Functional Scope and Execution Roadmap

Functional Scope

The **Metro Ticket Generation System built on ServiceNow** is intended to digitize and automate the complete metro ticket booking lifecycle. The functional scope defines what the system includes, how it operates, and the limits of its functionality to ensure clear understanding among stakeholders.

This solution acts as a **single digital platform** where passengers can request metro tickets, receive system-calculated fares, obtain QR-code-enabled digital tickets, and get real-time notifications—eliminating traditional manual ticketing methods.

Core Functional Capabilities

1. Service Catalog Enablement

- A dedicated **Service Catalog item** is created for metro ticket booking.
- Passengers submit ticket requests through the **ServiceNow Service Portal**.
- The catalog captures essential travel and payment details such as:
  - Boarding station
  - Destination station
  - Passenger category (Adult / Student / Senior Citizen)
  - Ticket quantity
  - Travel date
  - Payment option
- Dynamic catalog variables enhance usability and reduce errors.

2. Form Design and Validation

- Interactive and intuitive forms collect complete journey information.
- Mandatory fields ensure accurate data entry.
- **UI Policies and Client Scripts** dynamically control field visibility and validation rules (for example, displaying student ID fields only when Student is selected).
- Input validation prevents invalid station combinations and incorrect ticket counts.

3. Automated Fare Computation

- The system automatically calculates ticket charges based on:
    - Selected source and destination
    - Distance or zone-based pricing model
    - Passenger category discounts
    - Number of tickets requested
- Fare logic is implemented using **Business Rules or Script Includes**.
- Ensures uniform pricing and eliminates manual calculation errors.

4. QR-Code-Based Digital Ticket Creation

- Each booking generates a **unique ticket reference number**.
- A digital ticket embedded with a QR code is created automatically.
- QR codes are used for secure validation at metro entry and exit points.
- Removes dependency on physical paper tickets.

5. Workflow Automation Using Flow Designer

- Complete automation is achieved through **Flow Designer**, triggered upon catalog submission.
- The flow manages:
  - Fare calculation
  - Ticket record generation
  - QR code creation
  - Status transitions
- Integrates with custom tables such as **u_metro_ticket** and **u_station_master** for reliable data storage.

6. Notification and Ticket Distribution

- Automated notifications are sent to passengers via:
  - Email
  - ServiceNow alerts
- Notifications include booking details, QR code, and travel summary.
- Keeps users informed at every stage of the booking process.

7. Data Management and Reporting

- Ticket and transaction data are stored securely in custom database tables.
- Enables generation of reports such as:
  - Daily ticket volume
  - Peak travel periods
  - Station-wise passenger flow
  - Revenue analysis
- Supports operational insights and strategic planning.

Functional Limitations

- The system is limited to **metro ticket booking and QR ticket generation**.
- Direct integration with external payment gateways or metro gate hardware is considered a **future enhancement**.
- Role-based access is supported for:
  - Passengers
  - Station Managers
  - Metro Operations Team
  - IT Administrators

Execution Roadmap

The execution roadmap defines a **phase-wise rollout strategy**, ensuring smooth implementation, reduced risk, and controlled delivery.

Phase 1: Service Catalog Configuration

- Create the metro ticket booking catalog item.
- Define journey and passenger-related variables.
- Configure catalog access for passenger users.

Phase 2: Form Customization

- Design user-friendly booking forms.
- Implement UI Policies and Client Scripts for dynamic behavior.
- Validate station selection and ticket quantity inputs.

Phase 3: Fare Logic and QR Code Setup

- Implement automated fare calculation rules.

- Configure unique ticket ID generation.
- Enable QR code generation for digital tickets.

Phase 4: Workflow and Notification Automation

- Build end-to-end flows using Flow Designer.
- Automate ticket creation and lifecycle updates.
- Configure email and ServiceNow notifications.

Phase 5: System Testing

- Perform functional testing of catalog forms and workflows.
- Validate fare accuracy and QR code generation.
- Conduct role-based security and access testing.

Phase 6: Deployment and Monitoring

- Deploy configurations using update sets.
- Validate performance in the production environment.
- Grant user access and monitor initial ticket bookings.

Expected Outcomes

Following this functional scope and execution plan ensures:

- Fully automated and digital metro ticket booking
- Significant reduction in manual effort and human errors
- Instant QR-code-enabled ticket delivery
- Improved visibility into ticket sales and usage
- Eco-friendly, paperless ticketing solution
- Faster, smoother, and more convenient passenger experience

Summary

This **Functional Scope and Execution Roadmap** clearly outlines the features, system boundaries, and phased implementation approach of the Metro Ticket Generation System in ServiceNow. It acts as a comprehensive blueprint for configuration, development, testing, and deployment—ensuring a scalable, efficient, and future-ready digital metro ticketing solution.