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# Interactive Design of Museum Display System in the Context of New Media

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**Abstract:** With the continuous development and popularization of Internet technology, people's lifestyles have undergone earth-shaking changes. In today's society, people's demand for information is increasing, and traditional media forms can no longer meet the public's demand for information. For example, more and more users will access museum information and exhibit it through mobile phones or computers. At the same time, some merchants will take advantage of this convenience to conduct online exhibitions to attract more tourists to visit cultural relics and monuments or to post content about the collection on the Internet to spread cultural and educational purposes. This paper mainly focuses on the characteristics of new media, combined with the analysis of the current status of interaction design. The interaction design idea of a museum exhibit display system in the context of new media is proposed. Through the in-depth study of the characteristics of new media, combined with the functional requirements of the museum exhibit display system and the characteristics of the user group, the design principles and specific implementation methods of the interface of the museum exhibit display system are proposed.

**Keywords:** Museum; Display System; Interactive Design; New Media.

## 1. Introduction

In today's society, with the continuous development of science and technology and the improvement of people's living standards, people's demand for culture and art is increasing. As an essential cultural carrier, the museum carries the history and wisdom of human civilization. It has become one of the critical places for people to learn about history and inner culture. However, traditional design methods can no longer meet the requirements of modern audiences for a cultural experience and need to be upgraded through modern technology. In this context, the application of new media technology has become one of the critical directions of museum display system design. New media technology can provide museums with more vivid and intuitive interaction display forms so that visitors can better understand the historical and cultural connotations and enhance the museum's attractiveness and influence. New media technology can also help museums achieve digital transformation and strengthen data management and protection work to ensure cultural relics' safe survival.

## 2. The Development History of Interactive Design of Museum Display Systems in the Context of New Media

### 2.1. The Current Situation of Interactive Design of Museum Display System

(1) The current situation of interactive design of foreign museum display systems

Some foreign museums have begun to adopt new interactive technologies for their exhibitions to capture visitors' attention better and increase their engagement. For example, the Metropolitan Museum of Art in New York City has adopted virtual reality technology that allows visitors to explore ancient Egyptian civilization's history and cultural heritage in a realistic environment. In addition, other museums use AR (augmented reality) technology to combine digital content with the real world, allowing people to gain a deeper understanding of the stories and historical context behind exhibits. Applying these new technologies enhances the visitor experience and provides museums with more promotional opportunities and revenue sources. In addition to technological means, some museums have also improved the traditional exhibition format. For example, the Louvre Museum in France has introduced a new interactive way of interpretation - an audio guide. This device can automatically identify the user's location and provide corresponding interpretation services. In this way, visitors can easily and enjoyably tour the museum even without a guide. In short, foreign museum display systems have made significant progress and will continue to develop in the future toward becoming more intelligent and interactive.

(2) The current situation of interactive design of the domestic museum display system

In China, the interactive design of museum display systems has become a trend. At present, many museums in China have adopted advanced digital technology for exhibition display, such as the Palace Museum in Beijing and the Shanghai Museum. Using multimedia technology, these museums have made communicating between cultural relics exhibits and the audience more vivid and exciting. For example, visitors can learn historical and cultural knowledge in the Palace Museum using a touch screen. At the same time, in the Shanghai Museum, they can use VR glasses to experience the life scenes of ancient cities. In addition to the traditional digital display methods, many new interactive display forms have emerged in recent years. For example, some museums have adopted AR (augmented reality) technology, which allows visitors to experience the virtual world in a natural environment; others have adopted VR (virtual reality) technology, which allows people to immerse themselves in the authentic atmosphere of historical events. The application of these new technologies has not only increased the attractiveness of museums but also provided visitors with a richer cultural experience. However, although the interactive

design of museum display systems has achieved specific results, some problems still need to be solved. In the future research, we should pay attention to innovative thinking, explore new ways of display, and make good use of the modern and flourishing new media technology, so as to improve the interactivity of museum display system, so as to achieve better cultural communication effect.

## 2.2. The Future Trend of Interactive Design of Museum Display System

In the current digital era, the museum display system has become one of the essential means of cultural heritage protection and inheritance. With the development of new technology, people's demand for museum display system is also increasing. In the future, the interactive design of museum display systems will show the following development trends: First, interactivity will become an essential feature of the display system. Traditional exhibition methods often let the audience passively accept knowledge, while the future of the display system will pay more attention to interactive communication with the audience. Through the introduction of virtual reality technology, augmented reality technology, and other forms of interaction, a deeper understanding and experience can be achieved. For example, VR glasses can be used to simulate a visit to ancient buildings or scenes of historical events, or AR technology can be used to demonstrate the restoration of cultural relics. These interactive methods not only can attract more people to visit but also can better stimulate people's interest and knowledge of history and culture. Second, personalization will become a new feature of the display system. Traditionally, the museum display system is often standardized design cannot meet the needs of different people. However, with the advent of the era of big data, we can use data analysis methods to understand different user groups and provide them with exhibition content and services that are more tailored to their personal preferences. For example, some social functions can be added to the exhibition so that people can share their insights and feelings; intelligent recommendation algorithms can also be used to create exclusive content tailored to users based on their historical browsing records and preferences, among other factors. In this way, it will better meet the needs of people of different age levels and professional backgrounds and enhance their participation and satisfaction. Finally, multimedia integration will be the new direction of the display system. At present, many museums have started to use various multimedia elements to enrich the performance effect of exhibits. For example, the story and meaning behind the cultural relics can be presented in multi-dimensional through video, audio, and images to increase the immersion and emotional resonance of the audience. At the same time, automatic identification and classification of cultural relics, as well as real-time monitoring and response to visitors' behavior and feedback, can be achieved with the help of artificial intelligence technology. Such multimedia integration can make the exhibition more vivid and interesting and better adapt to modern people's aesthetic habits and social values [1].

# 3. The Principles of Interactive Design of Museum Display System in the Context of New Media

## 3.1. The Principle of Human-Centered

In the new media environment, the museum display system is more and more interactive. Therefore, how to better meet the needs and expectations of users has become an important issue. Furthermore, the concept of human-centeredness plays a vital role in this situation. First, from the user's point of view, we need to understand their needs and preferences. Through research studies and market analysis, we can understand that users of different age levels have different preferences and cognitive levels for different exhibition contents. For example, children prefer lively and exciting exhibits, while older people pay more attention to historical background and cultural connotations. Therefore, these factors should be fully considered when designing museum display systems, and corresponding display methods and services should be provided. Second, from the designer's point of view, the principle of human-centered design is also fundamental. The designer should think from the user's point of view to reduce the difficulty and learning cost of the user as much as possible and improve the user experience. At the same time, designers should also consider the compatibility and cross-platform issues between various devices so that more users can use the system. In addition, attention should be paid to the interface's aesthetics and ease of use to meet users' psychological expectations and aesthetic standards. Finally, the human-centered design principle is also crucial from the technical level. With the development of technology, people have become increasingly dependent on digital and networked life. Therefore, in the process of designing the museum display system, it must ensure that it matches the existing technology system and has good scalability and security performance. This is to ensure the long-term stable operation of the system but also to adapt to future development changes.

## 3.2. Principle of Interactivity

In the new media environment, the interactive design of the museum display system needs to follow the principle of interactivity. Interactivity refers to the interaction and communication process between the user and the system, which can enhance the user's interest and participation in the system content and improve the user experience and satisfaction. Therefore, the interactive design of the museum display system should focus on interactivity and operability. First, the interactive interface of the museum display system should have an intuitive and easy-to-understand design language so that users can quickly understand and use the system. Second, the system should provide a variety of interaction methods, such as touch screens, voice recognition, gesture control, and other forms, to meet the needs and habits of different users. In addition, the system also needs to have specific self-adaptive capabilities, that is, according to different user behavior, to make intelligent adjustments to provide users with more personalized services. In addition, the interactive design of the museum display system also needs to consider the psychological needs of users. For example, through the emotional presentation to attract the user's attention or using gamification elements to increase the user's sense of participation and fun. At the same time, the system also needs to consider the user's time cost and energy

investment, reduce the user's burden as much as possible, and improve their efficiency and comfort. In short, the museum display system's interactive design needs to consider factors such as interactivity and operability, as well as the psychological needs of users. Only in this way can we better achieve the purpose of museum exhibitions and promote cultural heritage and development.

# 4. The Strategy of Interactive Design of Museum Display System in the Context of New Media

## 4.1. Methods of Interactive Design of Museum Display System

In the new media environment, museums' exhibition content and form must constantly be updated and developed. Therefore, how to better use new media technology to improve the interactivity and attractiveness of the museum has become an important research direction. This chapter discusses the interactive design strategy of museum display systems in the context of new media from the interactive design perspective. First, we need to clarify the target user groups of the museum display system and their needs. By studying the audience, we can understand their understanding of museum exhibits, their interests, and other information to provide a reference basis for the subsequent design. At the same time, it is also necessary to consider the differences in the needs of users of different age levels to ensure that the museum display system experience can meet users of all ages [2]. Second, we need to determine the functional modules of the museum display system and their characteristics. For example, a virtual reality or augmented reality module can be set up to allow the audience to experience the content of the exhibition more deeply; or a social sharing module can be set up to encourage the audience to communicate with others and share their views. The selection of these functional modules should align with the overall theme and concept of the museum display system, while also considering factors such as the practical difficulty and feasibility of operation. Finally, we need to develop specific interactive design solutions, including interface layout, interactive methods, visual effects and other aspects. Specifically, we can make it easier for the audience to understand and grasp the exhibit information by adopting a simple and clear interface design language to reduce unnecessary distracting factors; we can also transport user-sensitive interactive methods, such as touch and voice recognition, to increase audience participation and immersion. In addition, it can also combine multimedia elements, such as video, audio, and images, to enrich the presentation of exhibits and enhance the audience's viewing experience. In conclusion, the interactive design of museum display system in the context of new media is a complex task that requires comprehensive consideration of various factors. Only by fully exploring the audience's needs, reasonably selecting functional modules, and making detailed interactive design plans can the actual value and role of the museum display system be realized.

## 4.2. The Process of Interactive Design of Museum Display System

In the context of new media, the interactive design of museum display systems needs to follow an inevitable process. First, we need to clarify users' needs and goals, understand their behavioral habits, and their awareness of cultural heritage. Secondly, we must consider combining museum exhibits with modern technology to achieve a better interactive experience. On this basis, we can develop a specific design plan, including the interface layout, functional module settings, and other aspects. Finally, we also need to test and evaluate to ensure the feasibility and practicality of the design. Specifically, the interactive design process of the museum display system can be divided into the following steps: 1. Requirements analysis stage: through market research, user surveys, and other ways to obtain user demand data, and combined with the actual situation to determine the main functional modules of the display system; at the same time, to take into account the characteristics of different age groups of users, to provide them with different service content. 2. Prototype design stage: Based on the results of the preliminary data analysis, draw out the preliminary design drawings and make several revisions and optimizations to finally form a prototype model that meets the actual needs. 3. Development stage: Using advanced technical means, such as HTML5, CSS3, JavaScript， build up a complete display system platform, and test and debug it to ensure its stability and security. 4. Go-live Promotion phase: After releasing the display system platform, carry out promotional activities to attract more visitors to the exhibition, and also expand the scope of dissemination through social networks and other channels. In short, the interactive design of the museum display system is a complex process that requires full consideration of the needs and characteristics of users, combined with modern technology, to create an attractive and interactive display system.

## 4.3. Evaluation of Interactive Design of Museum Display System

In order to better meet the needs of users and improve the interactive experience, museums need to conduct a practical interactive design evaluation. This chapter will evaluate the interactive design of the museum display system from the following aspects: First, we should pay attention to whether the interface design meets the user's needs. The interface should be designed to be simple, clear, and easy to operate while being able to provide rich functionality and personalization. For example, different navigation methods or recommended contents can be set for different types of users to suit their interests and learning goals. In addition, the interface design needs to pay attention to factors such as color palette and font size to ensure that it is visually appealing and easy to read. Second, we also need to consider whether the interaction process of the museum display system is smooth and natural. The interaction process should be smooth and organized so as to avoid the situation of lag or a dead loop. At the same time, the interaction process of user feedback is also a significant factor. The interactive design of the exhibition system can be continuously improved by collecting users' opinions to make it close to users' needs. Finally, we also need to pay attention to the security of the museum display system. With the development of Internet technology, network security has become a problem that cannot be ignored [3]. Therefore, the museum display system's interactive design must consider issues such as data privacy protection, which can ensure that the user's data will not be leaked or misused.

# 5. Conclusion

In this study, we explored how the museum display system can be effectively designed for interaction in the context of new media, and we came to some important conclusions: First, the interactive design of the museum display system should focus on user experience. Only by making users feel good about using the system can we attract more people to visit the museum and thus achieve the purpose of museum promotion. Therefore, designers need to fully consider the needs and habits of users, using straightforward design language to improve the interface, ease of use, and operational fluency. Second, the interactive design of the museum display system should also follow certain principles and norms. For example, it should comply with the basic rules of website construction to ensure that the page layout is reasonable and clear; at the same time, it should also avoid overly complex or cumbersome design styles to maintain simple and intuitive style features. Therefore, designers must constantly explore new technical means and application scenarios to inject fresh blood into the museum display system, making it more attractive and practical. In our future work, we can continue to explore new ways to interact and improve the attractiveness of museum exhibits while also focusing on preserving the value of cultural heritage and making museums an important place for people to learn about history and pass on civilization.

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