

Functional Specification: Enhanced Online Checkout and Personalization Project

1. Project Overview & Objectives

This project aims to streamline the checkout process while delivering personalized product recommendations to improve conversion rates, reduce cart abandonment, and enhance mobile usability.

- Project Objective: Increase overall conversion rates by 15%, reduce cart abandonment by optimizing page load speeds, and deliver a more intuitive and personalized experience for mobile shoppers.

2. Scope Boundaries:

Optimize the online checkout journey through improved usability, faster performance, and data-driven personalization strategies.

- In-Scope:
 - Page load performance enhancements
 - Dynamic product recommendation engine integration
 - Payment gateway integration
 - Mobile usability improvements
 - User feedback systems for real-time data capture
- Out-of-Scope:
 - Advanced real-time AI chatbot features
 - Cross-platform desktop application development
 - Non-critical backend features unrelated to checkout optimization

3. Current State (As-Is)

- Checkout process is multi-step, creating friction for mobile users.
- Page load speeds are slow, often exceeding customer expectations and causing cart abandonment.
- Product recommendation engine offers generic suggestions with limited personalization.
- Payment validation errors occasionally result in transaction failures, frustrating customers.
- API latency or downtime disrupts real-time recommendation delivery.

As-Is Process Flows

- Checkout Flow:
 - Happy path:
 1. User adds products to cart.

- 2. User enters payment and delivery details.
- 3. User confirms order and completes checkout process.

- Unhappy path / exceptions:

- 1. Slow page load causes users to abandon cart.
- 2. Payment validation errors lead to failed transactions.

- Recommendation Engine:

- Happy path:

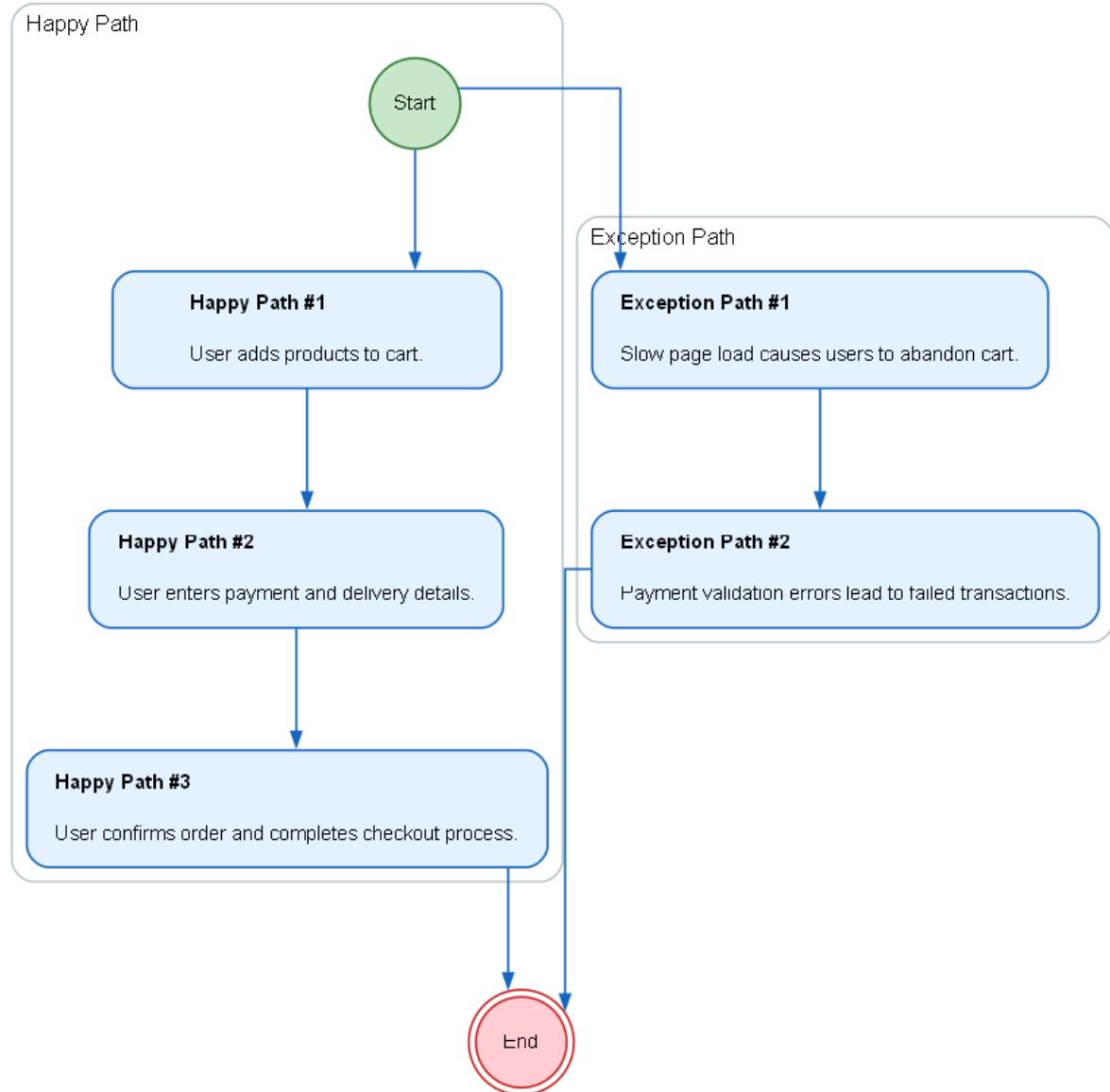
- 1. System provides product suggestions based on predefined logic.
- 2. Customer considers suggestions and adds relevant products to cart.

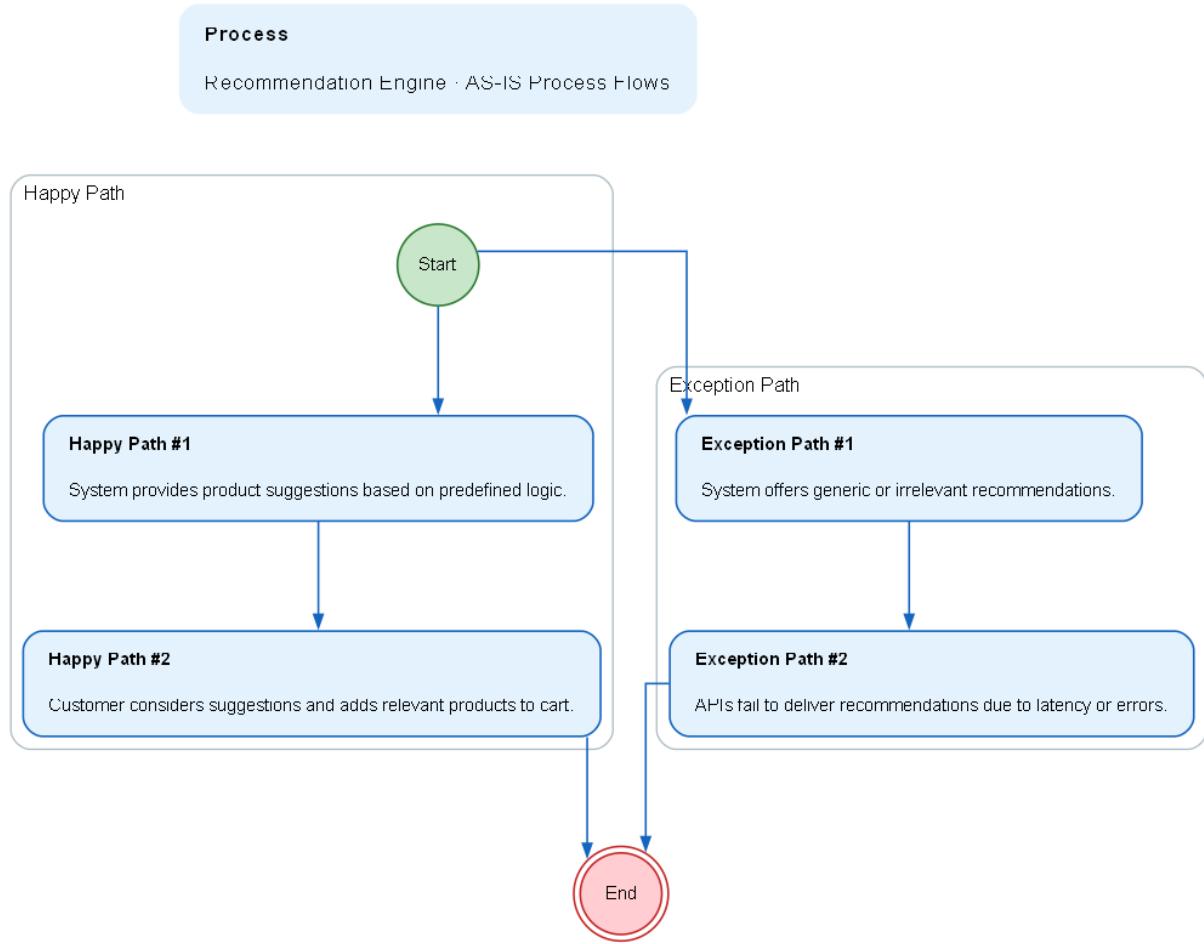
- Unhappy path / exceptions:

- 1. System offers generic or irrelevant recommendations.
- 2. APIs fail to deliver recommendations due to latency or errors.

Process

Checkout Flow · AS-IS Process Flows





4. Future State (To-Be)

- Launch a streamlined mobile-first checkout flow within one page to boost usability and reduce friction.
- Optimize page load times to under 3 seconds for mobile users to minimize cart abandonment rates.
- Implement dynamic, personalized product recommendations powered by CRM and user behavior data.
- Ensure payment gateway integration offers fast, secure, real-time validations with minimal API latency.
- Adopt an A/B testing framework to continuously refine the customer experience and usability metrics.
- Deploy real-time analytics capturing customer behavior and feedback for data-driven improvements.

Future Process Flows

- Streamlined Mobile Checkout:
 - Happy path:
 1. User adds products to cart using a responsive mobile interface.

- 2. Customer reviews order details on a single checkout page.
- 3. User enters payment and delivery information efficiently.
- 4. Transaction is processed securely, and order confirmation is sent instantly.

- Unhappy path / exceptions:

- 1. Slow page load deters user engagement, leading to cart abandonment.
- 2. Payment processing fails due to API latency or security errors.

- Dynamic Recommendation System:

- Happy path:

- 1. Personalized recommendations are generated using browsing and CRM data.
 - 2. Customers interact with relevant suggestions and add items to cart.
 - 3. Fallback mechanisms ensure consistent recommendations during API errors.

- Unhappy path / exceptions:

- 1. System shows irrelevant or generic suggestions due to faulty data mapping.
 - 2. High traffic delays dynamic recommendation loading, frustrating users.

- Real-Time Feedback and Analytics System:

- Happy path:

- 1. System captures customer interaction data during the checkout journey.
 - 2. Behavior insights are stored securely in Salesforce CRM.
 - 3. Feedback dashboards enable actionable analysis for optimization teams.

- Unhappy path / exceptions:

- 1. Analytics tools fail to sync data in real time due to API downtime.
 - 2. Customer feedback inconsistencies hinder targeted improvements.

Process

Streamlined Mobile Checkout · Future (10-BE) Process Flows

Happy Path



Happy Path #1

User adds products to cart using a responsive mobile interface.

Happy Path #2

Customer reviews order details on a single checkout page.

Happy Path #3

User enters payment and delivery information efficiently.

Happy Path #4

Transaction is processed securely, and order confirmation is sent instantly.



Exception Path

Exception Path #1

Slow page load deters user engagement, leading to cart abandonment.

Exception Path #2

Payment processing fails due to API latency or security errors.

Process

Dynamic Recommendation System - Future (IO-BE) Process Flows

Happy Path

Start

Happy Path #1

Personalized recommendations are generated using browsing and CRM data.

Happy Path #2

Customers interact with relevant suggestions and add items to cart.

Happy Path #3

Fallback mechanisms ensure consistent recommendations during API errors.

Exception Path

Exception Path #1

System shows irrelevant or generic suggestions due to faulty data mapping.

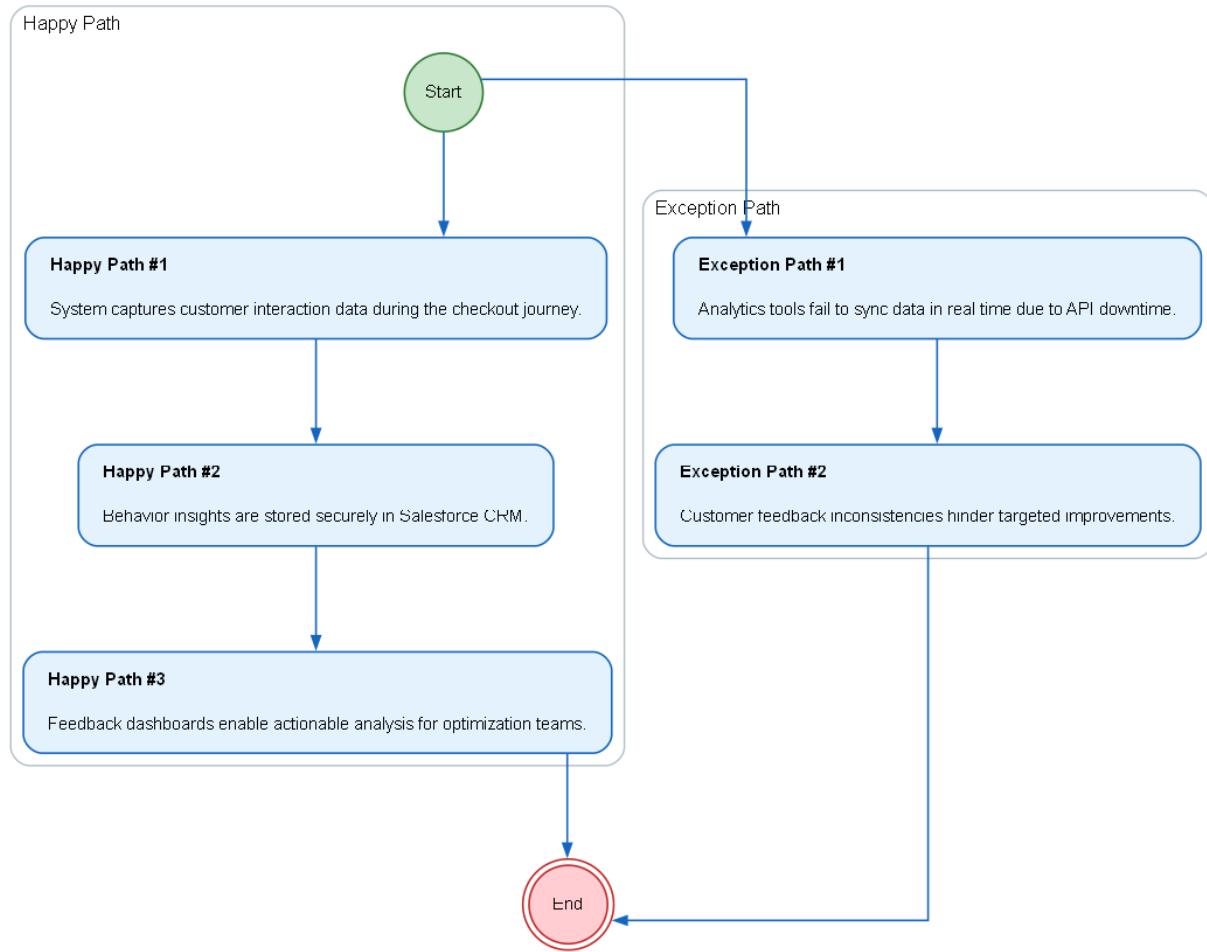
Exception Path #2

High traffic delays dynamic recommendation loading, frustrating users.

End

Process

Real-Time Feedback and Analytics System - Future (TO-BE) Process Flows



5. Stakeholders & Personas

- Mobile Shopper: Aged 25-45, prioritizes speed and convenience while shopping via mobile devices.
- Frequent Buyer: Repeat customer who values personalized recommendations and streamlined checkout.
- Administrator: Backend user responsible for managing product recommendations and monitoring system performance.

6. Functional Requirements Overview

Optimize, automate, and personalize the checkout flow while ensuring seamless integrations across third-party tools.

7. Non-Functional Requirements

- Page load speeds must stay under 3 seconds.
- System uptime for integrations must meet SLA targets of 99.9%.
- All compliance standards, including PCI and GDPR, must be adhered to.

8. Assumptions

- Infrastructure upgrades will be completed on time.
- Third-party vendors will support timely API updates and testing.
- Mobile shoppers will remain the dominant user segment.

9. Risks

- Vendor API downtime could disrupt real-time processes.
- Timeline delays due to resource constraints or data mismatches.
- Negative customer feedback from unforeseen usability issues.

10. Open Issues

- Clarify fallback rules for recommendation engine when API data fails.
- Verify accuracy and reliability of Salesforce real-time data capture.
- Confirm readiness of infrastructure upgrades for optimal load speeds.

11. Functional Requirements

Functional Requirements

Spec ID	Specification Description	Business Rules
		Data Dependency
FR-1	FR-1: Optimize page load speed under 3 seconds for mobile users.	Dependent on CDN settings and infrastructure improvements ensuring responsiveness.
FR-2	FR-2: Integrate dynamic product recommendations for personalized suggestions.	Requires CRM and historical user data for relevancy; fallback options if API fails.
FR-3	FR-3: Streamline the checkout process with responsive design for mobile usability.	Validated through A/B testing, analytics, and bounce rate improvements.
FR-4	FR-4: Ensure secure and fast payment gateway integration.	Adherence to PCI standards; API testing for Stripe and PayPal integration.

FR-5	FR-5: Implement real-time analytics capture for feedback and behavior tracking.	Uses Salesforce for CRM data; stress-tested for high-traffic occasions.
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