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.

MAXSript 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.

The video from the camera is shot and rendered in Corona render 1.7.4. Adobe Premiere Pro is used for video editing, the program is a professional platform for high-quality audio and video editing.

For testing the product, a comparison of the scale of the objects and the scene with the real ones takes place. Taking into account their location and quality based on the wishes of the customer. Also tested the capabilities of the 3D model and new scripts.

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ARCHITECTURE OF CLUSTER STATE MONITORING SYSTEM

The cluster system requires monitoring tools that can monitor the state of the cluster, take the necessary measures to restore data in case of a temporary failure of one of the computing systems. So, the development of a cluster monitoring system is an actual goal.

There are some cluster monitoring means on the market, but they are focused on a wide range of clusters, this degrades performance, because of unused functions. Also, most systems work with containers, which limits cluster usage scenarios.

This project uses the architectural style of REST, which allows you to obtain information about the status of each of the nodes of the cluster and have the tools to restore failed shard node. The main advantages of the developed project over competitors are the focus on a certain type of systems, taking into account the features of monitoring, as well as autonomy.

The application consists of a REST service, which in turn includes a web interface that handles HTTP requests, and business logic that request state of each shard and returns information that is converted for transmission over HTTP. Also, the monitoring system includes a REST-service located on each shard of the cluster, which checks the database and the performance of the shard server itself.

The monitoring system works with data in JSON format. The input data includes the request received by certain way which affects the output. The output contains a list of active shard nodes, in the case of request along the path responsible for the shard poll. In case of request of state of whole cluster returns the node list with the status of each.