

1. Web animation: where and why? [electronic resource]. Access Mode: <https://habr.com/ru/company/ruvds/blog/321822/>. Access Date: 11/07/2019.
2. A Complete Guide to Web Animation, article. [electronic resource]. Access Mode: <https://yandex.com/turbo?text=https%3A%2F%2Fwww.internet-technologies.ru%2Farticles%2Fpolnoe-rukovodstvo-po-veb-animacii.html> Date of access: 11/08/2019.

## IMMERSIVE 3D VISUALIZATION IN REAL TIME

**Alexander Sergeev**

VSU named after P.M. Masherov, Vitebsk, Belarus

In the process of design design, the result of the work is the presentation of the project to the customer. In the period of fierce competition in the labor market, the competitive advantage is the implementation of the project submission in the most effective way. Epic Games in 2019 announced the acquisition of Twinmotion, a software package for high-quality visualization of the interior and exterior in real time, positioning it as a simple and intuitive visualizer based on the Unreal Engine 4 engine as a technical base [1]. However, until November 2019, Twinmotion was distributed free of charge. According to the company, this package allows you to create high-quality animation of a 3-dimensional environment, which, unlike the static representation of the project, has several advantages.

The purpose of the study is to test this product as part of the educational process by identifying its strengths and weaknesses, for further possible implementation in the educational process in the framework of the discipline "Animation in Design"

**Material and methods.** The material of the study was the educational and creative work of 5th year students of the art and graphic faculty of the design department of Vitebsk State University named after P.M. Masherova. The method of continuous polling and the method of analogies are used.

**Finding sand the discussion.** Unlike traditional animation programs, the Twinmotion architectural visualization program is built on the Unreal Engine, which is traditionally used in the gaming industry [2]. That raised a number of questions about the possibility of implementation in the educational process, since there was no work experience for students with this approach to visualization architecture. Previously, the entire animation creation process took place in the 3ds max package. This package of 3D modeling is the main one in the preparation of young specialists of the department, but it is the process of creating animation that creates a number of difficulties. Namely: the difficulty of adjusting the process of the camera's flight over the stage, adjusting the camera's parameters, adjusting the visualizer, the long animation time, the inability to view the animation in real time,

high requirements for the system unit parameters. As a result of this, the final animation in 3ds max often turned out to be of poor quality, and the lack of time allotted for discipline did not allow repeating the process.

Given all of the above, the animation of the virtual object itself was no more than 4 seconds, taking into account the frame rate of 25 per second.

Under the circumstances, the pilot implementation of the Twinmotion package within the discipline seemed justified.

In the process of studying the package, the following shortcomings were identified: when transferring an already simulated scene from 3ds max to Twinmotion, texture maps were lost (since they were created in the Corona render visualizer), the transfer takes place only in FBX format (which causes difficulties for some students) [3].

The advantages of the program include: an intuitive interface, the most reduced number of material settings, the ability to view visualization in real time, the ability to customize the viewing window for the system capabilities of the computer, a large set of related objects for a more realistic image, the presence of animated objects (characters, animals, etc.). e.), quick scene setup, setting an object by location, creating natural factors and time of day (fig. 1).



Fig. 1 Example of work in the visualizer Twinmotion

As a result of work in the architectural visualizer, it was noted: students easily mastered the program interface and quickly became involved in the project, the average duration of dynamic animation of a virtual object increased to 28 seconds. (700%), the quality of the animation has increased.

In general, students positively characterized the process of introducing Twinmotion into the educational process. Some of the difficulties of transferring

a model from one software package to another can be attributed to the comments.

**Conclusion.** In the process of this study, we can conclude that the Twinmotion software package deserves attention because of its low demands on the capabilities of the system unit and ease of study. Achieving the positive result indicates the possibility of introducing the Twinmotion program in the educational process within the framework of the discipline "Animation in Design".

1. Kukson A., Dowlingsoka P., Krampler K. Development of games on Unreal Engine 4 in 24 hours / A. Kukson, R. Dowlingsoka, K. Krampler - M: Eksmo, 2019 - 528 pp., Ill.
2. Twinmotion 2019 [Electronic resource]. - Access mode: <https://www.unrealengine.com/en-US/twinmotion>. - Date of access: 11/04/19.
3. How to export to FBX format and save textures outside? [Electronic resource]. - Access mode: <https://forums.autodesk.com/t5/3ds-max-maya-russkiy/kak-eksportirovat-v-format-fbx-i-sohranit-tekstury-vovne/td-p/8358009>. - Date of access: 11/02/19.

## **MODERNIZATION PROJECT OF PUBLIC TRANSPORT STOP, PERFORMED IN THE FRAMEWORK OF A WORKSHOP WITH MARTIN FOESSLIGHTNER**

**N. Starzhinskaya**

VSU named after P.M. Masherov, Vitebsk, Belarus

In today's world, when everyone can provide themselves with everything for a comfortable life, people's needs are growing. The market of the design industry is actively developing, adapting to new trends. Each company tries to improve not only the functionality and quality of the product, but also its appearance. In a dense stream of various information and advertising, consumers become more selective, more and more based on their choice of the appearance of the product. This situation is more relevant for industrial design objects.

However, some areas of this industry are still not developing so actively, for example, the sphere of public transport infrastructure, of which stops are an indispensable part. Quite recently, bus stops of an updated form appeared in the city of Vitebsk. News portal "People's News of Vitebsk" reports: "The design of the stops is made of a metal profile of various sections, and the roof and side screens are made of tempered glass" [1]. The issue of their compliance with modern requirements has become one of the main topics of the workshop under the guidance of Austrian designer Martin Foessleitner, which was held on October 24-25 at the P. M. Masherov Vitebsk State University. Within the framework of this intensiveness, Martin Foessleitner shared the features of the