

The Research on the Design of Integrated Management System of Intelligent Scenic Spots

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ABSTRACT

Following the development trend of advanced technologies such as Internet technology, the Internet of Things and virtual reality technology. The demand for digitized, networked and intelligent management of scenic spots is growing constantly. The design of integrated management system of intelligent scenic spots becomes the hot topic of tourism industry. To improve the design of integrated management system of intelligent scenic spots, we should strengthen the integrated application of core technologies such as mobile Internet, the Internet of Things, cloud computing, virtual reality and geographic information technology. In addition to these technologies, service platform of intelligent scenic spots, ticketing system of intelligent scenic spots and guide system of intelligent scenic spots should be core subsystems of integrated management system of intelligent scenic spots.

Keywords: *Intelligent scenic spots, integrated management system, service system, ticketing system, guide system*

1. INTRODUCTION

With the development of advanced technology like Internet technology, Internet of Things technology and virtual reality technology, the demand for intelligent management of scenic spots is growing constantly. Digitization, technicalization and Internetization become the development tendency. Because of the rapid development of tourism industry nowadays, construction of integrated management system of intelligent scenic spots becomes the focus of government and industry. Moreover, the development of correlation technique provides technical support to intelligent scenic spots, especially the construction of integrated management system of intelligent scenic spots.

2. THE TECHNOLOGIES OF INTEGRATED MANAGEMENT SYSTEM OF INTELLIGENT SCENIC SPOTS

Mobile Internet, the Internet of Things, cloud computing, virtual reality, geographic information technology and other related technologies are core technologies of integrated management system of intelligent scenic spots. To develop the system, these technologies should be applied comprehensively and given full play to the advantages of advanced technology to achieve the synergistic effect of these technologies. [1]

2.1. Mobile Internet

Mobile Internet is a new concept. It came into being because of the continuous development and the integration of mobile communication technology and Internet technology. It contains the unique advantages of the Internet and mobile communication technology. Therefore, mobile Internet systematically combines their advantages. It has mobile communication's convenience and efficiency. Meanwhile, it also has advantages like openness and interaction according to Internet.

With the rapid development of mobile Internet, the construction and progress of the integrated management system of intelligent scenic spots based on Internet technology have been improved at the technical level. By using mobile Internet technology, intelligent scenic spots will further improve user's stickiness and interaction of scenic spots. Users can publish their personal travel experiences on the Internet in the form of novels, photos, videos or other forms by using the social network service provided by mobile Internet. In this way, the official of the scenic spots can build a unique social network to share the information of the scenic spot. [2]

2.2. The Internet of Things

The Internet of things is a kind of derivative network of Internet whose existence relies on Internet and traditional telecom network. It enables the addressable targets to form

an interconnected network through the Internet.[3]The Internet of Things is mainly composed of information sensors,radio frequency identification technology,global positioning system and other advanced technology.It is an extension of Internet.The Internet of Things collect useful information to realize the purpose of Internet of everything. For system of intelligent scenic spots and intelligent tourism industry,the Internet of Things can achieve precise localization,collecting information,integration,analysis and other functions.For tourists,the Internet of Things technology can collect information about the actual situation of tour guides and overview of scenic spots through audio,video,AR and other diversified information channels.Therefore,it will help increase the interaction between tourists and scenic spots,make the tour convenient and improve the level of satisfaction of tourists.

2.3. Cloud Computing

Cloud computing is a kind of serve integration system built on the basis of Internet technology.It distributes a calculation into multiple computers to improve the transmission speed and improve the utilization efficiency of resources.In addition to improving the efficiency of data analysis,cloud computing distributes the calculation in multiple computers,with different data in different servers,thus reducing the risk that may arise because of the centralized data processing.It improves the security level of data processing,so the security of data processing is guaranteed.[4]

With cloud computing technology,the scenic spot can accurately obtain various data of tourists in the scenic spot,judge the current situation and future trend of the scenic spot.In this way,operation problem of scenic spots will be found and solved.[5] The competitiveness level of scenic spots can be analyzed.The scenic spot can imitate the excellent operation strategy of other scenic spots,which will improve the management level and attract more tourists.

2.4. Virtual Reality

Virtual Reality (VR) is a computer simulation system started in the 20th century. It aims to create a virtual world for users to immerse themselves in by using the technologies of computer, electronic information, simulation technology and other technologies. VR can create a virtual reality which provide users with visual, auditory and tactile experience to improve the interactivity of scenic spots.

The continuous development of virtual reality technology brings a new mode for integrated management system of intelligent scenic spots.With the help of virtual reality technology,the scenic spots can build a unique all-dimensional virtual scenic spot space.Through the virtual space,managerial staff of the scenic spot can get the information of the scenic spot such as the condition of

facility,tourist number,crowdedness and so on.Then staff can collect useful information which will help for the integrated management of intelligent scenic spots.

2.5. Geographic information technology

Geographic information technology,also known as "3S" technology,includes Geographic Information System (GIS),Remote Sensing (RS) and Global Positioning System (GPS).Proper use of 3S technology can achieve the integration of tourism resources under the background of big data environment,and establish the associated information model.With the help of the model,the scenic spots' managers can not only get the position information of scenic spot,but also obtain the analytical information through the geographic information technology.According to the information and analysis,manager can choose the most suitable tourism operation and development mode.

3. DESIGN of SERVICE PLATFORM OF INTELLIGENT SCENIC SPOTS

Service platform of intelligent scenic spots is one of the core subsystems of integrated management system of intelligent scenic spots.It is a tourist-oriented service platform based on information data.Tourist's demand is its core.According to the data obtained by intelligent scenic spots system,the scenic spot's manager should build a targeted tourist service platform based on the needs of tourists.The core of the platform includes transportation,operation platform and tourism resource allocation system.Therefore,service platform of intelligent scenic spots should be composed of application layer,platform layer,data layer and perception layer.

3.1. Data Layer

The data layer plays a fundamental role of the service platform of the service platform of intelligent scenic spots.The main functions of the data layer of the service platform include data statistics,data integration,data analysis and data provider.After specific processes,useful data will be provided to platform layer and application layer.According to the different sources and types,there are three main types of data collected by the data layer.They are scenic spot's geographic information data,scenic spot's theme data and tourist information data.Integrating and analyzing these three types of data will greatly improve the level of scenic spots management and promote the intelligent development of scenic spots management system.

3.2. Service Layer

The service layer of the service platform of intelligent scenic spots has a variety of Internet-related functions, such as Establishing and Communicating brand values of scenic spots, collect feedback from tourists and releasing service information of scenic spots, provide tourist information service and achieve the online interaction. The service layer is built for residents, tourists, tourist enterprise and tourism administration department. Therefore, the service layer should have many login channels. Login channels can be set on the official website of the scenic spots, tourist app, WeChat public account and small programs, electronic business website and other related websites. [6]

3.3. Business Layer

The business layer of the service platform of intelligent scenic spots is the upper layer of the platform system. The types of business are varied. For tourists, business layer involves the traveling experience of tourists. For managers of the scenic spots, it involves operation, management, decision and other core business. Because of various types of business, business layer is divided into four small platforms, they are intelligent guide platform for all-for-one tourism, operation management platform, guarantee platform of Integrated management of tourism industry, integrated command and control center of all-for-one tourism.

In recent years, there have been many successes of design of service platform of intelligent scenic spots. Especially the construction of operation management platform, which helps promote the online and offline display of tourism products through multiple channels. The operation management platform is characterized by professionalism, stability and high efficiency. It can provide tourists with convenient service such as hotel reservation, ticket reservation and online payment. The development of service platform of intelligent scenic spots improves the level of integrated management of intelligent scenic spots.

4. DESIGN of TICKETING SYSTEM OF INTELLIGENT SCENIC SPOTS

Ticketing system is one of the core subsystems of integrated management system of intelligent scenic spots. It includes ticket sale and check system and ticket management system. In order to realize the unified management of system data and information release, the ticket sale and check system and the ticket management system need to carry on the system data interaction through the unified database. The design of ticketing system needs to take into account the multiple functions such as offline purchasing, online purchasing, ticket checking and data analysis. In terms of payment, ticket sale and check system will accept not only cash payment and

UnionPay payment, but also accept Internet payment such as WeChat Pay and Alipay.

4.1. Ticket Sale and Check System

The main functions of the ticket sale and check system include ticket selling and ticket checking. With the rise of e-commerce platform, third-party website platforms have become the choice of many intelligent scenic spots to sell tickets. Therefore, in addition to the traditional function of ticket selling and checking, Online Travel Agency (OTA) docking function should also be considered in the ticket sale and check system. In addition, the ticket sale system of the whole system should be divided into offline ticket selling and WeChat ticket selling modes according to the different ways of ticket selling.

4.2. Ticket Management System

The ticket management system should have core functions such as system configuring, operation configuring, user management, ticket setting and system monitoring to ensure the efficient operation of the ticketing system of intelligent scenic spots. System configuring requires the information of the scenic spot to be registered and set in the ticket management system. The related properties such as opening time and closing time will be set for different scenic spots. In addition, the system will log into all the terminal systems in the scenic spot and give them different ID for real-time equipment query and maintenance. Operation configuring requires the system to configure and log in the data such as tourist types and preferential policies, so as to realize the control of ticket quantity and different preferential levels of scenic spot. User management is to log tourists into the system as system users, so as to give different rights to different tourists in the scenic spot. System monitoring shall monitor the ticketing system of intelligent scenic spots in real time. Monitoring records should be ensured that it can be saved and exported to the system at any time.

The ticketing system of intelligent scenic spots is an electronic ticket distribution system that directly links scenic spot and distributors. The system closely connects the steps of ticket generation, ticket information transmission and ticket checking according to the order, which makes the scenic spot and ticket distributor tied tightly. The system not only improves the efficiency of ticket selling and checking, but also plays a role in saving management costs.

5. DESIGN of GUIDE SYSTEM OF INTELLIGENT SCENIC SPOTS

As one of the core subsystems of integrated management system of intelligent scenic spots, guide system of intelligent scenic spots is developed on mini program

platform of WeChat with the use of GPS and GIS technology. After entering the scenic spot, tourists will have convenient and comfortable travel experiences according to the map navigation, intelligent tour guide and electronic route planning of the scenic spot.

5.1. The Structure of Guide System of Intelligent Scenic Spots

The guide system of intelligent scenic spots is built on mini program platform of WeChat. The system is divided into four main parts, they are data part, business part, location part and service part. The data part mainly saves the relevant data of the scenic spot, which can provide information such as the culture, historical evolution and background of the scenic spot. In addition, the data part will also store the relevant data of users, so as to provide personalized tour guide services according to users' preferences. Through business part, users can directly log into the tour guide system with their WeChat account by using the "Scan QR Code" function of the WeChat. The other function of the business part is maintenance and update of the whole guide system of intelligent scenic spots. The location part combines GPS and GIS technology to locate the tourist position on the basis of the scenic spot map data. Location part also use Floyd-Warshall algorithm to get the shortest distance between the tourist's current position and the target position, so that the tourists can get the most convenient tour experience. The service part will combine with the data part to provide tourists with explanation of scenic spots and introduce relevant information like history of scenic spot. In addition, the service part will also provide the real-time situation of the congestion in the scenic spot, which will help avoid long queues of tourists and give a reasonable travel plan to tourists. [7]

5.2. Function Design of Guide System of Intelligent Scenic Spots

The guide system of intelligent scenic spots should be based on the relevant data of scenic spots. Therefore, in order to realize the navigation function, the system should collect relevant information including the landform of the scenic spot, the distribution of scenic spots, utility distribution, cultural information of scenic spots, service around the scenic spots. After the collection and storage of data, the relevant data will be analysed and processed. Then the processed data will be correlated systematically. The map of the scenic area will be displayed after modularization to achieve the following functions.

6. CONCLUSION

With the continuous development of Chinese tourism industry and the support of advanced technologies, the

construction of integrated management system of intelligent scenic spots, especially the promotion of the service platform, ticketing system and guide system has become an inevitable trend. Therefore, the official of the scenic spot and relevant departments should actively formulate the optimal design of integrated management system of intelligent scenic spots and implement in an all-round way.

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