University of Wollongong

Faculty of Engineering and Information Sciences
School of Computing and Information Technology

CSIT321
Group Project: Blockchain-based Traceable Anti-counterfeiting System

Assignment 4: Prototype Presentation

Letter of Transmittal

Date: May 3,2024
To
John Le,Yudi Zhang
University Of Wollongong
Northfields Avenue
Wollongong NSW 2500

Dear Dr. John Le,

I’m writing to formally submit the report for the CSIT321 Assignment 4, detailing the design and development progress of Group 7's Blockchain-based Traceable Anti-counterfeiting system at the University of Wollongong. This comprehensive report outlines the key aspects of our project as we move closer to a fully functional prototype, showcasing the advancements made since our initial design phases.

Questions about this proposal should be addressed to the document's author and researcher. I hope that you will find this report to be satisfactory.

Sincerely,
Group 7

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A4 Prototype Presentation Document

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1. Project Overview

Vision Statement:
Empowering a Secure Ecosystem: The Next-Gen Anti-Counterfeiting Platform with Traceable Blockchain Technology.

Project Evolution:
Since the initial project overview, our system design has matured to include more detailed user interfaces and enhanced security measures. The scope now encompasses a broader range of functionalities to cater to varying stakeholder needs.

Purpose of Integration: Describe the purpose of integrating web-vitals into the product. For example, "Enhancing user experience by monitoring and optimizing core web performance metrics such as LCP, FID, and CLS."

Target Audience: Identify who will benefit from the web-vitals data, such as developers, UX/UI designers, and product managers.

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2. Requirements/User Stories

Initial Requirements:

1. Secure user login with role-based access.
2. Manufacturers create and register products with QR codes/RFID tags.
3. Suppliers update product status and manage information.
4. Customers verify product authenticity using the platform.
5. Administrators generate reports on product authenticity, user activity, and feedback.

Modifications and Extensions:

- Expanded user roles to include different levels of access for suppliers and manufacturers.
- Enhanced reporting capabilities with more granular analytics.
- Improved user interface for easier navigation and verification processes.

Performance Monitoring Requirements:

- As a developer, I want to capture core web vitals data so that I can monitor performance in real-time.
- As a product manager, I want to track the overall performance health of the product to prioritize enhancements.

User Roles Specific to Web-Vitals:

- **Developers:** Integrate and interpret web-vitals data.
- **Product Managers:** Access performance reports and metrics.
- **Operations Team:** Monitor performance trends for maintaining optimal user experience.

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3. System Functionality and User Interaction

Functionality Overview:

- **Authentication and Authorization:** Secure login with role-based access.
- **Product Management:** Manufacturers create and register products, attach QR codes/RFID tags, manage information.
- **Product Verification:** Customers verify product authenticity using QR codes/RFID tags.
- **Reporting and Analytics:** Administrators generate detailed reports on product status and user interactions.
- **Data Collection:** Describe how the web-vitals data will be collected and stored (e.g., using Google Analytics, custom APIs).
- **Real-Time Monitoring:** Explain how the real-time performance metrics will be accessible within the system.
- **Performance Alerts:** If applicable, discuss how performance alerts will be set up to notify teams when vitals fall below certain thresholds.

Expected User Interaction:

- **Customers:** Scan QR codes/RFID tags to verify product authenticity, provide feedback.
- **Manufacturers:** Register new products, attach tags, update product information.
- **Suppliers:** Scan tags, update product status, manage product information.
- **Administrators:** Monitor system activity, generate reports, manage user roles.

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4. Current Interface Designs

Web Interface:

- **Login Page:** Secure login for all user roles. (feature which will be implemented in the future)
- **Dashboard:** Overview of product status and system activity. (feature which will be implemented in the future)
- **Product Management:** Interface for creating and managing product information.
- **Verification Page:** Interface for customers to scan and verify products.
- **Reports:** Detailed analytics and reporting tools.

Mobile Interface:

- **Login Screen:** Secure login for all user roles.
- **Main Menu:** Access to product management, verification, and feedback tools.
- **Scan Page:** QR code/RFID tag scanning for product verification.
- **Feedback Page:** Submit feedback on verified products.

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5. Branding and Style Guide

Project Branding:

- **Logo:** Etherweave
- **Color Scheme:** Blue, White, and Green for a professional and trustworthy appearance.
- **Font Style:** Sans-serif fonts for readability and modern aesthetics.

Style Guide:

- **Consistent Layouts:** All pages have a uniform layout for ease of navigation.
- **Responsive Design:** Ensures compatibility across different devices and screen sizes.
- **Accessibility:** Designed to be accessible to users with disabilities, following WCAG guidelines.

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6. Development Progress and Prototype

Development Status:

- **System Design and Development:** Completed initial design and prototype.
- **Project Registration and Tracking:** Implemented core registration and tracking features.
- **Consumer Verification and Engagement:** Developed verification tools and user interfaces.
- **Security and Scalability:** Enhanced security measures and began scalability testing.

Requirements Traceability Matrix:

Requirement	Status	Notes
User Authentication	Complete	Secure login implemented for all user roles
Product Creation and Management	Complete	Manufacturers can create and manage products
Product Verification	Complete	Customers can verify products using QR codes/RFID tags
Reporting and Analytics	In Progress	Basic reporting implemented, more features being added
User Feedback	Complete	Customers can submit feedback

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7. Requirements and User Stories

As the project evolved, we revisited our original requirements and user stories. Key adjustments include:

More fine-grained permissions: We have implemented additional user roles to more accurately represent their levels of control across various enterprise supply chains, particularly on the administrative end.

Multi-factor Authentication (MFA): MFA processes have been strengthened, as evidenced by the numerous features we made to the user authentications.

User Experience Enhancements: Draft phase testing and feedback informed significant changes to our user interface guiding the way for a more streamlined, interactive experience for all role types.

Conclusion

The Etherweave project has made significant progress towards developing a secure, transparent anti-counterfeiting system using blockchain technology. With a functional prototype in place, the focus will now shift to extensive testing, stakeholder engagement, and iterative improvements to ensure the system meets all requirements and provides a robust solution against counterfeit products.

Github Repository: *https://github.com/Fukiri/product-tracking-hardhat*