

SELF-SERVICE FOLK TOURISM GUIDING TECHNOLOGY ON MOBILE TERMINAL WITH MULTI-MODE: APPLICATION OF GPS AND ELECTRONIC MAP

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1. INTRODUCTION

Folk tourism has features of small-scale operated and unbalanced infrastructure condition. It is necessary to study a flexible configurable self-service guiding technology suitable for different type of scenic spots. It should have capability of diverse demonstrating and be affordable by most of folk-tourism operator.

In this paper, a self-service folk-tourism guiding technology is introduced. This low-cost and flexibly-deployable technology was developed on mobile equipment, which is accord with the floating feature of folk-tourism.

Multi-mode: It has multi-options of deploying, utility and scenic experience function.

Objectives: Using GPS to get user's position information and electronic map to do spatial information retrieval, it provides position-aware touring experience function, including spot introduction, picture and video show and virtual article. On this basis, recommendation, configuration of touring route and automatic-guiding functions will be provided.

2. DATA, METHOD AND WORKFLOW

The main data used include scenic spot map and tour guiding information (include text, images, videos and three dimensional models, etc.).

On server side, data is management by light-level DBMS, e.g. MySQL. On client side, downloaded data is organized by designed folder catalogue.

Developing strategy: Users' position is acquired by embedded or external GPS module. GIS functions are utilized to realize spatial relation calculation and route recommendation. Text, images, video or three dimensional models will be demonstrated by corresponding software interface according to the relationship between users' position and scenic spot.

Above all, multi-mode strategy was analyzed to fulfill specific requirement of folk-tourism.

3. RESULTS AND DISCUSSION

3.1. Multi-mode Design

Three situations were considered in multi-mode design.

(1) Different mobile termination combination mode was provided to be chosen by folk-tourism operators with different infrastructure conditions. Following mobile termination options were considered:

- PDA (scenic spot) + embedded GPS module (scenic spot) + preinstalled program
- PDA (scenic spot) + external GPS module (scenic spot) + preinstalled program
- Cell phone (guest) + embedded GPS module (guest) + downloaded program (wireless or internet)
- Cell phone (guest) + external GPS module (scenic spot) + downloaded program (wireless or internet)

(2) Different demonstration contents combination mode was provided to be chosen by folk-tourism operators with different demonstration requirement. Text, images, video or three dimensional models can be used considering different technical difficulties. As a result, it is also correlated to termination combination model.

(3) Under above two modes, usage combination can be considered to facilitate the usage of folk-tourism operators and guests.

3.2. Data Center Management and Delivery

Data organization and management: guiding service data (configuration file, scenic spot information association file), electronic map data (point, polyline and polygon) and media data (text, image, video, audio, and three-dimensional model) were included.

In the database table on server side, 'project' table and 'user' table were used to manage the whole information. (project and user table structure omitted here)

Data was put in a designated folder with standard file catalogue on both server and client side.

Media data can be downloaded to client from server separately or intensively using zipped package. Electronic map data can be downloaded solely.

3.3. Multi-mode Data Transfer

GPRS, 3G, Bluetooth, WIFI, and cable connection are all considered to be data transfer link between server and client termination.

For a scenic spot, program will check the number of files in its data folder. A configuration file will be generated to record scenic spot information, media data file associated and electronic map name. Hibernate framework was used to realize data search.

Class named BufferedInputStream called to acquire a file-reading stream to designated folder path on client. To avoid possible messy code, URLEncoder interface was used.

3.4. Self-service guiding function development on client

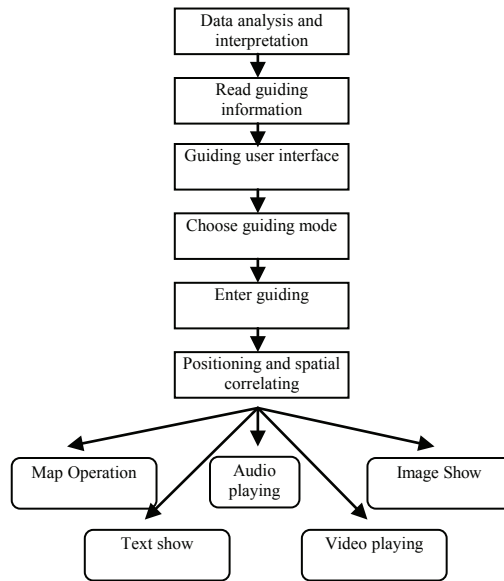


Figure 1. Self-service guiding workflow

Through scenic spot configuration file download from server which record organization of data files, data for guiding analysis acquired and interpreted.

GIS function was realized by HiMap control using electronic map data.

GPS Intermediate Driver was used to collect GPS position information. Every scenic spot was mapped with correct position by electronic map. By HiMap's spatial query interface, current scenic spot may be calculated. Different function will be called selectively to demonstrate different media resources associated with current scenic spot.

- Image: TouchPictureBox
- Audio: FMOD
- Video: TCPMP (The Core Pocket Media Player)
- Guiding rout designing was realized by Dijkstra algorithm.

4. CONCLUSION

A case study was done at Changjia manor, Shanxi province, China. It shows the feasibility of this technology, which has the characteristics of low-cost and flexibly-deployable. It enriches demonstration means of folk-tourism operators as well as make guest' s experience profound and flexible.



Figure 2. effect of technology

5. REFERENCES

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