Location Based Emergency Services

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Abstract- Now days, Location Based Service has many advantages in the real-time situation. It gives information about the current locations in the form of co-ordinates (Lat-Long-Elea) and related information about the specific area. By using the LBS, we get value added services such as advertising current traffic condition, routing information, finding the hotel, mall and other information.

Now days, an increasing number of crime cases to be unsolved due to lack of location information and thus Police face many problems while patrolling high risk area. Fire Fighter and Ambulance services face many problems about the victim's location. Thus, it is important to get an emergency alert for service provider and victim at the right time. In this paper, we introduce the Client Server application of LBS, which is using the concept of Push and Pull Location Based Service. The Environment consists of Assisted Global Positioning System (A-GPS) in the phone and the Web services with General Packet Radio Service (GPRS internet).**Client application provides an interface and location for services while server updates location and triggers services, which are nearest to the user. The Client application is developed using an Android SDK, Eclipse IDE platform, JDK6.Server application is developed using an Internet Information server (IIS), JAVA and XML technology for creating and using Web Services.**

Keywords- *Location Based Service, push and pull LBS Service, Android-Operating System, Web-Services, Emergency, A-GPS.*

I. INTRODUCTION

The thoughts and ideas about integrating the cell phone with advanced technology to deliver multiple services, other than basic communication have been envisaged since the early-1990s when the internet was added to voice telephony.

Location-based services or LBS refer to 'a set of applications that exploit the knowledge of the geographical real-time location of a mobile device in order to provide services based on that information. Location-based services (LBS) provide the mobile clients personalized services according to their current location. They also open a new area for developers, cellular service network operators, and service providers to develop and provide value-added services like to advise clients about current traffic conditions, providing routing information, helping the users find nearby shopping malls [2].

We have also used Assisted-GPS (A-GPS) which is the new technology for smart phones that integrates the mobile network with the GPS to give a better accuracy of 5 to 10 meters. This fixes the position within seconds, has better coverage and can, in some cases, be used inside the buildings, consumes less battery power and requires fewer satellites. The granularity of location information is most accurate (Latitudes and Longitudes).The disadvantage is cost of AGPS enabled handsets for the user [2].
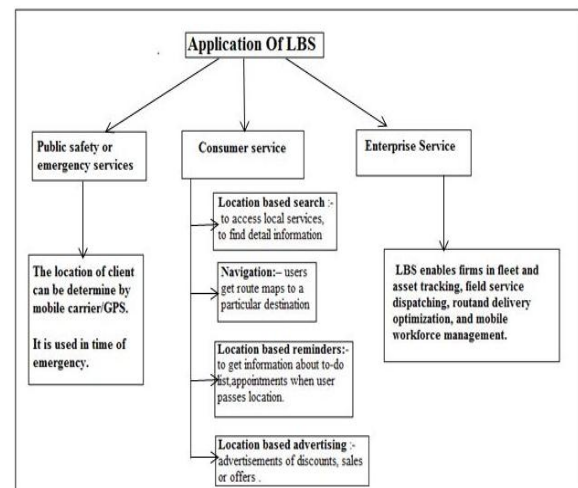

Fig.1. Application of LBS

We propose the use of Pull & Push Location Based Service model in experiments of the implementation of Location Based Service environment to lessen the problems faced by Police and Fire Fighters in retrieving accurate information while patrolling high risk area.
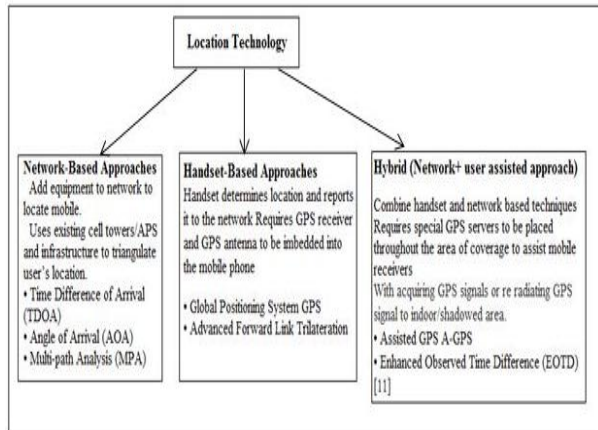

Fig.2. Location technologies

The application is developed by using Eclipse IDE platform and tested using Android OS. The conceptual design and architecture are designed for Pull and Push Location Based Services. In this project, we tried to focus on simplifying the flow of emergency information flow by utilizing the usage of Pull and Push Location Based Service.

II. LITERATURE SURVEY

A. Related Work Done

Now days in emergency call management system, existing flow of calls is handled by call center. Any calls for police cases received by the call center agent will be diverted to the police call center agent and this information will then be transmitted to the police on duty[1]. (In India, people call on free service provider number 100 for police service, 101 for ambulance service and 102 for fire brigade service) .This emergency call work flow was handled by manual system being practiced by the agencies taking the emergency actions which involved much more time consuming while on operation.. Theoretically, this processing take 8 minutes which could be reduced to 3-4 minutes with the use of Push- Pull technology in location based service system.
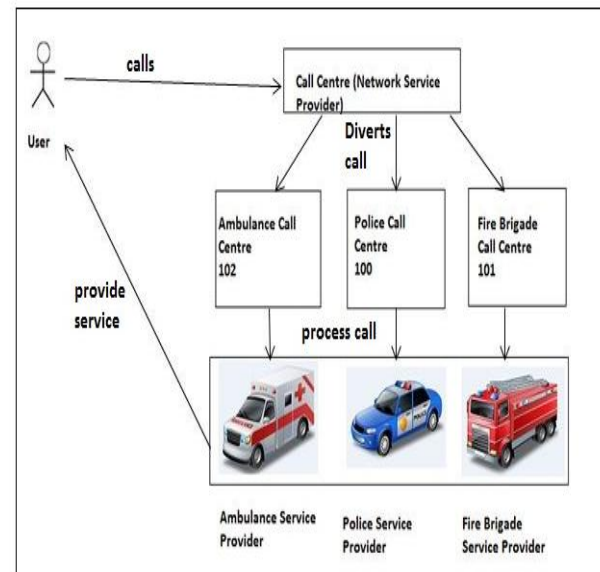

Fig.3. Traditional Emergency System

As shown in fig no.3 Traditional Emergency System, Callers that are urgently in much need of help would have to wait on the line if the line is busy. As a result reports cannot be channeled to the right agency in time, many rescue cases cannot be served in time, criminals will get escaped and as a consequence more crime cases cannot be solved or need longer time to get solved. As the calls is recorded manually at the call center system, sometimes the information being communicated to the recipients is not clear and this caused for misunderstandings among the recipients at the emergency center and also the call center.

III. PROPOSED SYSTEM

Now days, GPRS (Internet) service is available at minimum cost from all service providers. Thus, this mode of messaging is proved more useful, cheaper, faster, and scalable as compared to the SMS-based mobile positioning. In our project we have built communication mode by WIFI/network technology from which client-Server (IIS) communication is done. In future, Client-Server communication will be implemented by using static IP for server. Thus main objective of our proposed system is :To design and develop a mobile application which can be used in emergency cases of Police Officer, Fire Fighters and Ambulance To focus on simplifying the flow of emergency information by utilizing the usage of pull and push location based service.
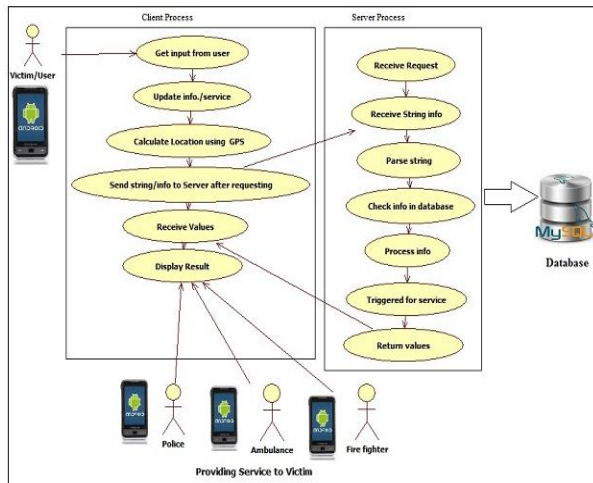
Fig.4. Proposed System of LBS

The Client-Server communication in Figure 4 gives idea about flow of working and design for proposed system developed. Client process involves getting input from user/victim in the form of either user-information or type of service request and updating it (location). This updating of current location is done by GPS system which is on client's mobile device. The server acquires (push) information about Client's location continuously and stores it in database. The Client can request for service which is sent to server in the form of string. In server process, the string is received and parsed using XML parser and verification of information received is done with the database. Server then find the nearest location of service from database and trigger (pull) for it to service provider and return values to client also. In this way, information is retrieved by using push and pulls location based service technology by the targeted users and service providers like police, ambulance and fire fighter.

A. Objectives

1) To design and develop a mobile application which can be used in emergency cases of Police Officer, Fire Fighters and Ambulance

2) To focus on simplifying the flow of emergency information by utilizing the usage of pull and push location based service.

3) To investigate design considerations in providing location based services for crime and emergency situations.

4) To optimize the work flow for handling emergency cases

IV. METHEDOLOGY USED

A. Location Based Service

LBS can be any of the type such as location-dependent services, location-related services, location enabled services and location services that can be used by in ubiquitous computing area.LBS is strongly associated with physical point or location to the surface of earth and it is subset of larger set called context-aware services which are automatically adapt their behavior.

B. Classification of LBS

The location is formed using the coordinate system or defined as latitude-longitude-altitude. Latitude is a measurement of the angle at the Earth's Centre, north or south of the equator while for Longitude is measurement of the angle at the Earth's center, east or west of the prime meridian which runs pole to pole through Greenwich. We define LBS in two types [1]:

- Push (Proactive) Location Based Service:

It is service in which user pushes it's information to the server. Such service is also called proactive services; in which services are automatically initiated as soon as user comes into predefine location area. Thus this service gives constant tracking of mobile handset to detect changes in location. Push location based service plays important role because it allows establishing a connection to a user terminal without action and to deliver content as soon as possible.

- Pull (Reactive) Location Based Service:

It is service which is user requested or triggered. When user requests for service it gather location data about target as well as user and processes it and returns result to requested user. For ex. we request for nearby restaurant or theatres then server sends its data to client after processing it.

We define LBS as an application that offer information, communication or transaction satisfying the users' requests and providing geographical data and information services to users across world.
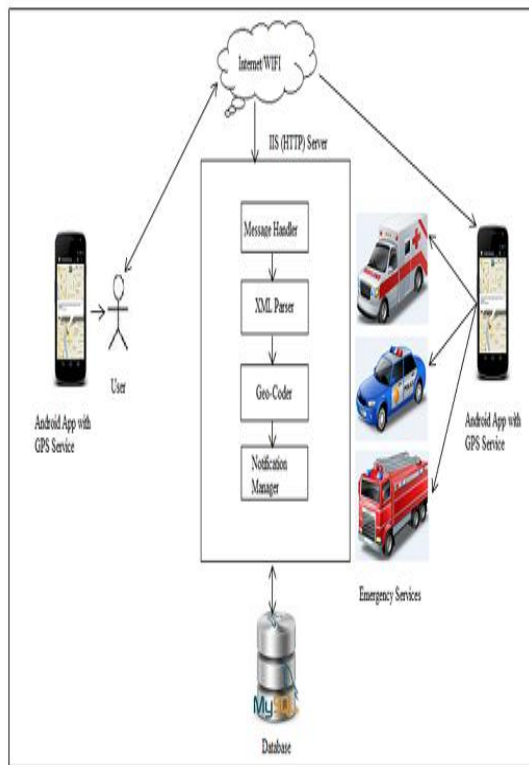
V. ARCHITECTURE

Fig.5. System Architecture of GPS Base Location Services Using Mobile

The figure 5 shows system architecture diagram of mobile based location service. It consists of IIS server which is used for processing. Server does authentication of user which is checking of user's mobile number from database and finding the current location. It includes Message handler used for handling the string which is sent by user device and parsed by XML parser. Parsing is nothing but breaking string into tokens such as type of service, current location. Geo-coder processes its location and finally notification manager responds to the requested service by user. The further processing of server includes finding nearest, user requested location based service with the help of database and location of user retrieved from Geo-coder.

Such processing is logical web service rather than GUI. All communication between server and user is done by WIFI/network technology or we can also go for static IP (Internet).Character Extraction.

VI. ANDROID LOCATION API

These are the different classes present under Location API package to retrieve the Location information of the user.

1) Location Manager Class- This class provides access to the location service. It also provides facility to get the best Location Provider as per the criteria.

2) Location Provider- It's an abstract super class for location providers. A location provider provides periodic reports on the geographical location of the device.

3) Location Listener- This class provides callback methods which are called when location gets changed. The listener object has to be registered with the location manager. Android also provide an API to access the Google maps. So, with the help of the Google maps and the location APIs the application can show required places to the user on the map. Positioning Method Used [2].
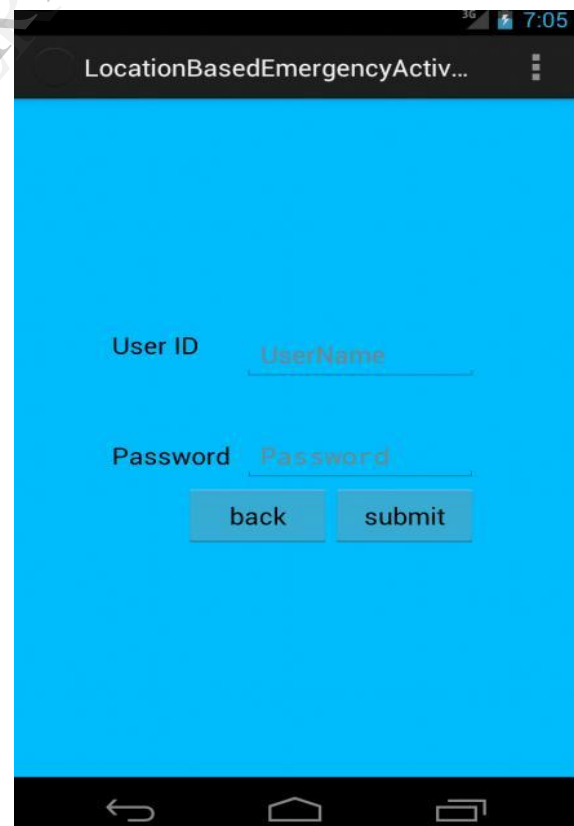
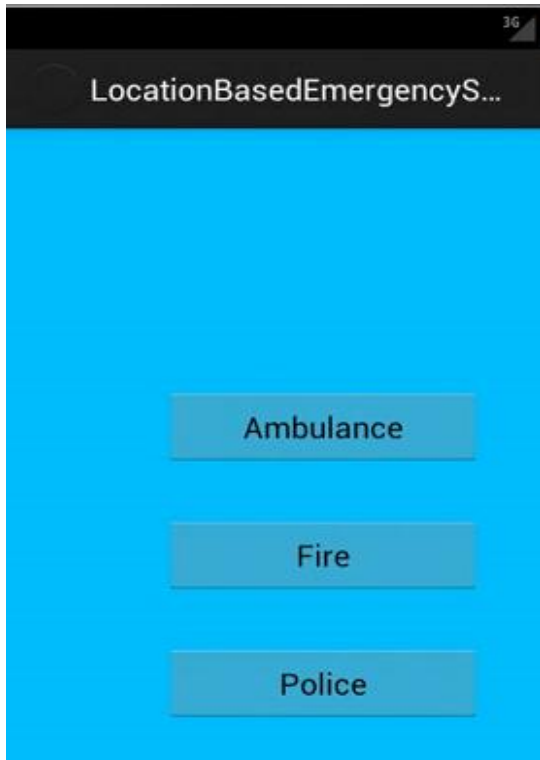## VII IMPLEMENTATION RESULTS

Fig.6. Application screenshot

Fig.7. Application screenshot

As we entered user_id and password, authentication will be done by the server. We will transfer to location Based Service activities. This activity contains three options (buttons) viz. ambulance, fire, police after clicking any one of the button, activity of particular service runs in the background and information get send to the server. Server process for finding nearest location and will alert for triggered service. The place at which service to be provide will be shown by Google map to the service provider.

VIII   CONCLUSION

The existence of web services is considered as a part of important element for rendering the information for this mobile application prototype as an emergency finder. The information will always be updated based on the information feeds from the web based system at the call center site and are retrievable according to the user .In this paper, we have proposed the usage of Pull and Push Location Based Service as a basis for the architecture of providing emergency Location Based Service.

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