METRO TICKET BOOKING - DATA ARCHITECTURE

1. Introduction

This document outlines the data architecture of the **Metro Ticket Booking and Smart Card Management System** developed using ServiceNow. It explains how data is organized, stored, secured, and maintained to support metro ticket booking, smart card recharge, automation, and reporting.

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2. Architecture Objectives

The key objectives of this data architecture are:

- Centralized storage of metro ticket and smart card transactions
- Secure and auditable handling of user and payment data
- Seamless integration with ServiceNow Service Catalog and Flow Designer
- Support for reporting, tracking, and future scalability

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3. Logical Data Model Overview

The system follows a **centralized logical data model**, where all metro-related transactions are stored in a single custom table. This logical design reduces redundancy and ensures consistency across ticket booking and recharge workflows.

Core Entity:

- Metro Transaction Record

Supporting Entity:

- User (ServiceNow sys_user table)

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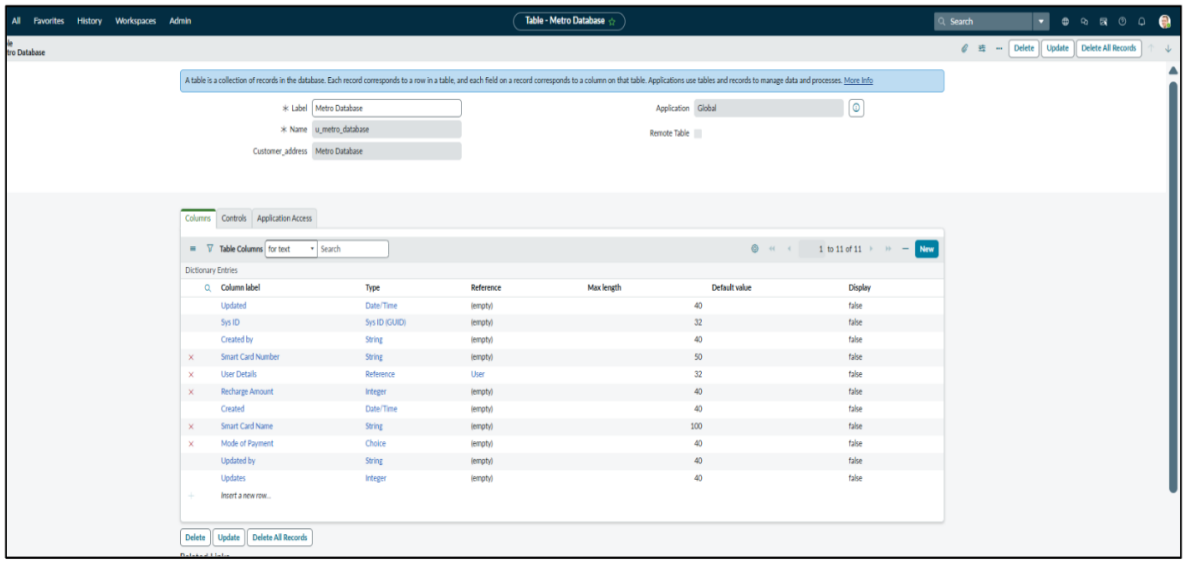
4. Physical Data Model (Custom Table Design)

4.1 Custom Table Information

Attribute	Description
Table Label	Metro Database
Table Name	u_metro_database
Application Scope	Global
Table Type	Custom Table
Primary Purpose	Store metro ticket bookings and smart card recharge details



4.2 Field Classification

a) User Reference Fields

- **User Details** → Reference to sys_user
  - Enables user identification
  - Supports access control and transaction ownership

b) Transaction Fields

- Smart Card Number
- Smart Card Name
- Recharge Amount
- Mode of Payment

c) Choice Fields

- **Mode of Payment**
  - Predefined options: UPI, Debit Card, Credit Card, Net Banking
  - Ensures data consistency and reporting accuracy

d) System Fields (Auto-generated)

- Sys ID
- Created
- Created By
- Updated

These fields support auditing and are read-only.

4.3 Mandatory Data Enforcement

To maintain data integrity, the following fields are mandatory:

- Smart Card Number
- Smart Card Name
- Recharge Amount
- Mode of Payment
- User Details

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5. Table Relationships

5.1 Relationship with User Table

The u_metro_database table maintains a **many-to-one relationship** with the ServiceNow **User (sys_user)** table.

Benefits of this relationship:

- Secure user authentication
- Role-based access control (RBAC)
- Accurate tracking of individual user transactions
- Improved reporting by user

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6. Data Flow and Automation Design

6.1 Data Capture Flow

1. User submits a **Metro Ticket Booking** or **Smart Card Recharge** request via the Service Catalog
2. Required catalog variables are entered by the user
3. Flow Designer is triggered on request submission
4. Flow maps catalog variables to fields in u_metro_database
5. A new transaction record is created automatically
6. Data is stored securely for future reference and reporting

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7. Security and Audit Considerations

- System fields ensure full audit trail
- User reference enables access restriction based on roles
- Mandatory fields prevent incomplete transactions
- Choice fields avoid invalid payment entries

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8. Reporting and Scalability

The structured data model allows:

- Easy generation of transaction and recharge reports
- User-wise booking and payment analysis
- Future extension to include ticket types, zones, or fare rules

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9. Summary

The revised data architecture for the Metro Ticket Booking and Smart Card Management System provides a **robust, secure, and scalable foundation**. By combining a centralized custom table with ServiceNow's native user management and automation capabilities, the system ensures reliable transaction handling, compliance, and operational efficiency.