

Project Design Phase-I
Proposed Solution Template

Date	19 September 2022
Team ID	PNT2022TMID23442
Project Name	SMART SOLUTION FOR RAILWAYS
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<p>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.</p> <p>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.</p> <p>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.</p>
2.	Idea / Solution description	<p style="text-align: center;">The</p> <p>fundamental point here is to introduce mobile applications into the workflow</p>

		<p>of technical staff, meaning to transfer the work of particular employees into digital. These applications would give employees deeper insights into equipment status and provide new data in real-time. The ultimate goal is to provide a better level of safety on the railroad. Although railway accidents happen rarely, their consequences sometimes are catastrophic. The reason for many cases is often human error caused by maintenance of the train, railroad equipment, and infrastructure, as well as an abundance of paperwork that the railway staff handles daily.</p> <p>The main advantage of the mobile applications for engineers and technicians on the railroad is a real-time connection between the control center and maintenance staff. It significantly simplifies and improves the maintenance of the railroad, offering the staff not no wait for scheduled maintenance, but to fix the issue if it is needed. It allows maintenance staff to receive, review, and action faults as they occur, decreasing response and repair time and increasing network performance, the efficiency of resource usage, and uptime. However, this is also possible if the train has the Internet of Things sensors.</p>
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3.	Novelty / Uniqueness	<p>The main advantage of the mobile applications for engineers and technicians on the railroad is a real-time connection between the control center and maintenance staff. It significantly simplifies and improves the maintenance of the railroad, offering the staff not no wait for scheduled maintenance, but to fix the issue if it is needed. It allows maintenance staff to receive, review, and action faults as they occur, decreasing response and repair time and increasing network performance, the efficiency of resource usage, and uptime. However, this is also possible if the train has the Internet of Things sensors.</p>
4.	Social Impact / Customer Satisfaction	<p>The social impact of the railways emerged from the very beginning. The railways made India mobile and opened up new vistas and opportunities for its people. It brought in new expertise and trades, new technology and above all, it gave the people a sense of freedom. Railways allowed people to travel further, more quickly. This allowed leisure travel, and contributed to the growth of seaside resorts. It also allowed people to live further from their places of work, as the phenomenon of commuting took hold.</p>
5.	Business Model (Revenue Model)	<p>Using chat bot we can contact user's ticket booking. The chat bot can give instructions to the users based on their location. It will store the customer's details and ticket orders in the database. The chat bot will send a notification to customers if the booking is confirmed. Chat bots can also help in collecting customer feedback</p>
6.	Scalability of the Solution	<p>This model can be easily adopted among online users and it can be easily deployed. It can be used and accessed by everyone and it can handle the requests from the customers</p>