

# Three-dimensional Animation Technology in Showing the Application of the Art of Design

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**Abstract.** The three dimensional animation technology is a new technology in recent years with the development of computer hardware and software technology and produce; exhibition design art is accompanied by stages in the development of human society politics, economy and the gradual formation of art. This paper mainly studies animation how to promote and enhance the artistic design and industrial product design from the technical means of 3D, architectural exhibition as a starting point, to integration and innovation between the two studies, which reflects the perfect combination of technology and art.

## 1 3D Animation Technology

Three-dimensional animation animation, also known as 3D animation. Its work principle and method are to create a virtual world in the computer platform, and then in the virtual 3D world, according to the shape size of the object to display the model and the design of the scene, and then according to the need to set up the model of motion track, virtual camera movement and other animation parameters, and finally to the design intent to give a specific material and lighting effects. When this is done, it can be set up and output, through the post editing and synthesis, and ultimately generate three-dimensional animation [1].

Three dimensional animation technology, which can simulate the simple industrial products and display of art, can simulate the complex role and scene model, from the static, single model to dynamic, complex scenes can rely on powerful animation technology to achieve. Three dimensional animation relies on the design and performance of real and perfect virtual reality technology, which has a very high accuracy, authenticity and unlimited operability, and has been widely used in many fields such as business, science, technology, military, education, medicine, entertainment, etc. For example, some of the animation, character animation, architectural roaming, film and television advertising, special effects production and other works to bring an unprecedented visual feast.

With the continuous development of computer 3D animation technology and innovation, and now has been more and more valued. Because it is more intuitive, image and vivid, more intuitive, more intuitive, more able to enjoy the immersive feeling, especially for those who

have not yet achieved or ready to implement the project, you can make the audience enjoy the wonderful results and display in advance after the implementation of the design scheme.

## 2 Display Design Art

Display design is a comprehensive discipline based on the design of art. It is through the use of certain tools and equipment, the use of certain tools and equipment, the use of certain visual communication means, in the established time and space, the use of art design language, to create a unique space and artistic conception, and the content of certain information and content in the public, and to produce a significant impact on the audience's psychological, ideological and behavior. Its core is how to efficiently transfer information to the audience, so as to achieve the purpose of perfect communication.

In the display design, the "space" is the critical factor, the need to convey the information must be displayed in public, it is a platform for people to perceive activities. Therefore, the essence of the design is how to properly handle the space form. Its premise and foundation is to understand the relationship between the spatial form and the display design. Display design art, through the form, color, lighting, video, audio, materials, text illustrations and models and other aspects of the full use of new technologies, new results, can fully mobilize the audience's vision, hearing, touch and even smell and taste, and all the ability to form a benign interaction between people and environmental science [2].

With the years of development, scientific and technological progress has now formed a "show art". In

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the business activities of its display means is highly effective and direct characteristics; the function of the literary and artistic display is self-evident. Museum, science museum, art exhibition hall, Folk Museum, etc. are important part of social civilization and cultural resources, which plays an important role in inheriting civilization, enlightening wisdom, showing science and promoting the construction of spiritual civilization. This new field of display design not only enriches the contents of the exhibition, but also updates the artistic conception of the exhibition. Through the introduction of some new decoration technology and materials, it is a subject of systematic, scientific and artistic integration.

### 3 Commercial Buildings Display Design Art Based on the Three-dimensional Animation Technology

The art of commercial architecture design includes: the design and production of urban construction and planning, city image display, city digital project, park landscape construction, municipal planning, commercial buildings, residential, public place design, virtual city and so on. Before the commencement of these projects, we must have a complete pre design and planning process, comprehensive analysis and induction of various factors, first of all to develop a detailed project objectives and plans, and then determine the rationality and feasibility of the program. In order to get the final results in the previous work, the use of virtual reality technology can easily achieve this process, through the construction roaming animation, 3D animation, animation, project bidding animation. The concept of architectural animation and other techniques for the corresponding art processing and performance, can be in the future development direction has a general understanding so as to improve working efficiency, effectively reduce the risk.

The 3D animation technology on the one hand makes the range of display design time and space and depth to expand and extend. The number of messages and effectively enhance the amount and quality of the change; on the other hand, because of the virtual display of flexibility and diversity, can make some objects in the real environment can not be displayed get dripping every performance, let a person feel personally on the scene and intimacy, so that the display design is more popular and comprehensive. Three dimensional animation technology in the commercial building display design art in the main solution to the development of the project's virtual reality performance and to develop the project promotion and publicity. In the commercial building planning and design of roaming animation can be in the display process, with the help of virtual reality technology to build a virtual three-dimensional scene, so that visitors to participate in, experience the sense of interaction and immersion [3].

With the development and progress of 3D animation technology, the typical visual image and artistic characteristics of the commercial buildings are also widely used and studied. VRP-MUSEUM (network virtual Pavilion) is a museum experience, for all kinds of

large-scale exhibition center, and other industries, the exhibition hall, exhibition and temporary exhibits transplanted to the Internet 3D interactive display, publicity and education experience solutions. VRP-MUSEUM can be used to combine the traditional pavilion with the Internet and three-dimensional virtual technology to break the time and space constraints, so that a wider range of users on the network platform can truly feel the pavilion and exhibits, with online interactive experience, enjoy the search, immersive online exhibition! Compared with the traditional physical exhibition hall, the performance characteristics of the exhibition are essentially different in Table 1.

**Table 1.** Comparison of the characteristics of the network virtual exhibition hall and the entity Pavilion

	Online virtual exhibition hall	Entity Pavilion
Features	In a digital way to display, education, collection, research	In a entity mode to display, education, collection, research
Autonomy	User initiative	User passive
Convenience	Use the Internet, anywhere at any time you can access the browse	Tickets to the destination is required to enter the exhibition
Interactiveness	Interaction, games, expansion of information	such as individual interaction
Environmental control	Can be a window interactive control environment	The environment can not control or change
Display mode	All round, digital	Close range, entity
Presentation mode	Diversity, according to personal habits have different classification	Single fixed display mode
Extension	Extremely	Finite
Space quantity	Limited to broadband, server and hardware devices, but can be expanded and improved	Confined to buildings, it is difficult to expand, access is limited
Spatial scale	Can be reduced and enlarged, 360 degree full range of viewing	Limited by the distance between the viewer and the object
Resource saving	Environmental protection and energy saving, low carbon life	Commercial venues borrow fees, exhibition fees and further exhibits transportation

Three dimensional animation technology can be carried out in the computer platform. The 3D model of virtual object is stored in the computer, and all kinds of information in computer program. In the project, the project design in its role is obvious, through three-dimensional animation display can find out the defects in the design, so that can effectively reduce the difficulty of production, shorten the design cycle, increase the design personnel's interest, so as to reduce the cost of production. Along with the development of virtual reality technology, the application of 3D animation technology in the commercial building display design will be widely spread and applied.

#### **4 Industrial Product Display Design Based on 3D Animation Technology**

Industrial design is a discipline which follows nature and objective law. It is a combination of technology and art, function and form. It is influenced by social form, natural environment, cultural ideas and economic factors, which is based on the harmonious relationship between "function" and "beauty".

Product design is a kind of imagining and planning, the use of digital, line, color, symbol, etc. to find ways to solve the problem, through the creation of comprehensive information processing and specific carrier, the people of a certain purpose or needs to be expressed in a good form of the process, it is reflected in a certain level of economic, technological and cultural development level. Industrial products display design art is an orderly design system, which is based on a variety of media from the structure of the form, function, application of the special design to complete the transmission of information. Finally realize the function of the product, which brings people a more realistic aesthetic experience.

Product animation is a branch of animation field, it uses computer graphics (CG) technology and multimedia design software, the product structure, features, functions, working principle, using method, attention to matters such as three-dimensional animation through three-dimensional rendering, so that people's direct view, detailed and full range of dynamic understanding of product features and characteristics. Product animation has been widely used in industrial product development, testing, publicity, display and other aspects, such as the car as a representative of the means of transport animation, mobile phone as the representative of the electronic products, machinery products parts assembly animation, engineering application animation, production process, production process and other three-dimensional animation design and production. Using virtual reality technology to provide interactive, the product is placed in a certain environment or in the story, the network can use Cult3D technology on the product's work environment or the performance of the product is a dynamic display [4].

With the development of virtual reality (Reality Virtual) technology and multimedia technology, virtual reality technology and multimedia technology are used in the new product development process. At present, the virtual reality technology is introduced into the CAD

environment, which will be convenient for the simulation of some properties of the new product development, and also to facilitate the design of the product changes. When the technology conditions of the company, in the virtual product design, designers can use the existing CAD system modeling, and then converted to the VR environment, so that the design staff or prospective customers to perceive products. Designers can also use the VR-CAD system, directly in the virtual environment for design and modification. For example, in the design of the car, the design personnel in a fully interactive design environment, the use of helmet display, with tactile feedback functions of data gloves, joystick, three-dimensional position tracking device, the visual, auditory, tactile and virtual product model, not only can carry out virtual cooperation, produce an immersive feeling, but also to the entire virtual product (Product Virtual) design process inspection, assessment, field address design decisions, so that the design idea is integrated. In the interactive virtual environment rapid prototyping equipment, the design of the virtual product design model of the direct design, improve the design of the initiative and creativity of the design. With the rapid development of multimedia technology, especially the combination of virtual reality and multimedia technology, the speed of the design has been accelerated by the designers from the keyboard and the mouse. Although it is only the initial stage, in the aspects of the interaction between the various sensors and multi-dimensional information environment, and realize the full range of understanding, but also to be further improved, but in the new product development and design application has great potential, and the application prospect is broad. It should be further developed and studied, so that the virtual design technology is better to help designers in the new product development to enhance the design of innovative thinking ability and product design level [5].

Through the three-dimensional animation technology to the industrial product display design art convey and performance, can the product appearance, structure and function of creative and construction, so as to determine the layout of the whole production system, through product animation and interactive, intuitive understanding of the structure and working principle. It not only shows the superiority of the function, but also is easy to manufacture, low production cost, so that the comprehensive competitiveness of products can be enhanced. Product animation in the realization of the product is more detailed, complete and comprehensive, can effectively make the target audience more conscious, active acceptance of enterprise products; on the other hand for the image of the enterprise and corporate culture, the concept of propaganda, also has great potential value.

#### **5 Three-dimensional Animation Technology and Display Design of the Integration of Innovation and Development Trends**

Three-dimensional animation and display design is the combination of science and art, the design of the

realization of the need to rely on technical support, through the design of the form of beauty and technology pursuit of the function of the United States for integration and innovation, and ultimately form, function and aesthetic perfect fusion. Display design is the pursuit of a seek and create emotional and rational exploration and discovery of wisdom, looking at a higher level is to show the aesthetic design, function, environment and human factors such as harmony, intertwined with each other, through the dissemination and exhibition of 3D animation technology, will bring a unique the creative and new experience of the exhibition.

Architectural animation design for the project plan approval of the intuitive carrier, reduce communication costs between the government departments and improve the efficiency of communication. Developers can also be in the virtual reality technology, through the animation of arbitrary interception of pictures or fragments of advertising, so as to reduce the cost of advertising investment. Application of virtual reality technology, the target customers can freely walk in real estate roaming virtual reality demonstration system, free to watch, the impact of strong, can make the customer feel immersive, greatly promote the speed of the contract signing. According to the United States, the famous real estate website realtor data show that there is a virtual reality technology display real estate roaming real estate, real estate, than did not show the real estate, access rate increased by 40%, the purchase effect increased by 28.5%. Real estate can make roaming scheme has multifunction, real estate can also be used for roaming online advertising sales promotion, brand promotion, sales site display, company website and real estate website display, as the company's historical data for permanent preservation, long-term investment, leasing, commercial projects for various assessment activities. One-time investment, can be applied in all aspects of project approval, construction, sales, investment leasing, and can be used permanently. The construction of roaming animation allows buyers to choose to see the model of the image on the computer. In the sales department the use of VR technology allows buyers to see the house which will be built in the area after a few years, to see beautiful residential environment design through real estate roaming.

The VRP-PHYSICS system in the code of digital technology in the industry pioneered the application of professional industrial simulation field, is currently the only one suitable for high-end industrial simulation virtual reality system physics engine. Since the birth of the day, VRP-PHYSICS system with its powerful physical real-time computing capabilities to support the real simulation of gravity, environment, simulation of rigid body dynamics and other environmental characteristics, support for a variety of dynamic interactive means, support for a variety of high speed calculation of the impact of a variety of high speed calculation of the method, a simple and easy to be used for the majority of industrial simulation needs of excellent interactive simulation creative solutions is perfect, for the vast number of domestic industrial

simulation tools and technology to achieve the level of revolutionary progress. VRP-PHYSICS system is widely used in many industries of virtual simulation: the simulation of large-scale machinery and equipment operation principle, for training and product electronic sample demonstration; production line process simulation, for skills training teaching and production line simulation monitoring; all kinds of virtual scene and real industrial facilities of interactive operation application [6].

With the development of digital technology and network technology, the application of digital technology will be more and more. The 3D display effect of virtual reality technology in digital technology has brought a wealth of ideas and immersive feeling. Through 3D animation design and production, people can be integrated into the virtual scene.

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