



11440 n 136th street
scottsdale, az 85259

Senior Project Proposal
Griffin Saggau
December 18th, 2015

I. Title of Project:

Virtual Reality: A Game Changer

II. Statement of Purpose:

Virtual reality, once thought of as a gimmick, is now being introduced as a reality. By putting on a headset and a couple of motion controllers in your hands, you are transported into a virtual world. Of course the video game industry will be revolutionized, but once we look past fun and games and consider helpful applications of this young technology we could do more with VR than just entertainment. I will be comparing some of the VR technology available--specifically HTC vive, Oculus, Samsung, and google cardboard -- from a business standpoint. Ultimately I will discover which product is best in its entirety. I will be evaluating cost, performance, user/developer preference, etc.

III. Background:

Ever since I got my first Xbox in the second grade, I have loved video games, and my interest has continued to evolve. I now don't only enjoy playing them, but I've built my own gaming computer and I've recently started my internship at an independent videogame development company. They specialize in making virtual reality games. My job there is to help organize their online presence and social media outlets. Along with that I spend several hours everyday at my internship, teaching myself the complicated software they use for the games creation.

IV. Prior Research:

Virtual reality has a lot of potential outside of video games, and is currently being used in a variety of therapeutic settings. Especially when considering those suffering from a mental, physical, or emotional condition. There are reports of virtual reality being used as a form of therapeutic treatment to help veterans suffering from PTSD by simulating events in Afghanistan to help them cope with the traumatic situations they have had to deal with. This treatment helps veterans cope with triggers that would otherwise harm veterans who suffer from PTSD (Carson 2015). Virtual reality is also used to help individuals who have a fear of flying or are claustrophobic by simulating these experiences without the "risk". Some virtual reality programs can simulate a peaceful scenario that distracts from the pain which has shown to be extremely beneficial for burn victims, and that it is more potent than treatment from morphine. Individuals who have lost a limb, tend to suffer from phantom limb pain. A painful sensation in which they still feel as if the limb is attached and are unable to relax. Virtual reality allows them to use a



11440 n 136th street
scottsdale, az 85259

simulated limb to complete simple task, allowing some relief. Individuals suffering from brain damage can use virtual reality to solve simple puzzle games that test and repair cognitive function. Virtual reality even helps medical students simulate surgery without using actual cadavers. This is extremely useful as it cuts cost, resolves moral conflicts, and is easily accessible. There are also applications for kids with autism, meditation, disabled, and more.

Advances in the technology itself are allowing even further potential down the road. Recently, researchers in Germany have developed a device that simulates feeling inside of virtual reality (Feller 2015). Although it is in early stages there is speculation that it will become a large part of future virtual reality technologies.

The four main technologies that will be available for public consumption are the HTC Vive, Oculus Rift, PlayStation VR, and Google Cardboard. Despite none of them being available to the public, I have access to all of them through my internship. All four of these products serve to simulate virtual reality. All with their own slight nuances that set them apart.

V. Significance:

The potential of virtual reality has yet to be fully understood. There are many benefits that have already been uncovered, even though the product has yet to be released to the public. I, myself, have used virtual reality and understand how unique and innovative this technology is. As I mentioned before, a team of engineers have now uncovered the ability to simulate feeling and touch in virtual reality. This is a huge obstacle that has been overcome in the community. Despite it being discovered very recently, this only allows more room for innovation and greater use.

VI. Description:

I will be conducting research for virtual reality through online research. I will explore the differences between all four products through this method and by using the physical products and making my own observations. I will question actual video game developers about what their preference is. Dizziness is a major concern when using these headsets; addressing which product handles this major issue is another priority. I will investigate how affordable each product is, what kind of games/applications will be available, which products have the most efficient technology, and which have the most potential for growth. By this I mean how far the developers are willing to support and further support for their products.

VII. Methodology:

I plan to look up online a bulk of my research. This includes price points, technical statistics, release dates, available software, and the companies themselves. However, I will be conducting data directly from videogame developers. Specifically I will ask them which product they prefer from a development standpoint. I will also attempt to conduct a survey, with a group of willing participants. This survey will determine which product appeals to the consumer in comfortability and simplicity. This will be conducted by allowing those small amount of people to try out and test all the different types of headsets. Specifically, which products they think they would buy? How much would they be willing to spend on something like this? And this product is mostly



11440 n 136th street
scottsdale, az 85259

targeted to people who actively play video games, so their answers may vary from those who don't.

VIII. Problems:

This technology is incredibly new. It is not even available to the public at this point. So there might be some limitations in that respect: limited information and access to the technology. Getting a large enough group of participants. When I conduct a survey, that will also be difficult. I will need to find a large number of people willing to test and use each product. Not to mention question each of them.

IX. Bibliography:

Bymer, L. (2012, August 1). ARMY.MIL, The Official Homepage of the United States Army.

<http://www.army.mil/article/84453/>

Carson, E. (2015, April 8). 10 ways virtual reality is revolutionizing medicine and healthcare - TechRepublic. Retrieved November 23, 2015, from

<http://www.techrepublic.com/article/10-ways-virtual-reality-is-revolutionizing-medicine-and-healthcare/>

Epstein, Z. (2015, November 11). Virtual reality just got real: New tech lets users feel VR.

<http://bgr.com/2015/11/11/virtual-reality-games-accessory-impact/>

Feller, S. (2015, November 21). Doctors use virtual reality imaging to treat blocked coronary artery. UPI.com. Retrieved from

http://www.upi.com/Health_News/2015/11/21/Doctors-use-virtual-reality-imaging-to-treat-blocked-coronary-artery/3191448150485/

Full immersion virtual reality. (n.d.).

<http://www.futuretimeline.net/21stcentury/2039.htm#.VmBaOPmrSUK>

Strickland, J. (n.d.). How Virtual Reality Military Applications Work. Retrieved December 3, 2015,

from <http://science.howstuffworks.com/virtual-military.htm>

Virtual Reality in the Military. (n.d.).<http://www.vrs.org.uk/virtual-reality-military/>

The best VR headsets. (n.d.). Retrieved December 3, 2015, from

<http://www.wareable.com/headgear/the-best-ar-and-vr-headsets>

Wohlsen, M. (2015, November 11). Google Cardboard's New York Times Experiment Just Hooked a Generation on VR.



11440 n 136th street
scottsdale, az 85259

<http://www.wired.com/2015/11/google-cardboards-new-york-times-experiment-just-hooke-d-a-generation-on-vr/>

Rosenbaum, S. (2015, November 2). The Future Of Virtual Reality Video Has Arrived.
<http://www.forbes.com/forbes/welcome/>