

## **IOT based Smart Solutions for Railways**

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## **Problem statement for smart solution of railways**

To meet the increasing demands for passenger data rates, modern railway communication

networks face significant challenges. The advent of 5G communications after the long term evolution (LTE) and LTE-Advanced (LTE-A) systems provides several technological advances to address these challenges. In this paper, after reviewing the main 5G communication aspects for modern railways, we describe seven main challenges faced by train connectivity, and discuss appropriate solutions.

Specifically, we elaborate on techniques for ensuring connectivity and energy efficiency for the passengers' user equipment (UE) through the use of mobile relays (MRs) on top of the train wagons in conjunction with intelligent resource allocation.

These challenges pertain to confidentiality, authentication, integrity, non-repudiation, location privacy, identity privacy, anonymity, certificate revocation, and certificate resolution. This article aims to propose a novel taxonomy of security and privacy issues and solutions in ITS.

Many challenges were identified to achieve a fully functional, practical, and integratable ITS network. Some of these challenges include coordination with different stakeholders, adopting different countries' ITS systems, keeping up with the technology, integration with existing systems, and budget constraints.

### **Problem Statement:**

- Engagement of dedicated staff/window for
- Pass/PTO and ticketing.
- Loss of working time of staff requiring pass.

- Wastage of lot of Paper.
- Availability of Pass/PTO and ticketing(in night,
- away from HQ, for the families).

### **Solution to Problem:**

- Merge required data maintained on different
- platforms like IPAS,UMID etc. on 1 platform.
- One time initial detail required to be entered in
- system and later on Grade Pay system will take
- the required numbers of pass.
- Online Pass/PTO request will be applied and
- Unique Pass Number(UPN) will be generated with
- registered mobile number.
- This UPN to be used for booking ticket on PRS
- and also be entered on IRCTC for online ticketing.