MEET BUDDY: Track and Meet the People Nearby

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Abstract: In this paper, Do we really care about who is around us? Many social media companies have envisioned the internet as a facilitator for real world interaction — a way to make it easier to see the people we care about. So far, though, it's been tough to get a critical mass of users interested in features like mobile based service is developed such that registering user's when he/she arrives with in a location near by registered user and deliver notification for the registered user. Thenwe use a novel method called location-based delivery (LBD), which combines the short message service (SMS) and global position system (GPS), is proposed, and further to assist with the exact information, atright place in real time with personalized setup and location is tracked to meet.

Keywords: location-based delivery (LBD), Global Positioning System (GPS), Nearby Friends, Tracking.

I. INTRODUCTION

Early iterations of the Nearby Friends concept are found on Google — with its Latitude Feature — and Foursquare. Both technologies were launched in 2009, as Google brought Latitude to its mobile Maps product and Foursquare launched at South by Southwest. Both services were somewhat primitive. Google Latitude started as a way simply for people to share their location, but became more sophisticated over time. Meanwhile, Foursquare's technology could only filter friends who recently checked in at a nearby location, rather than seeing everything in real time [1].

Location-based applications are one of the most anticipated new segments of the mobile industry. These new applications are enabled by GPS-equipped phones and range from Emergency 911 (E-911) applications to buddy finders (e.g., "let me know when my friend is within 1000 feet") to games (e.g., treasure hunt) to location-based advertising (e.g., "enter the Starbucks to your left and get $1.00 off a Frappuccino"). These services are designed to give consumers instant access to personalized, local content. In this case, local content is local to the consumer's immediate location. Some of these applications will couple LBS with notification services, automatically alerting users when they are close to a preselected destination. LBS proponents believe that these services will create new markets and new revenue opportunities for device manufacturers, wireless providers, and application developers.

The goal was to provide enhanced LBS solutions [4] for people to stay in touch with their friends and family, to be able to find one another, and to get directions.

II. PROPOSED APPROACH

The three main features of the proposed LBD approach are awell-defined SMS format, location prediction module, and dynamicthreshold module (see Fig. 1). LBD uses a proprietarySMS format. The location prediction module, which is built inboth the target and the tracker side, uses

the information on thecurrent location, moving speed, and bearing of the target to predictits next location. The dynamic threshold module, which isused only on the target side, minimizes the number of short messagesby dynamically adjusting the threshold TH according tothe moving speed of the target.

The tracker periodically updates the location of the target on the local screen according to the predicted location. However, when it receives a short message response from the target, it means that the predicted location is far from the actual location.

For more accurate location tracking, the tracker updates the target's location using the information encoded in the receivedmessage, rather than its prediction.
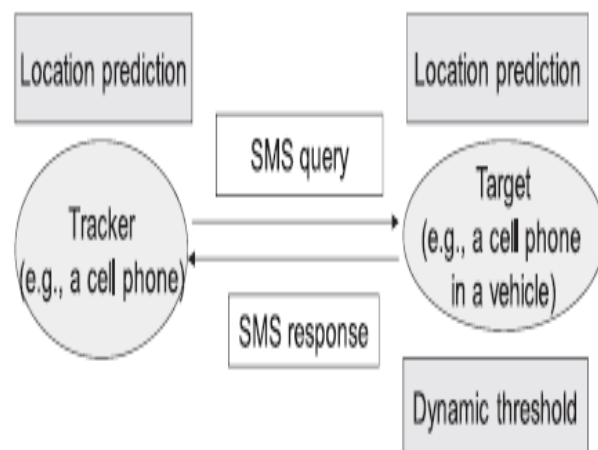

Fig. 1. Structure of the LBD system.

The idea of using the mobile handsets and phones is todeliver the valuable services.Location-based services or LBS refer to a set of applications that exploit the knowledge of thegeographical position of a mobile device in order toprovide services based on that information.

'Location based services (LBS) provide the mobile clientspersonalized services according to their current location.

They also open a new area for developers, cellular servicenetwork operators, and service providers to develop andprovide value-added services. Location-basedservices offer many merits to the mobile clients. For themobile user, the examples of location based services [2] are:

▪   Nearest registered Friends notification reminder
▪   Privacy in Person Location tracking by FamilyMember

III.   LBS COMPONENTS

All In order to make LBS[5] services possible, someinfrastructure elements are necessary, including mobiledevices, applications, communication network, positioningcomponent, and service servers Mobile devices are toolsused by users to access LBS services, to send requests andretrieve results. Such devices can be portable navigation devices (PNDs), Personal Data Assistants (PDAs), laptops, mobile phones, and so on. Application is the interface forusers to access the LBS service. It is usually softwaredeveloped by an application provider, downloaded andinstalled on user's mobile device. A specific application isusually developed for a specific LBS service. Due to therestrictions of mobile devices (small screen size, limitedprocessor power and memory, battery capacity), LBSapplications need to be lightweight and battery saving.Communication network refers to the mobile networkwhich transfers service request from user to serviceprovider, and requested information back to the user. Apositioning component is usually needed in an LBS application to determine the location of user's mobiledevice. Service providers maintain service server's which offer different kinds of LBS services to users and areresponsible for processing service requests and sendingback request results. Servers calculate positions, search fora route, or search specific information based on user'sposition. Service providers usually do not store andmaintain all the information requested by users. Instead, content providers are responsible for collecting and storinggeographic data, location-based information, and otherrelated data. These data will be requested and processedby service servers and then returned to users. Fig. 2shows the interactions among these components, and theprocess of a LBS service. First, user sends a servicerequest using the application running on mobile device (Step 1). The service request, with user's current locationinformation obtained from the positioning component (inthis example, GPS data), is sent to service server via themobile communication network (Step 2). The serviceserver requests geographic database and other relateddatabase to get required information (Step 3, 4). At last, the requested information is sent back to user's mobilephone via mobile communication network paragraphsmust be indented.
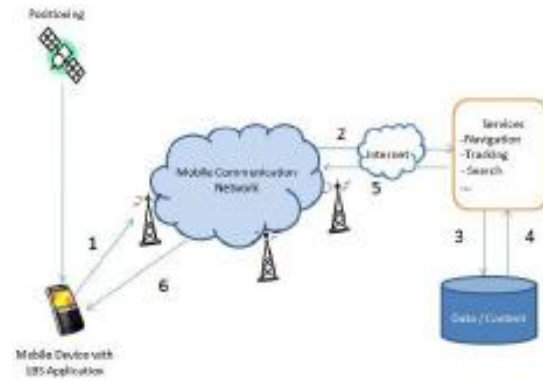

Fig. 2 LBS components and Service Process

Every LBSs contain a number of components includingmaps and Geographic Information System (GIS) information, location collection services, and LBS application-specific subcomponents. The architecture ofLBS can be generalized as shown in Fig 3.LBS Applicationthis represents a specific application such as a find myfriends‖ application. This consists of a Smartphonecomponent, which has a number of sensors, andpotentially a server component that includes application specific data (such as location-tagged informationLBS Middlewarethis wraps access to Core LBS Features (LocationTracking, GIS Provider and Location Collection Services)to provide a consistent
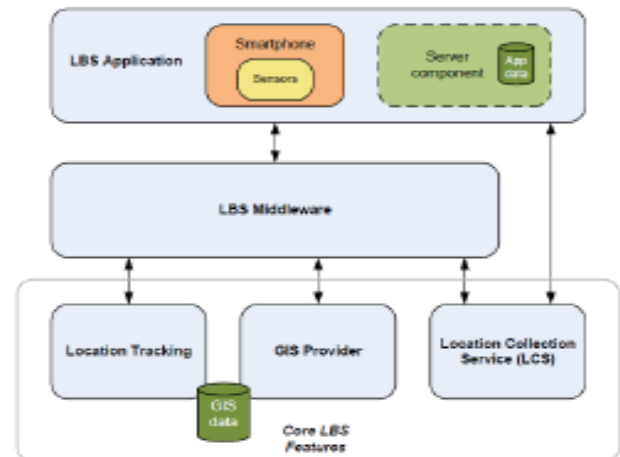

interface to LBS applications.

Fig. 3 Components of LBS

A.   *Location Tracking*

This component stores the location trace of individualusers. This represents a fundamental component in next generationLBS as it contains the data that allows a user‘sroute to be determined and potentially predicted. Inparticular, this component would typically support thefollowing functionality:

1. Keep records on user‘s current and past locations.

2. Notify other components when a specific user hasmoved, or when they move in or out of an area.This supports location-based notifications being sent tousers.

3. Determine which users are within a defined location thissupports geo-casting features.

4. Queries of location trace to generate user movementmodels

B.   GIS Provider

This component provides geospatial functionality formany LBSs including map information, map visualizationand directory services. Google Maps with its API can beconsidered a GIS provider.Location Collection ServiceThis component performs location collection to get alatitude and longitude for a specific user. Depending onthe technology, this component may be accessed via theLBS Middleware (e.g., mobile network triangulation via aservice provider) or directly (e.g., via GPS receiver in theSmartphone). Android provides access to the abovecomponents to facilitate the implementation of LBSservicesthrough the help of following classes;

1. Location Manager

2. Location Provider

3. Geo-coding

4. Google-Map

C.   Location Manager

Location Manager Class of android is present to manageall other components needed to establish a LBS system.

D.   Location provider

Location provider represents the technology to determinethe physical location i.e. to handle GIS. Location Providercomponent of Android application is a present to facilitatethe determination of available provider and selection ofsuitable one.There are two methodologies to implement LBS [3].

• To process location data in a server and toforward the generated response to the clients.
• To find location data for a mobile device-based application that can use it directly.

To discover the position of the mobile, LBS must usepositioning methods in real time. The accuracy of themethodology depends on the approach used. Locations can be represented in spatial terms or as text descriptions. Aspatial location can be represented in the used latitude longitude-altitude coordinate system. Latitude is definedas 0-90 degrees north or south of the equator and longitudeas 0-180 degrees east or west of the prime meridian, thatpasses through the Greenwich, England. Altitude isrepresented in meters above sea level. A text description isusually defined as a street location, including city, pincode.The location of the device can be retrieved. As shown in below Fig. 4
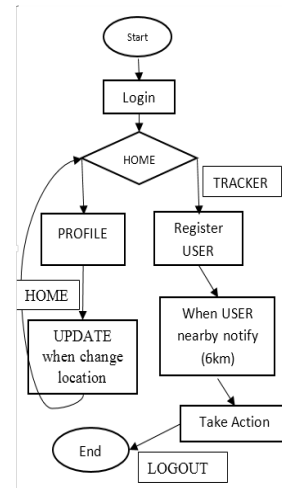

Fig. 4 Flow chart for Mobile App

1.   Mobile Phone Service Provider Network

The current cell ID is used to locate the Base Transceiver Station (BTS) that the mobile phone is interacting withand the location of that BTS. It is the most basic andcheapest method for this purpose as it uses the location ofthe radio base station that the cell phone is connected to. AGSM cell may be anywhere from 2 to 20 kilometers indiameter. Other approaches used along with cell ID canachieve location granularity within 150 meters. Thegranularity of location information is poor due to WideCell Range. The advantage is that no additional cost isattached to the handset or to the network to enable thisservice.

2.   Satellites

The Global Positioning System (GPS) uses a constellationof 24 satellites orbiting the earth. GPS finds the userposition by calculating differences in the times the signals, from different satellites, take to reach the receiver. GPSsignals are decoded, so the smart phone must have in-builtGPS receiver. Assisted GPS (A-GPS) is the newtechnology for smart phones that integrates the mobilenetwork with the GPS to give a better accuracy of 5 to 10meters. This fixes the position within seconds, has bettercoverage and can, in some cases, be used inside thebuildings, consumes less battery power and requires fewersatellites. The granularity of location information is mostaccurate (Latitudes and Longitudes).The disadvantage iscost of AGPS enabled handsets for the user.

IV.   USE OF LBS IN MOBILE APP

The LBS in Mobile App such that first user has to register the user detail by phone number or name as shown in Fig. 5 with that when they are nearby such location are notified.
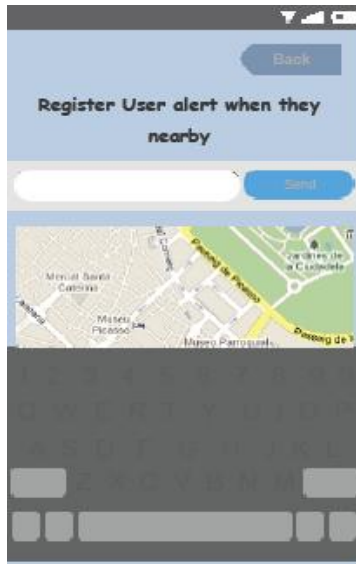
Fig. 5 Register User

1.   Nearest Friends notification reminder

This is another location based service provided by ourandroid app, in which we are going to implement nearestfriends notification reminder (e.g. Fig. 6). In this feature the user willget reminder message when his/her friend locate in thesame area, so that the user can meet him/her. Hereaccording to the friends list provided by user, user will getthe notification reminder when the GPS tracks the locationof the person from list in same area where the user iscurrently present. In this scenario, the area is based on thegeographic cell.
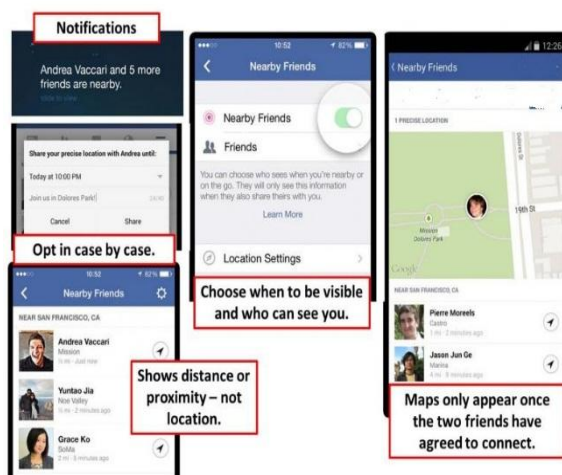

Fig. 6 Notification and listing nearby friends

2.   Person Location tracking by FamilyMember (SMS)

This feature of our android app will help the familymembers to locate their other family member. In thismodule we are going to implement person's locationtracking with mobile device using Google map & GPStechnology. Here when family members e.g. parentswants to find location of son/daughter then they have tojust send a particular message on son/daughter's

mobilethen the app will send location to Google map service &then Google cloud's SMS service will this send locationSMS to parents. So parents can easily get location of theirson/daughter with help of this feature.

3.   Profile changer based on place or area

In   this   module   of   project   we   are   going   to implementautomatic profile changing facility means using thisfeature of our android app, the profile of user's mobiledevice will automatically change from normal mode tosilent mode & vice versa. According to places whereperson goes. The user needs to register the particularplaces/location for which he wants to change the profile.And accordingly the profile changer will work in thatparticular registered perimeter only. Here first the user'smobile device will locate using GPS technology thenaccording to place the profile of mobile will change. Sometimes the person forgets to change the profile ofmobile phone at certain places, so this app will help whichautomatically change profile.

V. CONCLUSIONS

There are various constraints to implement Location BasedServices. The different kinds of constraints include:

•   Technology Constraints

The most important factor in enabling the growth of LBSis wide   availability   of   cheap   GPS   enabled   handsets. GPSenabled handsets are being manufactured now days.

•   Infrastructure Constraints

One of the main problems is the lack of spread of thewireless   network   into   the   countryside.   In developingcountry like India, the wireless technology is in verynascent stage. In metro cities and areas, the problem ofnetwork   congestion   is   also   an   important   issue. Thepercentage of service operators not meeting the congestionrate benchmarks has risen subsequently.

This   paper   proposes   a   developing   an   Android Applicationwhich is based on LBS & provides different location basedservices like profile changing of mobile from normalmode to silent mode & vice versa for certain places thatuser registered. Again nearest friend locator, familymember location finder. Here for finding location the GPStechnology with Google Map API can used. As android isan open source, this application can be used for furtherimprovements in many Smartphones. Also in concern thesecurity aspect of this application, the Reputation basedsecurity model can apply. After going through thesurveying, it can be gathered that there is a huge scope ofapplication development in mobile domain.

encouragement and moral support and giving the Opportunity to work on this project. We would like to show sincere gratitude to our guides Prof. **GAYATHRI T** and Prof. **SOMASHEKAR R** for their guidance and knowledge, without which this paper would not be possible.

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