Analysis of Intelligent Exhibition Mode based on 5G Technology

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Abstract. Exhibition is an important platform for the implementation of national strategy and an important carrier of science and technology development in the new era. With the development of artificial intelligence technology, the concept of "Intelligent Exhibition" is proposed. Limited by the impact of communication bandwidth, there are still some problems in the development of intelligent exhibition. With the continuous development and application of 5G network technology, enabling exhibition with 5G will be an important trend in the future development of exhibition industry, and realize the transformation and upgrading of traditional exhibition to intelligent exhibition. Based on the characteristics of 5G technology, this paper discusses the problems in the intelligent exhibition mode, analyses the exhibition mode based on 5G technology, and puts forward the corresponding combination methods.

Keywords: Intelligent Exhibition; 5G Technology; Big Data; Online and Offline.

1. Introduction

With the formal application of 5G technology, China has made a lot of achievements in the construction and integration of 5G technology in recent years. 5G technology has begun to integrate with a variety of industries. As an important part of China's modern industry, the exhibition industry has been included in the important strategy of the "14th Five Year Plan" period. Therefore, 5G technology will be further integrated with the exhibition industry to promote the further informatization and intelligence of the exhibition industry, and it can provide solid technical support for China's progress from a large exhibition country to a powerful exhibition country.

Exhibition industry is an emerging industry, which includes conferences, exhibitions, festival activities and so on. So it can be regarded as the general name of all activities that gather people in a specific time and space for gathering and communication. In China, the exhibition industry is gradually developing into a new important growth point [1], which not only can gather high-quality resources, but also promotes the exchange of the latest technology and in-depth learning of the industry.

In recent years, with the development of communication technology and artificial intelligence technology, many industries have entered a new development stage of the combination of "intelligent application", so the concept of "Intelligent Exhibition" is proposed and studied in recent years. At present, there is no exact and unified definition of intelligent exhibition. But the academia and industry generally recognize that the intelligent exhibition is based on information technology, which takes exhibition data as the core, so it serves the whole chain of exhibition industry through big data analysis, and various management and services can be intelligently organized in the process of exhibition organization and implementation, which can improve exhibition efficiency and experience. The main characteristics of intelligent exhibition include personalized exhibition process experience, informatization and intelligence of exhibition management [2].

Intelligent exhibition is an emerging and more efficient industry in the current era. It has many advantages compared with the traditional exhibition. Firstly, intelligent exhibition takes the idea of sustainability and intelligence as the main principle. So intelligent exhibition is more intelligent and intensive, and wastes less resource. Secondly, intelligent exhibition can provide decision-making reference for exhibition services based on a large amount of information on big data platforms. It is conducive to exhibitors to timely improve the planning scheme, and provides the most matching

personalized recommendation service according to users' differentiated needs, which can enhance the use sense in both sides. Finally, intelligent exhibition can also improve the intelligent level in the management process of exhibition. The traditional exhibition needs a lot of manual works such as security, etiquette guidance and product introduction in management, and the management is complicated. However, intelligent exhibitions can use the network information management platform to optimize the processes in the whole exhibition, such as planning, organization and communication of exhibitions. As it can comprehensively monitor the flow of people and logistics in venues, timely warn and deal with possible dangerous situations in the exhibition hall, so the manual works can be reduced and the high-quality completion of exhibition can be ensured.

However, owing to the limitation of communication technology, there are still many problems in intelligent exhibition, which leads to a certain bottleneck in the development. It is specifically reflected in the improvement of the exhibition quality, and the effect of the combination of online and offline.

2. Features of 5G Mobile Communication Technology

With the development of wireless communication, many generations of mobile communication technology have been proposed, and each generation has played a great role in industrial upgrading. The first generation mobile communication (1G) system is introduced into China in 1990s, which adopts analog communication technology, so it has poor anti-interference, reusability and system capacity. The 2G communication technology is based on the digital communication. It not only has more stable communication quality, but also can use mobile phones to realize simple functions such as sending information and browsing web pages. In the 3G era, the high-speed communication transmission is realized, and it can achieve the wireless roaming all over the world and deal with various media forms such as data, image, audio and video streaming. 4G integrates 3G and WLAN, which can transmit multimedia data more quickly and provides higher data quality[3]. 5G network technology inherits many advantages of these communication technologies on the basis of previous generations communication technologies. Compared with 4G technology, 5G network technology has many advantages.

2.1 High Speed

5G network technology enhances the mobile bandwidth, so it has higher transmission speed and can support more smooth communication effect. Compared with 4G technology, it can provide 825 times the communication rate, and the peak transmission rate can reach 10Gbps. Therefore, with the application of 5G network technology, the display effect can be greatly improved. The situation of fuzzy and low quality of VR effects in 4G era can be changed. The boundary between virtual and real will be weakened, and the new sense of virtual to real can be realized.

2.2 Low Delay

5G network technology has taken the delay requirements into consideration at the beginning of design. Compared with the delay of about 20ms in 4G network, the delay requirements of 5G network are decreased to 1ms, so it can provide a technical basis for real-time communication among different systems. As the time delay of 5G network technology is far lower than that of 4G, the 5G network based intelligent driving and industries can become much safer and more reliable.

2.3 Large Capacity

5G network technology has expanded to a new spectrum, so it can provide larger network capacity and support more connections at the same time. In general, the capacity of 5G network technology has increased by 1000 times compared with 4G technology. According to the standards of the International Telecommunication Union, it needs to have the equipment connection capacity to

support millions of connections per square kilometer, so as to meet the communication needs of various technologies such as the Internet of Things.

2.4 High Reliability

5G network technology also puts forward higher requirements for the reliability of data transmission. According to the test conducted by Qualcomm in the headquarters laboratory, the data reliability of 5G network transmission can be as high as 99.9999%. The six "9" high reliability networks can greatly expand the application occasions of 5G network, and even completely subvert many industry environments, allowing remote communication Online payment and other industries benefit from it.

3. Intelligent Exhibition Mode based on 5G Technology

5G network communication technology has obvious advantages of high speed, low delay, large capacity and high reliability. It can not only meet the requirement of large-scale data transmission of high-definition video, virtual reality and other application scenarios. It can also be adjusted flexibly and automatically, which is conducive to realizing the personalized needs of the Internet. 5G technology is more suitable for use in the complex environment of the future era. The exhibition industry is changing from the traditional "sweat and physical driven" stage to "intelligent and innovation driven" stage [4]. As the driving force of a new round of technological revolution, 5G technology has brought great changes to the development of various industries and provided more development possibilities for the intelligent development of the exhibition industry as shown in Fig 1.

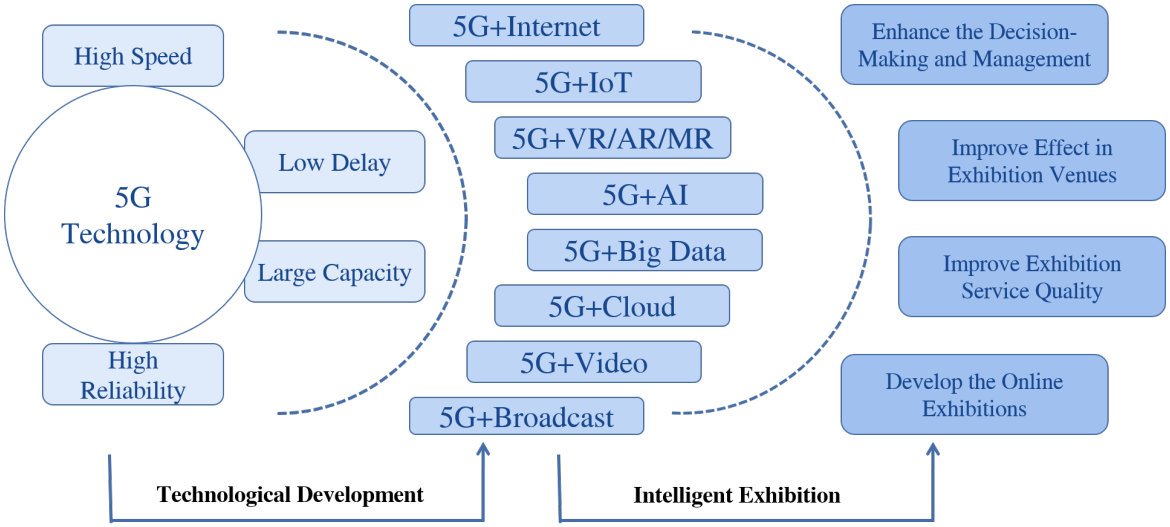


Figure 1. Intelligent Exhibition based on 5G Technology.

3.1 Enhance the Decision-Making and Management

With the advent of 5G, all kinds of information within the coverage of 5G network can be transmitted much more quickly and efficiently, including local exhibition information, exhibition hall information, exhibitor information, exhibit information and audience information. With big data and value evaluation, it is helpful for the exhibition organizers to decide what kind of exhibition to hold and how to hold the exhibition. And the information is very useful for the organizer to improve the exhibition planning, marketing scheme and provide personalized management services for customers. Under 5G technology, the exhibition site can achieve high-definition real-time monitoring and real-time recording and analysis of on-site audience behavior. Due to the large number of people, logistics and capital flows gathered at the exhibition site, it is difficult to manage the site. 5G technology makes a qualitative leap in exhibition information management and promotes the orderly progress of the exhibition site.

3.2 Improve Effect in Exhibition Venues

Recently, the VR and AR technologies are very common in exhibitions, especially when introducing exhibits. VR technology can mobilize people's perception system, make virtual scenes and exhibits realistic, and realize interaction with visitors. However, VR cannot achieve the same effect as reality, mainly due to the time delay of communication technology. 5G network technology can achieve a new visual experience and improve the exhibition effect, which can completely solve the problem. At the same time, 5G effectively supports the access of massive Internet of Things devices. Guests from different countries in the world can realize multi scene, long-distance real-time viewing of high-quality pictures and videos and real-time interaction, so that the distance will no longer affect the display effect.

3.3 Improve Exhibition Service Quality

With the help of 5G network technology, the information and images are transmitted to the big data platform in real time to realize accurate capture, rapid recognition and detection. With the help of VR technology, the guidance of exhibitors and visitors in the exhibition venues can be more realized. Combined with artificial intelligence technology, the check-in and security can be more accurate, and business can be much faster and safer. For international exhibitions, it has a wide range of participants and strong international exchanges. Although speech recognition technology has been applied to many large exhibitions to help simultaneous interpreting, in practice, the problem of pronunciation errors and punctuation and punctuation still leads to an increase in translation error rate, resulting in errors in important exhibition exchanges. 5G technology can continuously enhance the translation ability of translation machines under the abundant high-quality training data, and provide barrier free and intelligent simultaneous interpretation services for exhibition customers.

3.4 Develop the Online Exhibitions

5G network technology can support high-quality images and immersive interactive experience, which can allow the absent to share the grand occasion of the exhibition online. Affected by COVID-19, lots of exhibition activities are delayed or cancelled, which has an impact on the exhibition industry, and causes different degrees of loss to the industry chain [5]. As the "first exhibition in China", the 127th Guangzhou Export Commodities Fair was held entirely in the online form for the first time with the help of 5G network technology. It provided 25000 exhibitors, thousands of buyers around the world and millions of industry worker with 1.8 million goods for online display and promotion.

4. Conclusion

With the advent of the 5G era, the development and application of new technologies are conducive to the transformation and upgrading of the traditional exhibition industry to intelligence. More and more exhibition projects will use 5G technology to improve the exhibition quality and expand the exhibition scale. 5G network communication technology not only brings major opportunities to the exhibition industry, but also faces many challenges. Cultivating high-quality exhibition talents who master 5G network technology in the 5G era and launching high-quality 5G and Exhibition integration products are the main direction of future research and practice, so as to achieve the goal of intelligent transformation of the exhibition industry as soon as possible.

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