



FT5003

Group Presentation

Meditracker



Abstract

MediTracker is a blockchain-based pharmaceutical tracking system designed to enhance transparency, security, and efficiency in the healthcare supply chain. By integrating blockchain technology enabled drug monitoring, MediTracker aims to reduce counterfeit drugs, ensure regulatory compliance, and provide real-time tracking of pharmaceuticals. The system leverages decentralized ledger technology to create an immutable and verifiable record of drug manufacturing, distribution, and authentication, aligning with global regulations such as HIPAA and GDPR.



A large, abstract network graph is centered on the slide. It consists of numerous small, glowing blue dots (nodes) connected by thin, translucent blue lines (edges) forming a complex web. The graph is set against a dark blue gradient background.

PART 01 Background



01 Background

Meditracker



Background information of Meditracker



Blockchain Technology

Blockchain is a distributed, immutable ledger that facilitates secure transaction recording and asset tracking within a decentralized network. It ensures data integrity by maintaining an unalterable history of transactions, eliminating the need for intermediaries and enhancing transparency . The decentralized nature of blockchain prevents unauthorized modifications, making it a reliable solution for industries that require secure data management.





01 Background

Meditracker



Background information of Meditracker



Web 3.0 and Decentralized Internet

Web 3.0, also known as the Semantic Web or the Decentralized Web, represents the next generation of the internet, emphasizing user sovereignty, blockchain integration, and decentralized data ownership.

Unlike Web 2.0, which relies heavily on centralized platforms controlled by a few corporations, Web 3.0 leverages blockchain, smart contracts, and decentralized storage systems to empower users with greater control over their data and transactions .





01 Background

Meditracker



Background information of Meditracker



Integration of Emerging Technologies in Healthcare

The intersection of blockchain, IoT, and Web 3.0 has the potential to redefine healthcare operations, particularly in areas such as medical data security, drug authenticity verification, and transparent healthcare transactions. The integration of these technologies addresses longstanding challenges such as pharmaceutical fraud, data breaches, and lack of interoperability among healthcare providers.





01 Background

Meditracker



01. The pharmaceutical industry

The pharmaceutical industry is a regulated industry that involves the research, manufacture, and distribution of medical products.

02. Regulatory compliance

The supply chain of medicine is heavily regulated by government agencies such as the FDA and EMA.

03. Counterfeit medicine

The supply chain of medicine is also vulnerable to counterfeit medicine, which can enter the supply chain through various means.

04. Technology advancements

Technology is playing an increasingly important role in the supply chain of medicine.



Background
information of
Meditracker





PART 02

Problem Explanation



02 Problem Explanation

Meditracker



Medicine Transparency in Healthcare

In the modern healthcare ecosystem, transparency has emerged as a critical concern, particularly for consumers seeking greater visibility into medical treatments, pricing structures, and pharmaceutical authenticity.





02 Problem Explanation

Meditracker



Counterfeit medicine problem



The discourse about openness is centered on the customer. Customers can ask questions regarding treatment alternatives and prices, possible treatment risks, realistic results, and other topics



Difficult to monitor and hold accountable

Most studies describe innovative blockchain systems, concepts, or models. However, technical details about the blockchain components are rarely provided, and there is rarely any sample or pilot usage to learn from





PART 03 Proposed Solution





03 Proposed Solution

Meditracker



Blockchain as a Solution for Pharmaceutical Transparency

Blockchain's immutable and decentralized nature enables comprehensive tracking of the entire lifecycle of a drug, from its manufacturing stage to its final dispensation.

- Tamper-proof drug records
- Real-time tracking
- Enhanced accountability
- Improved regulatory compliance





03 Proposed Solution

Meditracker



01. Immutability

With blockchain, information cannot vary over databases since there is one single record, which is immutable

02. Append-only

Users can see as it was included exchanges to a database, making everything traceable and auditable.

03. Transparency

Rather than a company offering someone's information to a third party, that individual can control where their information goes.

04. Decentralized

Database duplicates are kept in numerous places, and no third party must exist as a director. This decreases overhead and the requirement for brokers.





03 Proposed Solution

Meditracker



01. Drug Manufacturing Stage



02. Distribution and Logistics



03. Retail and Dispensation



04. Patient Verification and Authentication



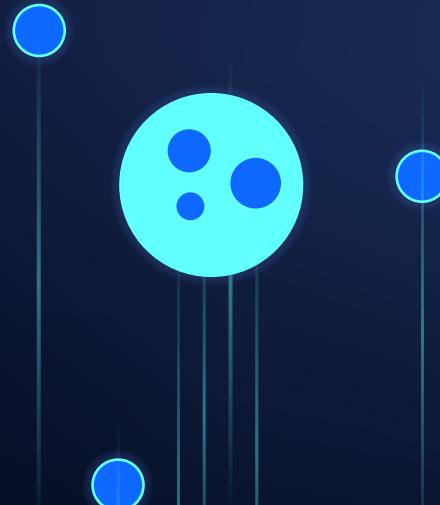
System
Architecture and
Functionality





03 Proposed Solution

Meditracker



Security and Trust Mechanisms



01. Smart Contracts

Self-executing contracts ensure automatic compliance with regulatory requirements, reducing the need for manual verification



02. Cryptographic Hashing

All records are encrypted using cryptographic hash functions, making them tamper-proof and ensuring data integrity.



03. Consensus Mechanisms

The system employs a consensus protocol, such as Proof of Authority (PoA) or Hyperledger Fabric's endorsement policy, to validate transactions before they are permanently.



04. Auditability and Traceability

Regulatory agencies and healthcare providers can perform real-time audits on pharmaceutical transactions, ensuring compliance with safety standards and preventing fraud





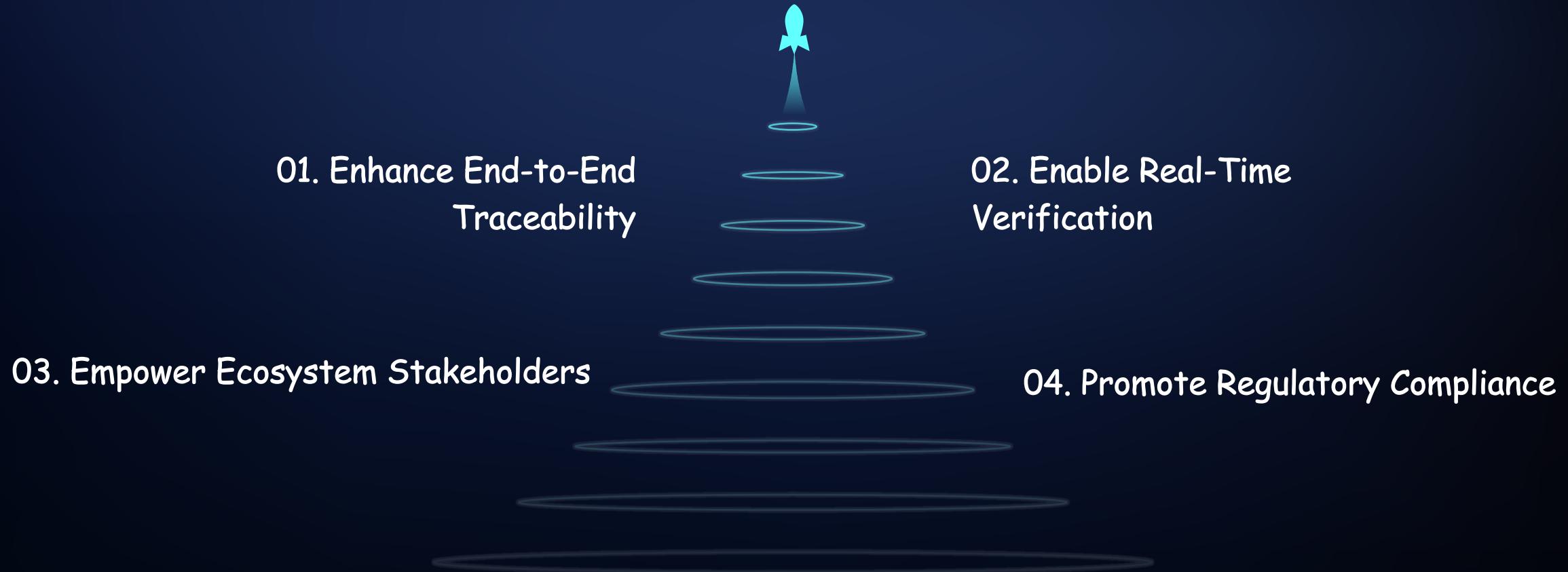
PART 04
Business
Strategies



04 Business Strategies

Meditracker

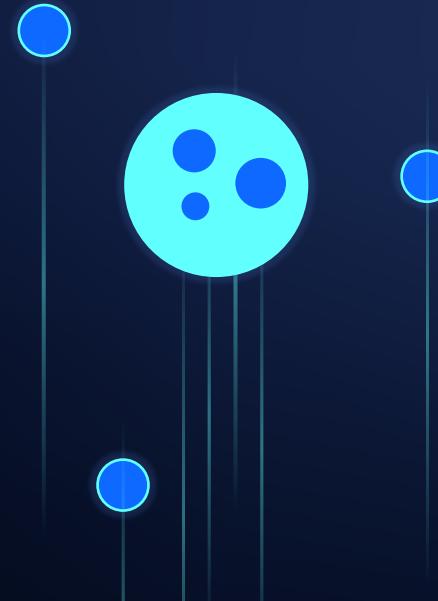
Business Objectives





04 Business Strategies

Meditracker



Value Proposition



01. Security

All transactions are cryptographically secured and immutable.



02. Transparency

Real-time access to drug origin, batch number, and logistics data.



03. Efficiency

Reduced operational overhead through automation (smart contracts).



04. Trust

Strengthened regulatory compliance and user confidence in medications.





04 Business Strategies

Meditracker



The Business Model Canvas of Meditracker

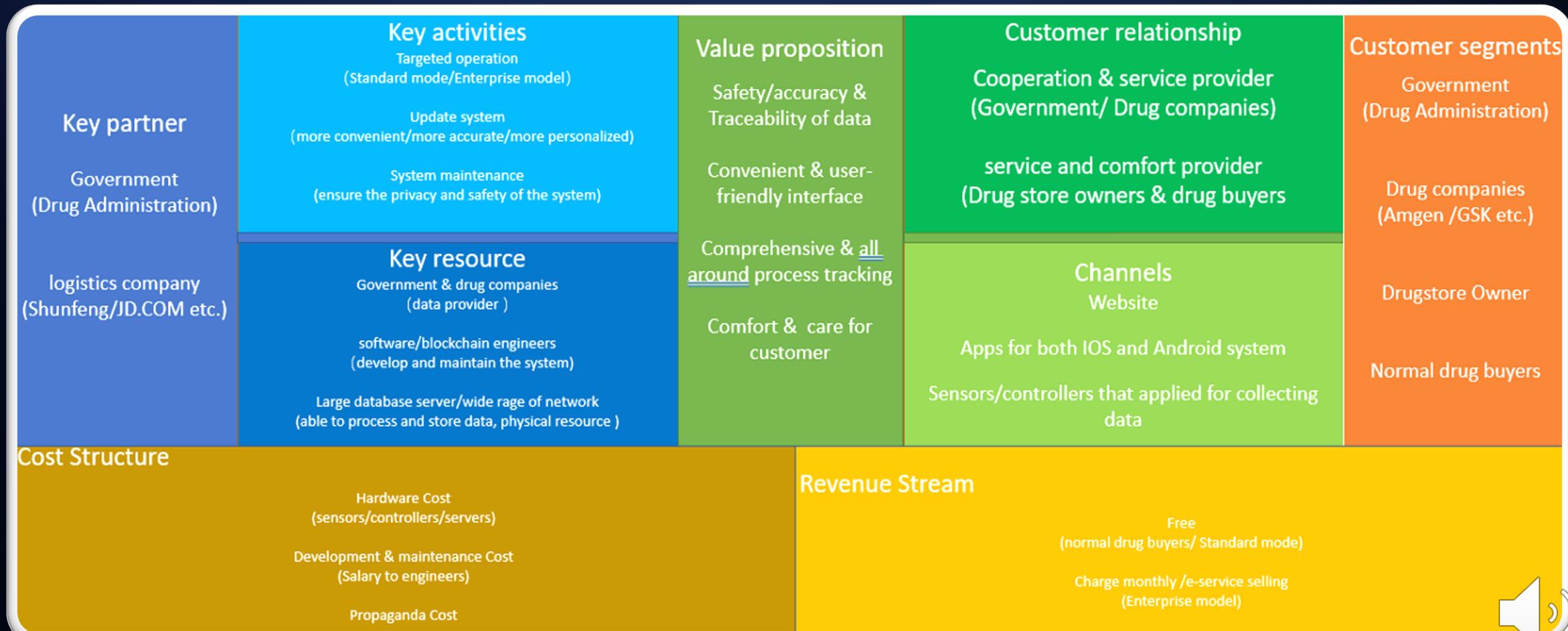


Figure 01: The Business Model Canvas of Meditracker





04 Business Model

Meditracker



The SWOT Business Model of Meditracker



Figure 02: The SWOT Business Model of Meditracker

A complex network graph composed of numerous small, glowing blue and white dots connected by thin lines, forming a dense web-like structure that curves around the center of the slide.

PART 05 Technology



05 Technology

Meditracker



Blockchain and Smart Contract Infrastructure

01. Ethereum Blockchain

MediTracker is deployed on the Ethereum Virtual Machine (EVM), utilizing a public or private Ethereum network depending on regulatory requirements.



02. Development Tooling

- Truffle Suite
- Ganache
- MetaMask Wallet



03. Smart Contract Design with Solidity

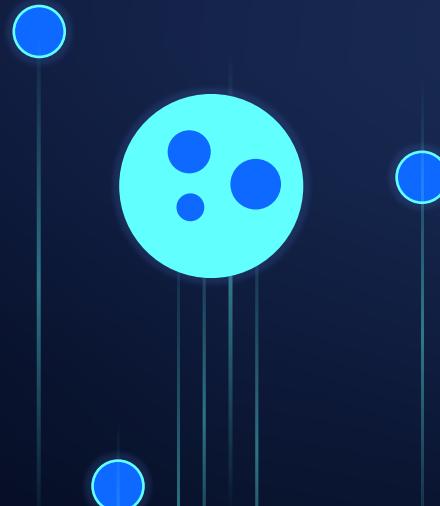
All business logic for supply chain role interactions is implemented using Solidity, a statically typed, Turing-complete programming language designed for writing smart contracts on Ethereum.





05 Technology

Meditracker



Security and Compliance Mechanisms



01. Access Control in Solidity

Role-based modifiers and function-level restrictions enforce permission control at the smart contract level (e.g., `require(isManufacturer[msg.sender])`).

02. End-to-End Encryption

While transaction hashes are stored on-chain, sensitive metadata (e.g., patient data) is encrypted off-chain using AES encryption.

03. Data Privacy and Legal Compliance

MediTracker adheres to privacy regulations such as GDPR and HIPAA by implementing off-chain anonymization a

04. On-Chain Tamper Alerts

If an IoT sensor detects environmental anomalies (e.g., extreme temperature or tampering), the event is logged to the blockchain, and a compliance violation alert is triggered on the user interface.



A complex network graph composed of numerous small, glowing blue and white nodes connected by thin lines, forming a dense web-like structure that curves around the central text.

PART 06

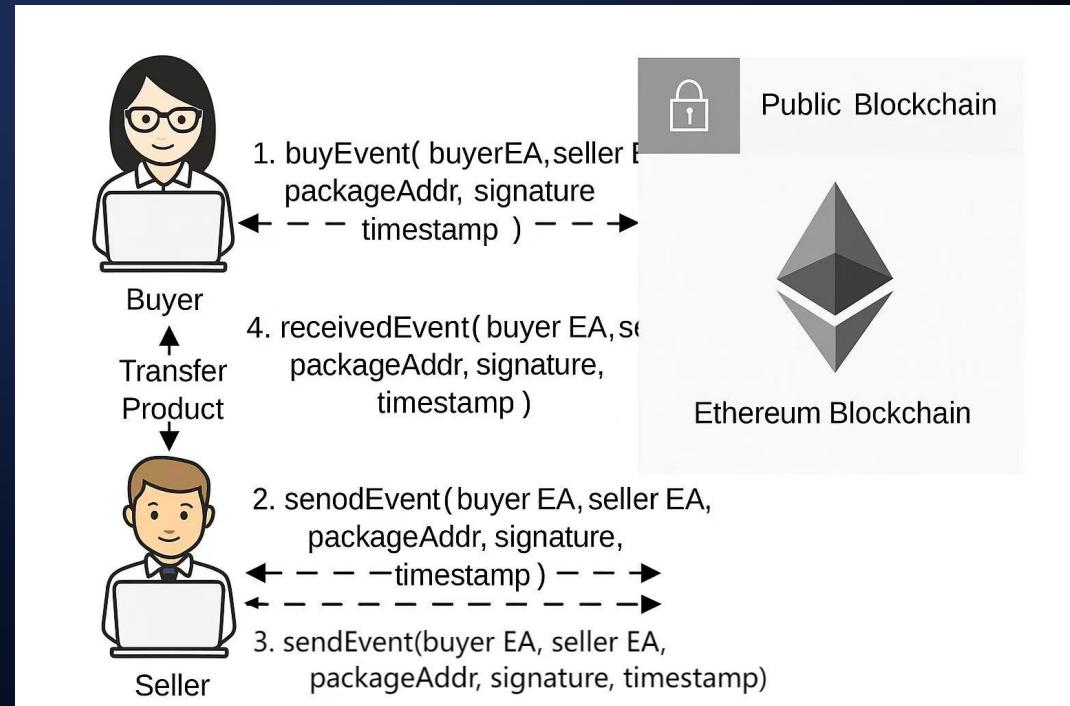
System Architecture



06 System Architecture

Meditracker

This diagram shows a secure transaction flow on the Ethereum blockchain between a buyer and a seller. The buyer initiates a buyEvent, which is recorded on-chain. The seller then confirms shipment with a sendEvent, followed by the buyer confirming receipt through a receivedEvent. Each step includes cryptographic signatures and timestamps, ensuring transparency, authenticity, and traceability in the product transfer process.

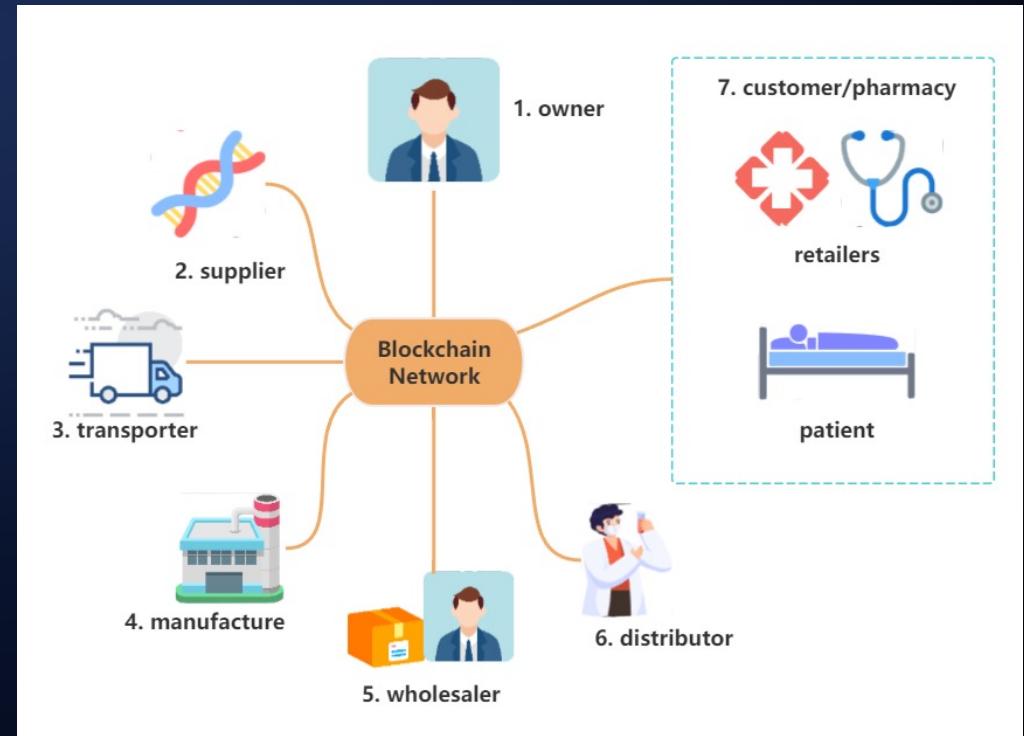




06 System Architecture

Meditracker

This diagram illustrates the MediTracker blockchain ecosystem, connecting all key stakeholders in the pharmaceutical supply chain. At the center is the Blockchain Network, which ensures secure, transparent, and tamper-proof data exchange among participants. The Owner manages the platform, while Manufacturers, Wholesalers, Distributors, Transporters, and Suppliers handle the production and movement of medical products. Finally, Customers, including pharmacies, retailers, and patients, receive verified products with full traceability, enhancing safety and trust across the healthcare supply chain.

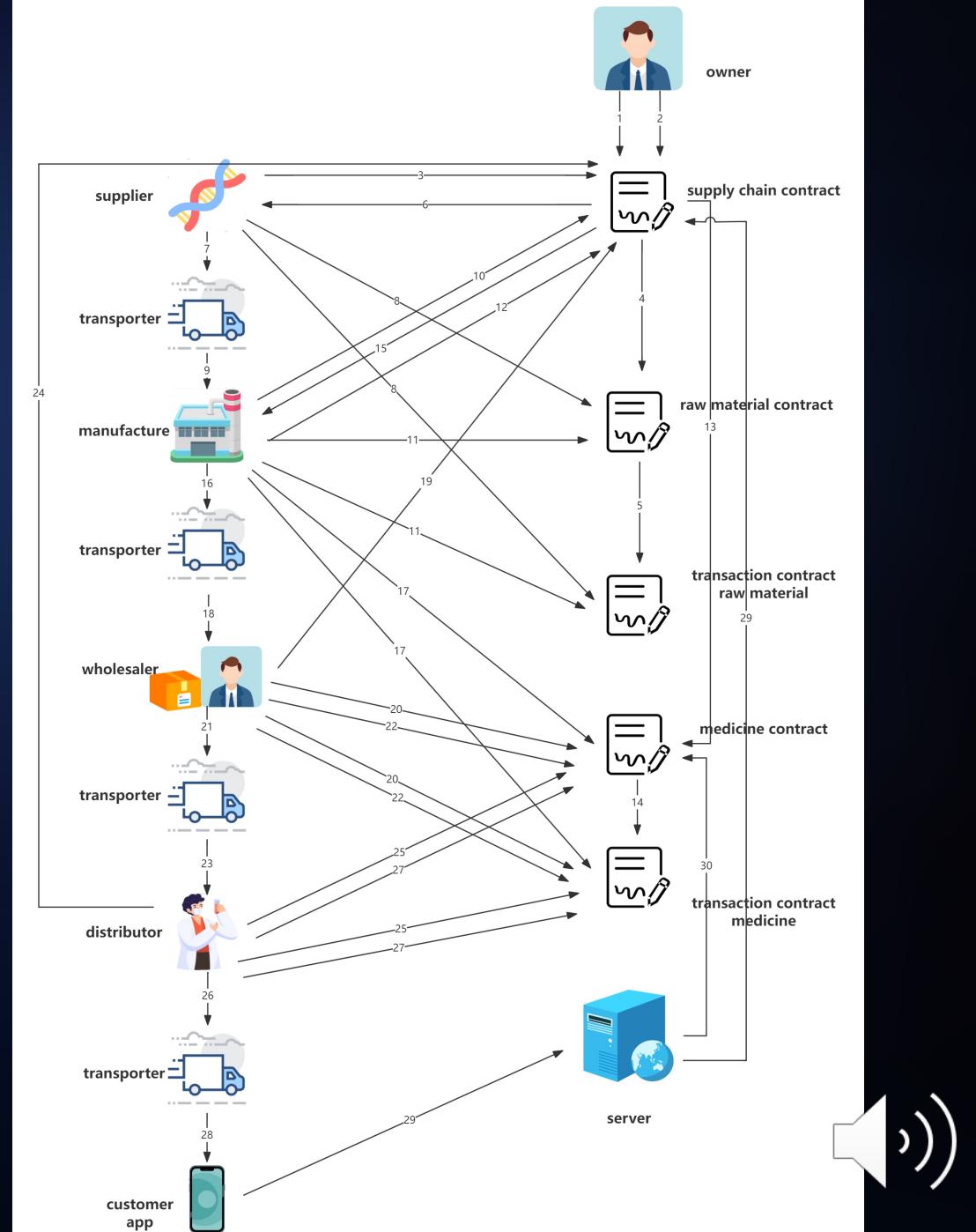




06 System Architecture

Meditracker

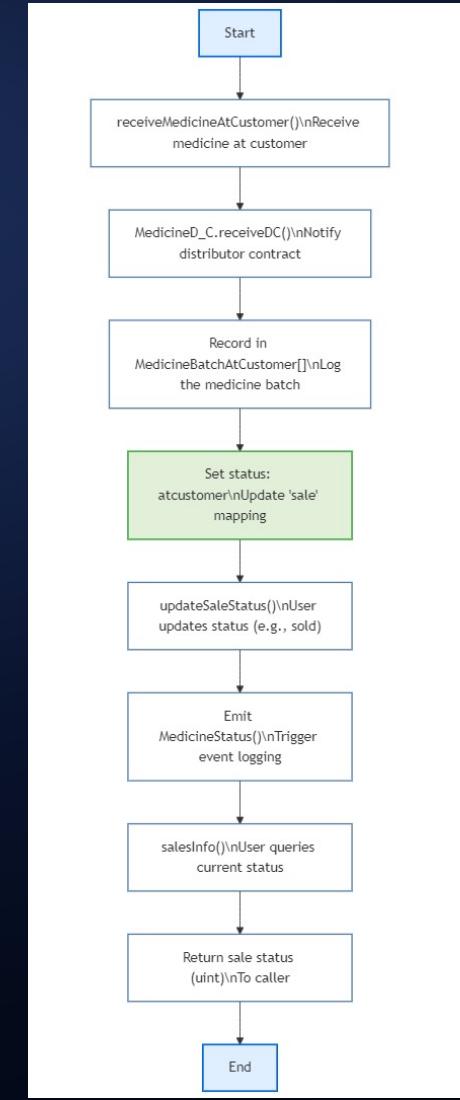
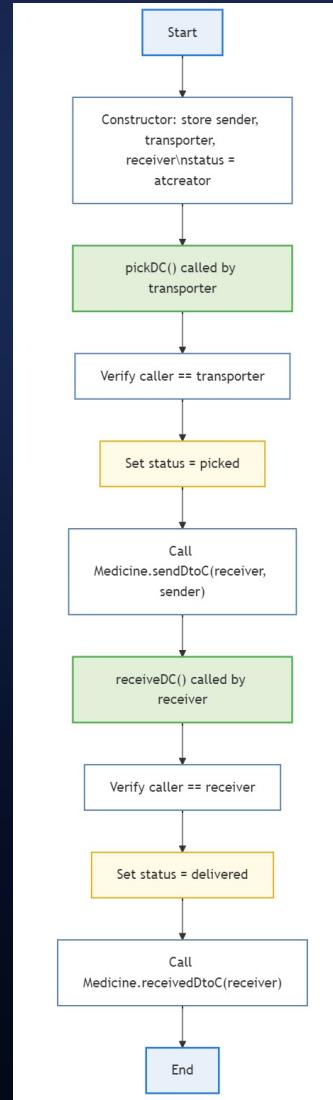
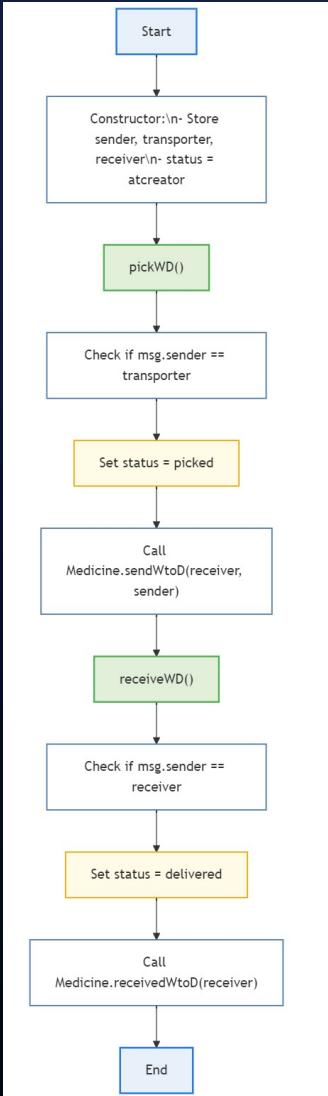
This diagram presents a detailed overview of the MediTracker smart contract ecosystem, showcasing how blockchain smart contracts coordinate pharmaceutical supply chain operations. The Owner initiates and deploys key contracts, including the Supply Chain Contract, Raw Material Contract, and Medicine Contract. Each stakeholder—Supplier, Manufacturer, Wholesaler, Distributor, Transporters, and Customer App—interacts with these contracts to record and verify transactions at every stage.





06 System Architecture

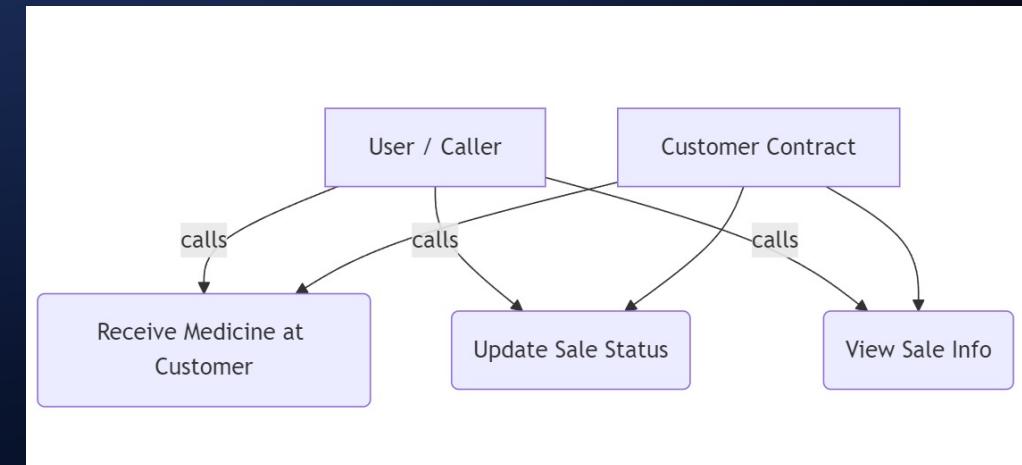
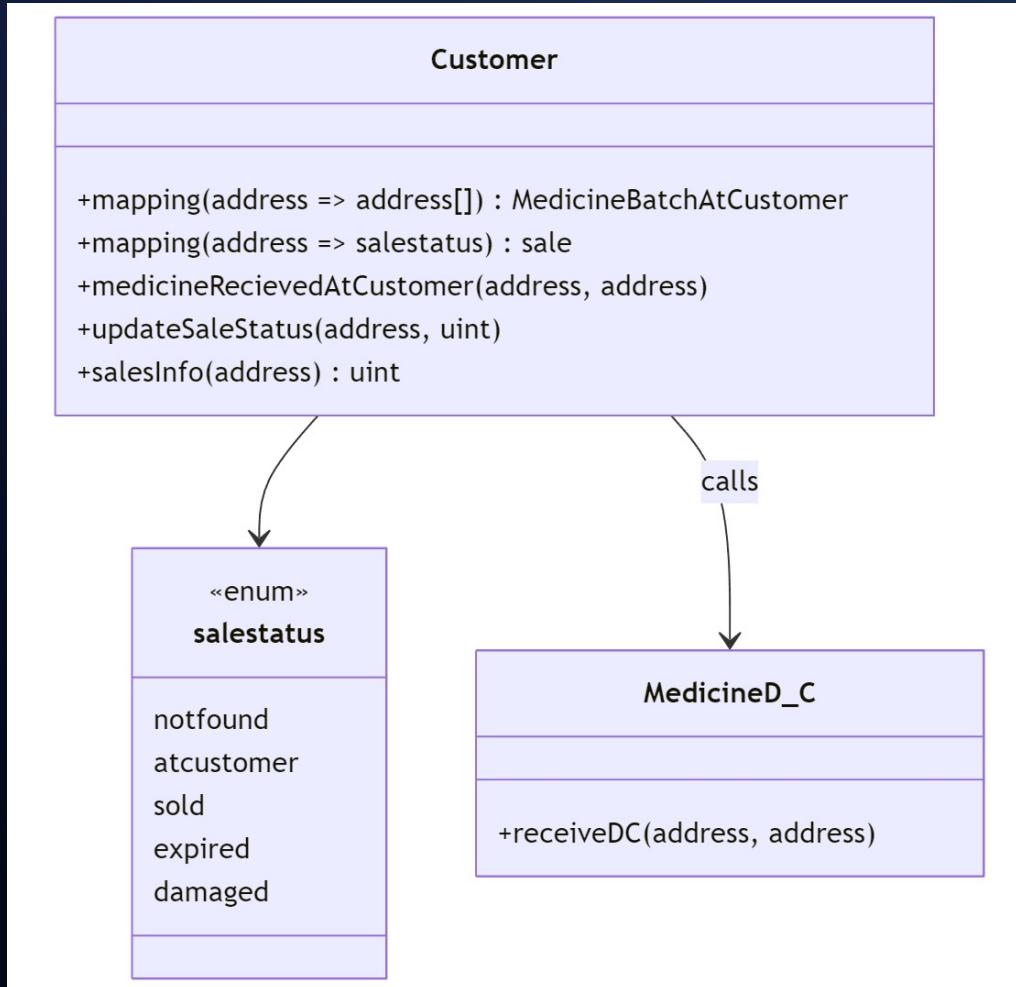
Meditracker





06 System Atchitecture

Meditracker



A complex, abstract network graph composed of numerous small, glowing blue and white dots (nodes) connected by thin lines (edges). The graph forms a dense, circular, and somewhat twisted structure that serves as a background for the title text.

PART 07

Implementation



07 Implementation

Meditracker



Full stack development of Meditracker



Frontend Stack (React)

- React Components
- Smart Contract ABI Binding
- State and UI Feedback



Deployment and Infrastructure

- Docker and Docker Compose
- CI/CD Pipelines
- Cloud Hosting (Optional)





07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot shows the MediTracker homepage. At the top left is the MediTracker logo with the tagline "Med your medicine, meet you approval". The top right features a language selector set to "EN". A navigation bar below the header includes links for "Introduction", "Service", "Sharing", "Articles", "About", and "Contact". The main visual area consists of a large banner image on the left showing a close-up of a doctor's gloved hands holding a stethoscope, and a hexagonal grid graphic on the right depicting various medical icons like an eye, a wheelchair, a molecular structure, test tubes, a syringe, and a capsule, all labeled with terms such as "Health Care", "Doctor", "Hospital", "Pharmacist", "MEDICAL", and "PHARMACEUTICAL". Below the banner, a section titled "Introducing MediTracker" contains a detailed description of the platform's purpose and technology. At the bottom, there are social media links for Facebook, Twitter, and LinkedIn, along with a copyright notice for "©2025 by MediTracker, National University of Singapore".

Introducing MediTracker

MediTracker is a blockchain-based web application designed to enhance transparency, traceability, and security within the pharmaceutical supply chain. By leveraging decentralized ledger technology, MediTracker enables seamless tracking of medicine batches across key stakeholders—including manufacturers, distributors, wholesalers, suppliers, and regulatory authorities. Each transaction is immutably recorded on-chain, ensuring authenticity, reducing the risk of counterfeiting, and promoting trust in healthcare logistics.

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07 Implementation

Meditracker



Full stack development of Meditracker

The image shows a dark green-themed landing page for Meditracker's full stack development services. The page features a central title "Our Services" and a subtitle "What we offer". Below these, six service categories are displayed in a 2x3 grid, each with a circular thumbnail image and a "View" button:

- Owner**: Shows a close-up of various medicine bottles and containers.
- Supplier**: Shows a person's hands handling boxes of medicine.
- Transporter**: Shows a person in a blue uniform carrying a large white box.
- Manufacture**: Shows a laboratory setting with a scientist working at a bench.
- Whole Saler**: Shows a person's hands reaching for medicine boxes on a shelf.
- Distributor**: Shows a variety of colorful medicine pills and capsules.





07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot shows the MediTracker website's owner dashboard. At the top, there is a navigation bar with links for Introduction, Service, Sharing, Articles, About, Contact, and a language selector (EN). The main content area has a dark green background with a large, stylized white sphere graphic on the right. On the left, there is a sidebar with a teal header containing the MediTracker logo and the tagline "Meet your medicine, meet your approval". The main content area features a section titled "Owner" with a detailed description of the role and a local URL for access. To the right of the text is a photograph of two women working together at a desk with laptops.

Owner

As the central authority of the MediTracker ecosystem, the Owner oversees and manages the entire pharmaceutical supply chain network. The Owner is responsible for onboarding participants—such as manufacturers, wholesalers, distributors, and suppliers—and granting them role-based access to the platform. With full administrative privileges, the Owner ensures that only verified entities interact with the system, maintaining the integrity, transparency, and security of all blockchain-recorded operations.

The line to the website locally:
<http://localhost:3000/owner/dashboard>

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07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot displays the Meditracker dashboard, which is a full-stack application. On the left, there's a sidebar with navigation links: OWNER, Dashboard, Add New User, View User, User Profile, and Maps. The main area is titled 'Dashboard' and contains several cards with real-time data:

- Used Space:** 49/50 GB (Orange card)
- Revenue:** \$34,245 (Green card)
- Fixed Issues:** 75 (Red card)
- Followers:** +245 (Teal card)

Below these are three larger charts:

- Daily Sales:** A line chart showing sales over the week. Data points: M(10), T(15), W(5), T(15), F(20), S(15), S(35).
- Email Subscriptions:** A bar chart showing monthly subscription counts. Data points: Jan(500), Feb(400), Mar(700), Apr(600), Mai(400), Jun(300), Jul(200), Aug(500), Sep(400), Oct(600), Nov(700), Dec(800).
- Completed Tasks:** A line chart showing task completion over time. Data points: 12am(150), 3pm(650), 6pm(400), 9pm(200), 12pm(150), 3am(100), 6am(50), 9am(100).

At the bottom, there are footer sections for 'Tasks' (Bugs, Website, Server) and 'Employees Stats' (New employees on 15th September, 2016). A large orange button labeled 'Start' is visible at the bottom right.





07 Implementation

Meditracker



Full stack development of Medittracker

The screenshot displays the Medittracker application interface. On the left, a dark sidebar titled 'OWNER' contains navigation links: 'Dashboard' (selected), 'Add New User' (highlighted in blue), 'View User', 'User Profile', and 'Maps'. The main content area shows a 'Add New User' form titled 'Add New User'. The form includes fields for 'Name', 'Locationx', 'Locatyony', 'Role', and 'Account', each with a corresponding input field. A large blue 'SUBMIT' button is at the bottom. The top right of the screen features a search bar, a grid icon, a notification bell with a red '5' badge, and a user profile icon.



07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot displays the Meditracker application's user interface. On the left, a sidebar titled 'OWNER' contains navigation links: Dashboard, Add New User, View User (which is highlighted with a teal background), User Profile, and Maps. The main content area is titled 'View User' and shows a single row with the heading 'Account'. At the bottom of this row is a large blue 'SUBMIT' button. The top right corner of the main area features a search bar, a grid icon, a notification bell with a red '5' badge, and a user profile icon.





07 Implementation

Meditracker



Full stack development of Meditracker

Supplier

The Supplier is the final authorized party in the MediTracker supply chain before products reach healthcare providers or end consumers. Upon receiving verified pharmaceutical batches from the Distributor, the Supplier confirms delivery and updates the transaction on the blockchain. This ensures end-to-end visibility and guarantees that only authenticated, traceable medicines reach the market—safeguarding public health and reinforcing supply chain trust.

The link to the website locally:
<http://localhost:3000/supplier/dashboard>

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Full stack development of Meditracker

The screenshot shows the Meditracker application interface. On the left, a sidebar menu for 'SUPPLIER' is visible with options: Dashboard (selected), Add Raw Material (highlighted in blue), View Raw Material, User Profile, and Maps. The main content area is titled 'Add Raw Material'. It contains three input fields: 'Material Description *' with the value 'Paracetamol', 'Material Quantity *' with the value '100', and 'Transporter Address *' with the value '0x9ab390191EE3d5E94fE890Ea596F6be140C'. A large blue 'SUBMIT' button is at the bottom.





07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot shows a web application interface for a supplier. On the left is a sidebar with a dark background and a cityscape image at the bottom. The sidebar has a "SUPPLIER" header and the following menu items:

- Dashboard
- Add Raw Material
- View Raw Material
- User Profile
- Maps

The main content area has a white background. At the top right are search and filter icons. The title "Product Details" is centered above a list of product information. The information includes:

- Generated Product ID: 0x2775ec7413B8dAa431D130391ebB77B63EB1e988
- Description: Paracetamol
- Product Quantity: 100
- Product Supplier: 0x262A203e4e62c898637811994E19ebDe95E25C1d
- Product Transporter: 0x9ab390191EE3d5E94fE890Ea596F6be1400F9064
- Product Manufacturer: 0x262A203e4e62c898637811994E19ebDe95E25C1d
- Product Transaction contract address: 0xd5E844399683E253e5079006EEb3666124E2D975

Below the product info is a horizontal timeline with three stages: 1. At Supplier, 2. Collected by Transporter, and 3. Delivered to Manufacturer. A note states "Raw Material is at supplier stage in the supply chain." At the bottom are two buttons: "VIEW REQUESTS" and "SEND PACKAGE".





07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot shows the Meditracker Supplier dashboard. On the left, a sidebar menu lists: SUPPLIER, Dashboard, Add Raw Material, View Raw Material, User Profile, and Maps. The main area has a pink header bar labeled "View Requests". Below it is a table with the following data:

Buyer Address	Seller Address	Package Address	Signature	Timestamp	Verify
0xCc3535f93165498ff4f466dBE e5f2A723A145B06	0x262A203e4e62c89863781199 4E19ebDe95E25C1d	0x873bc77faeE979f6f90df92Cdab536 6D54834DCE	0x706013cf3dd3be66 4a1706fc0535d96701 1b80a5d11a3356d8b8 480cbcd82ff83ca834f fbe70eabf31b54aa6a3 190f58a7535585934a 933091dc2520e79d11 361b	Sat Mar 27 2021 13:04:51 GMT+0530 (India Standard Time)	VERIFY SIGNATURE





07 Implementation

Meditracker



Full stack development of Meditracker

[Introduction](#) [Service](#) [Sharing](#) [Articles](#) [About](#) [Contact](#)

EN ▾

Transporter

The Transporter plays a vital role in MediTracker by ensuring the safe and authenticated movement of pharmaceutical batches between supply chain entities. Authorized by upstream stakeholders, Transporters are responsible for updating the system whenever a shipment is picked up, in transit, or successfully delivered. Each logistics event is recorded on the blockchain, enabling end-to-end traceability and accountability throughout the delivery process.

The line to the website locally:
<http://localhost:3000/transporter/dashboard>

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07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot displays the Meditracker application's user interface. On the left, a sidebar menu titled 'TRANSPORTER' is visible, featuring four options: 'Dashboard' (selected), 'Handle Package' (highlighted in blue), 'Maps', and 'User Profile'. The main content area is titled 'Handle Package' and contains a sub-section titled 'Enter Package Details'. This section includes three input fields: 'Package Address *' with the value '0x64BAEa18140301D10ad6c4f3129C2b68C1', 'Transporter type *' with the value '3', and 'Cid *' with the value '0xA44F772C0546fe978CB05c5827d8680581'. A large blue 'SUBMIT' button is located at the bottom of this form. The top right corner of the main window shows a search bar, a grid icon, a notification bell with a red '3' badge, and a user profile icon.





07 Implementation

Meditracker



Full stack development of Meditracker

 **MediTracker**
Meet your medicine, meet your approval

EN ▾

[Introduction](#) [Service](#) [Sharing](#) [Articles](#) [About](#) [Contact](#)

Manufacturer

The Manufacturer initiates the supply chain in MediTracker by creating and registering new batches of pharmaceutical products on the blockchain. Each batch entry includes critical details such as batch ID, production date, and drug specifications, ensuring authenticity from the point of origin. By anchoring data to an immutable ledger, the Manufacturer enables downstream stakeholders to verify the legitimacy of products throughout their journey.

The line to the website locally:
<http://localhost:3000/namufacturer/dashboard>

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07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot displays the Meditracker application interface. On the left, a sidebar titled 'MANUFACTURER' lists various functions: Dashboard, Create Medicine (which is highlighted in blue), View Raw Materials, Request Product, Receive Product, View Response, View Medicines, User Profile, and Maps. The main content area shows a 'Create Medicine' page with a sub-header 'Create New Medicine'. It contains five input fields: 'Medicine Description *', 'Medicine Quantity *', 'Raw Material Address *', 'Manufacturer Address *', and 'Transporter Address *'. A large blue 'SUBMIT' button is at the bottom. The URL 'localhost:3000/manufacturer/create-medicine' is visible at the bottom of the page.





07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot displays the 'Product Details' page of the Meditracker application. On the left, a dark sidebar menu titled 'MANUFACTURER' lists various functions: Dashboard, Create Medicine, View Raw Materials, Request Product, Receive Product, View Response, View Medicines, User Profile, and Maps. The main content area shows the following information:

- Generated Product ID: 0x873bc77faeE979f6f90df92Cda...DCE
- Description: Paracetamol
- Product Quantity: 100
- Product Supplier: 0x262A203e4e62c898637811994E19ebDe95E25C1d
- Product Transporter: 0x9ab390191EE3d5E94fE890Ea596F6be1400F9064
- Product Manufacturer: 0xCc3535f93165498ff4f466dB...A145B06
- Product Transaction contract address: 0xd5E844399683E253e5079006EEb3666124E2D975

Below this, a horizontal timeline shows three stages: 'At Supplier' (marked with a checkmark), 'Collected by Transporter' (marked with a checkmark), and 'Delivered to Manufacturer' (marked with a blue circle containing the number 3). A note at the bottom states: 'Raw Material currently with the Manufacturer'.





07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot displays the Meditracker application's user interface. On the left, a sidebar titled "MANUFACTURER" lists several options: Dashboard, Create Medicine, View Raw Materials, Request Product (which is highlighted with a blue background), Receive Product, View Response, View Medicines, User Profile, and Maps. The main content area is titled "Request Product" and contains a form titled "Enter Package To be Requested". The form includes three input fields: "Package Address *", "Supplier Address *", and "Signature *". A large blue "SUBMIT" button is positioned at the bottom of the form. At the top right of the main area, there is a search bar, a grid icon, a notification bell with a red "5" badge, and a user profile icon. The URL "localhost:3000/manufacturer/request-product" is visible at the bottom left of the screenshot.

MANUFACTURER

Request Product

Search

5

Package Address *

Supplier Address *

Signature *

SUBMIT

localhost:3000/manufacturer/request-product





07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot shows a dark-themed website for MediTracker. At the top left is the logo with two white spheres and the text "MediTracker" and "Meet your medicine, meet your approval". The top right features a language dropdown set to "EN". The navigation bar includes links for "Introduction", "Service", "Sharing", "Articles", "About", and "Contact". A large, dark green background image of a spiral staircase is visible.

Wholesaler

The Wholesaler acts as a key intermediary in the MediTracker supply chain, receiving verified pharmaceutical batches from manufacturers and distributing them to authorized distributors or suppliers. Upon receiving a shipment, the Wholesaler verifies its authenticity and updates the transaction on the blockchain. This ensures that every transfer is securely logged, preserving transparency and preventing the circulation of counterfeit products.

The line to the website locally:
<http://localhost:3000/wholesaler/dashboard>

[Geback](#)

At the bottom center, there are social media icons for Facebook, Twitter, and LinkedIn. Below them is the copyright notice: "©2025 by MediTracker, National University of Singapore".





07 Implementation

Meditracker



Full stack development of Meditracker

WHOLESALER

- Dashboard
- View Received Medicine
- Request Product
- View Responses
- Transfer Medicine
- Receive Medicine
- Maps
- User Profile

Product Details

Product Address: 0x64BAEa18140301D10ad6c4f3129C2b68C1Ef0804

Product Manufacturer: 0xCc3535f93165498ff4f466dBEe5f2A723A145B06

Description: Crocin

Product Raw Materials: 0x873bc77faeE979f6f90df92Cdab5366D54834DCE

Product Quantity: 100

Product Transporter: 0x9ab390191EE3d5E94fE890Ea596F6be1400F9064

Product Wholesaler: 0x248389b42F0D3009712B0dF413a0bbb972b3a443

Product Distributor: 0x03641Da51B024a9e386B1fB1AA6434833aCc274e

Product Transaction contract address: **0x5Db09F46731c926A741e364e8E99F7b9c482F34F**

At Manufacturer Collected by Transporter Delivered to Wholesaler Collected by Transporter Delivered to Distributor Collected by Transporter Medicine Delivered

Wholesaler, the medicine is currently with you!

Subcontract Address: 0xA44F772C0546fe978CB05c5827d86805813De31B

VIEW REQUESTS **SEND PACKAGE**





07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot displays the Meditracker Wholesaler application's user interface. On the left, a sidebar menu lists several options: Dashboard, View Received Medicine, Request Product, View Responses (which is highlighted with a blue background), Transfer Medicine, Receive Medicine, Maps, and User Profile. The main content area is titled "View Responses" and contains a yellow header bar with the word "Responses". Below this, a table lists a single response entry. The columns are labeled: Buyer Address, Seller Address, Package Address, Signature, Timestamp, and Verify. The "Signature" column shows a long string of hex values: 0xb74b5ed33a2815bb45fd6e00d6867316c431c1dad5bd3063524cab16bc0dc8f3743b08ddd8c799269d270b285b407697f8e27f5b40c719c2df83bb0fabac166b1c. The "Timestamp" column shows the date and time: Sat Mar 27 2021 13:41:44 GMT+0530 (India Standard Time). A red "VERIFY SIGNATURE" button is located at the bottom right of this row. The top right corner of the main content area features a search bar, a grid icon, a notification bell with a red badge, and a user profile icon.

Buyer Address	Seller Address	Package Address	Signature	Timestamp	Verify
0x248389b42F0D3009712B 0dF413a0bbb972b3a443	0xCc3535f93165498ff4f466 dBeE5f2A723A145B06	0x64BAEa18140301D10ad6 c4f3129C2b68C1Ef0804	0xb74b5ed33a2815bb45fd6e00d6867316c431c1dad5bd3063524cab16bc0dc8f3743b08ddd8c799269d270b285b407697f8e27f5b40c719c2df83bb0fabac166b1c	Sat Mar 27 2021 13:41:44 GMT+0530 (India Standard Time)	VERIFY SIGNATURE





07 Implementation

Meditracker



Full stack development of Meditracker

The screenshot shows the MediTracker website with a dark green background. At the top, there is a navigation bar with links for Introduction, Service, Sharing, Articles, About, Contact, and a language selector (EN). The main content area features a large image of two women working together at a desk with a laptop. To the left of the image, the word "Distributor" is displayed in bold. Below it, a paragraph explains the role of the Distributor in facilitating the timely and secure delivery of pharmaceutical products. A link to the local distributor dashboard is provided: <http://localhost:3000/distributor/dashboard>. At the bottom of the page, there are social media icons for Facebook, Twitter, and LinkedIn, along with a copyright notice for 2025 by MediTracker, National University of Singapore.





07 Implementation

Meditracker



Full stack development of Meditracker

DISTRIBUTOR

- Dashboard
- Request Product
- View Response
- Receive Medicine
- View Medicines
- User Profile
- Maps

Transactions List

View all transactions for this Medicine

TxnHash	From	To	Previous TxnHash	Lat	Lng	Timestamp
0xfd137eac4620138110e322e5a4404e2e14d455ebd391768c0f9b2a438719a05f	0xCc3535f93165498ff4f466dBEE5f2A723A145B06	0x64BAEa18140301D10a d6c4f3129C2b68C1Ef0804	0xfd137eac4620138110e322e5a4404e2e14d455ebd391768c0f9b2a438719a05f	10	10	Sat Mar 27 2021 13:37:10 GMT+0530 (India Standard Time)
0x683d3030eeb502af76a6b5f72672e25c0be0b192bd28ec87ea52db512ab3b512	0xCc3535f93165498ff4f466dBEE5f2A723A145B06	0x9ab390191EE3d5E94fE890Ea596F6be1400F9064	0xfd137eac4620138110e322e5a4404e2e14d455ebd391768c0f9b2a438719a05f	10	10	Sat Mar 27 2021 13:43:21 GMT+0530 (India Standard Time)
0x1143ecf15ee8a0f4a0dfc211681f64d5862d40a0bfea7967b67325ade58d ed01	0x9ab390191EE3d5E94fE890Ea596F6be1400F9064	0x248389b42F0D3009712B0dF413a0bbb972b3a443	0x683d3030eeb502af76a6b5f72672e25c0be0b192bd28ec87ea52db512ab3b512	10	10	Sat Mar 27 2021 13:44:40 GMT+0530 (India Standard Time)
0x9039aac1910a9a1cf9452f15f9e3ea5b39b2ddd7b2630abb7b8e0f14f844f883	0x248389b42F0D3009712B0dF413a0bbb972b3a443	0x9ab390191EE3d5E94fE890Ea596F6be1400F9064	0x1143ecf15ee8a0f4a0dfc211681f64d5862d40a0bfea7967b67325ade58d ed01	10	10	Sat Mar 27 2021 14:35:26 GMT+0530 (India Standard Time)
0xe54257e021621cc6b643c94e280b1a1b546252cdade0c72b02fae919cb11d26	0x9ab390191EE3d5E94fE890Ea596F6be1400F9064	0x03641Da51B024a9e386B1fB1AA6434833aCc274e f883	0x9039aac1910a9a1cf9452f15f9e3ea5b39b2ddd7b2630abb7b8e0f14f8444f883	10	10	Sat Mar 27 2021 14:36:50 GMT+0530 (India Standard Time)



A complex network graph composed of numerous small, glowing blue and white dots connected by thin lines, forming a dense web-like structure that curves across the center of the slide.

PART 08

Market Analysis



08 Market Analysis

Meditracker



Market Size

The global medical service market is expected to reach a value of USD 14.7 trillion by 2025, growing at a CAGR of 4.7% from 2020 to 2025. North America leads the market followed by Europe and the Asia Pacific.



Market Segments

The medical service market is segmented based on service types that include diagnostic and laboratory services, primary care, emergency care. Primary care services are expected to lead the market due to the increasing demand for preventive care and the rise in chronic diseases.



Market Trends

The medical service market is experiencing an increasing trend towards the incorporation of digital technology into healthcare services. Telemedicine, for example, has expanded significantly due to the growing preference for virtual consultations amid the COVID-19 global pandemic.





08 Market Analysis

Meditracker



Pros: Innovation & Disruption

In the healthcare business, blockchain is becoming a viable alternative. With blockchain technology, few firms have begun solving significant pain problems in the health industry

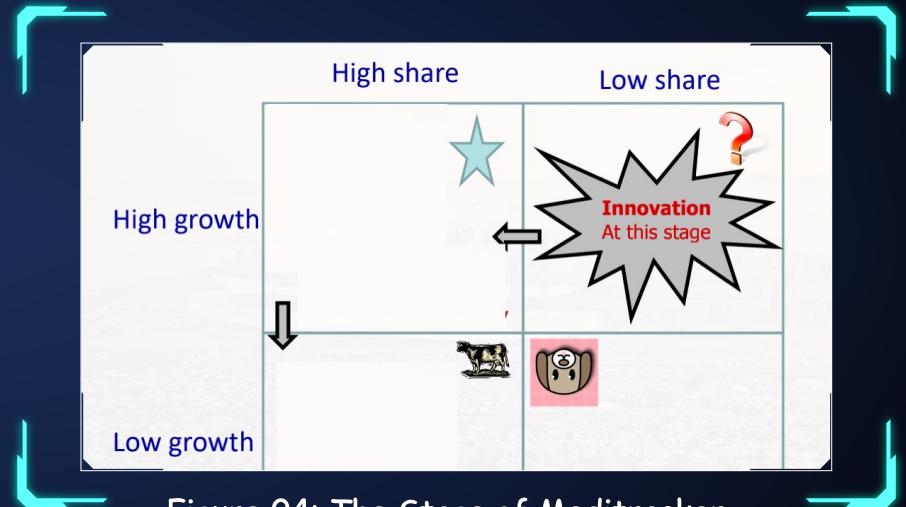


Figure 04: The Stage of Meditracker

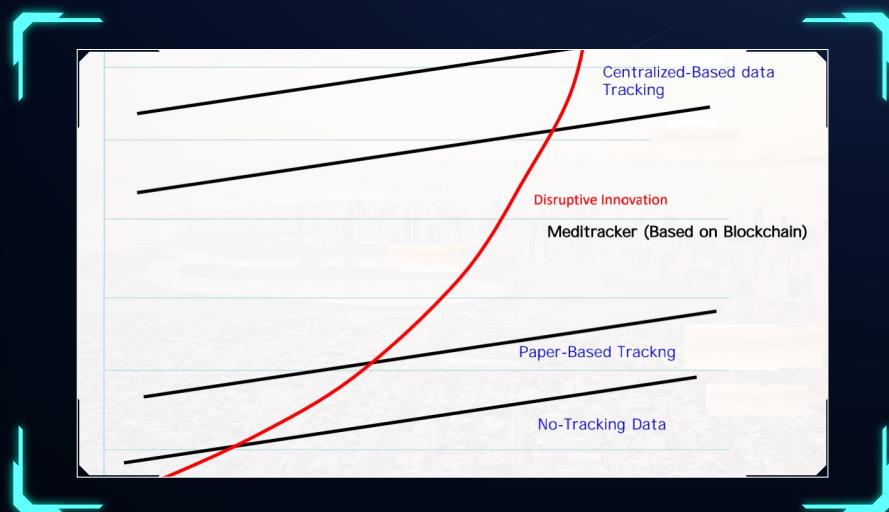


Figure 05: The Disruptive of Meditracker

Cons: Lack of awareness & understanding

The lack of information about distributed ledger computing and its use in the healthcare business is a crucial impediment to the expansion of blockchain technology. The advantages of these technological advancements and how it operates are not well understood by end customers in the health sector



A complex, abstract network graph is centered on the slide. It consists of numerous small, glowing blue and white dots (nodes) connected by thin, translucent blue lines (edges). The nodes are densely packed in the center and taper off towards the edges, creating a spherical or toroidal shape against a dark blue background.

PART 09

Timeline



09 Status and Timeline

Meditracker



Short-term status and timeline of Meditracker

Tasks	Description	Status	Timeline
Organize a Team	Form a team that can always complete the project	Completed	1 month
Demo Project	Write the proposal and report. Then, create a simple project demo, which contains some part of the main functions, but still needs future development.	Completed	1-2 month
Find Sponsors	Use the project demo, proposal, and report to find sponsors and get the funds.	scheduled	3-5 month
Develop Project	Develop the main project.	scheduled	3-6 month
Test & Debug	Test & Debug is very import for the blockchain related project.	scheduled	6-7 month
Show & Sell	After everything is done, we will present and market our projects to targets	scheduled	8 month



Table 01: The Stage of Meditracker



09 Status and Timeline

Meditracker



Long-term status and timeline of Meditracker



Figure 07: The Stage of Meditracker



A complex, abstract network graph composed of numerous small, glowing blue dots connected by thin lines, forming a dense web-like structure that curves across the center of the slide.

PART 10 Projections



10 Projections and milestones

Meditracker



01. Market demand

The demand for medicine is likely to continue to grow, particularly as populations age and chronic conditions become more prevalent.

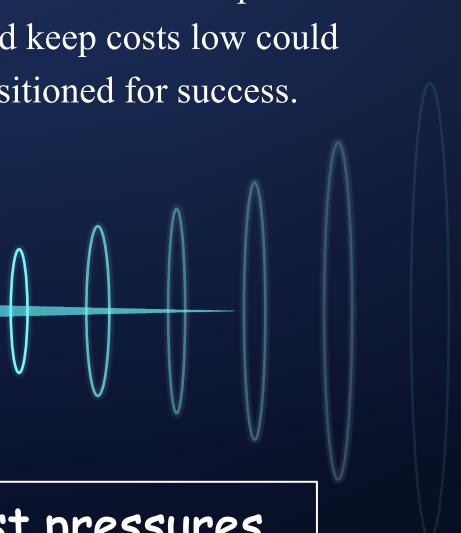


02. Technology advancements

Technology has already begun to transform the supply chain of medicine, with the increasing use of automation, blockchain, and other digital tools.

03. Regulatory environment

Companies that are able to operate efficiently and keep costs low could be well positioned for success.



04. Cost pressures

The cost of medicine is a major concern for both patients and healthcare providers, and there is likely to be continued pressure to reduce costs throughout the supply chain.

**Factors
impact on the
projections of
Meditracker**





10 Projections and milestones

Meditracker



5-year Income statistics of Meditracker

Income statistics	Year1	Year2	Year3	Year4	Year5
C-end service charge	10,000	30,000	50,000	150,000	500,000
B-end service charge	50,000	50,000	80,000	150,000	300,000
Advertising revenue	5,000	10,000	15,000	45,000	75,000
Joint income	3,000	500	8,000	20,000	35,000
Medical commission	20,000	30,000	50,000	100,000	200,000
Government Cooperation	10,000	20,000	50,000	150,000	200,000
Pharmaceutical research	5,000	10,000	15,000	30,000	50,000

Table 02: 5-year Income statistics of Meditracker

5-year Consumption statistics of Meditracker

Consumption statistics	Year1	Year2	Year3	Year4	Year5
Building the website	10,000	20,000	50,000	100,000	150,000
Research Technology	20,000	30,000	50,000	100,000	150,000
Office rental	20,000	20,000	20,000	50,000	80,000
Staff living expenses	20,000	25,000	40,000	80,000	150,000
Advertising	10,000	15,000	50,000	80,000	100,000
Business meetings	10,000	30,000	50,000	100,000	150,000
Some other fees	5,000	10,000	15,000	35,000	50,000

Table 03: 5-year Consumption statistics of Meditracker



PART 11

Future Work





11 Future Work

Meditracker



Advanced AI Integration for Predictive Analytics

Future iterations of the platform will incorporate predictive analytics to proactively monitor pharmaceutical logistics and detect abnormal behavior indicative of fraud or operational risk.

Key applications of AI within MediTracker include:

- Counterfeit Pattern Recognition
- Supply Chain Disruption Forecasting





11 Future Work

Meditracker



Implementation of Decentralized Identity (DID)

As MediTracker advances toward a more user-centric and privacy-preserving architecture, the integration of Decentralized Identity (DID) frameworks represents a crucial step in enhancing security, autonomy, and interoperability across stakeholders.





PART 12

Lessons Learned





12 Lessons Learned

Meditracker



01. Technical Development

From smart contract logic in Solidity to frontend integration with React and deployment via Docker, each layer must be carefully aligned to maintain data integrity and ensure user responsiveness. We learned to debug smart contracts efficiently, manage ABI bindings, and design intuitive user interfaces—all while keeping security and immutability at the core of our implementation.





12 Lessons Learned

Meditracker



02. Real-World Use Cases and User-Centered Design

We also realized that technical innovation must meet real-world needs.

Through our exploration of medicine traceability and counterfeiting issues, we learned how vital transparency and trust are for end users. Incorporating features like DID for privacy and predictive analytics for risk management helped us address deeper systemic issues. Ultimately, user-centric design and regulatory compliance must go hand-in-hand with blockchain innovation to build truly impactful solutions.





PART 13 Summary





13 Summary and Call to Action

Meditracker

Meditracker enhances the security of individual digital medical records, encourages the commercialization of medical data, increases connectivity across medical centers, and aids in the battle against counterfeit pharmaceuticals. This can help to increase transparency, traceability, and accountability, reduce errors and paperwork, protect sensitive information, ensure compliance with regulations, and foster collaboration between stakeholders.

Thank you for your watching!

