System Requirement Analysis

Public Vehicle Tracking (PVT) Application

Version 1.0

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# Introduction

## 1.1 Purpose

The purpose of this document is to present a detailed description of the Public Transport Vehicle Tracking Android Application. It will explain the purpose and features of the application, the interfaces of the application, what the application will do, the constraints under which it must operate and how the application will react to external stimuli.

## 1.2. Project Scope

This application will be a Vehicle Tracking Application for a passenger withheld with an Android device. This application will be designed to facilitate the user intended to use any public transport for moving from Source to Destination. By facilitating the user, he will be able to track his target vehicle.

More specifically, this application will provide the user with the required information about the selected vehicle. The application will display the information by using the area map giving a graphical interface for the tracking of the vehicle.

**1.3 Intended Audience and Reading Suggestions**

This document is intended for both the user and the developer of the application. The document will provide a detailed description of the goal and specifications of the application and hence will give an overview for the use of the application.

Overall Description

**2.1 Product Perspective**

The application will be a self-contained product functioning with the requirements of the user.

The application is NOT a follow-up or any improved version of an existing application and hence will function independently without any dependency on any existing applications.

**2.2 Product Features**

The application will be providing all the features which can track the specific public transport vehicle enquired by the user.

The features of the application will include the characteristics of the interface as well as the functioning of its various tools. These functionalities and features can be summarized as:

* Area Map Interface
* Pointer to the User location
* Pointer to the enquired vehicle location
* ETA (Estimated Time of Arrival) for the vehicle to the user’s location
* Vehicle’s registered Source and Destination
* Vehicle’s registered Transport Number

**2.3 User Classes and Characteristics**

The application structure will include various User Classes which will accordingly to make the application function according to the needs. These User Classes will include:

* User
* User’s Android Device
* Public Transport vehicle with the Tracking device
* Web Connection

**2.4 Operating Environment**

The application will work in any condition with regard that the Public Transport Vehicle has ongoing Tracking device and the User has an Android Device with the application installed in it and running with all the functionalities.

The application will be available through Web resources or through other File Transfer mode where the User can receive the .apk file into the device and hence can install the application into it to use it.

**2.5 Design and Implementation Constraints**

The Design and Implementation of the application will require the permission of the respected authorities to be implemented so that the Public Transport Vehicles can be installed with the tracking devices which can hence complete the minimum requirements of the application to run.

**2.6 User Documentation**

The application will be user-friendly and will require the basic knowledge of operating and Android Device. Apart from the basic knowledge understanding, the application console will be provided will a troubleshooter with the FAQs and online help which would facilitate the users in the event of accessibility problems with the application.

System Features

The System Features for the Tracker System includes the various functionalities of the system including the Tracking and the Information Display by the application.

**3.1 Vehicle Tracking**

3.1.1 Description and Priority

The tracking of the specific vehicle is the main feature of the application providing the user with the exact real-time location of the specified vehicle to be searched. It is highest priority feature of the application with real-time monitoring and vehicle tracking.

3.1.2 Stimulus/Response Sequences

The user will be required to interact with the application in a sequential manner to get the application display results according to the user requirements.

* Launch PVT application
* Enter the desired destination in the Destination Query field
* Press Track Interface

These steps will guide the user in obtaining the desired information by the application.

**3.2 Area Map**

3.2.1 Description and Priority

The application will be able to show the Area map in which the user wants to get the Vehicle Information. The Area Map will be according to the current location of the User Device as the user will be requiring by default the map of the location where he/she is currently located.

The Area Map feature will be a Medium-Priority feature of the application for the Area information.

3.2.2 Stimulus/Response Sequences

The user can access the Area Map by the application so that he can get all the information about his location. The user can access this functionality by the application.

* Launch PVT Application
* Select the Area Map Interface

**3.3 Vehicle Information**

3.3.1 Description and Priority

The Vehicle Information feature is being incorporated as a Medium-level Priority feature in the application to provide all the detailed information about all the registered vehicles in the area which can be used by the user for transportation. The information of the vehicle will include the information about the vehicle with respect to it:

* Registered routes
* Transit Timings
* Registered number of the vehicle

External Interface Requirements

**4.1 User Interfaces**

The PVT Application will provide the user with a User Friendly Interface to allow the user to interact with ease without any advance knowledge about the application and allowing the user to fully use the application at his first time.

The PVT Application Interfaces are divided into various segments according to the information to be delivered to the user:

* Home Screen
* Area Map
* Destination Map Screen
* Pointers To the vehicle
* Bus Details Interface

**4.2 Hardware Interfaces**

The Hardware Interfaces will be requiring the basic and necessary devices which will be required for the functioning of the PVT application. The Hardware Requirements will include:

* User Android Device
* Vehicle GPS Tracker Hardware
* Acknowledgement Server

Other Hardware requirements will be according to the advanced functionality of the application.

**4.3 Software Interfaces**

The Software Requirements will be the backbone for the Hardware to function. This will include all the communication links as well as the interfaces for the user to interact with the application. The Software requirements will be:

* Android Operating System (2.2 or higher)
* PVT Application Interface
* Basic Android Application Support

**4.4 Communications Interfaces**

The Communication Interface will be required to connect the GPS Tracker Device to the User Device. The main function of the Communication Interface will be to transfer the information necessary for the functioning of the application. This will include a Communication Server which will connect the Vehicle Tracker with the device.

Other Nonfunctional Requirements

**5.1 Performance Requirements**

To make the PVT application function, there are no such Performance requirements. The application can work in all the environments except that the Android OS should be compatible as mentioned above.

* 1. **Security Requirements**

The application will not be experiencing any security breach in the user end as well as on the server end as there is no personal information with respect to the User. Apart from the User Information, the User Location will be displayed only on the User device and will not be transmitted on the server.

* 1. **Software Quality Attributes**

The PVT application will be providing all the features which will facilitate the application user to find all the information and use it to get the Public Transport service or other information related to vehicles. These Quality Attributes will include:

* Optimum Location tracking of the vehicle
* Gaining detailed information about the vehicle
* ETA(Estimated Time of Arrival) for the approaching vehicle
* Area Map for the routes towards the destination
* Reliable data for the registered vehicles
* No data redundancy
* Security of data and coordinates
* User Friendly Interface
* Easy Accessibility
* Basic usage knowledge to use the application
* Minimum data input for Information Access

Appendix A: Glossary

The Requirement Specification provides an overview of the whole application according to the User and the Developers necessary for the usage and formatting parts of the application.

Various acronyms and keywords used in the document can be summarized here.

* **Android Operating System –** The interface of the user’s device through which the user can interact with the device
* **PVT Application** – Public Vehicle Tracking Application
* **Query Field** – The box where the user can enter the destination
* **User Coordinates** – The User Coordinates provides the exact location of the user according to the Latitude and Longitude values through which the User (User Device) can be tracked
* **User Device** – The Android Device which on which the user is running the application

Appendix B: Analysis Models

The PVT Application can be represented by the model diagrams relating the various components of the application.

**Activity Diagram**

**Android user send request for destination**

**Send signal to GPS Device**

**Receive and send user request to server Database**

Start

**Device checks location**

**Message “Location not found**”

Termination **NO**

**Reply back to server**

**Produce location result**

**YES**

**Server send location to User**