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MOBILE DISTRIBUTED PERSONAL SECURITY APPLICATION

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Abstract:

The goal of this project is to provide a location-based alarm system through which users can broadcast their last known position in emergency situations. The system will be able to send an SMS or an e-mail containing the user's location co-ordinates to the already registered mobile numbers using GCM service. The location information is obtained using GPS technology and real-time location is shown on the receiver's application using Google Maps API. In situations where GPS is not available, the system tracks location using LBS technology

.**Keywords: GPS,GCM,LBS Android.**

I. INTRODUCTION

We are developing an application in which user will can call emergency contacts by just a single click of button given in the application. The additional thing is after the click tracking is enabled and the contacts alerted can see the users live location in their mobile smartphones on Google Maps using Google Map API v3.

The idea is, whenever a user feels that they are in trouble, they just need to pull out the hand free cord attached to the mobile or push a single button. By doing so, the system will immediately notify the predefined contacts of the user by sending their current location plotted on a map and some predefined messages.

GCM for Android is a free service that helps developers send data from servers to their Android applications on Android devices, and upstream messages from the user's device back to the cloud.

An Android application on an Android device doesn't need to be running to receive messages. The system will wake up

the Android application via Intent broadcast when the message arrives, as long as the application is set up with the proper broadcast receiver and permissions.

II.SYSTEM ARCHITECTURE

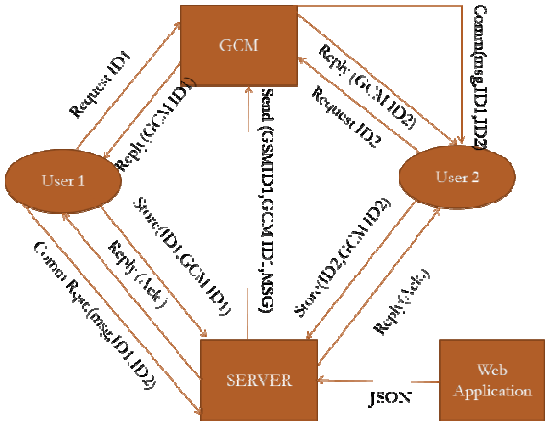

Fig. 1 System architecture.

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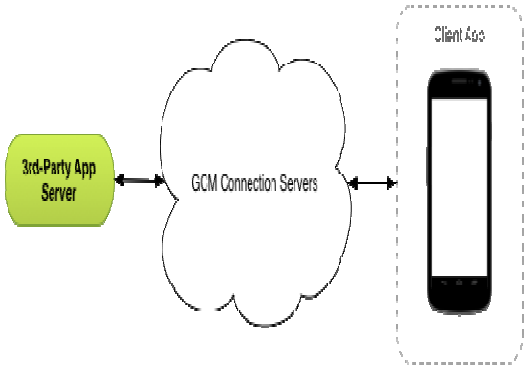

Fig 2.GCM architecture overview

III. TECHNOLOGIES USED

A) *GPS*

In the past few years, smart mobile devices have grown cheaper. The GPS sensor present in these devices provides a huge scope for location based services. A GPS receiver uses signals transmitted by GPS satellites to calculate the exact location in terms of the latitude, longitude and altitude. GPS devices retrieve GPS signals from three or more satellites in the user's vicinity. With the help of these signals, the GPS unit calculates data which includes three-dimensional position, velocity and time information. Due to the incorporation of GPS devices in Android and other smart phones, it is easier to provide such location based services. Android SDK provides API for such location based services since one of the first versions Android 1.5. The Social Complain Mobile App uses this technology to find the location of the complaint.

B) *GOOGLE MAPS API*

Google Maps is a web mapping service application provided by Google Inc[8]. It provides street maps and satellite imagery of all locations across the globe. The Google maps Application Programming Interface (API) allows developers to embed the maps into their applications. This API is used in GPSCRS for detecting the administrative area of the complaint and plotting all the registered complaints on the map.

C) LOCATION BASED SERVICES

Location-based services (LBS) are a general class of computer program-level services that use location data to control features. As such LBS is an information service and has a number of uses in social networking today as an entertainment service, which is accessible with mobile devices through the mobile network and which uses information on the geographical position of the mobile device. This has become more and more important with the expansion of the smart phone and tablet markets as well.

LBS are used in a variety of contexts, such as health, indoor object search, entertainment, work, personal life, etc.LBS include services to identify a location of a person or object, such as discovering the nearest banking cash machine (a.k.a. ATM) or the whereabouts of a friend or employee. LBS include parcel tracking and vehicle tracking services. LBS can include mobile commerce when taking the form of coupons or advertising directed at customers based on their current location. They include personalized weather services and even location-based games

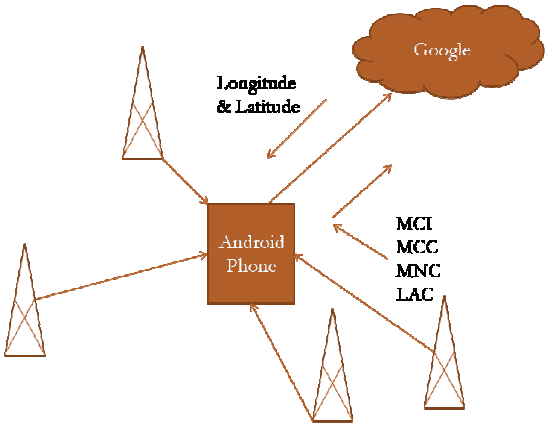

Fig 3.Location Based Service Overview.

1) *MATHEMATICAL CALCULATION*

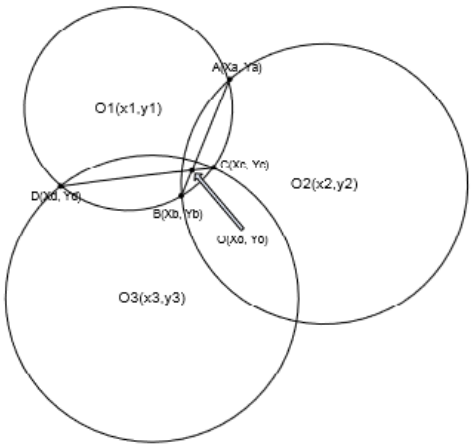

Fig.3 Coordinates Calculation

- Our goal is to calculate the coordinates of the approximate location O (□o, □o).
- Let O1(x1, y1), O2(x2, y2), O3(x3, y3) be the coordinates of the three towers or access points, and set r1, r2, r3 as a radius of each circle.
- A(xa, ya), B(xa, yb), C(xc, yc), D(xd, yd) are points of intersection between O1∧ O2, O1∧O3.
- Using the second order equation group with two unknowns, we will get coordinate values of A(xa, ya), B(xb, yb), C(xc, yc), D(xd, yd). Now we know coordinate of A, B, C, D, so there are two straight lines between A, B and C, D.
- The point of intersection between these two lines is what we need calculate. Therefore using the slope intercept equation, the slopes K1, K2 and intercepts B1, B2 can be calculated for lines between A, B and C, D by the equation group:

  ya=K1.xa+B1

  yb=K1.xb+B1
- Since the cell phone must be located at the overlapping area of all three cell towers, two straight lines must intersect at a point in the overlapping area. The coordinates of that point is our goal.
- We apply the slope intercept equation group for both straight lines A, B and C, D.

  yo=K1.xo+B1

  yo=K1.xo+B2
- The O(xo, yo) are the approximate coordinates which we used to get the location without GPS.

IV.PROPOSED SYSTEM

Proposal of an integrated android application based on location information.The discussion in the previous section motivates us to adopt the design principle that the following functions are realized "on the spot":

(1) Creating and editing event in case of emergency

(2) System to upload location information

(3)System to track the real time location based on GPS and LBS.

(4) Customizable contact list based on User's choice

(5)Alert messages can be sent via SMS and e-mail.

(6) Displaying search results on the screen.

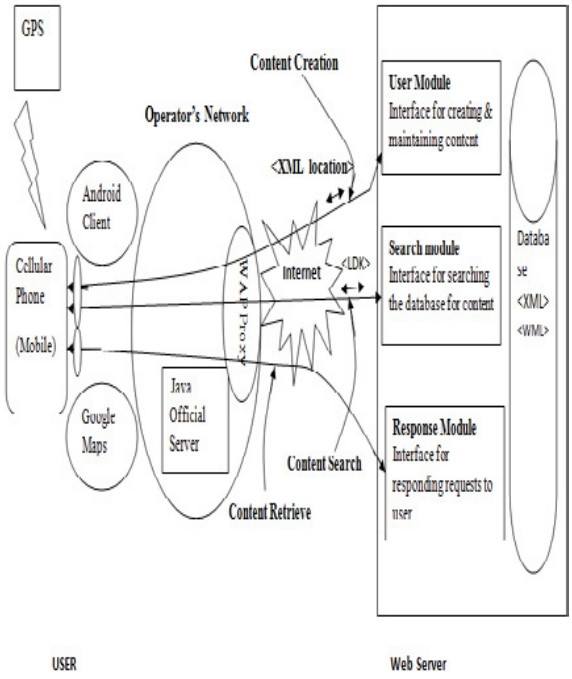

Fig 5.User-System interaction

On the other hand, the user access the web server with the mobile phone equipped with location information acquiring function, a java virtual machine and a WAP browser. Data exchange between the user module on the server side and the Java client on the user side is conducted in XML format. The user module

translates the XML format to the WML (Wireless Markup Language) / CSS (Cascading Style Sheet) format for the mobile phone to browse, and store both formats in the database. The search module provides a function to use the location of the user and a geographical range as a search condition in addition to keywords in text format.

The response module obtains the requested web content from the database, and transfers it to the mobile phone in the WML format. The structure of the functional modules in the proposed system is shown in Fig. 5. We propose

to use "apache" for the web server, MySQL for the DBMS and PHP for coordinating both entities. Also, we use J2ME for java application runtime environment on the mobile phone, MIDP, which is a profile for a mobile phone and KDDI-P, which is a profile provided by KDDI for GPS functions. For the communications between the Java client or the WAP browser on the client side and the web applications on the web server side, HTTP is supported and used.

V.CONCLUSION

Our system proposes the idea to create a mobile application which can help us emergency. Just one click and you can send alert message to your trustworthy contacts.

This application makes complaints easier to co-ordinate, monitor and resolve. The aim behind this project is to make cities a better place to live. In this project we have proposed a technique for evaluating the safety of users,that combines the predicted safety of the user's location with the aggregated safety of the people co-located with the user.

This project aims to enable the vision of smart and safe cities, by using mobile technologies to securely and privately extract, model and embed real time public safety into day-to-day user experiences. The ability of existing forecasting techniques is used to deduce future safety values.

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