**BHEL-Tracker**

**Project Definition Document**

**Version 1  
Date: July 17th, 2015**

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# General Information about the project:

## Project Name

BHEL Tracker

## Project Description

Product overview

The product can run as an android application within an android based mobile. It is flexible enough to run easily with a variety of different android versions (2.3.3 to 5.0), mobile architectures and is simple to install and use. The developed location and tracking based system will take care of the BHEL’s shipments. The app will send the location of the en-route carrier at fixed intervals (say 10 sec) over the BHEL server and on the tracking side, the locations are plotted and the traversed route of the carrier is displayed over Google maps. It will also help BHEL to keep a check on its shipping activities. Its user interface use animation and graphics. The product does not require special or new hardware.

Product Features

• Separate login for carriers and trackers.

• A check on state of GPS and if it’s off, an alert to switch it on will be given.

• Carrier side can enter a unique advice number which will be used for tracking.

• The information about updated location will also be shown to the carrier.

• Route of carrier will be plotted on the tracking side along with the exact locations.

• A menu with options like help, settings (location) and logout.

• Unique identifiers like sim no, device ID, android ID are also extracted from the device and sent to the server.

## BU Information

The intended users of this application are the Employees/Customers of BHEL who want to get some more features out of the latest android technology. The users will be able to track the shipments remotely at any instant of time. This will help them schedule their activities. Moreover, they don’t have to wait for the shipment if it’s getting late as they can anticipate their arrival by their current location.

# Project Details:

## Project Definition

The app built/developed will send very precise locations; say with an error of just 5m (standard GPS error) of the trucks carrying the shipments over to the server and users will track the route traversed by the truck till then. It’s an implementation of features of device like GPS, data connection and Google maps API v2. The app not just sends the location but also the details regarding the device like sim no, android ID, device ID and phone no. are sent to the server which will help to contact the driver directly in case of any issues.

## In Scope

At present, a polyline function of Google Maps API v2 is used to mark the route between two locations. It will just plot a straight line between two coordinates given to it. So, the location updates time should be as less as possible.

But a new feature introduced by Google will help track the route better. It’s known as Google Roads API. By implementing its functions and integrating it in the app, the route will be displayed just over the roads actually present and in that case, location updates time can also be increased.

## Out of Scope

More research can be done in this field and an extension or update to the application can be made. It can be turned into more general app which can also track shipments in the air.

Consider an example for a shipment which initially is coming by air and then will travel by road to reach its ultimate destination. At present, we won’t be able to track its route in air. If that would be known, scheduling and planning will be much better.

A parameter of elevation can also be used but the app still hasn’t reached that phase.

## Constraints

The mobile application is constrained by the system interface to the GPS navigation system within the mobile phone. Since there are multiple system and multiple GPS manufacturers, the interface will most likely not be the same for every one of them. Also, there may be a difference between what navigation features each of them provide.

The Internet connection is also a constraint for the application. Since the application fetches data from the database over the Internet, it is crucial that there is an Internet connection for the application to function.

The mobile application will be constrained by the capacity of the database. Since the database is shared between both application it may be forced to queue incoming requests and therefore increase the time it takes to fetch data.

## Assumption

One assumption about the product is that it will always be used on mobile phones that have enough performance. If the phone does not have enough hardware resources available for the application, for example the users might have allocated them with other applications; there may be scenarios where the application does not work as intended or even at all.

Another assumption is that the GPS components in all phones work in the same way. If the phones have different interfaces to the GPS, the application need to be specifically adjusted to each interface and that would mean the integration with the GPS would have different requirements than what is stated in this specification.

# Tools & Technologies

## Tools

The Android studio is used as the main tool for coding and implementation of the designed app.

Android Virtual Device (AVD) or an Android Emulator is also used for testing the app during implementation.

## Technologies

The base of the Android studio is Java and some methods and syntaxes specific to the tool.

# Open Sources / Reusable Components Used

## Open Sources

The Android studio and AVD are easily available and downloadable tools.

## Reusable components

A few java activity files like the one used for location updates gives you the locations at fixed intervals are re-usable as general codes are used in it.

# Team information

## Mentors

Ankit Gupta (01202416495)

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## Students

Gaurav Shad (9873053231)

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## Others

RP Singh

AGM (CS&IT)

BHEL, Noida

# Schedule

|  |  |  |  |
| --- | --- | --- | --- |
| Task | Start Date | End Date | Duration |
| Introduction to BHEL (CS&IT) | 8 jun | 8 jun |  |
| Project Proposal | 9 jun | 9 jun |  |
| Gaining more knowledge in android | 10 jun | 12 jun | 3 days |
| Research in the field | 13 jun | 15 jun | 3 days |
| Getting started with project work | 16 jun | 17 jun | 2 days |
| App designing | 18 jun | 20 jun | 3 days |
| Code implementation of design | 21 jun | 30 jun | 10 days |
| Implementation of google maps | 1 july | 7 july | 8 days |
| Implementation of Menu | 8 july | 10 july | 3 days |
| Further improvement and DB connectivity | 11 july | 15 july | 5 days |
| Testing | 16 july | 19 july | 4 days |
| Final submission | 20 july | 21 july | 2 days |
|  |  |  |  |

# Benefits

## BHEL

The company, by including students and providing them internships are increasing their network. Plus they are letting students know the actual working of a company. Moreover this will cut their recruitment cost as they will get to know the talent and capacity of students and can directly offer jobs as required and take the best out of the lot.

## Students

As a student, I feel that I got this very good opportunity of working with a great corporation, BHEL. I will include this internship in my resume that will definitely improve our candidature in future applications.

## Mentors

As it is a learning experience for students, mentors will also gain experience out of this project. And in future, they will be the persons for the success of BHEL.