Using the information technology of virtual-reality in architectural activities

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The main properties of the virtual reality are characterized. Prospects application technology of virtual reality: Fast 3D City Model Generation, VE CADWall, Building Design Suite and Creation Suite in architectural activity are analyzed.

Keywords: information technology, information system, virtual reality, architectural activity, architectural desig, building structure.

INTRODUCTION

Computer simulation of objects, phenomens and processes is one of the most promising areas of information technology in the architectural business. Using computer models, you can submit architectural objects more clearly demonstrate all its sides and on this basis to significantly improve the quality of the building or project.

THE MAIN PROPERTIES OF VIRTUAL REALITY

Virtual reality (VR) is a model of reality created by technical means, objects and subjects of which are perceived by a person through his senses: sight, hearing, smell, touch.

The first attempts to create an artificial reality, no different from the present reality, was undertaken in the early 60-ies of XX century and was aimed at the development of multi-sensor simulators, allows the viewer to convey in real time the dynamics of images, sounds, smells [1].

With the development of computer technology and information technology has resulted in a technology platform and capabilities to create a virtual reality in various spheres of human activity.

Thus, virtual reality is considered as a set of objects, simulate real processes, but the content and form which do not correspond to these processes.

Virtual objects exist separately from reality, and the virtuality itself is established in relation to the underlying reality that causes it.

The main properties of VR are the following [2]:
- the generation of VR external to it reality;
- relevance (VR exists at a given location and at a given time, at the time of observation)
- autonomy (existence of own laws of time, space, existence of VR);
- interactivity (VR has independence, but can interact with other realities).

Immersion of a person in virtual reality is provided by special technical devices that simulate interaction with it by affecting the human sensory organs.

Virtual reality involves human interaction with artificial three-dimensional visual or touch any environment in which actions are performed - a virtual environment. The virtual environment does not require physical space for the organization of it created technical facilities: hypertext pages, e-mail, News, chat, audio and video conferencing.

At present, virtual reality technologies are developed and can be applied in almost all spheres of human activity: education, science and technology, medicine, construction and architecture, marketing and advertising.

The purpose of this work is to analyze the prospects of using new VR technologies in architectural activities.

OPPORTUNITIES FOR USE OF VIRTUAL

REALITY IN ARCHITECTURAL ACTIVITIES: REVIEW OF NEW TECHNOLOGIES

Virtual reality technologies have the greatest development prospects in architecture, urban planning and interior design.

The projection systems of partial or full immersion extend the perception of architectural design to three dimensions in real scale. This gives you the ability to change the angle of view, interact with architectural virtual space superposed on the image surface data in the form of an abstract of the upper layers and schemes.

On the basis of the presentation, alternative solutions for the project may appear, be discussed and tested, and a sense of the sense of the surrounding space will positively influence the process of discussion and work.

Effective modern technologies VR for practice in architectural activities are:

Fast 3D City Model Generation - technology to quickly create a 3D model of the urban environment. The project is designed to quickly generate automated photorealistic 3D models of urban environments to create a simulator and interactive viewing capabilities. Therefore Fast 3D City Model Generation is called virtual, virtualized reality.

In addition to the fact that the virtualization of the city in this technology is automated, and done very quickly, the features of the Fast 3D City Model Generation are : the data is collected using laser scanners and digital cameras; using laser capture distances, sizes of objects and other "geometry"; and the photos are used to stretch the "facades" on the skeletons of these objects; the computer combines the data and actually builds a virtualized, but realistic city.

Technology VE CADWall is a projection stereoscopic system of virtual reality with one wide screen, the size of which can reach 10 and more meters, the resolution is several million pixels. VE CADWall provides a sufficient level of immersion and interactivity for the collective work of a group of experts from various fields of knowledge, is applied in the field of urban planning (virtual planning), virtual prototyping (CAD/CAM/PLM). In addition, VE CADWall is a fairly economical virtual reality system, and suitable for presentations: a large flat screen can be used both in stereo mode with tracking for working with virtual prototypes, and in mono mode, like a normal screen for presentations, meetings, videoconferences.

Using VE CADWall allows you to develop virtual prototypes of various interiors in a scale of 1: 1, analyze the various options for the location of furniture, communications, equipment and simulate the passage of visitors to these areas.

Due to this, it is possible to avoid a large number of changes in the project before the real construction phase, which significantly reduces the cost of possible alterations and changes at the final construction stage. The advantage of VE CADWall is that the system can be integrated with other VR-systems so that remotely located participants can interact with each other.

Program Complexes the **Building Design Suite and Creation Suite** are a unified solution for 3D building design and documentation.

The programs support workflows based on BIM and CAD technologies, designed for architects, designers of engineering systems and building structures, as well as for construction organizations specialists.

Software products with virtual technologies the Building Design Suite and Creation Suite provide: improved collaboration with visualization; study of project options; use of visualization to transfer project design; study and demonstration of project options; evaluation of projects before their implementation; making more informed project decisions; designing more efficient buildings using energy calculation tools; based on 3D models Elimination of collisions before the beginning of construction works objects.

The information in current conditions is a vital resource, without which it is impossible to achieve professional goals in architectural work. With the latest technology is changing the role, method, speed and efficiency of information in the process of architectural practice. An essential element of architectural activity is technology virtual reality. Application of VR-technology allows us to visualize architect полученные Results of research and polnoy least in the use your intuition and memory at visual analysis processes.

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