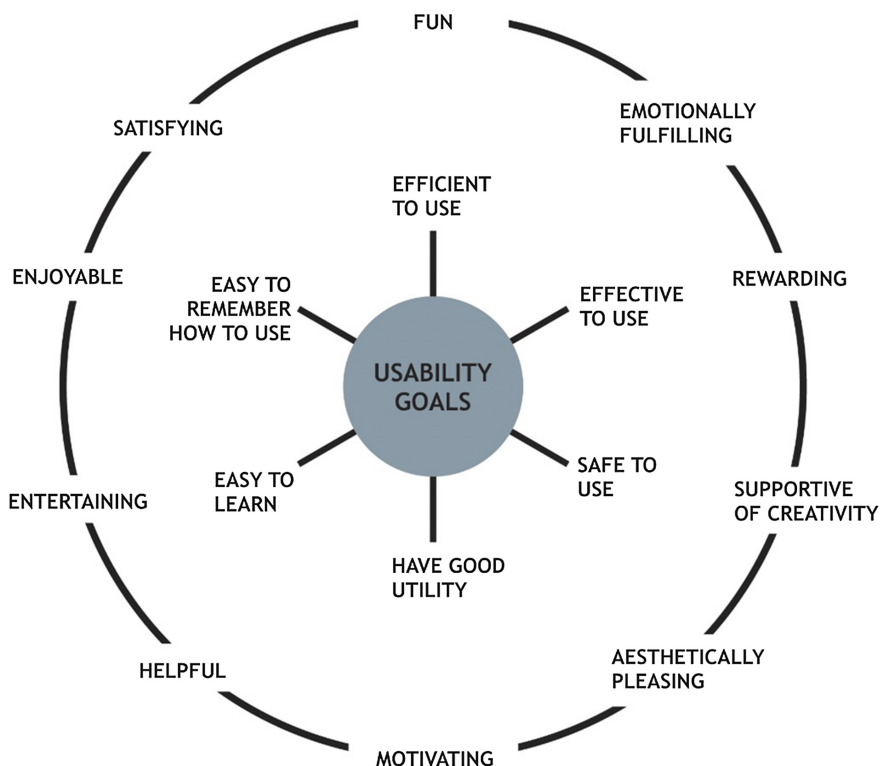
Fig. 3. Jennifer Preece's diagram on the user's goals of usability and experience. (source: site www.sharritt.com/CISHCIExam/preece.html).

obstacle between the user and his/her goals, whether it is easy to use and whether it helps the user in his/her task. This is the main perspective of the analysis of an interface for games nowadays because basically they deal with interfaces that should make it possible for the user to perform a given task or mission.

In the matter of gameplay, the author says that the focus of ergonomic interventions changes in games, because this is not only about developing interfaces that help the user to perform in a direct and objective way the tasks given to him/her. The objective in games is to provide entertainment and the right amount of challenges in an immersive environment. Very often it is challenges posed at the right pace that make it worth playing a particular game. A general principle of games is to maximize the time and effort devoted to the objectives to be achieved (gameplay goals) and to minimize the time and effort used to learn to play (usability goals). As it was a single game with two different platforms that was analyzed, it was observed that the gameplay goals are the same on both platforms and the usability goals are different.

Since the focus is to analyze a multi-platform game that is usable, which generically means games that are easy to learn, are effective in use, and provide the user with a pleasant experience. It was possible to determine whether the game to be chosen would have a good interaction design on both platforms. Usable interactive games require to

take into account who will play them and where they will be used. A good starting point for thinking about how to design usable interactive games is to compare good and bad examples. By identifying strengths and weaknesses specific to different platforms, a start can be made on understanding the importance of interaction in games.

Another aspect studied was gameplay with regard to how easy it is to play a given game. The artefact should be very easy in terms of being able to access it but should also offer difficulties and challenges. According to Bráulio Tavares [9], another definition of playability is that in English this is also called responsiveness, and that is the speed and clarity of the reaction of the game to the player's actions. The player needs to feel confident in the game, needs to know what will happen whenever he/she performs some task. Gameplay also implies rhythm and tempo. There are certain games that require the player to have a faster reaction response time (joining a great many blocks quickly and smartly in Doctor Who: Legacy, for example). And others imply the player needs to be patient, is capable of waiting or of being willing to keep looking for something until he/she finds it.

Gameplay also implies coherence. Every game has rules; if there are no rules, it is not a game. There are rules that are explained right at the start and others are assimilated all during the activity. Anyone who plays naturally learns early on when there will be a difficult situation. The game is considered incoherent when it frustrates the player's expectations in a disorderly way, thus leading to the user giving up playing, either because he/she does not understand or cannot manage to complete the challenge presented.

The multiplatform game chosen for the study was the casual game Doctor Who: Legacy, available on Android, iOS and Facebook. The choice was based on the fact that it is a repetitive game, is easy to understand and presents different forms of challenge to the user, in addition to having platforms with different modes of gameplay, namely, keyboard and mouse on a desktop and touchscreen on a mobile device.

According to the data of the second edition of the Game Brazil survey in 2015 [10], smartphones are now the preferred platform of Brazilian gamers, with 82.8 % of mentions, against the 71.3 % share of PCs and notebooks. These data encouraged the investigation of how games work on two different platforms. Another piece of information obtained by Game Brazil is that although the smartphone is the most widely used platform, the Brazilian player is multi-platform, i.e. most (78.6 %) of those who took part in the survey conducted by Game Brazil 2015 [10]. play on more than one device. Given these differences in platforms, several questions beg to be asked (e.g. which one has the best response time? In what way was the game was adapted to a given platform?). Another reason that attracted our attention was the fact that the game is based on the storyboard of a television series that has existed for over 50 years.

To conduct the survey, we selected 10 people at random, 7 men and 3 women, aged between 14 and 28 years old. Half of the sample did not know the game from the BBC series. Participants had to play the tutorial and two stages of the game, on mobile platforms and, soon after, on the web. In the first of these, a smartphone, model Samsung Galaxy S3, was used; in the second, a desktop computer with keyboard and mouse. The two platforms required an internet connection. During testing, the way in which the interviewees were playing was observed by two members of the research group. This type of observation is very important because even if the user says that the

game is easy or that he/she liked it, the reactions obtained while he/she is playing can demonstrate otherwise.

Before the player interacts with the applications, they were informed that it would be possible for the researchers to intervene or help participants achieve the objectives, in order to obtain greater reliability in the results. After playing on both platforms, each interviewee answered a questionnaire with 14 questions, which were designed to evaluate their experience with regard to the criteria for gameplay, usability and user experience, indicated in the Preece diagram.

4 Findings

The following data were found after observation and analyzing the users' answers to the questionnaire. Of the ten respondents, only four did not know the series and the game Doctor Who: Legacy. After becoming familiar with the game, all respondents played on the PC platform and mobile and gave their opinions on Doctor Who. Most thought it was a creative idea that there is a game for a television program. 60 % of respondents say that the game is nostalgic, because they feel themselves to be playing the story of the episodes that they had just seen on TV, in addition to praising the mechanics and strategies to be used to advance to the next phase. In the case of this game, each phase corresponds to one episode. All respondents said they did not have difficulty in interacting on the PC or mobile device, but 30 % claimed that there is a big difference in the feel of playing when using the mouse and the touch of the smartphone. They said it is quicker with the touchscreen. 80 % of the people who played found the game fun.

On the question of the motivation that the game offers the user, a balanced percentage was obtained. 50 % say the game motivated then because there is always something to do such as collecting characters and clothes to be collected, and for those who like to complete all steps, the biggest challenge is to leave all the characters at a maximum level. In addition to the collections, there is also always something new in every episode launched in the series.

One respondent pointed out that the game has an intriguing storyboard, which motivates the player to seek progress and find out how the story unfolds, something almost nonexistent among social games. 50 % said they were not all that excited with the game, since they did not know the story, or that the stages to gain some characters are very repetitive. 20 % of respondents had difficulty understanding the history of *Doctor Who: Legacy*, and claimed it was complicated to understand the history of the game, leading the game to be considered boring because it is only yet another casual game. Another interviewee said it was complicated to join all the spheres that you want. The other 80 % said the tutorial explains well what you have to do and how to play. 80 % of respondents say that even those who do not know the series should play because the game is fun, addictive and captivating even for those who do not know the series. They also claimed that the model of the game is simple and many people like it. So it would not be necessary to know the series in order to manage to play the game.

One respondent said that her sister did not like the BBC series, but still played *Doctor Who: Legacy* and that today she is another fan of the Doctor Who series.

In other words, the game and its plot induced a player to watch the same series that she did not previously like. The game also had a part in winning over more fans to the television program. 100 % of players said that the game does not have any error whatsoever, thus showing that it is fully functional and problem-free. Although half of the players interviewed did not notice any difference in the PC and mobile platforms, the other half noticed the only difference in the game: the audio controllers that on the desktop platform are at the top of the game while on the mobile, to disable or enable the audio, the user must enter the settings menu. 70 % of respondents said the interface of the game was easy to manipulate, pointing out that via the home screen menu, all areas of the game, from stages to character information and settings, can be accessed. Others said it was very demonstrative and direct, but they would like the back button to be more visible.

The other 30 % said the interface was very complex and that there are several submenus with names that only those who watch the show will understand. 90 % of respondents said that the game has good aesthetics, and claim the design of the game is very faithful to the fiction of Doctor Who and that this is very important. There were also many compliments about how beautiful and attractive the designs of the characters and scenarios are.

What caught the attention of users is the possibility of editing areas of the game, in which the theme of their spheres may be chosen. One respondent said that the game, when launched, was not as beautiful and pleasant as it is today, because there were many complaints in the forum of the game upon its release in 2013. The complaints helped developers to improve the game, thus making it more pleasing to the users in its latest version.

Once again, the respondents did not present any difficulty in interacting with the game. All they mentioned was that the tactile sensation with the touchscreen is more perceptible than that with the mouse. Although the mouse offers greater accuracy, respondents prefer the speed of the touch technology. All respondents were satisfied with the legibility presented on both platforms, but would very much like that the game could be played optionally in Portuguese since Doctor Who is only available in English.

5   Final Remarks

Since the 1980 s, casual and multi-platform games have been captivating their users through interactions, narratives and empathy with the characters created. The need to reach a large share of audiences, either by using computers connected to the internet, or mobile devices with touchscreen technology, led game developers to the challenge of creating interfaces and mechanisms to define screens and distinct commands on various platforms, but which allow users the same experience of interaction.

The development team of the game Doctor Who: Legacy managed to create a game that fits the platforms investigated without the vast majority of users realizing it. Because of the test performed, it can be seen that the issue of the multi-platform platform did not adversely affect the experience of interaction, since it satisfied a good number of players in the category of comfort both on the mobile platform and on the

PC. The storyboard was well worked out and therefore grasps the fan's attention and that of anyone who has never seen the series, as can be seen in the search results. The game in itself does not present any difficulties in its gameplay since it combines an interaction with simple movements and a light interface. The strategy of developing the art of the game similar to that of the original Doctor Who series pleased most of those investigated. The game Doctor Who: Legacy fulfills its role of entertaining fans of the Doctor Who series besides being a digital artifact that appeals to new users who are not interested in it because of the old or current series.

From the research using the Preece diagram, even though most users do not identify differences in visual and physical interaction with the game, the touchscreen technology enabled the players to play at greater speed and with greater precision. As Cybis [8] shows in the surveys on video games and experiences that arise from this interactive universe, this leads researchers in usability and playability to leave the comfort zone by showing that being concerned with only the user interface is not enough to understand a good experience of using a multi-platform game.

The knowledge available and the existing techniques and tools for assessing the aspects of usability and gameplay together need to advance and improve in order to include the users of games in touchscreen technology devices as opposed to the interaction with the classical computer.

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