

Секция 3 «Автоматизация исследований»

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DESIGNING AND DEVELOPING 3D MODELS FOR CISCO LABORATORY

Today, 3D modeling is ubiquitous: used in marketing, design, cinema and photography, industry, in creating computer games, as well as in medical visualization. Using 3D technology allows you to get a realistic project long before its implementation.

By order of the department, a 3D model of the updated Cisco laboratory was created. The project allows you to see the laboratory from all angles, with the ability to change its content and position of objects, to see the result without changing it in a real room.

To implement the project, an object is first shot on a Canon 600D camera to record all the elements in the laboratory and the opportunity to recreate in detail those items that the client will remain in the new audience at will. A wide angle lens was used to cover the largest space. The shooting was carried out on a sunny day to see the illumination of the room without using artificial light sources.

Each object is modeled, everything is done in the 3Ds MAX 2018 program. For the implementation of the project, this program was chosen for its user-friendliness, wide possibilities for modeling the exterior and interior, creating your own textures, supporting vector maps, several modes for interactive visualization, simple import and data export.

For an object, a material, texture is developed, this is done in the Corona render 1.7.4 render. Its advantages in the best global illumination, the ability to develop its detailed materials, textures, resulting in a more realistic render. It also has its own built-in library of materials, excellent effects of reflections and refractions.

Next, external and internal lighting is simulated using Corona render light sources: Corona Light, Corona Sun, Corona Sky with internal settings in accordance with real laboratory lighting.

Currently, there are many companies willing to provide modeling services, both for training and in addition to repair services. In most cases, the customer is given a couple of shots from different angles, but the project itself remains out of access.

In the project, at the output, we get a model of the laboratory with ready-made objects and lighting.

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ARCHITECTURE, REALIZATION AND TESTING 3D MODELS FOR CISCO LABORATORY

Visualization with the use of 3D-technology provides an opportunity to assess the external indicators of the future project. Developments are provided in the form of photo-realistic graphics from different angles.

In the finished project, the user can interact with objects, changing them at his own discretion, placing new objects, which is convenient for repairs or rearrangement.

Selecting and placing the camera selects their level - human growth. The same camera above the stage will allow you to see the laboratory from above. Next, you need to choose the angle and start rendering. Detailed rendering of a single frame takes several hours or even a day, depending on computer performance.

For more realistic graphics, shadows are reduced to softer ones so as not to obscure the image, complicating further work.

MAXScript is used to create a video review of the lab. This is a scripting language embedded immediately in the program 3Ds MAX. It can be used to simplify work with routine tasks: placing identical objects on surfaces, the task of the camera heading when creating animations, adjusting the lighting with previously known parameters. Also with the help of MAXScript it is possible to create new tools. The function can be easily integrated into 3Ds MAX and used along with other default tools.

Animation from the camera is processed in Corona render 1.7.4.

Photos after rendering are processed in Adobe Photoshop. Contrast, shadows, image brightness are adjusted, colors of materials and textures are drawn out.