

Usage of Virtual Reality Games in non Entertainment Industry

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Abstract—VR (Virtual Reality) technology is getting more popular these days, especially in entertainment and gaming industry. A lot of game developer team starts to create games that uses VR. But this technology could be used more than just for entertainment purpose. That's why in this paper the author will discuss about usage of VR games in the non entertainment sector.

Keywords— VR (Virtual Reality).

I. INTRODUCTION

^[1]VR, short of Virtual Reality comes from the definitions for both 'virtual' and 'reality'. Virtual means near to the real thing. And reality is what humans experience. And so, VR means near-reality, the experience that the VR device gives to the user, these experiences can be felt with humans 5 senses. sight, touch, hear, taste, and smell. Just like how human can feel the real thing happening besides them.

The development of VR has begin since long ago. Starts with visual realization through panoramic painting around 19th century that gives real sense of 360 degree view of the painted event. And then in 1838 Charles Wheatstone made a research in how brain processes the different two-dimensional images from each eye into a single object of three dimensions, called stereoscopic image that gives the viewer sense of depth and immersion that feels like looking at the real thing. 1929, "Link Trainer" a flight simulator for military purpose, invented by Edward Link that gives the user senses of flying a real plane. In 1930 science fiction predicts a pair of goggles that gives its users experience of a fictional world through holographics, smell, taste and touch which become the idea of VR nowadays. In 1930 come a Sensorama by Mortin Heilig that featured stereo speakers, a stereoscopic 3D display, fans, smell generators and a vibrating chair. In 1960 Mortin Heilig developed a VR head mounted display (HMD), focusing the virtual sight and hear of a mobile wearable device, ignoring the touch and smell function from Sensorama and later in 1961 it's developed by Philco Corporation, into a "Headsight", HMD that features motion tracking camera. The grand idea at 1965, an idea of Ultimate Display by Ivan Sutherland, where a HMD could give realistic 3D view with sound and tactile feedback, a real time virtual world, and a realistic interaction with virtual object.

"The ultimate display would, of course, be a room within which the computer can control the existence of matter. A chair displayed in such a room would be good enough to sit in. Handcuffs displayed in such a room would be confining, and a

bullet displayed in such a room would be fatal. With appropriate programming such a display could literally be the Wonderland into which Alice walked." – **Ivan Sutherland**

This idea later become the core of our current and future VR technology. Much later move intention in 1987, 1990s, and even in 2000s, VR is being improved into a properly mobile wearable head gear with more realistic function. Nowadays we might hear news about development of VR everywhere, but mostly in the area of entertainment and games. Virtual is indeed great in entertainment, but surely it can still be used for non entertainment purpose. It can be used for education, training, business purpose, like how the Link Trainer in 1920 helps pilots for flying simulation. Lots of benefits can be gain in the usage of VR outside entertainment sector. In this paper, the author will discuss about usage of Virtual Reality and it's advantages in the area of non Entertainment Industry.

II. DISCUSSION

A. Usage of VR in Entertainment

At the first development, VR mostly used in entertainment industry, such as movie, because sight and hearing are the easiest part to develop. It's features are still limited in visual and audio technology because it's the easiest part to develop. A lot more improvement has been given so VR device can be used into a wearable, lighter, and comfortable device to use.

^[2]Nowadays, VR, being heavily funded and developed, although mostly for entertainment purpose, has a lot of improvements with current technology. Such as having a better life like visual, clearer audio, and having free interaction with the virtual object using dynamic controller. ^[3]^[4]Furthermore, VR now is in development to give the users the rest sense that was unable to be applied. Taste and smell.

^[5]The VR gear itself, has been sold millions units in 2 years, showing how big the enthusiasms of people towards VR technology.

^[2]The usage, are mostly still in entertainment industry. A lot of games developed for VR compatibility to gives users new gameplay experiences further than old games where users only holding controller while looking at static screen. This experience can be greatly from in action and horror games.

B. Usage of VR in Non Entertainment

Some early usage of VR in non entertainment industry used the Link Trainer, a flight simulation for junior pilots in military

base. This invention has saved a lot of costs and lives because it's pretty costly to prepare the real plane and fuel, also it risks the safety of the junior pilots that has yet to learn how to fly.

But nowadays no much news flying around about development of VR in non entertainment industry. [9] While there are actually a lot of serious application used in non entertainment area (usually called serious games), there is one common lacking on them. they have no VR usage on it. Some serious games needs real human interaction, such as running vehicle simulations, trainings, and surgery. In these games, player can only use a fixed controller and thus, lacking the real experience they need. Moreover, the bad news is ^[10] some of these serious looking game, are actually not serious games, and actually just to fool around in the serious work looking environment, making it unusable for serious purpose. And some of actual serious game, become entertainment games because not polished yet.

^[11] The development in non entertainment industry still continues. It's not as rapid and as loud as entertainment area, but slowly improved. The main reason of it's slow development, are the lack of funding and interest of people on it. Most users from the 5 million VR gear sold, are using it for entertainment purpose. Serious application games that was developed for study, business, and simulations, can only be used by people in certain area of job. Thus making the demand is low compared to the entertainment ones.

Another reason of why VR in non Entertainment area development is slow, is because of it's complexity. A serious games such as vehicle or surgery simulation, must be made as realistic as possible and that's a hard work for the developer. A lot of possible input must be considered, the visual detail and function it needs, especially in a program that is critical such as vehicle training, or maybe surgery simulation.

C. Benefits of VR in Non Entertainment

^{[6][7][8]} While the non entertainment usage of VR is still in development, we can expect much usage and benefits it can give if the device is ready.

1. Military Training

Military training costs a lot, the weapons, ammunitions, training dummy, field, and also life safety. Some of these experience can be done with VR device, thus making it less costly and gives more safety.

2. Retail

Marketplace and trading could be improved as user could checkout the goods they want to buy even it's a big house, or just a small merchandise.

3. Bussiness Meeting

Most business company holds meeting periodically. Reserving a meeting place is costly. If the meeting could be done virtually, it could saves a lot of costs,

and can also reduce vehicle costs that is good for nature.

4. Tourism

Tourism promotion could be improved more than just HD pictures of the resort, but also the local area musics, and maybe even further the food smells.

5. Education

a lot of experience can be given to education area, such as field trip, working simulation, that can save time and cost to do the real thing.

6. Healthcare

Some joke surgery simulation, if developed even properly, can be beneficial for health purpose. It can help doctor to do surgery training, learning human body even further.

And there are more possibilities we can have if VR is more developed in non entertainment industry

III. CONCLUSION

Although the development of VR in non entertainment industry is rather slow, it has a lot of use and can be very beneficial for humanity.

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