On the construction of virtual museum

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Abstract. The combination of virtual reality technology and museum is feasible and inevitable. Virtual reality technology can make effective use of digital resources and generate strong immersion interaction, which is perfectly consistent with the characteristics of modern social museum, and promotes the birth of virtual museum. There are certain principles and problems in the construction of virtual museum. These problems can be solved through personnel training, capital investment and institutional innovation.

1. Principles of virtual museum construction

1.1 Accurate positioning function
According to the contents of the exhibition hall, traditional museums are divided into historical exhibition hall, science and technology exhibition hall, art exhibition hall and comprehensive exhibition hall. Each type of exhibition hall has different functional orientation. For example, the historical exhibition hall displays the collection from the historical point of view, and explains the facts existing in the long history through the way of cultural relics display. Virtual museum is an educational exhibition hall with learning and research as its main purpose. In addition to cultural relics exhibition, audio and video broadcasting, it also needs to have cultural relics information consulting, knowledge point detection and other functions. By using the digitalized resources in the museum and through independent learning, cooperation and exploration activities, the ability of the audience to participate in practical activities, solve practical problems and adapt flexibly is improved.

1.2 Comprehensive and reasonable content design
Content design should be based on the principle of scientific and reasonable, that is, to ensure the scientific and logical rationality of content. The design source of digital museum platform content is the information in the physical exhibition hall, which can ensure the scientific content of the digital exhibition hall. The content display of digital exhibition hall is based on the principle of step-by-step, generally, it will be displayed one by one in accordance with the main time line and level by level.

1.3 Strictly follow the theme and reflect the characteristics of the exhibition hall
The design and display content of the digital exhibition hall should be consistent with the actual physical exhibition hall and the theme, rather than fabricated. When designing the virtual museum, the designer can design and add content according to the principle of display aesthetics and the objective actual situation, but the overall content shouldn’t be separated from the actual exhibition hall. Only when each exhibition hall has its own characteristics can it embody its advantages, be unique among many digital exhibition halls, and highlight its role and value. The interest of the audience is closely
related to the characteristics and richness of information display. The more characteristic information resources are, the more valuable they are, the more attention they can attract.

1.4 Easy to operate and support personalized requirements
The promotion and use of virtual museums is related to its operation difficulty. Only an easy-to-use platform can get the user's approval. In the design of virtual museum platform, we should analyze the characteristics of different learning subjects, such as age, thinking characteristics, behavior characteristics, cognitive level and hobbies, etc., considering their different levels of learning needs, develop flexible, the content and form of learning can meet the audience's independent and diversified learning needs.

2. Problems in the construction of virtual museum

2.1 Less professionals in informatization
Talents are the prerequisite to ensure the smooth progress of museum information construction. In the current virtual museum construction activities, the lack of information technology professionals is the main reason to hinder the development of museum information. Most of the managers of museums have strong ability of museum business management, but their mastery of information technology is generally low. Most of the managers in the museum are liberal arts majors, so they have a good understanding of museum management and museum collections. However, there are relatively few staff in science majors, which indirectly affects the information construction of the museum. Museum informatization involves many professional fields, including cultural relics, archaeology and computer. These three aspects coordinate with each other to jointly promote the development of Museum informatization.

2.2 Imperfect network construction of museum
Network construction is the basic guarantee to realize museum information construction. In the current stage of museum work, due to the lack of professionals, most museums do not have a set of perfect network construction, which also hinders the development of museum information. In addition, even though some museums have established a network management system, due to the lack of professional staff to regularly improve the network system, there are many security risks in the network system, the function of the network system is not reflected, which is not conducive to the information development of museums.

3. Information construction mode of virtual museum

3.1 Strengthen the information technology ability of virtual museum staff
In order to meet the pace of the development of the times, museum information construction has become an inevitable trend. In order to speed up the development of information technology in virtual museum, we should first carry out professional training for museum staff, strengthen the information technology level of staff, improve the awareness of museum staff more than information construction, so that they can strengthen the use of information technology in their work, and then realize the training of staff in museum information construction, the museum can hire professional computer engineers to explain more information technology application skills for the staff, so that the staff can master the basic operation requirements of computers and software. In addition, it can also organize staff to watch the information technology products, let staff understand the charm and role of information technology, and then strengthen the understanding of information technology, and promote the smooth progress of museum information construction.

3.2 Improve the construction of virtual museum network system
The construction of the network system of virtual museum includes many aspects, such as the collection information input, management, storage, display and so on. In general, museum network system mainly includes information management module, multimedia resource module and portal module. In the network construction of virtual museum, LAN is an important part of network construction. The LAN construction of the museum is mainly divided into two parts: software construction and hardware construction. In the LAN construction of the museum, the main part is the configuration and application of the general wiring, servers, switches and other equipment of the network. In the work of network wiring, we should try to connect all departments and exhibition halls in the museum. In addition, in order to promote the information construction of the museum, the staff should strengthen the use of network resources, use information technology for network information collection, and also use search engine to search the collection information in the museum, so as to enrich the digital resource library of the museum, and promote the smooth progress of the information construction of the museum.

3.3 Strengthen the website design of virtual museum and promote the information construction of virtual museum

Virtual museum is mainly browsing through the internet. Therefore, strengthening the website design of virtual museum can’t only promote the development of virtual museum, but also realize the information construction of virtual museum. In the process of information construction of virtual museum, website design is an indispensable part of information construction. Through the establishment of a website, the collection in the museum will be displayed in the form of digital in the website, attracting more people to understand the virtual museum. While appreciating the collection, people can also have real-time communication in the website. For the construction of the website, it must include visiting exhibition, information inquiry, communication and other parts, so as to provide more comprehensive services for the visitors, deepen people's understanding of the collection, and maximize the value of virtual museum information construction.

3.4 Setting up the external exhibition system of virtual museum information

The external display system of virtual museum is mainly through the form of network. In the mode of virtual museum, users can use information technology to view the collection anytime and anywhere. This will also appear in a certain period of time, the phenomenon of large number of users. In order to avoid the system paralysis caused by more users, we should first improve the external display system of virtual museum. First of all, it should be able to use computers to classify the collection information, and then specify the corresponding directory, so that users can carry out targeted information search according to their own needs, and realize the diversion of users. Secondly, in the process of user browsing, we can also use the computer to analyze the user's interest, and then develop a multimedia navigation system to guide the user, so that the user can more easily find out what they are interested in.

3.5 Strengthen capital investment

In the process of the construction and development of virtual museum, we need to have some investment in software and hardware, and have a certain demand for funds. In this case, the digital museum needs to be able to guarantee the investment of funds in the development, apply the funds to scientific research, and reflect the scientific value of information resources on the basis of further improving the level of scientific research. At the same time, it is also necessary to apply the funds to the construction of museum database, the digital construction of museum collections, the development and management of software and exhibition center, and to do a good job in the construction and maintenance of the website through the investment of funds, so as to ensure its safe and efficient operation. Among them, the development and research of software is a key work, and also an important foundation and premise for the construction of virtual museum. For this content, the museum can strengthen cooperation with software companies, and work with professionals to strengthen database entry, document processing, digital collection and retrieval programs, so as to ensure that relevant
software programs can meet the business development of the museum at this stage in terms of type and function. In addition, it also needs to be able to strengthen the construction of acquisition hardware configuration, constantly improve the configuration quality of printers, scanners and computer related equipment, ensure the operation stability of related equipment, so as to achieve the improvement of digital acquisition efficiency, and constantly improve the configuration level of photographic equipment, improve the accuracy and clarity of video and audio; In order to ensure the security of data information, the application of encryption, image watermark and digital authentication technology should be done well.

3.6 Strengthen theoretical learning
In the background of new technology development, museums need to be able to change their ideas in the development. In museum construction, it is formed by both material and technology. The material basis is the collection in the museum; the technical basis is the advanced digital information technology, which constitutes the digital museum through the combination of the two. On this basis, through the application of digital technology to establish an information platform, in order to achieve the collection of digital collections. Compared with traditional museums, virtual museums have the functions of education, collection and research, but they collect digital collections. They need to realize simultaneous interpreting through the construction and application of information platform. At the same time, the digital museum has a wider audience, which will face the whole Internet audience. For this, in the actual virtual museum construction, we need to be able to grasp the above situation, consider the audience's preferences, viewing power and location, and make good goals for the future development of the virtual museum on the basis of constantly changing old ideas and deepening theoretical learning.

3.7 Strengthen technical update
Technology is an important foundation for the construction and development of virtual museum. During the operation of the museum, it is necessary to strengthen the communication and cooperation with peers at home and abroad, update the information technology in the process of communication, make full use of the collection information, and develop the all-round digital application space; in the construction of the actual virtual museum, it is required to carry out the digital processing of all works in the museum, including the automatic monitoring of the collection environment, application of display multimedia, office automation, establishment of collection information database and collection of fire and theft prevention. Among them, the safety of the collection can be said to be the most concerned problem in the development of the museum. Through the application of automatic monitoring and control technology, it can automatically monitor and control the lighting, corrosion protection, temperature and humidity of the collection environment, so as to ensure that the collection has a controllable state in the environment and avoid the occurrence of damage. At present, many museums have applied the automatic monitoring system, which can effectively guarantee the safety of collections.

4. Results
To sum up, it is an inevitable requirement for the development of the times to realize the digital and information construction of museums. Under the background of rapid development of information technology, strengthening the information construction of virtual museum can effectively promote the development of museum. At present, the information construction of virtual museum in China is relatively backward, so it requires the museum staff in the process of work, it is necessary to constantly improve the information system of the virtual museum, so as to promote the smooth progress of the information construction of the virtual museum and the long-term and stable development of the museum.
References

[1] Zhu Mingmin. Current situation and Prospect of information construction of Cultural Relics Museum— Take Guangzhou as an example [J]. China port, 2016 (S1)

[2] Tang Xiaoru. Digital museum construction in the information age [J]. Heilongjiang science, 2019 (2)

[3] Lu Kaifeng. Research on the application of virtual reality technology in museum display. Popular literature and art , 2018 (10)

[4] Lu Wei, Zeng Dinghao, Chen Jiming, et al. Research on key technologies in the construction of virtual museum system [J]. Computer science, 2017, 34 (7): 244-247

[5] Yuan Shuo. Research on the informatization construction of digital museum based on cloud computing [J]. Science and technology innovation guide, 2018,15 (03): 147 + 149