MOBILE RESPONSIVE SCREENS FOR DLT LEDGERS : WEB BASED BLOCKCHAIN APPLICATION

AN INTERNSHIP REPORT

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE AWARD OF THE DEGREE OF

MASTER OF DESIGN

Submitted by

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CANDIDATE'S DECLARATION

I, Vaidehi Vijay, Roll No. - 2K22/MDPD/08, student of M.Des (Department of Design), hereby declare that the project dissertation titled "**Mobile responsive screens for #dltledgers : blockchain application**" which is submitted by me to the Department of Design, Delhi Technological University, Delhi is original and not copied from any source without proper citation. This work has not previously formed the basis for the award of any Degree, Diploma Associateship, Fellowship or other similar title recognition.

Place : Delhi

Date : 01/05/2024

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A very special thanks to **Prof. R. C. Singh**, head of the department, for his constant support and encouragement.

Special thanks to my friends and family for their constant support throughout.

Place : Delhi

Date : 01/05/2024

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ABSTRACT

The goal of this project is to improve the access and appeal of the DLTledgers blockchain application through mobile responsive screens. The ubiquity of mobile technology in various professional and recreational environments makes it imperative that any application sought to promote the levels of user interaction and satisfaction be compatible with the leading smart devices and tablets. Using responsive design concepts, the project addresses the dynamic adaptation of the DLTledgers platform's layout, content, and functionality across screen sizes, resolutions, and orientations. Mobile access problems, user interface development, performance advancements, and compatibility will be the major challenges and benefits. These will improve the overall user experience for logistics, finance, and other industry professionals. Developing mobile responsive screens will enable involved parties to access blockchain data and necessary insights on a rolling basis, allowing them to maximize efficiency, productivity, and decision-making in their organizations.

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Chapter 1

INTRODUCTION

1.1 About the Project

This project aims to improve the user experience on dltedgers, a web-based blockchain application, by designing mobile-friendly screens. DLT ledgers is an online platform built on blockchain technology to provide a secure and transparent way to manage supply chains. As many users continue to use mobile devices to access web applications including dltledgers, it is important to customize the application to suit mobile platforms so other users also find it easy to use.

1.2 About the Company

#dltledgers' team is responsible business. The company is a global supply chain digitalization platform, co-founded by Huck Hodge, the experienced Founder and the seasoned leadership working with global enterprises to move supply chain digitalization. Created early in 2018, the platform has already facilitated over $3 billion in live trade finance transactions and involved more than 20 enterprises, 65 banks, and other partners in the supply chain transactions.

1.3 Problem Statement

To create mobile responsive screens for the DLTledgers blockchain application to ensure seamless access and usability across diverse mobile devices.

Chapter 2

DESIGN PROCESS

2.1 Work Flow

The design work flow starts from the research phase, which includes finding the existing solutions and studying their problems, followed by UX design phase and UI design. Then testing is done in order to check whether the design serves the purpose, collect feedback and then moves on to the final design and launch phase

Fig. 2.1 Design process (Source: Author)

2.2 Design Timeline

The phase one and two that included the research phase and the UX design phase was completed within the end of January. The phase one included the primary research phase wher in surveys and interviews were done. UX design phase is where you understand the user, collect information from them, brainstorming, information architecture, user flow and competitive analysis are carried out. UI design is where you create the low fidelity screens and give the users to test, collect feedback from them, create the final one until the user is satisfied with the screens. This phase was completed within the end of March. Then you test the design and launch with the help of the development team, which will be happening soon.

Chapter 3

RESEARCH PROCESS

3.1 Primary Research

Primary research includes interview as well as user surveys. The interview included more than 20 participants which included mostly of Businessmen, Developers and Product Architects. The results or insights from the primary are mentioned below as interview and survey insights, which are taken from the people I've conducted the interview and surveys with.

3.1.1 Survey Insights

Based on the survey I've conducted, I've got hte insights which have been listed below:

1. 68% users of #dletledgers webpage comes under the age group 35-54 years
2. 75% #dltledgers customers who use the webpage are males and are businessmen.
3. 90% businessmen who uses the webpage, most preferably uses android.
4. 84% customers say that they use mobile phones multiple times in a single day.
5. 80% customers approve that it is extremely important to access the application on mobile device.
6. 63% customers prefer to enable notifications on mobile device while working.

3.1.2 Interview Insights

Few interview insights are as follows:

- " I do prefer minimalist design style for any mobile application "
- " It will be great if there is real time data access in the application "
- " Data security is the most important thing I need in the application "
- " I do prefer an exact responsive design for the website application "

Chapter 4

UX DESIGN

4.1 Secondary Research

Secondary research or qualitative UX research is a research methodology used to answer questions and understand the motivations, thoughts, and attitudes of a target audience.

4.1.1 User Persona

A user persona is a fictitious figure based on the current client or user, whose aims and traits represent the requirements of a broader group of users that you would like to cater to.

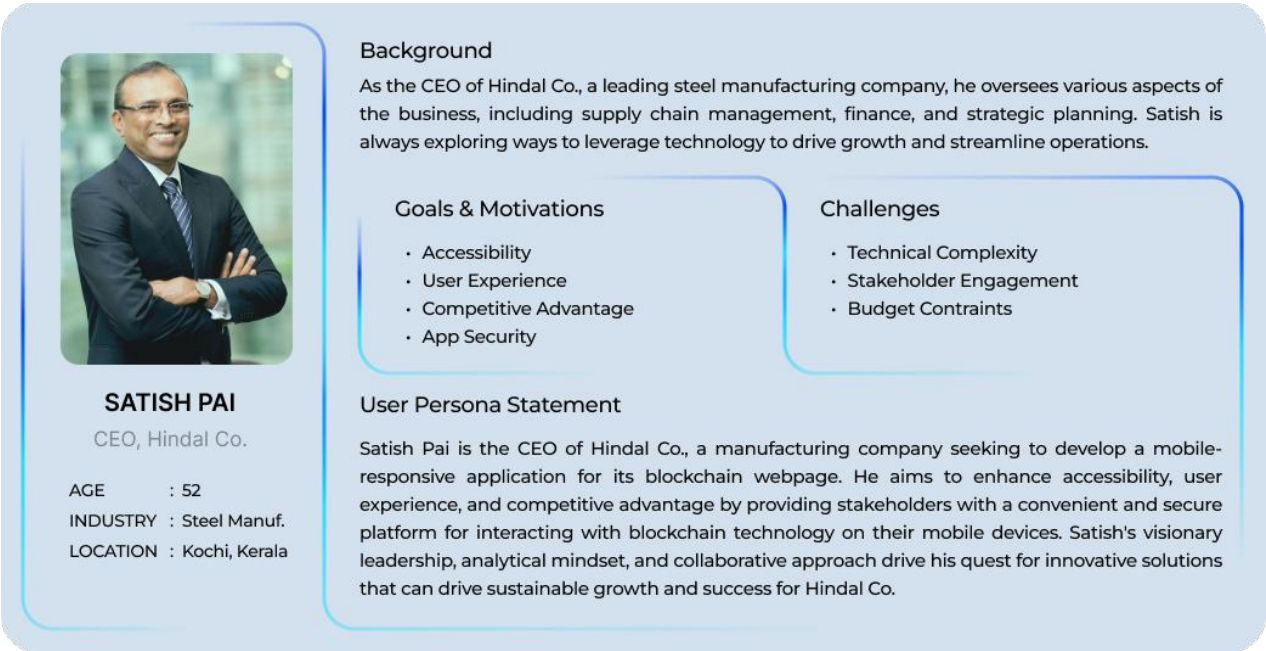


Fig. 4.1 User Persona (Source: Author)

4.1.2 Competitive Analysis

The competitive analysis for the mobile-responsive screens project of the DLTledgers blockchain app provides a comprehensive examination of key competitors in the blockchain and supply chain management space. Through this analysis, we aim to compare the feature set, mobile responsiveness, integration, security, scalability and customisation posed by competitors, of the DLTledgers platform.

Features	IBM Blockchain Platform	Ethereum	Hyperledger Fabric	Corda	DLTledgers
Feature Set	Comprehensive blockchain solution like smart contract.	Decentralised platform for building and deployment.	Permissioned block chain framework des igned for enterprises.	Designed for financial services and enterprise application	Specializes in supply chain management solutions.
Mobile Responsiveness	Mobile- friendly interfaces for blockchain data.	Mobile-friendly interface for accessing decentralised exchang	Mobile access to blockchain networks through mobile SDKs	Provides mobile-friendly interfaces for accessing diff features	Focuses on enhancing mobile access to supply chain data.
Integration	Seamless integration allowing efficient data exchange.	Seamless data exchange and collaboration.	Integrates with existing enterprise systems.	Integrates with ERP systems, inventory databases, & sensors.	Integrates with logistics and supply chain management.
Security	Inclues encryption, access control and identity management.	Relies on decentralized architecture & crypto graphic techniques.	Prioritises privacy supporting encryp- ted transactions.	Implements security features for identity verification.	Focuses on data secu- rity & privacy in supply chain transactions.
Scalability	Scale with enterprise level requirement.	Challenges with sca- lability : limitations of consensus mechanism	Offers scalable, high- performance blockchain networks.	Provides scalable solutions for financial services & enterprises	Focuses on scalability in supply chain management.
Customisation	Offers flexible customisation options.	Supports customiz- ation through smart contracts and DApps.	Provides modular architecture for easy customisation.	Customisation through smart contracts.	Tailors solutions to supply chain management needs.

Fig. 4.2 Competitive Analysis (Source: Author)

4.2 Refined Problem Statement

To create mobile responsive screens for the DLTledgers blockchain application to ensure seamless access and usability across diverse mobile devices.

4.3 Ideation

To ensure a seamless transition from web to mobile, the approach prioritizes user-centric design principles and responsive layout strategies. By analyzing user behaviors, screen dimensions, and touch interactions, I aim to optimize the mobile experience while retaining the core functionality and visual identity of the website. Through iterative prototyping and user testing, I will refine the mobile screens to ensure intuitive navigation, readability, and accessibility across various mobile devices and screen sizes.

4.4 Brainstorm

To ensure a seamless transition from web to mobile, the approach prioritizes user-centric design principles and responsive layout strategies. By analyzing user behaviors, screen dimensions, and touch interactions, I aim to optimize the mobile experience while retaining the core functionality and visual identity of the website. Through iterative prototyping and user testing, I will refine the mobile screens to ensure intuitive navigation, readability, and accessibility across various mobile devices and screen sizes.

Fig. 4.3 Brainstorm (Source: Author)

4.5 Information Architecture

Information architecture involves structuring, and labeling content in such a way that it facilitates intuitive navigation, efficient retrieval, and meaningful user interactions within digital systems.

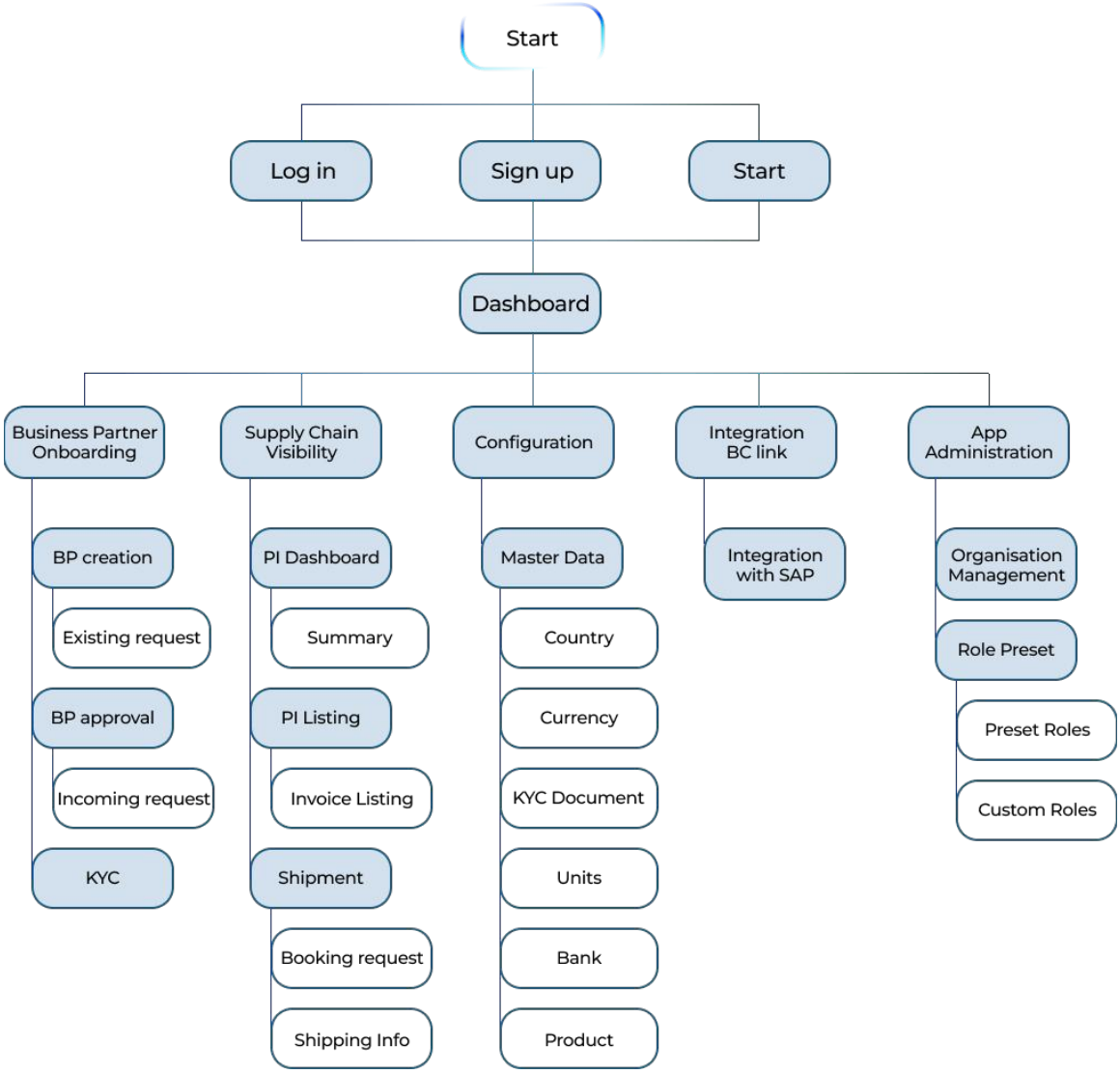


Fig. 4.4 Information Architecture (Source: Author)

4.6 User Flow

A user flow represents the step-by-step journey that a user takes through a digital product or website, outlining their interactions, decisions, and pathways to accomplish specific tasks or goals.

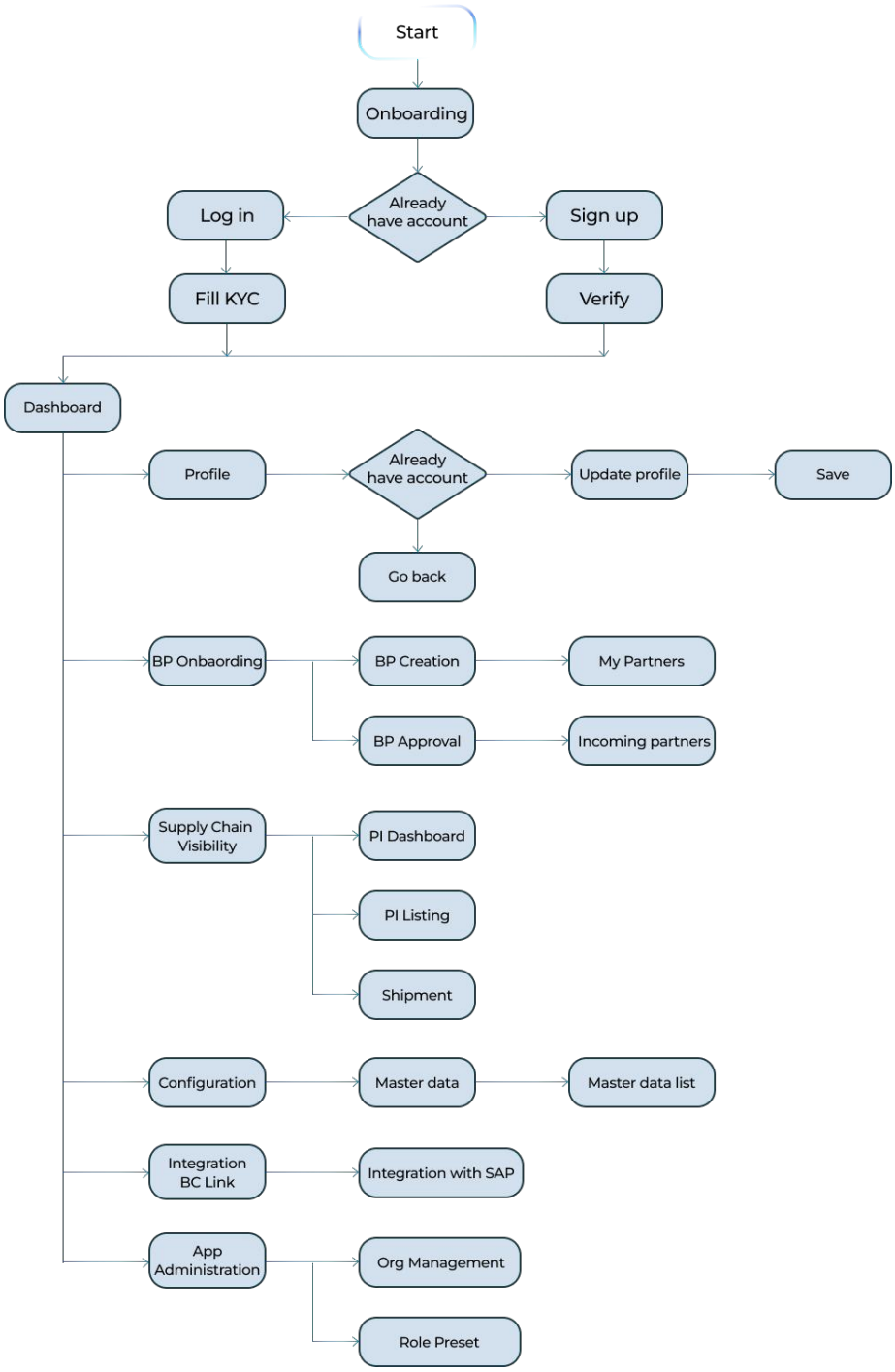


Fig. 4.5 User Flow (Source: Author)

Chapter 5

UI DESIGN

5.1 Low Fidelity Screens

Low-fidelity screens are simplified, rough sketches or wireframes that convey basic layout and functionality without detailed design elements, facilitating rapid prototyping and iteration during the early stages of the design process.

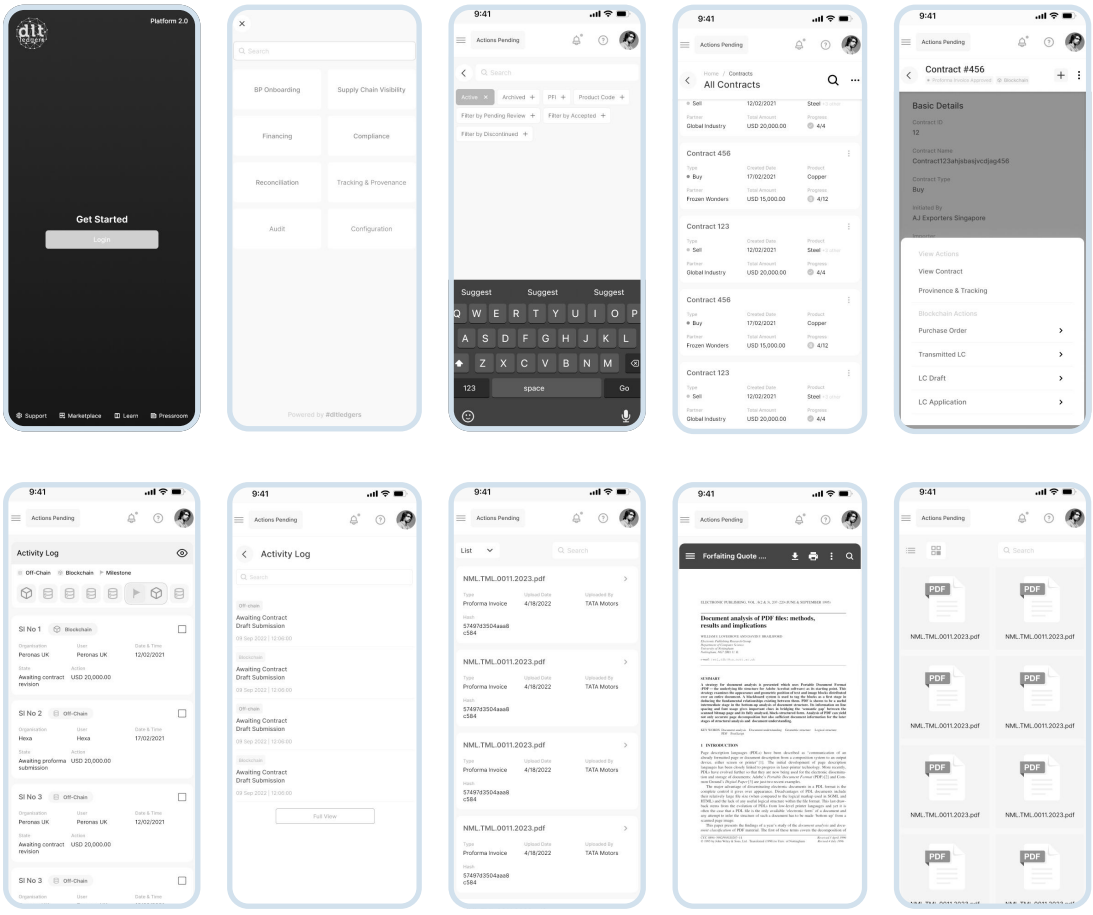


Fig. 5.1 Low Fidelity Screens (Source: Author)

5.2 Visual Library

Visual library is a visual set having a wide range of building blocks available to the developer. These can range from buttons to font style, input elements, colour palettes, and more.

Fig. 5.2 (a)

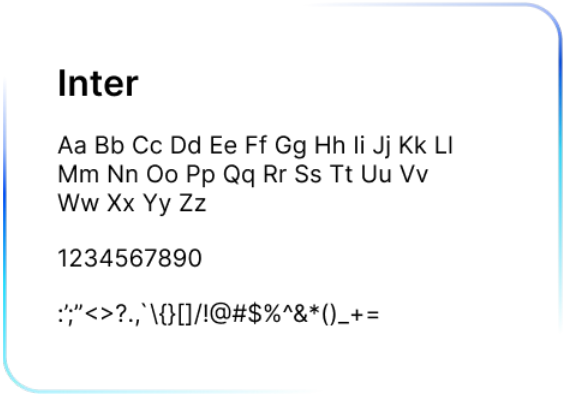


Fig. 5.2 (b)

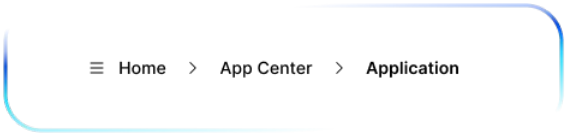


Fig. 5.2 (c)

Fig. 5.2 (d)

Fig. 5.2 Visual Library (a) Icons (b) Typography

(c) Breadcrumb (d) Pagination (Source: Author)

Fig. 5.2 (e)

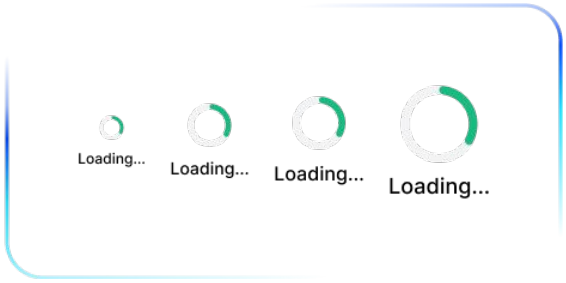


Fig. 5.2 (f)

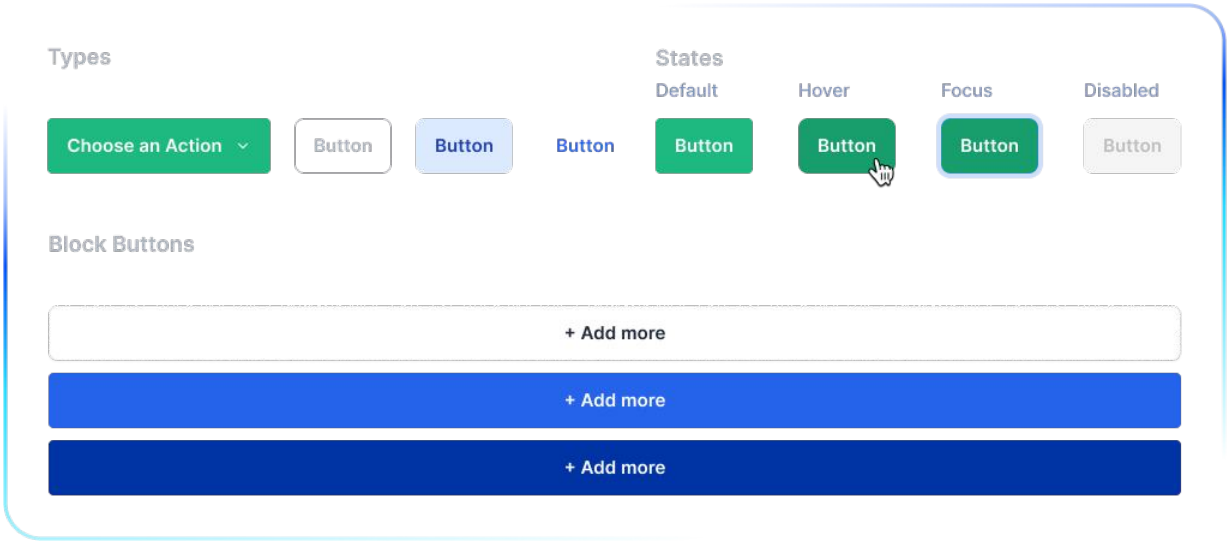


Fig. 5.2 (g)

Fig. 5.2 Visual Library (e) Colour palette (f)

Loading states (g) Buttons (Source: Author)

5.3 High Fedility screens

High fedility device screens are the ones that looks as close as possible to the final design. The high fedility device screens which includes the the onboarding screens, health tracker screens, schedule screens and the heat therapy screen.

5.3.1 Menu Page

Introducing the newly designed mobile screens for the menu page of the #dltledgers website, meticulously crafted to enhance accessibility and user experience on handheld devices.

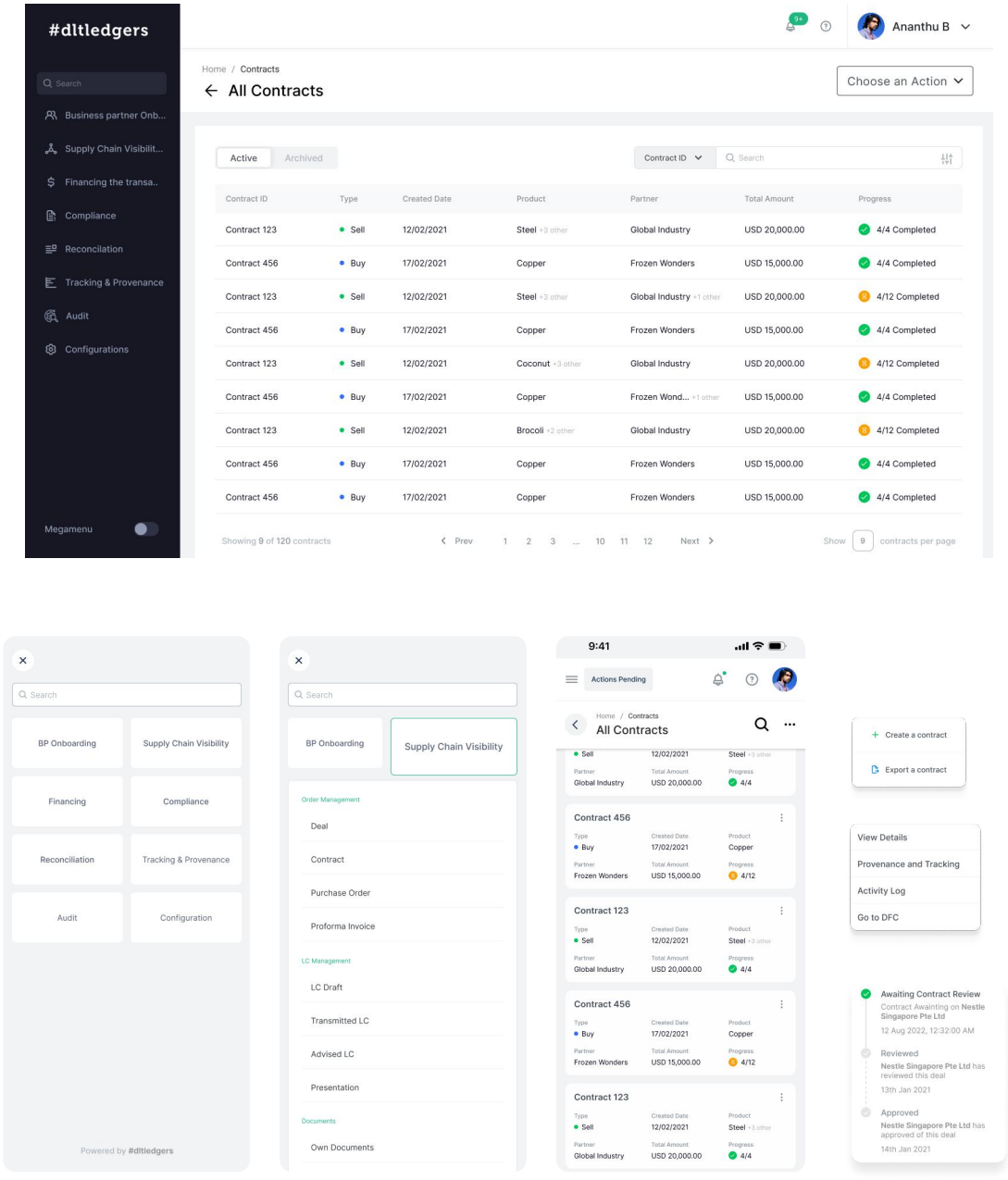


Fig. 5.3 Menu Page (Source: Author)

5.3.2 Dashboard

The redesigned mobile dashboard screens for the #dltledgers website, optimized to deliver a seamless and intuitive user experience on smartphones is as follows.

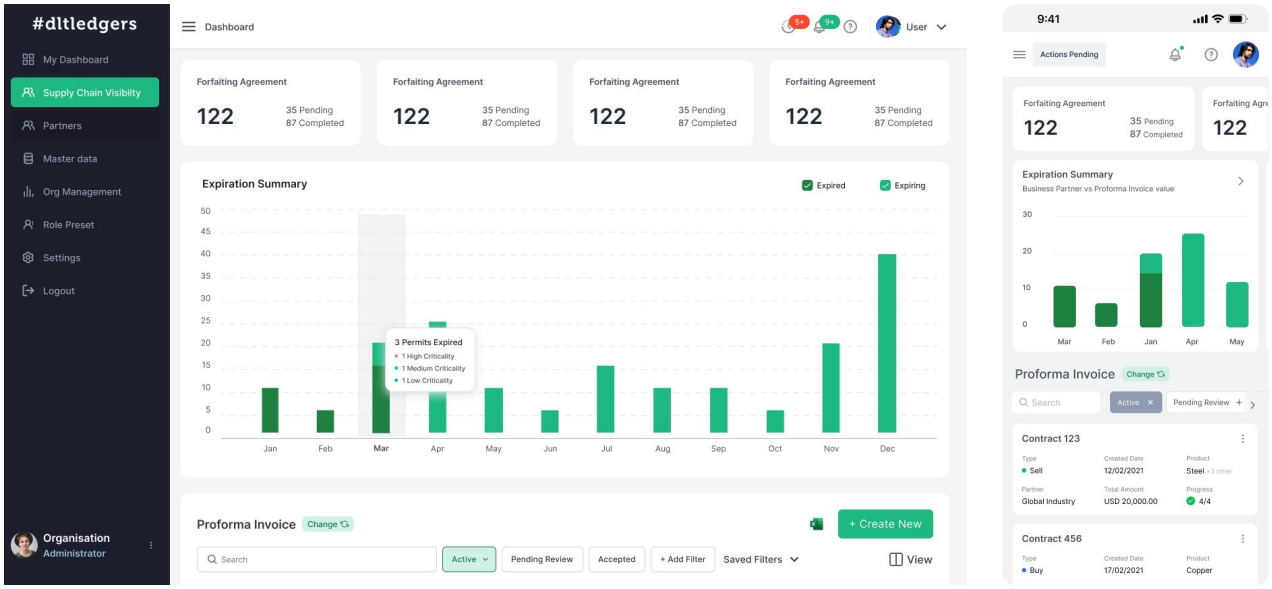
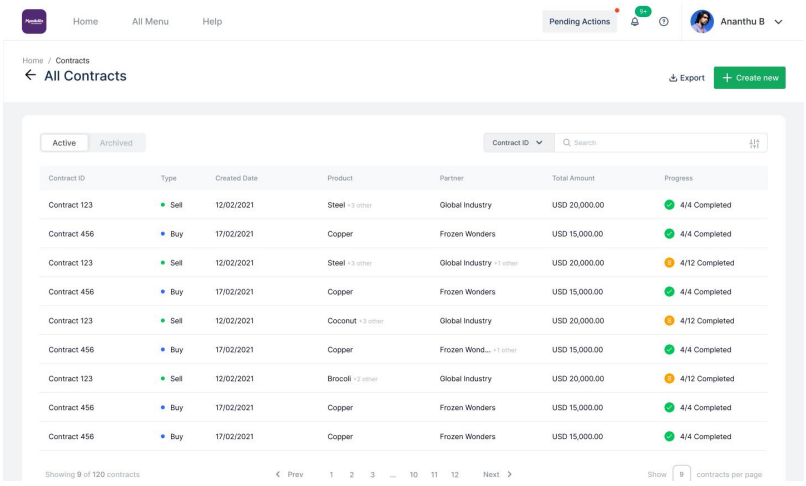


Fig. 5.4 Dashboard (Source: Author)

5.3.3 Contract View

Introducing the enhanced mobile contract view screens for the #dltledgers website, meticulously designed to offer a streamlined and immersive experience for managing contracts on the go.



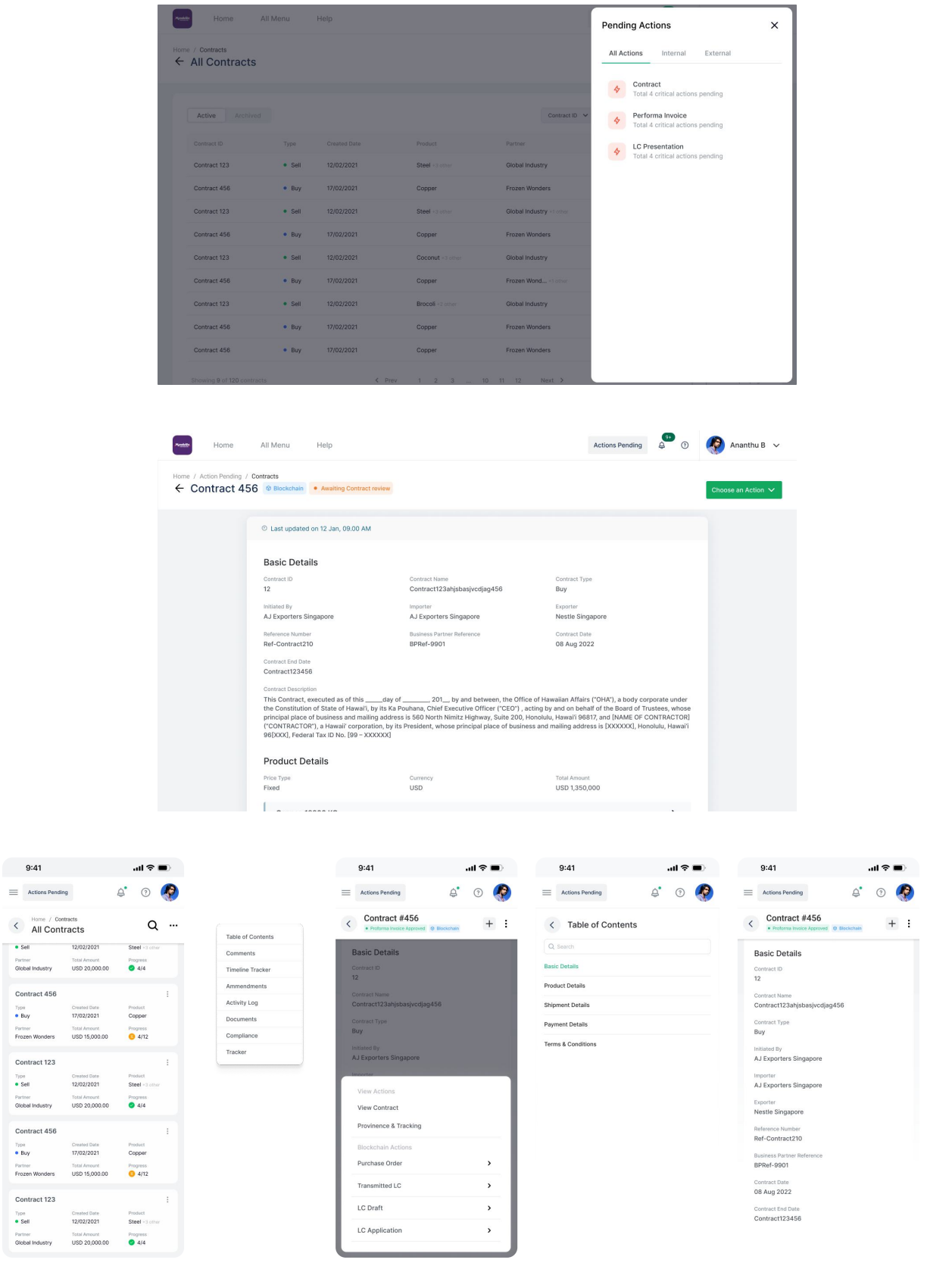
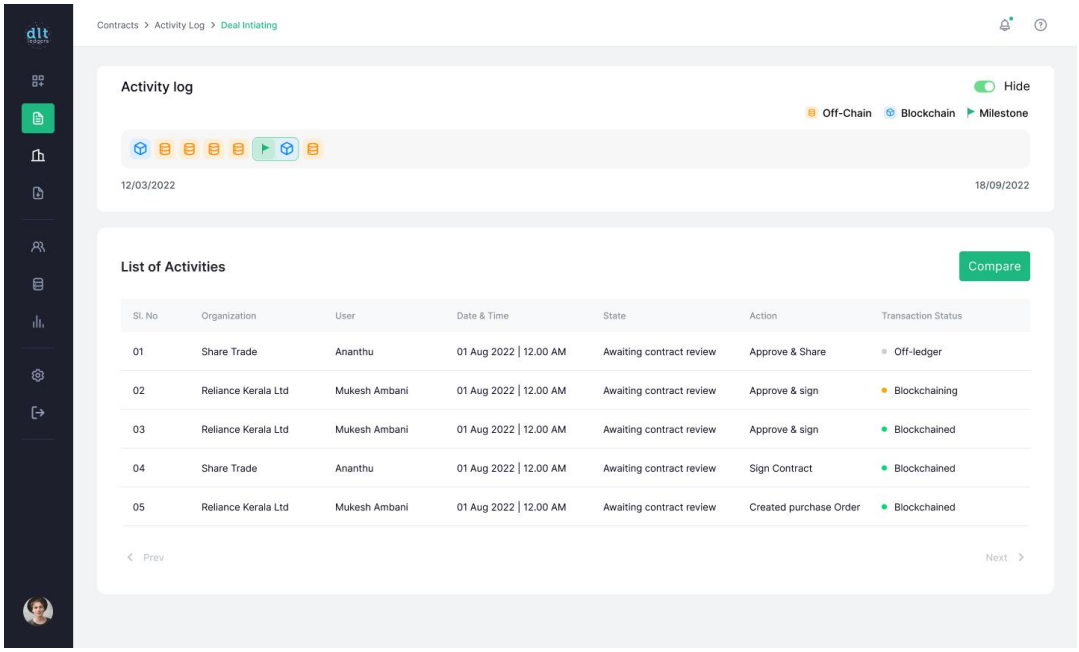


Fig. 5.5 Contract View (Source: Author)

5.3.4 Activity Log

The newly tailored mobile screens for the Activity Log page of the #dltledgers website, ensuring convenient access and efficient tracking of all blockchain activities from your handheld device are as follows.



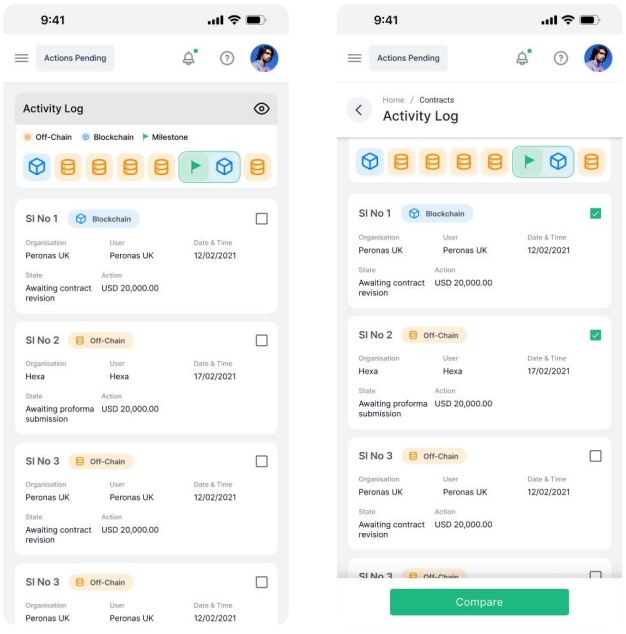


Fig. 5.6 Activity Log (Source: Author)

5.3.5 Documents

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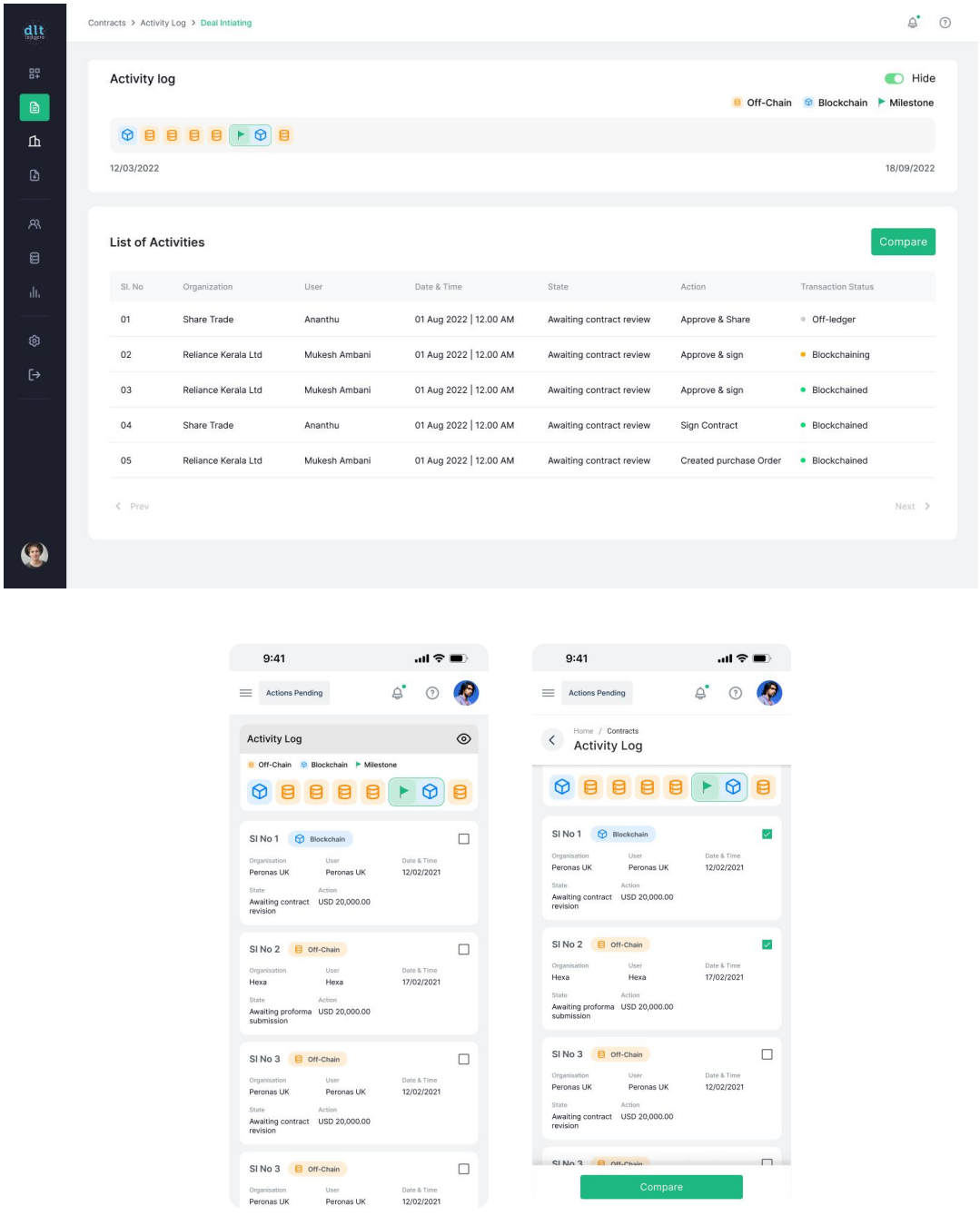


Fig. 5.7 Documents (Source: Author)

Chapter 6

TESTING

6.1 Heuristic Evaluation

Low-fidelity screens are simplified, rough sketches or wireframes that convey basic layout and functionality without detailed design elements, facilitating rapid prototyping and iteration during the early stages of the design process. Observation and severity rates of the ten heuristic evaluation done are as follows:

i) Visibility of system status

Observation: The webpage lacks clear indicators of system status, such as loading screens or progress bars, leading to potential user confusion during data retrieval or transaction processing.

Severity rate: 2

ii) Match between system and real world

Observation: The terminology and language used in the application may not align with users' mental models or industry-specific terminology, potentially causing confusion or misunderstanding.

Severity rate: 2

iii) User control and freedom

Observation: Users may feel constrained by the limited control and freedom offered within the application, particularly in terms of navigation options, customization features, and the ability to undo or redo actions.

Severity rate: 3

iv) Consistency and standards

Observation: Inconsistencies in design elements, layout, and navigation patterns across different screens and modules may hinder user comprehension and navigation efficiency.

Severity rate: 1

v) Recognition rather than recall

Observation: Users may struggle to remember specific actions or steps required to perform tasks within the application, indicating a need for clearer visual cues, contextual guidance, and in-app assistance features.

Severity rate: 2

vi) Error prevention

Observation: The project lacks sufficient error prevention mechanisms, such as validation checks or confirmation prompts, potentially leading to user errors or unintended actions with significant consequences.

Severity Rate: 3

vii) Flexibility and efficiency of users

Observation: The application may not adequately accommodate users with varying levels of expertise or preferences, lacking customizable settings, shortcuts, or advanced features that cater to different user needs and workflows.

Severity Rate: 1

viii) Aesthetic and minimalist design

Observation: The visual design of the application may appear cluttered or overwhelming, with unnecessary elements or distractions detracting from the user experience and detracting from usability.

Severity Rate: 1

ix) Help users recognise, diagnose and recover from errors

Observation: Error messages and feedback provided to users may be vague, cryptic, or uninformative, making it difficult for users to understand the nature of the problem and take appropriate corrective actions.

Severity rate: 2

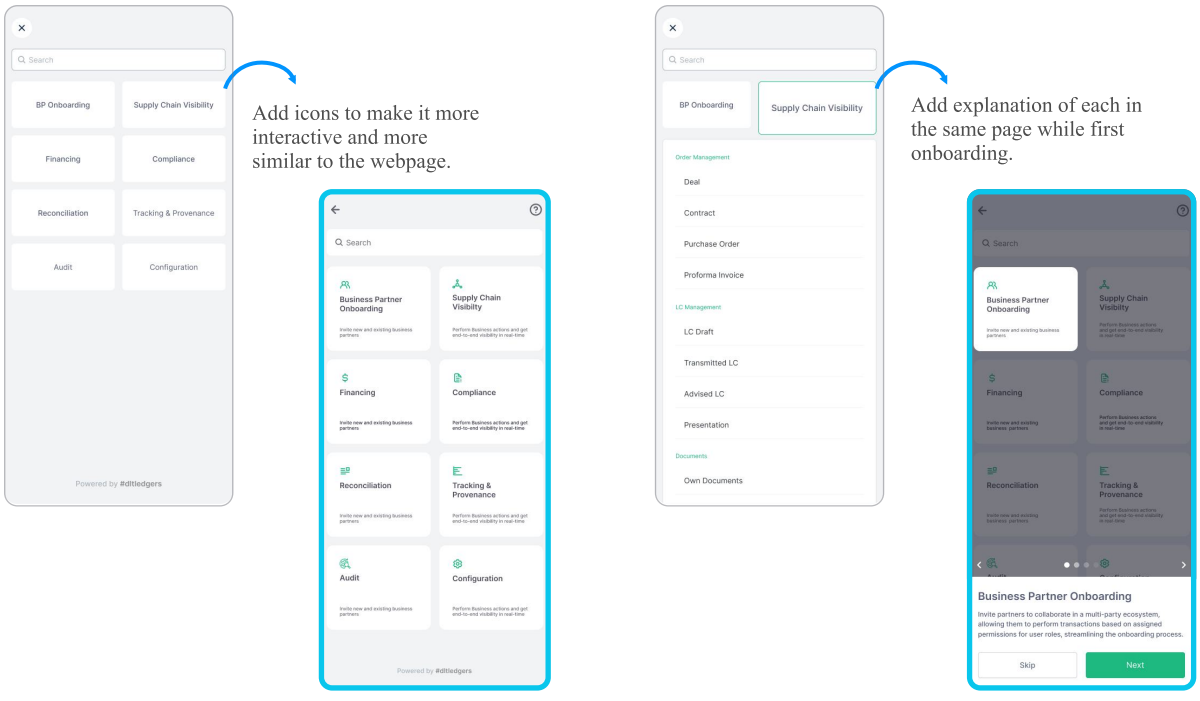
x) Help and documentation

Observation: The availability of help resources, documentation, and support channels within the application may be insufficient, leaving users stranded when encountering difficulties or seeking additional information.

Severity rate: 1

6.2 User Feedback

User feedback has been collected after testing and are provided below:



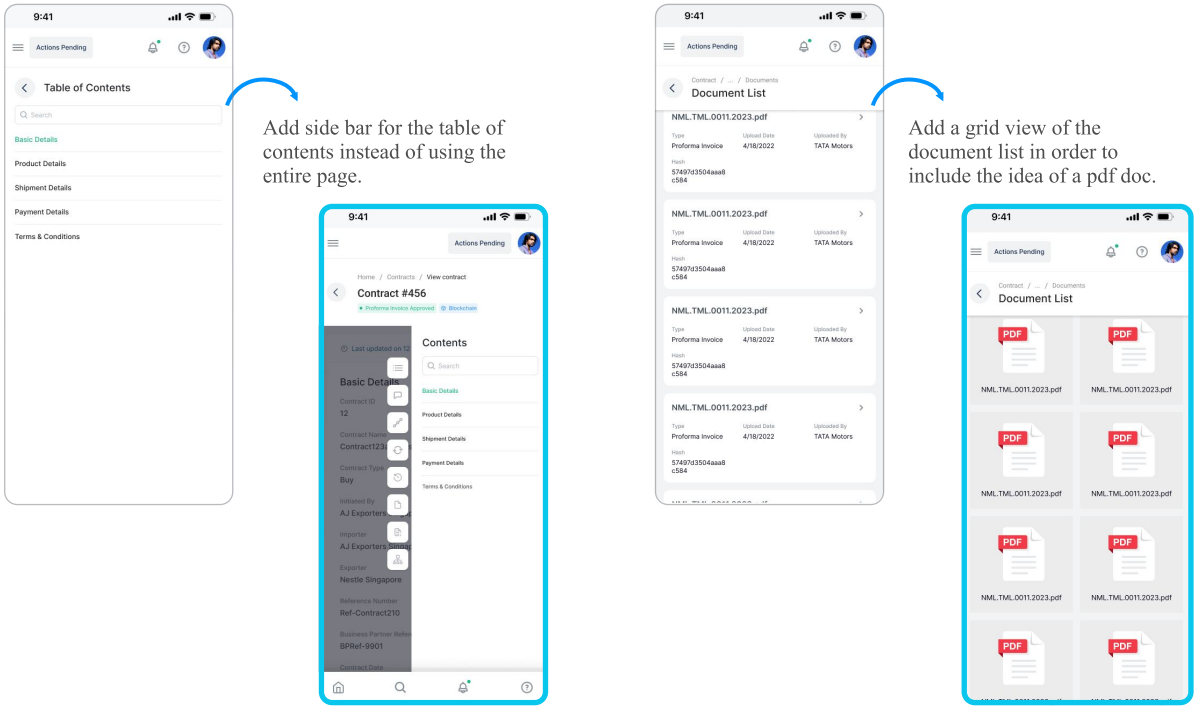


Fig. 6.1 User Feedback (Source: Author)

Chapter 7

LAUNCH

7.1 High Fedility Mobile Screens

High fedility mobile screens are the ones that looks as close as possible to the final design. The high fedility mobile screens which includes the login screens, the onboarding screens, home screen, health tracker screens, schedule screens and the heat therapy screen.

7.1.1 Login and Menu Page

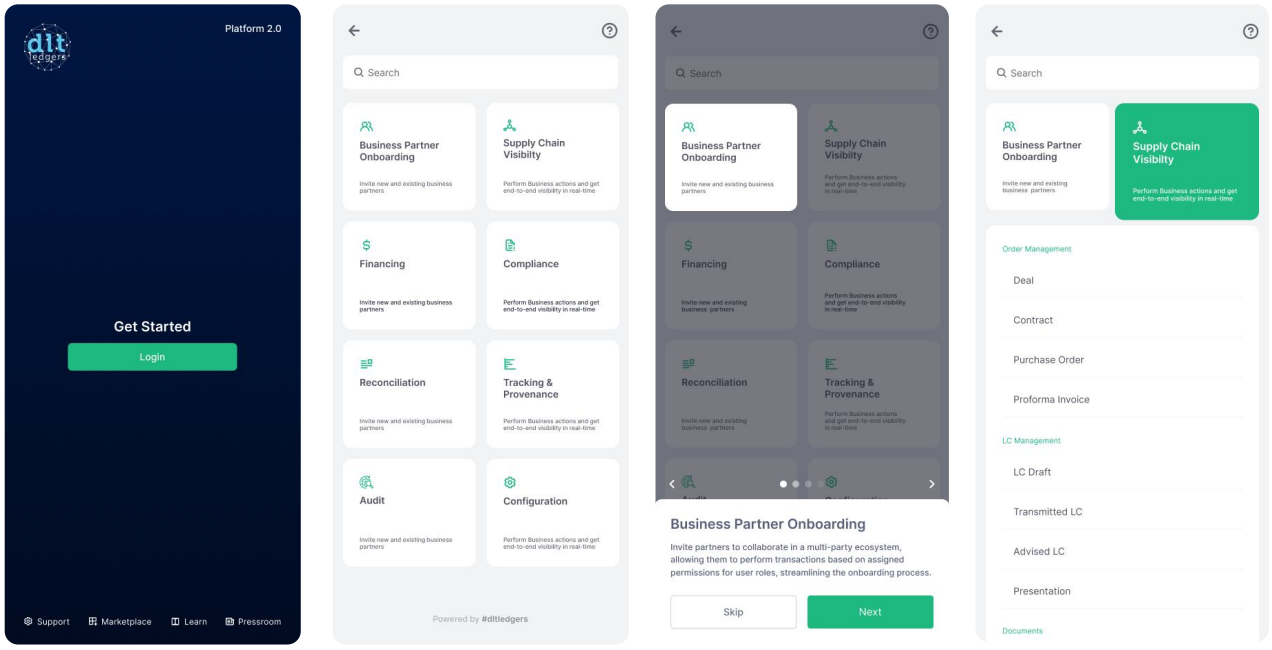


Fig. 7.1 (a) **Fig. 7.1 (b)**

Fig. 7.1 High Fidelity Mobile Screens (a) Login page (b) Menu Page (Source: Author)

7.1.2 Contract List and Comments page

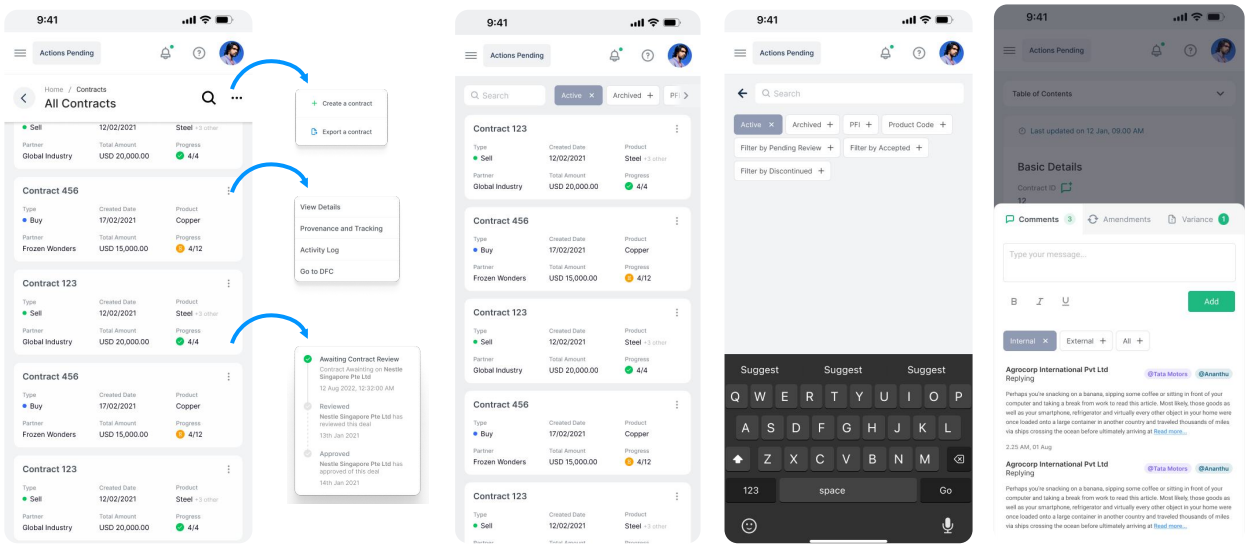


Fig. 7.1 (c)

Fig. 7.1 (d)

7.1.3 Contract View

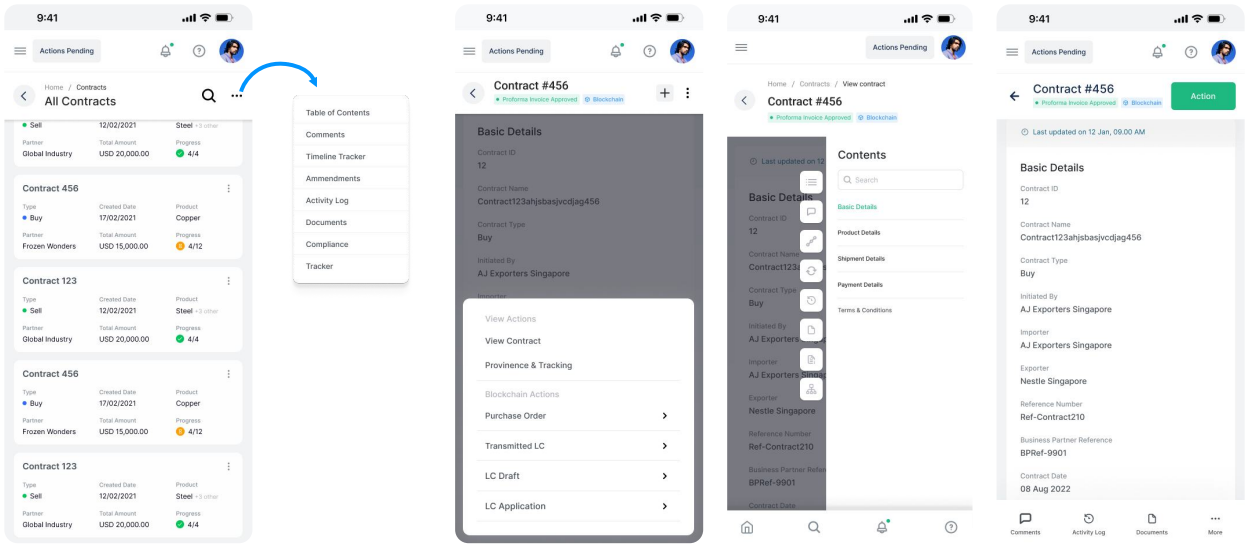
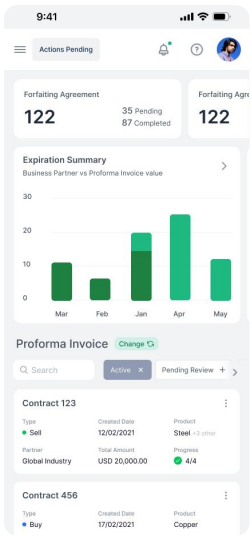


Fig. 7.1 (e)

Fig. 7.1 High Fidelity Mobile Screens (c) Contract List (d) Comments (e) Contract View (Source: Author)

7.1.4 Dashboard and Documents



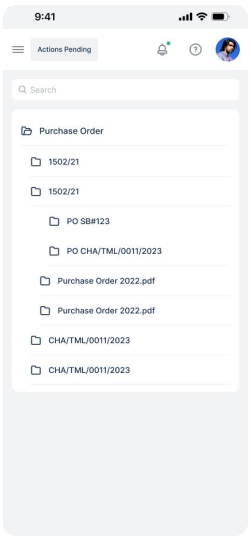
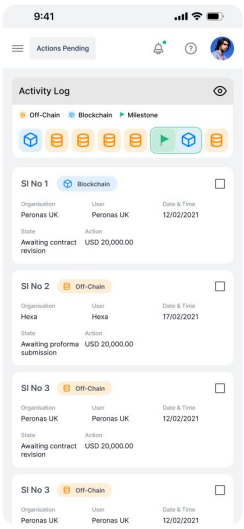
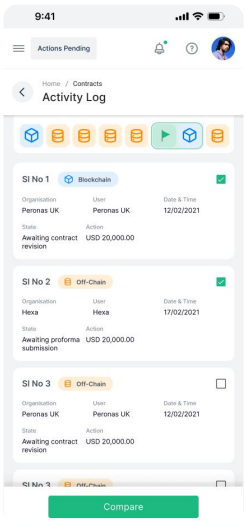


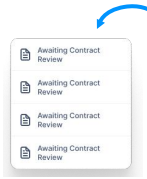
Fig. 7.1 (f)

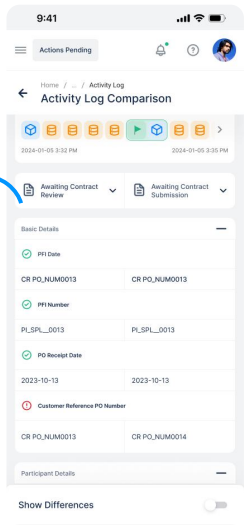
Fig. 7.1 (g)

7.1.5 Activity Log and Comparison









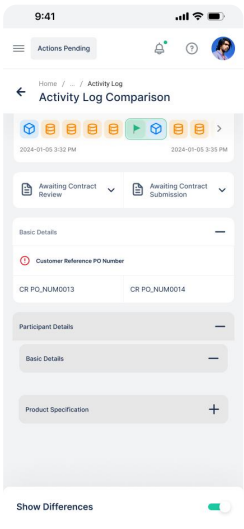


Fig. 7.1 (h)

Fig. 7.1 (i)

Fig. 7.1 High Fidelity Mobile Screens (f) Dashboard (g) Documents (h) Activity Log (i) Comparison (Source: Author)

7.2 Development

Thorough testing of the UI development in Java,.NET, and Angular environments is paramount to the successful CD of the launch phase. The consistent and thoughtful consideration of different testing environments will prevent further compatibility problems and ensure that the application will operate as intended. Furthermore, close consideration of version control, deployment specifics, and related documentation should be allowed in order to streamline the integration and maintenance of the three combined environments after their initial launch. An additional requirement for the programming of CD applications in Java,.NET, and Angular environments is close collaboration between individual developers responsible for each of the environments to prevent and easily address any possible interoperability issues.

Chapter 8

CONCLUSION

In conclusion, the project to create mobile-responsive screens for the DLTledgers blockchain application has been a significant endeavor aimed at enhancing accessibility and usability across diverse mobile devices. Through meticulous design and development efforts, we have successfully translated the functionality and aesthetics of the existing website screens into intuitive and visually appealing mobile interfaces. By prioritizing user-centric design principles, responsive layout strategies, and thorough testing, we have ensured a seamless and immersive user experience for professionals in logistics, finance, and related industries. Moving forward, ongoing monitoring, iteration, and user feedback will be crucial for continuously improving and refining the mobile-responsive screens to meet evolving user needs and technological advancements. With these enhancements, we are confident that the DLTledgers blockchain application will continue to empower users, drive operational efficiency, and facilitate greater transparency and trust within supply chain networks.

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