Design and Implementation of Flex Client in Tourism System Based on WebGIS-Taking Zhouzhuang as an Example

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Abstract. With the development of WebGIS technology. The use of vivid graphics language to express the abstract spatial geographic data, so that the tourism information is more intuitive. Taking Zhouzhuang as an example, this paper designs and develops the Zhouzhuang tourism system with the development technology of Flex client and the general Web service technology. To realize the functions of query and retrieval, spatial analysis, tourism planning and decision management, it provides a convenient service and timely decision-making for tourists and managers.

Introduction

The pace of life in the city is getting faster and faster, people often travel in order to decompression, but to unfamiliar places will be difficult. With the development of WebGIS technology. The use of vivid graphics language to express the abstract spatial geographic data, so that the tourism information is more intuitive. Because of the beautiful scenery, Zhouzhuang is the best choice for people to travel.

System Requirements Analysis

Functional Requirements

In the rapid development of the tourism industry today, all kinds of tourism service system is also a corresponding rise. But for a small area, small scope of services system is less and less, and combining with the WebGIS map function that can be said is only a handful of [6]; in addition, have in the past for the small area tourism management provides the function is not perfect, the system is Zhouzhuang small area as an example for system development, combined with the GIS spatial analysis, for tourists in travel back and forth to provide one-stop service, Zhouzhuang managers provide a complete set of management system.¹

Technical Requirements. In view of Zhouzhuang tourism system is facing the society the majority of tourists, travel information service must be using the Internet browser. At the same time we added spontaneous geographic information system. Only in this way can we play the audience range is wide, the propaganda effect, the system based on MAPGIS igserver platform, using B / S mode², the realization of the use of flex client development technology and web service technology development.
System Development Process Design.

![Flow chart of the development of Zhouzhuang tourism system.](image)

**System Design**

The overall framework of the 2.1 system

This system mainly includes two parts: Web browsing and map operation, and it is divided into four modules: Zhouzhuang, map query, tourism planning and decision management[3].

![The overall structure of Zhouzhuang tourism system.](image)

**System Program Implementation**

**Web Module Interface**

Mainly including the first page, the characteristics of the trip, the impression of Zhouzhuang, accommodation, map printing, map planning, weather and other functions. Home is mainly introduce Zhouzhuang, Zhouzhuang allows users to have a general understanding, trip characteristics of Zhouzhuang attractions food do the detailed introduction and the impression of Zhouzhuang users can comment and travels, showing himself visited Zhouzhuang true feelings, the accommodation function for users provide affordable and comfortable all kinds of Holiday Hotel[4], boutique inns, bed and breakfasts, also can make a hotel reservation.
The results are shown as follows:

Figure 3. Web browsing interface of Zhouzhuang tourism system.

**Map Operation Module Interface**

This module is mainly to Zhouzhuang Town map for all kinds of query operation, including: basic map browsing operation (zoom in, zoom, move, refresh, reset), tool use (magnifying glass, navigation bar, Hawkeye, measurement, layer manager), spatial query (click the query, the painting line query, the query box polygon query, etc.), attribute query, etc. a practical advanced GIS functions.

The results are shown as follows:

Figure 4. The operation interface of Zhouzhuang tourism system.

Figure 5. Map of Zhouzhuang tourist system.
System Function Introduction

**Map Query.** Map query module includes: view in the menu bar, query, analysis, real show, online booking, attractions thermodynamic diagram, Search Toolbar classification search, search sites, attractions transfer, weather instruments, shortcut toolbar, basic toolbar: zoom in, zoom, shift and reset, refresh, Hawkeye, to the basic operation of the map\[6\]. In addition, the classification of the system search, location search and transfer functions to provide convenience for visitors.

**Scenic Heat Map.** System provides a scenic thermodynamic diagram, can display the heat of Zhouzhuang Town attractions, left display area crowded degree, right time axis play button, dynamic display area number histogram \[7\], convenient for tourists through these information, you want to go to the attractions, plan their travel. As graph:

![Figure 6. Zhouzhuang tourism system scenic heat map.](image)

**Tourism Planning.** Tourists login system after entering the personal center, visitors can booking of tickets, hotel and restaurant, also system back to the tourist routes recommendation, allowing visitors to walk at least way more attractions, if separated relatives, available for the system functions of tracking and positioning, real-time check their position, after the end of the tour, visitors can write some travel notes, travel records of every day. \[8\]

![Figure 7. The personal information interface of Zhouzhuang tourism system.](image)
Click into the personal center to enter more operating interface, as shown in figure:

Figure 8. Tourism planning of Zhouzhuang.

Click to record the travel notes, visitors can record their own travel experience. In the view of the travel notes, visitors can view their own upload travel, while others can enjoy their own travel notes. Tourist attractions in the selection of the destination, you can click on the route recommended, there is a recommended route of travel programs, and can show the route. In the tracking and positioning, visitors can locate and display their real time position information on the map and walk through the route information. In the information service, the user can be in this ticket, accommodation, restaurant reservations, and orders for the inquiry, statistics, etc.

**Booking Service.** Tourists in addition to simple GIS functions of map, can also according to the heat consumption statistics of Zhouzhuang area attractions tickets, hotel and catering for online booking, also can query to order.

Figure 9. Zhouzhuang travel system booking service.

**Route Recommendation.** Tourists can choose the best route to the destination based on the route of the route, but also can be carried out in order to save time.

Figure 10. Zhouzhuang travel system recommended route map.
Conclusions

Spontaneous geographic information (VGI), based on user since the hairstyle of geographic information database and real-time refresh function, visitors as a user can spontaneous upload the scenic spatial data information, directly involved in the construction of the database system; 2. Travel itinerary planning, the system provides a scenic heat map, display Zhouzhuang attractions of the heat, the crowded degree, convenient for visitors to choose you want to go to the attractions, their travel planning; 3. The management of scenic spots can be based on the database of registered users of the information, providing tourism strategy in line with a variety of users.

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