Research on the Construction of the Resort Mobile Tourism Guide System

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Abstract. With the advent of the two-day weekend system in Taiwan, people’s demand for leisure activities has risen sharply, and the leisure industry development in Taiwan has experienced a boom in recent years. Along with the popularization of the Internet, the network and leisure industries have become more closely interrelated. In the future, the cable network navigation mode of the fixed site will be unable to meet a wide range of leisure industry considerations, such as action, convenience, timeliness, and economy. Based on this situation, this research aimed to understand the planning mode of a tourism guide system for a large region resort, and the feasibility of its construction. In addition, the aim was to construct an integrated resort mobile tourism guide system with plentiful information on multimedia voice and spatial positioning by making use of the existing network multimedia and space information technology as the main development tools. At the same time, the study attempted to test and verify the guide system in a systematic and practical way, taking Promised Land Resort & Lagoon in Taiwan as an example, in the hope of presenting a resort navigation mechanism characterized by utility, vividness, real-time and multiple functions as well as reaping the benefits of promoted service quality and downsized human navigation.

Keywords: network multimedia, spatial information, tourism guide system.

1. Introduction

With the increasing maturity and popularity of computer and Internet technology, the wireless network went from theory to its current booming development, freeing network applications from their fixed cable environment and allowing users to gain access to a new Internet environment. Taking the leisure industry in Taiwan as an example, the present wireless network environment within the existing industry is limited to a single building or a single floor. However, with the disbanding of the regulations governing the administration of the land and hills, ever more large leisure industry areas in Taiwan have come into being. These endeavors eagerly call for the construction of a wireless network and its related system. The effective construction of the wireless network environment and its relevant application system can not only meet the demands of the general public and business for instant and effective access to the network resources, but also provide instant customer service and internal management for the leisure industry.

At present, when tourists take part in the recreational activities in a large resort area, they often encounter a shortage of information and services because of the vast hinterland in the resort; this seriously affects service quality and leads to endless complaints from the tourists. Therefore, determining how best to use the wireless network and related derivative system for the recreation resource integration and internal management as well as the improvement of Travel Quality of Service (TQoS) have become important and urgent challenges. In view of this situation, this paper aimed to develop a mobile navigation mode suitable for large space leisure industry through the integration of wireless network multimedia and spatial positioning technology. This paper also carried out practical construction and exploration based on a demonstration tour site, the Promised Land Resort & Lagoon in Hualien, Taiwan, in order to provide

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reference for the planning and construction of the mobile tourism guide system for the leisure industry, with regional characteristics.

2. Introduction to the construction technology

2.1. The wireless network multimedia technology

The multimedia system will continue to endure thanks to its role: transmitting information to the users by combining various media such as video, sound, images, writing, etc. In the existing multimedia, communication and information are constrained by temporal and spatial limitations linked to fixed hardware such as cables. With the mature development of the network and multimedia technology, we can easily share multimedia information on the Internet; thanks to wireless network technology, we completely got rid of the problems arising from the confined cable environment. Furthermore, it enables all users to access network multimedia information any time and anywhere.

2.2. Space positioning technology

Space positioning technology is mainly comprised of a combination of three systems: the Geographic Information System (GIS), Global Positioning System (GPS) and Location Based Services (LBS). With the help of the signals from GPS and the image-text media constructed by GIS and LBS, the geographical spatial information regarding where you are, is effectively presented and the mobile navigation demand can be met. The relevant technology is briefly described as follows:

3. A case Study on the Resort Construction

This research aimed to test and verify the Tourism Guide System in a practical and systematic way, taking the Promised Land Resort & Lagoon in Hualien of Taiwan as an example; it is under development by the Promised Land Development Co., Ltd. The Wimberly Allison Tong & Goo Company is responsible for its planning and Design, while Longman Engineering Company is responsible for the construction. The base, located in Shoufeng Township, Hualien County of Taiwan and about an hour’s drive from Taroko, has an area of about 250 hectares and is currently still undergoing the three phase development projects:

- The first phase: an around-the-lake resort hotel complex.
- The second phase: an 18-hole landscape golf course and 500 guest rooms in the resort hotel.
- The third phase: a theme park, water park and European street.

3.1. Factor analysis and limitations

The Promised Land Resort & Lagoon covers an area of about 250 hectares, approximately 10 hectares of which have been currently developed. Given the design changes in the future development of the resort, the research only focused on the related wireless tourism guide system planning of the present developed area and listed the basic reference factors as follows:

- The BBS (Basic Service Set) region covered by Access Point: 8 hectares is estimated to cover the around-the-lake resort hotel complex and the reception hall.
- The accommodation population: a total of 1250 people, including 1000 tenants (calculated by the 262 rooms in the around-the-lake resort hotel complex with full room accommodation of 3 people per room) and 250 employees.
- The existing navigation mode: this resort has set up simple explanation boards at fixed sites, with navigation explanation on the transferring vehicles and vessels by the connection personnel. This mode required a lot of manpower and material resources. What’s more, after the tourists check in and settle down in the resort, they could communicate with the service staff only through the traditional way of using the telephone. This mode had a limited range of information transmission media for the related activities. All of these factors seriously influence its service quality.

3.2. Construction of the wireless network environment

The case of the Promised Land Resort & Lagoon is in a region with a high density of large buildings. In order to effectively plan the wireless network and achieve the best effect of service quality, we took into
consideration the following relevant factors: (a) strength type of antenna environment field, (b) interference between wireless communications, (c) the output power distance between the devices, (d) the barriers in the transmission environment, (e) Internet connection type, (f) maintenance cost, (g) safety, and (h) aesthetic properties. After the calculating the path loss (Lbf), we proposed the Access Point setting with the optimized network quality and the wireless Internet infrastructure. The relevant topology type design framework and antenna setting positions are shown in Figures 1 to 3. The completion of the construction of the wireless network intervals was followed by the construction of the resort mobile Tourism Guide System.

Fig. 1: Main network framework

Fig. 2: Indoor antenna location
3.3. Design concept and tools of the tourism guide system

The information system design strategy often affects the subsequent efficiency and achievement. After careful consideration that the movable resort tourism guide system must be able to access dynamic information at any time, the conclusion drawn was that it was more suitable to adopt an information design strategy of random access. In addition, in order to enhance the popularization and simplify the follow-up maintenance of the system, this study aimed to develop a mobile tourism guide system by using some of the easily obtained software, as shown in Table 1. The system was expected to be built in the computer room of the resort, and the related servers such as the multimedia video, Mobile IP and information bank are also to be built in order to meet the demands of follow-up mobile navigation. The system framework is shown in Figure 4.

<table>
<thead>
<tr>
<th>Functions</th>
<th>Name of the software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layout and image</td>
<td>Adobe Photoshop</td>
</tr>
<tr>
<td>Webpage construction</td>
<td>Macromedia Dreamwave</td>
</tr>
<tr>
<td>Databank</td>
<td>Microsoft SQL Server</td>
</tr>
<tr>
<td>Safety Components</td>
<td>Microsoft .NET Framework</td>
</tr>
<tr>
<td>Animation Design</td>
<td>Macromedia Flash</td>
</tr>
<tr>
<td>Floor plan generation</td>
<td>Microsoft Visio</td>
</tr>
<tr>
<td>E-map service mode</td>
<td>Google Map API</td>
</tr>
<tr>
<td>Effect generation and control program for the virtual environment</td>
<td>Sun Java</td>
</tr>
<tr>
<td>Real-time service mode</td>
<td>Location-Based Service</td>
</tr>
<tr>
<td>Multimedia transfer mode</td>
<td>UMTS</td>
</tr>
</tbody>
</table>
3.4. System function

The main function of the resort mobile tourism guide system is to enable the tourists to enjoy real-time and effective service through the boundless Internet in the resort and to solve the problem of sluggish information transmission and difficult service delivery in the leisure industry covering large regions. The structure of the system functions is shown below:

![Fig. 5: Structure of the functions of the resort mobile tourism guide system](image)

3.5. System display and expected benefits

For visitors’ convenience, the resort mobile tourism guide system constructed in this research is mainly divided into website navigation and cell phone navigation; the display interface of functions and usage are shown in Figures 6 to 9:
4. Conclusion and Recommendations

Determining how to improve the service quality of the leisure industry has long been an important issue, and the key factor is providing timely, correct and effective service. This study aimed to construct a resort mobile tourism guide system for a large region, by adopting an information design strategy of random access as well as incorporating multimedia and spatial positioning information technology into the wireless network construction. The tourism guide system proved to produce good economic benefits in a wide range of resorts as shown by the case study. By combining plentiful image-texts, video and audio multimedia, spatial information and instant service information technology, it is possible to create the same atmosphere of navigation and service as if one were in the tourist destination in person, which is more appealing than the common navigation or pure oral guidance. The related system construction mode is expected to provide reference for a mobile Tourism Guide System for a large region, including the national parks, cultural parks, etc.

5. References


