Serverless Tracking And Spying Application

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CERTIFICATE

Certified that the contents and form of project report entitled **“Serverless Tracking And Spying Application”** submitted by Zeeshan Akram, Mansoor Ul Hassan and Farrukh Naeem have been found satisfactory for the requirement of the degree.

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ABSTRACT

Serverless Tracking And Spying Application

In Today's World communication is very important element in everyone's life. Cell phones have become the biggest tool to communicate with each other. With the increasing use of mobile phones in our daily lifes, we became too much dependent on it. Mobile Phones is a unimaginable uses which facilitate us but on other hand it is a tool in hands of evil people who use it for fulfilment of their evil design. This application provides us the way to keep a check and counter such evil activities by its spying and tracking features. In our country where so many negative people are active now a day in criminal or terrorist activities, by help of this application Law enforcement agencies can counter and monitor them. This application can extract useful data and take control of targeted device. This application allows user in an emergency would just have to press two times his power button and a consolidated information about his location is delivered to previoussly mentioned numbers. The system consists of two parts. An android application running on smart phone and a server. The aim of system is to bring out maximum useful information out of targeted device. Incase of any delay in sending location due to signal strength, the application re-directs continuously until the message is sent. The server is only used in case of live video streaming from targeted device to our device. Due to Multithreading this application performs various tasks simultaneously to decrease processing time.

DECLARATION

No portion of the work presented in this dissertation has been submitted in support of another award or qualification either at this institution or elsewhere.

DEDICATION

To all the Reformed Institutions of Pakistan, dedicated to Allah and His kingdom and,

In particular to the faculty, staff and students of Military College of Signals

ACKNOWLEDEMENTS

We would like to express our profound gratitude to our parents for their prayers and continuous moral support throughout degree program in general and our project in particular. We are very much grateful to our Project Supervisor Dr Hammad Afzal for his support and critique which helped us reach new levels of perfection. We are highly indebted to all the faculty members who throughout the degree trained, mentored and guided us to achieve new levels of professionalism which is the hallmark of this prestigious institute.

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1. Introduction

Server less tracking and Spying Application is a GPS (Global Positioning System) based android mobile application. With the help of this application user can track any person who is using this application, once installed anonymously, the application can be entirely controlled by SMS. User can also hide/show the application on the target mobile by just an SMS. While in case of emergency, Server less tracking also serves its purpose by providing the current location of user using GPS/GPRS. By sending a secret code, the application will keep displaying subject's changing location on user's mobile. Meanwhile, all of the contacts list and Call log can also be retrieved by the subject's phone via text Message. In simple words, the entire control of the subject's phone can be managed by Text Messages.

1.1 Purpose

The purpose of this document is to present a design view and detailed description of the "Server less Tracking And Spying Application". It will explain the purpose and features of the system, major classes, database entities and dataflow in the application. It would also tell that what the system will do, the constraints under which it must operate and how the system will react to external inputs.

1.2 Document Conventions

1. Words in bold, in any paragraph, refer to a specific term defined earlier in document or in the glossary.
2. Following pair of words are used interchangeably:-
    a. Survey and feedback
    b. Audience and respondents
3. Audience, respondents refer to the individuals who will be giving feedback regarding this app.
4. The conventions used to prepare the document is given bellow
    a. Font – Arial, size 11
    b. Main headings, Font – Arial, Bold, size 14
    c. Sub headings, Font – Arial, Bold, size 12

d. Sub-sub headings, Font-Arial, Bold, size 11

1.3 Scope

“Server less Tracking and Spying Application is designed to facilitate the users to carry out the real time tracking and spying of the targeted audience. The application will provide:-

1. Quick installation of app.
2. Wide Range of Spying option
3. Targeted location extraction.
4. Support to obtain the location of Police Station.
5. Support to obtain the location of Fire brigade.

1.4 Overall Description

Server Tess Tracking is an android based smart phone application. Main purpose of this application is to track user’s geographical location on map. While serving the tracking purpose, the target mobile’s entire control can be managed by SMS. Server Less Tracking helps to control and overcome rapidly growing crime rate. The outcomes of application may also be used for policing, preventing execution of crime and for the purpose of investigation. One of the major advantages is that it will reduce the crime rate and stress of people regarding safety. It can also serve the purpose of surveillance by retrieving any of the required information by the target's mobile phone. All needed is to just install the application anonymously. Furthermore this project includes designing a web application which gives a similar user experience to users of different platforms (Android, IPhone, Windows and BlackBerry). The Server less tracking is a new and self-contained product. It does not need any intermediate medium to serve its purpose, i.e. server. The application’s most unique feature is executing the said functions without being dependent on any severs. Currently the crime rate, abduction and occurrence of such incidents in Pakistan are rapidly growing and everyone feel threatened and at risk and security is the main problem. Server less tracking application could help to overcome the risk of security and reduce crime rate. STS gives you a number of spy tools and utilities that allow you to send coded messages to

your fellow agents transmit mores code keep track of friends and foe alike. It also includes weapon sounds and a motion detector to track any movement within range of the camera. This document is intended for all individuals participating in and/or supervising the STS. Readers interested in a brief overview of the product should focus on the rest of Part 1(Introduction), as well as Part 2 of the document (Overall Description), which provide a brief overview of each aspect of the project as a whole. Readers who wish to explore the features of STS in more detail should read on to Part 4 (System Features), which expands upon the information laid out in the main overview. Part 3 (External Interface Requirements) offers further technical details, including information on the user interface as well as the hardware and software platforms on which the application will run. Readers interested in the non-technical aspects of the project should read Part 5, which covers performance, safety, security, and various other attributes that will be important to users.

1.5 Server Module:

The Server is only required for live video streaming mode. This module is required because remote device cannot fulfill the purpose of live video streaming. For this reason in order to achieve our goal we require a server so that up linking and down linking process can be performed easily without any service limitation.

1.6 Cell phone Module:

The cell phone is the basic module of this application. All processes and requests can be performed that user wishes to generate. Predefined operations can be performed via SMS and the results can also be seen via SMS. Whereas some of the operations will be performed through the main screen and result will also be received from the same screen. The application when installed on mobile phone would be able to perform following features.

- You can extract the contacts from targeted device.

- You can extract the call log from targeted device.
- You can extract the SMS record from targeted device.
- You can get the location of the targeted device.
- You can enable and disable calling facility of the targeted device.
- You can change the sound modes of the targeted device.
- You can generate a call from the targeted device to any desired number.
- You can show and hide the application on a targeted device.
- You can get the directions of nearest police station/hospitals/fire extinguishers and targeted device.
- You can encode and decode a message into a picture through steganography.
- You can protect the application by a passwords.
- You can generate an emergency location messaging service to your desire number ranging from 1 minutes to 60 minutes.

1.7 Background

Today we see mobile phones in everyone's hand. It is the biggest facility of this century but its negative effects are also griping our society. That's why we felt a dire need to develop such a Spying and Tracking application with important features to counter these security risks. Theft, snatchers, Terrorists etc can be countered by using this application. Law enforcement agencies also require such applications in order to monitor and to stop negative activities in our society. This application can be use on commercial basis by the parents in order to monitor the activities of there siblings.

1.8 Problem Statement

In the current prevailing security environment it is nearly impossible to keep an eye on every person directly or indirectly related to you. As a Nation we are facing the worst form of insurgency. Our enemy knows whom to target, when to target and where to target. But we dont know how to effectively counter these problems. Previously there was no setup available to monitor the activities of surrounding people. These people use modern devices such as mobile phones for planning and execution their evil designs. The biggest dilemma is that our law enforcement agencies are not well equipped with these modern tools to counter these notorious people.

1.9 Objectives

Objective is to develop android based serverless application which will perform spying and tracking operations. Which includes sending location of targeted devices, extraction useful data from the targeted device, steganography and live video streaming.

1.10 Deliverables

First Progress Report: including SRS Document

Second Progress Report: including System Design (Hardware and Software)

Third Progress Report: Demo of integrated system

Final Report: including complete documentation of the system and user manual.

1.11 Technological requirements

1.11.1 Operating Systems

- Windows
- Android

1.11.2 Software Packages

- Java
- Eclipse
- Android SDK

1.11.3 Hardware Components

- Personal Computer (Optional)
- Android Phone

2 Literature Review

2.1 Introduction

2.1.1 Background

Android is world most famous and widely used operating system. Android, Inc. was founded in Palo Alto, California in October 2003 by Andy Rubin, Rich Miner, Nick Sears and Chris White to develop, in Rubin's words, "smarter mobile devices that are more aware of its owner's location and preferences". Google acquired Android Inc. on August 17, 2005.

Android is open source and Google releases the source code under the Apache License. This open-source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers, wireless carriers and enthusiast developers. Android is an operating system based on the Linux kernel, and designed primarily for touch screen mobile devices such as smart phones and tablets.

2.2 Overall Description

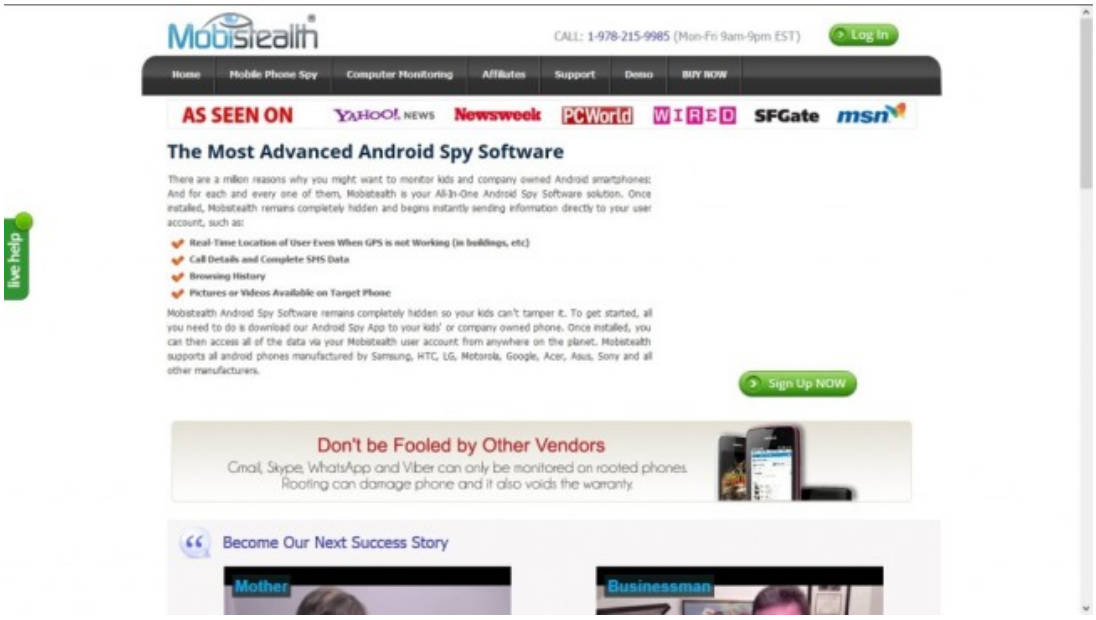
The need of this software arises when effectively using your android phone module for spying and tracking means. Data extraction, secrecy, user friendliness, improved efficiency is the main aim.

The detailed description of the software is presented in the software requirement specification document above.

2.3 Similar Software and work

2.3.1 MobiStealth

MobiStealth is a great parental control app for android that comes at different costs and packages depending on what you specifically need to do. With sophisticated innovations and updates, this android spy app is cool for recording and spy calling. Mobile Stealth enables you to directly interrupt calls that might be of harm to your kid or anyone else important to you. Ranked top by most child internet safety advocates, the mobistealth mobile spy app will be your best companion when it comes to protecting your kids from cyber bullying, online predators and social media mishaps



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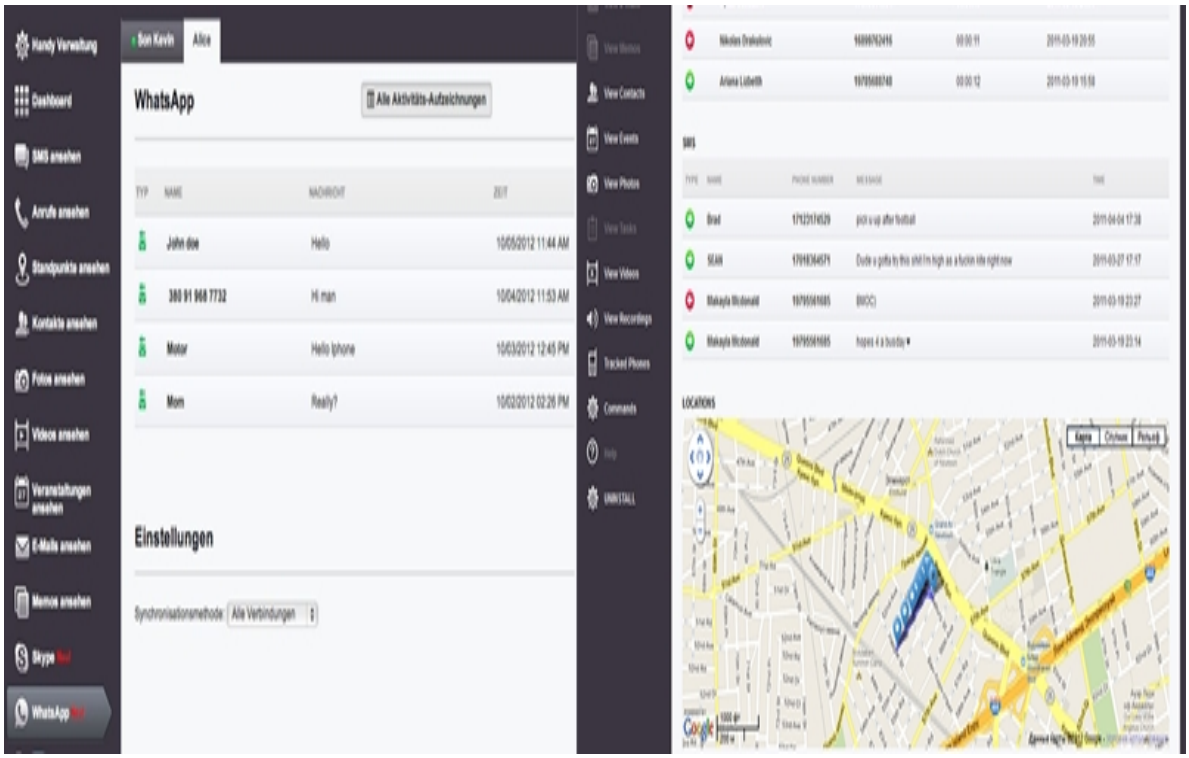
2.3.2 mSpy

mSpy is one of the most reliable and good looking spy apps for Android. This spy app has multiple packages for you to select from. They all range differently in price and functionality but provide a consistent and solid service. Whether you are a business owner or a caring mother, you will appreciate what mSpy offers.



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2.3.3 Spyera

Spyera is one of the best spy software on Android when it comes to user experience. Intercepting calls and ambient listening are fluid and easy to execute. Viewing multimedia files including pictures, images and videos is quite easy as well. Live call recording is a great feature which allows you to record the calls as they happen. Location tracking, calendar tracking and instant messaging tracking are also available on this spy app for Android.

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3 System Requirements

3.1 Introduction

This chapter describes the requirements specifications for Serverless Tracking And Spying Application

3.2 Product Perspective

The existing applications which allows to cater emergency situations are integrated in Serverless Tracking And Spying Application and some new and necessary features are added which were not in any of existing applications. The ancestors of Serverless Tracking And Spying Application are:

MobiStealth

- Call details
- Browsing history
- Complete SMS Data
- Real-Time Location of the subject user eve when GPS isn't working
- Pictures or videos send or received
- Actual call recordings

mSpy

- Clean and easy to use interface.
- Track calls, texts and location easily.
- Remotely record calls.

Spyera

- Ambient listening enables you to listen whenever

you want.

- Read SMS, emails and instant messages easily.
- Check address book and read contacts.
- See what the user is searching on the web via history..

3.3 Basic Assumptions

The project is based on following assumptions:

- Android based mobile will be available.
- Windows pc will be available if required.
- Wi-Fi connection will be present for live video streaming.
- User will be familiar with the windows and android.

3.4 Operating System

Mobile phones with android operating system is required.

3.5 Operating Environment

GSM signals should be available to run the application successfully. Wi-Fi is required only for live video streaming.

3.6 System Features

3.6.1 Extract call log

Description

This feature will allow user to send SMS from the app to the targeted device.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**User sends an SMS.**
Response	SMS is delivered to the targeted device and it automatically sends back the call log via SMS.

Functional Requirements

Requirement 1: The system should send SMS to targeted device.

Requirement 2: The system should retrieve the users call log and sends back.

3.6.2 Extract SMS Details

Description

This feature will allow user to send SMS from the app to the targeted device.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**User sends an SMS.**
Response	SMS is delivered to the targeted device and it automatically sends back the SMS details via SMS.

Functional Requirements

Requirement 1: The system should send SMS to targeted device.

Requirement 2: The system should retrieve the users SMS details and sends back.

3.6.3 Extract Contacts

Description

This feature will allow user to send SMS from the app to the targeted device.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**User sends an SMS.**
Response	SMS is delivered to the targeted device and it automatically sends back the Contacts via SMS.

Functional Requirements

Requirement 1: The system should send SMS to targeted device.

Requirement 2: The system should retrieve the users contacts and sends back.

3.6.4 Extract the Target Location

Description

This feature will allow user to send SMS from the app to the targeted device.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**User sends an SMS.**
Response	SMS is delivered to the targeted device and it automatically sends back the location (lat and long) via SMS.

Functional Requirements

Requirement 1: The system should send SMS to targeted device.

Requirement 2: The system should retrieve the users location and sends back.

3.6.5 Enable/Disable Calling Facility

Description

This feature will allow user to send SMS from the app to the targeted device.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**User sends an SMS.**
Response	SMS is delivered to the targeted device and it automatically enable/disable the calling facility.

Functional Requirements

Requirement 1: The system should send SMS to targeted device.

Requirement 2: The system should be able to enable/disable calling facility of the targeted device..

3.6.6 Controlling the Sound Modes

Description

This feature will allow user to send SMS from the app to the targeted device.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**User sends an SMS.**
Response	SMS is delivered to the targeted device and it automatically changes the sound mode to normal/silent/vibrate.

Functional Requirements

Requirement 1: The system should send SMS to targeted device.

Requirement 2: The system should changes the sound mode as requested.

3.6.7 Show/Hide Application

Description

This feature will allow user to send SMS from the app to the targeted device.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**User sends an SMS.**
Response	SMS is delivered to the targeted device and it automatically shows/hides the application in the targeted device.

Functional Requirements

Requirement 1: The system should send SMS to targeted device.

Requirement 2: The system should show/hide the application in the targeted device.

3.6.8 Call generation to a desired Number

Description

This feature will allow user to send SMS from the app to the targeted device.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**User sends an SMS.**

Response SMS is delivered to the targeted device and it will automatically initiate a call from targeted device to the desired number.

Functional Requirements

Requirement 1: The system should send SMS to targeted device.

Requirement 2: The system should generate a call from targeted device.

3.6.9 Emergency Location Guide

Description

This feature will allow user to initiate an emergency alarm to a predefined number.

Stimulus/Response Sequences

Normal Flow:

Stimulus **User will activate a number and will press the power button twice.**

Response As the power button is pressed twice, it will generate an SMS to the desired number with location.

Functional Requirements

Requirement 1: The user should enter an emergency number and should activate the facility for a desired period of time.

Requirement 2: The user should press the power button twice to generate alarm.

3.6.10 Steganography

Description

This feature will allow user to embed/extract a message into a picture using encode/decode techniques.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**allow user to embed/extract a message into a picture using encode/decode techniques.**
Response	Encode/Decode a picture message in order to extract information.

Functional Requirements

Requirement 1: The system should send picture to desired device.

Requirement 2: The system should encode/decode message in a picture.

3.6.11 Live Video Streaming

Description

This feature will allow user to watch live video of targeted device.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**Press video streaming**
Response	It will telecast the video of the targeted device by enabling its camera

Functional Requirements

Requirement 1: The system should connect to a server.

Requirement 2: The system should able to support up linking and down linking.

3.6.12 Application Lock

Description

This feature will allow user to make the application password protected.

Stimulus/Response Sequences

Normal Flow:

Stimulus	**Press the app lock button.**
Response	It will open new window to set your password.

Functional Requirements

Requirement 1: The system will prompt for password, if password is already set.

Requirement 2: The system will ask the user to set a password and confirm it again, if application was not previously password protected.

3.7 Nonfunctional requirements

3.7.1 Performance Requirements

3.7.1.1 System Response

The system should respond to the user's request and should not take more then 2-4 seconds depending on the device used and Mobile Network connection. The Response may vary depending on the size of data requested.

3.7.1.2 Live Video Streaming

Connection with server should be establish within 5 seconds of generation of request. And the quality of video will be depended on the type / speed of connection.

3.7.2 Safety Requirements

During message transfer between device to device, the changing of data will be prevented in order to prevent data inconsistency.

3.7.3 Security Requirements

Application should be kept password protected so that unauthorized should be prohibited.

3.7.4 Software Quality Attributes

Some of the quality attributes identified includes:

3.7.4.1 Adaptability

Updating the Android OS version will not have any impact on the working of the system.

3.7.4.2 Availability

The application will be available all the time, mobile is in working state, server is running and connection is available and up in case of live video streaming.

3.7.4.3 Capacity

The system shall provide storage up to storage capacity of phone. In case of limited space it should prompt the user.

3.7.4.4 Compatibility

Both the devices should be android based.

3.7.4.5 Competitive edge

It includes many additional features which makes it complete spying and tracking application.

3.7.4.6 Compliance

Not applicable

3.7.4.7 Documentation

A video tutorial and a user manual would be available along with software.

3.7.4.8 Efficiency

The system takes approximately 2-4 seconds to respond to the user's request depending on the underlying hardware and connection speed. The SMS speed depends on multiple factors like GSM connection and signal strength. The server request and respond depends on the connection speed.

3.7.4.9 Flexibility

The layout of the application will be flexible enough to accommodate any changes.

3.7.4.10 Interoperability

Semantic interoperability is provided by the system that allows exchange of information between mobile to mobile and sever. Also it is operable on different versions of Android.

3.7.4.11 Maintainability

Whenever there is a change in requirement or bug found, the application will be easily maintainable.

3.7.4.12 Portability

In API, portability can be defined as "compatibility of application with platform (Android's version) upgraded or downgraded versions. In Android's platform when an up gradation is done, application requires some changes for compatibility with new version. Extensive testing will be required for verification & validation to address compatibility issues..

3.7.4.13 Reliability

The System is reliable in the sense that only specific action can be performed under specific command which makes this application fool proof.

3.7.4.14 Scalability

Multiple users can generate and receive SMS messages at a time. However one interface of application will run on mobile at a time.

3.7.4.15 Security

Application is password protected.

3.7.4.16 Stress

The system shall be capable of handling extremely high or stressful load.

3.7.4.17 Start-up time

Not applicable because there is no specific requirement.

3.7.4.18 Timeliness

Not applicable

3.7.4.19 Usability

The user interface of the application will be designed user friendly and self-explanatory. Any android user can easily use it. Although if required minimum training of 20 minutes will be enough for the understanding of the system.

4 Design and Development

4.1 Introduction

This chapter describes Software Design Document for this Application.

4.2 Architecture Design

4.2.1 Block Diagram

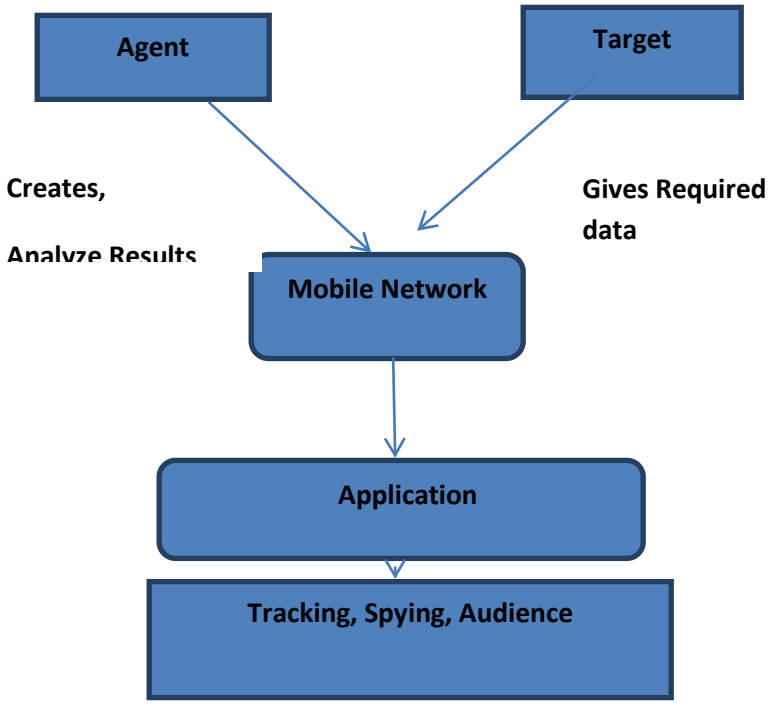


Figure 2.1: Block Diagram a

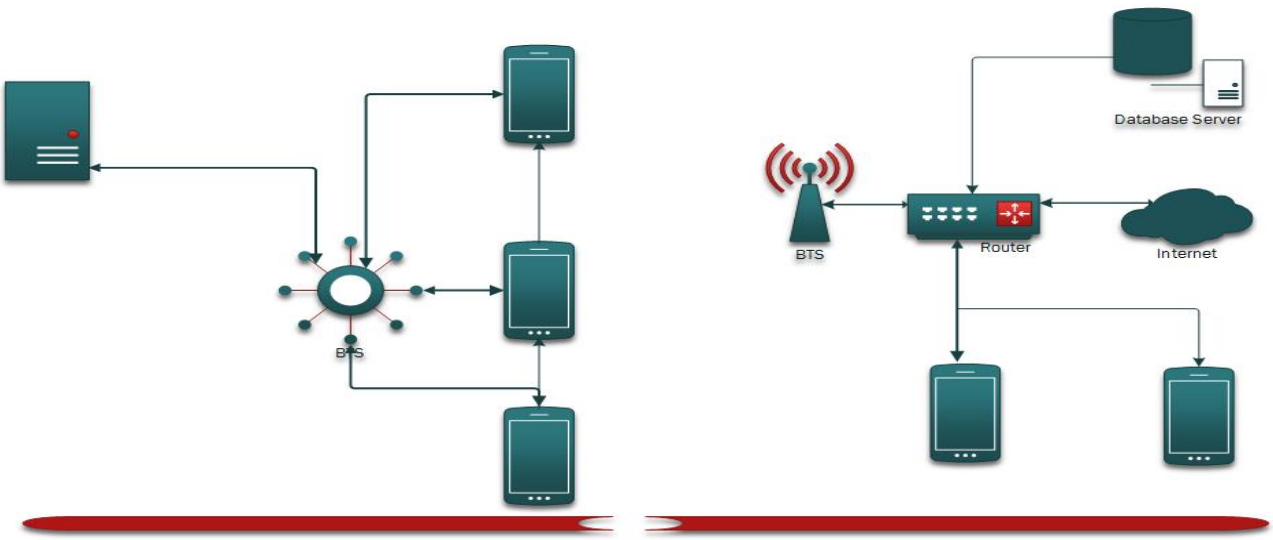


Figure 2.2: Block Diagram b

4.2.2 Software Components

4.2.2.1 Operating Environment

4.2.1.1 Agent Side

6. **Scripting language:** JavaScript, HTML, JQuery Mobile
7. **Browser:** All browsers from IE 6 and onwards to Firefox, Safari, Opera and Google Chrome.

4.2.1.2 Target Side

8. **OS:** Windows server with Microsoft Framework 4.0
9. **Database:** SQL Server 2012
10. **Programming Language:** ASP.Net 4.0 and C#.

4.2.2.2 Network System

Protocols for communication

1. TCP/IP
2. HTTP
3. HTTPS

4.2.2.3 Programming Interface

1. ASP.Net Framework 4.0

2. Microsoft Enterprise Practice Data Library
3. Microsoft SQL Server 2012
4. Visual Studio.Net 2010

4.2.3 Hardware Components

1. Personal Computers
2. Smart Phones and Tablets having Android, IOS,Windows OS
3. SMS modem(only one at server)
4. Server having Microsoft Windows Server 2012 as an OS

4.2.4 Design and Implementation Constraints

Description	**Rationale**
Windows Server with Microsoft Framework 4.0 and SQL Server 2012.	ASP.Net 4.0 is used for the web application development and SQL Server 2012 is used for Database Management
The website will be developed using ASP.NET v4.0	C#/ASP.NET is a powerful high level language by Microsoft. Support of large .Net Libraries, WCF Services, MVC framework and powerful database integration /secure proofed database libraries enhances its capability and makes it suitable for Web Applications Projects.
Web Application will be created using Windows Communication Foundation (WCF) service.	Service will be useful for developers in future to create further native applications for Android, IPhone and other platforms.
Initially our aim will be to cater for events and education related surveys.	To cater for the question syntax creation and focusing on the limited functionality.
Availability of either of (Android, Apple and Windows)Smart Phone, Tablet or Personal Computer(PC)with the respondents	Focus will be on the use of Smart Phones, since almost 80% of the people now are in possession of Smartphones and prefer its usage over PC's, Laptops and paper work. Online Survey requires either of the devices available with the respondent to respond.
Internet connection is required for both survey creation and response as it is a web application.	For survey creation and submitting survey response to the web server internet connection is required.

SQL Server 2012 will be used for database management.	SQL provides an efficient way of accessing the database through different interfaces using queries and stored procedures. Microsoft provides efficient and secure libraries for handling SQL server databases to be used with .Net applications

4.2.5 Assumptions and Dependencies

Our System shall be assuming and depending upon the following facts:

11. Users have sufficient knowledge of Computers and Smart Phone's Usage.
12. Users know the English language because user interface will be provided in English.
13. There will be limits to the number of free services that can be created by one user. And the number of respondents contacted through SMS.
14. User authentication procedure shall be used to protect data from unauthorized access.
15. The project scope is fixed but we may enhance the functionalities of the application according to the available time and the required resources.

4.2.6 High Level Design Diagram (Modules Identification)

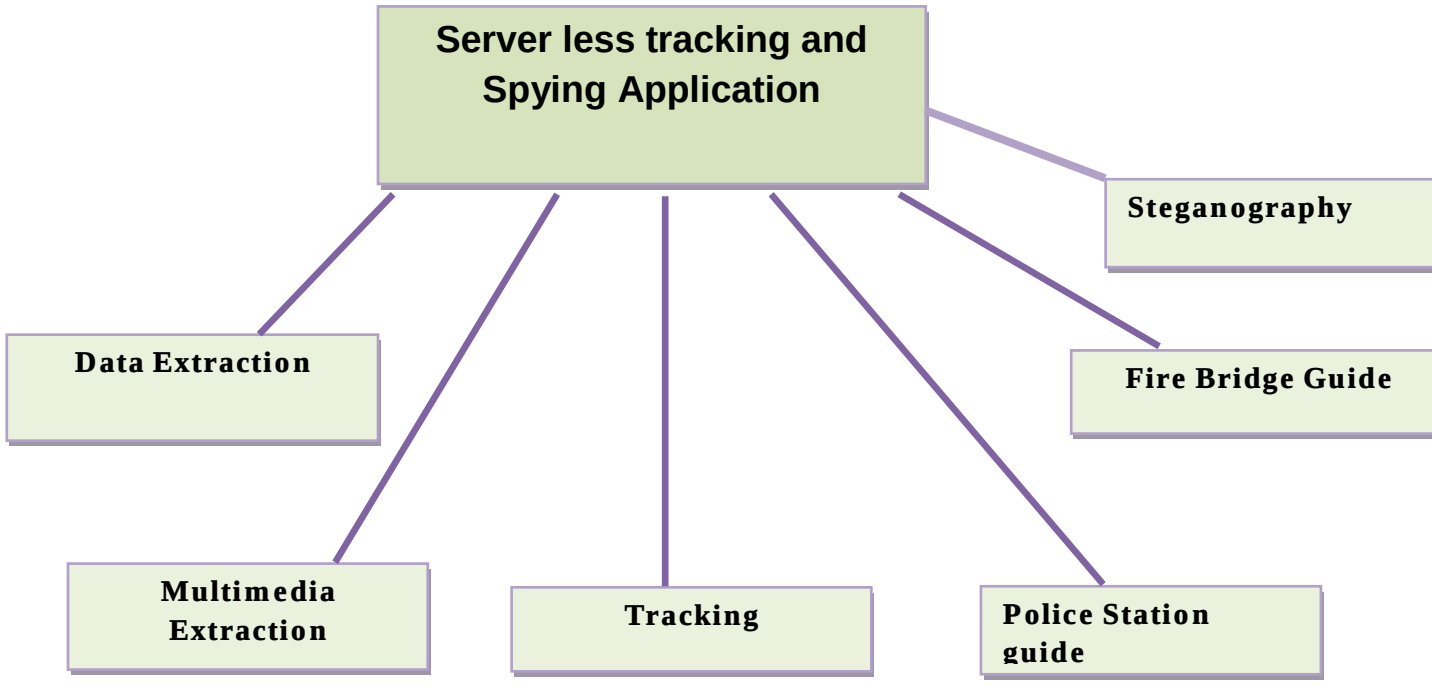


Figure 3: High Level Design Diagram

4.2.7 Architectural Diagram

Layered Architecture (3-Tiers) will be used to implement STS. From a high level perspective, a service-based solution can be seen as being composed of multiple services, each communicating with the others by passing messages. Conceptually, the services can be seen as components of the overall solution. However, internally, each service is made up of software components, just like any other application, and these components can be logically grouped into presentation, business, and data layers. Other applications can make use of the services without being aware of the way they are implemented.

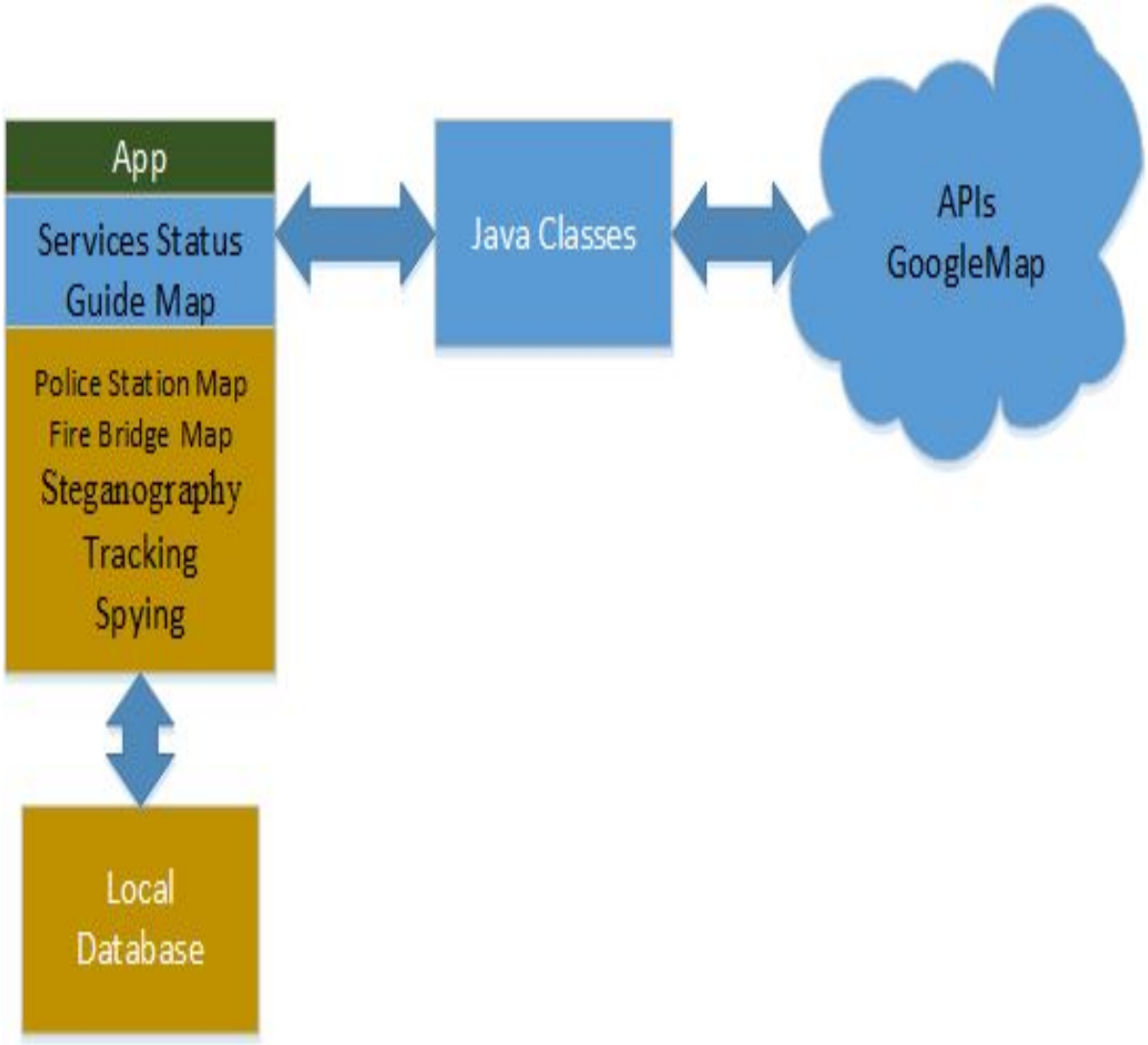


Figure 4: Architecture Diagram

The rationale for selecting Layered architecture is described as under:-

16. Separation of concerns. Each Layer has to implement independent functionality.
17. Separating Data Access Layer from application logic layer. Since, a lot of interaction with databases is involved.
18. To allow for reusability for developers working on different platforms to make native
19. 3-tier made it technically possible to integrate different servers. i-e Crawler can access other database servers e-g OLX
20. Allows easily generating and converting the views of WebPages for different platforms e-g Android, IOS and Windows.
21. Apart from the usual advantages of modular software with well-defined interfaces, the three-tier architecture is intended to allow any of the three tiers to be upgraded or replaced independently in response to changes in requirements or technology.
22. Future Scalability, if we intend to deploy different layers on different physical servers for rich scalability.
23. Dynamic load balancing by use of multiple servers

4.2.7.1 Layers Details

4.2.7.1.1 Presentation Layer

Provides the platform for interaction of the user with the system. It displays data to the user and accepts input from the user. This is the part which receives the HTTP request and returns the HTML response. The Presentation layer can only receive requests from, and return responses to, an outside agent. This is usually a person, but may be another piece of software. The Presentation layer can only send requests to, and receive responses from, the Business layer. It cannot have direct access to either the database or the Data Access layer.

4.2.7.1.2 Business Logic

Spying Service Layer provides services to other applications, as well as implementing features to support clients directly. It is used to exposes the business functionality of the application. The services layer effectively provides an alternative view that allows clients to use a different channel to access the application.

4.2.7.1.3 Data Access Layer

This layer receives request from the Spying Service Layer and sends back data after querying it from the database server.

4.3 Detailed Design

4.3.1 Database Diagram

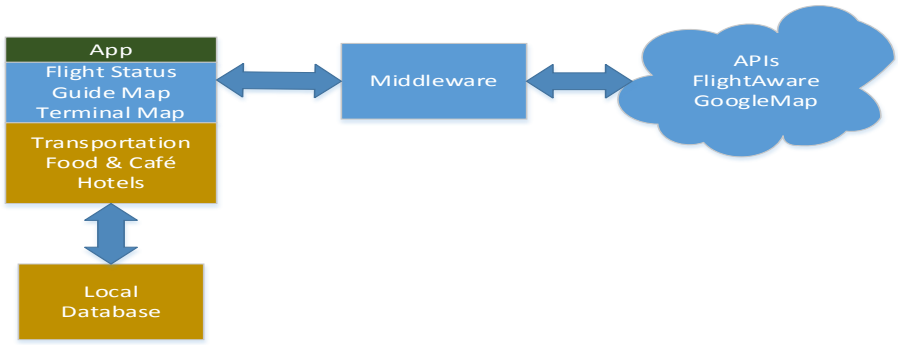


Figure 5: Database Diagram

4.3.1.1 ERD Explanation

User	This table contains variables related to the basic informations about administrator, agent and targeted users. Spying Service will be free however the contact details provided by one user may be used by other.
Spying	This table contains spying fecilties required by user, primary key will be spying, any user can create any number of spying request.
Tracking	This App enable user to track any target person device both automatically or manually. Location will be shown on map along with the shortest path.
Services	This tablecontains answer options of each question. Each question can have maximum of 6 answer options. Each Option has a weight which will be added to sum up the results and take their average or percentage.
Steganography	This table stores the informations about which respondent gave which feedbak against different questions of a survey. Feeback will be stored against each question and the respondent Id who gave the feedback. Results will be computed using the responses table

4.3.2 Flow Chart

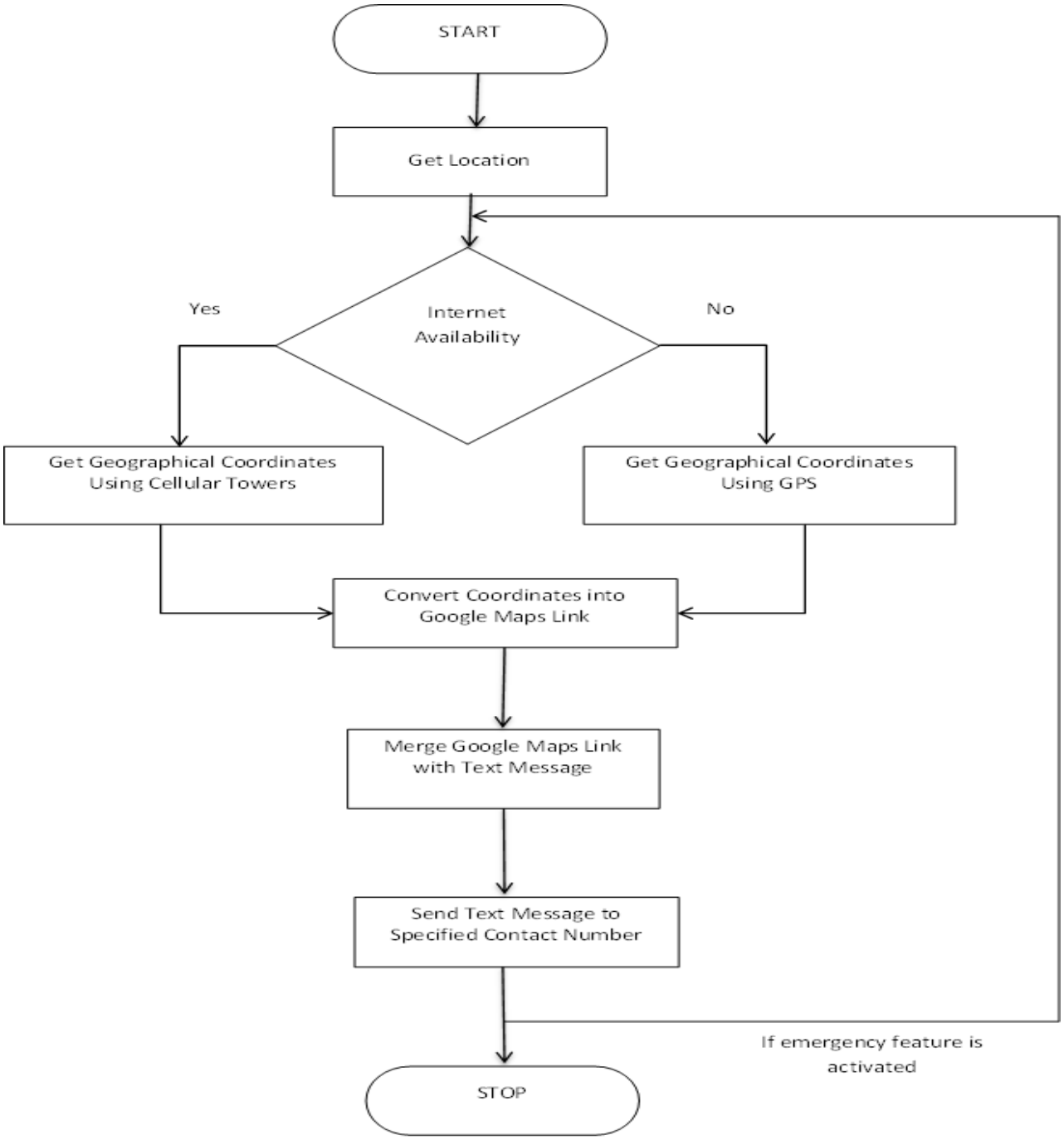


Figure 6: Flow Chart

4.3.3 UML Diagram

4.3.3.1 Usecase Diagram

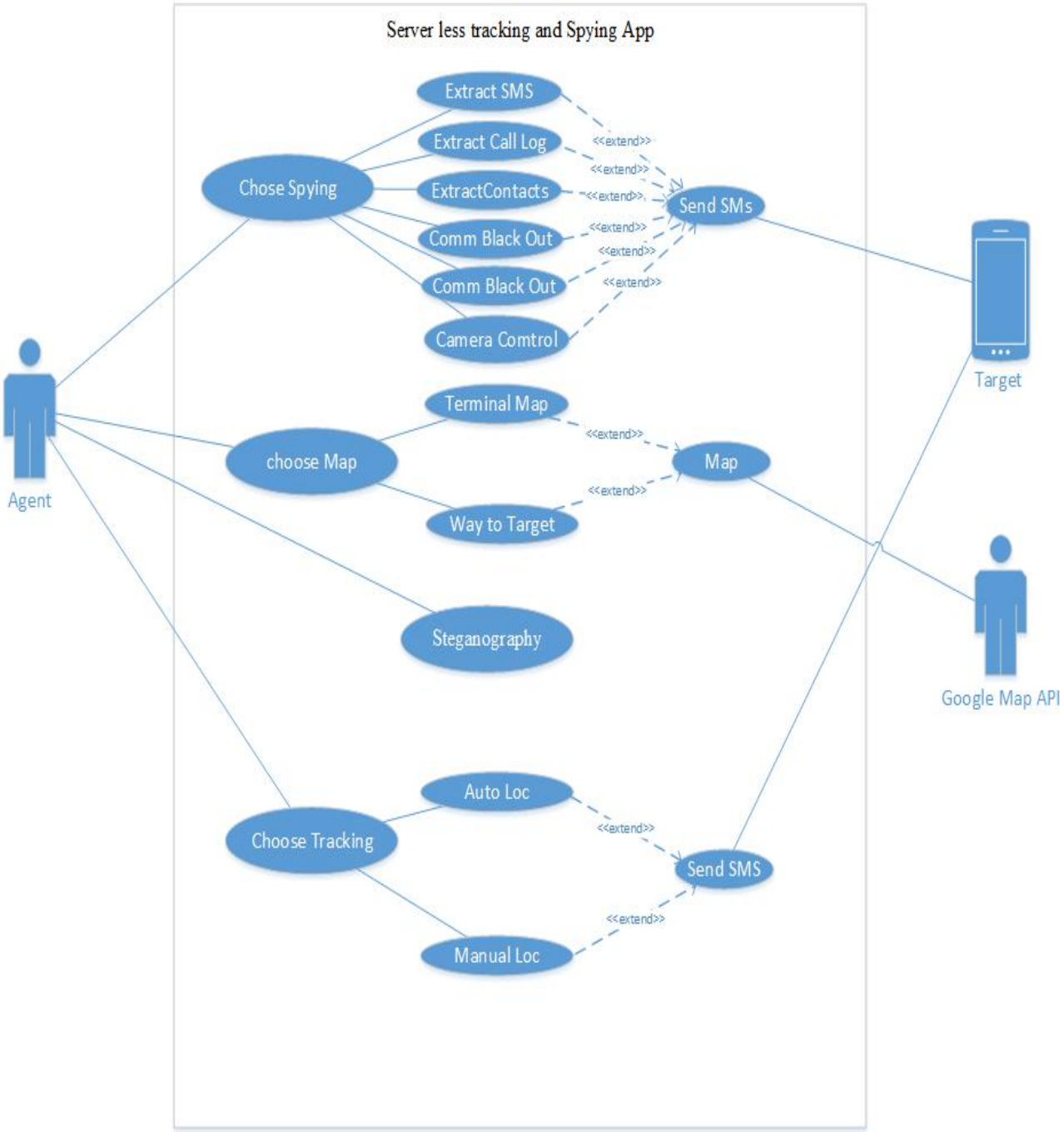


Figure 7: Use Case Diagram RTS

4.3.3.2 UseCases

4.3.3.2.1 Activation Of App: The complete usage scenario is explained as under:-

Use Case ID:	1		
Use Case Name:	Activation Of App		
Actors:	Admin, User		
Created By:	Zeeshan Akram	Last Updated By:	Zeeshan Akram
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This use-case will describe the behavioral requirements to successfully complete the activation process.		
Preconditions:	User has to be android user.		
Post conditions:	Users would be able to login into the app admin section.		
Normal Flow (primary scenario):	1. User selects the app from play store or any android based app store. 2. System asks for under mentioned required information for registration:- 24. First name, Last name 25. Email address 26. Educational Category 27. Professional Field 3. After User provides the information he/she selects install option. 4. System asks the user for certain permissions. 5. User confirms the Activation.		
Alternative Flows:	**User** 4.a User doesn't the supported android version. 4.a.1 Android prompts an error message and asks the user to fill values in missing field. 4.b User does not allow all the permissions to this App. 4.b.1 System prompts an error message and asks the user to provide valid credentials.		

4.3.3.2.2 User Login: The complete usage scenario is explained as under:-

Use Case ID:	2		
Use Case Name:	User Login		
Actors:	User		
Created By:	Farrukh Naeem	Last Updated By:	Farrukh Naeem
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This use-case will describe the behavioral requirements to successfully complete the login process.		

Preconditions:	User has to have STS app install on his/her mobile.
Post conditions:	After successful login user is directed to his home page where he can view all the features available.
Normal Flow (primary scenario):	1. Student selects 'Sign In' option. 2. System asks for required information including user name and password. 3. User provides the username and password. 4. System verifies the username and password from database.
Alternative Flows:	**User** 3.a User entered invalid user name or invalid password. 3.a.1 System shows an error message and asks the user to login again. 4.b System cannot match the record from the data base due to connection problem. 4.b.1 System prompts an 404 error message.

4.3.3.2.3 Manual Location Sending Task: The complete usage scenario is explained as under:-

Use Case ID:	3		
Use Case Name:	Manual Location Sending Task		
Actors:	User		
Created By:	Mansoor Ul Hassan	Last Updated By:	Mansoor Ul Hassan
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This use-case will describe the behavioral requirements to successfully send the user location in emergency manually.		
Preconditions:	Emergency feature should be activated		
Post conditions:	**Success** System has successfully enable user to continuously send user's current location SMS to selected contact number. **Failure** System has failed to send user location .		
Normal Flow (primary scenario):	1. User install the app on his/her System. 2. Use case start as user double click power button. 3. User selects the category of the survey from the available list of categories. 4. System gets the users current location and send continuously SMS to pre-set contact numbers.survey		

Alternative Flows:	**User** 2.a User Skips activating process. 2.a.1 System shows an error message and asks the user to enter the password. 9.a User enters invalid start-time and end-time. 9.a.1 System displays an error message for invalid start-time and end-time.

4.3.3.2.4 Stenography: The complete usage scenario is explained as under:-

Use Case ID:	4		
Use Case Name:	Stenography		
Actors:	User		
Created By:	Zeeshan Akram	Last Updated By:	Zeeshan Akram
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This use-case will describe steganography and successfully exchange of hidden information.		
Preconditions:	User is logged in to his account. User is an android user.		
Post conditions:	User would be able to exchange hidden information.		
Normal Flow (primary scenario):	1. User login into in this App. 2. User enters his user name n password. 3. User selects the image for exchange of information. 4. User write the information he want to exchange 5. User clicks on the Stenography button. 6. User sends that imagine on any media he wants.		
Alternative Flows:	2.a User does not have a valid account. 2.b User enters invalid user name . 4.a User enter invalid password.		

4.3.3.2.5 Contact Extraction: The complete usage scenario is explained as under:-

Use Case ID:	5

Use Case Name:	Contact Extraction		
Actors:	User		
Created By:	FarrukhNaeem	Last Updated By:	FarrukhNaeem
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This use-case will describe as how a user can extract the contact list of targeted mobile.		
Preconditions:	Targeted user is android user. Targeted user don't have this App		
Post conditions:	Contacts are successfully extracted.		
Normal Flow (primary scenario):	1. User login into the app. 2. User send a coded message. 3. Target user will received but that will be coded. 4. User will specify the total no of contacts he wants to extract. 5. User will start receiving target mobile contacts in SMS. 6. The sent contacts will not be shown in sent items		
Alternative Flows:	6.a User sent message in wrong code. 6.b There is no contacts saved in mobile.		

4.3.3.2.6 Call Log Extraction: The complete usage scenario is explained as under:-

Use Case ID:	6		
Use Case Name:	Call Log Extraction		
Actors:	User		
Created By:	Zeeshan Akram	Last Updated By:	Zeeshan Akram
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This use-case will describe as how a user can extract the Call Logs of targeted mobile.		
Preconditions:	Targeted user is android user. Targeted user don't have this App		
Post conditions:	Call Logs are successfully extracted.		
Normal Flow (primary scenario):	1. User login into the app. 2. User sends a coded message. 3. Target user will receive but that will be coded. 4. User will specify the total no of Call log contacts he wants to extract. 5. User will start receiving target mobile call log contacts in SMS.		

	6. The sent contacts will not be shown in sent items
Alternative Flows:	6.a User sends message in wrong code. 6.b There is no contacts saved in mobile.

4.3.3.2.7 Messages Extraction: The complete usage scenario is explained as under:-

Use Case ID:	7		
Use Case Name:	Messages Extraction		
Actors:	User		
Created By:	Mansoor Ul Hassan	Last Updated By:	Mansoor Ul Hassan
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This use-case will describe as how a user can extract the Messages of targeted mobile..		
Preconditions:	Targeted user is android user. Targeted user don't have this App		
Post conditions:	Messages are successfully extracted.		
Normal Flow (primary scenario):	1. User login into the app. 2. User sends a coded message. 3. Target user will receive but that will be coded. 4. User will specify the total no of Call log contacts he wants to extract. 5. User will start receiving target mobile call log contacts in SMS. 6. The sent contacts will not be shown in sent items		
Alternative Flows:	6.a User sent message in wrong code. 6.b There is no contacts saved in mobile.		

4.3.3.2.8 Communication Blockage: The complete usage scenario is explained as under:-

Use Case ID:	8
Use Case Name:	Communication Blockage
Actors:	User

Created By:	Zeeshan Akram	Last Updated By:	Zeeshan Akram
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This feature will allow the user to block the target user from all sort of outgoing communication		
Preconditions:	Targeted user is android user. Targeted user don't have this App		
Post conditions:	Targeted mobile cannot call or sent message to any one.		
Normal Flow (primary scenario):	1. User logs into the app. 2. User sends a coded message. 3. Target user would be out of communication. 4. His outgoing calls would be blocked 5. His Outgoing messages would be blocked.		
Alternative Flows:	6.a User sent message in wrong code. 6.b There is no contacts saved in mobile.		

4.3.3.2.9 Google Map: The complete usage scenario is explained as under:-

Use Case ID:	9		
Use Case Name:	Google Map		
Actors:	User		
Created By:	Mansoor Ul Hassan	Last Updated By:	Mansoor Ul Hassan
Date Created:	02/12/2014	Date Last Updated:	02/12/2014
Description:	This feature will allow the users to see the location of target along with police station and fire brigade on Google map.		
Preconditions:	User is logged in to his account. User has Wi-Fi or edge available.		
Post conditions:	User can see all the location along with the direction of Google map		
Normal Flow (primary scenario):	1. User login into the app. 2. User provides the correct user name and password. 3. User open Google maps and select the target 4. User would be able to see all required data in 10 km radius.		

4.3.3.2.10 Auto Call on Any Number: The complete usage scenario is explained as under:-

Use Case ID:	10		
Use Case Name:	Auto Call on Any Number		
Actors:	User		
Created By:	Farrukh Naeem	Last Updated By:	Farrukh Naeem
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This feature will allow the users to get the control of any target mobile		
Preconditions:	Target user should have android. Target user should have credit for call.		
Post conditions:	User can successfully call on any mobile from target mobile.		
Normal Flow (primary scenario):	1. User login into the app. 2. User sends the coded message to the target mobile. 3. User sends the number on which he wants to call. 4. Target user would not know about this.		
Alternative	2.a Targeted user don't have android mobile 2.b User provided invalid number.		

4.3.3.2.11 Getting Control of Mobile Camera: The complete usage scenario is explained as under:-

Use Case ID:	11		
Use Case Name:	Getting Control of Mobile Camera		
Actors:	User		
Created By:	Mansoor Ul Hassan	Last Updated By:	Mansoor Ul Hassan
Date Created:	01/12/2014	Date Last Updated:	01/12/2014
Description:	This feature will allow the users to get control mobile camera of any target user and then can use it for any purpose		
Preconditions:	User must have android mobile. User must have mobile camera.		
Post conditions:	User can control the target mobile camera.		
Normal Flow (primary scenario):	1. User login into the app. 2. User sends the coded message to the target mobile. 3. User would start seeing the video through target mobile. 4. User can also take picture from target mobile camera.		

4.3.4 Sequence Diagrams

Sequence diagrams of important use cases are given as under:-

4.3.4.1 Spying

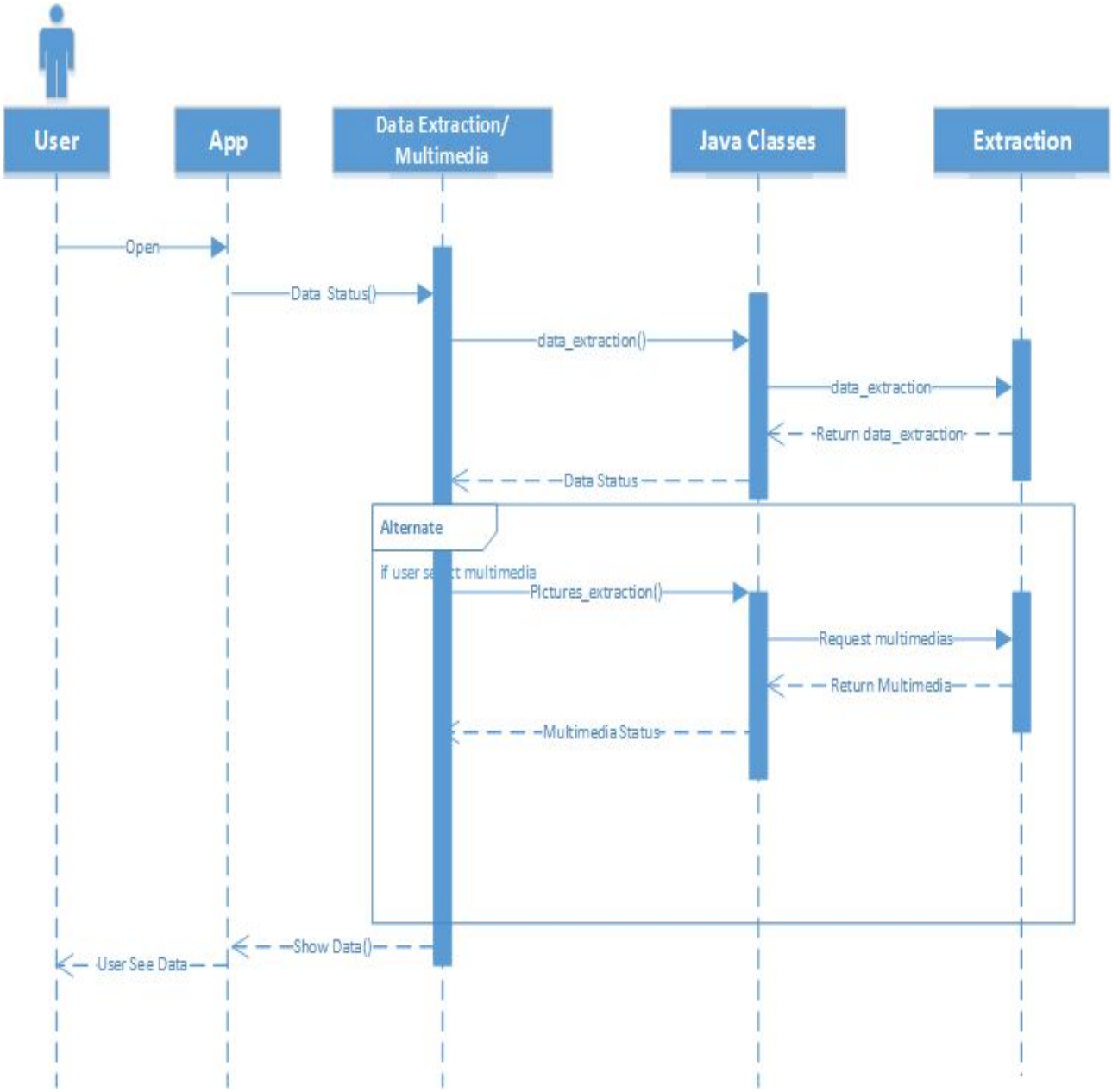


Figure 8: Login Sequence Diagram

4.3.4.2 Tracking

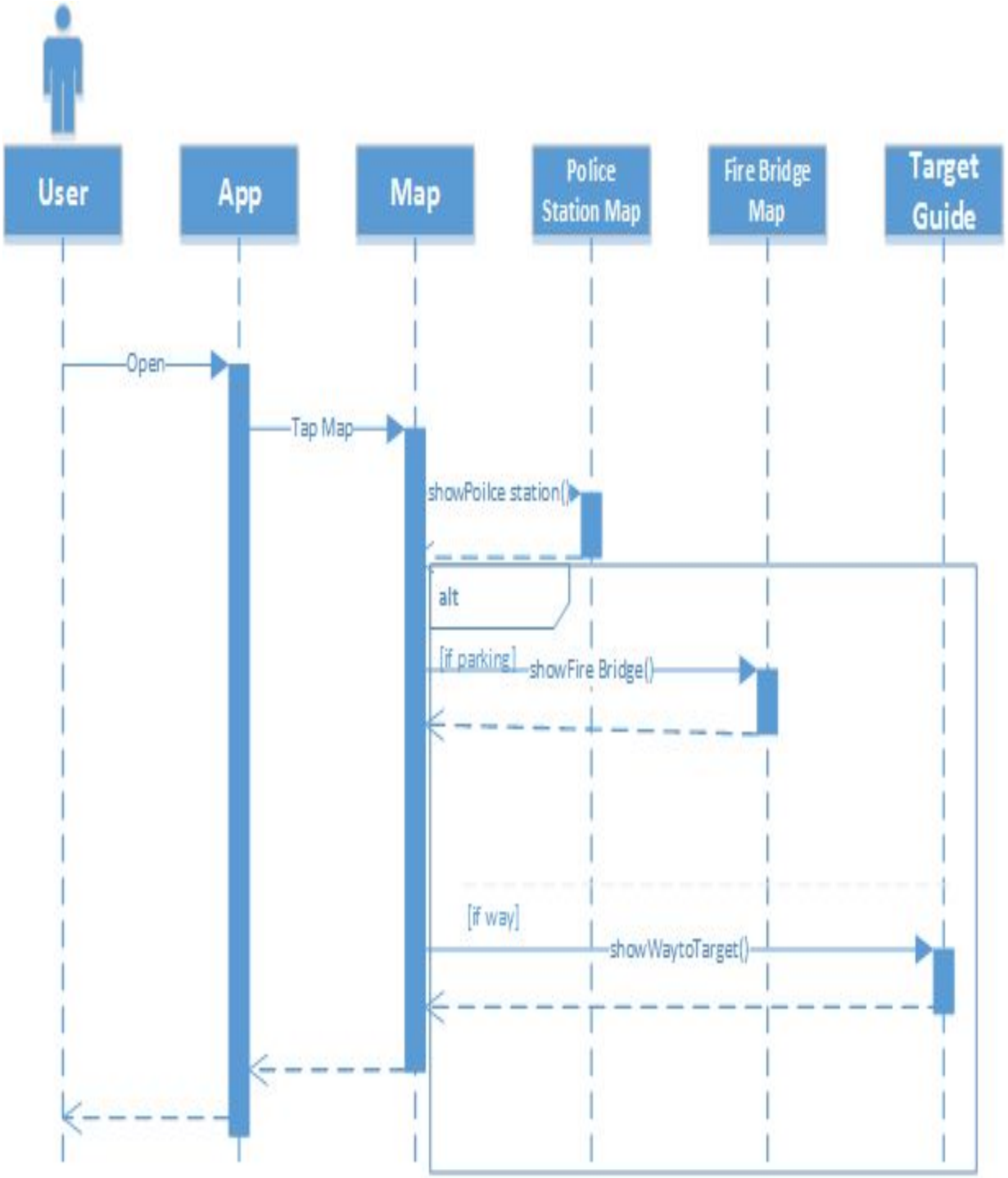


Figure 9: Sequence Diagram Survey Creation

4.3.4.3 Stenography

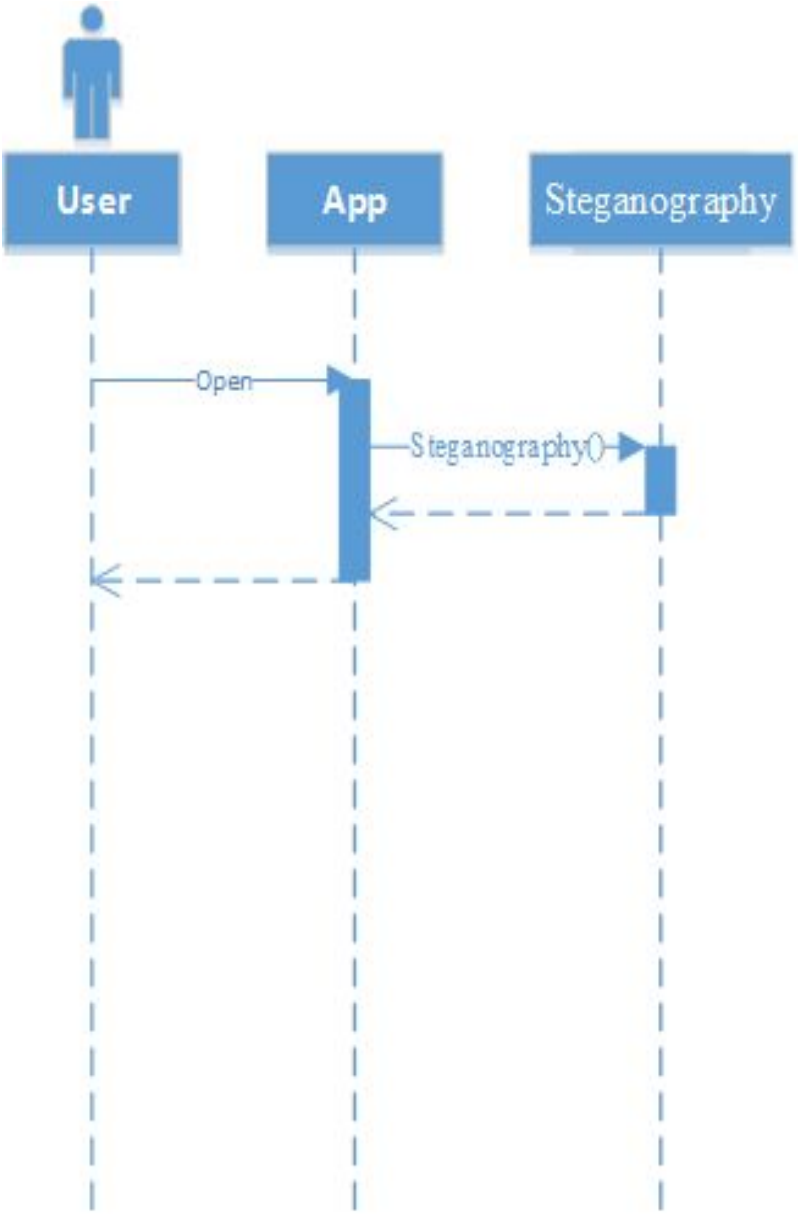


Figure 10: Steganography

4.3.5 Activity Diagram

Dynamic behavior of survey process is shown as under :-

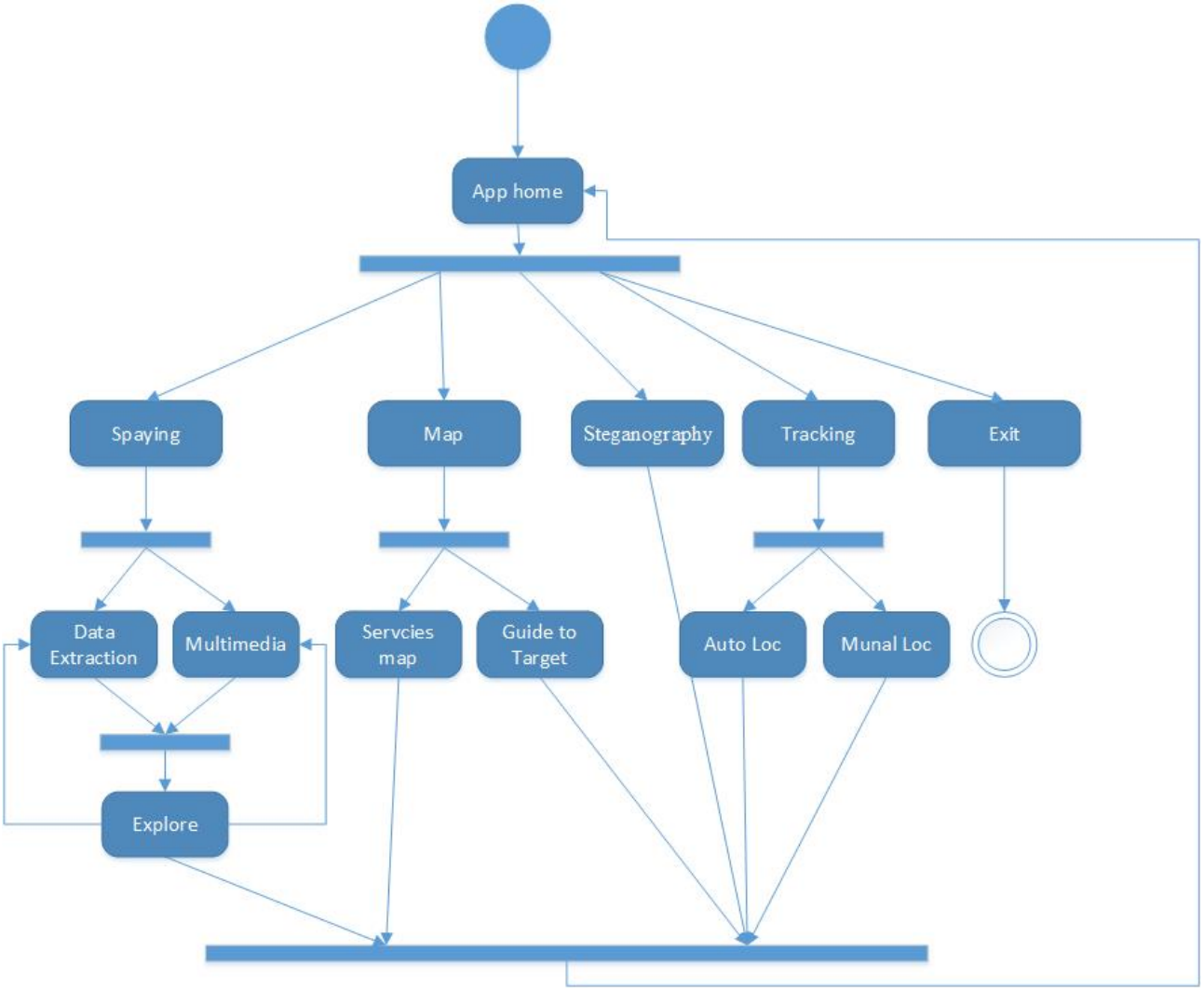


Figure 11: Activity Diagram

3.6 Data Flow Diagram

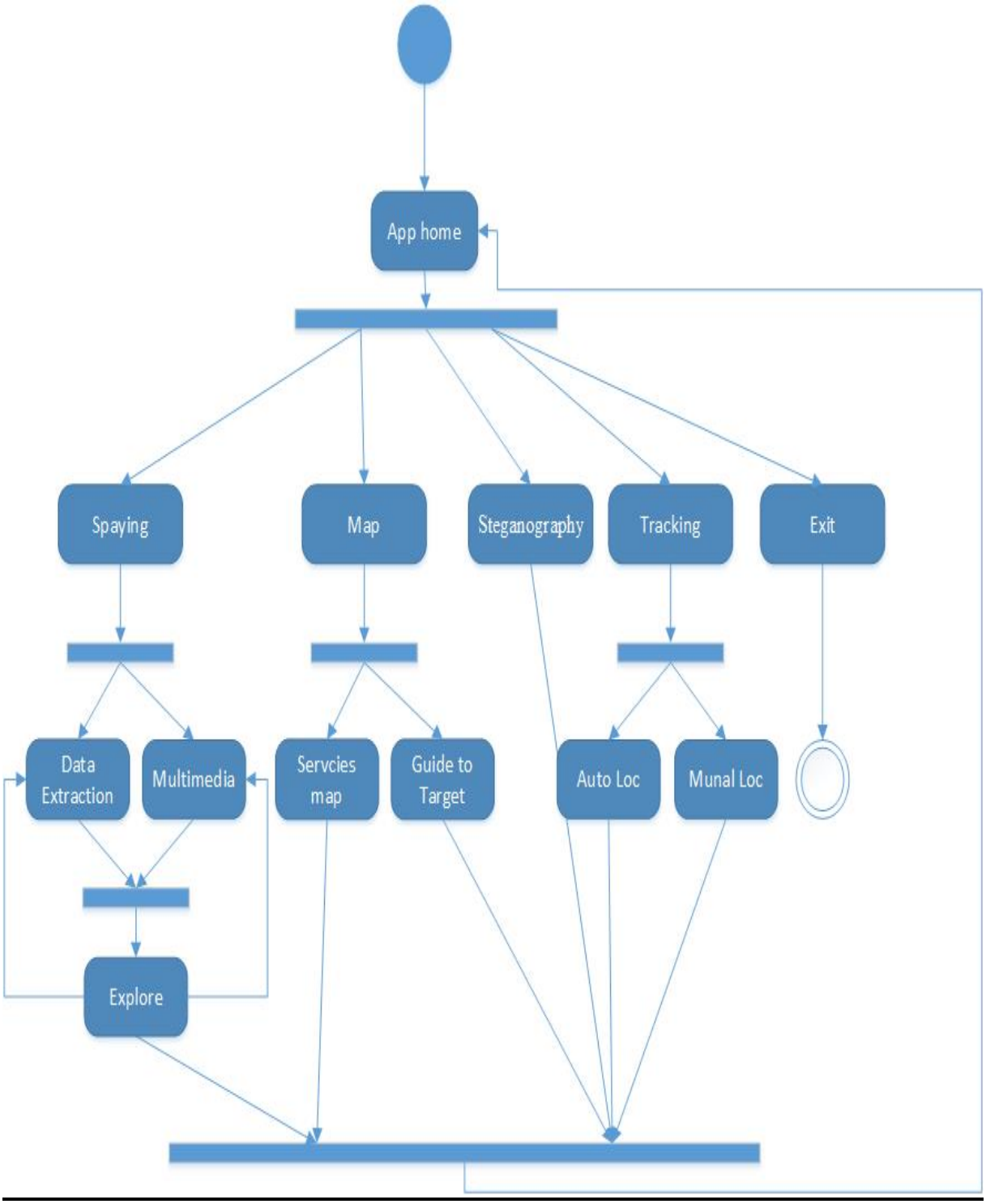
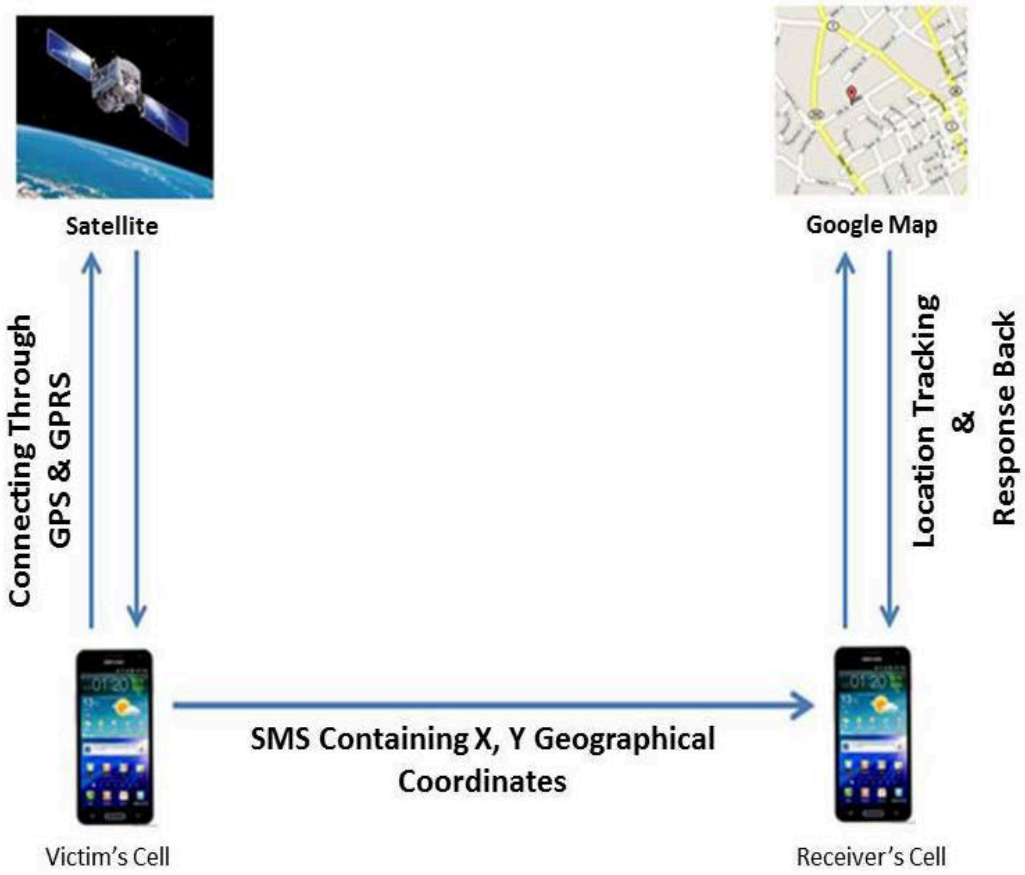
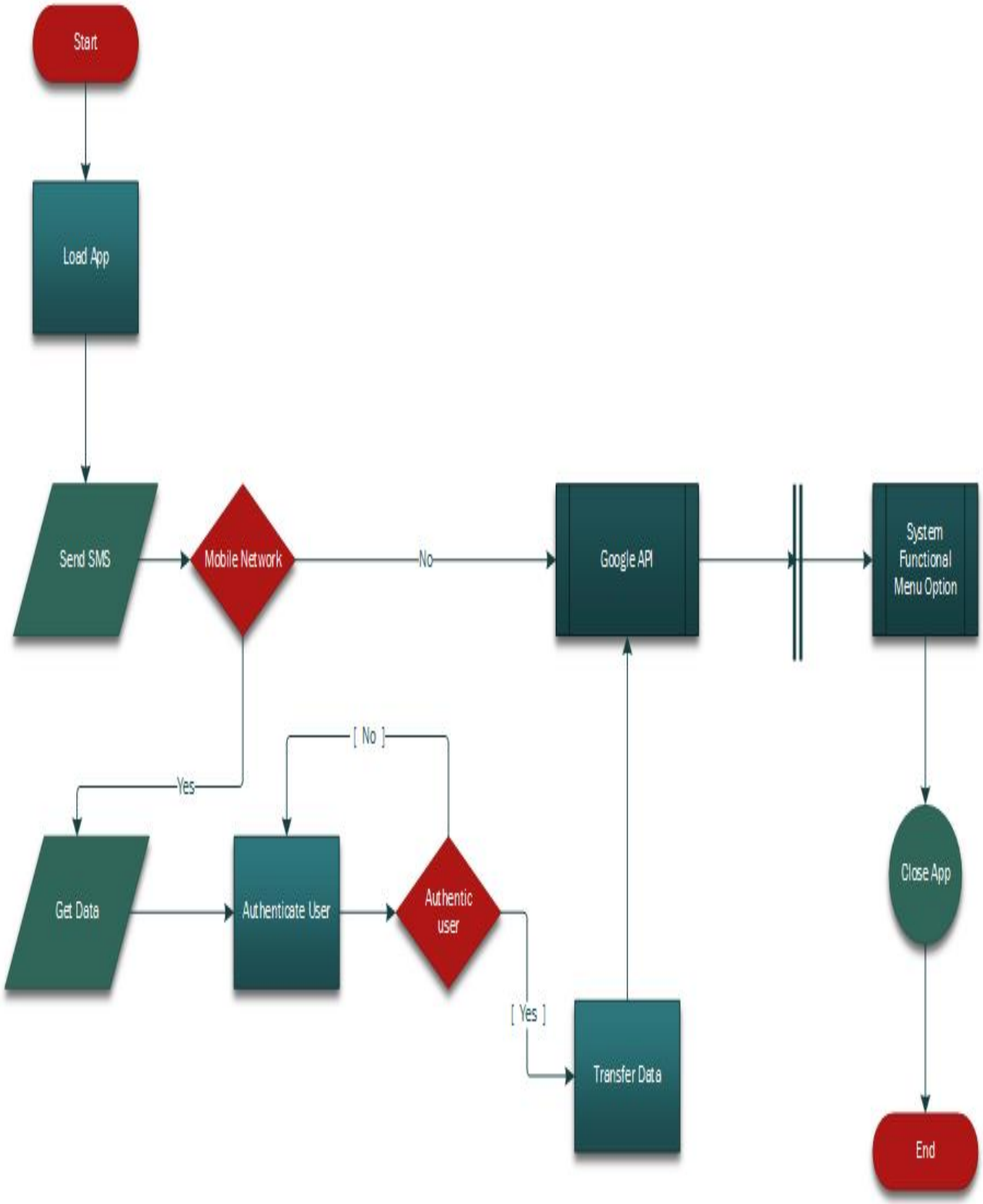


Figure 12: Data Flow Diagram


Satellite
Google Map
Connecting Through GPS & GPRS
Location Tracking & Response Back
SMS Containing X, Y Geographical Coordinates
Victim's Cell
Receiver's Cell


Start
Load App
Send SMS
Mobile Network
No
Google API
System Functional Menu Option
Yes
[No]
Get Data
Authenticate User
Authentic user
[Yes]
Transfer Data
Close App
End

4.4 User Interface Design

The user interface consists of multiple parts.

4.4.1 Main Window

Figure 4.1: Main Menu Interface

The main window appears when the application starts. It includes major operations of application.

4.4.2 Emergency Window

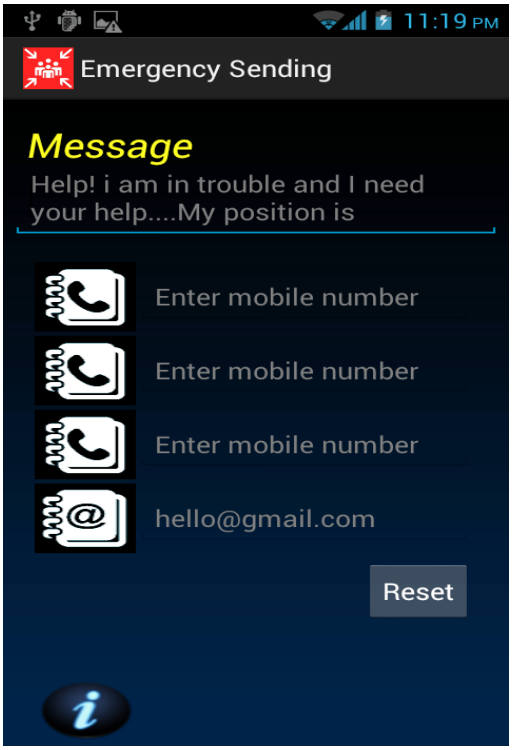


Figure 4.2: Emergency Window

The screen will be used to select emergency type. After pressing 2 times power button, it will send location to desired numbers.

5 System Implementation

5.1 Tools and Technologies

5.1.1 Eclipse SDK

In computer programming, Eclipse is an integrated development environment (IDE). It contains a base workspace and an extensible plug-in system for customizing the environment. Written mostly in Java, Eclipse can be used to develop both android and desktop applications. By means of various plug-ins, Eclipse may also be used to develop

applications in other programming languages

like Ada, ABAP, C, C++,COBOL, Fortran, Haskell, JavaScript, Lasso, Natural, Perl, PHP, Python, R, Ruby Scala, Clojure, Groovy, Scheme, and Erlang. Development environments include the Eclipse Java development tools (JDT) for Java and Scala, Eclipse CDT for C/C++ and Eclipse PDT for PHP, among others.

5.2 Software Implementation

The system follows a client server based architecture so there are two apps running one on the phone and one on PC. Some global variables are needed for effective communication between the two devices. These include the IP addresses of both devices plus the ports that the sockets use for communication.

5.2.1 Data Extraction via SMS

The user forwards a message to the targeted device and in response he can receive following information.

- Contact Extraction
- Call Log Extraction
- SMS Extraction
- Getting location of targeted device
- Enabling /Disabling Calling Mode
- Controlling the Sound Mode of Targeted Device
- Video Streaming from the Targeted Device

- Showing/ Hiding the Application
- Call generation to a desired number

The device sends the request containing the code and as a result he receives the above mention responses.

5.2.2 Emergency Message

GPS Location can be sent to any number previously selected. By just simply pressing the power button twice after which the device keeps on sending the locationfor a desired time period.

5.2.3 Google Maps

Latitude and longitude are gathered from either GPS or network. GPS API is used to gather these coordinates with maximum accuracy. In case GPS is not available network location is used. Network location API is used. In this module we can get locations of police stations, fire extinguisher, hospitals and targeted devices.

5.2.4 Steganography

In this feature we can embed a message into a picture by encoding message and the data can be extracted back on any desired device after decoding it. If the picture is not decoded it will only show the pictorial part to the intruder unless decoded through this application.

5.2.5 Video Streaming

Video can be seen from targeted device on our device through server. This the feature which require server for its normal working due to heavy amount of data.

5.2.6 Application Lock

This application is password protected.

6. Project Analysis and Evaluation

6.1 Testing

6.1.1 Testing Introduction

To ensure quality of the product, testing is conducted. Accuracy and efficiency of tasks performed by our system had to be tested to analyze the system and verify and validate it. Software testing techniques and results obtained are discussed in the coming sections.

6.1.2 Testing Levels

Separate modules were developed to provide different functionalities of the system. All of these modules were tested at different levels during development and after integration. Different levels at which the system has been tested and results obtained are described in this section.

6.1.3 Unit Testing

Each module was developed and tested individually, each and every component was tested at unit level to ensure that they were functioning properly.

6.1.3.1 Contacts Extraction Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, contacts extraction successful >

<Valid message attributes and undelivered, contacts extraction unsuccessful >

<Invalid message attributes and delivered, contacts extraction unsuccessful >

<Invalid message attributes and undelivered, contracts extraction unsuccessful >

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and delivered	Contacts extracted	Contacts extracted	**Pass**
TC 2	valid message attributes and undelivered	Contacts extracted	unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Contacts extracted	unsuccessful	**Fail**
TC 4	Invalid message attributes and undelivered	Contacts extracted	unsuccessful	**Fail**

6.1.3.2 Call Log Extraction Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, Call Log extraction successful >

<Valid message attributes and undelivered, Call Log extraction unsuccessful >

<Invalid message attributes and delivered, Call Log extraction unsuccessful >

<Invalid message attributes and undelivered, Call Log extraction unsuccessful >

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and delivered	Call Log Extracted	Call Log Extracted	**Pass**
TC 2	valid message attributes and undelivered	Call Log Extracted	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Call Log Extracted	Unsuccessful	**Fail**
TC 4	Invalid message attributes and undelivered	Call Log Extracted	Unsuccessful	**Fail**

6.1.3.3 SMS Extraction Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, SMS extraction successful >

<Valid message attributes and undelivered, SMS extraction unsuccessful >

<Invalid message attributes and delivered, SMS extraction unsuccessful >

<Invalid message attributes and undelivered, SMS extraction unsuccessful >

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and	SMS Extracted	SMS Extracted	**Pass**

	delivered			
TC 2	valid message attributes and undelivered	SMS Extracted	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	SMS Extracted	Unsuccessful	**Fail**
TC 4	Invalid message attributes and undelivered	SMS Extracted	Unsuccessful	**Fail**

6.1.3.4 Location Finding Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, Location extraction successful >

<Valid message attributes and undelivered, Location extraction unsuccessful >

<Invalid message attributes and delivered, Location extraction unsuccessful >

<Invalid message attributes and undelivered, Location extraction unsuccessful >

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and delivered	Location Extracted	Location Extracted	**Pass**
TC 2	valid message attributes and undelivered	Location Extracted	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Location Extracted	Unsuccessful	**Fail**

TC 4	Invalid message attributes and undelivered	Location Extracted	Unsuccessful	**Fail**

6.1.3.5 Enable Call Blocking Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, Call Block successful >

<Valid message attributes and undelivered, Call Block unsuccessful >

<Invalid message attributes and delivered, Call Block unsuccessful >

<Invalid message attributes and undelivered, Call Block unsuccessful >

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and delivered	Call Blocked	Call Blocked	**Pass**
TC 2	valid message attributes and undelivered	Call Blocked	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Call Blocked	Unsuccessful	**Fail**
TC 4	Invalid message attributes and undelivered	Call Blocked	Unsuccessful	**Fail**

6.1.3.6 Disable Call Blocking Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, Call Block Disable successful >

<Valid message attributes and undelivered, Call Block Disable unsuccessful >

<Invalid message attributes and delivered, Call Block Disable unsuccessful >

<Invalid message attributes and undelivered, Call Block Disable unsuccessful >

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and delivered	Call Block Disabled	Call Block Disabled	**Pass**
TC 2	valid message attributes and undelivered	Call Block Disabled	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Call Block Disabled	Unsuccessful	**Fail**
TC 4	Invalid message attributes and undelivered	Call Block Disabled	Unsuccessful	**Fail**

6.1.3.7 Controlling Sound Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, Sound mode change successful >

<Valid message attributes and undelivered, Sound mode change unsuccessful >

<Invalid message attributes and delivered, Sound mode change unsuccessful >

<Invalid message attributes and undelivered, Sound mode change unsuccessful>

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and delivered	Sound mode change	Sound mode change	**Pass**
TC 2	valid message attributes and undelivered	Sound mode change	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Sound mode change	Unsuccessful	**Fail**
TC 4	Invalid message attributes and undelivered	Sound mode change	Unsuccessful	**Fail**

6.1.3.8 Hide Application Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, Hiding successful >

<Valid message attributes and undelivered, Hiding unsuccessful >

<Invalid message attributes and delivered, Hiding unsuccessful >

<Invalid message attributes and undelivered, Hiding unsuccessful>

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and delivered	Application Hiding	Application Hiding	**Pass**
TC 2	valid message attributes and undelivered	Application Hiding	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Application Hiding	Unsuccessful	**Fail**
TC 4	Invalid message attributes and undelivered	Application Hiding	Unsuccessful	**Fail**

6.1.3.9 Show Application Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, Showing successful >

<Valid message attributes and undelivered, Showing unsuccessful >

<Invalid message attributes and delivered, Showing unsuccessful >

<Invalid message attributes and undelivered, Showing unsuccessful>

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and delivered	Application Showing	Application Showing	**Pass**
TC 2	valid message attributes and undelivered	Application Showing	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Application Showing	Unsuccessful	**Fail**
TC 4	Invalid message attributes and undelivered	Application Showing	Unsuccessful	**Fail**

6.1.3.10 Call Back Mode

Cases:

Case 1: SMS sent successfully

Case 2: SMS not sent successfully

Test cases:

<Valid message attributes and delivered, Call back successful >

<Valid message attributes and undelivered, Call back unsuccessful >

<Invalid message attributes and delivered, Call back unsuccessful >

<Invalid message attributes and undelivered, Call back unsuccessful>

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and	Call back	Call back	**Pass**

	delivered			
TC 2	valid message attributes and undelivered	Call back	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Call back	Unsuccessful	**Fail**
TC 4	Invalid message attributes and undelivered	Call back	Unsuccessful	**Fail**

6.1.3.11 Emergency Location Mode

Cases:

Case 1: Press Emergency button from API and SMS sent successfully

Case 2: Press Emergency button from API and SMS not sent successfully

Test cases:

<Valid message attributes and delivered, Location sent successful >

<Valid message attributes and undelivered, Location sent unsuccessful >

<Invalid message attributes and delivered, Location sent unsuccessful >

<Invalid message attributes and undelivered, Location sent unsuccessful>

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid message attributes and delivered	Location sent	Location sent	**Pass**
TC 2	valid message attributes and undelivered	Location sent	Unsuccessful	**Fail**
TC 3	Invalid message attributes and delivered	Location sent	Unsuccessful	**Fail**

TC 4	Invalid message attributes and undelivered	Location sent	Unsuccessful	**Fail**

6.1.3.12 Steganography Mode

Cases:

Case 1: Press button from API and picture encoded successfully

Case 2: Press button from API and picture decoded successfully

Test cases:

<Valid code attributes , Picture encoding successful >

<Invalid code attributes, Picture encoding unsuccessful >

<Valid code attributes , Picture decoding successful >

<Invalid code attributes, Picture decoding unsuccessful >

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid code attributes	Encoded	Encoded	**Pass**
TC 2	Invalid code attributes	Encoded	Unsuccessful	**Fail**
TC 3	valid code attributes	Decoded	Decoded	**Pass**
TC 4	Invalid code attributes	Decoded	Unsuccessful	**Fail**

6.1.3.13 Video Streaming Mode

Cases:

Case 1: Press button from API and Video streaming starts successfully

Case 2: Press button from API and Video streaming start unsuccessful

Test cases:

<Valid code attributes , Video streaming successful >

<Invalid code attributes, Video streaming unsuccessful >

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	valid code attributes	Video Streaming starts	Video Streaming starts	**Pass**
TC 2	Invalid code attributes	Video Streaming starts	Unsuccessful	**Fail**

6.1.3.14 GPS Location Module

Cases:

Case 1: GPS coordinates fetched successfully

Case 2: Could not fetch coordinates

Test cases:

<GPS signal strength is high and weather is clear Case 1 executed >

<GPS signal strength is low, Case 2 executed>

<Weather is not clear, Case 2 executed>

Test case ID	Input	Expected output	Actual output	Status (pass/fail)
TC 1	GPS signal strength is high	Case 1 executed	Case 1 executed	**Pass**
TC 2	GPS signal	Case 2 executed	Case 2 executed	**Pass**

	strength is low			
TC 3	Weather is not clear	Case 2 executed	Case 2 executed	**Pass**
TC 4	Weather is clear	Case 2 executed	Case 2 executed	**Pass**

6.1.4 Integration Testing

This Test Plan describes the integration tests that will be conducted on the implementation of the Application

The interfaces between the following modules will be tested:

1. Installation on Devices
2. Contact Extraction
3. Call Log Extraction
4. SMS Extraction
5. Emergency Location SMS
6. Server for video
7. GPS Coordinates for user/ target
8. Changing Sound Mode
9. Enable/ Disable Calling Mode
10. Hide/ Show Application
11. Call Back Mode
12. Steganography
13. App lock
14. Help/ Information Menu

It is assumed that unit testing already provided. Wi-Fi and GPS signals are available.

Main aim is to check if the modules are working properly after integration. The user of the system should be able to extract all the desired information successfully after entering valid information and should be able to perform functionalities like contacts extraction, call log extraction, SMS extraction, emergency location finding, enabling/ disabling call mode, controlling sound mode, showing/hiding of application, call back, video streaming, steganography etc . The system performance would be tested under valid and invalid inputs.

Functional Testing will focus on each and every use case that is included in the version currently being worked on. Testing will mainly consists of execution of test cases written to address the gap identified. It will focus on inputs and outputs due to the actions.

1. Installation on Devices
2. Contact Extraction
3. Call Log Extraction
4. SMS Extraction
5. Emergency Location SMS
6. Server for video
7. GPS Coordinates for user/ target
8. Changing Sound Mode
9. Enable/ Disable Calling Mode
10. Hide/ Show Application
11. Call Back Mode
12. Steganography
13. App lock

14. Help/ Information Menu

Connection between user and targeted device:

First of all we will install the app on both the devices. Client application (Mobile module of the application) with server (Server module of the application) to ensure that client is successfully making connection with the targeted device so that requests could be handled. We will first perform the test cases to validate the functionality of the app.

6.1.4.1 Structure of Integration levels:

Integration test phases:

a. Phase One

In this phase tests will be designed to uncover functional errors in each module after it is integrated on multiple devices. We will integrate the connection via SMS module which sends SMS containing information. We also integrate both the devices so that the other information can also be extracted through other API based modules without any hindrance.

Each new module is added after successful debugging from errors and extensive testing. The performance variables are tested any invalid output is corrected and then it is moved forward to the next phase.

b. Phase two

Pair wise validity will be performed in which we will combine two modules together and check the functionality which is dependent on all modules. first of all

SMS based functions are being tested and after that the API based functionalities are also being tested. At the end of the phase all modules are tested as a whole to check the overall functionality of system as a whole so that they confirm with the requirements.

c. Phase Three

In third phase endurance testing will be performed that how much stress our system can with stand i.e. How many messages can be sent. Are all messages correctly sent and what is the response delay, also we see that the targeted device is not over burdened or lacking in efficiency etc.

6.1.4.2 Phase vise Modules Integration

a. Phase one

In first phase we need to check functional validity of all the modules. So, we will use all of our modules in this phase.

b. Phase two

In end to end tests. We will utilize all of our modules to perform the task starting from one of the module to the module that accepting information from other device.

c. Phase Three

For checking the stress the system can withstand we will again require our whole integrated system in place. This phase validates that critical functions will meet production performance requirements during peak transaction volumes.

6.1.4.3 Building process and Schedule for each phase:

a. Phase one

We started first phase on 20th Jan 2015 and checked for functionality of each module after integration and it took almost 10 hours so ended at the same day

b. Phase two

The second phase checks end to end validity. It started on 11st Feb 2015 after the 1st phase. It will be completed in 7 hours.

c. Phase three

The endurance testing is the last phase in integration testing. It started on 15th Feb. System endurance will be checked by testing it for 2 continuous hours under different conditions and for valid and invalid inputs.

6.1.4.4 Environment to be set up and resources required in each phase:

Make sure that computer is running Windows with Wi-Fi signals available

- Testers and developers set up manual and configuration guides
- Wi-Fi signals
- GPS connection
- Mobile data if case Wi-Fi signals are not avalable
- Android phone

6.1.4.5 Criteria for Integration and Test:

a. Phase one:

i. Entry criteria:

Entry criteria for functional testing is that each module has been unit tested individually and all errors have been corrected. Interface integrity ensures that the two modules communicate with each other in the desired way.

ii. Exit criteria:

All modules are integrated inclemently. Exit criteria for the first phase is fully functionally tested modules integrated together. In the end we get a successfully functionally tested integrated system. The integrated system has passed all the integration tests and no defect is outstanding.

iii. Integration Technique to be used:

Incremental technique

iv. Test configuration set-up:

Normal test conditions are required (computers and environment with normal temperature).

b. Phase two:

i. Entry criteria:

Functionality of each module is tested after integrations and validated, is Entry criteria for End to end and pair wise.

ii. **Exit criteria:**

Fully integrated system with no more modules to integrate is Exit criteria .we get a, All the system integration tests for the phases have passed, all the defects found have been fixed and also documented.

iii. **Integration Technique to be used:**

Incremental technique

iv. **Test configuration set-up:**

Normal test conditions are required (computers and environment with normal temperature).

c. **Phase three:**

i. **Entry criteria:**

The entry criteria of this phase is that we have a validated system that works together from end to end. There are no major defects remaining while testing the end to end working of the integrated system.

ii. **Exit criteria:**

The exit criteria of this phase is that we have an integrated system to which when the load is applied can sustain the load and does not crash.

iii. **Integration Technique to be used:**

Incremental technique.

iv. **Test configuration set-up:**

Normal test conditions are required (computers and environment with normal temperature).

6.1.4.6 Functional Correctness and Completeness

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system to be executed.

6.1.4.7 Accuracy

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system.

6.1.4.8 Data Integrity

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system.

6.1.4.9 Backup and Recoverability

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system. Backup of all data extracted can be maintained by the user on his device or on some server.

6.1.4.10 Usability

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system.

6.1.4.11 Performance

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system.

6.1.4.12 Robustness

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system.

6.1.4.13 Confidentiality

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system.

6.1.4.14 Compatibility and interoperability

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system.

6.1.4.15 Load Testing

Operational Environment:

The operational environment required to test the software is the operating system it requires. As it is not a hardware related software so it only requires an android based operating system.

6.1.4.16 Schedule:

The system is medium and no. of test cases are acceptable so it will take one to two weeks for the acceptance testing to complete.

6.1.4.17 Human Resource:

The following testers will carry out acceptance testing for the Fortify Me

1. Zeeshan Akram
2. Mansoor Ul Hassan
3. Farrukh Naeem

6.2 Summary

Testing not only maintains the software and system quality but also improves over all usability and stability of the project. At different stages of development suitable testing techniques were used to ensure product worked accurately and efficiently. Almost all the errors detected during testing were removed.

6.3 Results and Analysis

6.3.1 Results and Analysis Introduction

This App was developed to effectively retrieve data from other devices through messages and other modules. With minimum user interaction maximum duties can be performed by the application. User just needs to enter minimum information. There are thousands of type of devices available in the market and android development requires that you test your products to ensure compatibility with maximum devices.

6.3.2 Results

The major purpose was to make address the security issues by making a simple and easy to use interface in a user friendly environment where help can arrive to a person as quickly as possible and the surroundings can be monitored easily. The app requires minimum user interaction.

6.3.3 Analysis

This device is a revolution in the market and can be used by security agencies and also can be used commercially basing on the need of time

7 Conclusion and Future Work

The purpose of this project was to learn various aspects of android and java. Implementing programming in order to fetch the required information, bind them together and dispatch all this in the shortest possible time frame. The interface is designed to maintain an easy approach for a common man with little knowledge of Android devices. The primary aim to develop this app is to provide sense of security to the people in our surrounding without

getting worried . Future work will be focused on improving the quality of this application with add-on features including follow me and power button operations

8. Appendix A: Glossary

API (application programming interface): specifies how some software components should interact with each other. In addition to accessing databases or computer hardware, such as hard disk drives or video cards, an API can be used to ease the work of programming graphical user interface components.

Activity diagram: An analysis model that shows a dynamic view of a system by depicting the flow from one activity to another. Similar to a flowchart.

Assumption: A statement that is believed to be true in the absence of proof or definitive knowledge.

Class: A description of a set of objects having common properties and behaviours, which typically correspond to real-world items (persons, places, or things) in the business or problem domain.

Class diagram: An analysis model that shows a set of system or problem domain classes and their relationships.

Compatibility: Capable of orderly, efficient integration and operation with other elements in a system with no modification or conversion required.

Constraint: A restriction that is imposed on the choices available to the developer for the design and construction of a product.

Call log: display of missed, received and dialed calls

Data flow diagram: An analysis model that depicts the processes, data collections, and flows among them that characterize the behavior of a business process or of a software system.

Dependency: A reliance that a project has on an external factor, event, or group outside its control.

External interface requirement: A description of an interface between a software system and a user, another software system, or a hardware device.

Wi-Fi: Wi-Fi is the name of a popular wireless networking technology that uses radio waves to provide wireless high-speed Internet and network connections

Wi-Fi Router: used to provide access to the Internet.

Feature: A set of logically related functional requirements that provides a capability to the user and enables the satisfaction of a business objective.

Flowchart: An analysis model that shows the processing steps and decision points in the logic of a process or of a program.

Hardware: A computer and the associated physical equipment directly involved in the performance of data-processing or communications functions.

Hardware Interface: The logical and physical characteristics of each interface between the software product and the hardware components of the system.

Implementation: Execution of a plan, idea, model, design, specification, standard, algorithm, or policy.

Interface: A point where two systems, subjects, organizations, etc., meet and interact.

Non-functional requirement: A description of a property or characteristic that a software system must exhibit or a constraint that it must respect, other than an observable system behaviour.

OS: Operating System

Operating Environment: The circumstances surrounding and potentially affecting something that is operating.

Operating System: A collection of software that manages computer hardware resources and provides common services for computer programs.

Perspective: The way in which objects appear to the eye.

Post condition: A condition that describes the state of a system after a use case is successfully completed.

Precondition: A Condition that must be satisfied before a use case may begin.

Procedure: A written description of a course of action to be taken to perform a given activity, describing how the activity is to be accomplished.

Process: A sequence of activities performed for a given purpose. A process description is a documented definition of those activities.

References: List of any other documents or Web addresses to which this SRS refers. These may include user interface style guides, contracts, standards, system requirements specifications, use case documents, or a vision and scope document. Provide enough information so that the reader could access a copy of each reference, including title, author, version number, date, and source or location.

Response: A reaction, as that of an organism or a mechanism, to a specific stimulus.

Scope: The portion of the ultimate product vision that the current project will address. The scope draws the boundary between what's in and what's out for the project.

Software requirements specification: A collection of the functional and non-functional requirements for a software product.

Specification, requirements: The process of documenting a system's requirements in a structured, shareable, and manageable form. Also, the product from this process.

Stimulus: Something causing or regarded as causing a response.

Supplementary Information: Something added to complete the information.

System requirement: A top-level requirement for a product that contains multiple subsystems, which could be all-software or software and hardware.

Usability: Fit for use; convenient to use.

Use case: A description of an interaction between an actor and a system that results in an outcome that provides value to the actor.

Use case diagram: An analysis model that identifies the actors who can interact with a system to accomplish valuable goals and the various use cases that each actor will perform.

User: A customer who will interact with a system either directly or indirectly (for example, using outputs from the system but not generating those outputs personally). Also called end user.

User class: A group of users for a system who have similar characteristics and requirements for the system.

User Interface: the logical characteristics of each interface between the software product and the users.

User requirement: User goals or tasks that users must be able to perform with a system, or statements of the user's expectations of system quality.

Validation: The process of evaluating a work product to determine whether it satisfies customer requirements.

Verification: The process of evaluating a work product to determine whether it satisfies the specifications and conditions imposed on it at the beginning of the development phase during which it was created.

Vision: A long-term strategic concept of the ultimate purpose and form of a new system.

Vision and scope document: A document that presents the business requirements for a new system, including a product vision statement and a project scope description.

SMS: short message service

9. Appendix B: Bibliography

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10. Appendix C: User Manual

This Application consists of two basic features. These include Spying and Tracking.