**CUSTOMER REQUIREMENT SPECIFICATION**

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|  | https://lh4.googleusercontent.com/proxy/YA9Xoqs7jhpeuwrEjwhdi_EVSCDwUdpr72V-2YHZ2lz2y1FaqityK8c8RlZRTvUDEw3Y2TekyGNi07wcREil5Ez3ii80dA-DE8G6HAQjEmJVz8W32Wy2uaDAWwuZs6uPZtJp2zrUJ_Qps2T1CUmSpuPR8dk2XA=w128-h144-k-no | | | **Document Ref.:** | | |  | |
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| **PORTER ANDROID APPLICATION** | | | | | | | |
| **Summary**  This Application will enable travellers to book coolies at railway stations across the country and aims at easing the burden off passenger’s shoulders for a hassle free travel. The app has features such as ETA, type of coolies, price guide and coolie profiles, allowing users to see past ratings, reviews and more. The customer enters the PNR number details before reaching and the coolie appears within the expected time. Google Maps API is used to pinpoint the pickup location during the boarding process. The App aims to provide a safe, economic, quick and comfortable experience to all passengers of the Indian Railways. | | | | | | | |
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**Definitions, Acronyms and Abbreviations**

1. IR : Indian Railways
2. PNR : Passenger Name Record
3. ETA : Expected Time of Arrival
4. GPS : Global Positioning System
5. API : Application Programming Interface
6. SDK : Software Development Kit

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**Change History**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Date** | **Document Version No.** | **Change Description** | **Reason For change** |
|  | 3.2.2018 | 1 | Initial Commit | Initial Commit |
|  | 15.2.2018 | 2 | Second Commit | Inputs from Guide |
|  |  |  |  |  |

# Introduction

This Document aims to provide a high level overview of the Porter Android Application by outlining the customer requirements along with the architectural design, scope and performance requirements.It is aimed at the general audience to enable them to understand the environment and performance constraints to be able use or deploy the application.

* 1. ***Scope***

The scope of the project includes the evaluation of the platform. The architectural design of the system gives the platform sufficient room to scale up as per the increase in demand. The system design has been built across the pillars of modularity and low coupling. The application targets the online train ticket booking audience whose data can easily be fetched for the Railway System’s Database. The application focuses on the passenger’s revenue enhancement and an improved and optimized service without the hassle of choosing a porter and bargaining the price as per the weight.

The application will be consuming a dummy payment portal since the utilization of a proper payment portal is out of scope of development and hence can only be applicable on a fully fledged application.

The application enables the user to:

* Book a porter at his/her choice of pick up point.
* Track the status of luggage.
* View historical listing of all the trips(past/upcoming) and notifications
* View the previous reviews and ratings of the assigned porter.
* Carry out payment online.
* Incentives applicable to first time users.

More design features for future scope which can be added to the platform to make the application more effective and user friendly are:

* Adding filters related to price and popularity can help the users make a smart choice
* The application can serve as a common portal for multiple porter provider service application and hence, the user can choose the appropriate service as per the usage and rating.
* As per the previous trip experience and rating the user is assigned the next porter for the upcoming trip and similarly as per the porter’s feedback the porter is assigned the next user for the upcoming trip.

# Product Perspective

The high level product perspective of the porter application is stated below:

1. The Application requires the use of the Google Map functionality at the time the passenger wants to pinpoint his luggage pickup location during train boarding.
2. Hardware platforms used for deployment include:

* Android Ice Cream Sandwhich or Above
* Basic smartphone with GPS functionality

3. Software Platforms for deployment include:

* Java
* Android SDK
* PHP Web Service
* SQLite

* 1. **User Characteristics**

The user of the system should be comfortable with a touchscreen android mobile device and performing the following functions:

* Register to a new User Account and login.
* Enter the required details to book a porter.
* Select the drop location in the Google Map Interface.
* Cancel a booking.
* Perform online payment.

* 1. **General Constraints, Assumptions and Dependencies**

Regulatory policies:Indian railway coolies are centrally trained and hold a license in the name of the President of India, and their role is carefully regulated, with local services such as porters' offices, lavatories, and canteens provided by the railways.Hence we would need to seek permission from the Railway Authorities in order to register porters and issue their prices.

The Assumptions made are:

* The schema of Railway Database continues to be fixed.
* The pick up points outside railway station are well defined and fixed.
* The trains operates on the correct timings of arrival and departures.
* The willingness of the porter’s to join the system and approval for the same from the Coolie Management Society.

The application requires:

1. The google maps api to fetch the info about the drop points which users utilize to arrive at the location.
2. Social Media API for advertising and reviews.
   1. ***Risks***

We foresee the following risks during the execution of the project:

* Porters are not normal individuals like cab drivers who can be enrolled only with the individual’s consent. They belong to a Government union and have a licensed badge from the President of India. Hence, we expect certain legal and regulatory risks while enrolling them into the system in the future.
* Risks faced by the app’s Stakeholders:
* Porters might get mugged/cheated by clients in certain circumstances including but not limited to:
  + - False declaration of luggage capacity during booking.
    - Improper PNR status updation leading to discrepancies.
    - Fare bargaining/ Issue of duplicate currency notes.
    - Cancellation at last moment leading to loss of time and opportunities to earn revenue.
    - False escalations such as damage/ loss of baggage.
* Clients might get mugged/cheated by porters in certain circumstances including but not limited to:
  + - GPS geo coordinate position of client being compromised.
    - Porter stealing/damaging client’s luggage.
    - Porter not being punctual and shows up late.

# System Architecture

The following section depicts a high level overview of the Porter Application’s System Architecture.

For Example:

|  |
| --- |
| Figure 1.0: System Architecture Diagram |

|  |
| --- |
| Figure 1.2: Server Side Architecture |

* **Device Hosting Application:** This refers to the android mobile device hosting the Porter Application.

* **Web Service:** We implement Web services by PHP language to provide a connection between database and Android applications.Android application uses JSON format (JavaScript Object Notation) to send data from the phone to the Web services.JSON is fully supported by Android OS and PHP. Currently, we only concern about GPS

* **Databases:** The SQLite Database stores all the App,User and Porter related Information and also updates the information as new data is to be furnished.The figure shows the relations used in the database.

# 

* 1. **Android Device Architecture**

The Mobile device hosting the android application has the following build present on their systems. This module talks briefly about the user interface of the application. Each of the subcomponents indicates the activity or the page of the application. The following diagram dictates the structure.

|  |
| --- |
| Figure 1.1: Android Device Architecture |

|  |  |
| --- | --- |
| **Reqmt #** | **Requirement** |
| 1 | The Android version 21 SDK or above |
| 2 | Interfaces with the Google Maps API |

* 1. **Server Side Architecture**

This module talks about the server side structure of the platform. The following components are available as a web service. Each of these components are individually replaceable. The server utilizes the Google Maps Api to fetch the information about the pick up points. The application also allows user to tweet or carry on a facebook post about their findings of the application. The Server processes the request made by the application and provides an appropriate response such as Porter info, booking, status, coupons etc.

|  |
| --- |
| Figure 1.2: Server Side Architecture |

|  |  |
| --- | --- |
| **Reqmt #** | **Requirement** |
| 1 | Support to utilize Google Maps Api |
| 2 | Support to utilize Twitter Api |
| 3 | Support to utilize Facebook Api |
| 4 | Php 5.5 or above |
| 5 | Interface with the Sqlite Database |

* 1. **Database Architecture**

The server interfaces with the following databases to fetch and update the system information

|  |
| --- |
| Figure 1.3: Database Architecture |

|  |  |
| --- | --- |
| **Reqmt #** | **Requirement** |
| 1 | SQLite Database |
| 2 | Storage above 100GB(For current implementation) |

# External Interface Requirements

* 1. **Hardware Requirements**

**Device capabilities**:TouchScreen, Internet connectivity, GPS functionality.

|  |  |  |
| --- | --- | --- |
| NETWORK | Technology | GSM / HSPA / LTE |

|  |  |  |
| --- | --- | --- |
| DISPLAY | Resolution | 480 x 800 pixels, 5:3 ratio  (~217 ppi density) |
| Multitouch | Yes |

|  |  |  |
| --- | --- | --- |
| PLATFORM | OS | Android 4.0.4 (Ice Cream S.W), |
| CPU | Dual-core 1.3 GHz Cortex |

|  |  |  |
| --- | --- | --- |
| MEMORY | Internal | 4 GB, 512 MB RAM |

|  |  |  |
| --- | --- | --- |
| COMMS | WLAN | Wi-Fi 802.11 b/g/n, Wi-Fi Direct |
| GPS | Yes, with A-GPS |

|  |  |  |
| --- | --- | --- |
| FEATURES | Messaging | SMS(threaded view) |

|  |  |  |
| --- | --- | --- |
| BATTERY | Talk time | Up to 10 h (4G) |

* 1. **Software Requirements**

The below section specifies the software requirements:

* **Android SDK**:It is a set of development tools used to develop applications for Android platform. The Android SDK includes the required android libraries,Debugger,Emulator,Documentations etc.

Recommended Version for this project is Ice Cream Sandwich or Above.

Source : https://developer.android.com/studio/index.html

* **Java SE:** Java SE API provides the core functionality of the Java programming language. It defines everything from the basic types and objects of the Java programming language to high-level classes that are used for networking, security, database access, graphical user interface (GUI) development, and XML parsing**.**

Recommended version for this project is Version 7 or above**.**

Source: http://www.oracle.com/technetwork/java/javase/downloads/index.html

* **SQLite Database**: SQLite is a relational database management system, similar to Oracle, MySQL, PostgreSQL and SQL Server.The source code for SQLite exists in the public domain and is free for both private and commercial purposes.

Recommended version is 3.6 and above.

Source : https://www.sqlite.org/

* **PHP Web Service**: We will create a Web Service in PHP, read from the SQLite database, and let the Android Application connect with the Web Service and send data.The data interchange between web service to app and web service to SQLite happens in JSON format.The communications make use of REST API.

Source : http://phpforandroid.net/doku.php

* 1. **Communication Interfaces**

The provided interfaces are applicable across India.

2G capabilities : GSM 900, GSM 1800  
3G capabilities : UMTS 900, UMTS 2100  
4G capabilities : LTE 850(5), LTE 1800(3), LTE 2100(1), LTE 2300(40), LTE 2500(41)

# User Interfaces

* Required screen formats: A typical 4:3 screen with a minimum resolution of 200 dots/inch.
* Page layout and content of any reports and menus: Portrait Orientation Only
* Relative timing of inputs and outputs: Continuous and uninterrupted data stream w/o user session expiry
* Availability of some form of programmable function key: None

# Performance Requirements

The Static numerical performance requirements may include:-

* The number of terminals to be supported : 2 (1-Client, 1-Porter)
* The number of simultaneous users to be supported : 100 for initial release
* Number of files and records to be handled : Less than 50
* Sizes of tables and files : A few hundred Kilo Bytes
* Dynamic numerical requirements may include:-
* The number of locations to which the system caters : 5 for initial release
* The number of transactions : 1 successful transaction per client per session
* Tasks and the amount of data to be processed within certain time periods for both normal and peak workload conditions : Less than 100 Kilobytes/ Second
* Compatibility between heterogeneous environments (for e.g. Open Systems, Mainframes, Mid-range systems, etc.) : None. Only Android for initial release
* Interconnection between various networks (LAN, WAN, Internet, etc.) : Internet

# Special Characteristics

This section shall specify the factors that would protect the software from accidental or malicious access, use, modifications, destruction, or disclosure. Specific requirements in this area could include the need to:

* Utilize certain cryptographic techniques : None. Password entry will be through dedicated Google Account Sign-In
* Keep specific log or history data sets : Will be Encrypted for enhanced security.
* Assign certain functions to different modules : None for initial release
* Restrict communications between some areas of a program : None for initial release
* Compute checksums for critical quantities : Might be used for fare calculation.
* Hardware / Software locks for the product / package : Uses the phone’s security features such as pattern lock/ fingerprint lock.

# Help

This section is describing the help planned for the system like, online / context sensitive help and other documentation (e.g. User Manual, Technical Manual) planned, to aid in the usage of the system.

The application will include a Help feature to reach out to the Porter team and directly chat with a customer care agent.

Upon the installation of the application, the application will walk the user through basic setup and usage steps.(This could be a simulated video).

The application will also include an error tracking log that will help the user understand what error occurred when the application crashed along with suggestions on how to prevent the error from occurring again.

# Other Requirements

Certain requirements may, due to the nature of the software and the user organization, be placed in separate categories as indicated below:

None.

* 1. ***Site Adaptation Requirements***

This section shall describe the following: -

* Define the requirements for any data or given site, mission, or operational mode, for example, grid values, safety limits etc.

Here, we’d be needing consent of the Indian Railways for operation

* Specify the site or mission-related features that should be modified to adapt the software to a particular installation.

None.

* 1. ***Safety Requirements***

Identify the safety requirements that have to be addressed in the software. Eg. The Safety Standards prescribed by the customer to be mentioned here like HIPPA, Nuclear Safety or any other safety standard etc.,

We have to ensure that SAR (Specific Absorption Rate) values of smartphones used by the Porters is as per or below government permissible levels

# Packaging

This section shall describe the software product to be packaged by considering the following: -

* Type of media

An android APK (Android Package Kit) compatible on any Android Smartphone

* Compressed / encrypted software (algorithm details, if specified)

None

# 

# 

# 

# Traceability Matrix

|  |  |
| --- | --- |
| **URS Reference Section No. and Name** | **CRS Reference Section No. and Name** |
| Sign Up/ Log In | Section 3.1 Android Device Architecture Fig 1.1 |
| Book Porter (Enter PNR, Choose Drop location) | Section 3.1 Android Device Architecture Fig 1.1 |
| Make Payment | Section 3.1 Android Device Architecture Fig 1.1 |
| Help/ Cancel Booking | Section 3.1 Android Device Architecture Fig 1.1 |

* SignUp/Log In : Enables SignUp/Login functionality.
* Book Porter : Enables the customer to book the chosen porter.
* Make Payment : Enables the customer to pay for porter service through three modes card,cash or paytm
* Help/Cancel Booking : Enables the customer to cancel the booking.