# Metro Ticket Generating System

# Requirement Analysis and Planning

## 1. Introduction

The primary objective of this project is to digitize metro ticket booking using **ServiceNow** to provide a fast, accessible, and automated framework for ticket generation via **QR codes**. By transitioning from manual counters to a digital platform, the system reduces station congestion and enhances the overall commuter experience.

## 2. Strategic Objectives

- **Enhance Commuter Convenience**: Implement user-friendly digital ticketing options, such as QR codes, to drastically reduce wait times and streamline the intake process.
- **Increase Operational Efficiency**: Adopt **Automated Fare Collection (AFC)** principles to minimize manual interventions, reduce human errors in fare calculation, and lower operational costs.
- **Promote Digital Payment Adoption**: Encourage cashless transactions through the integration of **UPI**, credit/debit cards, and mobile wallets to improve revenue collection efficiency.
- **Facilitate Data-Driven Decision Making**: Utilize transaction data from the **u_metro_station_s_details** table to gain insights into passenger behavior and peak usage times for route optimization.
- **Support Environmental Sustainability**: Reduce paper waste by transitioning to digital QR tickets, aligning the metro operations with modern eco-friendly practices.

# 3. Requirement Analysis

## 3.1 Functional Requirements

- **Service Catalog Item**: A centralized "Book a Metro Ticket" item featuring dynamic variables for **Source**, **Destination**, **Passenger Type**, and **Number of Tickets**.
- **Automated Fare Calculation**: Backend logic to compute prices in real-time based on the selected journey parameters.
- **QR Code Integration**: Automated generation of digital tickets rendered via **SP Modal** popups immediately upon submission.

## 3.2 Technical Stack

- **Platform**: ServiceNow Personal Developer Instance (PDI).
- **Automation**: **Flow Designer** for record orchestration and **Catalog UI Policies** for dynamic form behavior.
- **Database**: Custom table **u_metro_station_s_details** to store transaction and station master data.
- **Scripting**: Minimal JavaScript (Catalog Client Scripts) for fare population and QR rendering.

# 4. Stakeholder Analysis

- **Passengers (End Users)**: The primary requesters who initiate ticket bookings or smart card recharges via the Service Portal.
- **Station Managers**: Oversee local station operations and monitor fulfillment tasks.
- **Metro Operations Team**: Responsible for executing backend tasks and ensuring transit compliance.
- **IT Admins**: Manage the system architecture, maintain data integrity, and configure security via **ACLs**.

## 5. Project Planning & Milestones

The project execution is structured into sequential milestones to ensure a stable deployment:

| Milestone | Key Activities |
|---|---|
| **Catalog Form Setup** | Define variables and categories in the Service Catalog. |
| **Fare Logic Script** | Develop onChange client scripts for real-time price calculation. |
| **QR Code Integration** | Implement onSubmit scripts for digital ticket rendering. |
| **Station Mapping** | Configure the **u_metro_station_s_details** table with station master data. |
| **UI Pages** | Design the end-user interface for a seamless portal experience. |
| **UAT & Deployment** | Conduct User Acceptance Testing and move the solution to production. |

## 6. Conclusion

This requirement analysis ensures that the **Metro Ticket Generating System** is built on a robust, scalable framework. By aligning technical capabilities with commuter needs, the project delivers a modern, automated, and sustainable solution for urban transportation.