Research of Mobile Public Transport Information System Based on J2ME and SVG

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Abstract. With the rapid development of wireless technology and the popularity of mobile devices, mobile GIS become the trend of the development of GIS. Mobile public transport information system is the powerful expansion of intelligent public transport system applied in WebGIS. The paper puts forward mobile public transport information system based on J2ME and SVG which effectively use the bus information of WebGIS. It applies the mobile GIS in public transport service that makes the life of people more convenient, and brings good social and economic benefits, improving the social information construction.

Keywords: J2ME, SVG, mobile GIS, GPS, path-selecting.

1 Introduction

In the sustainable development of the cities economic construction, traffic problem increasingly, for example the road crowded by automobile caused, vehicle delay, the air pollution and noise pollution, seriously influences the city environment and development. With the current situation analysis, to attract more people to choose the public transport for the main mode of transit, the government should make well the construction of public traffic information system, releasing timely the bus and road information, to obtain information for people and rational selection of travel paths [1]. With the popularity of mobile devices, GPS, wireless communications technology continues to evolve, people access to information no longer visit the website by using the computer in a place, but can be more easily and quickly to get the required information at any time and place. The rapid development of a large number of mobile devices leads development of GIS to mobile computing GIS, and gradually become an important direction of development of GIS.

The paper puts forward the mobile public transport system based on J2ME and SVG by studying the characteristics of mobile GIS. People can locate their own location and query the line, bus site, real-time operating vehicles information anytime anywhere to better plan their travel plans by using the system.
2 System Design

The system choose the J2ME as mobile phone client development platform, and the Mobile SVG as the format of digital maps, using wireless communication technology to achieve mobile devices and server-side for the real-time information interaction.

The system combines mobile J2ME development platform technology, global satellite positioning technology, Wireless communication technology, geographic information system technology and other technologies. The system composes car terminals, wireless communication network, the server-side etc.

The server-side deal with the vehicle geographic data, and the client’s data require, returning the results to the client-side the map-server responses the requests of web server to generate map: database server storage spatial data, bus information data and so on. Mobile terminal achieve to surf the Internet any time any where through the mobile communication technology (GPRS, CDMA, 3G etc), and obtain the required maps, bus sites and other information through the HTTP protocol connecting to the server-side. Each bus has on-board GPS terminal to receive the positioning signal, to collect the location data of bus and data continuously were uploaded to the server-side platforms in real time.

3 The Key Technology of System

Locate function. The mobile devices with built-in GPS module enable to locate the position in the map, and to view the surrounding traffic conditions, the building features and other information. When we need to obtain the positive information, the threads of system according to the need set the time interval of reading position information. It avoids too frequent updating data, resulting in the waste of system resources. The system only need to get the latitude and longitude information for determining the location of the holder device. The main thread opens a separate thread to get the data. When it opens the thread, the system carries out operation of request coordinates every three minutes or longer and or shorter the time interval to obtain the current latitude and longitude. After the data obtained, threads enter the waiting state to response to the next request of GPS data. When users have been obtained location information unnecessarily, withdraw the function is back to main thread.

Layers control. The map is layer collection. The first is the plan of each layer for map design. Map layer control is indispensable function, and can choose loading required layers to clearly see the important features of the map.

The domestic and foreign large-scale GIS mapping software are all based on the layer mode to management geographical spatial data. The spatial data is said by dot, line and region. And every geometric element of same characteristics makes up a separate layer. The vector diagram of SVG application the method that manage spatial data with layers [2]. This system identify six layers of the experiment data processed in <g> tags. SVG document is a DOM structure, and we can obtain the layer through traversal the <g> and </g> of SVG document. Control visibility of layer properties is true or false, in order to achieve dynamic layered shows the map layer.