

Virtual Reality

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Virtual Reality (VR), sometimes referred to as **immersive multimedia**, is a computer-simulated environment that can simulate physical presence in places in the real world or imagined worlds. Virtual reality can recreate sensory experiences, which include virtual taste, sight, smell, sound, and touch.

Most current virtual reality environments are displayed either on a computer screen or with special stereoscopic displays, and some simulations include additional sensory information and emphasize real sound through speakers or headphones targeted towards VR users. Some advanced, haptic, systems now include tactile information, generally known as *force feedback* in medical, gaming and military applications. Furthermore, virtual reality covers remote communication environments which provide virtual presence of users with the concepts of telepresence and telexistence or a virtual artifact (VA) either through the use of standard input devices such as a keyboard and mouse, or through multimodal devices such as a wired glove or omnidirectional treadmills. The simulated environment can be similar to the real world in order to create a lifelike experience—for example, in simulations for pilot or combat training—or it differs significantly from reality, such as in VR games. In practice, it is currently very difficult to create a high-fidelity virtual reality experience, because of technical limitations on processing power, image resolution, and communication bandwidth. However, VR's proponents hope that virtual reality's enabling technologies become more powerful and cost effective over time.

Virtual reality is often used to describe a wide variety of applications commonly associated with immersive, highly visual, 3D environments. The development of CAD software, graphics hardware acceleration, head-mounted displays, datagloves, and miniaturization have helped popularize the notion. In the book *The Metaphysics of Virtual Reality* by Michael R. Heim, seven different concepts of virtual reality are identified: simulation, interaction, artificiality, immersion, telepresence, full-body immersion, and network communication. People often identify VR with head mounted displays and data suits.



Virtual World:

A **virtual world** or **massively multiplayer online world** (MMOW) is an environment. The term has become largely synonymous with interactive 3D virtual environments, where the users take the form of avatars visible to others. These avatars can be textual, two or three-dimensional graphical representations, or live video avatars with auditory and touch sensations. In general, virtual worlds allow for multiple users.

The user accesses a computer-simulated world which presents perceptual stimuli to the user, who in turn can manipulate elements of the modeled world and thus experience a degree of telepresence. Such modeled worlds and their rules may draw from the reality or fantasy worlds. Example rules are gravity, topography, locomotion, real-time actions, and communication. Communication between users can range from text, graphical icons, visual gesture, sound, and rarely, forms using touch, voice command, and balance senses.

Massively multiplayer online games depict a wide range of worlds, including those based on science fiction, the real world, super heroes, sports, horror, and historical milieus. The most common form of such games are fantasy worlds, whereas those based on the real world are relatively rare. Most MMORPGs have real-time actions and communication. Players create a character who travels between buildings, towns, and worlds to carry out business or leisure activities. Communication is usually textual, but real-time voice communication is also possible. The form of communication used can substantially affect the experience of players in the game.

Virtual worlds are not limited to games but, depending on the degree of immediacy presented, can encompass computer conferencing and text based chatrooms. Sometimes, emoticons or 'smilies' are available to show feeling or facial expression. Emoticons often have a keyboard shortcut. Edward Castronova is an economist who has argued that "synthetic worlds" is a better term for these cyberspaces, but this term has not widely adopted.



Reference:

- [1] *What is Virtual Reality?*, <http://vr.isdale.com/WhatIsVR/frames/WhatIsVR4.1.html>.
- [2] *Augmented and Mixed Reality*, <http://www.mic.atr.co.jp/~poup/research/ar/>.
- [3] *Virtual Reality Applications*, <http://vresources.jump-gate.com/applications/applications.shtml>.
- [4] K.-P. Beier. *Virtual Reality: A short Introduction*. <http://www-vrl.umich.edu/intro/>
- [5] Franchi, J. *Virtual Reality: An Overview*. ERIC Digest, June 1995