

# NFC Based Technology for Railway Ticketing System

Sunita Dambhare, Sejal Doshi, Pratik Salya, Prasad Halgaonkar

**Abstract**— In today's area of information technology everyone tries to find convenient way to make their jobs as easier as possible without any workload. Everyone knows about the condition of Indian Railway system, travelling via railway is one of the most tedious thing. So we try to develop such a system which will reduce workload of Ticket checker as well as passenger. We use NFC base technology for developing proposed system. In this system ticket checker will have one NFC enabled phone and he can check the validity of passenger's ticket by using one application installed on his NFC enabled phone. On the other side we will create one Android application which provides user interface to passenger to view train schedule and book the ticket. In case if any vacant seat is available then server automatically informs the passenger in waiting list about his seat confirmation. Also we will create one database where all the information about passenger as well as train schedule will be stored for security purpose.

**Index Terms**— NFC enable phone, NFC tag, Railway ticketing System, Ticket Checker.

## I. INTRODUCTION

The current scenario is that passengers must have to keep waiting for the conformation of ticket. The waiting list varies depending upon various parameters. According to the current scenario, once train started then waiting list of passengers is maintained by Ticket Checker so if there are some vacant places and if any one who neither have ticket nor have reservation, they can bribe the TC for that seat. So passengers who are in waiting list can't get their seat even if they have already made the reservation.

In our system waiting list is maintained by server, if passenger is not present at the time of journey then TC will update their status on server and server will update waiting list and allocate that seat to the passenger. Allocation of seats can be done on priority basis.

Our main focus is to provide the such system which will for sure reduce the workload of user as well as ticket checker. Thus we have proposed a system which will work for the same.

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## II. NFC TECHNOLOGY:

NFC is Near field communication technology. NFC is a set of standards for smartphones and similar devices to establish radio communication with each other by touching them together or bringing them into proximity, usually no more than a few centimeters. Operating frequency of NFC is 13.56 MHz and it can able to transfer 106 kbits/sec to 424 kbit/sec. With this technology we developed a NFC issuer Application.

## III. PROPOSED SYSTEM:

The proposed architecture helps in understanding The how NFC technology is used for enhance the Railway ticketing system.

The component of the following architecture are: NFC enable phone with android application for Ticket checker. Android application for user. Server Database. Android application for NFC read and write.

The description of the above named components are as follows.

### 1) Server Database:

Server database where all information about passenger and their journey details will be stored. As well as details about train schedules, routes, source and destination all these information will be stored on server. At the time of registration passenger has to send registration request to the server at that time all the information about passenger will be stored on server database. After successfully registration whenever passenger want to book his ticket from the passenger side application he can book the ticket and after click on book ticket button then all the journey details will be automatically save on server database.

### 2) User Application:

This is the client side application which provide user interface between user and server. With this application user can book his ticket. After this NFC TAG with unique id will be act as ticket for passenger.

### 3) Ticket Checker Application:

Ticket checker checks whether passenger's ticket is valid or not.

### 4) NFC Issuer Application:

With This Application unique id will be providing to the passenger.

5) 1.2.5 Admin

With this application admin can manage all the information about train. It can add, delete, modify train route and location. It also adds the cost of each journey.

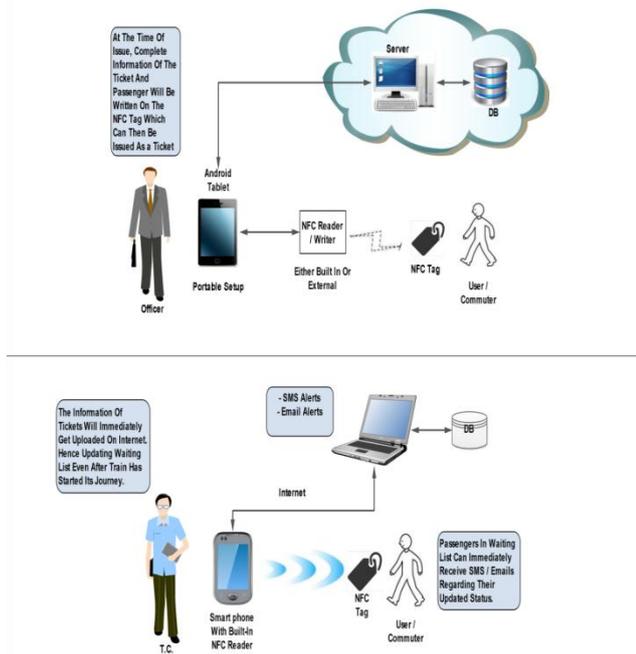


Fig. 1 Architecture of proposed System

IV. ALGORITHM

SHA -1 Algorithm:

We use Secure Hash Algorithm for providing a unique id for passenger. By using this algorithm at the time of NFC issue, an NFC TAG with one unique id will be provided to the each user. Afterward, all the changes about journey can be done with this unique id only at server side. By giving user id, it generates a 160-bit unique key.

A. Comparison of existing system with proposed system.

There are various technologies already used for railway systems like Android Suburban Railway Ticketing with GPS as Ticket Checker, in which a passenger can carry his ticket as a Quick Response code in his smart phone. This technique also uses a smart phone GPS technology for deleting a passenger ticket automatically after a specific interval of time once the user reaches to the destination [1]. But with this technology, there is no facility to inform a passenger about the conformation of their seats. One of the most advantages with this proposed system is that instead of a QR code, we use NFC-based technology, which is more powerful and secure. One more advantage with this proposed system is that it is not compulsory for a passenger to carry a smart phone with them.

V. RESULT:

The proposed system results into mainly 4 parts:

- i) Admin Application.
- ii) Android Application for Passenger.
- iii) Android Application for Ticket Checker.
- iiii) NFC Issuer Application.

i) Admin Application.

In this system, we provide an application for Admin which has the following areas for controlling and monitoring:

- Admin has to login before they use the system for authentication.
- Admin can add new train into a particular station and modify train details.
- Admin can manage all route information about train and modify it.
- Admin can add cost for each location.
- In short, Admin has authority to manage all the information about train journey and modify it.



Fig 2. Admin Application



Fig 3. Functionality given to admin

ii) Android Application For passenger.

In this system, we provide one android application for a passenger from which a passenger can book a ticket. This is the user interface between the user and server.

- New users have to fill all the information like name, password, USERNAME, address, mobile number etc; in short, a user has to create a new account. Then by using his name and password, a user can login.
- Once a user is logged in successfully, then various options will be provided on the next page like view histories, book ticket, add balance etc;
- Whenever a user books a ticket, his reservation details are automatically updated to the server database.

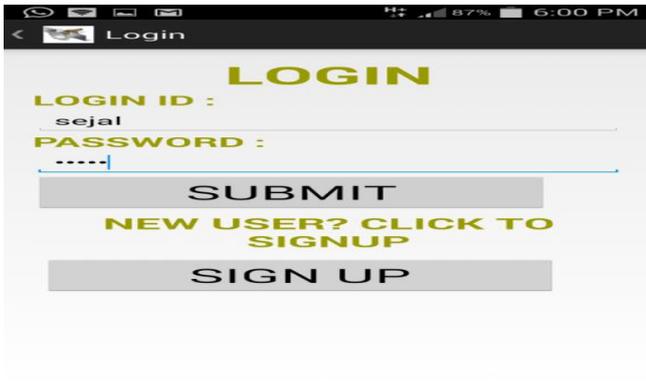


Fig 4.Login page for passenger.

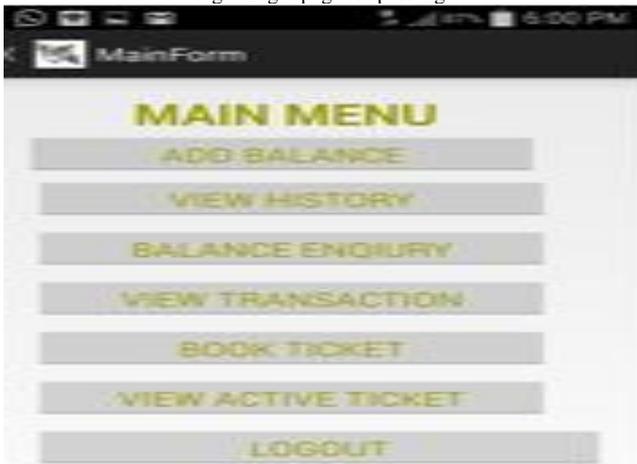


Fig 5.Next page after login successfully.

### iii) NFC issuerApplication:

In this system we provide this application for NFC issue.

- Once user has logged in to passenger application, then for only one time user has to go to the Railway Reservation Counter to buy the NFC tag.
- At that time there will one Authenticated Authority who has one NFC Enabled phone and this NFC Issuer Application has been installed on that phone. User has to give his USERNAME to that authority.
- That authority will enter user's USERNAME in his NFC Issuer application and keep user's **NFC tag near to his** NFC Enabled phone and he click on write data button. Then automatically one hash code will be generated for that USERNAME by using SHA-1 algorithm and this hash code will be stored on user's NFC tag. This hash code will be unique for each user.

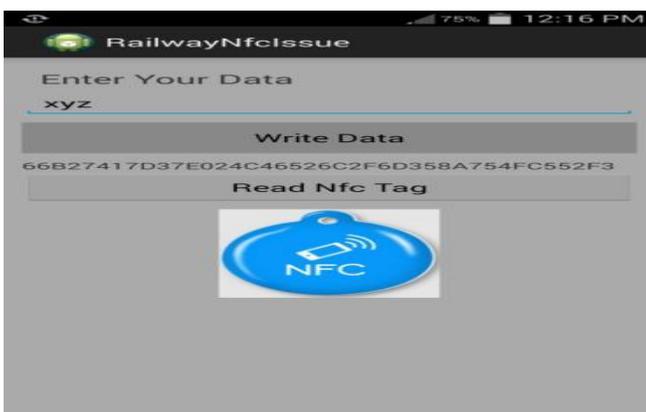


Fig 6.Generation of unique id.

### iv) Ticket Checker Application.

In this system we provide one ticket checker application. With this application Ticket checker Do the following activity.

- Ticket checker have to login before use the system.
- By entering train no he can fetch all the details about the passenger.
- By keeping his NFC enabled phone near to the passenger he check the validity of user.
- Clicking on offline mode he can download one CSV file which contain all information about passenger.
- Whenever TC find any vacant seat due to some cancelation or absence of passenger, he will mark that passengers entry as absent and update that thing to server then server will notify the passenger in waiting list about his seat confirmation via E-mail or SMS.



Fig 7.Fetching details about all passenger.



Fig7 Reading NFC TAG

### VI. CONCLUSIONS.

Thus, in proposed system we do the comparative study with the existing system. We try to eliminate all the drawbacks of the previous system. With this system all the workload of ticket checker as well as passenger getting reduced. It Replace all paper work with NFC enable smart phone and NFC TAG as ticket. So we try to develop proposed system to improve the condition of railway system and hope this system has bright future.

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