

Final Year Project Proposal

Blockchain Beauty Shield



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1. Introduction

This project embarks on a journey to combat counterfeit products and enhance trust within supply chains. We propose the development of a blockchain-based product tracing and verification system—a solution designed to revolutionize authenticity assurance.

The development of a product or any technology involves risk factors like counterfeiting of that product, this could well lead to affecting company's name, fame and the overall growth. In today's market, the challenging thing is to identify fake product from real ones. The yearly sales of counterfeit products in the world is 650 billion USD reported on the International Chamber of Commerce of Geneva. It could be life threatening if the counterfeiting takes place in medical field.

E-commerce is expected to grow from USD 40 billion in 2017 to USD 220 billion by 2026. The launch of these e-commerce website apps on mobile phones leads to an increase in counterfeit products. An increase in counterfeit product could affect the economic growth of any country. After conducting several surveys, the data reveals an increase in counterfeit product. Due to this, many companies receive negative remarks and lose their status from the brand list. Counterfeit products are similar to the real ones in the e-commerce market. Counterfeiting leads to huge losses for both manufacturers and customers.

To deal with this problem, we can use Blockchain technology. Blockchain technology will help us find the authenticity of the product. Blockchain is a computerized record of all transactions that is distributed across the entire network of systems on the blockchain. Each participant's record will contain information about all transactions and if a new transaction occurs each time the details of that transaction are added to the blockchain network. Distributed Ledger Technology (DLT) is where a decentralized database is managed by a system on the blockchain. A hash address is a type of cryptographic signature that is generated when transactions take place.

2. Aim and Objective of Proposal

Aim:

This project's primary aim is to create a secure and efficient blockchain-based product tracing and verification system within the supply chain. The system aims to combat counterfeit products while ensuring data security and operational efficiency.

Objectives:

Supply Chain Tracking through smart contracts

Developing a secure private blockchain network

Product registration on the blockchain

User-friendly verification mechanism

Scalability for increasing products and stakeholders

Implementing security measures

Promoting awareness and adoption

3. Background of the Project Proposal

Traditional supply chain tracking systems often suffer from a lack of transparency, susceptibility to fraud, and error-prone processes. The growing complexity of global supply chains has intensified the need for innovative solutions. Blockchain technology has emerged as a promising solution due to its decentralized and immutable ledger, which securely records and verifies transactions, making it ideal for ensuring product authenticity and traceability.

4. Learning Outcomes

- Participants in this project will gain valuable skills and knowledge.
- In-depth understanding of blockchain technology and its application in supply chain management.
- Proficiency in smart contract development for product registration, tracking, and verification.
- Enhanced understanding of supply chain processes.
- Development of Decentralized application (Dapp).
- Understanding Hyperledger fabric which is private Blockchain
- Integration of Front-end UI with Blockchain.
- Web3 Development & Web2 to Web3 migration.
- Deep Understanding of cryptography.
- Public and private keys importance.
- Working with Metamask.
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5. Required Skills of the Team Members

- Front End technologies such as:
 - HTML
 - CSS & CSS PREPROCESSORS
 - JAVASCRIPT & its frameworks like React.js
 - Material UI & styled components
 - BOOTSTRAP

- Back End technologies such as:
 - Node.js
 - MongoDB
- Blockchain technologies:
 - Hyperledger fabric
 - IPFS (Interplanetary File System).
 - Smart Contracts using Solidity.
 - Web3.js / Ether.js
 - Ganache / Truffle.
 - Metamask.
- Proposal Writing (formal, semi-formal, structured)
- User Interface Design / Interface Programming

6. . Methodology

In our methodology, we will:

Analyze existing supply chain processes

Design smart contracts and blockchain network

Set up infrastructure

Utilize Hyperledger for blockchain development

Perform comprehensive testing

7. Deliverables/Scope

The project scope includes the design, development, and deployment of the blockchain-based system.

It encompasses security measures, user training, and data integration.

The project covers pilot testing, system optimization, and compliance with regulations.

It aims to promote awareness and adoption of the system within the supply chain industry.

Continuous improvement and maintenance are within the project's scope to ensure long-term effectiveness.

8. Tools/Technology

Key tools and technologies include:

Blockchain Platform: Ethereum Blockchain

Front-end Development: React or Angular

9. Expertise of the Team Members

Our team includes:

Front-end: Azmat Ullah

Blockchain Developers: Zahoor Khan and Bahloul Mubarik

10. Project Timeline

Phase 1: Project Initiation and Planning (2 weeks)

Phase 2: System Design and Development (8 weeks)

Phase 3: Testing and Optimization (6 weeks)

Phase 4: Deployment and Pilot Testing (4 weeks)

Phase 5: Awareness and Adoption (4 weeks)

Phase 6: Continuous Improvement and Maintenance (Ongoing)

11. References

Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System.

Mougayar, W. (2016). The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology. Wiley.

Hyperledger Project. (URL: <https://www.hyperledger.org/>)