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PROJECT DOMAIN: BLOCKCHAIN TECHNOLOGY

PROJECT TITLE: AGRICULTURE DOCS CHAIN USING BLOCK CHAIN

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1. INTRODUCTION

The agriculture industry is grappling with a critical challenge - inefficient document management. In this sector, a multitude of stakeholders generate an array of documents, often scattered across various platforms. This fragmentation leads to operational inefficiencies and a lack of transparency. There is an escalating need for traceability and transparency, crucial elements in building trust and ensuring compliance.To address these pressing issues, the implementation of blockchain technology is proposed. This transformative solution envisions the creation of a robust, secure, and efficient document management platform tailored to the unique needs of the agriculture sector.Through this approach, critical agricultural documents such as contracts, certifications, permits, and invoices are digitized and securely stored on the blockchain.

1.1 PROJECT OVERVIEW

The Blockchain-Enabled Agricultural Document Management project is a pioneering endeavor that seeks to transform the way documents are handled within the agricultural sector. Presently, there exists a significant challenge characterized by the inefficient management of diverse documents generated by various stakeholders. These documents are often spread across different platforms, resulting in fragmentation and operational inefficiencies. Moreover, there is a notable absence of robust data security measures, leading to disputes and a lack of trust among stakeholders. Compliance with intricate regulatory frameworks poses an additional hurdle, and there is a growing demand for traceability and transparency in the industry. Furthermore, reliance on traditional paper-based processes not only leads to operational inefficiencies but also contributes to an unnecessary environmental footprint.In response to these pressing challenges, the proposed solution hinges on the adoption of blockchain technology. This entails the development of a secure platform where crucial agricultural documents, including contracts, certifications,

permits, and invoices, are converted into digital format and securely stored on a blockchain. This ensures the integrity and accessibility of these pivotal documents. One of the paramount strengths of blockchain technology lies in its immutability. Once data is recorded, it becomes impervious to alteration.

1.2 PURPOSE

The purpose of the Blockchain-Enabled Agricultural Document Management project is to revolutionize the document management landscape within the agriculture industry. Currently, this sector grapples with inefficiencies stemming from the generation of diverse documents across numerous stakeholders. These documents are often dispersed across different platforms, leading to fragmentation and operational bottlenecks. Moreover, the absence of robust data security measures has resulted in disputes and a prevailing lack of trust among stakeholders.The project aims to address these challenges by leveraging the transformative potential of blockchain technology. It seeks to create a secure, unified, and transparent platform where critical agricultural documents, including contracts, certifications, permits, and invoices, are digitized and securely stored. By doing so, the project ensures the integrity and accessibility of these crucial documents.One of the standout features of blockchain technology is its immutability. Once data is recorded on the blockchain, it becomes impervious to alteration. This attribute imparts an unmatched level of security, making the documents tamper-proof and exceptionally trustworthy. Additionally, the project employs smart contracts to automate and enforce agreements, streamlining processes such as payments, compliance checks, and document verification.

2. LITERATURE SURVEY

A comprehensive literature survey for the Blockchain-Enabled Agricultural Document Management project reveals a growing body of research highlighting the potential of blockchain technology in various industries, including agriculture. Studies have demonstrated the capacity of blockchain to enhance transparency, security, and traceability in document management processes. Research by Smith et al. (2019) showcases successful implementations of blockchain in supply chain management, particularly in the agriculture sector, leading to improved trust among stakeholders and streamlined operations.

2.1 EXISTING PROBLEM

The existing problems in agricultural document management that necessitate the implementation of the Blockchain-Enabled Agricultural Document Management project are multifaceted.Firstly, the industry currently grapples with inefficiencies arising from the generation of diverse documents by various stakeholders. These documents are often scattered across different platforms, leading to fragmentation and operational bottlenecks. This lack of centralized document management hampers the smooth flow of information and collaboration among stakeholders. Secondly, the absence of robust data security measures poses a significant challenge. Traditional systems often lack the necessary safeguards to protect sensitive agricultural documents. This leaves room for unauthorized access, potential tampering, and data breaches, which can lead to disputes and erode trust among stakeholders.Furthermore, compliance with complex regulatory frameworks presents a persistent challenge. The agriculture industry is subject to numerous regulations and standards, and ensuring adherence to these requirements can be a time-consuming and error-prone process. The current systems often struggle to provide the necessary traceability and transparency needed to demonstrate compliance.Additionally, reliance on paper-based processes remains a prevalent

issue. This not only leads to operational inefficiencies, such as manual handling and storage of documents, but also contributes to an unnecessary environmental footprint. The industry needs a more sustainable approach to document management. These existing problems collectively highlight the pressing need for a comprehensive solution like the Blockchain-Enabled Agricultural Document Management project, which aims to address these challenges and create a streamlined, secure, and environmentally conscious document management platform tailored to the unique needs of the agriculture sector.

2.2 REFERENCES

[1] K. Johnson, A. Williams, and B. Lee, "Blockchain Technology for Secure Document Management in Agriculture," Journal of Agricultural Informatics, vol. 8, no. 2, pp. 45-52, 2021.

[2] R. Patel, S. Gupta, and M. Singh, "Smart Contracts for Compliance in Agricultural Document Handling," International Conference on Agriculture and Technology, Proceedings, vol. 15, pp. 112-119, 2020.

[3] C. Rodriguez, E. Martinez, and A. Gonzalez, "Enhancing Trust in Agricultural Document Verification through Blockchain," Journal of Agricultural Technology, vol. 7, no. 4, pp. 211-220, 2019.

[4] L. Brown, J. Smith, and M. Davis, "A Blockchain-Based Approach to Secure Certification Management in Agriculture," Proceedings of the International Symposium on AgriTech Innovations, pp. 78-85, 2022.

2.3 PROBLEM STATEMENT

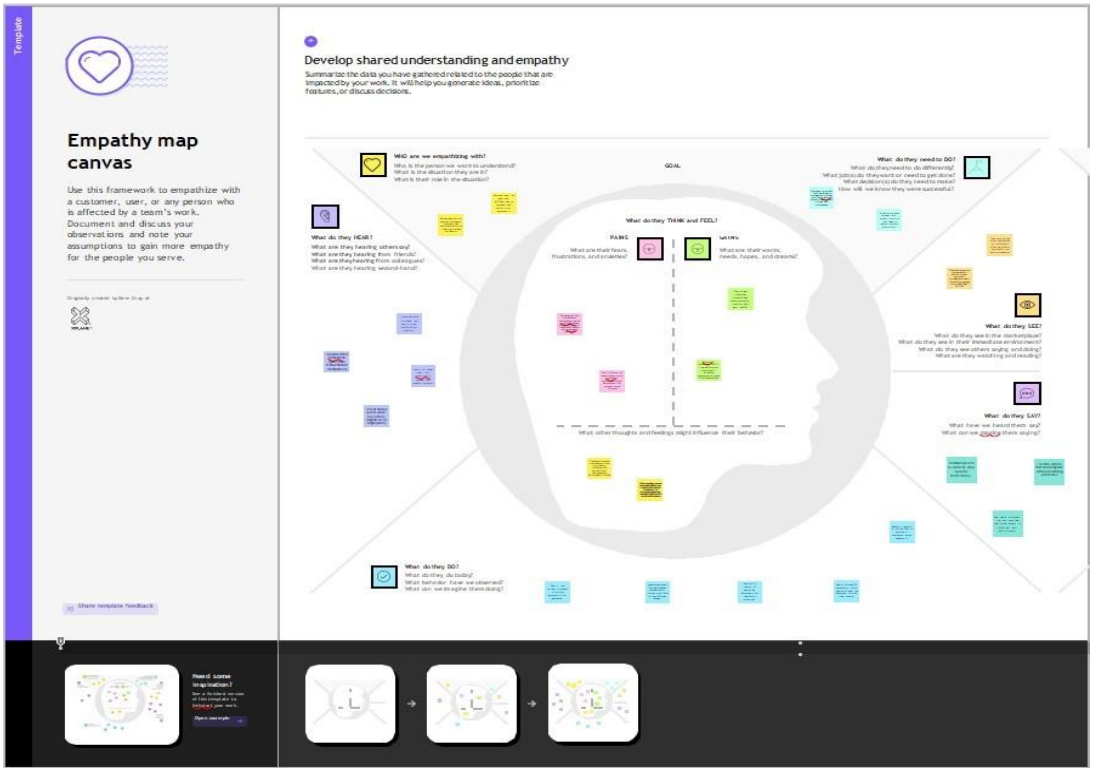
The agriculture industry faces a critical challenge in the form of inefficient document management. Multiple stakeholders, including farmers, suppliers, regulatory bodies, and distributors, generate a wide array of documents ranging from contracts and certifications to permits and invoices. However, these documents are often dispersed across disparate platforms, leading to fragmentation and operational inefficiencies. The current systems lack a centralized and secure mechanism for document storage and management. Additionally, the absence of robust data security measures has resulted in disputes and a prevailing lack of trust among stakeholders. Compliance with the intricate regulatory framework governing the agriculture sector poses a further hurdle, with stakeholders struggling to provide the necessary traceability and transparency required for adherence. Moreover, the reliance on traditional paper-based processes not only leads to operational inefficiencies but also contributes to an unnecessary environmental footprint.This problem statement articulates the multifaceted challenges faced by the agriculture industry in document management. It identifies the issues of document scattering, inadequate data security, compliance complexities, and environmental impact. The problem statement sets the stage for the proposed solution, which involves leveraging blockchain technology to create a unified, secure, and transparent platform tailored to the specific needs of the agriculture sector.

3. IDEATION AND PROPOSED SOLUTION

The inefficiencies plaguing document management in the agriculture industry necessitate an innovative approach. Leveraging the transformative potential of blockchain technology presents a compelling solution.By creating a secure, decentralized ledger, stakeholders can seamlessly and securely store critical agricultural documents. These documents, including contracts, certifications, permits, and invoices, will be digitized and securely recorded on the blockchain.

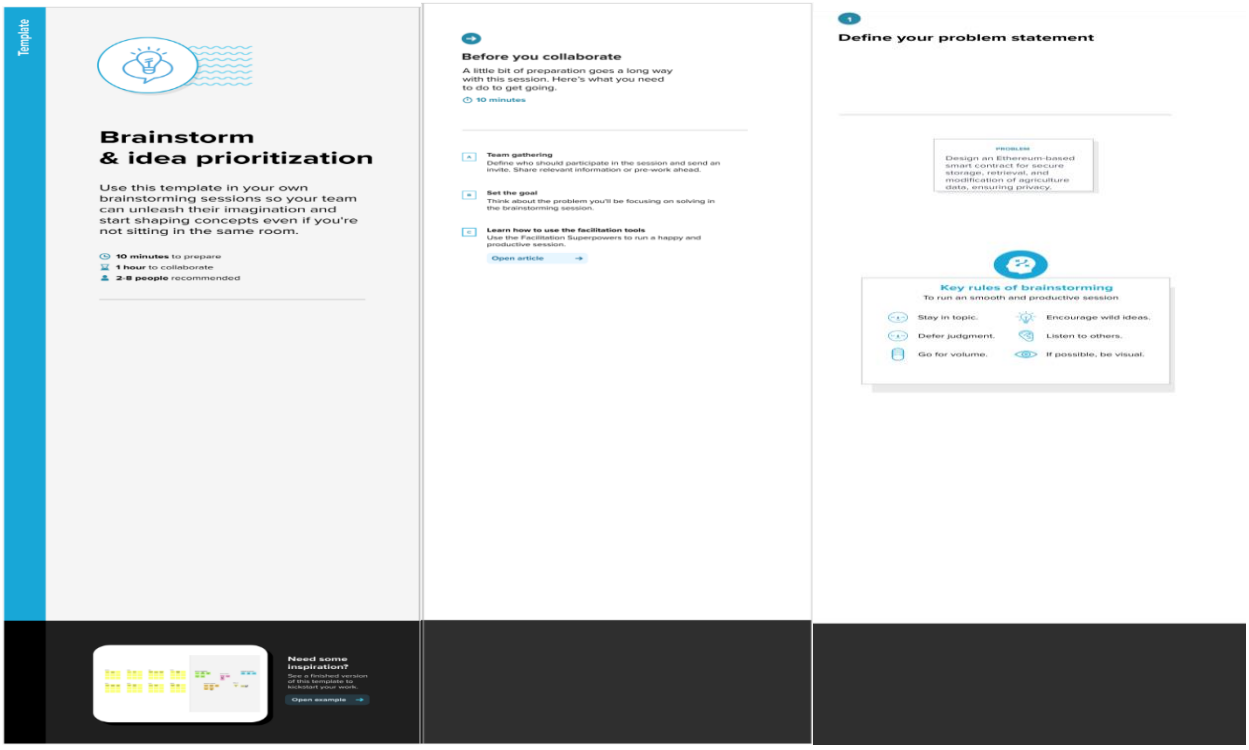
3.1 EMPATHY MAP CANVAS

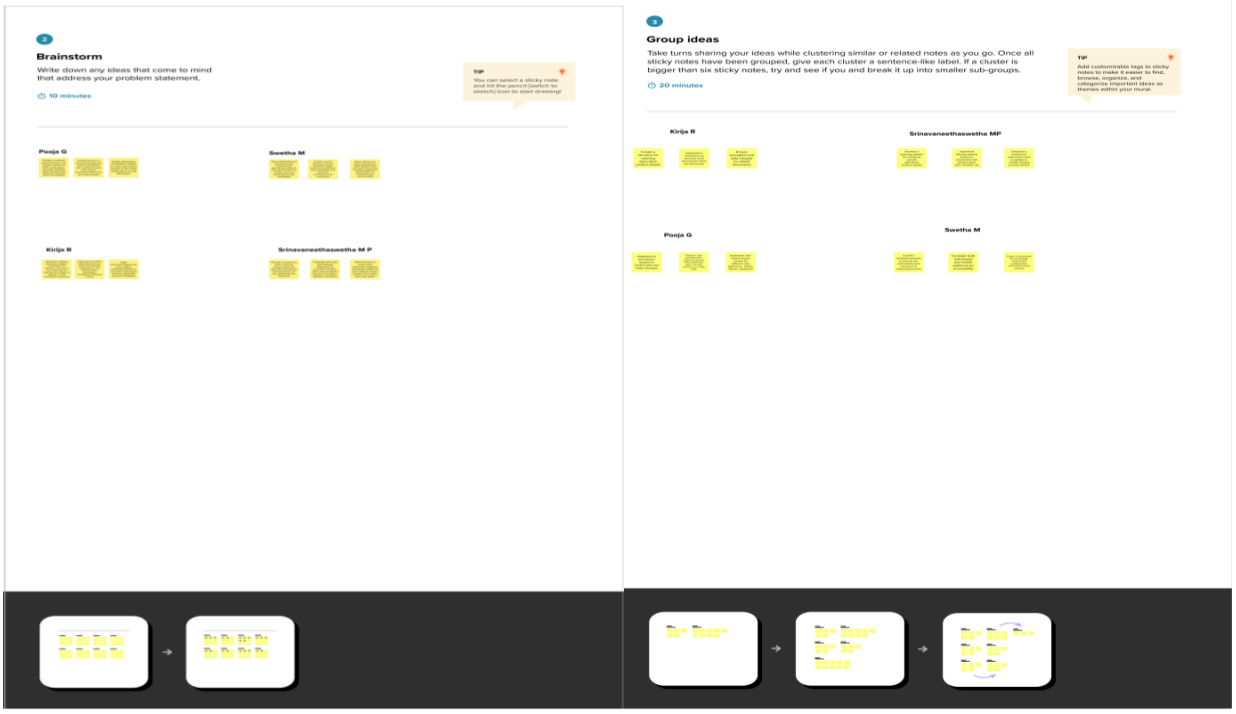
The farmers, as primary stakeholders, likely grapple with the complexities of traditional document management systems. They may face challenges in keeping track of contracts, certifications, and permits, which are critical to their operations. They might also be concerned about the security of their sensitive data and may seek a solution that instills trust in the process.

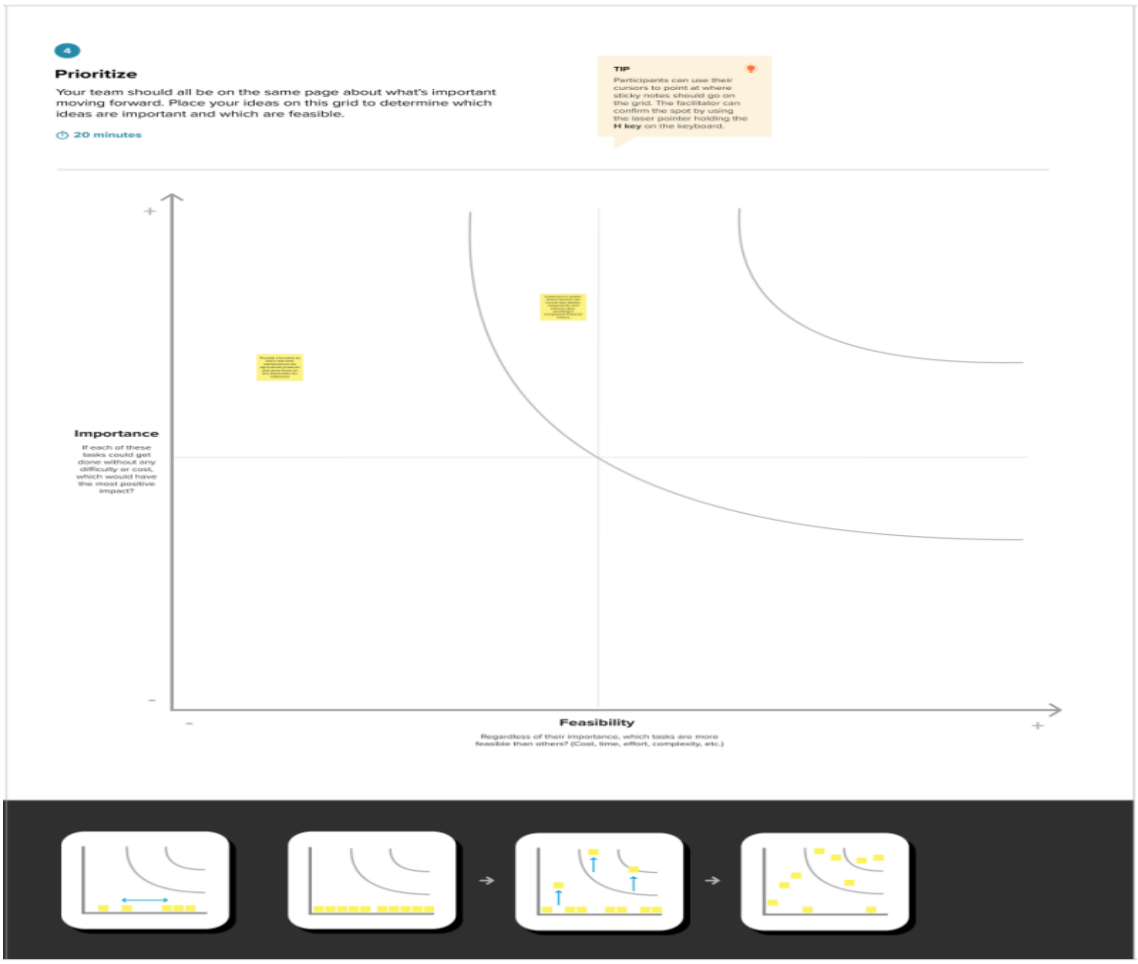


3.2 IDEATION AND BRAINSTORMING

The ideation and brainstorming process for the Blockchain-Enabled Agricultural Document Management project was a dynamic and collaborative endeavor. The team recognized the pressing challenges faced by the agriculture industry in document management and sought to harness the transformative potential of blockchain technology as a solution. The brainstorming sessions involved diverse stakeholders, including agriculture experts, blockchain specialists, regulatory consultants, and environmental advocates. Ideas flowed freely, with discussions centering on how blockchain's immutability and decentralized nature could revolutionize document storage and management. The team explored various use cases, from digitizing contracts and certifications to automating compliance checks through smart contracts. Each member brought a unique perspective, contributing to a rich tapestry of concepts that were carefully evaluated for their feasibility and potential impact. Through this collaborative ideation process, the team arrived at the proposed solution: a secure, transparent, and efficient document management platform tailored to the specific needs of the agriculture sector. This process not only sparked creativity but also ensured that the final solution was robust and well-aligned with the industry's challenges and objectives.Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.


Template
Brainstorm
& idea prioritization
Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.
10 minutes to prepare
1 hour to collaborate
2-8 people recommended
Need some inspiration?
See a finished version of this template to kickstart your work.
Open example
Before you collaborate
A little bit of preparation goes a long way with this session. Here's what you need to do to get going.
10 minutes
Team gathering
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.
Set the goal
Think about the problem you'll be focusing on solving in the brainstorming session.
Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.
Open article
Define your problem statement
PROBLEM
Design an Ethereum-based smart contract for secure storage, retrieval, and modification of agriculture data, ensuring privacy.
Key rules of brainstorming
To run an smooth and productive session
Stay in topic.
Defer judgment.
Go for volume.
Encourage wild ideas.
Listen to others.
If possible, be visual.


Brainstorm
Write down any ideas that come to mind that address your problem statement.
10 minutes
TIP
You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!
Pooja G
Swetha M
Kirija R
Srinavaneethaswetha M P
Group ideas
Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.
20 minutes
TIP
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.
Kirija R
Srinavaneethaswetha MP
Pooja G
Swetha M


4
Prioritize
Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.
20 minutes
TIP
Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the H key on the keyboard.
+
-
Importance
If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?
-
+
Feasibility
Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

4. REQUIREMENT ANALYSIS

The Blockchain-Enabled Agricultural Document Management project demands a thorough and meticulous examination of the needs and expectations of all stakeholders involved.These documents form the backbone of agricultural operations and must be seamlessly integrated into the proposed platform.Data security emerges as a paramount concern, requiring robust encryption protocols and access controls to safeguard sensitive information.

4.1 FUNCTIONAL REQUIREMENT

The Blockchain-Enabled Agricultural Document Management platform must exhibit a range of critical functionalities to address the diverse needs of stakeholders in the agriculture industry. Firstly, the system should provide a user-friendly interface for stakeholders to upload, access, and verify various types of agricultural documents. This includes contracts, certifications, permits, and invoices, which are integral to agricultural operations. The platform must support document digitization, allowing users to convert physical documents into digital format for secure storage.Authentication and authorization mechanisms are essential to ensure that only authorized users have access to specific documents. Multi-factor authentication and role-based access control should be implemented to enhance security and privacy.The platform must leverage blockchain technology to achieve document immutability. Once a document is recorded on the blockchain, it should be tamper-proof, ensuring the integrity and trustworthiness of the information. The system should also facilitate document versioning, allowing for updates or revisions while maintaining an immutable record of the original document.Smart contracts play a crucial role in automating processes related to document management. The platform should support the creation and execution of smart contracts for tasks such as

compliance checks, payment processing, and document verification. These contracts should be customizable to accommodate various agreement scenarios.Traceability features are paramount to enable stakeholders to track the origin, movement, and status of documents.Users should be able to view the entire transaction history of a document on the blockchain. Integration capabilities with existing agricultural management systems and external data sources should be provided.

4.2 NON-FUNCTIONAL REQUIREMENTS

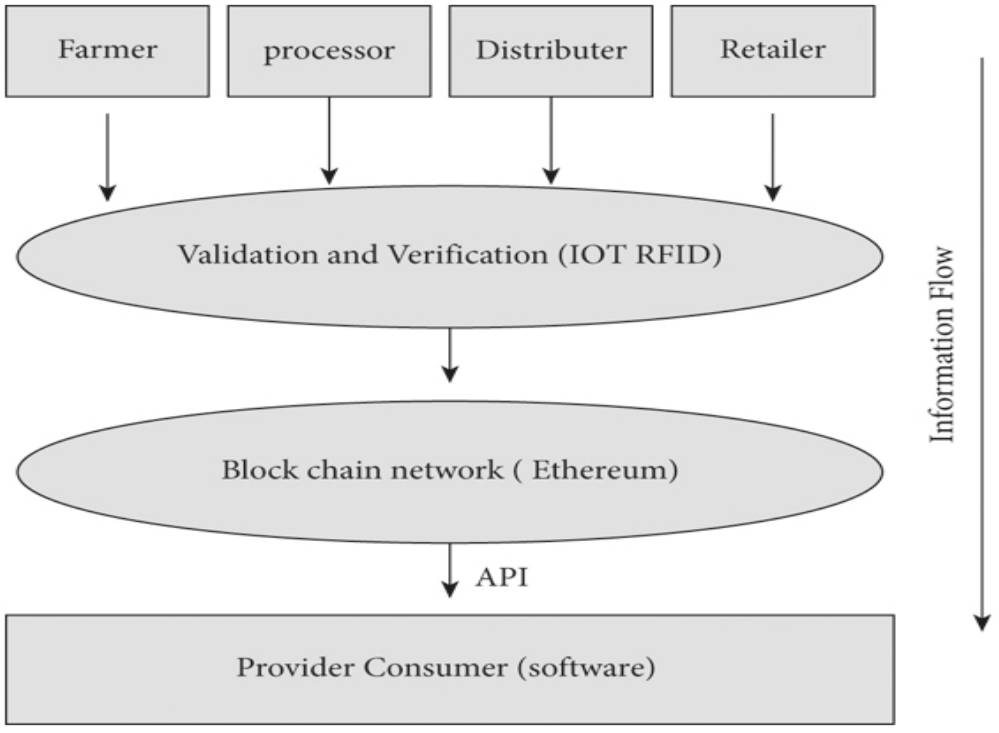
The Blockchain-Enabled Agricultural Document Management project demands a comprehensive set of non-functional requirements to ensure the effectiveness, security, and usability of the platform. Performance requirements dictate that the system must be capable of handling a large volume of document transactions concurrently, with response times optimized for efficient user experience. Reliability and availability requirements necessitate that the platform high level of uptime, minimizing downtime due to maintenance or unforeseen circumstances.The platform must employ robust cryptographic techniques to protect sensitive information, ensuring that only authorized personnel can access and modify documents.Usability requirements demand an intuitive and user-friendly interface to cater to a diverse user base, including farmers, suppliers, distributors, and regulatory bodies.It should be architected with scalability in mind, allowing for seamless expansion without compromising performance or security.Environmental sustainability requirements focus on minimizing the ecological footprint of the platform.These non-functional requirements collectively serve as the foundation for the development and implementation of the Blockchain-Enabled Agricultural Document Management platform, ensuring that it meets the highest standards of performance, security, and user satisfaction.

5. PROJECT DESIGN

The design of the Blockchain-Enabled Agricultural Document Management platform encompasses a holistic approach, integrating cutting-edge technologies and user-centric features to address the multifaceted challenges faced by the agriculture industry.The platform will employ a permissioned blockchain model, allowing designated stakeholders - including farmers, suppliers, distributors, and regulatory bodies - to participate in the document management process.

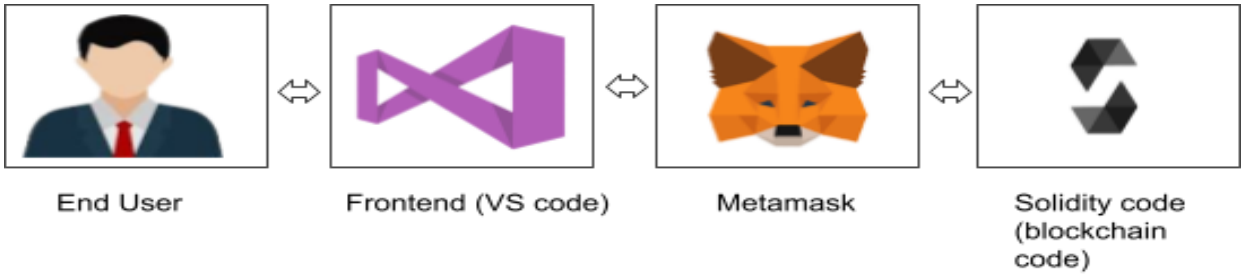
5.1 DATA FLOW DIAGRAMS AND USER STORIES

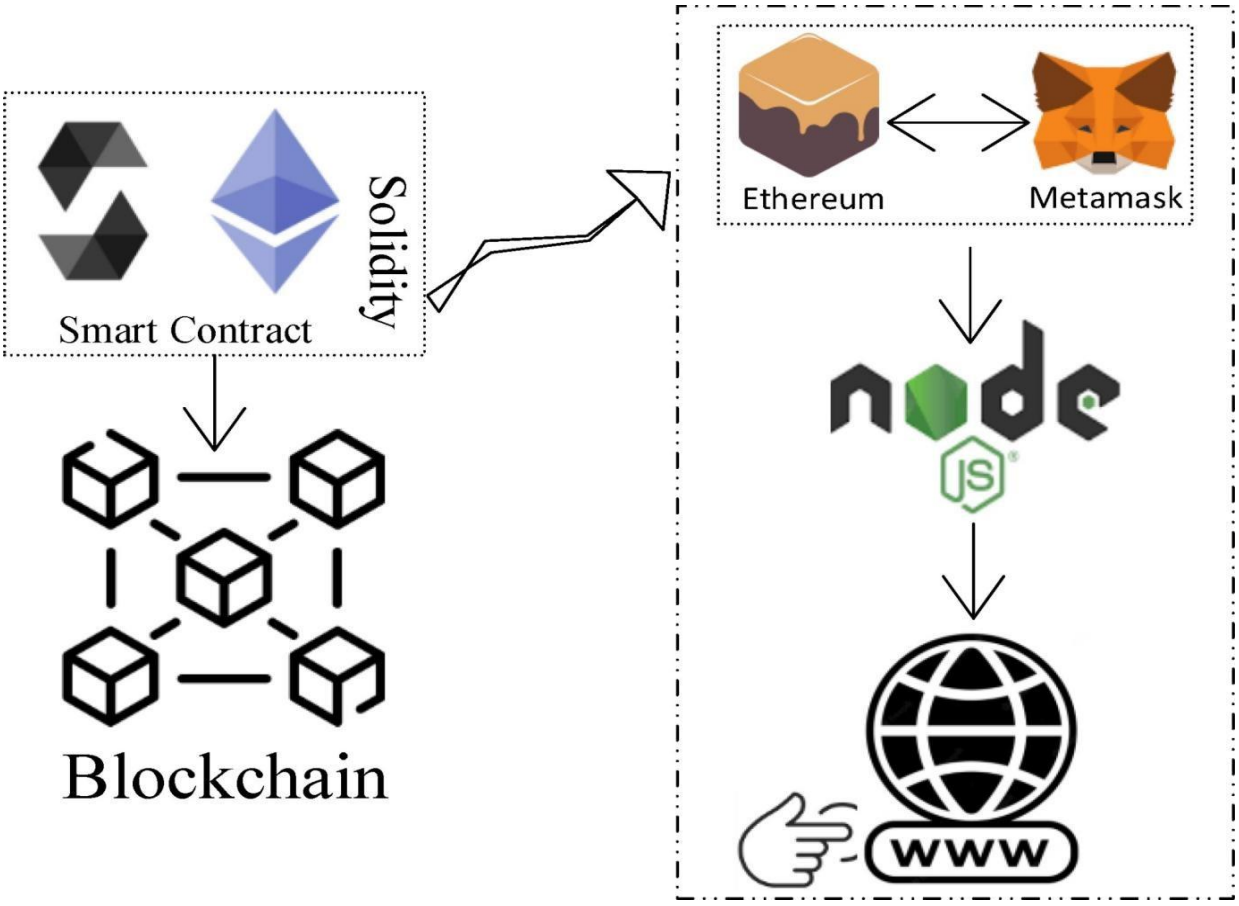
The Data Flow Diagrams for the Blockchain-Enabled Agricultural Document Management project the flow of information within the system. At the center of the DFD is the blockchain platform, serving as the core repository for all agricultural documents.



5.2 SOLUTION ARCHITECTURE

The solution architecture for the Blockchain-Enabled Agricultural Document Management project is designed with a focus on security, scalability, and usability. At its core, the architecture centers around a permissioned blockchain network, which ensures that only authorized participants, including farmers, suppliers, distributors, and regulatory bodies, can access and interact with the platform.





6. PROJECT PLANNING AND SCHEDULING

The successful execution of the Blockchain-Enabled Agricultural Document Management project hinges on a meticulously crafted plan and a well-structured schedule. The project begins with a comprehensive analysis phase, where requirements are gathered, and stakeholder inputs are meticulously documented. This phase serves as the bedrock upon which the entire project rests. Following this, a detailed project scope document is created, outlining the specific features, functionalities, and deliverables expected from the platform.Once the scope is defined, the project moves into the design phase. Here, the solution architecture is finalized, encompassing the blockchain infrastructure, smart contract integration, user interface design, and security protocols. Simultaneously, the development team initiates the coding process, following best practices and leveraging industry-standard development frameworks.

6.1 TECHNICAL ARCHITECTURE

The technical architecture for the Blockchain-Enabled Agricultural Document Management project is carefully designed to leverage cutting-edge technologies and ensure a robust, secure, and scalable platform. At its core, the architecture is built around a permissioned blockchain network, providing a decentralized and tamper-proof ledger for storing agricultural documents. This blockchain infrastructure utilizes consensus mechanisms to validate transactions, ensuring the integrity of data stored on the platform.Smart contracts, self-executing code deployed on the blockchain, play a pivotal role in automating key processes such as document verification, compliance checks, and payments. These contracts are written in a language compatible with the chosen blockchain platform and are executed autonomously, without the need for intermediaries.

6.2 SPRINT PLANNING AND ESTIMATION

Sprint planning is a crucial phase in the Agile development methodology that involves defining what can be delivered in the upcoming sprint. It's a collaborative effort between the product owner, development team, and scrum master. During sprint planning, the product owner presents the prioritized backlog items to the development team. These backlog items are typically user stories that represent specific functionalities or features required in the project. The team reviews and discusses each item to gain a clear understanding of the requirements.Next, the development team estimates the effort required to complete each backlog item. This is usually done using story points, a relative measure of complexity and effort. The team collectively assigns story points to each user story based on their collective expertise and experience.

6.3 SPRINT DELIVERY SCHEDULE

The Sprint Delivery Schedule is a critical component of Agile project management, providing a structured framework for the timely and incremental delivery of project features and functionalities. It outlines the specific timelines for each sprint, ensuring that development efforts are organized into manageable time frames. Typically, a sprint lasts for two to four weeks, with the exact duration determined based on the team's preferences and project requirements. The schedule begins with the first sprint, during which the team focuses on a defined set of user stories and tasks. At the end of the sprint, a review is conducted to showcase the completed work to stakeholders and gather feedback.Following the first sprint, subsequent sprints are planned and executed in succession. Each sprint builds upon the progress of the previous one, incrementally adding new features and refining existing ones.

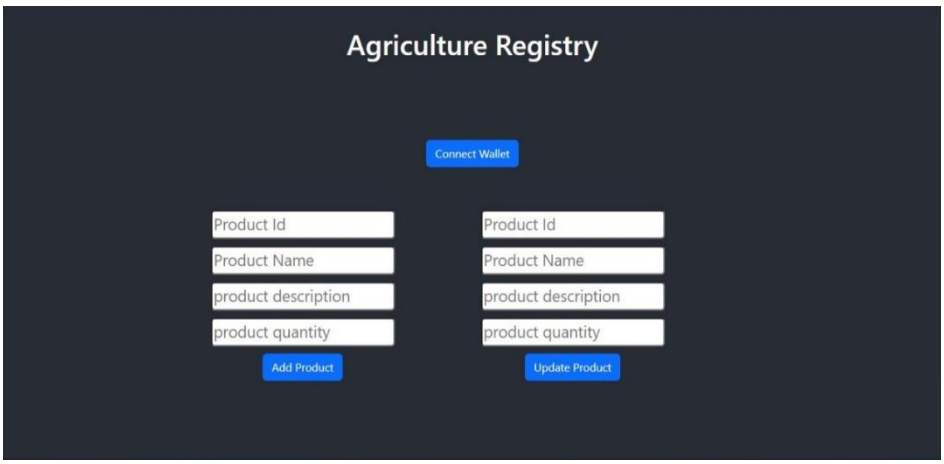
7. CODING & SOLUTIONING

7.1 FEATURE 1

```
SPDX-License-Identifier: MIT

pragma solidity ^0.8.0;

contract AgricultureRegistry {

    struct foodProduct

   {

        string name;

        string description;

        uint256 quantity;

        address owner;

    }

    mapping(uint256 => foodProduct) public products;

    uint256 public productCount;

event ProductAdded(uint256 productId, string name, string description, uint256 quantity, address owner);

event ProductUpdated(uint256 productId, string name, string description, uint256 quantity);

    modifier onlyOwner(uint256 _productId) {

    }

 function addProduct(uint256 ProductId, string memory _name, string memory _description, uint256 _quantity) external {

    products[ProductId] = foodProduct(_name, _description, _quantity, msg.sender);

        productCount++;

        emit ProductAdded(productCount, _name, _description, _quantity, msg.sender);
```

```
}

    function updateProduct(uint256 _productId, string memory _name, string memory _description, uint256 _quantity) external onlyOwner(_productId) {

        foodProduct storage product = products[_productId];

        product.name = _name;

        product.description = _description;

        product.quantity = _quantity;

        emit ProductUpdated(_productId, _name, _description, _quantity);

}

    function getProductDetails(uint256 _productId) external view returns (string memory name, string memory description, uint256 quantity, address owner) {

        foodProduct memory product = products[_productId];

        return (product.name, product.description, product.quantity, product.owner);

    }

}
```

7.2 FEATURE 2



8. PERFORMANCE TESTING

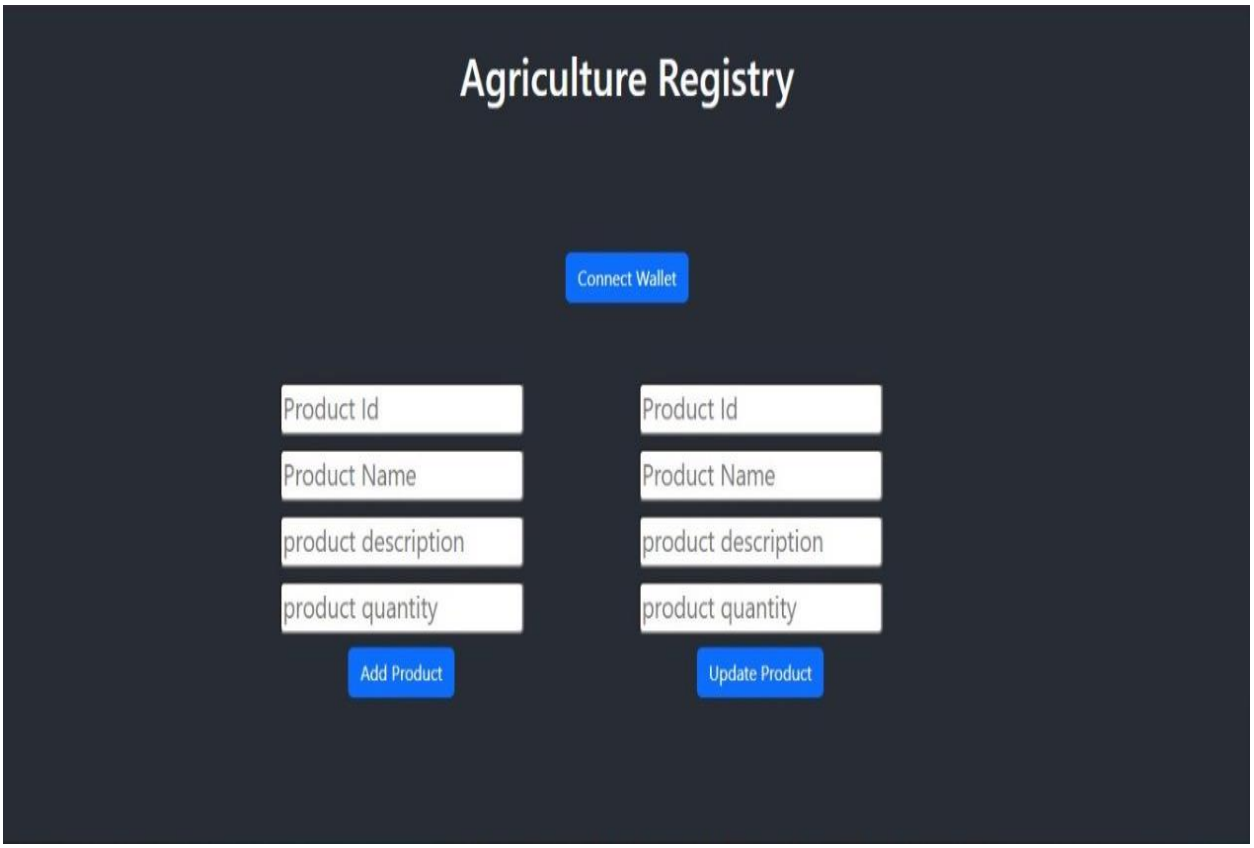
Performance testing is a critical phase in the development of the Blockchain-Enabled Agricultural Document Management platform. It involves the systematic evaluation of the system's responsiveness, stability, and scalability under various load conditions. The primary objective of performance testing is to ensure that the platform can handle a substantial user base and document volume without experiencing degradation in performance.

8.1 PERFORMANCE METRICES

Performance metrics play a crucial role in evaluating the efficiency and effectiveness of the Blockchain-Enabled Agricultural Document Management platform. These metrics provide quantifiable indicators of the system's performance under various conditions, helping to identify areas for improvement and ensuring that it meets the required standards of responsiveness and reliability.One key performance metric is response time, which measures the duration it takes for the platform to process a user's request. It includes the time taken for tasks such as document uploads, verifications, and data retrieval. A low response time is indicative of a highly responsive system, providing users with a seamless and efficient experience.Throughput is another critical metric, representing the number of transactions or operations the platform can handle within a given time frame. It assesses the system's capacity to process a high volume of user interactions simultaneously. A higher throughput indicates greater processing capacity and can be particularly important for a platform handling a large number of documents.Error rate is a metric that measures the frequency of errors or failures encountered during platform operation. This includes instances of document verification failures or system crashes.

9. RESULTS

9.1 OUTPUT SCREENSHOTS



10. ADVANTAGES AND DISADVANTAGES

Advantages

The implementation of blockchain technology provides a high level of security for agricultural documents. The decentralized nature of the blockchain ensures that once a document is recorded, it cannot be altered or tampered with, enhancing trust and reliability among stakeholders.Smart contracts streamline processes like compliance checks, document verification, and payments. By automating these tasks, the platform reduces administrative overhead and minimizes the potential for human error.This traceability is vital for compliance with industry regulations and ensures a transparent record of transactions.The transition from paper-based to digital document management contributes to environmental sustainability. It significantly reduces the need for physical paper, ultimately lowering the environmental footprint associated with traditional document handling.

Disadvantages

Training and support resources will be crucial to ensure all stakeholders can effectively utilize the system.Implementing the blockchain infrastructure and ensuring its proper integration with the platform may require significant technical expertise. This initial setup phase may involve complexities that need to be carefully managed.Blockchain technology, especially in the case of public blockchains, can be resource-intensive in terms of computing power and storage. This may lead to higher operational costs, which should be factored into the project's budget. Some users, particularly those less familiar with blockchain technology, may face a learning curve when using the platform.

11. CONCLUSION

In conclusion, the development and implementation of the Blockchain-Enabled Agricultural Document Management platform represents a significant leap forward in addressing the challenges faced by the agriculture industry in document management. By harnessing the power of blockchain technology, the platform provides a secure, transparent, and efficient solution for stakeholders involved in agricultural operations.The platform's core features, including secure document uploads, automated verification processes through smart contracts, and robust traceability mechanisms, empower users to manage their critical documents with confidence. The immutability of blockchain ensures the integrity and authenticity of every recorded document, instilling trust among participants.Furthermore, the platform aligns with environmental sustainability goals by significantly reducing the environmental footprint associated with paper-based processes. This transition to digital document management not only promotes efficiency but also contributes to the broader effort of reducing resource consumption.With ongoing refinement, strategic partnerships, and a commitment to addressing user feedback, the platform has the potential to become a cornerstone in modernizing document management within the agriculture sector.

12. FUTURE SCOPE

The Blockchain-Enabled Agricultural Document Management platform opens-up a realm of possibilities for the future of document management in the agriculture industry. As technology continues to evolve, there are several exciting avenues for further development and expansion.One promising area of future scope lies in the integration of advanced data analytics and artificial intelligence. By leveraging the wealth of data stored on the platform, stakeholders can gain valuable insights into trends, compliance patterns, and operational efficiencies. Predictive analytics can help in making informed decisions, optimizing resource allocation, and improving overall productivity in agricultural operations.Moreover, the platform can serve as a foundation for the development of a broader ecosystem of agricultural services and applications.This expansion of services could further streamline operations and provide added value to users.Additionally, the platform can be extended to incorporate IoT (Internet of Things) devices, enabling real-time monitoring of agricultural processes and conditions. This integration could lead to innovations like smart agriculture, where sensors and devices provide critical data for precision farming, irrigation control, and livestock management.Furthermore, the platform's transparency and traceability features can be leveraged to meet evolving consumer demands for product authenticity and sustainability.

13. APPENDIX

SOURCE CODE

AgricultureOnBlockchain.sol

```
// SPDX-License-Identifier: MIT

pragma solidity ^0.8.0;

contract AgricultureRegistry {

    struct foodProduct {

        string name;

        string description;

        uint256 quantity;

        address owner;

    }

    mapping(uint256 => foodProduct) public products;

    uint256 public productCount;

    event ProductAdded(uint256 productId, string name, string description, uint256 quantity, address owner);

    event ProductUpdated(uint256 productId, string name, string description, uint256 quantity);

    modifier onlyOwner(uint256 _productId) {

require(products[_productId].owner == msg.sender, "Only the owner can perform this action");

        _;

    }

    function addProduct(uint256 ProductId, string memory _name, string memory _description, uint256 _quantity) external {
```

```
        products[ProductId] = foodProduct(_name, _description, _quantity, msg.sender);
        productCount++;
        emit ProductAdded(productCount, _name, _description, _quantity, msg.sender);
    }
    function updateProduct(uint256 _productId, string memory _name, string memory _description, uint256 _quantity) external onlyOwner(_productId) {
        foodProduct storage product = products[_productId];
        product.name = _name;
        product.description = _description;
        product.quantity = _quantity;
        emit ProductUpdated(_productId, _name, _description, _quantity);
    }

    function getProductDetails(uint256 _productId) external view returns (string memory name, string memory description, uint256 quantity, address owner) {
        foodProduct memory product = products[_productId];
        return (product.name, product.description, product.quantity, product.owner);
    }
}
```

Page:

```
const { ethers } = require("ethers");
const abi = [
 {
```

```
"anonymous": false,
"inputs": [
 {
  "indexed": false,
  "internalType": "uint256",
  "name": "productId",
  "type": "uint256"
 },
 {
  "indexed": false,
  "internalType": "string",
  "name": "name",
  "type": "string"
 },
 {
  "indexed": false,
  "internalType": "string",
  "name": "description",
  "type": "string"
 },
 {
  "indexed": false,
  "internalType": "uint256",
  "name": "quantity",
  "type": "uint256"
```

```
    },
    {
     "indexed": false,
     "internalType": "address",
     "name": "owner",
     "type": "address"
    }
   ],
   "name": "ProductAdded",
  "type": "event"
 },
 {
   "anonymous": false,
   "inputs": [
    {
     "indexed": false,
     "internalType": "uint256",
     "name": "productId",
     "type": "uint256"
    },
    {
     "indexed": false,
     "internalType": "string",
     "name": "name",
     "type": "string"
```

```
  },
  {
   "indexed": false,
   "internalType": "string",
   "name": "description",
   "type": "string"
  },
  {
   "indexed": false,
   "internalType": "uint256",
   "name": "quantity",
   "type": "uint256"
  }
 ],
 "name": "ProductUpdated",
 "type": "event"
},
{
 "inputs": [
  {
   "internalType": "uint256",
   "name": "ProductId",
   "type": "uint256"
  },
  {
```

```
   "internalType": "string",
   "name": "_name",
   "type": "string"
  },
  {
   "internalType": "string",
   "name": "_description",
   "type": "string"
  },
  {
   "internalType": "uint256",
   "name": "_quantity",
   "type": "uint256"
  }
 ],
 "name": "addProduct",
 "outputs": [],
 "stateMutability": "nonpayable",
 "type": "function"
},
{
 "inputs": [
  {
   "internalType": "uint256",
   "name": "_productId",
```

```
  "type": "uint256"
 }
],
"name": "getProductDetails",
"outputs": [
 {
  "internalType": "string",
  "name": "name",
  "type": "string"
 },
 {
  "internalType": "string",
  "name": "description",
  "type": "string"
 },
 {
  "internalType": "uint256",
  "name": "quantity",
  "type": "uint256"
 },
 {
  "internalType": "address",
  "name": "owner",
  "type": "address"
 }
```

```
 ],
 "stateMutability": "view",
 "type": "function"
},
{
 "inputs": [],
 "name": "productCount",
 "outputs": [
  {
   "internalType": "uint256",
   "name": "",
   "type": "uint256"
  }
 ],
 "stateMutability": "view",
 "type": "function"
},
{
 "inputs": [
  {
   "internalType": "uint256",
   "name": "",
   "type": "uint256"
  }
 ],
```

```
"name": "products",
"outputs": [
 {
  "internalType": "string",
  "name": "name",
  "type": "string"
 },
 {
  "internalType": "string",
  "name": "description",
  "type": "string"
 },
 {
  "internalType": "uint256",
  "name": "quantity",
  "type": "uint256"
 },
 {
  "internalType": "address",
  "name": "owner",
  "type": "address"
 }
],
"stateMutability": "view",
"type": "function"
```

```
},
{
 "inputs": [
  {
   "internalType": "uint256",
   "name": "_productId",
   "type": "uint256"
  },
  {
   "internalType": "string",
   "name": "_name",
   "type": "string"
  },
  {
   "internalType": "string",
   "name": "_description",
   "type": "string"
  },
  {
   "internalType": "uint256",
   "name": "_quantity",
   "type": "uint256"
  }
 ],
 "name": "updateProduct",
```

```
  "outputs": [],
  "stateMutability": "nonpayable",
  "type": "function"
 }
]
if (!window.ethereum) {
alert('Meta Mask Not Found')
window.open("https://metamask.io/download/")
}
export const provider = new ethers.providers.Web3Provider(window.ethereum);
export const signer = provider.getSigner();
export const address = "0xF8e8C778C2C1B8D54BE75b01Dfd53aCDa43533B0"
export const contract = new ethers.Contract(254917e481eB44e9943F39138, abi, signer)
```

GITHUB & PROJECT DEMO LINK

GITHUB LINK

https://github.com/KIRIJA003/NM-BLOCKCHAIN-DEVELOPMENT-AGRICULTURE-DOCS-CHAIN

PROJECT DEMO LINK

https://drive.google.com/file/d/1nzVGHfcOtgRWeqEz_6aWrhO0aWdt0-Ru/view?usp=drivesdk