

Metro Ticket Generating System

Deployment, Documentation & Final Presentation

Introduction

This final phase marks the transition of the **Metro Ticket Generating System** from a development environment to a stakeholder-ready deployment. Phase 5 focuses on rigorous troubleshooting, the creation of a comprehensive technical blueprint, and the preparation of a visual demonstration. The goal is to ensure the system is not only functional but also maintainable, scalable, and clearly documented for future administrators and developers.

Troubleshooting & Debugging

Before final deployment, the system underwent deep technical validation to ensure reliability.

- **Logic Debugging:** Debugged QR encoding issues and potential fare mismatches using logs and print statements within the scripts.
- **Flow Execution Logs:** Traced every step of the **Metro Project** flow using Flow Designer's **Execution Details** to verify that condition paths for record creation triggered correctly.

- **Dynamic UI Validation:** Verified that selecting the "Recharge Metro Card" option correctly hides journey-specific fields and reveals smart card input variables, ensuring a focused user experience and data accuracy.

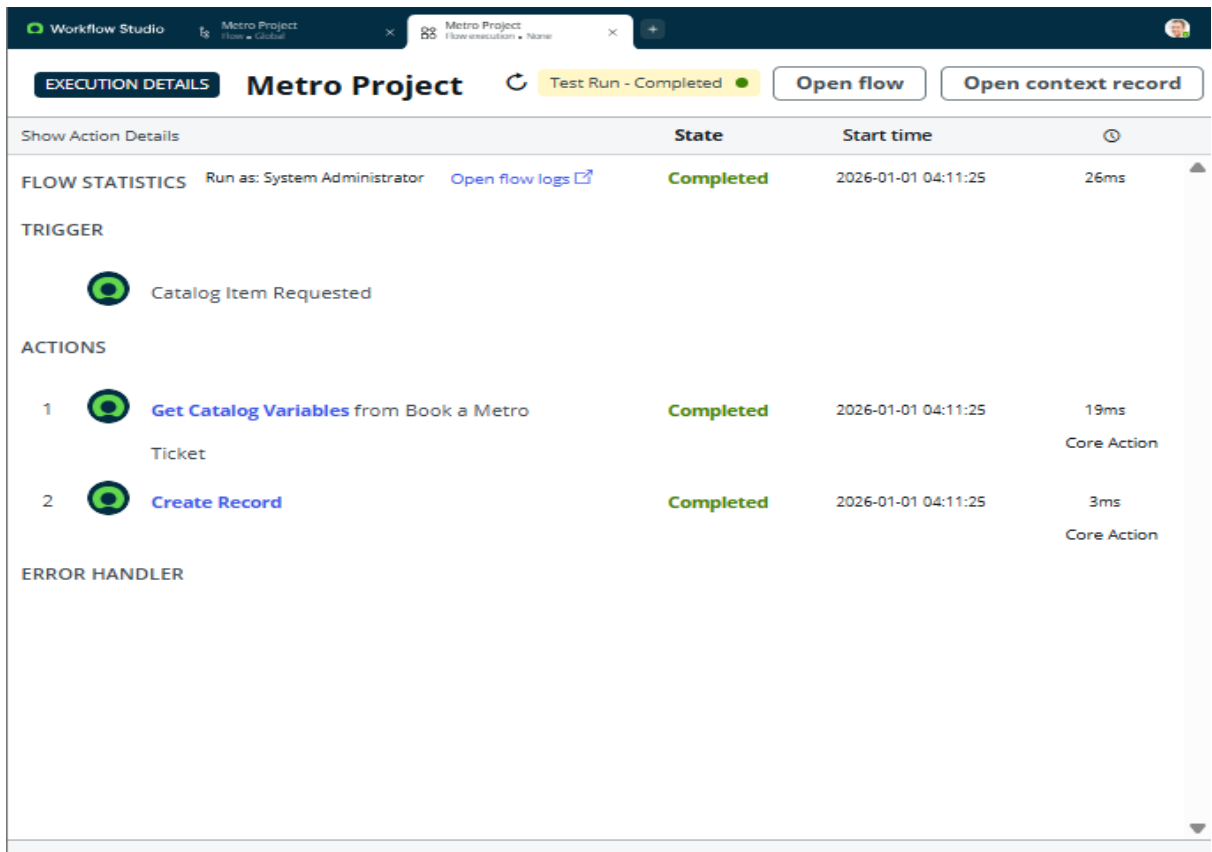


Figure 1: A screenshot of Flow Designer Execution Details showing a "Completed" path.

- **Variable Alignment:** Resolved data binding issues using **Catalog Client Scripts** to ensure that station selections dynamically populated the correct fare values on the portal.

- **Form Behaviour Testing:** Confirmed that UI policies correctly managed field visibility for both "Recharge" and "Booking" paths via Service Portal preview mode.

The screenshot shows the 'Book a Metro Ticket' form in its default state. The form is titled 'Book a Metro Ticket' and includes a description: 'A metro e-ticketing system allows passengers to purchase and use tickets digitally, typically via a mobile app or website, eliminating the need'. Below the description, there is a section 'What do you want to do Today?' with three radio button options: 'None' (selected), 'Recharge Metro Card', and 'Book QR Ticket'. To the right of the form, there is a sidebar with a 'Quantity' dropdown set to '1', a 'Delivery Time: 2 Days' label, and buttons for 'Add to Cart', 'Save as Draft', and 'Order Now'. At the bottom of the form, there is an 'Add attachments' section with a dashed box and a link to 'Choose a file or drag it here. Copy and paste clipboard files here.'

Figure 2a: Default State (None) – Shows the initial "clean" form layout where journey and card variables are hidden to minimize user effort

The screenshot shows the 'Book a Metro Ticket' form with the 'Recharge Metro Card' option selected. The form now displays additional fields for Smart Card variables: 'Enter Smart Card Number' (with value 'CH800900012'), 'Enter Smart Card Name' (with value 'METRO1190'), and 'Recharge Amount' (with value '1000'). The sidebar on the right remains the same, with 'Quantity' set to '1', 'Delivery Time: 2 Days', and buttons for 'Add to Cart', 'Save as Draft', and 'Order Now'. The 'Add attachments' section at the bottom is also present.

Figure 2b: Recharge Metro Card Selection – Demonstrates the dynamic reveal of Smart Card variables (Number, Name, and Amount) based on user selection.

The screenshot shows the ServiceNow interface for booking a metro ticket. The main form is titled 'Book a Metro Ticket' and contains several sections. The first section is for 'Starting From?' and 'Going To?', both with dropdown menus. The second section is for 'No of Passengers' with a text input field. The third section is for 'Type of Journey' with radio buttons for 'None', 'Single', and 'Return'. The fourth section is for 'Amount for Single Journey' and 'Amount including Return' with text input fields. The fifth section is for 'Mode of Payment' with radio buttons for 'None', 'UPI', 'Card', and 'Others'. On the right side, there is a 'Real-time Fare Preview' sidebar. It shows 'Quantity: 1' and 'Delivery Time: 2 Days'. Below this, there are three buttons: 'Add to Cart', 'Save as Draft', and 'Order Now'. The top navigation bar includes links for 'Knowledge', 'Catalog', 'Requests', 'System Status', 'Cart', 'Tours', and 'System Administrator'.

Figure 2c: Book QR Ticket Selection – Displays the journey-specific variables, including Source/Destination stations and the **Real-time Fare Preview**.

Adherence to Timelines

The project followed a disciplined **Sprint-based approach** to meet all 2025 graduation milestones:

- **Milestone 1:** Catalog Creation.
- **Milestone 2:** Form Setup & Dynamic Logic.
- **Milestone 3:** Testing, Security (ACLs), and QR Integration.
- **Milestone 4:** Deployment & Documentation.

Innovation & Maintenance

The system was built with a "Low-Code First" mindset to ensure it is easy to hand off to future IT teams:

- **No-Code Automation:** Leveraged **Flow Designer** for the entire backend lifecycle, eliminating the need for complex custom Script Includes or Business Rules.
- **Efficient Scripting:** Kept Client Scripts and UI Policies to the minimal essential use required for dynamic front-end behaviour.

Technical & Functional Blueprint

A complete repository of the system's architecture was prepared to support replicability:

- **Functional Overview:** Clear definitions of form variables, user experience flows, and the QR mapping process.
- **QR Generation Snippet:** A Client Script uses the spModal API to render a QR code using an external encoding service, passing the `g_form.getUniqueValue()` as the data payload.
- **Flow Designer Logic:** The "Metro Project" flow is triggered by a **Service Catalog** request. It executes two core actions: **Get Catalog Variables** to retrieve user inputs and **Create Record** to log the transaction in the backend database.

- **Technical Blueprint:** Included QR generation code snippets, Flow Designer logic snapshots, and the **Metro DataBase** custom table schema.
- **Setup Manual:** A step-by-step guide for recreating the **Catalog** → **Flow** → **ACL** structure in any new Personal Developer Instance (PDI).

Visual Demonstration & Project Demo

To present the system to stakeholders, a multi-role demonstration was planned:

- **Portal Walkthrough:** A guided tour from the Portal Home to the **Book A Metro Services** category.

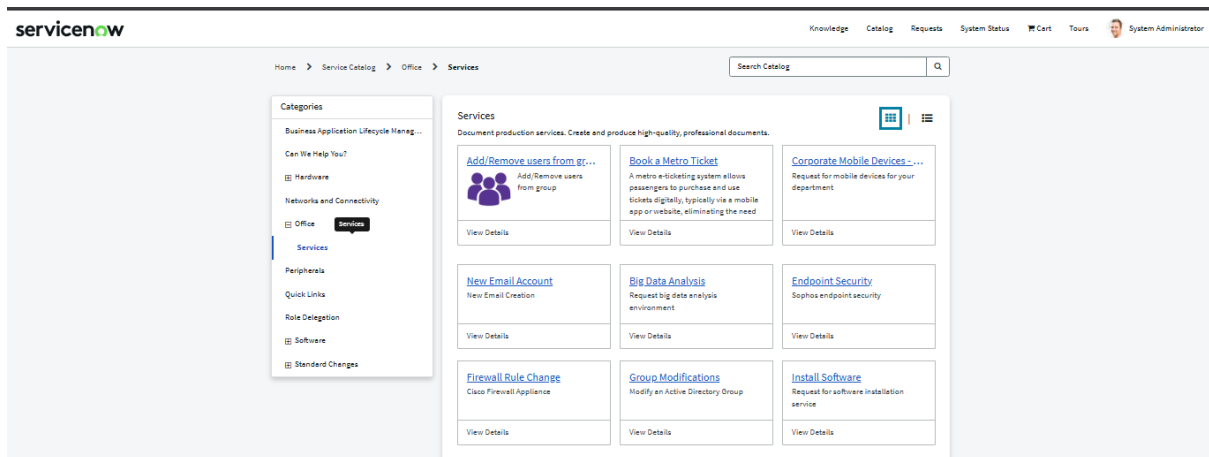


Figure 3: Service Catalog portal in service category

- **Live Submission:** A real-time demonstration of a request being submitted and the QR code rendering instantly via spModal.

The screenshot shows the 'Book a Metro Ticket' form in the Service Catalog. The form is titled 'Book a Metro Ticket' and includes a description: 'A metro e-ticketing system allows passengers to purchase and use tickets digitally, typically via a mobile app or website, eliminating the need'. The form is divided into several sections: 'What do you want to do Today?' with radio buttons for 'None', 'Recharge Metro Card', and 'Book QR Ticket' (selected); 'Starting Point' with a dropdown menu set to 'Inverpool'; 'Going To' with a dropdown menu set to 'Wigan'; 'No of Passengers' with a text input field set to '2'; 'Type of Journey' with radio buttons for 'None', 'Single' (selected), and 'Return'; 'Amount for Single Journey' with a text input field set to '£20'; 'Amount including Return' with a text input field; and 'Mode of Payment' with radio buttons for 'None', 'UPI' (selected), 'Card', and 'Others'. On the right side of the form, there is a 'Quantity' dropdown set to '1', a 'Delivery Time: 2 Days' label, and buttons for 'Add to Cart', 'Save as Draft', and 'Order Now'.

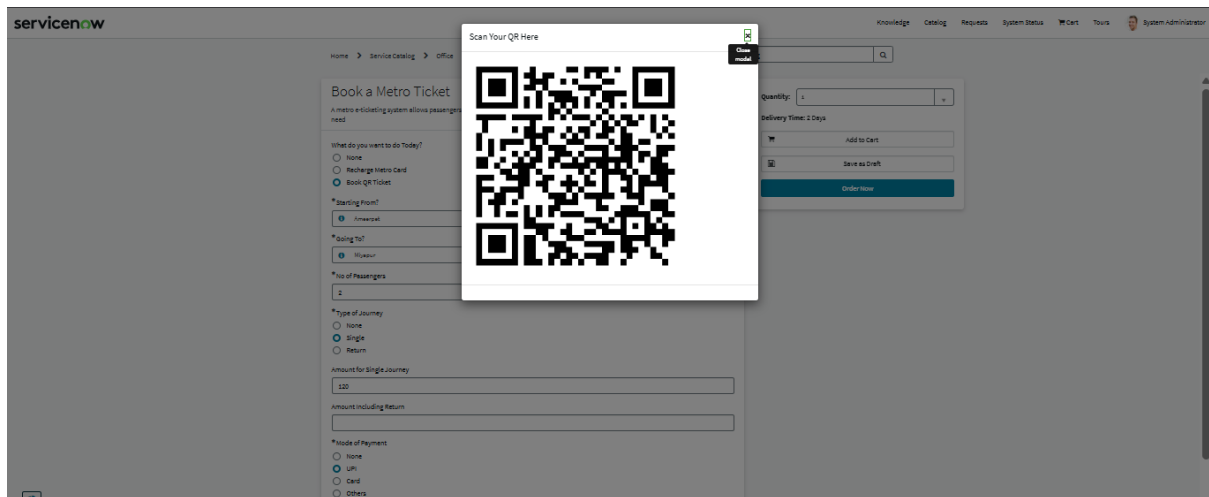


Figure 4: A screenshot of the **Service Portal** form showing the "Order Now" button and the resulting **QR Code**.

- **Data Storing:** Proof of the data being successfully logged in the backend **Metro Station's Details** table.

Metro Station's Details User Details						
Search						
All						
User Details						
	Smart Card Number	Smart Card Name	Recharge Amount	Mode of Payment	Created	
admin	CHE00077109	RUPAY	1000	BHIM UPI	2025-12-31 23:53:49	
admin	CHE00773435	METRO 112	1000	BHIM UPI	2025-12-31 23:59:47	
admin	CHE00077109	RUPAY 151	1000	BHIM UPI	2025-12-31 23:56:48	
admin	HYD00987191	METRO HYD 987	1000	BHIM UPI	2025-12-30 19:33:11	
admin	HYD00999111	METRO HYD 1280	1000	BHIM UPI	2025-12-29 02:10:25	

Figure 5: A screenshot of the Metro Station's Details table list view showing stored transaction data.

- **Annotated Visuals:** High-quality screenshots of the Catalog UI, QR output, and Flow logs were annotated to explain each stage clearly.

Scalability & Future Roadmap

The system is designed to grow beyond its current functional scope:

- **City-Wide Integration:** Reflects actual city metro workflows with dynamic fare bands.
- **Future Channels:** Roadmap includes implementing **SMS and Email-based ticketing** for commuters without portal access.
- **Advanced Features:** Plans for payment gateway integration and a **Travel Analytics Dashboard** for station authorities.

Conclusion

The Phase 5 successfully transitions the **Metro Ticket Generating System** from development to a fully documented, deployable solution. By combining robust troubleshooting, clear technical blueprints, and a roadmap for future scalability, the system ensures a high-quality transit experience aligned with ServiceNow best practices.