

# VIRTUAL REALITY

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# What is virtual reality?

The promise of virtual reality has always been enormous.

Put on these goggles, go nowhere, and be transported anywhere.

So what is virtual reality?

# Features of Virtual Reality Systems

There are many different types of virtual reality systems but they all share the same characteristics such as the ability to allow the person to view three-dimensional images. These images appear life-sized to the person.

Plus they change as the person moves around their environment which corresponds with the change in their field of vision. The aim is for a seamless join between the persons head and eye movements and the appropriate response, e.g. change in perception. This ensures that the virtual environment is both realistic and enjoyable.

# Features of Virtual Reality Systems

A virtual environment should provide the appropriate responses in real time- as the person explores their surroundings. The problems arise when there is a delay between the persons actions and system response or latency which then disrupts their experience. The person becomes aware that they are in an artificial environment and adjusts their behaviour accordingly which results in a stilted, mechanical form of interaction.

# History of Virtual Reality

1860s : Virtual reality can trace its roots to the 1860s, when 360-degree art through panoramic murals began to appear. An example of this would be Baldassare Peruzzi's piece titled, Sala delle Prospettive.

1930s : "Pygmalion's Spectacles" [5] by Stanley G. Weinbaum describes a goggle-based virtual reality system with holographic recording of fictional experiences including smell and touch.

1950s : Morton Heilig wrote in the 1950s of an "Experience Theatre" that could encompass all the senses in an effective manner, thus drawing the viewer into the onscreen activity. He built a prototype of his vision dubbed the Sensorama in 1962, along with five short films to be displayed in it while engaging multiple senses (sight, sound, smell, and touch). Predating digital computing, the Sensorama was a mechanical device, which reportedly still functions today. Around this time, Douglas Englebart uses computer screens as both input and output devices.

# History of Virtual Reality

1966 : Thomas A. Furness III introduces a visual flight simulator for the Air Force.

1968 : Ivan Sutherland created what is widely considered to be the first virtual reality and augmented reality head-mounted display system. It was primitive both in terms of user interface and realism, and the HMD to be worn by the user was so heavy it had to be suspended from the ceiling. The graphics comprising the virtual environment were simple wire-frame model rooms.

1977 : Also notable among the earlier hypermedia and virtual reality systems was the Aspen Movie Map, which was created at MIT in 1977. The program was a crude virtual simulation of Aspen, Colorado in which users could wander the streets in one of three modes: summer, winter, and polygons. The first two were based on photographs and the third was a basic 3-D model of the city.

# History of Virtual Reality

1980s : The term "virtual reality" was popularized by Jaron Lanier, one of the modern pioneers of the field. Lanier had founded the company VPL Research in 1985, which developed and built some of the seminal "goggles and gloves" systems of that decade.

1990 : Jonathan Waldern, a VR Ph.D, demonstrates "Virtuality" at the Computer Graphics 90 exhibition staged at London's Alexandra Palace.

1991 : Sega announces the Sega VR headset for arcade games and the Mega Drive console. It used LCD screens in the visor, stereo headphones, and inertial sensors that allowed the system to track and react to the movements of the user's head.

1991 : Virtuality launches and goes on to become the first mass-produced, networked, multiplayer VR location-based entertainment system. Costing up to 73,000 per multi-pod Virtuality system, they featured headsets and exoskeleton gloves that gave one of the first "immersive" VR experiences.

# History of Virtual Reality

1992 : Computer Gaming World predicts "Affordable VR by 1994".

1994 : Sega releases the Sega VR-1 motion simulator arcade attraction, in SegaWorld amusement arcades. It was able to track head movement and featured 3D polygon graphics in stereoscopic 3D

1995 : The artist Maurice Benayoun creates the first VR artwork connecting in real time 2 continents: the "Tunnel under the Atlantic" between the Pompidou Centre in Paris and the Museum of Contemporary Art in Montreal. The installation included dynamic real time 3d modeling, video chat, spatialized sound and AI content management.

1995 : Virtual Boy was created by Nintendo and was released in Japan and North America.

# History of Virtual Reality

2001 : SAS3 or SAS Cube has been the first PC based cubic room, developed by Z-A Production

2007 : Google introduces Street View, a service that shows panoramic views of an increasing number of worldwide positions such as roads, indoor buildings and rural areas.

2013 : Nintendo files a patent for the concept of using VR technology to produce a more realistic 3D effect on a 2D television. A camera on the TV tracks the viewer's location relative to the TV, and if the viewer moves, everything on the screen reorients itself appropriately. "For example, if you were looking at a forest, you could shift your head to the right to discover someone standing behind a tree."

# History of Virtual Reality

2014 : Facebook purchases a company that makes virtual reality headsets, Oculus VR, for 2 billion. Sony announces Project Morpheus, a virtual reality headset for the PS4. Google announces Cardboard, a do-it-yourself stereoscopic viewer for smartphones.

2014 : Google and others invest more than 500m into Magic Leap, a startup company that is working on head-mounted devices which superimpose 3D computer-generated imagery over real world objects, by projecting a digital light field into the user's eye.

## Augmented Reality

This involves literally augmenting reality with virtual information. An augmented reality app will typically annotate live video with information in various formats. One novel example is a table top racing game in which you actually race on your table.

## Virtual Worlds

Virtual worlds, such as Second Life, are played over the internet using a PC. Such applications open up a sandbox, allowing you to manipulate the world around you and can often feature their own currencies, with exchange rates to boot. There is even a booming virtual real estate market on Second Life.

## Kinect

This recent release by Microsoft probably offers one of the most in-depth virtual reality experiences around. The Kinect, at its core, is a motion sensor for the Xbox 360. Combining this with an expansive virtual world and goggles, you can become as immersed as you could possibly get.

Microsoft's Kinect This device uses a camera to track a player's movements, which are then reflected in-game. picture here

Wii Controls The Wii, mostly due to its controls, took the world by storm. Using a controller, which can be latched to the hand, movement becomes a form of input.

Sony is also the other big name in virtual reality business. In an interview from Sony Entertainment, when asked Whats been your best experience with VR?

Yoshida tells us Im a good swimmer, but Ive never tried diving, so the experience of The Deep was eye-opening for me. When the demo starts youre in a cage. You can look up and see the reflection of the sun on the water. Its really beautiful. After a few days, looking back on that experience is interesting because its kind of raw in my memory as if i was actually in the sea.”

Were you scared?

Yoshida tells that Once you try it, somehow everybody forgets that there are other people around you. People start to talk very loud. You forget about being seen by other people

Some other sayings about virtual reality:

"It was remarkably crude, but the promise was pretty amazing."

"The last step was moving from a command line interface to the visual interface. Maybe the next one was when you might be totally immersed in the world."

# Thank You