another dimension

R3D online
SUITE

virtual reality

Virtual reality comes from the desire to "reproduce" reality, as precisely as possible, from a visual, auditory, tactile and even olfactory point of view. To act in the virtual space regardless economic, safety, and physical limits.

BUT WHAT IS IT EXACTLY?

It is a three-dimensional, computer-generated representation, with different degrees of similarity with the real environment, from a schematic view of the objects up to photorealism, which allows to interact with environment and objects.

Virtual Reality can be accessed through computer's traditional communication interfaces (i.e., monitor, keyboard, mouse) or through specific devices that make the user experience more engaging.
These devices include helmets with stereoscopic visors, special gloves called "data gloves" to manually interact with the three-dimensional components, and tools/features such as motion detectors, motion tracking or head tracking.

Direct interaction with the Virtual Reality scenarios makes this technology ideal for communications and training.
The R3D experience goes beyond the experience of a movie; in fact, although the latter can be engaging and effective, it remains something to be enjoyed "as is". On the other hand, R3D goes further by allowing interaction with virtual objects in real time, providing an extraordinarily added value in the communication process, especially when associated with manual operations, or otherwise related to physical objects.

Today, Virtual Reality can be employed in many different domains: training through mechanical simulators, flight simulators, surgical simulators, rehabilitation of patients with cognitive deficits, architecture, tourism, etc.

augmented reality

The term Augmented Reality is defined as the superposition of computer-generated virtual elements to perception, not only visual, of the real-world, captured by a camera or through special glasses.

Through Augmented Reality applications, the user will therefore see virtual objects or movies superimposed on reality, and will be able to hear sounds, or perceive tactile sensations, or even smells.

For example, through Augmented Reality, a maintainer may rely on virtual and animated tools and components showing how to perform an operation directly on the equipment, following and guiding his activities step by step.

By pointing a tablet or a smart phone to a work of art, a tourist may display useful information. Likewise, by positioning the page of a book in front of the camera of his PC, a reader will see animations, 3d objects, movies or multimedia tools appearing on the book "reflected" on the PC's screen.

In fact, expressing a relatively new and constantly evolving concept, there is no unambiguous and clear definition for the term "augmented reality".

In general, Augmented Reality (or AR) is the representation of an altered reality where the ordinary reality perceived through our senses is overlapped with artificial/-virtual sensory information

difference between virtual & augmented reality

The fundamental difference between Virtual and Augmented Reality consists in the concept of simulation used. Virtual reality is completely computer generated and leads us to think of living a certain reality deceiving our senses. Augmented reality, in contrast, adds levels of information to what our senses perceive.

In a few words, Augmented Reality is a perceptual enhancement, mainly based on the virtual content generated by a computer and from its superimposition on reality. It is important to point out that these additions are not limited to visual data but may include, if technology permits, olfactory, auditory and even tactile information.

technology

real-time	high applicability	high scalability and performance	high productivity	control and customization capabilities
R3D online has a real-time oriented technological base. Each component is designed to ensure the highest quality graphics and very short response time.	The technology of R3D online has been developed and used for over a decade in very diverse contexts, demonstrating great flexibility.	R3D online is able to function successfully in regular-end consumer desktop, embedded systems with limited physical resources and state of the art graphics workstations with dedicated GPU cluster.	The R3D online Enhanced Scene Graph (ESG), enables a new level of effectiveness in shaping every aspect of reality, whether static or dynamic.	The R3D online technology is completely proprietary. Full control of the source code is crucial to the effective development of requested customizations.

technology specifications

COMPLETELY DEVELOPED USING OBJECT–ORIENTED IN C++ ANSI/ISO	SUPPORT FOR DIRECTX AND OPENGL GRAPHICS API	SUPPORT FOR HIGH-LEVEL SHADER FOR LANGUAGES AND EFFECTS: MS HLSH/FX, GLSL, CG, CGFX	RENDERING METHODS: FIXED-RENDERING PIPELINE, SHADER-BASED MULTIPASS, INTERACTIVE RAYTRACING (NVIDIA OPTIX / CUDA BASED)	ADVANCED EFFECTS SIMULATION SUCH AS: GLOBAL ILLUMINATION, DEPTH OF FIELD, PARALLAX BUMP MAPPING, SHADOW MAPPING, NPR (ES. CARTOON, EDGE-ONLY, ECC…), HDR LIGHTING.
SUPPORT FOR STEREOSCOPY	SUPPORT FOR AUGMENTED REALITY	BUILT IN ENGINE TERRAIN		