A DEFINITIVE GUIDE TO VIRTUAL REALITY

After the huge success of our The Definitive Guide :Augmented Reality 2020,

we are now presenting the A DEFINITIVE GUIDE: Virtual Reality 2020.

In this VR guide you will learn:

- Characteristics of Virtual reality
- Definitions of Virtual Reality
- How did Virtual reality evolve?
- Real-world applications of Virtual Reality
- Difference between Augmented Reality and Virtual Reality | AR vs VR
- Future of Virtual Reality | VR 2020
- Best VR handsets of 2020
- Difference between Augmented Reality and Virtual Reality | AR vs VR
- Future of Virtual Reality | VR 2020
- Best VR handsets of 2020

What is virtual reality?

One of the most common examples that quickly help someone in relating to Virtual reality is the VR games. The VR games are often being seen played by people of different ages in the shopping malls. Whether it is a 10-ye-old child or a 50-year-old man VR games transport the players in another world! Players shout, laugh and act as if they are shooting the zombies or driving a racing car! It's fun watching these VR game players.

Virtual reality is an alluring experience where an individual is not just an observer but a participant in the story. A user after putting the VR headsets is transported to a new world thinking that how is this so real? Sounding cool? It is cool more than someone can imagine. Do you think that games are the only offsprings of this revolutionary technology? The answer is, no. This blog will make you familiar with the fundamentals of VR, the evolution of VR, the real-world application of VR and the future of VR.

Wikipedia defines VR as a simulated experience that can be completely different or similar to that of real-world environment. Some of the common applications of VR technology are found in video games, education, training, etc.

Cambridge Dictionary defined VR as a set of sounds and images that are computer-generated and seem to present a situation or a place in which a person can participate.

VR in simple words can be defined as the use of computer technology for creating a simulated environment that places a user in an entirely new experience.

There are several other definitions of VR but the essence remains the same. VR is a revolutionary technology that lets a user experience a world that is not even created!

It allows a user to see the surrounding world in other dimension along with creating an experience that is not accessible in real life or even not yet created.

Characteristics of Virtual reality

There are three major characteristics of immersive VR technology

- VR is computer-generated; the complex 3D computer graphics that change in real-time makeup the VR world.
- VR is immersive; the artificial environment generated in VR immerses the user in the artificial environment in such a way that the users feel that they are in the real world.
- VR is believable; the artificial environment generated with VR makes a user feel that they are both physically and mentally present in the computer-generated environment.
- VR is interactive; a user in the VR environment can interact with objects present in the environment.

How did Virtual reality evolve?

The virtual reality which seems to be a new concept started way back in the 1930s. Let's see how this technology evolved throughout the decades.

1930

The overall concept of Virtual reality dates back to the year 1930s. It was the year when the idea of a pair of goggles that takes the wearer to a new fiction world was evolved in the story "Pygmalion's Spectacles" by Stanley G. Weinbaum.
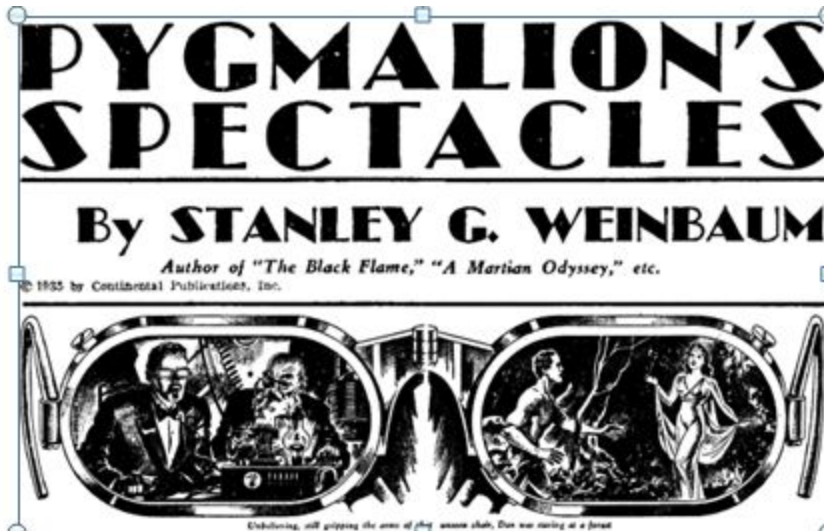
Credit: Medium

1950

In the 1950s, Sensorama was developed by the cinematographer Morton Heilig. This is one of the earliest known multi-sensory and immersive technologies. Sensoroma was a mechanical device with features including stereo speakers, smell generators, vibrating chair, and a stereoscopic display. Despite several features, the device was not interactive.

Credit: newcomputermeuseum

1960

In the year 1960, the first VR head-mounted display (HMD) was developed. The purpose of the development of this headset was to view the unpredictable situations of the military. The headset provided a stereoscopic 3D wide vision along with a stereo sound.
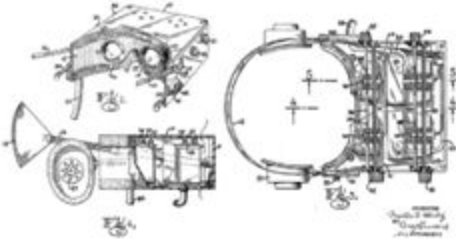
Credit: Wikimediacommons

1965

Ivan Sutherland, "Father of Computer Graphics" developed an HMD system that was a way ahead of its time. The system was able to simulate reality to an extent where it was difficult to determine the difference between the virtual and real worlds.

In 1965, Ivan Sutherland developed the Ultimate Display, an HMD system that could simulate reality to the point where one could not tell the difference between the real and virtual world.

Credit: Le HMD d'IvanbSutherland

1974

Videoplace a camera developed by Myron Krueger was developed in the year 1974. The video camera also included a projection system that produced shadows on the screen. The video camera allowed users to be present in an interactive environment.

Credit : Inventing Interactive

1989

The project VIEW (Virtual Interface Environment Workstation) was developed by NASA. VIEW was a head-mounted display system that displayed a computer-generated environment. An operator can "step into" this environment and interact with it. The operator using VIEW wore gloves with fiber optic cables and sensors. The computer-generated image moved exactly in the way in which the gloved hands moved.

Credit: warrenobinett

2007

Google Street view has made our lives easier. A user can stand in any part of the world and can look around for finding and exploring the new locations. Google Street View was launched back in the year 2007. This Google product utilized a regular

dodecahedron camera that captured 360- degree high-resolution video from all the directions.

2010

This was the year when the first prototype of Oculus Rift was built by Palmer Luckey. The virtual reality headset used in the prototype was capable only of the rotational tracking.

2014

Facebook bought the Oculus Company this year and the VR products such as Google Cardboard, Samsung Gear VR and PSVR were also launched this year. VR became a topic of interest by this year.

2018

The year 2018 marked a rise of standalone VR devices with a release of several VR systems. The evolution VR 2.0 marked a rise in VR technologies like Steam and Valve. The standalone VR was no more operated on computers and phones.

2019

The year 2019 marked a rise in mixed reality systems along with sophisticated technologies in the VR headsets. The year turned out to be strong for VR with a base of Oculus Quest, a standalone headset of Facebook. Oculus Quest created a lot of momentum and interest in 2019.

The evolution of virtual reality is wonderful. From the earliest ideas of Morton Heilig in 1950s, Sensoroma simulators in 1960 to the Oculus Quest in 2019 VR have been evolving and improving continuously. The businesses will continue to leverage the power of this revolutionary technology for their product and services advancement

Real-world applications of Virtual Reality

VR since its birth has attracted interest and attention of individuals and organizations. VR is beyond gaming, it extends to business solutions that significantly improve the customer experience and engagement along with making business processes efficient. VR offers a powerful, easy and intuitive ways of human interaction that offer numerous benefits in different areas.

A realistic simulated environment without a complex interface is fostering VR application in several industries. It was the VR wonder that led to the evolution of flight simulators that recreate the environment in which an aircraft flies.

VR in military

Ever thought how the military personnel is trained and educated? What if an artificial yet safe environment is generated where the personnel can get an opportunity to experience life-threatening and dangerous environment for their training? VR is doing wonders in the area of training in the military by simulating the environment in which there is no risk of injury or death. Using VR in military training the personnel are given combat training, battlefield training, boot camp, and vehicle training. In addition, VR in the military is also used for physical training, survival skills training and weapons drill training.

United States army using VR for training

The United States (US) army is using VR to train its soldiers to navigate the real cities. The VR in US military training is keeping the soldiers on their toe. The US Army has also created a "Synthetic training environment" that allows the soldiers to combat and practice 100s of scenarios before setting their foot on the real battle zone. The STE driven by virtual reality transports the soldiers to a new terrain or country just by strapping a pair of VR glasses. Thanks to revolutionary VR that prepares our soldiers to fight the challenging and dangerous situations in a cost-effective and safe manner.

VR in healthcare

VR apart from changing the face of gaming is also revolutionizing the healthcare sector. VR is healthcare that is transforming the surgical processes along with treating mental health disorders like Autism and memory loss.

VR headsets in surgical processes are used for mimicking the real surgery processes helping the surgeons improving the operating room preparedness and efficiency. VR platforms in surgical processes store the patient data and images and display the same in the most interactive manner during a surgery process. Imagine how the 3D models of body organs right in front of the surgeons would help them in conducting complex surgeries.

VR assisting the heart surgeries

The surgeons at Stanford's Lucile Packard Children's Hospital use VR to plan their surgeries and understand the anatomy of the child patients before making a single cut.

Medical professionals at Stanford's Lucile Packard Children's Hospital have been using True 3D to plan heart surgeries, allowing them to understand a patient's anatomy before making a single incision. A study conducted indicates that participants trained through VR completed the surgery process 20% faster with 38% correct steps given in the procedure-specific checklist.

VR in education

VR in education is making it a real fun like never before. The VR is being used by Colleges to take students on a virtual tour, for example, the solar plants and the museums. VR in education delivers an experiential form of learning. Experiential learning is learning by doing. Students can retain the knowledge obtained through the VR platform for longer.

Credit: mediajobs

VR making complex concepts easier

CEO of Miami's Children Health System states that the retention rate of VR training is up to 80 % even after a year of training in comparison to just 20% with the traditional training methods. The VR visual formats are the solution to the knowledge retention problem of millions of students.

Distance Education and Learning Technology Applications (DELTA) at NC State University have utilized VR for making the complex Biology concepts easier and interesting. Using VR University is immersing field-based experiences. The University of British Columbia also experiments with the Virtual lecture halls

VR in sports

The game is not over yet! VR is making the life of athletes easier. The VR headsets allow the sportspersons to practice anytime and anywhere in the same manner as if they are practicing in the real fields. The phenomenon of using VR in sports is not new.

Eon sports uses VR app for training

EON Sports is one of a leading virtual reality sports training application developers. Several college and professional sports teams use EON's products for training their persons. Some of the widely known clients of the company include the New England Patriots, the Dallas Cowboys, Tampa Bay Buccaneers etc.

VR in real estate

Buying or selling a property is a cumbersome task. The real-estate agent provides a long list of properties and then after some negotiations and explanations, the customers finally take a real-life visit to the apartment or the property. The process is indeed time consuming and inconvenient. VR in real estate is changing the face of the sector. VR headsets let the customers see the properties without actually visiting there!

VR in real allows the buyers to make a virtual interactive visit to properties where they can move across the property just by clicking on the view field. A customer using VR can even see a space with furniture. A user gets a complete view of the new property. This is also known as the process of virtual staging. According to the report of Profile of Home Staging, 77% of agents believe that buyers often associate a staged property with their future homes. Zillow's, for example, is a 3 D real estate tool that allows the users to navigate through the new property by clicking the rooms on the right side of the page.

VR in Retail

Now see how VR is creating ripples in the retail sector. VR in retail is allowing retailers to reach a bigger audience. The users using the VR capabilities get access to their favorite product and brand from the comfort of their home! Shopping with VR is true fun; users try their favorite sunglasses or the sneakers using the VR app. If you think that a picture is worth 1000 words then a VR experience is worth millions.   The VR experience in the retail industry lets the retailers demo complex products to customers across the world without worrying about the language differences.

It would be getting difficult to imagine how a user can take a virtual tour of a store and shop the products interactively. Let's have a look at one of the examples.

Alibaba uses the VR capabilities

Alibaba, a Chinese multinational conglomerate holding company that specializes in in e-commerce, retail, Internet, and technology.

The company introduces a VR shopping experience back in 2017. The shoppers were walking through the stores to buy the products and taking an all-angle view of the products. In addition to Alibaba, Addidas, Cisco, Ikea, Tesco also dove their customers in VR store experience.

Difference between Augmented Reality and Virtual Reality | AR vs VR

The differences between Virtual reality and Augmented Reality have been explained in tabular form in our Definitive guide: augmented reality 2020. The same is explained in pictorial form.

Real benefits of Virtual Reality for businesses

Till now the idea of Virtual Reality is clear. Now a question may arise that how his revolutionary, immersive technology will help the businesses:
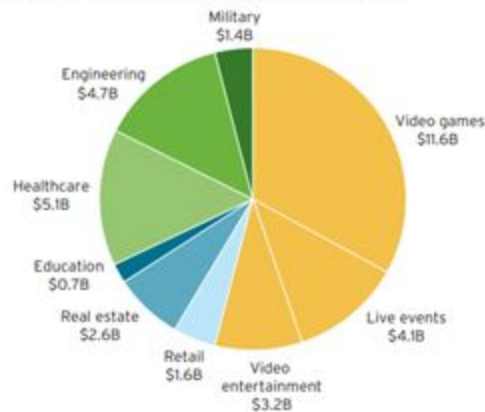
- Improved user experience – What is user experience? User experience can be defined as the experience a person has after using a website, product or application. User experience can make or break the customer's perception of a company. The rich VR content ensures that user get a pleasing experience after using the VR app.
- Improved brand awareness – A VR experience improves brand awareness. The rich and immersive VR content makes a user familiar with a brand in depth. Around 75% of the big brands of the world integrated VR into their marketing strategy.
- Improved consumer interaction – The customer's interactions have gone through significant changes in the past few decades. There are several devices, channels that are keeping the customers 'always on'.
- Unbelievable training experience – Are you facing issues in making tour large and small training engaging, interactive and interesting? Employees are often found yawning in the middle of the training session. There are millions of businesses that face the same issue while training. VR in training will increase knowledge retention by 95%, reduce the training time by 60% and improve the engagement 8 times.

 Traditional advertising is an old school. The companies need to catch the industry pace by improving the businesses using innovative immersive technologies like augmented reality and Virtual reality. Businesses cannot afford to lose an opportunity that will connect them with their customers like never before. Do not wait for the right time, the right time is here! Contact us for the best VR services that will give new energy to your business processes.

Future of Virtual Reality| VR 2020

Adopting VR & AR: What Enterprises are Doing

48% are considering adopting VR
23% within the next 3 years

67% are considering adopting AR
30% within the next 3 years

Top 3 areas of interest for using VR
- Simulation exercises
- Employee testing and training
- Computer modeling

Top 3 areas of interest for using AR
- Simulation exercises
- Employee testing and training
- For use in products

Response base: 205
Source: Tech Pro Research
Figure 2

Projected Revenue Prediction for VR & AR by Sector

- Military $1.4B
- Engineering $4.7B
- Healthcare $5.1B
- Education $0.7B
- Real estate $2.6B
- Retail $1.6B
- Video entertainment $3.2B
- Live events $4.1B
- Video games $11.6B

Source: Goldman Sachs Global Investment Research
Figure 3

The future of these shining and immersive technologies is depicted currently in the above infographic. The industries that will use VR as one of their mainstream technology include education, healthcare, real estate, retail, video games, military, etc. VR video games, VR Live events, and VR video entertainment industries may witness most of the VR usage. The Goldman Sachs report also predicted that the VR and AR market will reach $80 billion by 2025. Citibank predicts the same market to reach $200. billion by 2020.

Several forces will continue to offer a stronger base to the immersive technologies, one of them being is the 5G network. The speedy network will transfer the data at a speed of 3 gigabits per second. The 5 G network will improve the VR experience making it more real and immersive.

Even the governments of different nations have realized the potential of these immersive technologies. VR has become a part of the national strategy of the US. National Information Infrastructure (NII) has supported the enlistment of VR as key field support by the US government. The military of the state is getting new energy with VR application in areas such as performance evaluation of weapon systems, commanding of large-scale military exercises and operating training on various equipments.

Our blog on the idea of Virtual reality rooms for seniors also presents an idea that how VR in the future may help the seniors in traveling the world from the comfort of their place! The future VR will have more real elements including the feel of the blowing wind or the scorching heat of the dessert!

Best VR handsets of 2020

- Oculus Quest
- Oculus Rift S
- Playstation VR
- Oculus Go
- HTC Vive
- Valve Index
- Pansonite 3D VR Glasses
- Samsung Gear VR

The VR guide presented in the above blog is one of the efforts to provide a detailed insight into the revolutionary VR technology. This is however not an exhaustive guide, as VR is a vast concept, explore more to discover more!