IDEATION

TOP THREE IDEAS

TOP 1st - TOPIC NAME: Automatic door open for only booking passengers in train

DESCRIPTION: Nowadays, in many trains people are travelling without ticket and disturbing passengers so that we are coming up with a new idea that for booking ticket they will receive a QR CODE and there will be scanner outside they have to open the QR CODE and show to the scanner if the ticket is valid the door will open.

TOP 2nd - TOPIC NAME: Smart Ticketing Automated Fare Collection

DESCRIPTION: By implementing sensor beacons, edge computing, AI, and cloud-based technologies, operators can eliminate queue lines at ticket machines. Using sensors on station platforms or trains, the system is designed to detect a specific smartphone app as passengers enter the station or train and automatically charge the correct fair. This not only streamlines the process for both passengers and operators but can also simplify back-end billing and revenue management and collect usage behaviour for long-term planning.

TOP 3rd - TOPIC NAME: Alert while nearing destination

DESCRIPTION: Adding to Rakesh's second idea, notifications can be sent to the passengers mobile while they are about to reach their destination. In case the passenger doesn't see the notification, an alarm can be used (subject to few use cases)

NIVETHASREE S

1. **TOPIC NAME**: Automatic door open for only booking passengers in train

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2. **TOPIC NAME**: An android application for the passengers to connect with the officials in particular stations in case of emergency.

   DESCRIPTION: The passengers should enter their travelling details to connect with the officials in case of emergency and the main thing is they should enter the particular station they want to inform and they can contact emergency services like ambulance.

3. **TOPIC NAME**: Using an android application the passengers can order the food to the railway.

   DESCRIPTION: Mainly for long journeys the passengers are struggling for food when they are hungry, they can raise a token so that the canteen/pantry people come to know and they deliver the food to the respective people.

4. **TOPIC NAME**: Elevated Passenger Experience

   DESCRIPTION: Internet of Things enables the development of new experiences for the passengers. The technology has created connected applications that customers have always expected. IoT-driven passenger information systems have been developed that help them to gain updates about train schedules, subsequent stoppages on the train route, and unexpected train changes in case of an emergency. Moreover, infotainment systems are also being used to entertain passengers. These systems allow passengers to evade a boring journey and stay afresh with live news, weather forecasts, and video-on-demand services. The Wi-Fi-powered cabin will also help passengers to use their social media channels which will further help them to have fun during long trips. Train companies can hence generate additional revenue by streaming content to the passengers and then showing ads for a fee.

INFANTY VARSHAN V

1. **TOPIC NAME**: Allocation of berth or seats for RAC bookings

   DESCRIPTION: Last minute bookings lead to a lot of confusions. So, an application which collects the database of passengers who have cancelled at the last minute or passengers who have not boarded the train at the specified stations and simplify the job of TTR.

2. **TOPIC NAME**: IOT application for smart compartments

   DESCRIPTION: In most of the cases especially in second class compartments the fans and lights don't work and in case of AC compartments the temperature is not adjusted properly. An application to control these appliances can be designed.

3. **TOPIC NAME**: Alert while nearing destination

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4. **TOPIC NAME**: Brake systems using IoT

   DESCRIPTION: Use sensors and control the train speed like an embedded system

NEHA

1. **TOPIC NAME**: QR Scanner device for Ticket Collector

   DESCRIPTION: The device with scanner has access to database of our web application from that ticket collector can get details about passengers within few seconds. It makes ticket collector to check with passengers quick.

2. **TOPIC NAME**: Well distributed Database

   DESCRIPTION: Provided web application contains details of available unreserved seat that has been taken in station. This will help last minute traveller to plan which train they can prefer.

3. **TOPIC NAME**: Tracking train crossing.

   DESCRIPTION: From this passenger can check whether there is crossing of train in ongoing will happen or not. Some passengers those are new to travelling in train misunderstand the stopping of train with station form this they can have clear idea of what happening in their surroundings.

4. **TOPIC NAME**: Anti-theft alert for luggage bags

   DESCRIPTION: Nowadays, in many trains there are many theft cases so there will be a device that will be given in the counter after booking a ticket so if suddenly any theft case occurs then that particular compartment will be closed automatically after the issue finished then TC should open the compartment manually.

MEENAKSHI

1. **TOPIC NAME**: Smart Ticketing Automated Fare Collection

   DESCRIPTION: By implementing sensor beacons, edge computing, AI, and cloud-based technologies, operators can eliminate queue lines at ticket machines. Using sensors on station platforms or trains, the system is designed to detect a specific smartphone app as passengers enter the station or train and automatically charge the correct fair. This not only streamlines the process for both passengers and operators but can also simplify back-end billing and revenue management and collect usage behaviour for long-term planning.

2. **TOPIC NAME**: Greater Reliability and safety using IoT

   DESCRIPTION: Keeping passengers and railway staff safe is the top priority for operators. Implementing safety sensors across all parts of a railway is one-way operators can provide a safer rail experience for everyone during their transportation journey. A train that suddenly breaks down on the track can ruin the day of its passengers, lead to delays across the network, and essentially throw the entire system off-gear. However, recent developments in preventive maintenance practices prompted by IoT have helped to revive the reliability of even the oldest assets. Safety sensors can be added to critical components of the train, such as breaks and wheels, to help alert operators of any issues. Computer vision solutions can help enable automated and safe platform and train screen door systems or help detect when passengers slip and fall.

3. **TOPIC NAME**: Combat Crowding

   DESCRIPTION: Over-crowding is not just unpleasant, it is also dangerous – particularly in tight spaces, bottlenecks, and during a pandemic.

   IoT can be used to monitor passenger density through video analytics and the tactical use of sensors throughout the station. Combined with cameras, which will probably already be in use, crowding can be spotted live, and something can be done about it. For example, staff can usher busy commuters down the platform or open extra ticket gates.

   IoT, as with all technology, snowballs and gains momentum – the more it is used, the easier it becomes to use, and the greater the benefit. As passenger density is studied, additional data can be extracted from it, meaning patterns are recognised and human behaviour can be predicted and prepared for.

4. **TOPIC NAME**: Ensuring washroom cleanliness

   DESCRIPTION: This one might not seem suited to a seemingly revolutionary fourth-generation technology, however, IoT can massively improve the cleanliness of bathrooms. 'Smart-cleaning' ensures that cleaners are only called when they are needed, so their time isn't wasted when they could be cleaning other stations or other parts of the same station such as handrails and touchpoints. Inversely, that they only come to clean the bathrooms when they are seriously in need of servicing. For customers, this can be one of the most poignant factors impacting their view of their rail experience at large, and a bad experience in the bathroom is one not easily forgiven. This may seem like a running theme now, and for those not paying attention – long-term utilisation of IoT cannot just react, but pre-act human behaviour before it even happens, making sure it is dealt with appropriately.

MUKESH KUMAR

1. **TOPIC NAME**: Fewer Maintenance Delays

   DESCRIPTION: Undesirable downtime due to sudden repairs can soon be a thing of the past for the railways. Predictive and preventive maintenance is feasible and more effective in the IoT era. Smart sensors and analytics across the train engine, coaches, and tracks allow rail systems to be remotely checked and repaired before a small issue magnifies into huge trouble. Asset health monitoring through IoT insights implies less of maintenance delays and helps in extending the life of rail infrastructure.

2. **TOPIC NAME**: Better Product Development in the Industry

DESCRIPTION: Rail OEMs and operators can leverage IoT not only for better operations with the given infrastructure but also in the manufacturing processes of locomotives, wagons and train coaches. Conventional engineering solutions were not devised to support systems of systems. There can be delays and constraints in production when the process entails developing a requirements definition and then following it up with design, build, and tests. The actual feedback on product quality comes only later through sales and buyers' complaints.

3. **TOPIC NAME:** Restructured and Optimized Passenger Experience.

DESCRIPTION: Consumers have fast adapted to digitalization in the retail and banking space. The transport industry, including rail companies, is also transforming to meet passenger expectations with superior services. They offer e-tickets, scheduling information, and other solutions to travelers via smartphones and emails.

IoT can help take this experience a step ahead. It can help operators personalize the travel experience for individual passengers. For instance, services can be priced differently for different travelers as per the frequency of their traveling. Rail operators can enjoy greater passenger loyalty using IoT systems to understand customer experience history and make improvements for a more comfortable and convenient journey.

4. **TOPIC NAME**: Advanced Analytics for Streamlined Operations

DESCRIPTION: The operators can control their trains more efficiently by tracking them across networks and processing the data using analytics. Some companies also employ IoT to check the flow of passengers—those waiting at the stations, traveling in each train coach, and the times when the passenger flow is the highest. Analytics on such data can guide operators on optimization of travel schedules as per commuters' needs and demands.

Weather also affects rail system in a region. It can impact the condition of rolling stock and its regular operations. The IoT savvy operators have started to incorporate predictive weather modeling in their operations to be ready for and avoid service interruptions caused by adverse weather conditions.