“Location Based Task Reminder”

Project-I Report

Submitted in partial fulfillment of the requirement of University of Mumbai

For the Degree of

Bachelor of Engineering

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This Project-I entitled "***Location Based Task Reminder"*** by ***Patil Sagar, Shaikh Gulsher Alam, Siddiqui Irfan Ali, Shaikh Muzammil*** is approved for the degree of Bachelor ***of Engineering in Department of Computer Engineering***.

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Project Title: Location Based Task Reminder.

Abstract

Personal task reminders have been indispensable for modern people, in order to remind them of their tasks at specific circumstances. Traditional paper based reminders are still useful, but they cannot be organized efficiently. Electronic reminders based on the calendar in Cell phones are more efficient and gaining popularity, but such reminders are mostly triggered by time. In many situations, tasks are only meaningful to be performed at a specific location, so it would be useful if reminders for those tasks can be triggered only when the person to be reminded is physically near or located at that location.

Therefore, in this research, we develop a location-based personal task reminder for Android-based smart phones and tablets. To distinguish our work from existing ones that rely solely on the GPS technology, we take advantage of the ubiquity of IEEE 802.11 WLAN infrastructure to Compliment the ‘‘blind spots’’ of GPS location sensing. Combining the two technologies makes it possible for the personal task reminder to be effective in both indoor and outdoor environments. We also propose two operating models for the personal task reminder to boost the usability of the application. Furthermore, as long as the WLANinfrastructure is available, our work as a foundation of location-based services can easily be extended to be used in many other scenarios, such as guiding in public transportation systems or tourist attractions, location based learning, and even caring of the Dementia residents.

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Glossary of terms used

A

Activity A single screen in an application, with supporting Java code, derived from the Activity class. Most commonly, an activity is visibly represented by a full screen window that can receive and handle UI events and perform complex tasks, because of the Window it uses to render its window. Though an Activity is typically full screen, it can also be floating or transparent.

Application From a component perspective, an Android application consists of one or more activities, services, listeners, and intent receivers. From a source file perspective, an Android application consists of code, resources, assets, and a single manifest. During compilation, these files are packaged in a single file called an application package file (.apk).

.apk Android application package file. Each Android application is compiled and packaged in a single file that includes all of the application's code (.dex files), resources, assets, and manifest file. The application package file can have any name but must use the .apk extension. For example: myExampleAppname.apk. For convenience, an application package file is often referred to as an ".apk".

C

Canvas A drawing surface that handles compositing of the actual bits against a Bitmap or Surface object. It has methods for standard computer drawing of bitmaps, lines, circles, rectangles, text, and so on, and is bound to a Bitmap or Surface. Canvas is the simplest, easiest way to draw 2D objects on the screen. However, it does not support hardware acceleration, as OpenGL ES does. The base class is Canvas.

D

Drawable A compiled visual resource that can be used as a background, title, or other part of the screen. A drawable is typically loaded into another UI element, for example as a background image. A drawable is not able to receive events, but does assign various other properties such as "state" and scheduling, to enable subclasses such as animation objects or image libraries. Many drawable objects are loaded from drawable resource files — xml or bitmap files that describe the image. Drawable resources are compiled into subclasses of android.graphics.drawable.

G

GCM Google Cloud Messaging (GCM) for Android is a service that allows you to send data from your server to your users' Android-powered device, and also to receive messages from devices on the same connection. The GCM service handles all aspects of queuing of messages and delivery to the target Android application running on the target device, and it is completely free.

GPRS General Packet Radio Services (GPRS) is a packet-based wireless communication service that promises data rates from 56 up to 114 Kbps and continuous connection to the Internet for mobile phone and computer users.

GPS Global Positioning System (GPS) is a "constellation" of 24 well-spaced satellites that orbit the Earth and make it possible for people with ground receivers to pinpoint their geographic location. The location accuracy is anywhere from 100 to 10 meters for most equipment. Accuracy can be pinpointed to within one (1) meter with special military-approved equipment. GPS equipment is widely used in science and has now become sufficiently low-cost so that almost anyone can own a GPS receiver.

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Chapter 1

Introduction

1.1 Overview

The main purpose of location-based services is to provide services to customers based on the knowledge of their locations. Examples of these services include real-time traffic information, digital map services which are delivered to mobile terminals according to user's location to minimize data transmission, providing dynamic guidance services according to the users' location and current traffic condition; requesting the nearest business or service(e.g., the nearest restaurant or cinema) and location based advertising (like "Send e- coupons to all cars that are within two miles of my gas station"). Unfortunately the current state-of-the-art location based services are rigid as they cannot make good use of information. Services are provided at

inappropriate time without considering user's intention and changing environment. Also services are rigid as processing completely isolates various forms of user "preferences".

For example, cellular phones can now be used to carry not only voice but also data traffic, such as text messages, pictures, and video clips from anywhere at any time. Cell phones now emulate computers, with enhanced graphical user interfaces, integrated Global Positioning Systems, wireless data connectivity, efficient batteries, powerful central processing units (CPU), and expanded storage capabilities. Advanced communication protocols, databases, and software development environments ensures these end-system devices are connected to wireless cellular networks and can interact with many hosts and servers via the Internet. Similarly, hardware independent programming languages allow the development of applications that can run on any of these devices and exchange information to and from other clients, servers, and specialized databases. This generalized concept facilitates transportability of developed software across different devices and networks, which is a necessity for the rapidly advancing market of wireless communications. In this paper we raise the challenges and propose architecture to enable practical realization of location-based services. Then we further illustrate the key issues in the architecture and discuss corresponding solutions. The main idea of the architecture is to embed various information in service trigger mechanism and service itself. For example, dynamic route guidance service which ensures user to arrive at destination in the shortest time need to adjust previous route according to the traffic condition. Also in reminder services, the service needs to decide whether or not to post the message to user according to user's location, incident property

1.2 Proposed System Architecture

Figure 1 shows the system architecture. It can be divided into five parts which are task management component, user interface component, trigger management component, service management component, and storage retrieval management component. The work flow of this architecture shown below.

1) User interface component receives available task list from task generator in the task manager component when the system is initialized.

2) As user issues a task, the command receiver will dispatch it to the semantic translator to get task relevant information.

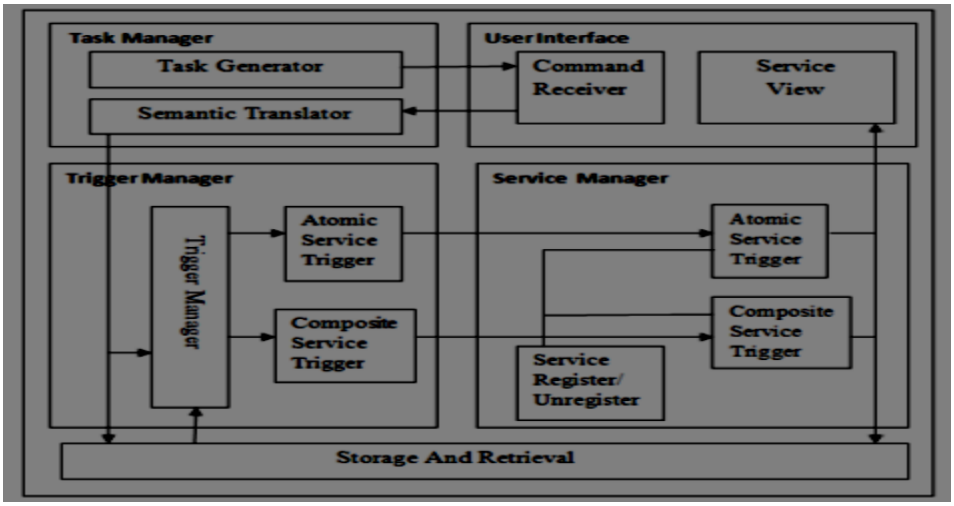

Fig 1.1: Proposed System Architecture

3) The semantic translator translates the task and then store related information to the database and calls trigger manager.

4) The trigger manager collects all kinds of context information to decide whether or not to start the service related to the task. (It might be atomic or composite).

5) When service starts; it will get all related content information to provide personalized services.

6) When changes occur in the database, it evaluates module, detect and decide whether there is a need to do reasoning. The evaluation result of content reasoning will be stored to database as a kind of advanced content information.

1.3 Scope of Project

Chapter 1

With the location based reminder system, a user gets reminder of what to do, when to do, depending on location and time. It is a client server project in which the boss sitting in the office would set reminders for different locations.IT consists of following five steps:

Server side software has the list of important places of particular city. Boss can frame a set of messages and select the messages with respect to the locations.

1. Stores the database in the form 0f table which contains message to deliver, place , phone no, and date for location based reminder system
2. Store the database in the form of table which contains message to deliver, time, phone no, and date for time based reminder system
3. To the server PC a mobile phone with modem IS connected through serial port.
4. The client application is loaded to the series 60-cell phone with Symbian O.S.
5. While moving every time the location changes the cell transfers the location details to the server through GSM connection via SMS.
6. Server checks the database if it matches through the mobile connected via serial port the reminder is sent in the form of message.

1.3.1 Motivation

The existing system is doing all the processes manually by making to notes or later the systems are based on time. The user needs to do the list of the entire task he has to perform with the details of time. This is so tedious and not always right as we can't do the thing on time. This process is so difficult because we have to carry notes or have to do things on time which is not always possible.

Drawbacks of Existing System

There are a lot of limitations for the existing systems

• Need to make To-do notes

• Need to set reminder according to time

• not accurate
• Complicated procedure
• May not complete in time
• Report production is very slow
• Searching for a file or record is very difficult

Due to all this reasons we are moving for the proposed system.

1.4 Formulation of Problems

Paper lists, often written on the ubiquitous Post-It, are lightweight and thus easily portable. As a result, they are often used for tasks like grocery shopping, which require leaving the "base". However, lists present problems at reference time. For example, subjects said that because lists are small, they are easy to lose (for instance, the note in Figure 3 was written on a 3" x 3" Post-It). Limited size also limits the number of items that can be recorded. As lists expand, people resort to crowding in new items however they can, typically writing later items smaller and between previous items. And as subjects cross out completed items, the list becomes messier; unfulfilled items may go unnoticed. When circumstances merit, subjects recopy partially completed lists onto new pieces of paper.

Chapter 2

Review of Literature

2.1 What is the Location Based Reminder?

In everyday life, Everyone has some task which needs to be completed for completion of a task, the people needs to remember the task and act accordingly in order to complete the task. But because of hectic schedule and all the hustle and bustle happening in one's life, there is high possibility that person may not remember the task. This is a common situation with us human as we tend to forget things that are not important or of a lesser priority. The project Location Based Task Reminder can help the user of the application to keep track of the task .In later time, people use to

prepare their to-do list on paper. It was quiet hectic since one needs to carry the paper, keep paper safe and there was a high possibility of paper getting lost. Due to all these reasons, noting down task on book or paper is definitely not a viable option. Then with advent and growth of technology, the to-do list as application on mobile and computer came into existence .It was quite a successful application and still in existence. But the simple to do list application lack tracking and notification feature. So there is high possibility that user of the application may not remember to check out the to-do list. So there were the drawbacks of earlier task tracking systems that were in existence.

This paper aims to reduce the drawback of the earlier system. The paper Location Based Tack Reminder not only keeps track of the task but also notifies the user regarding the task at the appropriate time. In this project the user of the application creates a to-do list.

The project requires the user enter the location at which he/she has to complete the task. Whenever user passes by that location, the application reminds the user of the task enabling the user to complete the task as promptly as possible. The technology used for tracking location is GPS. GPS is Global Positioning System that enables the user to know the location. For notification, GCM is used. GCM is Google Cloud Messenger that is developed by Google for sending messages through cloud. Thus, Location Based Task Reminder is an extension and advanced form of to do list helping the user with daily tasking in life.

2.2 Current Technology for Task Reminder.

The Task Tracker is novel in its combination of several key features of time-management and prompting Systems which would be most useful to those with attention deficits, specifically those struggling with selective attention during daily tasks: 1) a progress bar to visually represent time passed and time remaining, 2) alarm reminders to get the user's attention in case they have become distracted, and 3) a motivational message to urge them to keep working towards task completion. These combine uniquely into one application aimed at tracking a specific task that the user is currently working to complete. With a single task in mind, the interface was designed based on other ATC smart phone applications but with a simple, single screen to prevent users from becoming distracted or lost in the complexity of the program. While the technology was designed with those with cognitive impairments in mind, this application will prove useful to any individual who desires assistance and motivation in completing time-dependent tasks. When the user

starts the Task Tracker application, they immediately view the intuitive user interface screen where they are asked to input the task, time to complete the task, and the number of reminders required, as seen in Figure 1. For example, a student might input: Study for Math Test, 1.5 hours, 6 reminders. At the appropriate alarm time, the reminder screen pops up with the progress of the current task in pictorial form, a motivational message which can be individualized by the user or caregiver, and a pop-up message which reminds the user of the amount of time remaining to finish the task. This information can also be presented orally using text-to speech, according to user preference. An example of this can be seen in Figure 2. In the above example, the student will receive these reminders with feedback every fifteen minutes while they study until the hour and a half has passed or until they have finished the task. The purpose of the application is to provide several useful features of other ATC: repeated reminders, a progress system, and motivation throughout a period of time to aid in task completion. All of these features are thought to promote task completion and keep the users attention on their current task.

2.3 Drawbacks of Current Reminder

Personal task reminders have been indispensable-able for modern people, in order to remind them of their tasks at specific circumstances. Traditional paper-based reminders are still useful, but they cannot be organized efficiently. Electronic reminders based on the calendar in cell phones are more efficient and gaining popularity, but such reminders are mostly triggered by time.

Chapter 3

Description

3.1 Assumption and Dependencies

- Assumption of project is :-

1. User should have a google account registered in his/her android smartphone.
2. User should have google play service installed in his/her android smart phone.
3. User should have internet connection in his/her android smart phone.
4. User should have smart phone with Android OS platform greater than 2.3(Gingerbread).

- Dependencies of project is :-

1. Requires Google Cloud messaging to transfer data from one Android smartphone to another Android smartphone, which is provided by google.

2. Requires Google play services to support Google cloud messaging in Android smartphone.

3.2 Detailed Analysis and Description of project

Personal task reminders have been indispensable for modern people, in order to remind them of their tasks at specific circumstances. Traditional paper-based reminders are still useful, but they cannot be organized efficiently. Electronic reminders based on the calendar in cell phones are more efficient and gaining popularity, but such reminders are mostly triggered by time. In many situations, tasks are only meaningful to be performed at a specific location, so it would be useful if reminders for those tasks can be triggered only when the person to be reminded is physically near or located at that location. Therefore in this research, we develop a location-based personal task reminder for Android-based smartphones and tablets. To distinguish our work from existing ones that rely solely on the GPS technology, we take advantage of the ubiquity of IEEE 802.11 WLAN infrastructure to compliment the ‘‘blind spots’’ of GPS location sensing. Combining the two technologies makes it possible for the personal task reminder to be effective in both indoor and outdoor environments. We also propose two operating models for the personal task reminder to boost the usability of the application. Furthermore, as long as the WLAN infrastructure is available, our work as a foundation of location based services can easily be extended to be used in many other scenarios, such as guiding in public transportation systems or tourist attractions, location-based learning, and even caring of the Dementia residents.

3.2.2 User characteristics

There are three types of users that interact with the system: users of the android application, vendors and administrators. Each of these three types of users has different use of the system so each of them has their own requirements.

The mobile application users can only use the application to find a store. This means that the user have to be able to search for products, choose a store where that product is available and then navigate to it. In order for the users to get a relevant search result there are multiple criteria the users can specify and all results matches all of those. The vendor will also use the mobile application. There they will manage the information about their store, for example a description of the store, contact information and products.

The administrators also only interact with the application. They are managing the overall system so there is no incorrect information within it. The administrator can manage the information for each store as well as the options for both the mobile application users and the vendors.

3.2.3 Use case report

Table 3.2.1 shows the Use case for Location-Based Smart Shopping.

Title:	Location-Based Task Reminder
Description:	Location-Based Task Reminder provides the way to userthat allows the user to specify the tasks and locationsand accordingly give notification as the user reaches to the specified location. This tends to reduce time and effort put by user providing customer ease and satisfactory results
Primary Actor:	User/Application
Preconditions:	User uses the Application
Post conditions:	User enters the location and respected task
Main	1. User enters the specified task and location in the application then the

Success Scenario:	application successfully stores the specified information about the task in the database server, the information provided by the user about the task can further be updated according to the user needs in the database through the application. 2. When the user reaches the specified location the application will track the user's location through GPS and inform or notify the user about the respected task he/she has to perform. 3. User will perform the specified tasks.
Frequency of Use:	User can use any number of time
System Requirement:	Normal. No Specific Requirement
Trigger:	The Android Application, which fetches the user location and notify or display the user about specified task.

3.3 Analysis and Design Workflow

Design is the first step in the development phase for any techniques and principles for the purpose of defining a device, a process or system in sufficient detail to permit its physical realization. Once the software requirements have been analyzed and specified the software design involves three technical activities - design, coding, implementation and testing that are required to build and verify the software.

The design activities are of main importance in this phase, because in this activity, decisions ultimately affecting the success of the software implementation and its ease of maintenance are made. These decisions have the final bearing upon reliability and maintainability of the system. Design is the only way to accurately translate the customer‘s requirements into finished software or a system.

Design is the place where quality is fostered in development. Software design is a process through which requirements are translated into a representation of software. Software design is conducted in two steps. Preliminary design is concerned with the transformation of requirements into data.

3.3.1 Flow Diagram

3.3.1.1 DFD's and flow graph

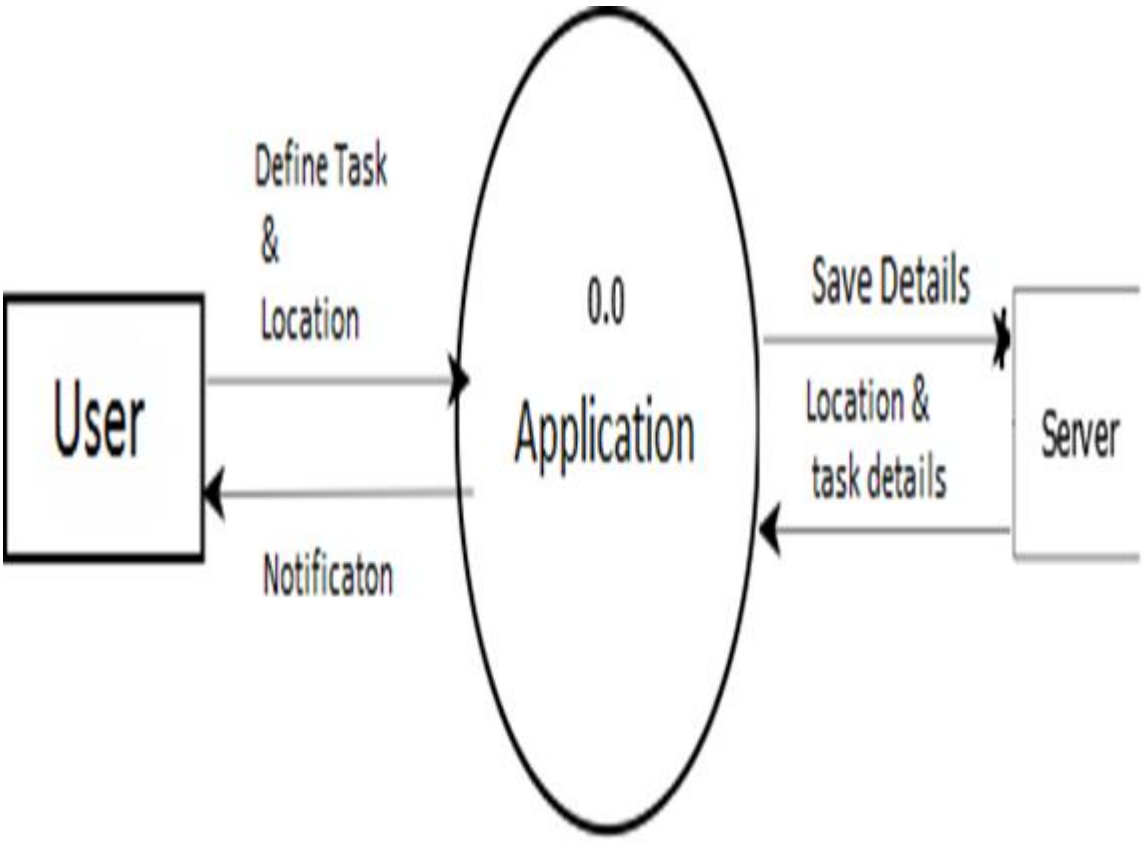

Fig 3.1: Level 0 DFD's of Location-Based Task Reminder Application

3.3.2 Use case Diagram

3.3.2.1 Use Case Diagram I

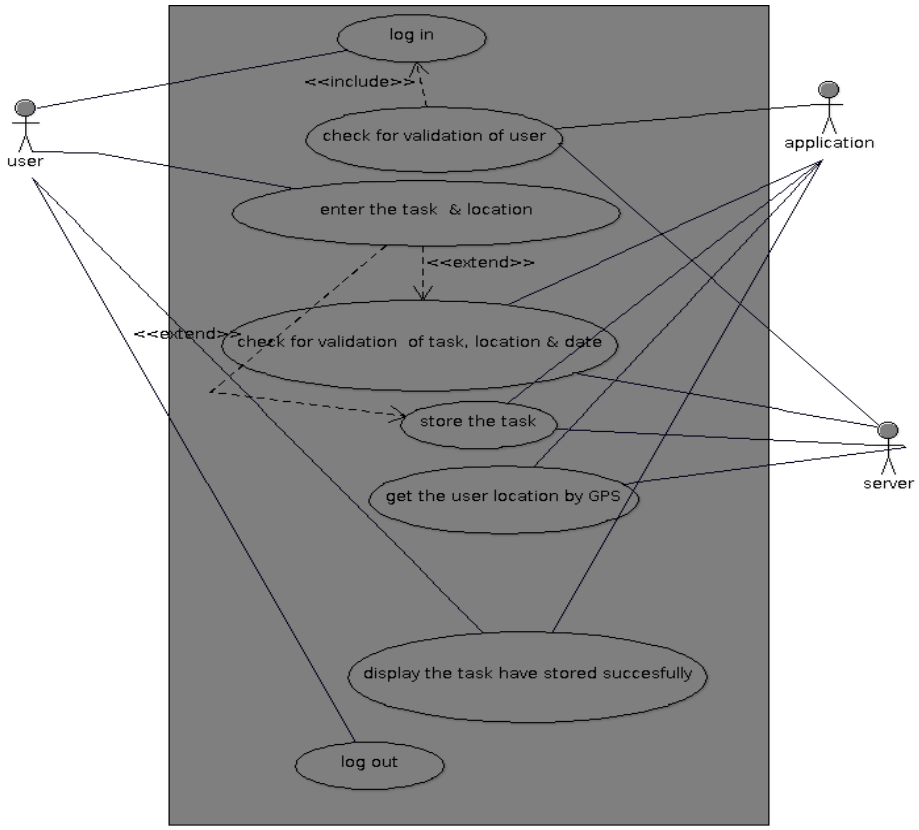

Fig 3.2 Use Case Diagram

3.3.2.2 Use Case Diagram II

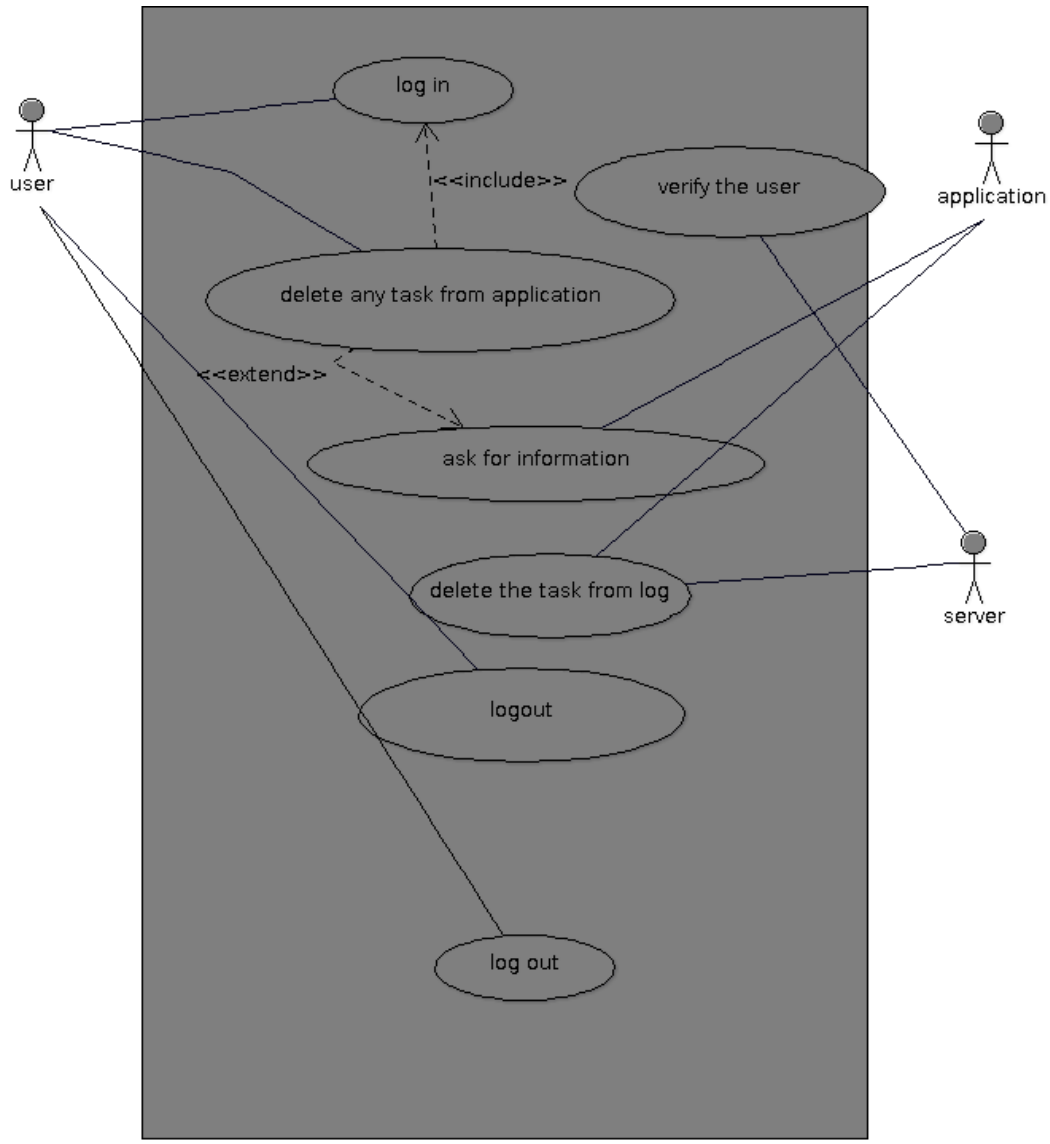

Fig 3.3 Use Case Diagram

3.3.3 Sequence Diagram

3.3.3.1 Sequence Diagram- Scenario 1

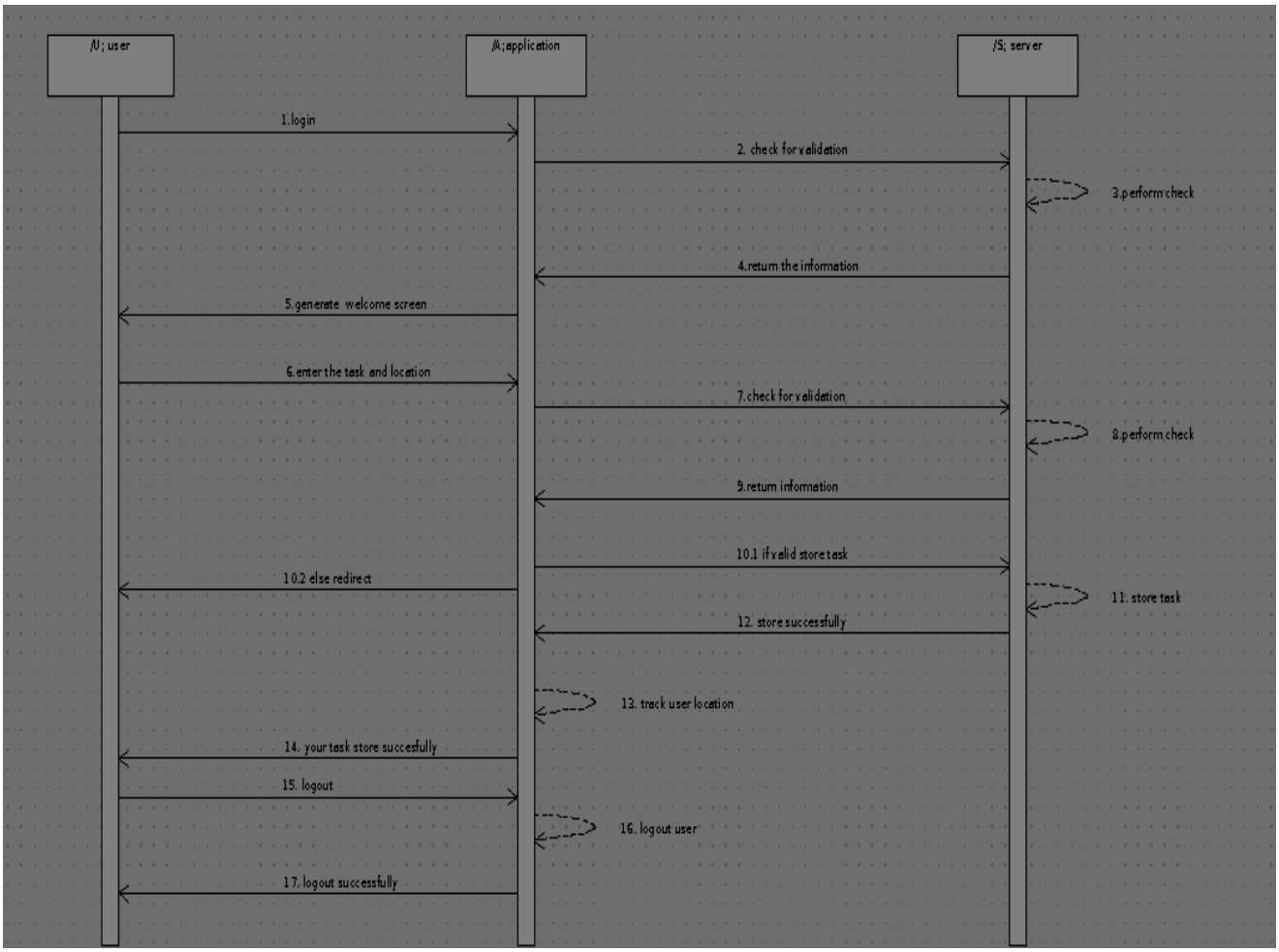

Fig. 3.4 Sequence Diagram- Scenario 1

3.3.3.2 Sequence Diagram- Scenario 2

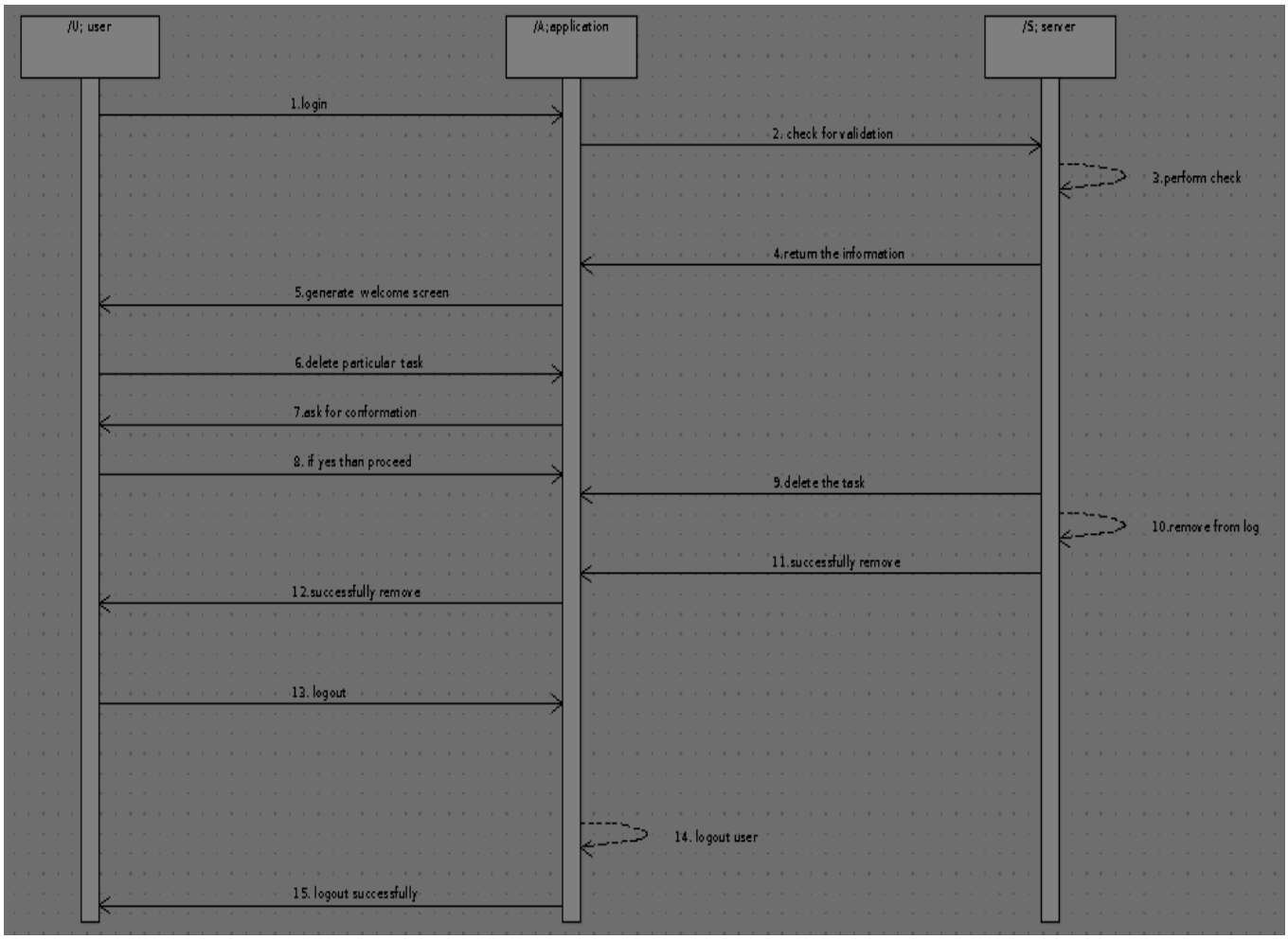

Fig. 3.5 Sequence Diagram- Scenario 2

3.3.4 Class Diagram

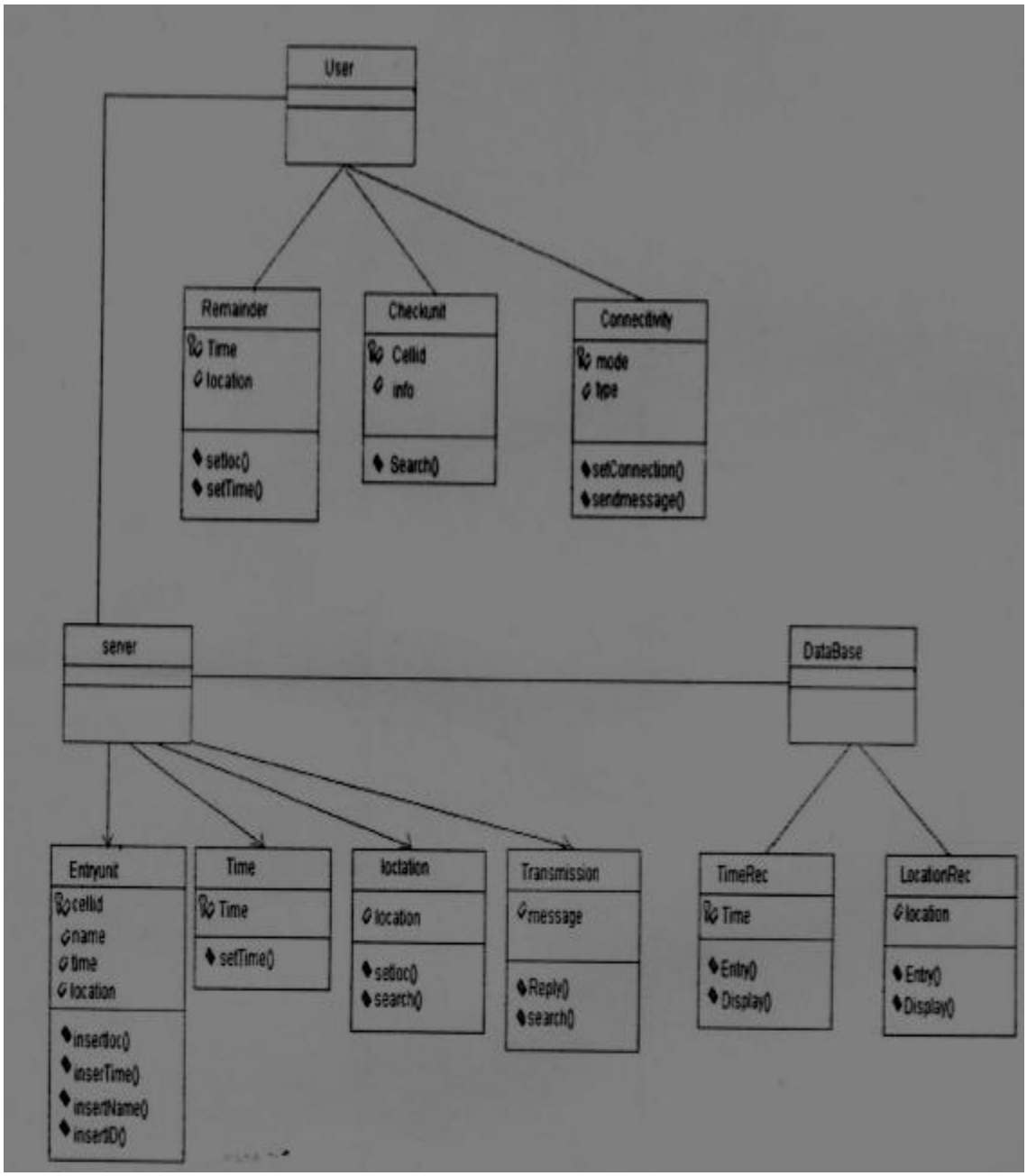

Fig:3.6 Class Diagram

Chapter 4

Implementation

4.1 Methodology

We conducted our study in three steps, a pre-study questionnaire, a two week long deployment, and post-study interview. Our pre-study consisted of a basic questionnaire regarding demographic information, mobile phone usage habits, and current methods of creating reminders. To help the participants personalize their Place-Its application, we asked each to provide, in advance, up to ten frequently visited places where they might want to set a reminder during the study. These pre-defined "Cheat Sheet" lists were put on the phone for the participants, enabling a participant to define new place without having to type it in using the phone's keypad (Figure 2). The person was still required to visit that location and mark the place before they could label it. We provided each

participant with a Nokia 6600 to use during the study. However, they transferred their personal SIM card to the new phone for the duration of the study, thereby transferring their address book and allowing them to use the same phone number and phone network account. Since the phone was unfamiliar to some participants, we also conducted a basic phone tutorial. We explained our application, using the adapted post-it note usage metaphor. Each participant was told that before a reminder could be posted at a location, they had to have visited the location and named the place. Our participants were aware that we would be logging usage data on the device for analysis after the study completed. We asked the participants to incorporate the application into their daily lives and routines, using the application to set reminders as the need arose. After one week, the participants filled out a mid-study questionnaire by email regarding their experiences with Place-Its and the types of reminders they were posting. Near the end of the two weeks the participants were sent a post-study questionnaire by email regarding their experiences with location-based reminders and the Place-Its application. The study concluded with each participant returning the Nokia 6600 and a 30 minute personal interview discussing their questionnaire responses.

4.2 Software Requirement

The software required for Android development:

1. The Java Development Kit (JDK).
2. The Eclipse IDE (Java Developers version) with the Android plugin is not technically essential since everything it does can be done using the command line, but it simplifies so many things that we will consider it to be essential.
3. The Android SDK and add-ons such as the Google Maps SDK.
4. SQLite/GCM
5. USB drivers (not always).Some of the sections “Google USB Driver” and “Setting up a Device for Development: Setup your system to detect your device” may no longer be necessary. Despite that, do not simply skip them. Instead, verify that you can run the application described in section “Checking that everything works fine” on your Android device.

4.3 Hardware Requirement

The Project will require:

For Mobile:

- At least 1GB of RAM(Minimum 512Mb)
- 1.2GHz Processor(Quad core is best suited)
- 3.5 inch of screen for better view
- Internet Data Connection Required

For Computer:

- At least 2GB of ram
- 256GB of Hard Disk
- 1.2GHz of Processor
- Internet Data Connection Required

Android development tools run on all flavors of computers of relatively recent vintage:

- Linux
- Mac OS
- Microsoft Windows.

An Android device such as a smartphone or tablet is useful (and of course the ultimate target for development), but is in fact not essential to getting started since the software contains virtual device emulators that allow you to develop and test.

Chapter 5

Future Work

5.1 Future Work

The prevalence of mobile phones and the pervasiveness of their networks makes them a promising platform for personal ubiquitous computing. Our findings from a two-week deployment of Place-Its help validate that location-based reminders can be useful even with coarse location-sensing capabilities. Notably, location was widely used as a cue for other contextual information that can be hard for any system to detect. On the whole, it appears that the convenience and ubiquity of location-sensing provided by mobile phones outweighs some of their current weaknesses as a sensing platform. This bodes well for the use of mobiles phones as a personal ubiquitous computing platform.

Our study revealed unexpected uses of location-aware reminders. We found that Place-It notes were often used for creating motivational reminders to perform activities that would vary in priority over time. This is similar to using post-it notes in highly visible areas for motivation. The locations for motivational reminders were often set at frequently visited places, such as 'home'. We also found that a majority of the uses for Place-Its involved communicating with people through a variety of media (e.g. email, phone). Communication is typically not tied to specific locations, implying that location is being used as a cue for other kinds of situational context. As a first study, the results presented here are preliminary. Our results suggest a few application modifications that are worthy of further investigation. First, given the limited text entry mechanisms available on mobile phones, a way of associating audio messages or pictures with reminders could offer greater convenience, encouraging unique and more opportunistic use. Second, with an understanding now of how location affords certain classes of reminders, it would be interesting to investigate how adding time-constrained notifications changes user behavior. Third, research into more accurate and faster location sensing on mobile phones should reduce the need for users to adapt their reminders to the capabilities of the application.

Finally, to both account for the effects of inaccurate location sensing and naturally support the use of recurring reminders, we propose a change to the user interface. Rather than the application automatically removing a Place-It when it is detected and presenting it as an explicit reminder notification, the application would continuously display a list of nearby Place-It's as to-do items, sorted by proximity to the current location. The user would then explicitly pull down a Place-It when it is no longer relevant, rather than repost it if it is still relevant. Alerts could still be provided when location certainty is high.

5.2 Scheduling and Planning for Project Implementation

Following Scheduling and Planning for Project Implementation is illustrated by using online tool which available on www.teamgantt.com.

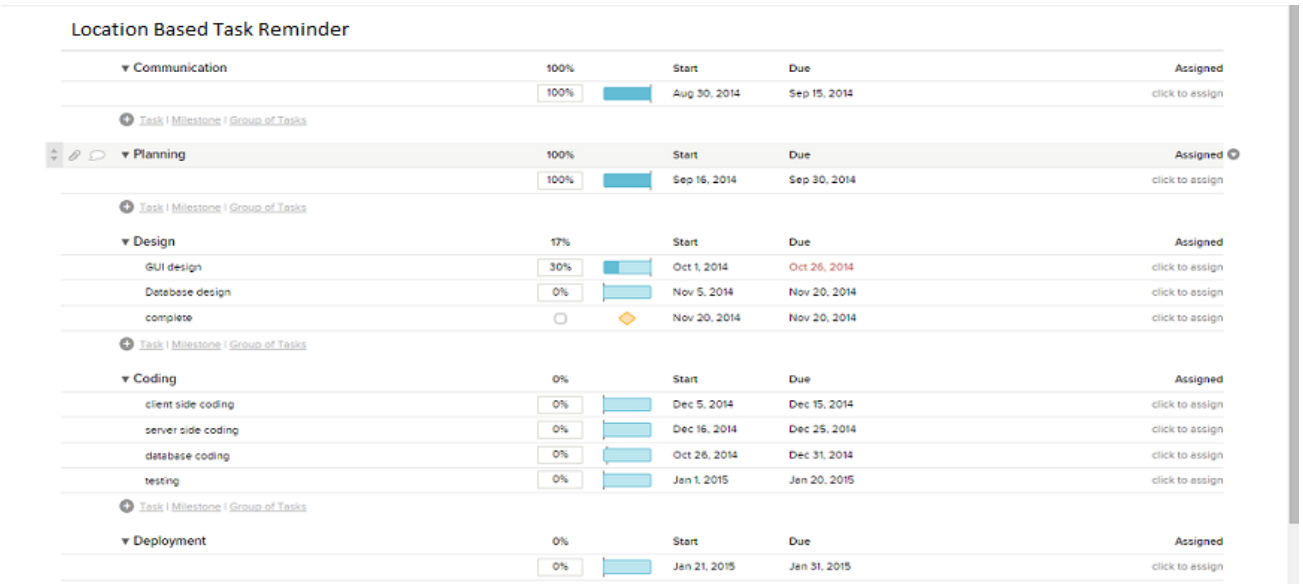

Fig 5.1: Gantt chart

Chapter 6

Appendix I

Challenges in Determining User Location

Knowing where the user is allows your application to be smarter and deliver better information to the user. When developing a location-aware application for Android, you can utilize GPS and Android's Network Location Provider to acquire the user location. Although GPS is most accurate, it only works outdoors, it quickly consumes battery power, and doesn't return the location as quickly as users want. Android's Network Location Provider determines user location using cell tower and Wi-Fi signals, providing location information in a way that works indoors and outdoors, responds faster, and uses less battery power. To obtain the user location in your application, you can use both GPS and the Network Location Provider, or just one. Obtaining user location from a mobile device can be

complicated. There are several reasons why a location reading (regardless of the source) can contain errors and be inaccurate. Some sources of error in the user location include:

- Multitude of location sources

GPS, Cell-ID, and Wi-Fi can each provide a clue to user's location. Determining which to use and trust is a matter of trade-offs in accuracy, speed, and battery-efficiency.

- User movement

Because the user location changes, you must account for movement by re-estimating user location every so often.

- Varying accuracy

Location estimates coming from each location source are not consistent in their accuracy. A location obtained 10 seconds ago from one source might be more accurate than the newest location from another or same source.

These problems can make it difficult to obtain a reliable user location reading. This document provides information to help you meet these challenges to obtain a reliable location reading. It also provides ideas that you can use in your application to provide the user with an accurate and responsive geo-location experience.

Flow for obtaining user location

Here's the typical flow of procedures for obtaining the user location:

1. Start application.
2. Sometime later, start listening for updates from desired location providers.
3. Maintain a "current best estimate" of location by filtering out new, but less accurate fixes.
4. Stop listening for location updates.
5. Take advantage of the last best location estimate.

Figure 1 demonstrates this model in a timeline that visualizes the period in which an application is listening for location updates and the events that occur during that time.

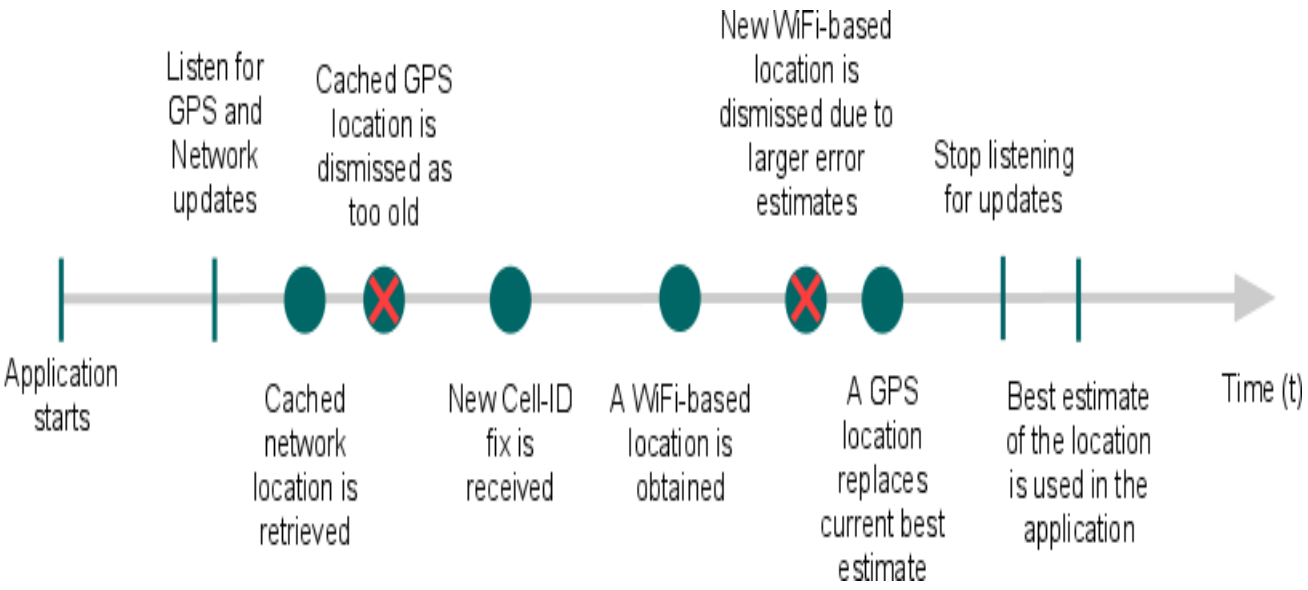

Fig I. A timeline representing the window in which an application listens for location updates.

This model of a window—during which location updates are received—frames many of the decisions you need to make when adding location-based services to your application.

Chapter

References

[1]. Bellotti, V., Dalal, B., Good, N., Flynn, P., Bobrow, D. Ducheneaut, N. (2004). What a to-do: studies of task management toward the design of a personal task list manager. Proc. CHI, ACM Press. 735-742.

[2]. Bellotti, V., Smith, I. Informing the Design of an Information Management System with Interactive Fieldwork.(2000). Proc. DIS, ACM Press. 227- 237.

[3]. Bergman, O., Boardman, R., Gwizdka, J., Jones, W.Personal Information Management. (2004). Proc. CHI, Special Interest Group. 1598-1599.

[4]. Boardman, R., Sasse, M. (2004). Stuff goes into the Computer and Doesn't Come Out, A cross-tool Study of Personal Information Management. Proc. CHI, ACM Press, 583-590.

[5]. Burrell, J., Gay, G. (2002). E-g raffiti: evaluating real-world use of a context -aware system. Interacting with Computers 14, 301-312

[6]. Dey, A., Abowd. G. (2002). CybreMinder: A context-aware system for supporting reminders. Proc. Symp. Handheld and Ubiquitous Computing, 172-186.

[7]. Espinoza, F., Persson, P., Sandin, A., Nyström, H., Cacciatore, E., Bylund, M. (2001). GeoNotes: Social and Navigational Aspects of Location-Based Information Systems, Proc. Intl. Conf. on Ubiquitous Computing,. 2-17.

[8]. Hudson, J.M., Christensen, J., Kellogg, W.A., Erickson, T. (2002). I'd be Overwhelmed, But its Just One More Thing to Do: Availability and Interruption in Research Management, Proc. CHI, and ACM Press. 97-104.

[9]. Jung, Y., Persson, P., Blom, J. (2005). Dede: Design and Evaluation of a Context -Enhanced Mobile Messaging System. Proc. CHI, ACM Press, 351-360.

[10]. Kim, S., Kim, M., Park, S., Jin, Y., Choi, W. (2004). Gate Reminder: A Design Case of a Smart Reminder. Proc. DIS, ACM Press. 81-90.

[11]. Klepis, N., Nelson, W., Ott, W., Robinson, J., Tsang, A., Switzer, P., Behar, J., Hern, S., Engelmann, W. (2001). The National Human Activity Pattern Survey, Journal of Exposure Analysis and Environmental Epidemiology, May-June 2001, v. 11, n. 3, 231-252.

[12]. Korpipaa, P., Hakkila, J., Kela, J., Ronakainen, S., Kansala, I. (2004). Utilising context ontology in mobile device application personalization. Proc. MUM, ACM Press. 133-140.

[13]. Lansdale, M. (1988). The Psychology of Information Management. Applied Ergonomics, 19, 55-66.

[14]. Marmasse, N., Schmandt, C. (2000). Location-Aware Information Delivery with comMotion. Intl. Symposium on Handheld and Ubiquitous Computing, 64-73.

[15]. Paay, J., Kjeldskov, J. (2005). Understand and Modelling the Built Environment for Mobile Guide Interface Design. Behavior, Info. Technology. 24, 21-35.

[16]. Sohn, T., Li, K., Lee, G., Smith, I., Scott, J., Griswold, W. (2005). Place-Its: Location-Based Reminders on Mobile Phones. Proc. Intl. Conf. on Ubiquitous Computing, 232-250.

[17]. Taylor, S., Swan L. List making in the home. (2004).Proc. CSCW, ACM Press, 542-545.

[18]. Tamminen, S., Oulasvirta, A., Toiskallio, K., Kankainen, A. (2004). Understanding Mobile Contexts. Personal and Ubiquitous Computing, v.8,2, 135-143.

[19]. Zhou, C., Frankowski, D., Ludford, P., Terveen, L. (2005). An Experiment in Discovering Personally Meaningful Places from Location Data, Ex

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