

## Introduction

### **Project : E-commerce Application on IBM Cloud Foundry Phase 1: Problem Definition and Design Thinking**

In this phase of the project, we embark on the journey to develop an artisanal e-commerce platform using IBM Cloud Foundry. Our mission is to bridge the gap between skilled artisans and a global audience, offering a platform where artisans can showcase their handcrafted products and customers can enjoy secure and seamless shopping experiences. This document serves as a blueprint for understanding the problem at hand and outlines our design thinking approach to address it.

## **Problem Definition**

The challenge before us is to create an e-commerce ecosystem that empowers artisans while providing a delightful shopping experience for customers. The central aspects of this endeavor include designing an intuitive platform, implementing crucial features, and ensuring user satisfaction. Our overarching goals are to establish secure shopping processes, integrate reliable payment gateways, and present an aesthetically pleasing and user-friendly interface

## **1. Platform Design**

**Objective:** Create an aesthetically pleasing and user-friendly platform layout.

- **Home Page:** The home page should feature a clean and attractive design with high-quality images, highlighting product categories, artisan spotlights, and any ongoing promotions. It should provide a clear call-to-action to guide users to explore further.
- **Product Categories:** Organize products into easily navigable categories with clear labels and thumbnails. Use a dropdown or grid layout to showcase these categories prominently on the home page, making it simple for users to browse.
- **Individual Product Pages:** Each product should have a dedicated page with a large image gallery, detailed descriptions, pricing information, and user reviews. Include related products or cross-selling suggestions to encourage users to explore more.
- **Shopping Cart:** Implement a responsive and easily accessible shopping cart that displays the number of items added. Users should be able to modify quantities, remove items, or proceed to checkout directly from the cart. Use clear icons and labels to indicate actions.

- **Checkout Page:** The checkout page should have a step-by-step layout, guiding users through the process. Collect necessary information such as shipping address, payment method, and billing details. Provide clear progress indicators and validation checks to avoid errors.
- **Payment Gateway Integration:** Integrate trusted and user-friendly payment gateways, such as PayPal, Stripe, or others, that support secure transactions. Ensure that users can choose their preferred payment method and enter payment details with confidence.

## 2. Product Showcase

**Objective:** Efficiently manage and display product information.

- **Database:** Implement a robust database system to store product information. Ensure that the database is scalable and can handle a large volume of products. Use proper indexing and caching to optimize data retrieval.
- **Search Functionality:** Develop a powerful search feature with filters to help users find products quickly. Enable users to search by keywords, categories, price ranges, and artisan names. Implement autocomplete and suggest relevant products as users type.
- **Product Reviews:** Allow registered users to leave reviews and ratings for products. Display these reviews on individual product pages to build trust and help customers make informed decisions.

## 3. User Authentication

**Objective:** Securely manage user accounts and access control.

- **User Registration:** Create a user-friendly registration form that collects essential information. Implement email verification to ensure the authenticity of user accounts. Use CAPTCHA or similar tools to prevent spam registrations.
- **User Profiles:** Provide registered users with a dedicated profile section where artisans can manage their products (add, edit, delete) and customers can track their orders, manage shipping addresses, and update account settings.
- **Authentication:** Implement secure authentication mechanisms, such as password hashing and salting, to protect user credentials. Allow users to reset their passwords through a secure process.

- **Role-Based Access Control:** Define roles for artisans and customers. Artisans should have access to product management features, while customers can browse and make purchases. Ensure proper access control to protect sensitive data.

#### 4. Shopping Cart and Checkout

**Objective:** Ensure a smooth shopping and checkout process.

- **Shopping Cart Functionality:** Develop a responsive shopping cart that updates in real-time as users add or remove items. Include features like quantity adjustment, removal, and the option to save items for later.
- **Shipping Information:** Collect necessary shipping details during checkout, including the recipient's name, address, and preferred shipping method. Provide suggestions for available shipping options and estimated delivery times.
- **Order Summary:** Before finalizing the purchase, display a clear and concise order summary, including itemized costs, shipping fees, and taxes. Allow users to review and make changes if needed.
- **Order History:** Create a section in user profiles where registered users can view their order history, track shipments, and access order receipts for reference.

#### 5. Payment Integration

**Objective:** Enable secure and convenient payment processing.

- **Payment Gateway Selection:** Choose reputable payment gateway providers compatible with IBM Cloud Foundry. Research their fees, security features, and integration options to select the most suitable ones for the platform.
- **Payment Security:** Implement security measures to protect user payment data. Use encryption (SSL/TLS) to secure data transmission. Comply with Payment Card Industry Data Security Standard (PCI DSS) requirements to safeguard payment information.
- **Payment Confirmation:** After successful payment, provide users with a clear payment confirmation message and email them a detailed order receipt. Include order tracking information if applicable.

#### 6. User Experience

**Objective:** Prioritize a user-centric and visually appealing experience.

- **Responsive Design:** Ensure the platform is responsive and accessible across various devices and screen sizes. Perform thorough testing on mobile devices, tablets, and desktops to guarantee a consistent and user-friendly experience.
- **User Guidance:** Offer tooltips, hints, and user-friendly error messages to guide users through the platform. Use micro-interactions and animations to enhance user engagement and feedback.
- **Performance Optimization:** Optimize platform performance for quick loading times. Compress images, use content delivery networks (CDNs), and minimize HTTP requests to reduce page load times.
- **Feedback Mechanism:** Implement a feedback mechanism, such as a contact form or customer support chat, to collect user feedback and address issues promptly. Use user feedback to continually improve the platform's usability and features.

## Conclusion

This document lays the foundation for our project to build an artisanal e-commerce platform on IBM Cloud Foundry. It underscores the importance of understanding the problem statement and outlines our comprehensive design thinking approach. The forthcoming phases of this project will encompass development, testing, and deployment, with this design framework serving as our guiding light. Together, we aspire to create a platform that not only empowers artisans but also delights customers with an exceptional shopping journey.