Design and Implementation of Map Services for JAVA Phones

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Location is a key to provide location based services to the user because the location information is typically useful for coverage, deployment, routing, location service, target tracking and rescue operations. The use of mobile devices has become a part of our daily routine. GPS is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the United States (US) Department of Defense (DoD). There are no subscription fees or setup charges to use GPS [1]. This paper provides detail on the design and implementation of a java application which provides the users current location, sends this location using SMS (Short Message Service) plus sharing location with friends and family and views them on maps. Users can also take benefit of this application in emergency situations by using emergency feature of this application. To get the location coordinates, application is using GPS as location provider. A mobile client which consists of a mobile and GPS receiver finds the location of the user to get aware of his location. In order to share this location the mobile client sends this location to the web server from where other users can get this location if they have the authentication provided by the user. The mobile client is implemented using J2ME which is one of the most promising software platforms for mobile devices. Sun representatives assert that 18 to 20 million mobile phones support the J2ME platform [2]. Analysts predict that within the next few years, this technology will become omnipresent. According to Gartner Group estimates, in 2006, approximately 80 percent of mobile phones will support Java [2].

Keywords : Google Maps, Global Positioning System, GSM, Location Based Services, Midmaps

1. INTRODUCTION

According to a new report from the research firm Berg Insight; revenues from mobile Location Based Services (LBS) in the European market will grow by 34 percent annually to reach ϵ 622 million in 2010 [2]. This figure demonstrates how important Location Based Services (LBS) applications are becoming to mobile users. Within the last few years, mobile phones spread like wild fire. With more than 2 billion phones around the globe and more mobile than fixed line subscribers, mobile phone industry is the most growing industry in the world. The development progressed from unhandy simple phones to small all-rounder with high resolution color display, organizer and integrated camera and Global Position Service (GPS) receiver [3].

The main reason for rapid progress in mobile business is that the features and services that a mobile phone can provide now a days. The previous generation phones only had the capability of speech communication between several users and text messaging with few numbers of inbuilt hardware. But now a mobile has the capability of image capturing, video recording, Bluetooth, file sharing, touch screen display, low power consumption, GPS receivers to get location coordinates and many other advanced features and inbuilt hardwares. These eye catching features attract more users. Here we are concerning only about the internal GPS receivers [4] in mobile phones. The GPS receiver is able to calculate the location using GPS satellite system [5]. For further information and access authentication about GPS refer

receiver. Figure 8 shows the users current location and the map positioning this location at the center of mobile screen. Users can browse the map and can also zoom/reduce the map. When zoomed, the map automatically switches to the next level maps. Figure 9 illustrates the location sharing. User needs to enter the correct password to access his friends location. It is marked by the red pointer.

8. CONCLUSION

A J2ME mobile application based on providing Location Based Service using Global Positioning System (GPS) as a location provider is presented. The application tells the user of his current location coordinates and shows it on Google Maps. The application is also implemented as a client server system that helps users to locate their friends or anyone with whom he wants to share his location. The location average accuracy using this system is believed to be within a couple of meters. The application works in the open space areas only as it relies on GPS. Future extensions may look at other options such as getting the location from the service provider. In this case the location accuracy will be reduced and will depend on the size of the cells where the user is located. Other future extensions are: Improvemnt in user Interfaces, Support for external Bluetooth GPS receiver, Speed Calculation, Compass, Accuracy can be improved by several algorithms, Centralized database for nearby emergencies.

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