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**MODERN INFORMATION TECHNOLOGIES IN THE ARCHITECTURE OF POST-WAR RECONSTRUCTION**

Researchers and future specialists consider theoretical and practical materials about technical means and methods of collecting, accumulating, processing and using information of various types (textual, numerical, tabular, graphical, spatially distributed) and their application in architecture. Various methods for developing and creating databases are analyzed, and the capabilities of the most common software packages for computer graphics, computer-aided drawing and design are considered, which is a response to the needs of the development of modern architecture. Many studies by scientists have been carried out on the study of information on the basics of using computer technologies and their application in the activities of an architect and builder. Now there is a great need to master software and hardware design tools in architecture, on the basis of which we can draw a conclusion about the prospects for these professions, which are becoming most in demand in the labor market, new and promising professions, which indicates the need to master modern information and communication technologies.

Application programs help a professional create a design project for an apartment in simpler and more understandable, as well as free design programs. Moreover, in almost all cases you don’t even need to download the program - they work online. But not all modern programs have the full range of necessary tools for every case. It is necessary to study the capabilities of each program, and in this article we reviewed a list of currently relevant programs, the development of which does not require much time and technical means. Let's analyze the list of interior design programs that contain all the necessary information to select the interface you need. It is worth considering that all 3D design programs that we review in our article have paid and free versions. Since the cost of a paid service is low, and all tariffs are similar, a specialist can choose based on functionality, and not on price.

Shared access allows you to simultaneously open a project on different computers and work in different applications (for example, creating floor plans, calculating engineering structures, generating estimates). In this case, all actions will be promptly reflected in the model for all team members. There are effects of sunlight, shadows, date and latitude, and texture of materials. Realistic visualization of interiors is carried out. The specification of materials indicates all the necessary parameters (manufacturer, price, number of items, volume, labor costs for installation). The received information is exported to Excel, dBase, Word files. With the help of the Layout Book, project documentation is prepared for printing in pdf format. An animated video is created to present the project. A virtual tour is available inside, above and around the building. Realistic textures, lighting sources, shadows are shown. Most programs have built-in virtual reality tools. These technologies make it possible to identify possible errors in construction at the design and documentation stage, before transfer to the construction stage. The designer can work with views in axonometric, plan or 3D. All programs are adapted to BIM technology. Team work and access through remote servers are supported.

We cannot limit our work to just a few programs. In this article we review current software for architects: why learn, main purpose, level of difficulty of use and mastery, download links. Conventionally, the most popular programs in the industry can be divided into the following categories: 2D drawing; 3D modeling; parametric design and visual programming; 3D visualization (rendering); presentation design, graphics and layout; video, sound editing and animation. BIM (Building Information Model) is an object-oriented model of a construction project or a complex of construction projects, usually in three-dimensional form, the elements of which are associated with data on the geometric, physical and functional characteristics of the construction project. The development of IT technologies has accelerated the pace at which the world is changing. Innovations are entering our lives rapidly, leaving no room for outdated drawing boards, calipers and rulers. Modern tools for the work of architects and designers in construction are specialized software systems. Design using BIM technologies is carried out not in the plane of the sheet, but immediately in three-dimensional execution. Moreover, the developers claim five-dimensional design. This means taking into account the time scale to control construction work and cost indicators to account for cash flows.

The 3D model continues to be in demand throughout the life of the building. It will also be required for maintenance of communications, and then will be used in the process of reconstruction or demolition. This approach allows us to achieve significant savings in labor costs, materials, and reduce energy consumption. BIM technologies fully fit into the concept of “green” construction, which has been actively developing in Europe and the USA since the beginning of the thist century. This is a responsible attitude towards our common future, ecology, and urban planning as a general set of works. Programs for architects are a whole world of software products that allow you to design houses, develop engineering structures, as well as interior and exterior design of premises.

The architect’s finished project can be immediately shown to the customer, since it is made in 3D projection. Visualization allows you to imagine what an object will look like in reality. BIM modeling allows specialists of different profiles to work on a project simultaneously. As a result, you can add many elements to your presentation - landscaping, small architectural forms, decorative details. In multi-user versions of programs, settings are possible in which changes made by one specialist are immediately visible to everyone else. This significantly speeds up reconciliation, drawing up estimates, and creating a package of documents. Subsequently, the digital model passes into the hands of the management company, helping to control operating processes throughout the entire life cycle of the facility. It takes into account not only the initial data, calculations, materials and construction solutions, but also climatic conditions, purpose, and intensity of operation of the building. BIM design represents a new approach to construction in general. If earlier the architect, designer and builder were responsible for the object only until it was handed over to the customer, now the possibilities have expanded.

List of link sources

BIM technologies in construction URL: https://geopro.com.ua/service/3dmesh-bim/bim-technology.html (date of application: 23.08.2023)

Building Information Modeling URL: https://www.magicad.com/ (date of application: 23.08.2023) (date of application: 23.08.2023)

BIM technologies are a tool for builders URL: https://pgasa.dp.ua/news/bim-tehnologiyi-instrument-budivelnykiv