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Project Report

Name : SMART SOLUTIONS FOR RAILWAYS

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1. INTRODUCTION

1.1 Project Overview

As trains are one of the most preferred modes of transportation among middle class and impoverished people as it attracts for its amenities. Simultaneously there is an increase at risk from thefts and accidents like chain snatching, derailment, fire accident. In order to avoid or in better words to stop all such brutality we came up with a solution by providing an application which can be accessed by the user after booking their tickets. With a single click this app addresses issues by sending a text message to TC and RPF as an alert. In our project we use Node-Red service, IBM cloud platform to store passenger data.

1.2 Purpose

The purpose of this project is to report and get relived from the issues related to trains.

2. LITERATURE SURVEY

2.1 Existing problem

- A Web page is designed for the public where they can book tickets by seeing the available seats.
- After booking the train, the person will get a QR code which has to be shown to the Ticket Collector while boarding the train.
- The ticket collectors can scan the QR code to identify the personal details.
- A GPS module is in the train to track it. The live status of the journey is updated in the Web app continuously
- All the booking details of the customers will be stored in the database with a unique ID and they can be retrieved back when the Ticket Collector scans the QR Code

2.2 References

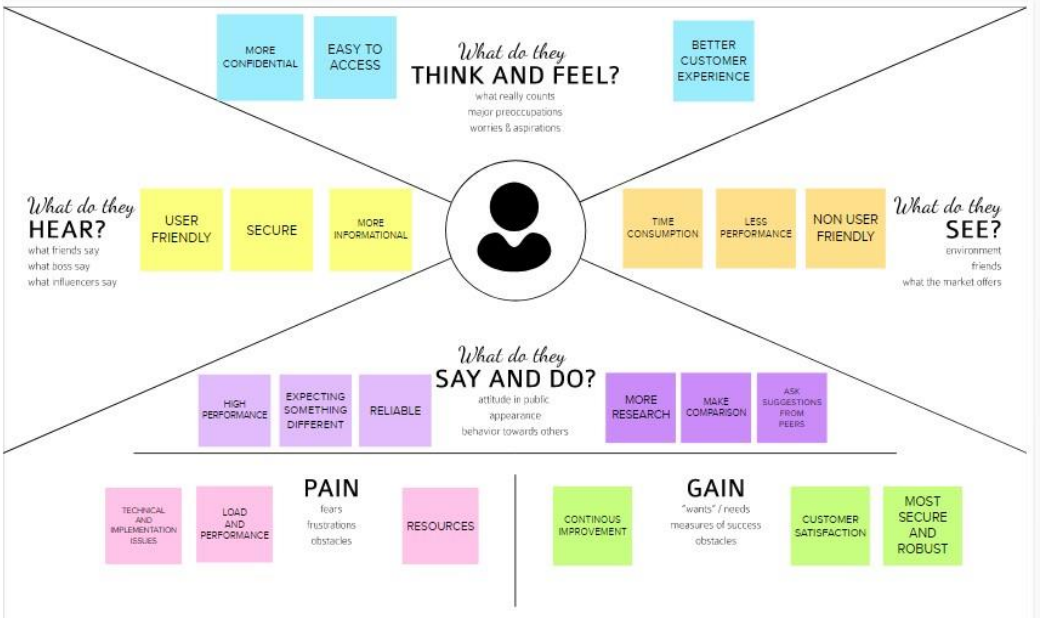
S.NO	TITLE	AUTHOR	YEAR	KEY TECHNOLOGY
1.	Problems of Indian Railways	Benjamin	2021	Common problems in Indian railways
2.	Construction and Building Materials	Sañudo, Roberto, Marina Miranda, Carlos García, and David GarcíaSanchez	2019	Drainage in railways
3.	Main geotechnical problems of railways and roads in kriolitozone and their solutions	Kondratiev, ValentinG	2017	Main problems in railways
4.	A comparative study of Indian and worldwiderailways	Sharma, Sunil Kumar, and AnilKumar	2014	Study of Indian railways
5.	Ticketing solutions for Indian railways using RFID technology	Prasanth, Venugopal, and K.P. Soman	2009	Solution for ticketing using RFID

2.3 Problem Statement Definition

Smart Solutions for railways are designed to reduce the work load of the user and the use of paper.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming

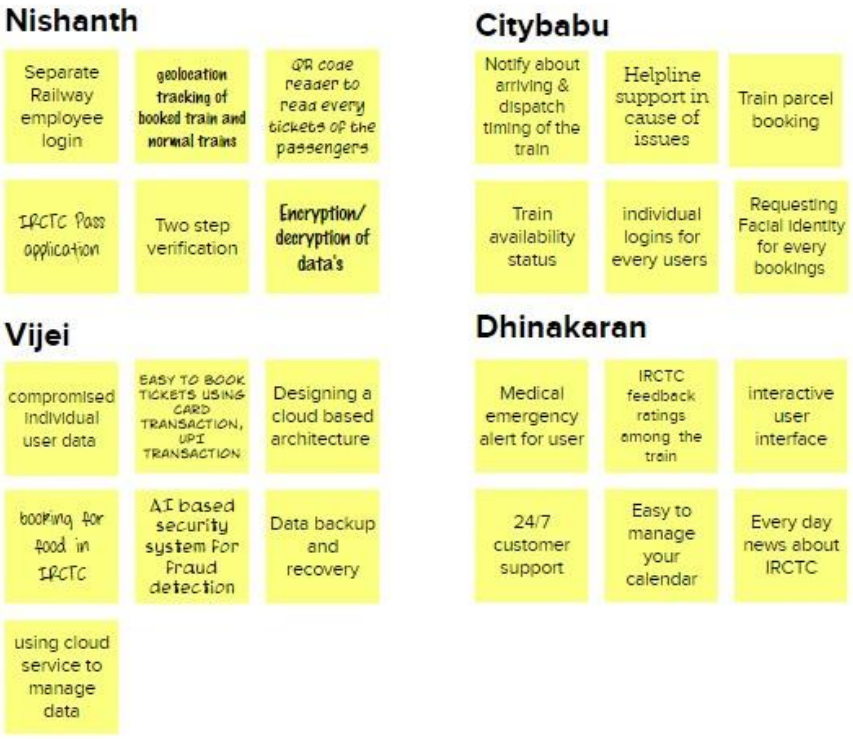


Figure-1

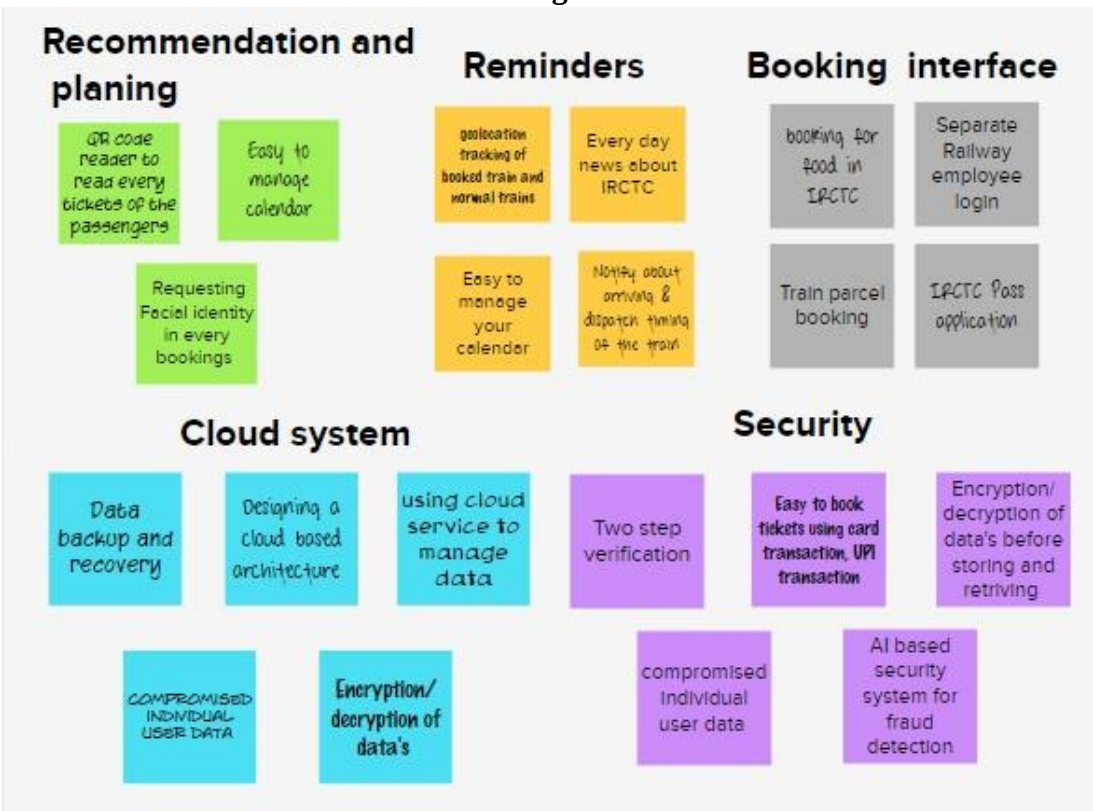


Figure-2

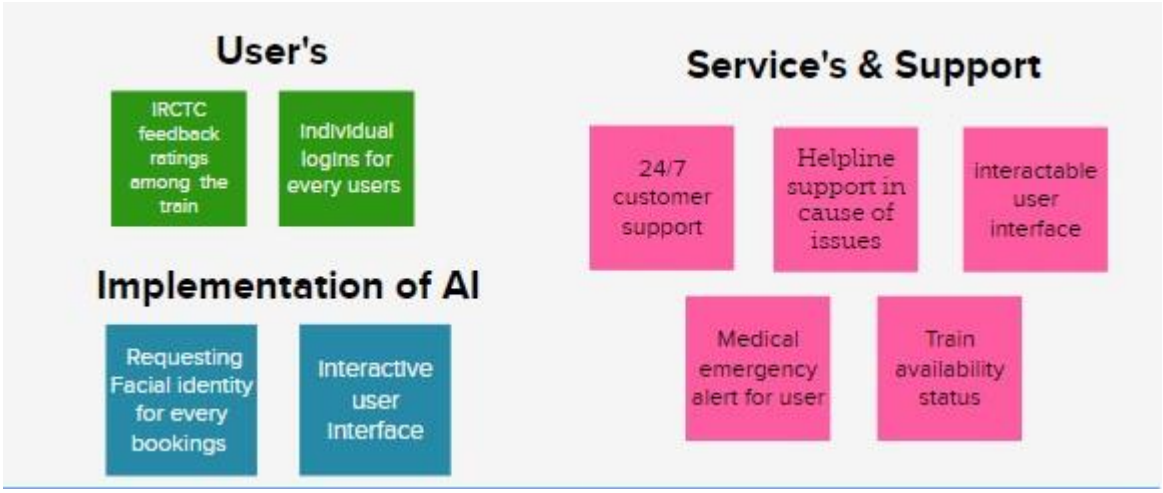


Figure-3

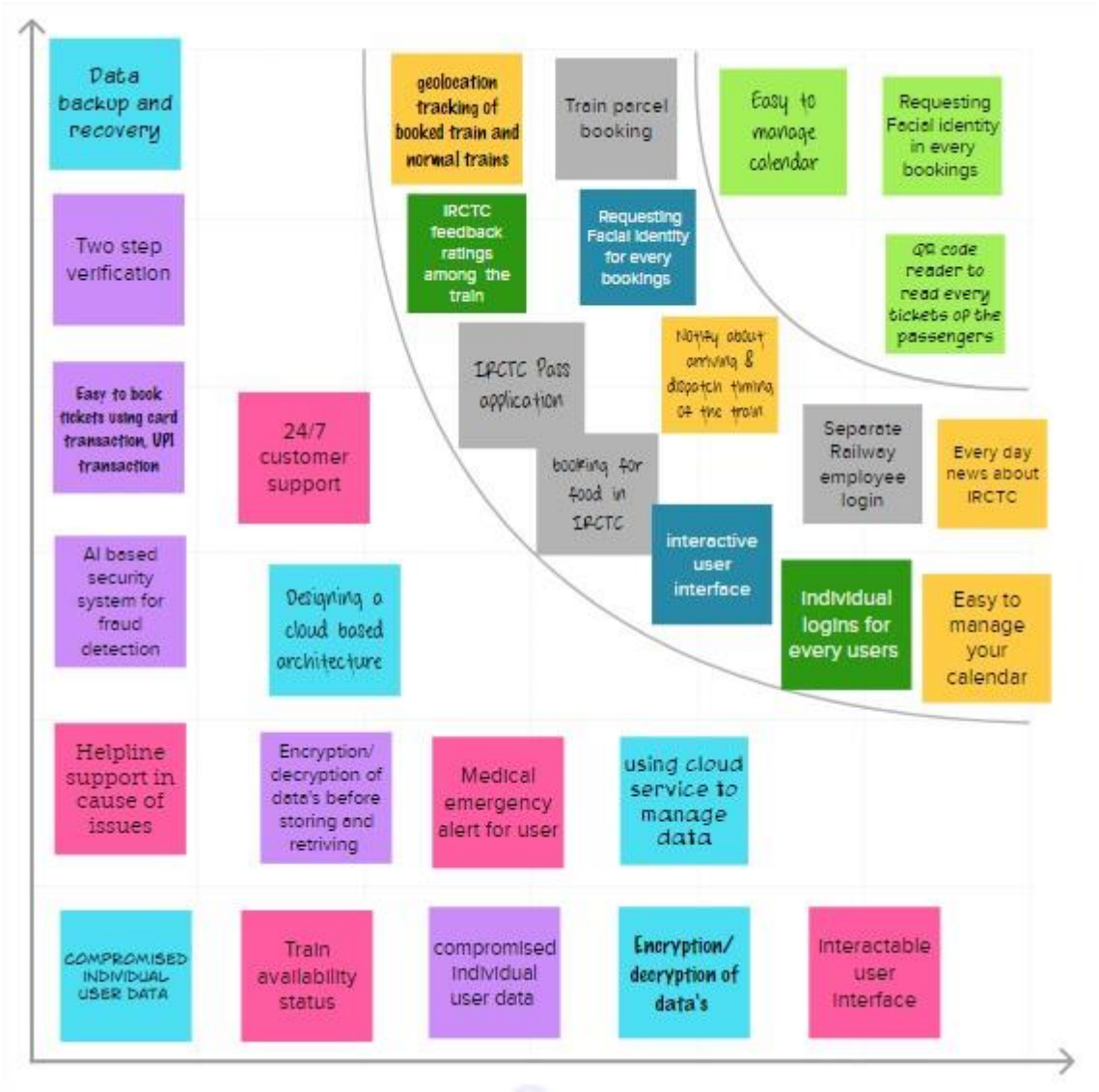
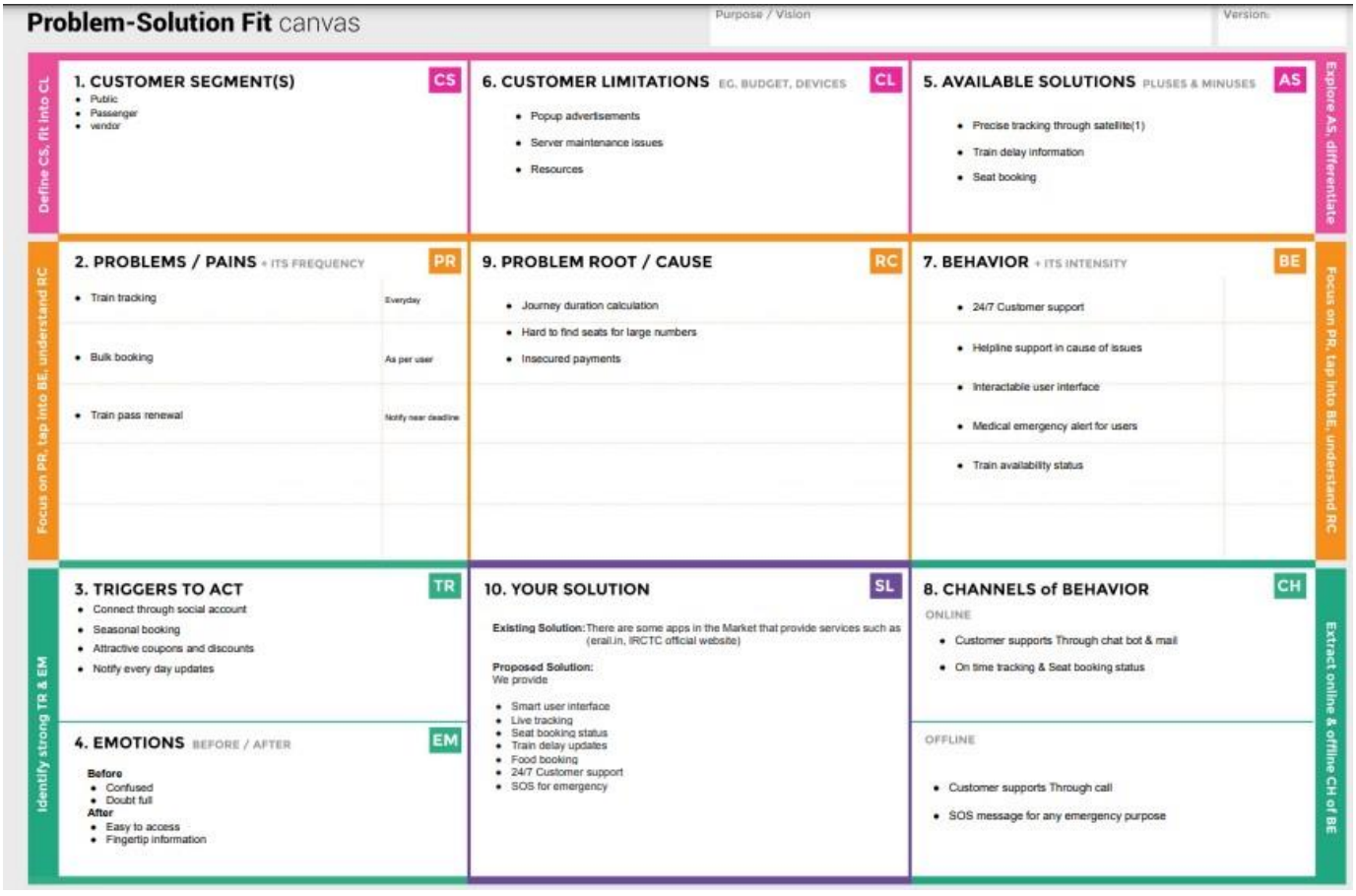


Figure-4

3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Web application based on IOT for efficient railway system based on user requirements and security
2.	Idea / Solution description	1)QR code reader to read every tickets of the passengers. 2)Requesting Facial identity in every bookings
3.	Novelty / Uniqueness	1)Interactable user interface 2) QR code, Virtual assistance
4.	Social Impact / Customer Satisfaction	1)Easy to access 2)More confidential 3)Better customer experience
5.	Business Model (Revenue Model)	1)Online payments 2)connect through social account
6.	Scalability of the Solution	1)Train tickets 2)Train availability

3.4 Problem Solution fit



4. REQUIREMENT ANALYSIS

4.1 Functional requirement

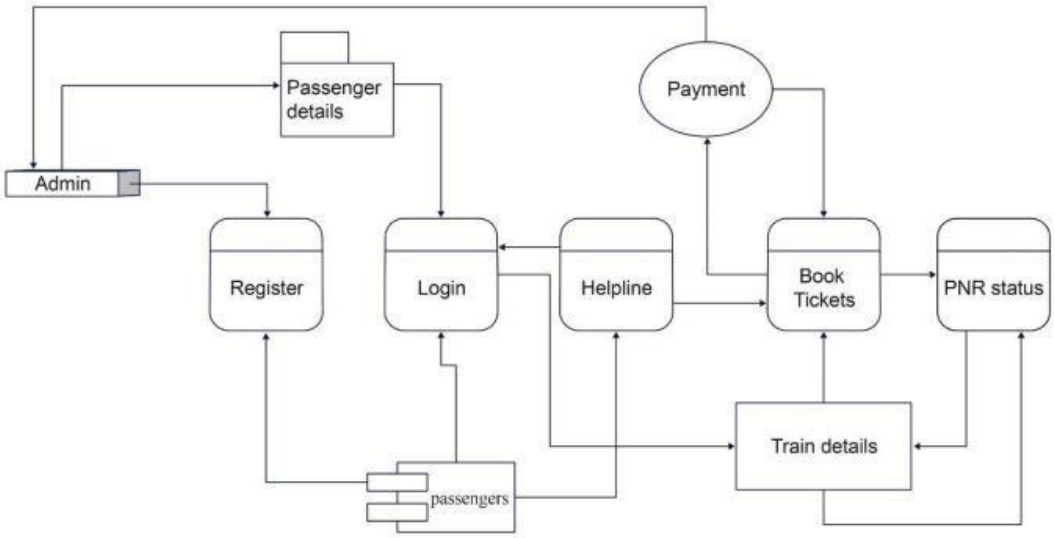
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Web page
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User QR code generation	QR code generated
FR-4	GPS tracking	Live location

4.2 Non-Functional requirements

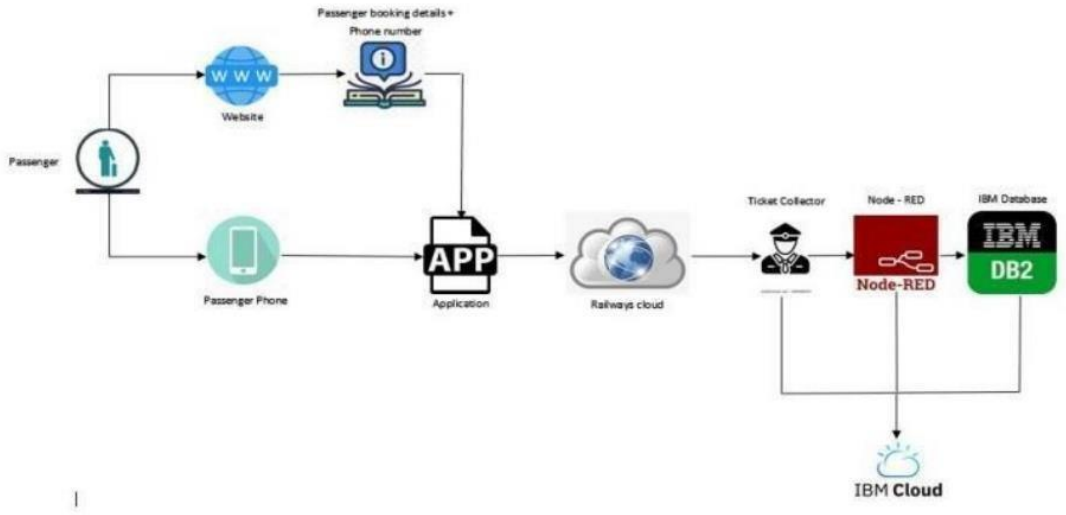
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	User can navigate easily
NFR-2	Security	The user detail are secured in cloud
NFR-3	Reliability	Reliable to the user without any failure as it is not fixed to limited number of users
NFR-4	Performance	User friendly
NFR-5	Availability	At any time
NFR-6	Scalability	Support the user with their need in ticket booking & tracking the train live location

5. PROJECT DESIGN

5.1 Data Flow Diagrams



5.2 Solution & Technical Architecture



6. ADVANTAGES

- The passengers can use this application, while they are travelling alone to ensure their safety.
- It is easy to use.
- It has minimized error rate.

7. DISADVANTAGES

- Network issues may arise.

8. CONCLUSION

Accidents occurring in Railway transportation system cost a large number of lives. So, this system helps us to prevent accidents and giving information about faults or cracks in advance to railway authorities. So that they can fix them and accidents cases becomes less. This project is cost effective. By using more techniques, they can be modified and developed according to their applications. By this system many lives can be saved by avoiding accidents. The idea can be implemented in large scale in the long run to facilitate better safety standards for rail tracks and provide effective testing infrastructure for achieving better results in the future.

9. FUTURE SCOPE

This application is ensured for safety for the passengers while they are travelling alone as well as they travel with their family or friends. In future, this application may also be used by passengers who travel through bus. By further enhancement of the application the passengers can explore more features regarding their safety.