F.A.B.R.I.CATORS SAS
ARCHITECTS OF THE CULTURE - FABRICATORS OF IDEAS
Via F.lli Bronzetti, 6 - 20129 Milano/Italy
Phone: +39-3405073009
fabricat@galactica.it - franz@evl.uic.edu - www.fabricat.com

# WHY VIRTUAL REALITY?



## About VR

**Virtual Reality** (VR) allows the user to interact in realistic three-dimensional full immersive situations and environments generated by a computer that responds to human movements. The user can navigate, and interact with the virtual environment and directly manipulate objects within the environments.

**A virtual environment** is a virtual reality application - the cosmos, a landscape, an imaginary space, the inner side of a painting, a city - that allow users to navigate and interact with a three-dimensional, computer-generated environment in real time. It is the user to believe he is in reality, fully immersed in this unique world.

Besides **immersion**, in a virtual world, there is **navigation** and **interaction**. A computer tracks the movements of the user's head and body, updating her vision accordingly. If the visitor moves her head, arms or legs, the computer generated visual cues reposition simultaneously as expected in a real world. VR is the **only medium** that combines the following properties: 360-degree panoramic picture, 3D - stereo dimensional display and user point of view control.

The visitor is an **interactive subject**. He selects the point of view, decides in which scenes to enter, from which perspective to observe, fly, walk, go up or down, turn around in 360 degrees, penetrate the image, be teleported ...etc..

The sense of depth and 3Ddimensional **stereo images** created by VR present unlimited possibilities in relation to the visual interpretation of the image and its perception.

These simulated environments are possible to visit and access with the **aid of virtual platforms,** immerse or see-through systems, visualization displays, and head-mounted or other immerse display systems that fully immerse the user's senses.

**Such as**: motion tracking devices that enable natural interaction with objects; head-mounted displays, which display either stereo or mono images depending on type. Stereoscopic images are seen when the display is viewed with special glasses, like LCD shutter glasses. The display shows left and right images alternately, switching at high speed between images.

**VR display technology** goes from the desktop to immersive technology. **Desktop**: 3D virtual environments can be graphically displayed on a desktop computer monitor. **Projected** (mono and or stereo) 3D environments can be projected onto a screen, allowing the user to navigate, interact and present products, simulations, and digital representations of a product, etc. **Semi-Immersive**: flight, ship and vehicle simulators are semi-immersive.

**Virtual Reality platforms & visualization systems**

The market for standard large-scale visualization displays, VR platform and immersive projection technology has expanded considerably over the past few years.

**F.A.B.R.I.CATORS** selects and coordinates the assembling of appropriate technological platforms and/or the most solid large-scale visualization displays in accordance with the requirements of the production, and the nature of the content through which, the virtual production shall be projected and presented.

Among the most solid VR platform is the CAVE (CAVE Automatic Virtual Environment) is a projection-based virtual reality system, located in a 10 foot-cubed room. Stereoscopic images are rear-projected onto CAVE walls creating the illusion for the user that 3D objects exist in the room. The user wears liquid crystal shutter glasses to resolve the stereoscopic imagery. An electromagnetic tracking sensor attached to the glasses allows the CAVE system to determine the location and orientation of the user's head.

Other large-scale visualization displays worth mentioning are the Rave, Instead I-desk, and the Geo Wall. These displays are more suitable platforms for temporal presentation and itinerant exhibits.

If the client prefers a non- ready-made projection system but a personal or creative interface and a projection/visualization display, more suitable to the nature of the work, **F.A.B.R.I.CATORS** can design it ad hoc.

**Virtual Reality: Field of Applications**

**Arts Cultural heritage Architecture / Design Industrial Design Advertising / Promotion Edutainment Music / Spectacle Educational / Learning Tool Fashion Medical Science**

**ARTS - Virtual Reality** and emerging technology has revolutionized the traditional concept of perspective visualization of viewpoints, the composition and perception of time and space. Moreover, it has generated a rupture with the precedent art forms, allowing the emergence of a new way of making art, a diverse style of creativity and above all, the crystallization of a revolutionary artistic language.

**CULTURAL HERITAGE - Virtual Reality** is useful for reconstructing cultural, historical and archaeological sites. To simulate environments and cities which no longer exist. What at the beginning appears as ruins or simple historical structures and barren landscaping can be transformed into animated places... bustling with life and personal experiences. VR is a powerful tool for re-interpreting the world of antiquity.

**ARCHITECTURE / DESIGN - Virtual Reality** presents many interesting features for disciplines such us: architecture and design. It is a valuable visualization tool for: structures, buildings, interior design, habitats, ambiences, and environments. It is also a beneficial tool for both planning and design and evaluating the planning and design process with customers. Virtual reality can demonstrate how a planned construction fits into an environment and how it is intended to be built.

**INDUSTRIAL DESIGN - Virtual Reality** is useful to simulate (realistically) new manufacturing processes, and product design from machines, and function, to material and potentialities, all before going to production. Once the products are simulated, the model can be updated, modified, improved and perfected.

**ADVERTISING & PROMOTION Virtual Reality** presents, communicates and proposes projects in experiences not possible with traditional media. Among the many industries that can profit from the use of virtual reality, advertising agencies in particular are able to expand the reach and impact of their message with more power, more speed, and more attraction, thus contacting a wider base of people

**EDUTEINMENT- Virtual Reality** permits: entering and exploring, within spaces, where physical access is difficult and complicated, such as: the interior of a volcano, the hidden depths of the ocean. Virtual Reality allows the visitor to navigate, fly, walk and interact, in the first person, with natural elements and explores natural beauty from the Amazons to the cosmos.

**MUSIC - SPECTACLE -** From the convergence of digital media, music and creativity can emerge in a new typology of interactive spectacles in real time.

**EDUCATIONAL - LEARNING TOOL - Virtual Reality** is suitable for learning objectives, training applications, and educational environments. Is a powerful media for research, teaching and for collaborative distance research, etc.

**FASHION -** Suitable for spectacular presentations of collections

**MEDICAL APPLICATION - Virtual Reality** is used in surgical procedures (remote surgery or Tele-Presence, augmented or enhanced surgery), and planning and simulation of procedures before Surgery. Also useful for: Medical therapy; preventive medicine and patient education; medical education and training; visualization of massive medical databases; skill enhancement and rehabilitation; and architectural design for health-care facilities.

**SCIENCE -** Virtual Reality is strongly used in the field of science.