

CASE STUDY

Gate Access Management System – Indian Institute of Technology - Madras



THE REQUIREMENT

IIT Madras is one of the India's Top prestigious institutes, serving 8000+ students, 550+ faculties & 2000+ Staffs along with 3000 family members and 3500+ average visitors. To manage such a voluminous crowd, IIT was looking for a Modern Gate Access Management System that is tightly integrated with the best access control hardware & Software.

THE SOLUTION

Dedicated vehicle & pedestrians access lanes for IIT staffs and members.

Existing Fasttag on 4 wheelers should be used for Faculty & Staff access.

For 4 wheelers the secondary level of backup access should be provided using smart cards.

A web-based pass generation module and mobile based photo capturing QR Pass issuance module based on NBR plate recognition.

Email and Whatsapp integration for QR ticket delivery and validation.

Issue Passes for day scholars and 5000 school students studying inside the IIT campus.

Issue Passes for visitors both preapproved and walk – in.

Issue Single entry and exit pass for cab operators, delivery personals and all other similar users.

Vehicles entering from one gate should not be allowed to exit through other gates.

Provide a real time dashboard of incoming and outgoing visitor vehicle with overstay alerts.

Integrate CCTV for Number plate capturing & the entire system should be ready for 24/7 outdoor use.



THE SOLUTION



Based on the requirements, **Protellabs** deployed an in-house web based system called Gate Entry Management system (**GEMs**). All Gates, be it 2 or 4 wheelers are equipped with high-speed boom barriers. The IIT user lanes are equipped with UHF and HF readers whereas the Visitor lanes are equipped with QR & HF Readers.

Also we have provided Mobile Tabs with number plate recognition for easy identification and generation of manual QR passes for the daily users. For all pre booked Visitor's, e- mail with QR ticket option is provided for. It can be extended to WhatsApp messaging in future.

The typical time taken for UHF (Fastag) validation is less than 2 secs and for HF cards it is less than 1 sec. Apart, the QR validation (for both paper or Mobile media) is achieved in less than 2 secs per visitor/ Vehicle. Today the system is used by around 5000 users with only 4 IN and 2 OUT lanes. What more, for QR visitors a display is provided to display the Visitor Pass number, Status, Photo & Visiting location such that the Security can physically verify.



MIS reports provided for

- Vehicle Category wise headcount
- User list based on category
- Inventory and issuance of smart cards
- Category/department/member-wise head count
- Vehicle Overstay
- Gate-wise traffic movement
- Violation reports
- Card lost and find reports
- Operator wise Pass generation
- Overstay Report

TECHNOLOGY STACK

- RFID – UHF (ISO 18000)
- HF – Mifare and Desfire
- QR – Zebra OEM with EI RFID
- Web Portal - .NET framework with SQL server
- Mobile App - Android
- Notification - Whatsapp API

THE CHALLENGE



Multiple pre-existing legacy systems



Weather Proof QR, RFID and Smart card readers



FASTAG Incorporation



Capturing of Family member details



Fixing RFID tags on two wheelers



All hardware to conform with MAKE IN INDIA standards.

