

# The Success of Virtual Reality (VR) in the Gaming Industry



Xiaoyan Wei

**Abstract** With the development of technology, VR games conform to the development of technology and occupy an increasingly important position in the video game industry. Therefore, this paper introduces the success of the new “Beat Saber” VR game and how the new design ideas and technology are successfully applied in VR games. Finally, it is concluded that the increasingly mature design ideas and the ever-changing technological development have made VR games a huge success and quickly gained a place in the video game industry. In the future, it will bring more opportunities to the entire game industry.

**Keywords** Technology · VR · Development

## 1 Introduction

The initial development of video game products began in the twentieth century. Nowadays, video games are not only on computers, but also have been widely applied to mobile phones. However, in these years, VR is widely used in games. Virtual reality (VR) is an interactive computer-generated experience taking place within a simulated environment, that incorporates mainly auditory and visual, but also other types of sensory feedback like haptic [1]. “Virtual reality game” is that when you open the computer and bring a virtual reality helmet, you can enter an interactive virtual scene, not only virtual current scene, but also virtual past and future.

Under this circumstance, we need to figure out some questions. Such as how the new design thinking and technology make the VR game successful? How does virtual reality impact the design of video gaming? In this paper, I first focus on the new design thinking in VR games and explain why they are important in designing the VR game. In addition, I will analyze the developing technology using in VR game. In order to prove the thesis statement, I analyzed the data of the VR game—“Beat Saber”. As a result, I draw a conclusion that the new design thinking and technology

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X. Wei (✉)  
University of Queensland, Queensland 4067, Australia  
e-mail: [xiaoyan.wei@uqconnect.edu.au](mailto:xiaoyan.wei@uqconnect.edu.au)

make the VR game success and become more important in the video game field. The remainder of this paper is organized as follows.

## **2 Article Review**

In this section, I will introduce three journal articles related to my paper. These three articles have a constructive effect on my research. I divided them into two parts, the design thinking in video games and some technology in VR games. They gave me a lot of inspiration in technology, design, and interactive experience. By reading these three articles, I can get useful research methods for my own research paper. At the same time, at the end of the review, I will also analyze the shortcomings of these three articles and propose the gap of my paper.

### ***2.1 Design Thinking in 3D Computer Games***

Kanev and Sugiyama concentrated on the tools and facilities of the collaborative game design and development process using in game functionalities of 3D game prototyping. The author divided the single player and multi-player into different platforms and approaches. In addition, they generated a project built by themselves which used in location-based entertainment named Game Design and Simulation testbed environment (GDS). According to this article, I knew how to use tools to design and built a game. Although the main idea of this article is using GDS in 3D game design, it also works in VR game design.

### ***2.2 Some Technology in Virtual Reality Games***

Some authors established a BCI-controlled VR online car racing game which allows multiple players to play it from different sites. This game is based on the structure of Internet of brains (IoB) [2]. And these authors used an experiment to prove the effectiveness of using the IoB in BCI-VR car racing game [3]. In addition, they clarify the background of the BCI-VR system and the reason why they use BCI-VR into this online car racing game [4]. This article is a successful example for me to introduce how to use technology in designing and building a VR game. After reading this article, I have a clear concept of how to analyze the data in my own research paper.

Martel and Muldner drew much attention on the researches of usability of hardware input devices. However, the researchers focused less on the control schemes. As a result, the authors generated a mixed-methods research. In this research, the authors chose three different types of control schemes in first-person VR games. This

article is important for my own research paper. Because controlling schemes play a significant role in any of the VR game. Thus, I can use the methods in this article to analyze whether the controlling scheme is suitable for players in the VR game I picked [3, 4].

The first article does not seem to have the players’ attitude about the game or tools. And the second article, the size of the samples in this experiment is too small and simple to clarify the advantages of this system used in this online car racing game. The third article, they failed to get other influencing factors when the players play the VR game. According to the limitation of these three articles, I propose a gap in my research paper. It is that both new design thinking and technology are making VR game successfully, by using a popular VR game—“Beat Saber” as an example.

### 3 The New Design Thinking in VR Game

#### 3.1 Introduce the VR Game—“Beat Saber”

“Beat Saber” is a light sword combat VR music game created by three people’s “Hyperbolic Magnetism” studio. In May 2018, the game got 1000 copies of the first day of sales and reached 50,000 copies in the first week. On May 25th, according to the data provided by the “Steamspy” Web site, “Beat Saber” has achieved sales of 160,000 on Steam. Up to 3/11/2018, “Beat Saber” still have high daily concurrent players. This is difficult for the games in the Steam [5] (Fig. 1).

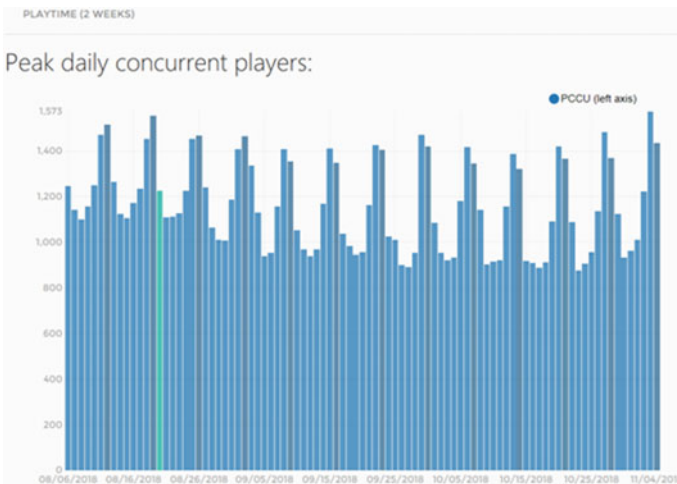


Fig. 1 Data provided by the Web site

The game company is called “Hyperbolic Magnetism” and its members are Vladimir Lokiman Hrinicar, Jan Split Ilavsky and Jaroslav Jerry Beck. At first, they started with the very popular VGA graphics computer game at the time. In college, they continued to develop games in a similar way and moved the direction completely to 3D technology.

### 3.2 *The New Design Thinking in “Beat Saber”*

(1) Simple and uniform style

The unification of interface style can reduce the strangeness of players participating in game interaction and avoid distracting thinking; properly weaken UI can better set off the scene. Using flash or sound to prompt user operation can replace some buttons. Floating layer level setting to be lighter, it can prevent users from losing their way when jumping between complex floating layers. If information can be grouped by level, it will be more helpful for users to select and operate [6]. “Beat Saber” as a music game can be said to be optimized to the extreme in terms of ease of operation. You do not need to press any buttons during the whole game, just you need to swipe your arm intuitively.

(2) Rational use of dynamic effects and provide correct and fast feedback

Good motion design makes the pages that are still at rest show subtle and interesting changes, attracting users’ attention and giving the interface objects vitality. Due to the high frequency of use, the commonly used functions in the game should reduce the animation effect as much as possible and use more rapid and direct way to display information; the dynamic effect of switching between floating layers is fast and natural, avoiding obvious interruption. Providing immediate feedback is one of the important principles of flow theory, efficiency and permission to discover. Providing immediate feedback helps users keep track of whether their operations are completed and the results of the operations.

(3) Reasonable design reading process

Text reading is a step-in designing interface interaction. If the designer wants to provide clues and promote the development of the plot, the text information in VR games is an important factor. Since these words are in a stereoscopic environment, readability is affected by distance, font, and font size. The design interface should consider the limits of the human brain’s processing of information. According to the theory of heart flow [7], a sense of control can be given by increasing the interest of reading designed by the designer. In the “Beat Saber”, the guidance in the game is also very clear, the handle which is presented in the game is the lightsaber, the squares are distinguished by different colors and different directions, at a glance.

- (4) Use of auditory elements and consider the player's physical comfort  
VR provides a full range of audiovisual presentations, and interface design should take advantage of these advantages to guide user interaction. In addition, if the button is slid or pressed, the feedback of the sound and special effects is appropriately increased, which also reduces the confusion of the user's operation. The design of the game scene should create a comfortable environment for the user, avoiding the scene being too bright or narrow and causing the user's eyes to fatigue. In terms of communication, I must talk about the very important element in the game—the lightsaber.

## 4 The New Technology in VR Game

### 4.1 *Game Model and Texture Production*

The low-level production of the scene is done in 3Ds Max software, and the model is imported into ZBrush to make the details. ZBrush software is the main software for character modeling. The ZBrush software greatly improves the efficiency of character modeling in the next era. The hand-painted board can easily realize the detailed engraving of the character model, which is simple and convenient. The software itself also has the powerful features of UV, which is easy to operate and more convenient. For the current situation where space is limited, the designer sets the perfect camera focal length and position in combination with the environment. Next, they hope to present the player's face to the audience completely, not just to the audience through strange angles. I do not know what the player is doing—because of this, the “Beat Saber” made with 3D MAX software and ZBrush software hopes to adjust the relative position without changing any hardware layout and system settings, only by software functions. In its place, the “ROOM ADJUST” panel, which provides the Hyperbolic Magnetism feature, gives players and viewers a perfect visual experience.

### 4.2 *Import the Model*

The interaction of VR games is only done in Unity 3D software. Import all previously completed scenes and models into Unity 3D software. Unity 3D software supports multiple import formats and exports different formats depending on the 3D modeling software. Here, it is exported by 3Ds Max, the format is FBX or OBJ, etc., and the model can be directly dragged into the Unity 3D software project, and the model can be adjusted in position and other attributes.

## 5 Conclusion

According to the data, the development of video games has been going through 54 years. VR technology gradually began to enter people's vision, VR's virtual and real conception, received most users like this is the innovation under the new technology, therefore, the development of the game also needs to gradually develop under this innovation. The use of VR games allows players to get rid of the situation of relying solely on the display in the process of experiencing online games. VR games integrate reality into the game and bring the game into reality, so that players can have no display.

The emergence of VR has brought many new possibilities for game design. Although the current visual experience of VR technology still has certain defects, with the continuous development of technology and hardware, its display mode will become more and more perfect. The broad prospects of VR technology in the game field have driven interface designers to adapt to the trend and evolve, and strive to transfer their skills from a limited, flat screen to explore and practice in a three-dimensional world without borders. In my future work, I will focus on how to design the VR game interface that conforms to the human visual cognition law will create a better immersive experience environment for users, thus stimulating the heart flow effect and realizing a better interactive experience.

VR games are full of thrills and excitement, and the demand for talents is large. Teamwork can better complete the development of the game. VR technology can also be combined with various industries to develop more hardware and software. More products will surely promote the integration of VR technology and multiple fields to form a huge VR industry.

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