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Hnitetska T., *Ph.D., Associate Professor,*
Hnitetska GO, *PhD, Associate Professor,*
National Aviation University, Kyiv, Ukraine

Modeling facilities Architecture and Design USING transfer files from AutoCAD to 3d Max DESIGNE

Abstract: This work is devoted to the possibility of modeling objects of architecture and design in a single information space of two graphical editors AutoCAD and 3d Max Designe. Consider ways to create 3d objects in various ways, and automatic modification of 3d model in 3d Max Designe in amending its plan in AutoCAD.

Keywords: 3d-modeling, design.

Statement of the problem. Design of complex objects is impossible without the use of modern systems of automatic design (CAD) that enables architects and designers to new tools to implement their ideas. Using modern CAD significantly shortens the design work, you can create three-dimensional, photo-realistic models of architectural and interior design project documentation and perform its maintenance. Therefore, to explore the possibilities of modern graphics software, work that leads to the work of architects and designers more easily and accurately is an urgent task.

Analysis of recent research. Nowadays one of the most popular programs to create drawings that meet national standards in both the industry and the architecture is AutoCAD. However, there are certain restrictions when creating and qualitative vizualizitsiyi objects, architecture and design in three-dimensional form in the framework of this program because it is not specialized for solving tasks of this group. More popular in this area is a pack 3d max. However, the question arises whether it is possible to take advantage of already completed work in AutoCAD for visualization and model building in 3d max, or need to start from scratch. Most sources [1] three-dimensional architectural objects in accordance with the plan referred to a group of polygonal or spline modeling, without the use of existing zahotovanok. Developers are in 3d max Tutorials to offer programs consider applications that lets you convert files of AutoCAD in 3d max and take them as a basis for further work, which in our opinion is reasonable and convenient.

There are many software products that can be used as a CAD for architecture and design, but the worldwide leader in software is based on AutoCAD. There are various customization options that extend the basic AutoCAD to functional tool that is designed to work in specific conditions of use, which converts AutoCAD to set up specific action tool.

These include Autodesk Architectural Desktop - Specialized CAD for architects, builders, planners and designers based on AutoCAD. The system can be used at all stages of the project, perform two-and three-dimensional modeling, design parameterized objects that execute the original design and documentation.

CAD Autodesk AutoCAD Revit Series integrates into one package the two programs. It allows you to initially design the building structure among Autodesk

Revit Building, and then perform the architectural and construction documents in AutoCAD.

CAD Autodesk Bulding Systems can not only design buildings, but also vykonuvyty design work for laying of internal communications - ventilation, power supply, plumbing and so on. based on AutoCAD.

That is, these specialized software includes povnofunktsiyna version of AutoCAD. Technological advances in CAD, AutoCAD was its eleventh version, if parameterized became AutoCAD. Now when any changes between objects are supported by set designers design relationships. This can significantly reduce the time of amending the draft. In AutoCAD version appeared twelve solids, ie the notion of external surfaces and internal volumes. Soon there were tools to work with arbitrary shapes, making it possible to create and analyze geometrically quite complex three-dimensional objects. Has become possible to support 3d-printing, which makes it easier to get prototypes and physical prototypes.Improved file format of PDF, which allows to simplify data exchange between all stakeholders.

Using CAD facilitates the work of designers, allowing them to analyze all intermediate results. The visual representation helps schvydko evaluate possible alternatives to the project that is being developed. With 3d-image, you can quickly obtain the relevant species sections and cross sections. 3d - image of architectural objects facilitates the work of designers in modeling interiors.

Thus, using relevant CAD units of designers who are involved in all phases of the project combined a common information space that provides coordination of their actions and quick modification of the project at all stages of rozroblennya.Do work with modern CAD should teach students as early as course of study in high school.

The wording of Article goals. The purpose of the given publication is to demonstrate the possibilities of building 3d models using converting file formats from AutoCAD documents in 3d Max Design.

The main part. Examples of work in a single information space in teaching the course "Computer Design" project is to create architectural objects simultaneously in two programs AutoCAD and 3d Max Design. In AutoCAD executed plan areas, and its 3d Max Design 3d image creation and visualization of interiors.

To use the file, made in AutoCAD, as a template for building a three-dimensional model in 3d Max Design, you must make some preparation stages, namely:

- image plan in AutoCAD should be spaced by layers so that the information that is used to construct a three-dimensional model in 3d Max Design, could be ignored (eg, axis, size and so on.). Since the work with layers in 3d Max Design seem to work with layers in AutoCAD, layers are hidden or frozen. Each layer of AutoCAD became an independent layer in 3d Max Design and AutoCAD every object becomes a new object 3d Max Design, following the appropriate layer and the color set for the objects belonging to this scharu;
- to reduce the number of objects when importing files from AutoCAD in 3d Max Design is recommended to convert AutoCAD polylines and lines to

form blocks, while in 3d Max Design will be created matching groups of objects;

- importing files from AutoCAD in 3d Max Design should be remembered that only imported objects placed in model space, and located in space are ignored;
- for a more realistic image of 3d model in 3d Max Design preferably in AutoCAD skruhlyty tips of sharp corners using Fillet command to set small radius;
- when dealing with plans preferably in AutoCAD - file a separate polyline that will be used to create 3d models for ceilings and floors, and place it on a separate layer;
- execute import in 3d Max Design: File menu> Import (select the file format of AutoCAD *. dwg, *. dxf). During the import should make the following settings (panel Geometry Import Option Dialog to enable Rescale and coordinate units of measure Units of measurement units set in the file AutoCAD);
- tab to work with layers Layers window Import option Dialog ignore all frozen layers (Skip all frozen layers).

Light source, the user coordinate system (UCS), views from within AutoCAD are imported in a separate light source, mesh and camera 3d Max Design.

Then the file is considered loaded.

Using bindings, build a wall using AEC Extended / Walls and specific points on imported building plans. On the prospects for the display to turn on Wireframe. It should be noted that the door (objects Doors) and windows (objects Windows) when installing in walls made using AEC Walls do not require previous creating for them a separate hole. They are installed in the wall just using bindings (recommended to turn off the layer with a plan that is imported from AutoCAD). However, if the walls are raised, for example, using the modifier Extrude, in this case for the installation of windows and doors should be pre-prepare the holes, eg using Boolean operations, or by following these steps:

- outline plan to lift using Extrude modifier according to the plan of the wall (contour line forming the plan must contain vertices that define the position of windows and doors);
- after the walls are raised and converted into Editably Poly, set sublevel Edges and built the plane of intersection (Slice Plane), which define the level of provision of windows and doors (upper window, lower window upper door). These levels are held subsidiary ribs (Slice), which fix the position of windows and doors in the walls;
- in order to create openings for windows and doors, between the ribs removed, with the corresponding sub polygons Polygon;
- Edges and sublevel set, using the Bridge on scrolls settings Edit Edges, «sew" holes that were formed between the outer and inner walls around the perimeter of doors and windows;
- install windows and doors, using bindings.

In practice, there is a need for design changes made to a file first AutoCAD, and after that in the 3d model. So the question arises about the simultaneity of the change. In this case it is convenient to use the File Link Manager. To do this:

- open the file in AutoCAD to plan and minimize the window;
- open 3d Max Design software and select File> File Link Manager;
- Attach tab to click on File button and specify the path to the plan in AutoCAD;
- Rescale and set the unit of measurement from the imported file (Incoming File Units Set to Inches) and click Attach this File, wait until the host binding files;
- build 3d model using the imported file to the plan.

If you minimize a window with 3d Max Design and make changes to the AutoCAD file and save it, then reflect these changes in 3d Max Design through the File Link Manager you can click using the Reload button on the tab Files. If the wall was raised by using AEC Walls, then by the changes in the plan will need to make changes to the 3d model manually. It's not very convenient, since it is desirable that a three-dimensional model changed automatically when changes in the plan.

For this it is convenient vkorystovuvaty algorithm below. When you click in the File Link Manager button on the Reload button opens File Link Setting: DWG Files. If you use the tab Advanced / Select Layer to include this window open Select Layer dialog, where you can create a layer of "bound geometry" (Switch Select from list). If this layer to lift the wall using Extrude, then when you make changes to the file, AutoCAD, will be changes in the file, 3d model 3d Max Design, which is associated with it. This is done as follows:

- Modify tab to spline, creating a plan (Linked Geometry), apply the modifier Edit Mesh;
- to perform sub Polygon Extrude from Edit Geometry tab in the options object that raised a wall;
- amend the AutoCAD file and save it, and then in the File Link Manager 3d Max Design to use the Reload button click on the tab Files. The result - a three-dimensional model is changed immediately, without complementary interventions.

Conclusions. Using modern computer technology can significantly shorten the design work on the new design to realize the actual process and obtain better solutions.

Prospects for further research. AutoCAD is a graphical standard for performance in virtually all design organizations. It has the following advantages: better visual representation of the design object, automated receipt of project documentation; AutoCAD includes a base software in the vast majority of modern CAD. Thus, the use of its capacity to organize the work of architects and designers, is a promising task.

Literatura

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Аннотация

Гнитецкая Т.В., Гнитецкая Г.О. Моделирование объектов архитектуры и дизайна с использованием передачи файлов из AutoCAD в 3d Max DESIGNE. Работа посвящена исследованию моделирования объектов архитектуры и дизайна в едином информационном пространстве двух графических редакторов AutoCAD и 3d Max Designe. Рассматриваются варианты создания 3d объектов разными способами и автоматического внесения изменений в 3d модель в 3d Max Designe при внесении изменений в её план в AutoCAD.

Ключевые слова: 3d моделирование, дизайн.

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Анотація

Гнітецька Т.В., Гнітецька Г.О. Моделювання об'єктів архітектури і дизайну з використанням передачі файлів з AutoCAD в 3d Max DESIGNE. Робота присвячена дослідженню моделювання об'єктів архітектури і дизайну в єдиному інформаційному просторі двох графічних редакторів AutoCAD і 3d Max Designe. Розглядаються варіанти створення 3d об'єктів різними способами і автоматичного внесення змін до 3d модель в 3d Max Designe при внесенні змін до її план в AutoCAD.

Ключові слова: 3d моделювання, дизайн.