

TESTING AND VALIDATION

1. System Overview

The **Metro Ticket Generating System** built on ServiceNow delivers a fully digital solution for metro ticket booking and generation. The system automates the complete lifecycle—from ticket request submission to QR-code-based ticket delivery—ensuring efficiency, accuracy, and a paperless travel experience.

2. Scope Definition

2.1 In-Scope Capabilities

The system supports the following core capabilities:

- Digital metro ticket booking through ServiceNow Service Portal
- Automated fare calculation
- QR-code-based ticket generation
- Real-time notifications to passengers
- Secure storage of ticket and transaction data
- Reporting and analytics for metro operations

2.2 Out-of-Scope Capabilities

- Direct integration with external payment gateways
- Hardware-level integration with metro entry/exit gates

(These are considered future enhancements.)

3. Functional Capability Breakdown

3.1 Ticket Booking Interface

- Centralized **Service Catalog item** for metro ticket booking
- Accessible through ServiceNow Service Portal
- Captures passenger and travel details using structured variables

Captured Inputs Include:

- Source Station
- Destination Station
- Passenger Category (Adult / Student / Senior Citizen)
- Number of Tickets
- Travel Date
- Payment Mode

3.2 Dynamic Form Behavior

- User-friendly form design for smooth data entry
- Mandatory fields to ensure completeness
- UI Policies and Client Scripts to:
 - Show or hide fields dynamically
 - Validate passenger category-specific inputs
 - Prevent invalid station or ticket selections

3.3 Fare Computation Engine

- Automated fare calculation based on:
 - Source and destination stations
 - Distance or zone-based pricing
 - Passenger category discounts
 - Number of tickets
- Logic implemented using **Business Rules or Script Includes**
- Ensures standardized and error-free fare computation

3.4 Digital Ticket & QR Code Generation

- Unique ticket ID generated for every booking
- QR code created containing:

- Ticket ID
- Travel details
- Passenger information
- QR codes enable fast and contactless ticket validation
- Eliminates dependency on physical tickets

3.5 Workflow Automation

- End-to-end automation handled using **Flow Designer**
- Triggered on Service Catalog submission
- Automates:
 - Fare calculation
 - Ticket record creation
 - QR code generation
 - Ticket status updates
- Integrated with custom tables such as:
 - u_metro_ticket
 - u_station_master

3.6 Notification & Communication

- Automatic ticket delivery via:
 - Email notifications
 - ServiceNow alerts
- Notifications include:
 - Travel summary
 - Ticket details
 - QR code
- Keeps passengers informed at every stage

3.7 Data Management & Reporting

- All ticket and transaction data stored in structured custom tables
- Supports reporting on:
 - Ticket volume trends
 - Peak travel periods
 - Station-wise passenger traffic
 - Revenue analysis
- Enables data-driven operational decisions

4. Role-Based Access Model

The system enforces role-based access for:

- Passengers
- Station Managers
- Metro Operations Team
- IT Administrators

This ensures data security and controlled access to system features.

5. Execution Roadmap

Phase 1: Catalog & Access Setup

- Create metro ticket booking catalog item
- Define travel and passenger variables
- Configure catalog visibility

Phase 2: Form Design & Validation

- Design booking forms
- Implement UI Policies and Client Scripts
- Validate input accuracy

Phase 3: Fare & QR Logic Implementation

- Implement automated fare calculation
- Generate unique ticket IDs
- Integrate QR code creation

Phase 4: Automation & Notifications

- Configure Flow Designer workflows
- Automate ticket lifecycle
- Enable email and ServiceNow notifications

Phase 5: Testing & Quality Assurance

- Perform functional and workflow testing
- Validate fare accuracy
- Test QR code and notifications
- Conduct security and role-based access testing

Phase 6: Deployment & Monitoring

- Deploy solution using update sets
- Validate production performance
- Release access to end users
- Monitor initial ticket bookings

6. Business Outcomes

- Fully automated metro ticket booking process
- Reduced manual effort and operational errors
- Instant QR-code-based digital ticket delivery
- Improved operational visibility and reporting
- Eco-friendly, paperless ticketing system
- Enhanced passenger experience

7. Conclusion

The Functional Scope and Execution Roadmap provides a structured and phased approach to implementing the Metro Ticket Generating System in ServiceNow. It ensures controlled development, reliable automation, and scalability while delivering a modern, efficient, and user-friendly digital ticketing solution.