PROJECT DESIGN PHASE

Metro Ticket Generating System using ServiceNow

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5. PROJECT DESIGN PHASE

The **Project Design Phase** translates the requirements identified in the Requirement Analysis Phase into a detailed technical and logical blueprint for implementation. For the **Metro Ticket Generating System using ServiceNow**, this phase defines the overall system architecture, data design, workflow design, user interface design, and security model.

The design phase ensures that the system is scalable, maintainable, user-friendly, and aligned with ServiceNow best practices. A well-structured design reduces development errors and ensures smooth system implementation.

5.1 System Architecture Design

The Metro Ticket Generating System follows a **ServiceNow-based centralized architecture**.

Architecture Overview

- Users access the system through the ServiceNow Service Portal
- Ticket requests are submitted via Service Catalog
- Business logic is handled using Flow Designer
- Data is stored in custom ServiceNow tables
- Notifications and reports provide communication and monitoring

Architectural Components

- Presentation Layer: Service Portal & Catalog Forms
- Application Layer: Business Rules, Flow Designer
- Data Layer: Custom Tables (Metro Ticket, Station, Route)
- Reporting Layer: Dashboards and Reports

This layered architecture ensures separation of concerns and easier maintenance.

5.2 Data Architecture Design

Data architecture defines how information is stored, managed, and accessed.

Key Tables

1. Metro Ticket Table

- Ticket Number (Auto-generated)
- Passenger Name
- Source Station
- Destination Station
- Fare Amount
- Journey Date
- Ticket Status

2. Station Table

- Station ID
- Station Name
- Station Code

3. Route / Fare Table

- Source Station
- Destination Station
- Fare Amount

Relationships

- Metro Ticket → References Station and Route tables
- Ensures data consistency and reusability

5.3 Application Design in ServiceNow

Application Scope

- Custom scoped application: **Metro Ticket Management**

Modules

- Ticket Booking
- Route & Fare Management
- Ticket Records
- Reports & Dashboards

Scoped application design ensures better security and modularity.

5.4 User Interface (UI) Design

UI design focuses on usability and simplicity.

Passenger Interface

- Service Catalog item for ticket booking
- Dropdown fields for source and destination
- Auto-calculated fare (read-only)
- Submit button with confirmation message

Admin Interface

- Forms to manage stations and fares
- List views for ticket tracking
- Dashboard for monitoring ticket trends

UI Policies are used to control field visibility and mandatory fields.

5.5 Workflow and Automation Design

Automation is a core strength of ServiceNow.

Flow Designer Workflow

Trigger: - Ticket request submission

Actions: - Validate source and destination - Calculate fare - Generate ticket number - Insert record into Metro Ticket table - Send confirmation notification

Error Handling

- Validation checks
- User-friendly error messages

5.6 Security Design

Security design ensures safe access and data protection.

Roles

- Metro_User (Passenger)
- Metro_Admin
- System_Admin

Access Controls

- ACL rules restrict table access
- Role-based form visibility

Data Security

- Secure storage in ServiceNow tables
- No sensitive payment data stored

5.7 Notification and Reporting Design

Notifications

- Ticket confirmation email
- Admin alerts for failed requests

Reports

- Daily ticket count
- Route-wise ticket distribution
- Revenue summary (academic simulation)

Dashboards provide real-time insights for administrators.

5.8 Integration Design (Optional Scope)

Although not implemented, the system design supports future integrations:

- Payment gateway APIs
- QR code generation systems
- Mobile applications

This ensures future scalability.

5.9 Design Constraints and Assumptions

Constraints

- Limited to ServiceNow platform
- Academic project scope

Assumptions

- Predefined stations and fares
- Users have portal access

Conclusion of Project Design Phase

The Project Design Phase provides a comprehensive blueprint for implementing the **Metro Ticket Generating System using ServiceNow**. By defining architecture, data models, workflows, UI, and security, this phase ensures efficient development and high system quality.

This design acts as a foundation for the **Development, Testing, and Deployment Phases**, ensuring the project meets both functional and academic objectives.
