



Design Intervention in the ticketing system of the Mumbai Local Train

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Guide
Prof. Jayesh P.

Introduction

20.7 million
2016



7 million
Per day



Modes of Ticketing



Ticket Window
1853 - Present

- Easiest mode
- Effort – Standing in the queue
- Time
- No other costs involved
- For all audiences



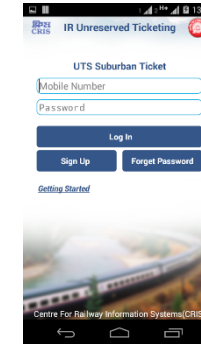
CVM
1994 - 2015

- Moderate difficulty
- Effort – Calculating fare, validating the coupons, queue's
- Time
- Minimum investment of Rs. 50
- For all audiences



ATVM
2010 - Present

- Hard
- Effort – Picking the stations, buying a card, recharging a card
- Minimum Time
- Minimum investment of Rs. 100
- For all semi-literate audiences



Mobile app
2014 - Present

- Hardest
- Effort – downloading app, recharging wallet, internet connectivity, within range of the station
- Time consuming with other factors
- Minimum investment of Rs. 100
- For all literate audiences



JTBS
2008 - Present

- Easiest mode
- Effort – finding it
- Minimum time
- Investment – Rs. 1 per ticket
- For all audiences

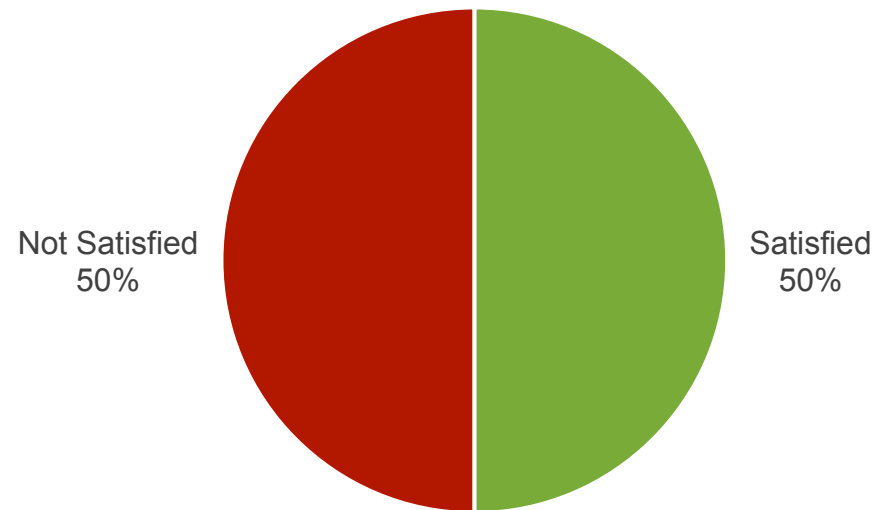
Secondary Research



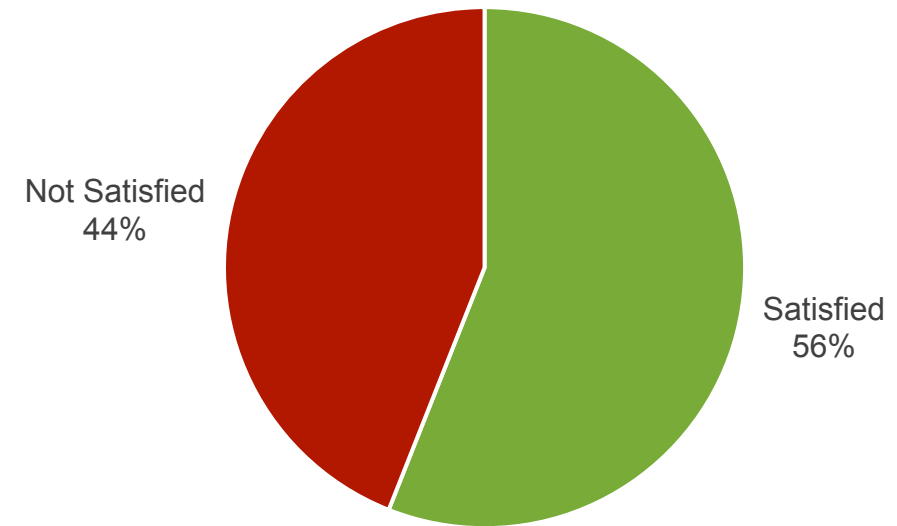
2013

Secondary Research

No. of Ticket Counters/ ATVMs/CVMs



Ease & Time taken to purchase the ticket



Secondary Research

Western line

| Stations | Queue length (No. of People) | Average Time spent in the Queue (in. Minutes) |
|----------------|---------------------------------|--|
| Churchgate | 35 | 20 |
| Mumbai Central | 45 | 25 |
| Dadar West | 54 | 30 |
| Mahim | 35 | 20 |
| Bandra | 17 | 10 |
| Andheri | 36 | 20 |
| Goregaon | 41 | 20 |
| Borivali | 26 | 15 |
| Mira Road | 14 | 10 |
| Bhayander | 52 | 30 |
| Vasai Road | 36 | 20 |
| Nalasopara | 35 | 20 |
| Virar | 38 | 20 |

Central line

| Stations | Queue length (No. of People) | Average Time spent in the Queue (in. Minutes) |
|-----------|---------------------------------|--|
| CST | 28 | 14 |
| Masjid | 26 | 13 |
| Byculla | 29 | 15 |
| Dadar | 34 | 17 |
| Kurla | 41 | 20 |
| Ghatkopar | 40 | 20 |
| Bhandup | 40 | 20 |
| Mulund | 39 | 20 |
| Thane | 33 | 17 |
| Dombivli | 37 | 19 |
| Kalyan | 45 | 23 |
| Kasara | 32 | 16 |
| Karjat | 29 | 14 |

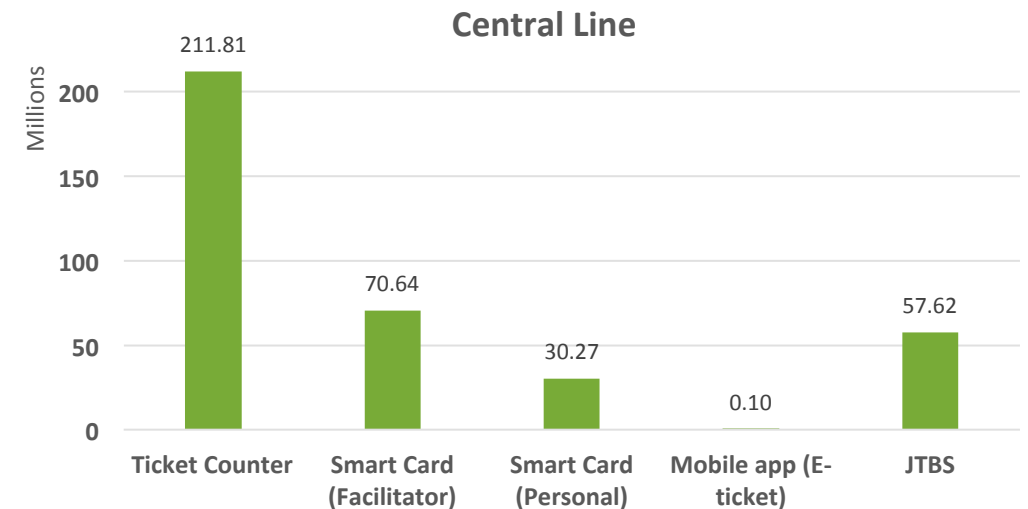
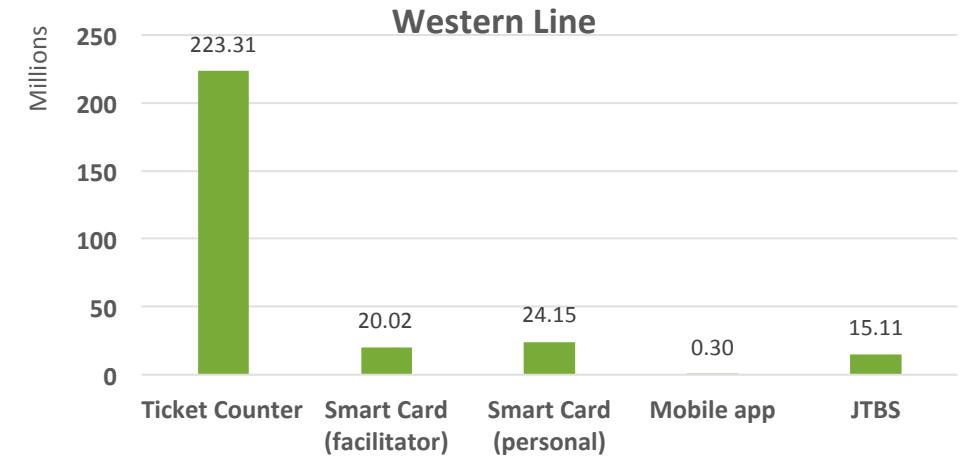
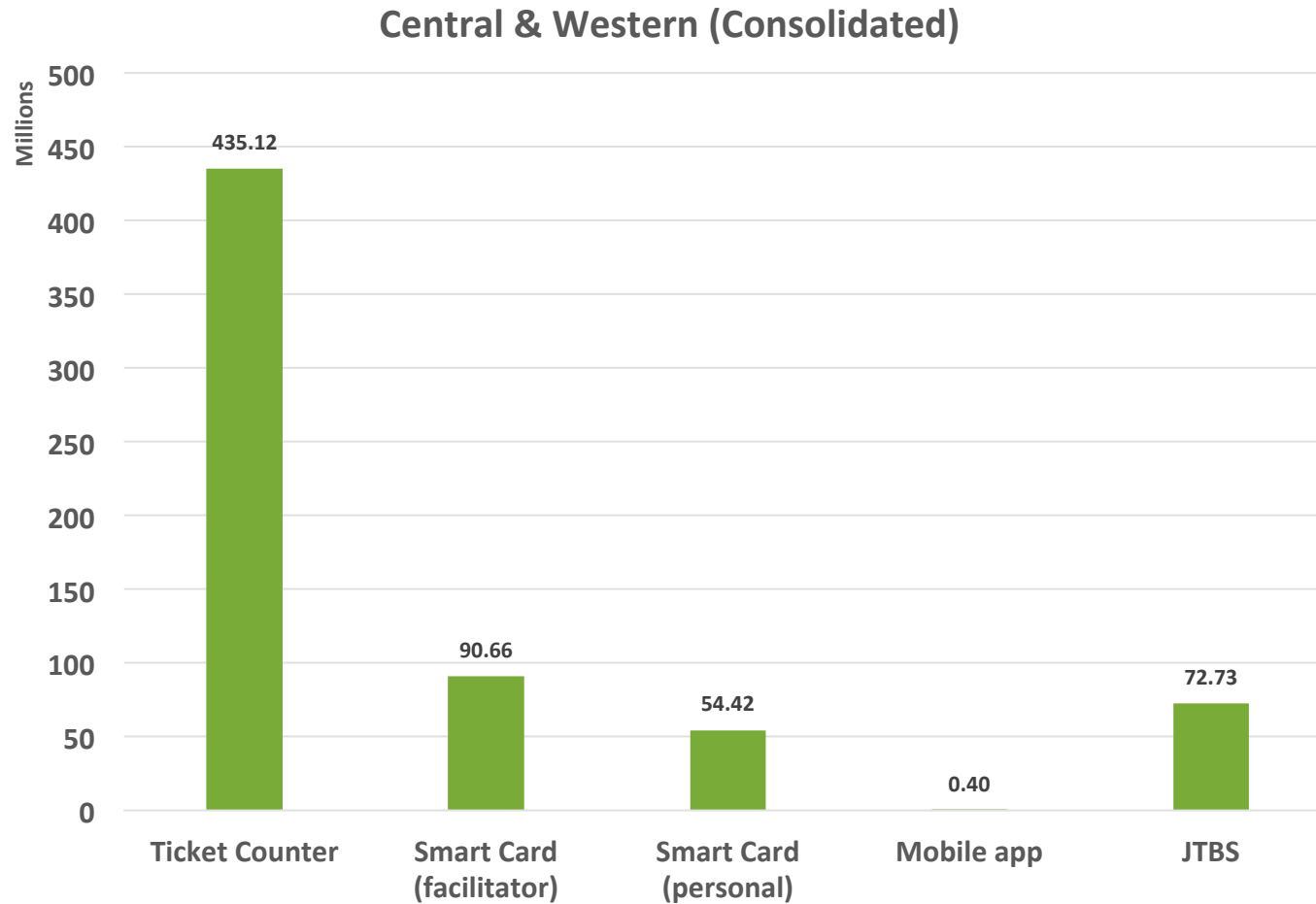


Western line as on
21/11/2012)

Central line as on
21/11/2012

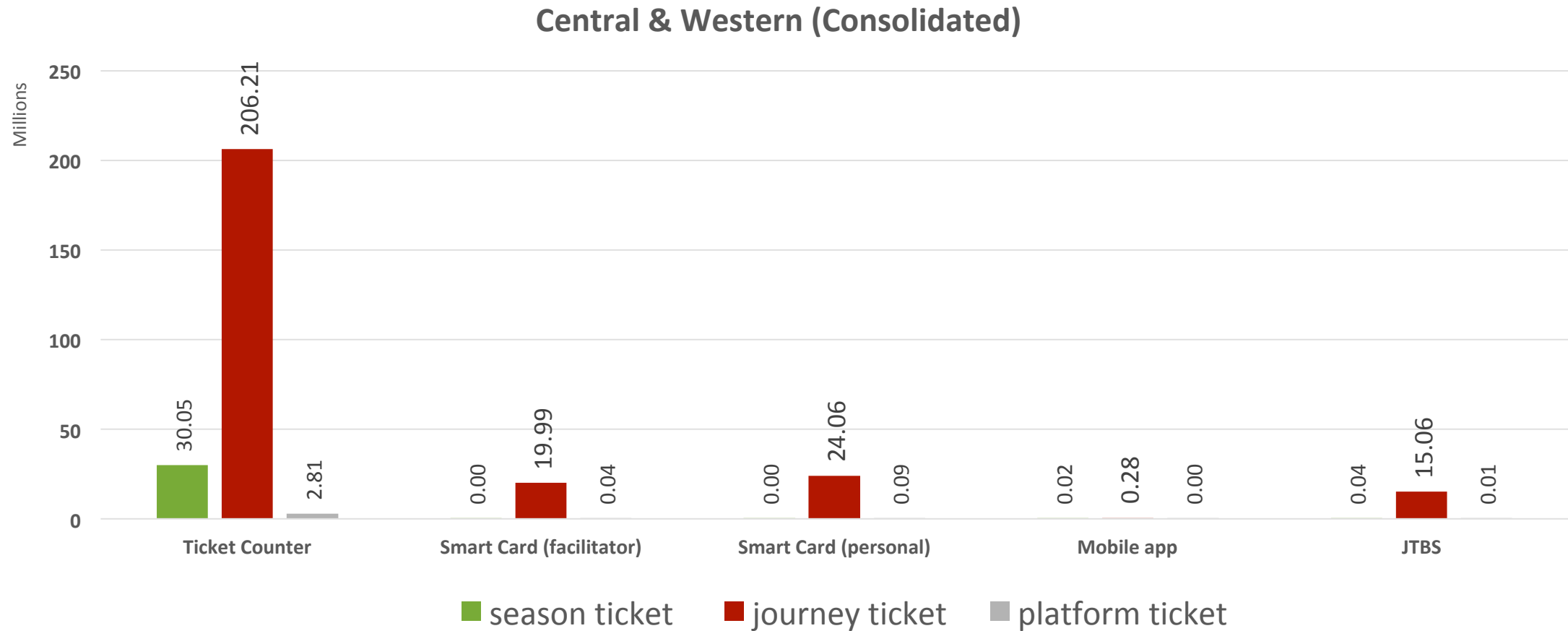
During peak hours
8 am – 10 am
6 pm – 9 pm

Primary research



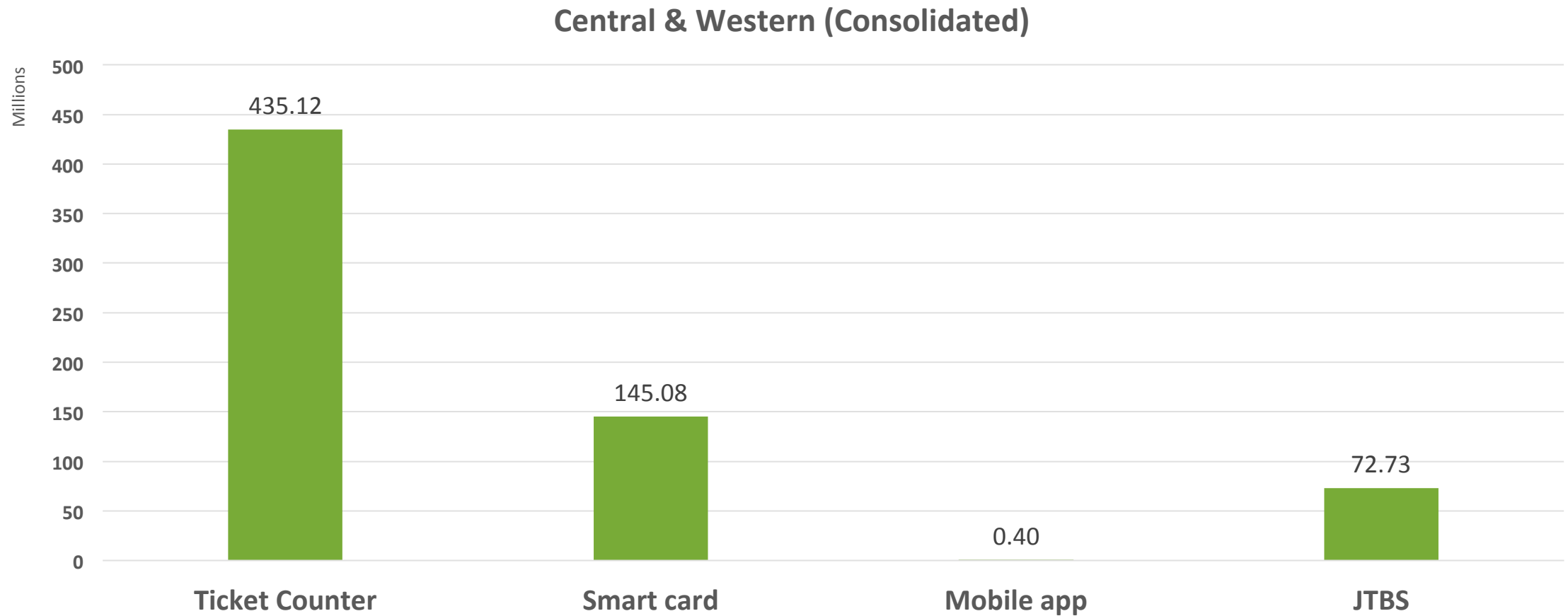
All data is from 1-1-2015 to 31-12-2015

Primary research



All data is from 1-1-2015 to 31-12-2015

Primary research



All data is from 1-1-2015 to 31-12-2015

Survey

197 Online

45 Dahisar stn

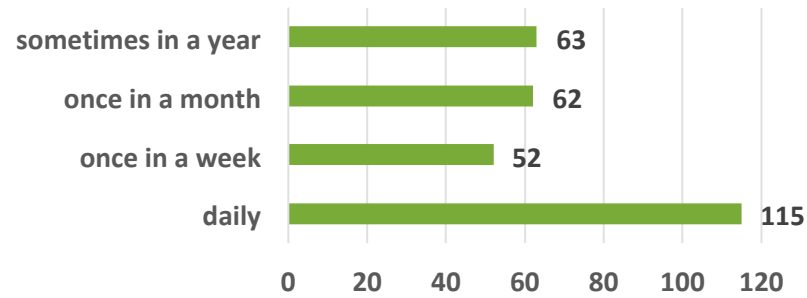
25 Building

25 Churchgate stn

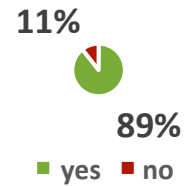
| Your Gender | Your Age | Your Qualification | Do you have a smartphone ? | How often do you travel by Local Train ? | Do you have a season pass ? | Are you aware of ? | | | | Have you used ? | | | |
|-------------|----------|----------------------|----------------------------|--|-----------------------------|--------------------|------------|------------|------|-----------------|------------|------------|------|
| | | | | | | Ticket Window | Smart Card | Mobile App | JTBS | Ticket Window | Smart Card | Mobile App | JTBS |
| Female | 30-50 | College / Graduation | Yes | Sometimes in a year | No | Yes | No | Yes | No | Yes | No | Yes | No |
| Male | 20-30 | College / Graduation | Yes | Once in a week | No | Yes | No | No | No | Yes | No | No | No |
| Female | 20-30 | College / Graduation | Yes | Sometimes in a year | No | Yes | Yes | No | No | Yes | Yes | No | No |
| Male | 15-20 | College / Graduation | Yes | Once in a week | No | Yes | No | No | No | Yes | No | No | No |
| Male | 20-30 | College / Graduation | Yes | Once in a week | No | Yes | Yes | No | No | Yes | Yes | No | No |
| Female | 20-30 | College / Graduation | Yes | Daily | Yes | Yes | No | No | No | Yes | No | No | No |
| Female | 30-50 | College / Graduation | Yes | Sometimes in a year | No | Yes | Yes | No | No | Yes | No | No | No |
| Male | 20-30 | College / Graduation | Yes | Once in a week | No | Yes | No | No | No | Yes | No | No | No |
| Male | 20-30 | College / Graduation | Yes | Once in a month | No | Yes | Yes | No | Yes | Yes | No | No | No |
| Male | 20-30 | College / Graduation | Yes | Daily | Yes | Yes | Yes | Yes | No | Yes | Yes | No | No |
| Female | 30-50 | College / Graduation | Yes | Sometimes in a year | No | Yes | No | No | No | Yes | No | No | No |

Survey

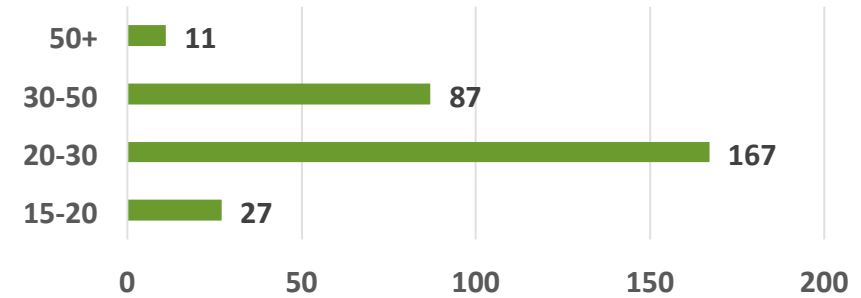
Travel



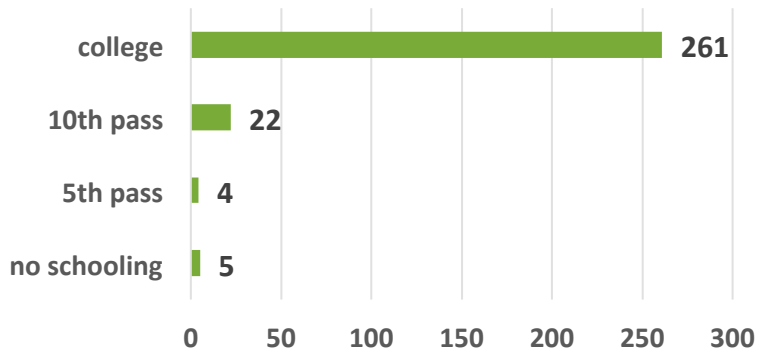
Do you have a smartphone ?



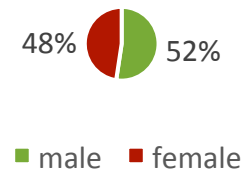
Age



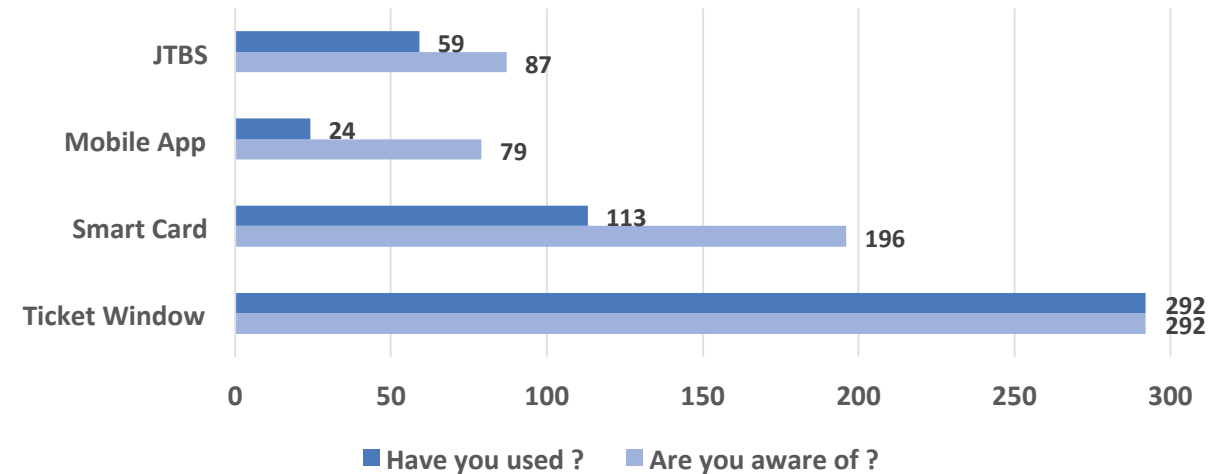
Qualification



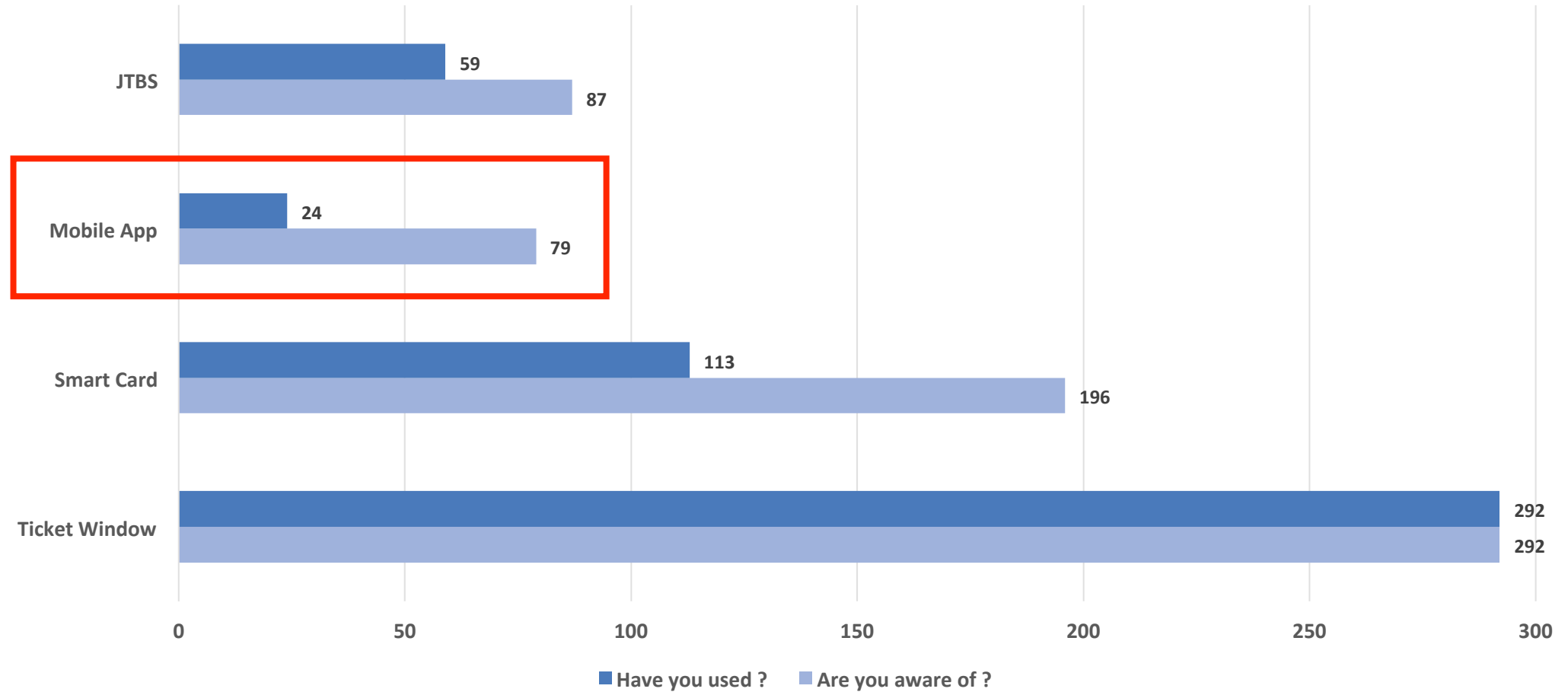
Gender



Awareness and Usage

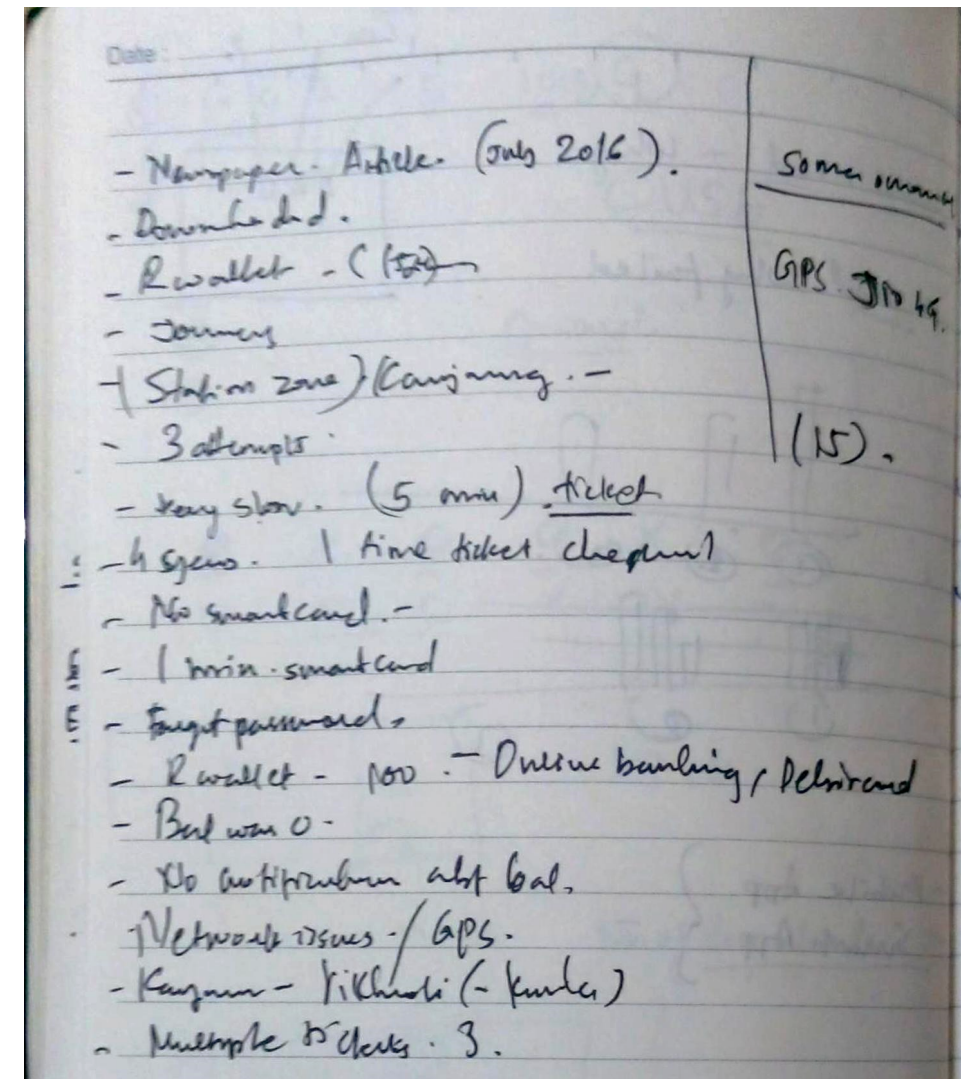


Awareness and Usage



User study – *Key Insights*

- People are usually in a hurry when they leave from home, which makes them forget to buy tickets on the go.
- They remember to buy tickets right when they arrive at the station. Usually the auto rickshaws or buses drop people right outside the station making it difficult for them to book the ticket because of the 30 meter boundary.
- I don't know where the boundary ends.
- I want to book from home as when I am in the bus it is very crowded to book a ticket.
- I don't have internet connection activated on my sim, I use Wi-Fi at home and office.
- The GPS is an issue to book a ticket. Sometimes it takes me ages to buy a ticket and sometimes I reach station even before I can book a ticket on my way.



Infrastructure



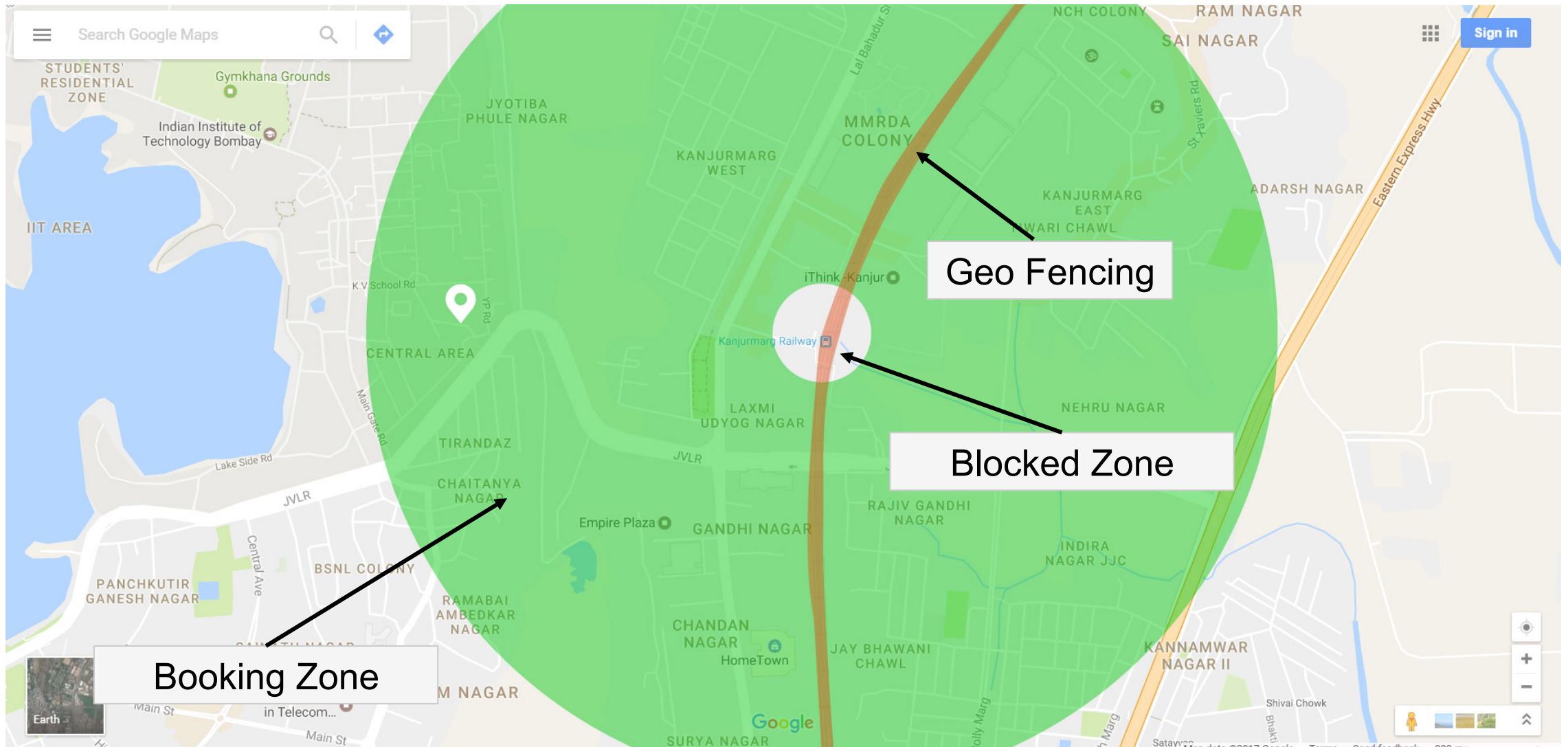
Infrastructure



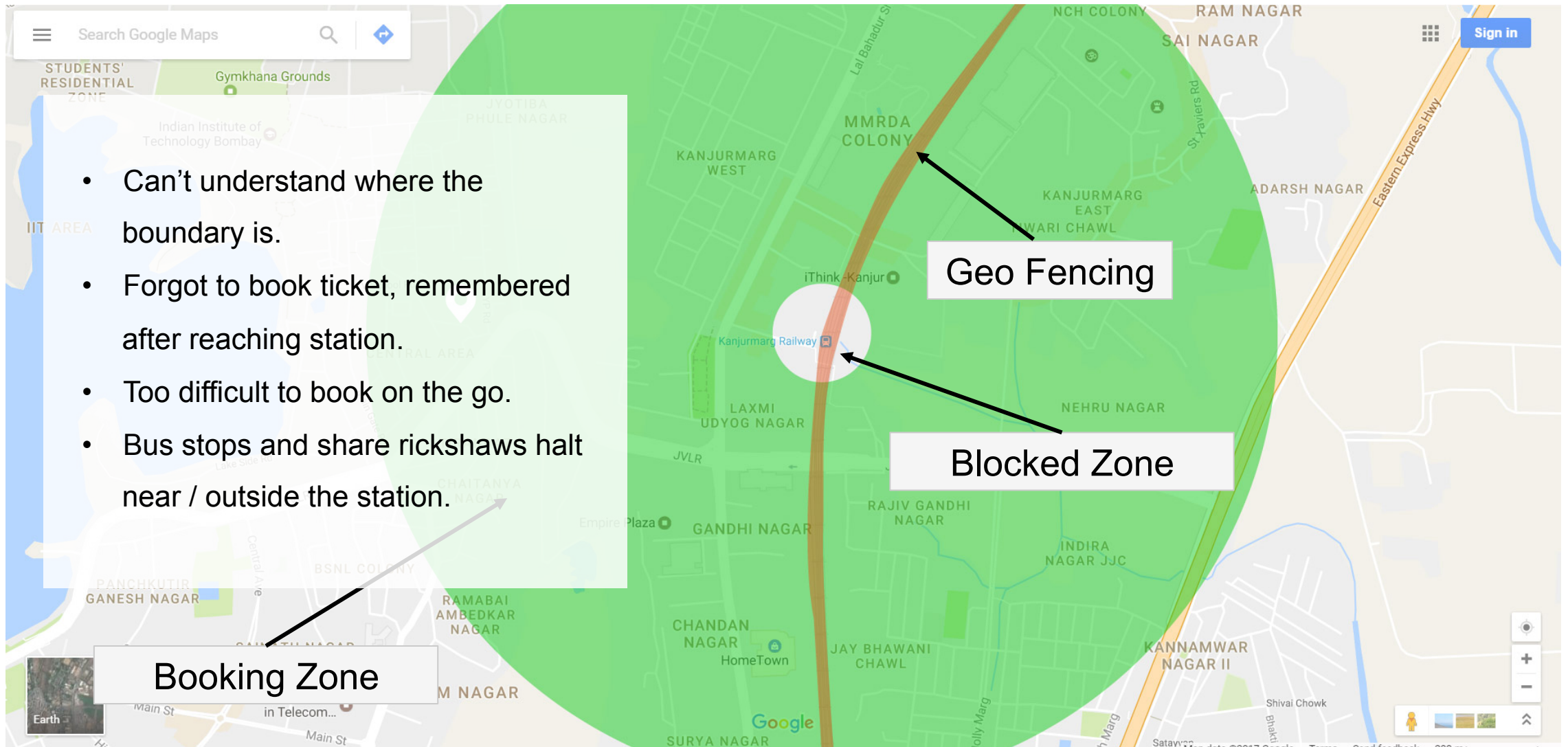
Easy access to stations.

Image source: The Culture trip

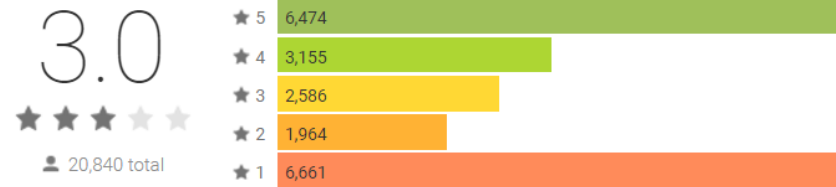
UTS - GPS



UTS - GPS



UTS – User reviews



Helpfulness ▾

User reviews



Abhishek Choudhuri March 1, 2017

★★★★★

Note: Those who are facing gps issues. Please set your phone's location mode at 'HIGH ACCURACY' from Location setting. This app is very useful. You can buy ticket for yourself as well as your co-traveler(upto 1+3). You have to be in the 2km radiation from Station. GPS works fine. There is offline mode available. So, you don't need internet for showing ticket to checker. You can also add your favorite roots to save time. Now, you can add money directly from app.



Dhananjay Paranjape March 2, 2017

★★★★★

Very useful and user-friendly app. But one concern. I would rate it 5* if following issue is resolved. In case of ticket booking this app fetch the source code with GPS (and only allows to use those stations only). In my opinion user should be allowed to book tickets between any 2 stations. Also, fetching source station codes by GPS takes very very long time than usual, in some cases it fails as well when network or GPS signal is low. I do not see any logic to fetch source code with help of GPS. Please look into this.



siddhesh venkatakrishnan

March 21, 2017

★★★★★

Till 5 days ago , it used to work fine, but all of a sudden it feels GPS signal is too low to make a booking? How on earth is that possible ?? Daily I book my ticket on the way to the station. Now despite trying at various locations, it feels the GPS signal is low. To test whether my GPS was faulty, I tested it in Google maps and it works fine as my location is accurate. What the hell did u guys change and why? Sigh.



Joy Mandal February 23, 2017

★★★★★

This app is very useful for me, I used to book Season ticket smoothly every month. This works fine in Kolkata. Some reviews that I have seen were extremely inappropriate. Someone wrote that UTS does not allow him to book ticket while traveling, let me remind you one thing that this feature has been introduced as a security feature. Otherwise you will book ticket while see a checker in front of you. Somebody wrote GPS should not attached with this app. Here the same answer applied to you also. Thanks Indian Railway for giving us this Super Excellent App.

Things to keep in mind



Crowded buses



Extreme monsoon conditions

Things to keep in mind

Public transport

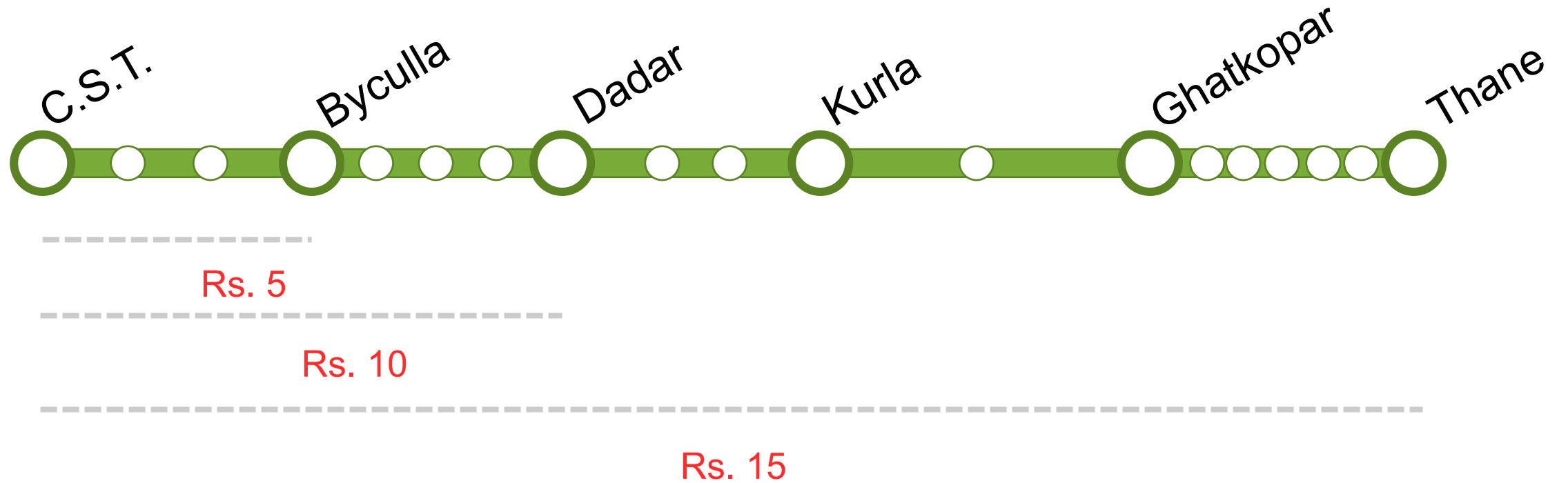


Problem statement

Ease in booking tickets from anywhere giving user maximum control and usage of the mode of ticketing.

Considering infrastructure and the working of the railways to not cost them extra infrastructure load / expenses.

Fare chart



Second class fare chart from C.S.T.

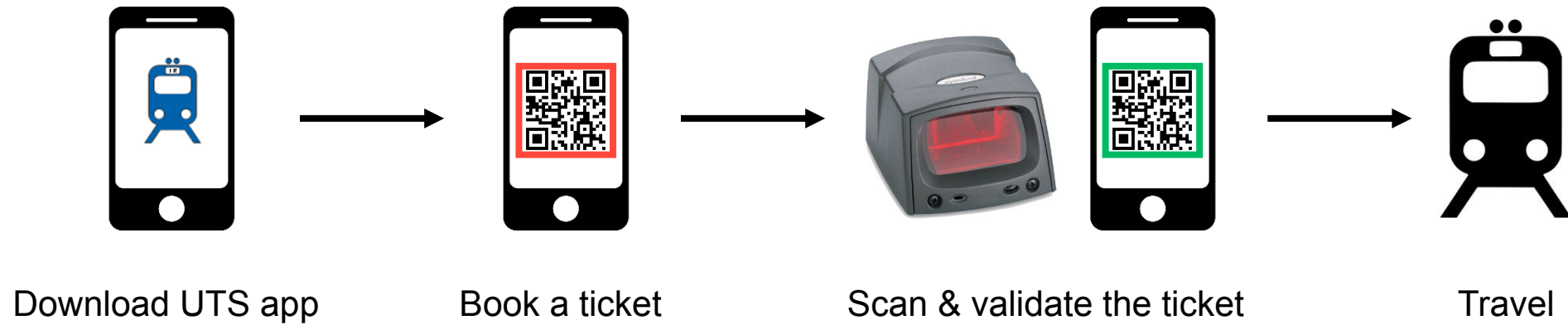
Design Idea



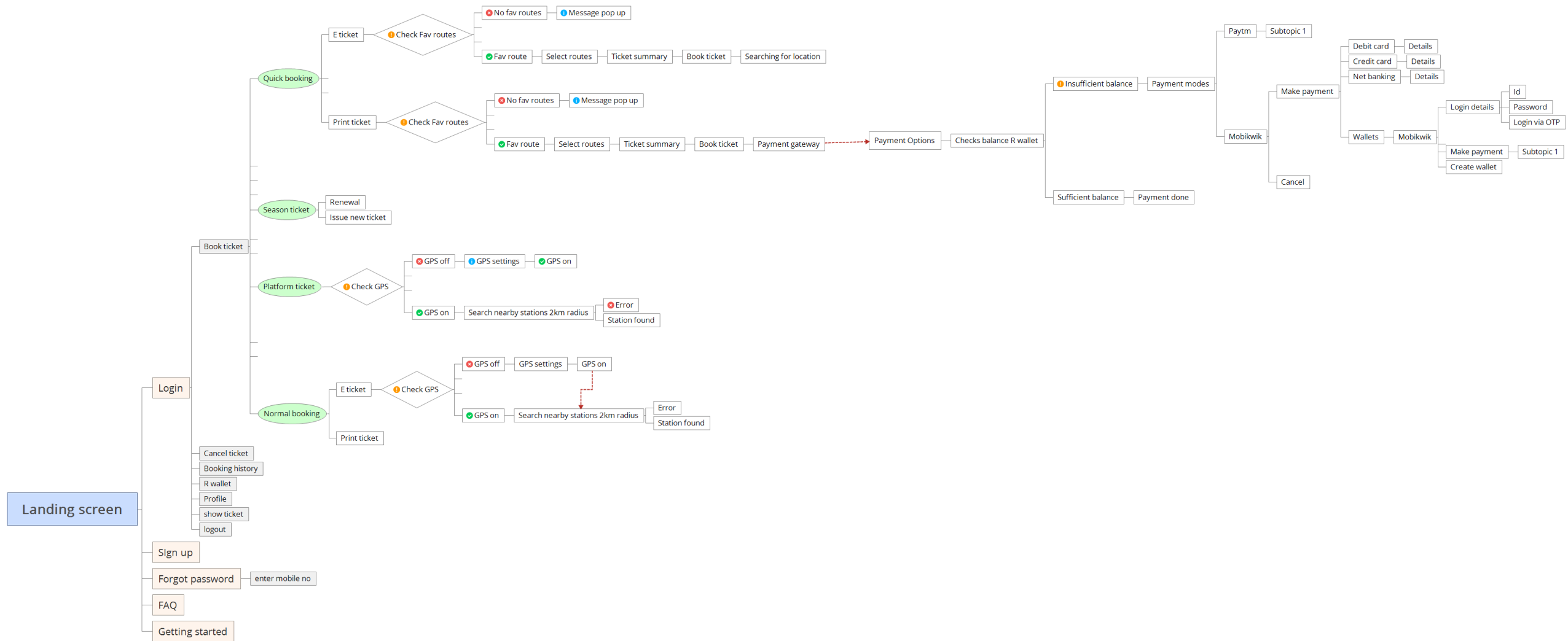
Cons:

- Calculating fare
- Punching tickets

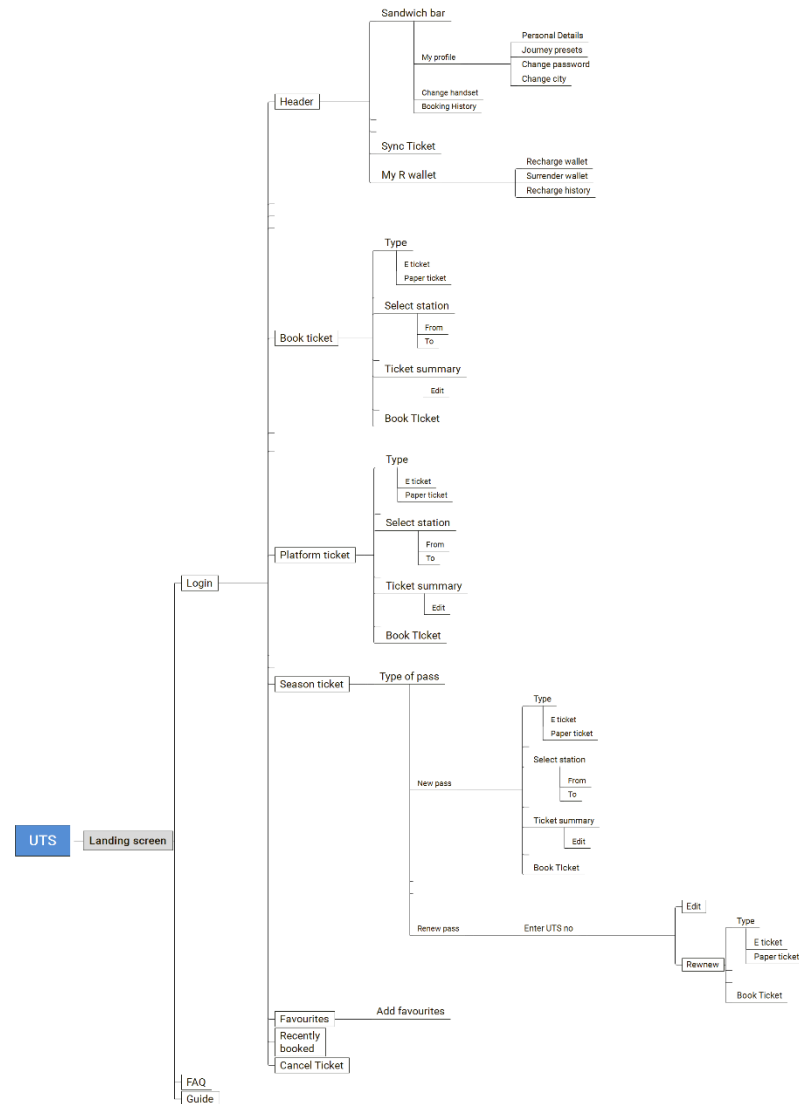
Flow



Current Information Architecture



New Information Architecture



Wireframes

Version 1

FAQ

Login

Password

Forgot Password

Login

Sign Up

Login Screen

Sandwich bar

Home / Logo

My R-wallet - 110 Rs

Platform Ticket

Normal Ticket

Season Ticket

E - Ticket

Paper ticket

From

To

Next

E - Ticket

Cancel Ticket

All Bookings

Amount visible in R-wallet balance

High priority tasks

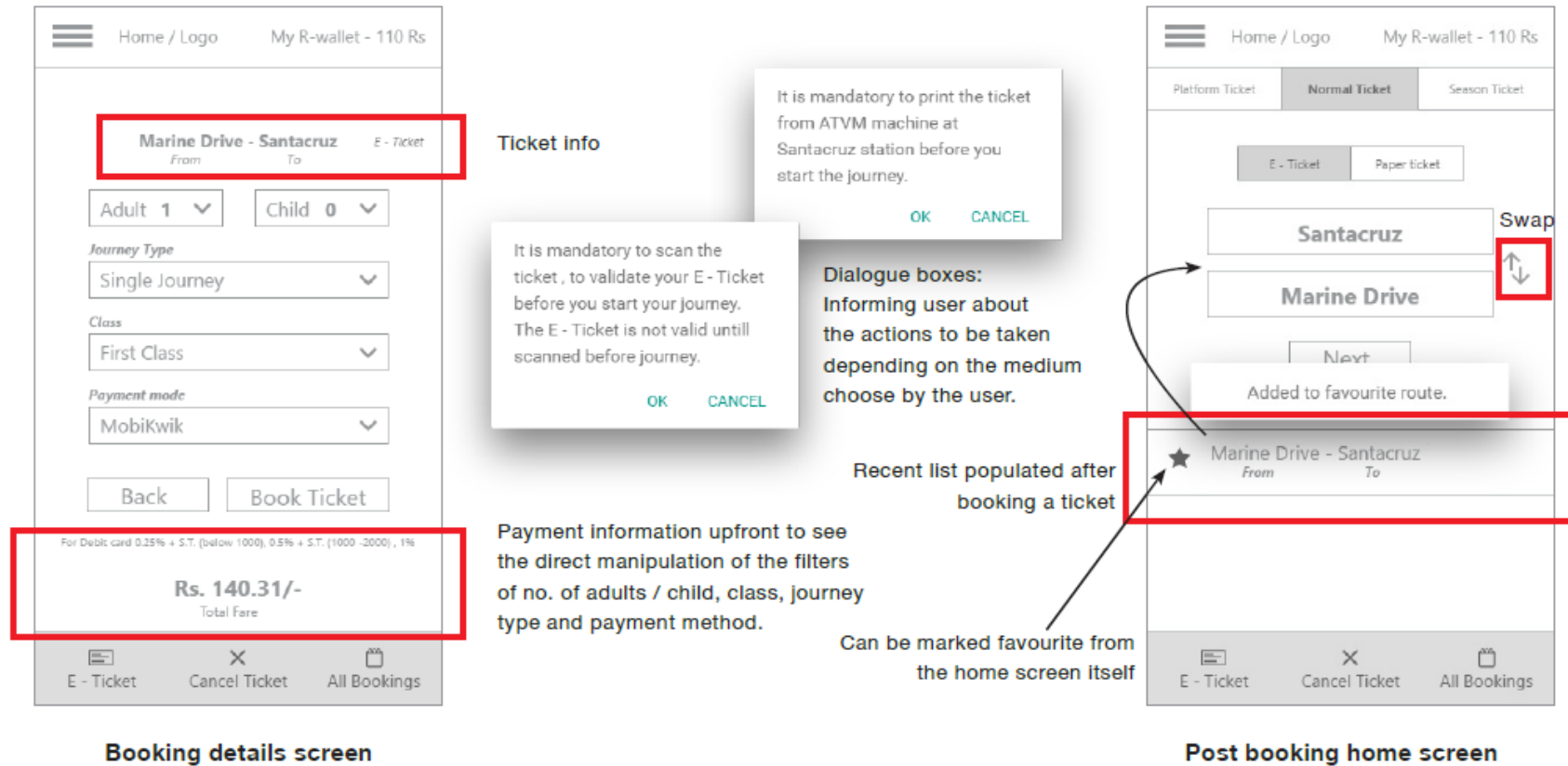
Default setting for Normal and E ticket

Quick buttons

Landing screen

Giving users the most obvious feature up front of booking tickets and pre-setting the tab on Normal Ticket. The Sandwich bar contains links and information that would not be required very often hence can be afforded to be hidden under. The sticky footer at the bottom is also 2nd important feature group.

Wireframes



The price of the ticket is directly populated here. It is much easier for the user to directly manipulate the filters and see the difference.

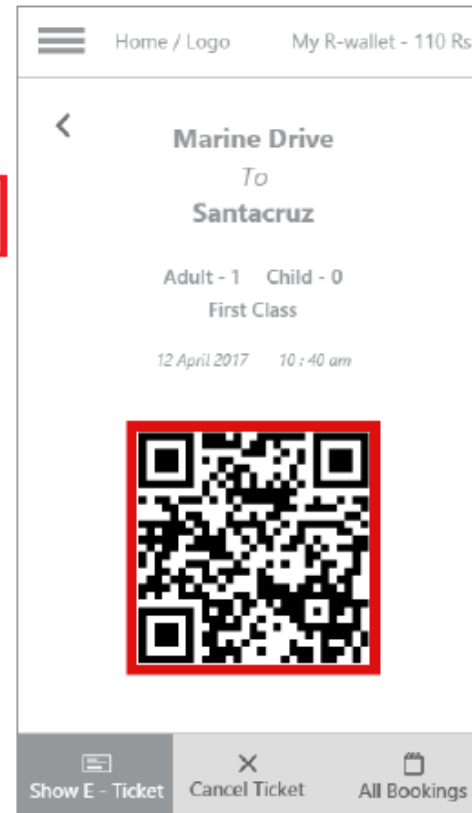
Users generally book return tickets, but if they would not then in that case the recent list is helpful to populate the from and to fields directly into the boxes as shown above and can also be swapped.

Wireframes

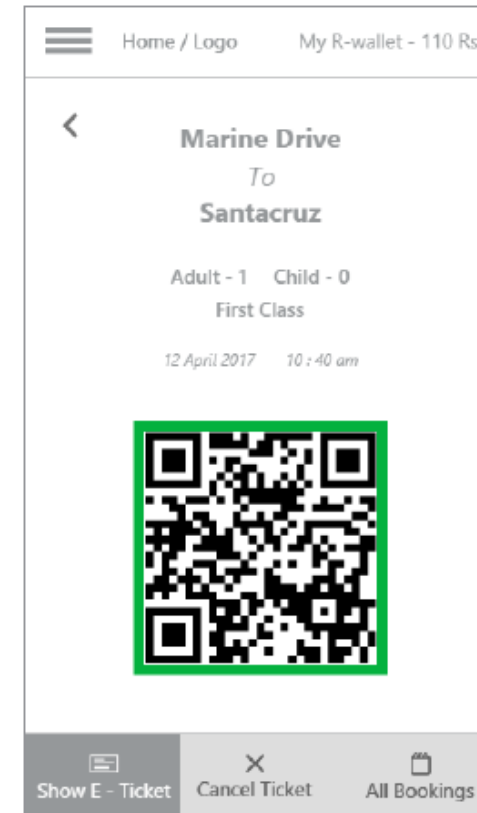
Ticket list in the E-ticket tab



Ticket before it is validated at the station using the scanner



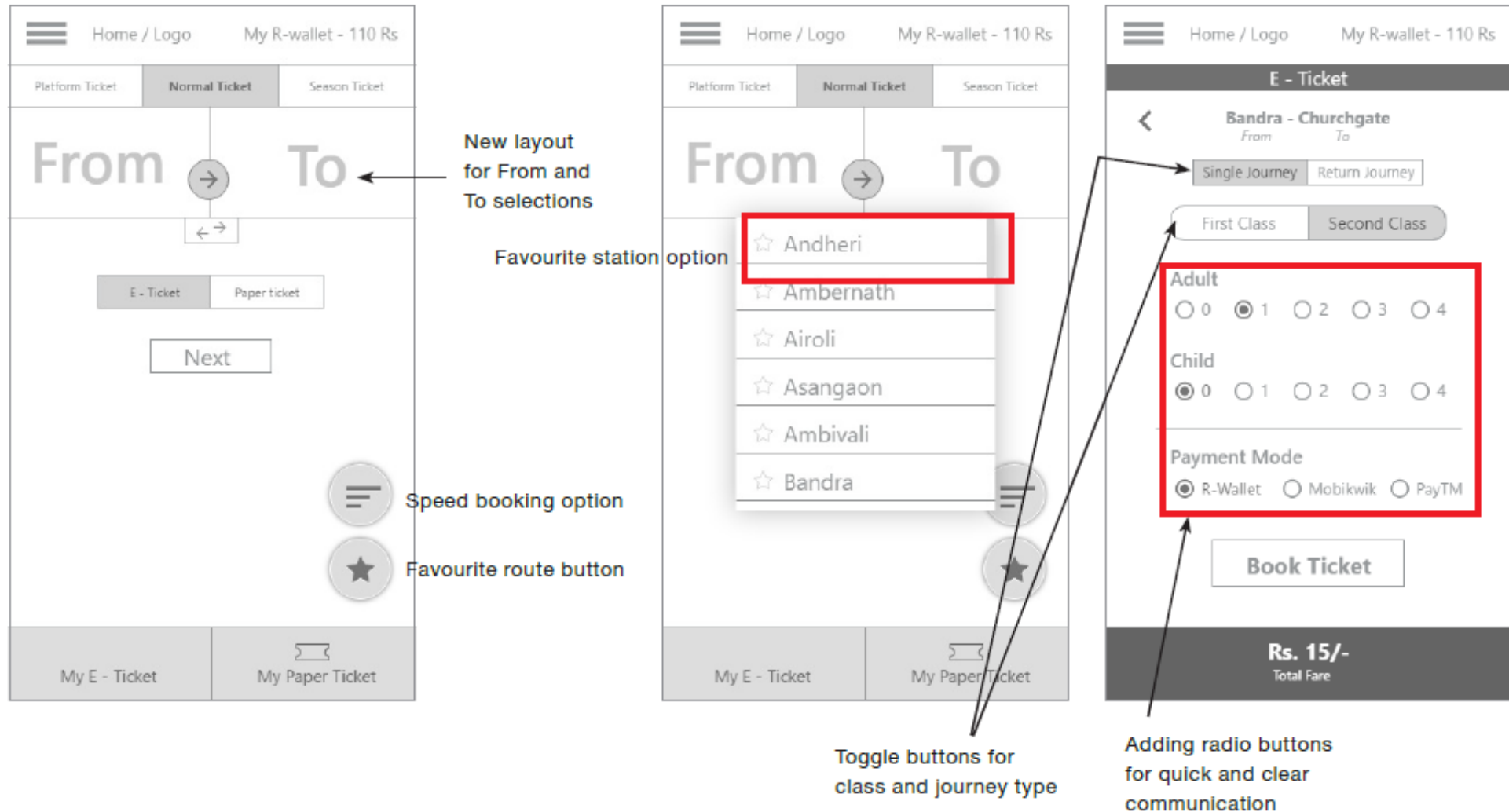
Ticket after it is validated at the station using the scanner



The QR code can be scanned at the source railway station before journey to have a valid E-ticket.

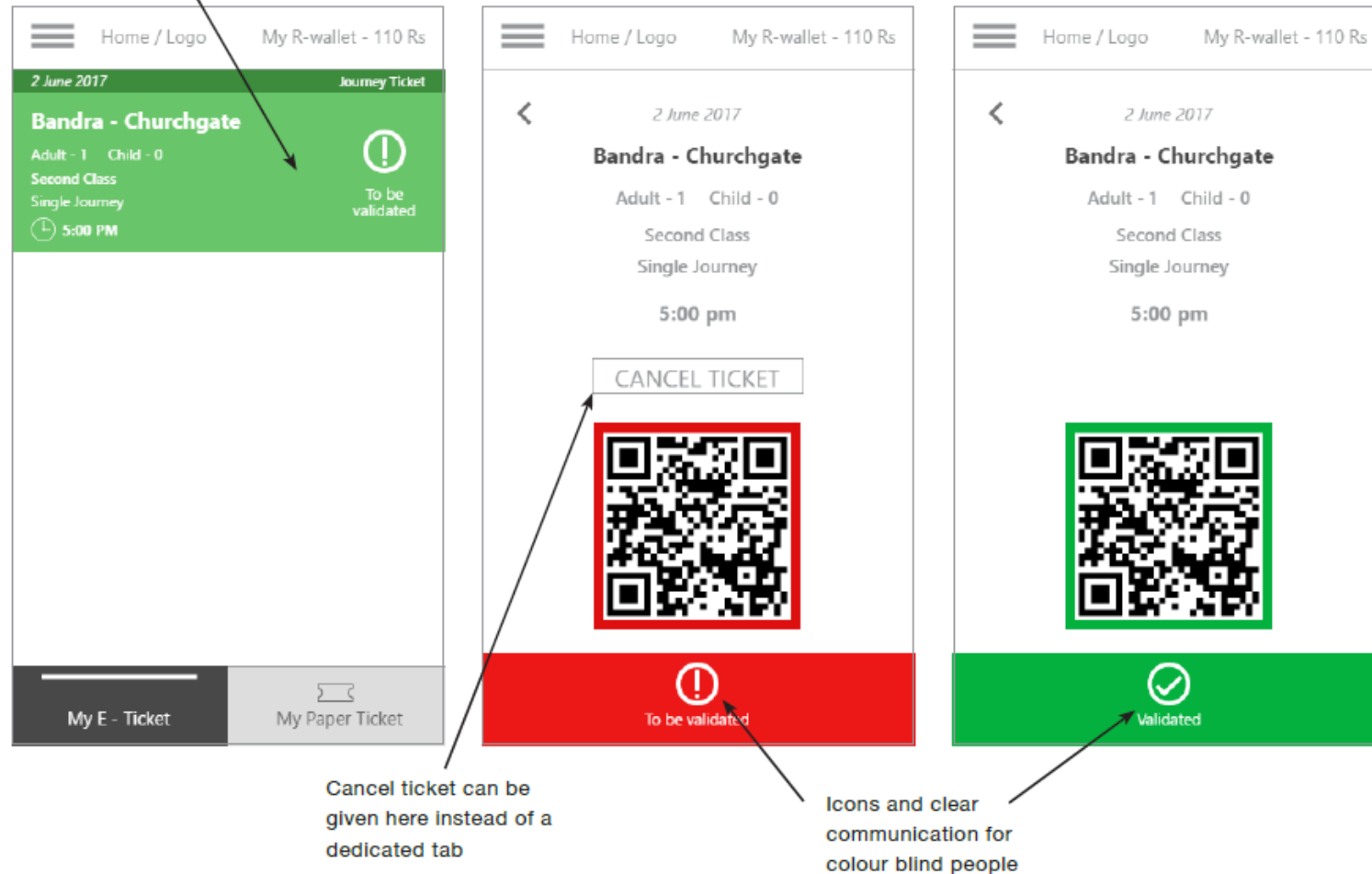
Wireframes

Version 2

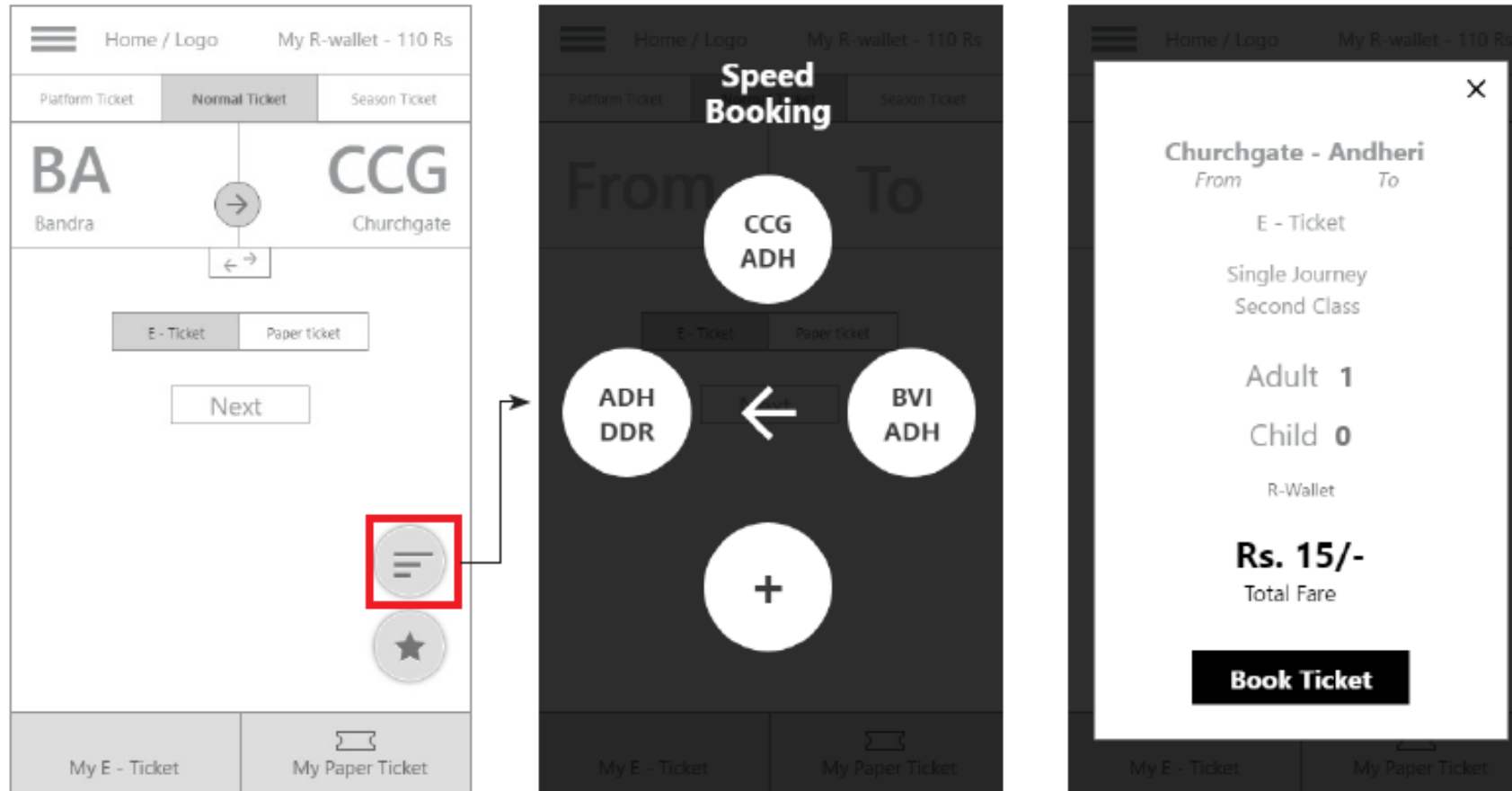


Wireframes

Colours for different types of tickets



Wireframes



Dedicated speed booking shortcuts with customizable travel preferences.

UTS Mobile Ticketing App

Basic Guidelines

Typography

Fira Sans Thin

Fira Sans Light

Fira Sans Book

Fira Sans Regular

Fira Sans Medium

Fira Sans Semibold

Fira Sans Bold

Fira Sans Heavy



Base Blue
(Brand colour)
1E2A6B



Journey Ticket
657FC1



Platform Ticket
A07F8D



Season Ticket
DBA349

UTS Mobile Ticketing App

Basic Guidelines

Typography

Fira Sans Thin

Fira Sans Light

Fira Sans Book

Fira Sans Regular

Fira Sans Medium

Fira Sans Semibold

Fira Sans Bold

Fira Sans Heavy



Base Blue
(Brand colour)
1E2A6B



Journey Ticket
657FC1



Platform Ticket
A07F8D



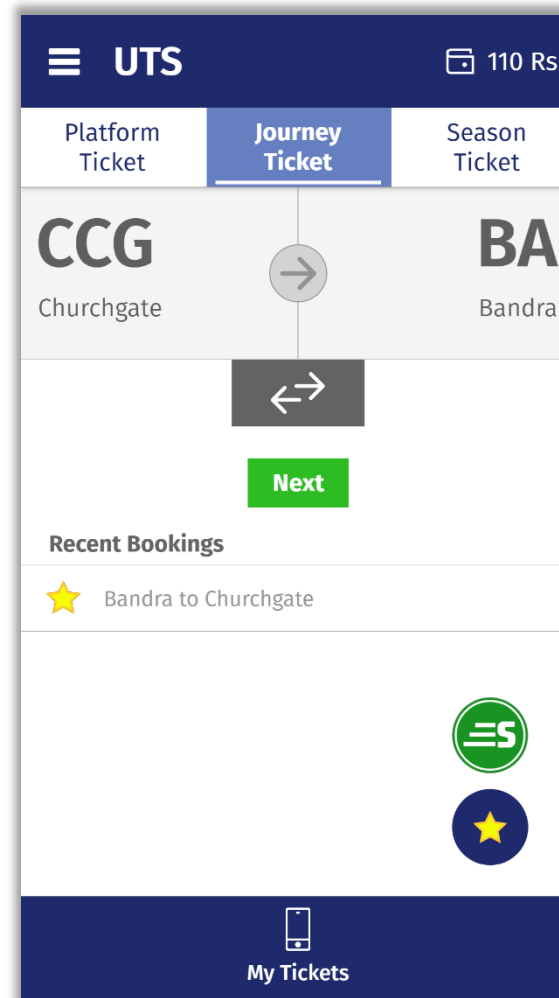
Season Ticket
DBA349

Icons



Final Design

Final Design



5 users

All Male

Age Group
(18 – 32)

1
User of
existing app

3
New users

Heuristic & Think Aloud

- Task to book ticket
- Task to add speed booking route
- Validating ticket

5 / 5

Validating E – Ticket

Conceptual
model

2 / 5

Speed booking

New
features

5 / 5

Having the option of print or
e-ticket from ticket details.

Conceptual
model

Evaluation - *Heuristic*

UTS 110 Rs

Platform Ticket Journey Ticket Season Ticket

From → To

- ☆ Ambernath
- ☆ Andheri
- ☆ Asangaon
- ☆ Badlapur
- ★ Bandra
- ☆ Bhandup

My Tickets



Difficult to figure

UTS 110 Rs

Platform Ticket Journey Ticket Season Ticket

Renew Pass New Pass

UTS No.

Next

My Tickets

Booking for oneself or others

UTS 110 Rs

< Bandra to Churchgate

Single Journey Return Journey

First Class Second Class

Adult

0 1 2 3

Child

0 1 2 3

Payment

R - Wallet MobiKwik

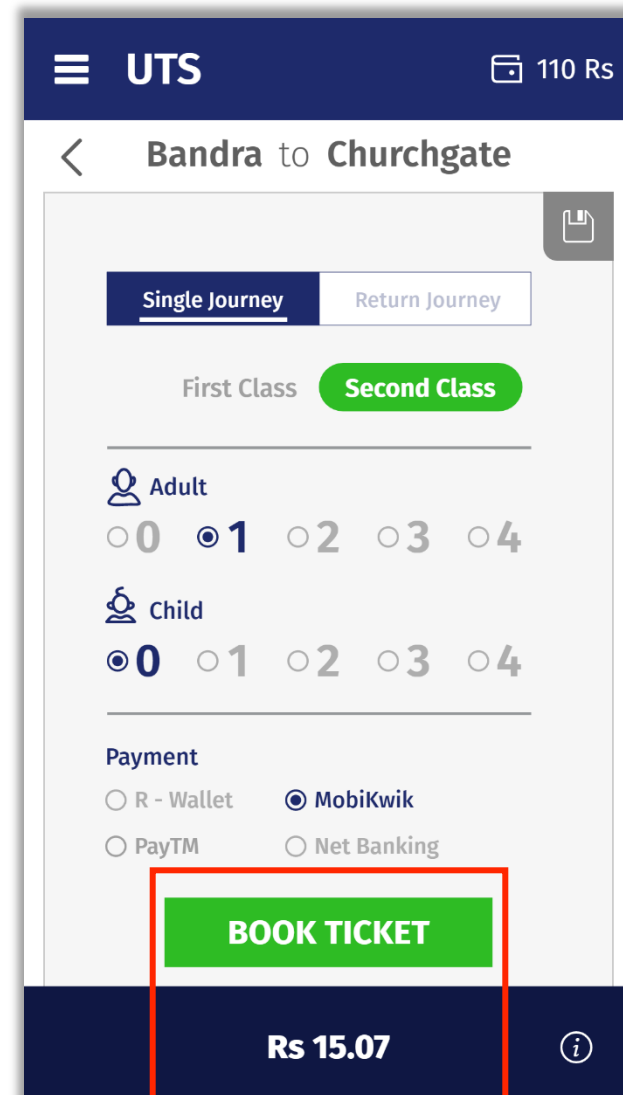
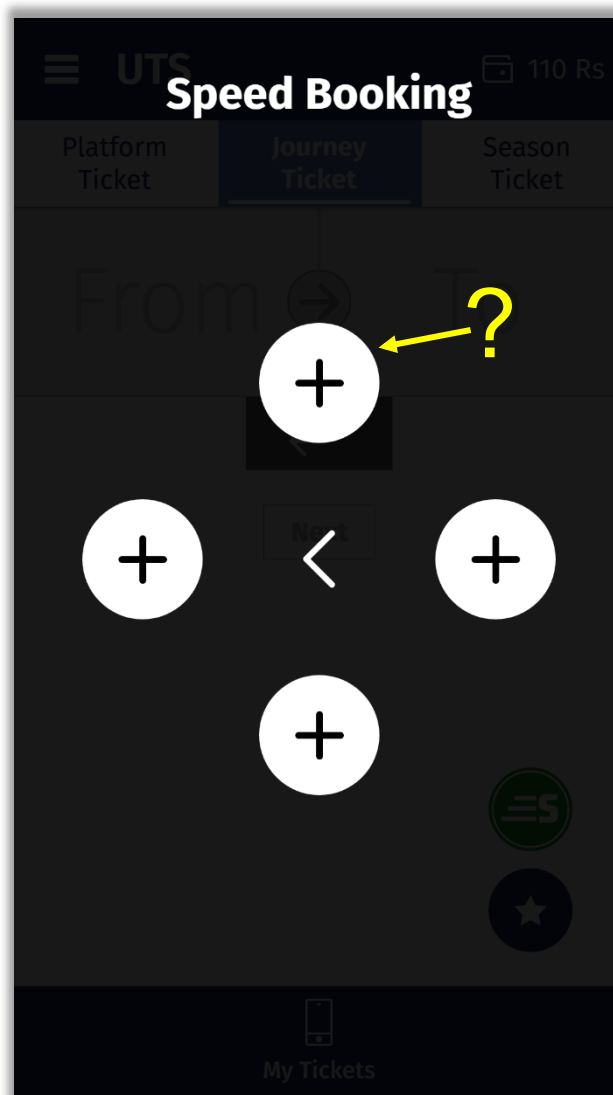
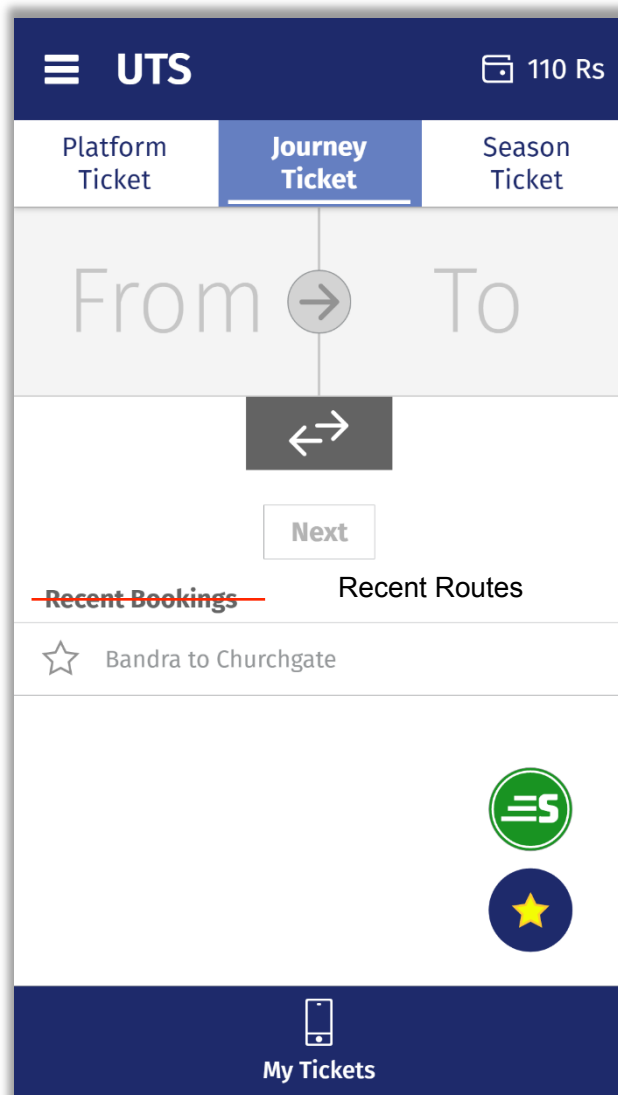
PayTM Net Banking

BOOK TICKET

Rs 15.07

Saving preset for setting

Evaluation - *Heuristic*





~ Thank You ~



Future scope

Pitch it to Mumbai Suburban railways

Mobile app

IR Unreserved Ticketing

Registration(1 of 4)

Mobile Number
1111111111

Name
testing

City
CHENNAI

Select ID card type
Govt. issued Icard

ID card number
XXXXXXXXXX

Generate OTP

☒ I accept the utsonmobile [Terms of Use](#) and [Privacy Policy](#)

Centre For Railway Information Systems(CRIS)

IR UNRESERVED TICKETING

Registration (2 of 4)

Default Train Type
ORDINARY (O)

Default Payment Type
RWALLET

Default Class
SECOND (II)

Done

Center For Railway Information Systems (CRIS)

IR Unreserved Ticketing

UTS Suburban Ticket

Mobile Number

Password

Log In

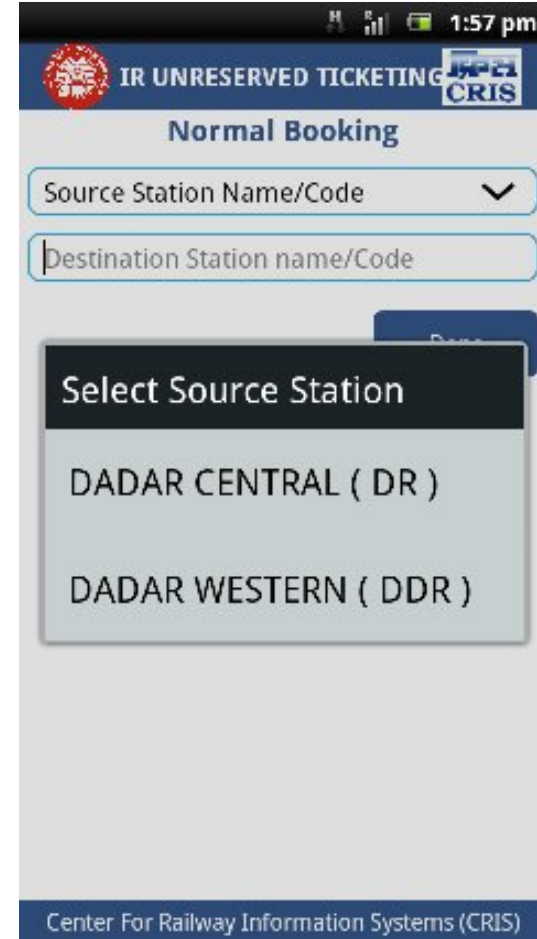
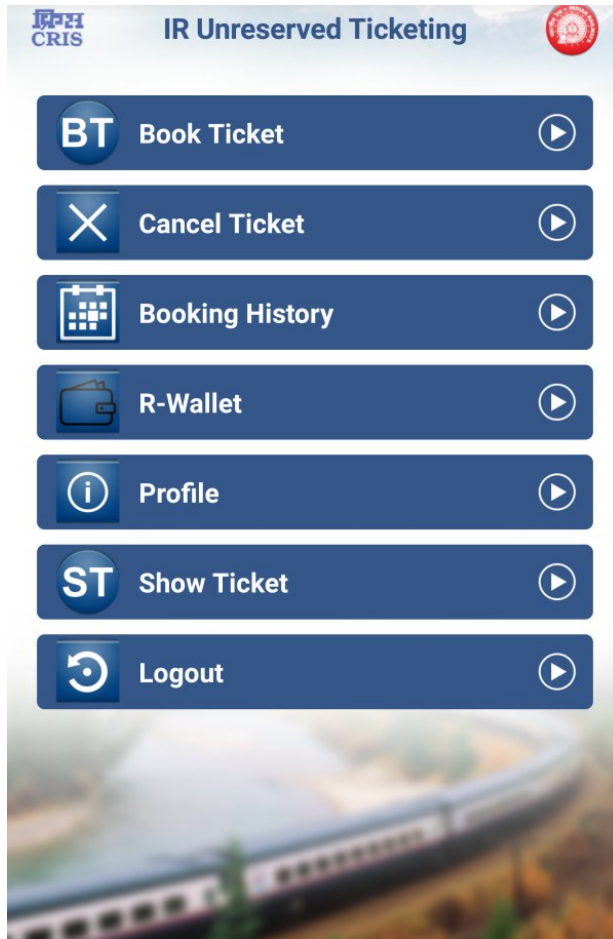
Sign Up

Forget Password

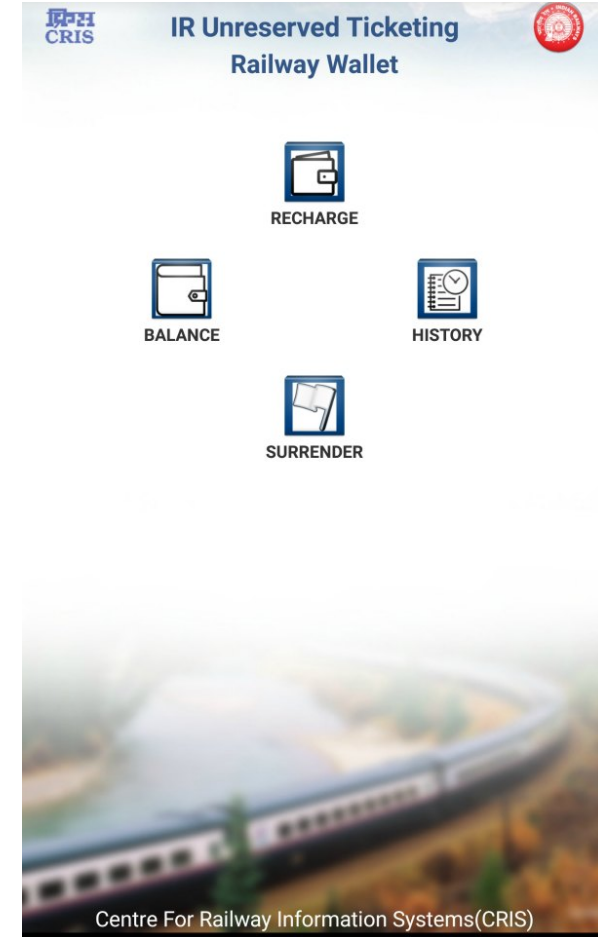
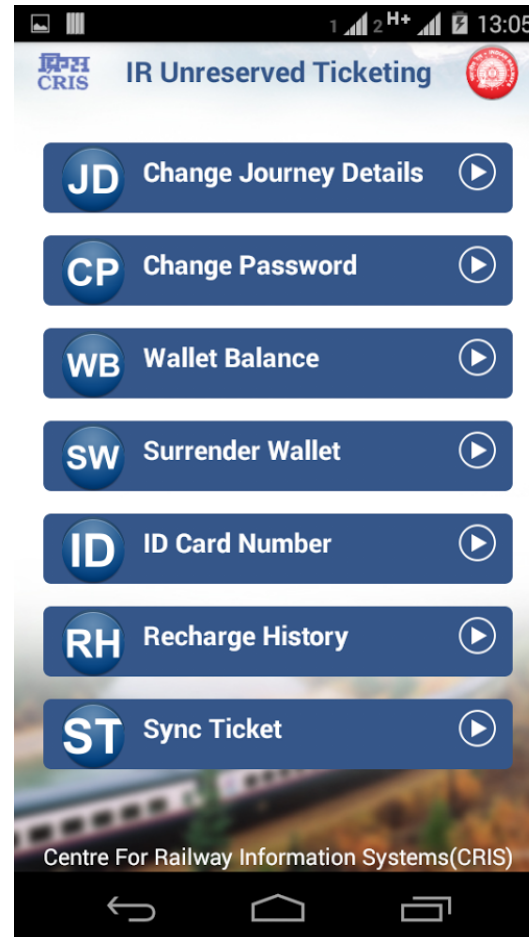
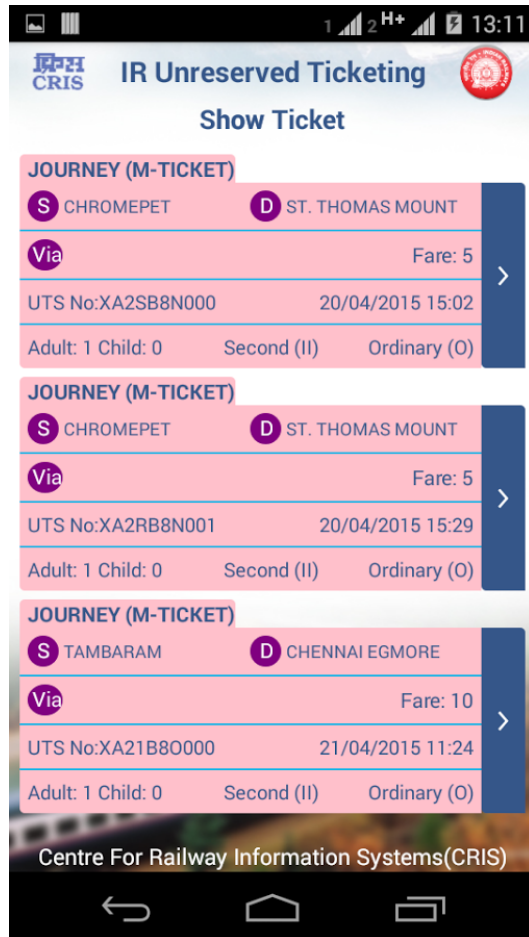
[Getting Started](#)

Centre For Railway Information Systems(CRIS)

Mobile app



Mobile app



Current Scenario



Image source: Google.com



Image source: womentravelmother india.com