QUICK TOLL

BY TEAM TESLAA
TEAM ID-5427

SHOBHIT RASTOGI

VIKAS

SHIVAM KUMAR

DIWAKAR SHUKLA

KUNAL SHARMA

TARUN BAGHMAR

Present scenerio

- People stand in long queues to pay toll
- Wastage of time and fuel
- Fastag facility of government not reliable
- No dedicated lane for fastag
- Lot of technical errors in implementation of fastag

Our Idea

WE ARE USING :-

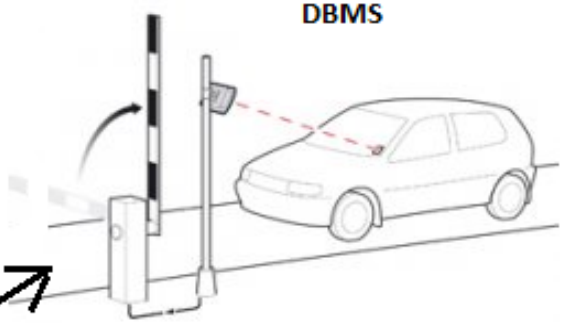
- RASPBERRY PI
- RFID RECEIVER
- PASSIVE UHF RFID TRANSMITTER
- HC-SR04 SENSOR

- Vehicle will be detected using HC-SR04 and the RFID READER.
- Each RFID tag have a unique ID
- All the detail of the driver are in synch with this id.
- Amount will be deducted automatically and a message and email of the same will be send to the driver
- He can now pass through the toll plaza.

it detect the incoming vehicle

takes the snap of vehicle no.

sensor and rfid reader detect the vehicle and send the ID to the DBMS



after comparison send the signal to gate

Central Server

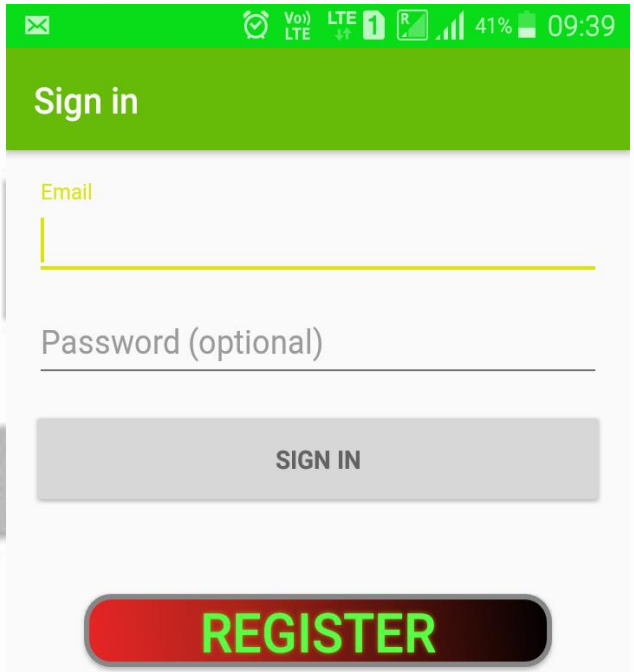
receive the data from DBMS and send data to operator and toll gate

DBMS

matches the data and send the message and email

Android Application

- The user just need to sign in into the app before passing through toll plaza
- New user need to register
- There are two options ,one for personal vehicles and other for company vehicle.



Challenges Tackaled

- FASTag is presently operational at 180 + toll plazas across national and state highways.
- Major drawback of this system is that sometime RFID reader reads other RFID tag or did not at all.
- We have use two stage system in which 1st is RFID reader ,it will detect the unique ID and the information sync with it will be send to server
- 2nd is camera which will take the snap of the vehicle no. and then compare it with information stored in server .If matches then signal is given to the gate.
- A sensor will detect the incoming vehicles and inform the camera to get active.
- Using RFID tag with high directivity.

RFID READER ANTENNA WITH HIGH DIRECTIVITY

RFID TAG - DIPOLE ANTENNA
RFID READER- LINEARLY POLARISED ANTENNA

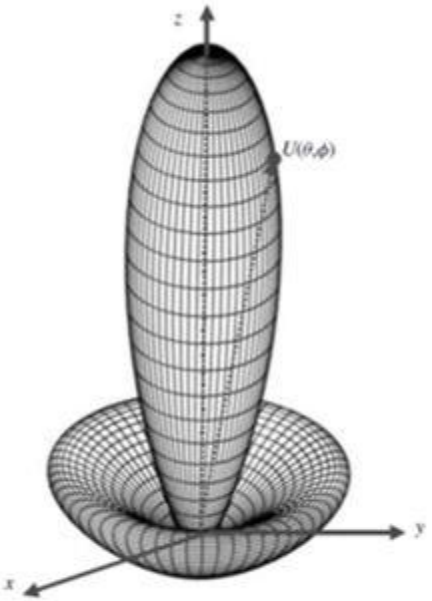


Figure 3 : Graphical representation of a Radiation Pattern

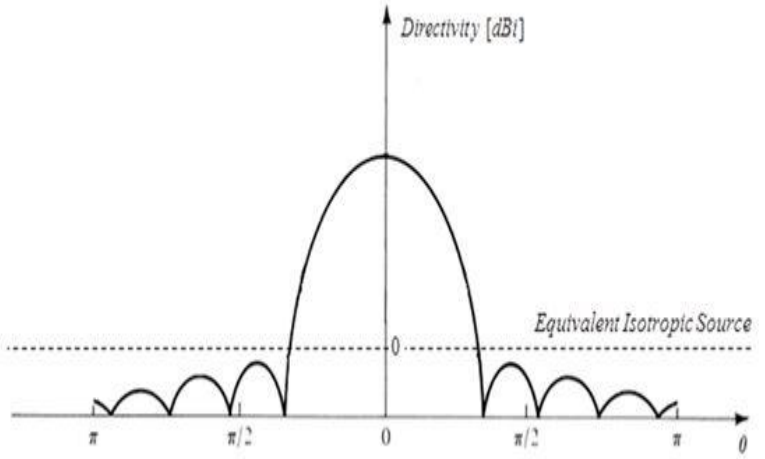


Figure 6 : Directivity of a typical directional antenna relative to an equivalent isotropic source.

Revenue model

- Most of the component which we are using is already installed at toll plaza and the rest of the component like

HC-SR04 sensor is of very low price.

- The basic structure of collecting revenue will be same .
- But through this system no. of jobs for unskilled people will decrease but more jobs will be for skilled people.
- The data collected through this system will let us know the statistic which we can use for further modification of system.