**Name:** Max O’Sullivan

**Student ID:** 19234481

**What is VR?**

VR is an acronym for ‘Virtual Reality’ and is an advancing form of technology in the modern world. It is most commonly known for its involvement in the video game industry, even though the technology can be used for other purposes as well. It is currently being implemented to other entertainment industries and is even being used for education in some facilities around the world.

*“Virtual reality is a synthetic technology combining three-dimensional video, audio, and other sensory components to achieve a sense of immersion in an interactive, computer-generated environment.”* **- (**Heim, M. (2014) Virtual Reality. Encyclopedia of Aesthetics [online]. Available [here](http://www.oxfordreference.com/view/10.1093/acref/9780199747108.001.0001/acref-9780199747108-e-740) or [here](https://www-oxfordreference-com.proxy.lib.ul.ie/view/10.1093/acref/9780199747108.001.0001/acref-9780199747108-e-740)**)**

The most common image that relates to VR is the headset you see people wearing like goggles, yet VR is often made up of a wide variety of equipment to cater for as many human senses as possible. For example, motion trackers can be used to follow the users’ head and body movement to give both control and immersion to the user. Headphones, or other sound systems, are often used alongside the headset too. Sometimes sensors are used to indicate to the user that they are nearing a wall or object in their physical space.

VR games over the past few years have opened up a new market for the industry with their immersive gameplay design and equipment. Unfortunately, commercial VR is limited to a small community of people thanks to the cost of the hardware needed. Although optimisation of VR games allows them to run on a wide variety of computers/consoles, a lot of VR games when compared to standard monitor games have a significant, minimum demand from users’ systems. This is usually the case since more processing, graphical and memory input is often required to play these games comfortably.

The equipment used in Virtual Reality is quite similar to what Augmented Reality uses, however both can be considered as two completely different industries. They are often mistaken for each other as they both may be used with headsets. The following quote from the article ‘People About Virtual Places: A Qualitative Perspective’ discusses the differences between the two quite well:

*“In augmented reality (AR) environments, users experience the physical environment and other users directly along with mediated virtual objects embedded in the environment. In immersive virtual reality (VR), users experience of a visual environment (and sometimes other senses) is completely mediated.”* **– (**People About Virtual Places: A Qualitative Perspective [online], p. 204, Available [here](https://s3.amazonaws.com/academia.edu.documents/42041134/Telling_People_About_Virtual_Places_A_Qu20160204-30232-xigvk3.pdf?response-content-disposition=inline%3B%20filename%3DTelling_people_about_virtual_places_A_qu.pdf&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=ASIATUSBJ6BAAAHWWGEK%2F20200509%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20200509T171417Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Security-Token=IQoJb3JpZ2luX2VjELb%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCXVzLWVhc3QtMSJIMEYCIQCrHx4gWLoMRTSmE2txY3VP5R%2BhtiPkk8JUlW2EcUsh1QIhALp8BTy2SqV6PoZ9E4q2WWJoY2wRQZgzIDBP%2Fs8nWJI8Kr0DCO%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEQABoMMjUwMzE4ODExMjAwIgyte4E0NxT8yPF6IKsqkQM5%2BU46diNLVLS74M4CvunbDRSA3YxwNxRrl%2BExanGI%2Bvz6usM89BwThpflrguu9lfOFYMg%2Bupo74W0iyJnSYfEk5q%2FrQHVK8KxBMFBB71USQOTOe2DrxOvWjRrSGqm4KPTiAxMxs%2BzfKqTv3Ad%2BteivT3rxYL34d524khve22Ii5e52ECxNHJ05u4T%2BtsZx9FWGw7rdFxphuoAgnRCd%2Bq4Q006iRmnKl5i4RBedH5ZG4qT3rJTcv9%2B%2Bu7%2FNPpN4g%2Fkt4UYKlb4sMNe1qoPNfiFYMRRQVEDw%2BZX0QZRuuYcQ6Fyg1H4TrQUedD7Mhnhi6xtXMZrUtJ%2BXFOcx0quiUm34c%2FM99bUs3q5YMw80s6aGFWnFmGW%2Fs8E11neQFuy6N9gQVUE%2Fc%2BFXezTW91wvv%2F6vm7aovkU6UDz747SVHxHgW1%2BRVJ9%2F5InSOkFOPp%2BncOypGV5grXdAJAWAfw1grx5oHW0lsy90hPlKexR6CO72CdLpgLrN99V8ATzflh7TvOjUqTjmLkbtHfkkkrn7SoDYDDQ4tr1BTrqAcBzmQG92B7%2FCgCfKH02xJxFdy9xspa0KzFANDaAeRUZs081z4TFquWURkf1Jim275eutn9qilVRljiFQJ5Vc3bH8kv9HW2Lwvb1ipdww4f7b8R1ohxGukDJVGPSxxrPQlHKDpKvPGADi42GGkc4mN5ERpE5mHCsXQTVf1CkN2xaBoenJY9YZZi7dWqO0Zy5PzI4tlukOef2%2BkmvmCTZmrpN83nWtQ7Aqqh5tXQfGIee8OVLNa2n8j%2BMnvEEHjnqjc1tCoc0DjJXxxdRylIPMSbBN9qK2dYSriU2vFQGLUTPXXM%2BArFklmuV5Q%3D%3D&X-Amz-Signature=70c3ec200eb0d21db9233df2b29e50b38077eb28ce46fabc8b6a7b1a7a03e974#page=205)**)**

**VR Hardware Available Today:**

Just like many other technologies and commercial products, a wide selection of VR headsets and hardware is available to the public. In this section I hope to give a summary of just a few of these VR products along with their expenses.

**The Valve Index:**

The Valve Index is one of the most advanced and, understandably, most expensive VR kits available to the public today. It is relatively new at the time of writing this as it was released on the 28th of June 2019.

**[](https://steamstore-a.akamaihd.net/public/images/valveindex/kit_social_media.jpg)**

As seen in the image, this VR kit includes a headset with built-in headphones, one controller for each hand and two ‘SteamVR 2.0 Base Stations’ which track the user. The headset has a 1440 x 1600 liquid-crystal display per eye and allows the user to adjust the field of view to their preference. The Valve Index controllers also contain sensors that track each individual finger of the user’s hands, allowing for a more immersive experience when compared to other VR controllers.

At the time of writing, the Valve Index kit is at a cost of €1,079 if bought from Valve itself. Unlike some other VR kits though, the Valve Index allows users to test their PC from the store page using downloadable software, alongside giving a list of minimum components and specifications needed. This allows potential buyers to ensure that their computers are ready to run the Valve Index before committing to buying.

Additional information on the Valve Index can be found at both the [Steam Store Website](https://store.steampowered.com/sub/354231/) and the [Valve Software Website](https://www.valvesoftware.com/en/index/headset).

**The HTC VIVE:**

In terms of VR in modern day gaming, the HTC VIVE would be a mid-range VR kit to own. It lacks some of the features that the Valve Index VR kit brings but still offers a Virtual Reality experience to those who can afford it.

[](https://uploads.ifdesign.de/award_img_317/oex_large/199745_01_317-199745-1.jpg)

The VIVE VR kit includes a headset, base stations and controllers as shown. Unlike the Index however, it does not have built-in headphones to the headset. The headset contains a dual 1080 x 1200 AMOLED 3.6’’ diagonal display with a refresh rate of 90 Hz. Similar to the Valve Index, the VIVE also allows for adjustable field of view to match the user’s preference.

Since its release in 2016, the HTC VIVE kit can be obtained for a wide variety of prices depending on the seller. Its minimum component specifications are only slightly lower than that of the Valve Index and HTC too allows users to test their hardware using downloadable software. From the VIVE Store page, this VR kit can be bought for the price of €599.00.

Additional Information on the HTC VIVE can be found at the [VIVE Website](https://www.vive.com/eu/product/vive/).

**PlayStation VR:**

Unlike both the Valve Index and HTC VIVE, PlayStation VR is designed for the PlayStation 4 console and is not officially supported on PC. When compared to the other two VR kits, PSVR would be on the lower end in terms of a gaming Virtual Reality experience.

[](https://media.playstation.com/is/image/SCEA/vr-refresh-trial-headset?$native_t$)

The PSVR kit includes the PSVR headset, PlayStation Move motion controllers and a PlayStation Camera to track the user. It does not include headphones and the controllers offer very little more in terms of immersive design when compared to the standard PlayStation Dualshock 4 controllers. The headset has a 1920 x 1080 5.7” OLED display and allows for some adjustment to the field of view.

The PlayStation VR kit cannot be bought directly from the PlayStation Store page however, making the price vary significantly. It is currently available at [Gamestop](https://www.gamestop.ie/Playstation%204/Games/46341/playstation-vr) for €299.99, and a PlayStation 4 console is required to use it.

Additional information on PlayStation VR can be found at the [PlayStation Store](https://www.playstation.com/en-ie/explore/playstation-vr/).

**Sources Used:**

The following are links to all sources used for quotes, images and information in general.

Quote 1: (<http://www.oxfordreference.com/view/10.1093/acref/9780199747108.001.0001/acref-9780199747108-e-740>)

Or

(https://www-oxfordreference-com.proxy.lib.ul.ie/view/10.1093/acref/9780199747108.001.0001/acref-9780199747108-e-740)

Quote 2:

(https://s3.amazonaws.com/academia.edu.documents/42041134/Telling\_People\_About\_Virtual\_Places\_A\_Qu20160204-30232-xigvk3.pdf?response-content-disposition=inline%3B%20filename%3DTelling\_people\_about\_virtual\_places\_A\_qu.pdf&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=ASIATUSBJ6BAAAHWWGEK%2F20200509%2Fus-east-1%2Fs3%2Faws4\_request&X-Amz-Date=20200509T171417Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Security-Token=IQoJb3JpZ2luX2VjELb%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCXVzLWVhc3QtMSJIMEYCIQCrHx4gWLoMRTSmE2txY3VP5R%2BhtiPkk8JUlW2EcUsh1QIhALp8BTy2SqV6PoZ9E4q2WWJoY2wRQZgzIDBP%2Fs8nWJI8Kr0DCO%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEQABoMMjUwMzE4ODExMjAwIgyte4E0NxT8yPF6IKsqkQM5%2BU46diNLVLS74M4CvunbDRSA3YxwNxRrl%2BExanGI%2Bvz6usM89BwThpflrguu9lfOFYMg%2Bupo74W0iyJnSYfEk5q%2FrQHVK8KxBMFBB71USQOTOe2DrxOvWjRrSGqm4KPTiAxMxs%2BzfKqTv3Ad%2BteivT3rxYL34d524khve22Ii5e52ECxNHJ05u4T%2BtsZx9FWGw7rdFxphuoAgnRCd%2Bq4Q006iRmnKl5i4RBedH5ZG4qT3rJTcv9%2B%2Bu7%2FNPpN4g%2Fkt4UYKlb4sMNe1qoPNfiFYMRRQVEDw%2BZX0QZRuuYcQ6Fyg1H4TrQUedD7Mhnhi6xtXMZrUtJ%2BXFOcx0quiUm34c%2FM99bUs3q5YMw80s6aGFWnFmGW%2Fs8E11neQFuy6N9gQVUE%2Fc%2BFXezTW91wvv%2F6vm7aovkU6UDz747SVHxHgW1%2BRVJ9%2F5InSOkFOPp%2BncOypGV5grXdAJAWAfw1grx5oHW0lsy90hPlKexR6CO72CdLpgLrN99V8ATzflh7TvOjUqTjmLkbtHfkkkrn7SoDYDDQ4tr1BTrqAcBzmQG92B7%2FCgCfKH02xJxFdy9xspa0KzFANDaAeRUZs081z4TFquWURkf1Jim275eutn9qilVRljiFQJ5Vc3bH8kv9HW2Lwvb1ipdww4f7b8R1ohxGukDJVGPSxxrPQlHKDpKvPGADi42GGkc4mN5ERpE5mHCsXQTVf1CkN2xaBoenJY9YZZi7dWqO0Zy5PzI4tlukOef2%2BkmvmCTZmrpN83nWtQ7Aqqh5tXQfGIee8OVLNa2n8j%2BMnvEEHjnqjc1tCoc0DjJXxxdRylIPMSbBN9qK2dYSriU2vFQGLUTPXXM%2BArFklmuV5Q%3D%3D&X-Amz-Signature=70c3ec200eb0d21db9233df2b29e50b38077eb28ce46fabc8b6a7b1a7a03e974#page=205)

Valve Index Information:

(<https://www.valvesoftware.com/en/index/headset>)

(<https://store.steampowered.com/sub/354231/>)

Image Source: (https://steamstore-a.akamaihd.net/public/images/valveindex/kit\_social\_media.jpg)

HTC VIVE Information:

(<https://www.vive.com/eu/product/vive/>)

Image Source: (https://uploads.ifdesign.de/award\_img\_317/oex\_large/199745\_01\_317-199745-1.jpg)

Playstation VR Information:

(https://www.playstation.com/en-ie/explore/playstation-vr/)

Image Source: (<https://media.playstation.com/is/image/SCEA/vr-refresh-trial-headset?$native_t$>)

Gamestop Price: (https://www.gamestop.ie/Playstation%204/Games/46341/playstation-vr)