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Application of multimedia image technology in engineering report demonstration system

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Abstract. With the rapid development of global economic integration, people's strong desire for a wide range of global exchanges and interactions has been promoted, and there are more unprecedented convenient means for people to know the world and even to transform the world. At this stage, we realize that the traditional mode of work has become difficult to adapt to the changing trends of the world and informatization, multimedia, science and technology have become the mainstream of the times. Therefore, this paper will mainly analyze the present situation of the project report demonstration system and the key points of the work and put forward with pertinence specific application strategy of the integration with multimedia image technology.

1. Introduction

Application of multimedia image technology in engineering report demonstration system can solve the disadvantages of traditional demonstration process to a great extent (such as destruction of environment, time consuming, demonstration rigidity and lack of attraction, etc.), adding to the attraction of rigid engineering presentations filled with data, mapping, etc. The use of PPT, short video, and even holographic projection technology greatly restores the engineering process and engineering results and is more intuitive; at the same time, a large number of pictures, images take the place of traditional paper-based documents and digital data appears in report demonstrations, increasing the interest and attraction of the demonstrations and making them fresh and impressive.

2. Present situation and key points of project report presentation

2.1. Status of engineering report presentation

Project report presentation is a complicated system engineering that requires the consumption of a large amount of manpower, financial resources and material resources, in addition, there are the characteristics of engineering construction itself (such as long cycle, large investment, strong comprehensiveness of technology, and the likeliness to be influenced by topography, geology, hydrology, meteorology, transportation, social economy, etc.), therefore, it is very important to improve and perfect the project presentation system scientifically and reasonably [1].

At present, in the process of project report presentation, the main methods of collecting data and materials are estimation statistics, manual reports, document delivery and photo recording. This method is with heavy workload and low efficiency, and it is difficult to ensure the timeliness and efficacy, nor can it macroscopically manage the construction progress of the whole project.

2.2. Keynotes and difficulties of project report presentation

Large engineering building area, complex structure and difficulty in accurate measurement. In the process of large-scale engineering construction, there is often involvement of large construction area

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and very complicated structure; athe time of traditional data collection and mapping, manual fixed point mapping and manual drawing are the main measures; not only does this impose a high requirement on the quality, ability and knowledge system of professional surveying and mapping personnel, but it is time and energy consuming with huge workload. And because it's manual calculation, mistakes are very likely to happen, leading to the late mapping and data compilation waste and in the final engineering report presentation system, mature results are hard to be actualized [2].

2.3. Plenty of working high above the ground that is hard to observe for blind spots

In the whole process of data acquisition, aerial photography is often needed, which requires the specialization and precision of equipment; meanwhile, manual aerial photography is not perfect, often there will be blind spot phenomenon; as rarely can the perspective switching be perfect, there can be passive impact on the final results.

2.4. The report lacks visualization

Traditional engineering presentations are mainly based on paper as the main medium, and report demonstration are performed on paper files of a large amount of printed documents, materials, even mappings. But in the actual engineering, there will be some special circumstances that are difficult to be intuitively reflected on paper documents. For example, the special nature of the terrain cannot be directly reflected in the paper, but report demonstrations are without the possibility of field observation; this contradiction is one of the most important and difficult points in the project presentation system at this stage.

2.5. It is difficult to realize paperless office

In the preparation phase of the project reporting demonstration system, we need to collect a large amount of data (mostly paper-based), and we will be surveying and mapping the project site, producing draft 1, 2 and even 3; in the early preparation process, if there is a simple mistake (for example, data entry mistake in the early stage), all the documents need to be printed again, which adds to the difficulty of preparation. Even if final documentation is formed, more papers can be needed in the process of batch printing and compiling into books due to multiple numbers of leaders in the report demonstration. At this stage, with the continuous reduction of limited resources and the needs of building a "resource-saving and environmental protection" society, the implementation of paperless office is inevitable choice, but as mentioned in the previous paper, traditional engineering demonstration system is very demanding for the quantity of paper, so it is extremely unfavorable for the implementation of paperless office.

3. Multimedia image technology

With increasing requirements on engineering report demonstration system and multimedia production of electronic images, as in the concept generation of multimedia "image multimedia" in narrow sense; as in presentation of design and engineering results via text dubbing, graphic representation, audio and video productions. From the perspective of the system, there are many types of multimedia presentations in architectural or engineering presentations, including multimedia bidding demonstration, PPT bidding demonstration, video bidding, 3D demo bidding, demonstration of indoor and outdoor design scheme, building decoration scheme demonstration, landscape design bidding demonstration, planning scheme demonstration, project bidding demonstration, interior decoration project demonstration, planning and design report presentation, post competition report demonstration, project achievement report presentation, landscape design scheme bidding, government procurement bidding, exhibition hall design bidding, demonstration of the achievement award of scientific research project, scheme optimization report, multimedia demonstration of urban planning scheme and multimedia demonstration, etc., the production requirements and development of project report demonstration system change rapidly.

4. Application of multimedia image technology in engineering report demonstration system

4.1. Application of 3D scene model in engineering process management

3D dynamic visualization digital model of construction schedule is established basing on the 3D visual digital modeling of construction site topography and various kinds of ground objects, solving key issues concerned by engineering management decision makers and urgent to be solved - visualization of engineering progress. 3D modeling based on oblique photography put all the management objects in a real 3D world, realizing the visualization of data and the true meaning of "WYSIWYG" in the sense of management. There is no need for staff to go to the scene personally and the construction site, construction schedule and construction problems are clear; for areas inconvenient for staff to come (such as the bottom of the pier and near-water steep slope, etc.), the environment and project information can be easily checked. In addition, the 3D scene model can provide abundant and detailed information about the water temperature, geomorphology, environment, humanity and traffic around the construction site, which is conducive for the comprehensive evaluation of construction conditions by the construction site managers and the formulation of targeted resource scheduling and configuration scheme.

If oblique photography 3D model is adopted, then there is no need for the installation of any software and the images can be uploaded to Wish3D Platform, and the 3D data publishing, display and sharing function can be utilized; there is also integration of flight browsing, tagging, measurement and other characteristics of the application. Large errors can occur in traditional surveying and mapping when the project site is large, time-consuming and requires massive labor, the results can have difficulty in terms of statistical data, and it is difficult to make timely analysis in case of emergency. Real time measurement of ground objects can be carried out by UAV oblique photography modelling, 3D spatial analysis can also be conducted, especially in complex terrain engineering. The powerful oblique photography 3D model enables a panoramic view of the situation without the need to present at the site, bringing new construction management mode and operation decision mode and solving the problem of visualization of construction schedule, it can not only help with the presentation and report of the executants but provide decision basis for the managers.

4.2. Improve the professional quality of the reporters and actualize bidirectional promotion of the multimedia imaging technology and reporters.

To improve the professional quality of the reporters, a full understanding of the presentation plan is needed with skilled and magical craftsmanship, the use of multimedia imaging technology should also be mastered to ensure a smooth progress of the reporting process [3].

Reporting program should be with "transposition thinking" and understanding of the thoughts of reporters, this can make communication more efficient. And the so-called thinking, of which a large part is - data. It's better for each of our decisions to be supported by correspondent data. Pictures produced based on this data logic are able to withstand test outs. Another content of thinking is logic. For large enterprises, brief introduction of the entrance position and flow line organization are not enough, or simply several color flow charts. The causal relations between the location of the entrance and exit and the surrounding land and the urban road should be clearly identified and expressed. Drawing based on deduction logic is a graph that can stand up to scrutiny. Fully understand what the value of design is: finding problems - analysing problems - solving problems at different stages of project advancement. This is the core value of the design, and our report should follow the same train of thought. In addition, the focus should be placed on improvement of professional quality, now the professional quality of the architects is more than column grid arrangement and space partition, on the basis of mastering basic skills, knowledge of relevant building types such as big business, hotel, etc. should be dabbled at; this will greatly improve the efficiency of communication and realize the bidirectional promotion of multimedia imaging technology and reporters.

4.3. System design should follow the logical process sequence

Logicality is an important factor in the reporting demonstration system. Many people don't know where to start when they design a demo process or elaborate on a project, then the following design

order is recommended, and it can be deleted or subtracted according to specific requirements and actual situation.

First, a brief account of engineering background to be presented with data and pictures. For example, where is the project, the size of it, what it is and why the project, is there something influencing the project and the problems to pay attention to; the second is the explanation of the project starting point, what is the starting point of the project? What problems need to be solved (or your idea); Third, start the planning layout of the project with multimedia image technology, axis, entrance, node, road, house layout, style, skyline, city facade, etc. need to be exhibited; fourth, introduce the general principles and specific space and the consideration on orientations; fifth, expound the engineering advantages and "scientific and technological natures" such as energy conservation, environmental protection, greenness, barrier free and materials, etc. meanwhile, in the process of system design, it is necessary to increase or reduce some parts according to the response of the reporters, if the owner is familiar with the terrain, no elaboration is needed; if the owner is particular about multi-building monomer modelling, this should be indicated in the design in detail.

4.4. Integration of holographic technology into engineering report presentation system

Holographic technique is the technique of recording and reproducing real 3D images of objects by means of interference and diffraction, it can not only produce 3D aerial illusion but make the illusion interact with the performer, completing the performance and produce stunning effect. Different from the holographic glasses of Microsoft hololens, holographic cultural experience is no need for wearing any accessory equipment, and the position is "unique immersive holographic cultural experience", it is more three-dimensional, realistic and the visual effect is more shocking, and the effect of expression is more immersive. Adoption of holographic technology for engineering report demonstration and recording holograms by means of electronic components omit the later chemical processing and plenty of time, realizing real time processing of images. Meanwhile, quantitative analysis can be down on digital images on computer, intensity and phase distribution of image can be obtained via calculation and simulation of superposition of multiple holograms and other operations can be conducted, greatly restoring the actual situation of the project and construction process and providing visual impact of authenticity and intuition for people who watch presentations.

5. Conclusion

Along with the rapid development of computer multimedia technology, multimedia is with more attention and application by means of its own advantages, and it has been influencing many aspects of our lives imperceptibly. In the application process of multimedia image technology in project report demonstration system, it has developed rather mature in terms of both hardware and software. However, there are still some shortcomings in the targeted development and more in-depth technical research. Only by realizing the more standardized and mature development of multimedia imaging technology, can we better serve the engineering report demonstration system.

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