

# Final Year Project User Manual

## Title Page

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# 1. About FarmaTech

FarmaTech is a blockchain-powered web application designed to combat counterfeit medicines by ensuring supply chain transparency and security. It empowers manufacturers, distributors, healthcare professionals, and consumers to verify the authenticity of medicines via encrypted QR codes and gives confidence to the consumer.

## 2. Getting Started

### 2.1 System Requirements

- Device: Smartphone (iOS/Android), Tablet, or Desktop
- Camera Access: Required for QR Code scanning
- Browser: Latest versions of Chrome, Firefox, Safari

### 2.2 Prerequisites & Setting up the Blockchain

1. **Clone the Fabric samples folder into the root directory.**

```
git clone https://github.com/hyperledger/fabric-samples.git
```

```
Cd fabric-samples
```

NOTE: Add the chaincode folder from the root directory into the fabric-samples folder

2. **Download and Execute the Installation Script (install-fabric.sh) in the Fabric Samples folder.**

```
curl -sSLO
```

```
https://raw.githubusercontent.com/hyperledger/fabric/main/scripts/install-fabric.sh && chmod +x install-fabric.sh
```

3. **Install docker images**

*./install-fabric.sh docker binary samples*

#### **4. Install the Fabric SDK**

*npm install fabric-network fabric-ca-client*

**To setup the blockchain:**

- 1. Navigate to the test-network folder in the fabric samples folder**
- 2. Run the command in your CLI (Preferably WSL).**

*./network.sh down*

*./network.sh up createChannel -ca -s couchdb*

- 3. Once the channels have been created navigate to test-network/organisations/peerOrganisations/org1.example.com/ Copy and paste the connection-org1.json file to FarmaTech fabric-test-app/config**
- 4. Navigate to FarmaTech/fabric-test-app/ and create the wallet id's by running the following commands:**

- Node enrollAdmin.js*
- Node registerUser.js*

- 5. Now deploy the chaincode in the test-network folder by using the following command:**

*./network.sh deployCC -ccn medicine-contract -ccp  
../chaincode/medicine-contract/ -ccl javascript*

- 6. Start the MongoDB servers to allow user handling:**

*sudo systemctl start mongod*  
  
*sudo systemctl status mongod*

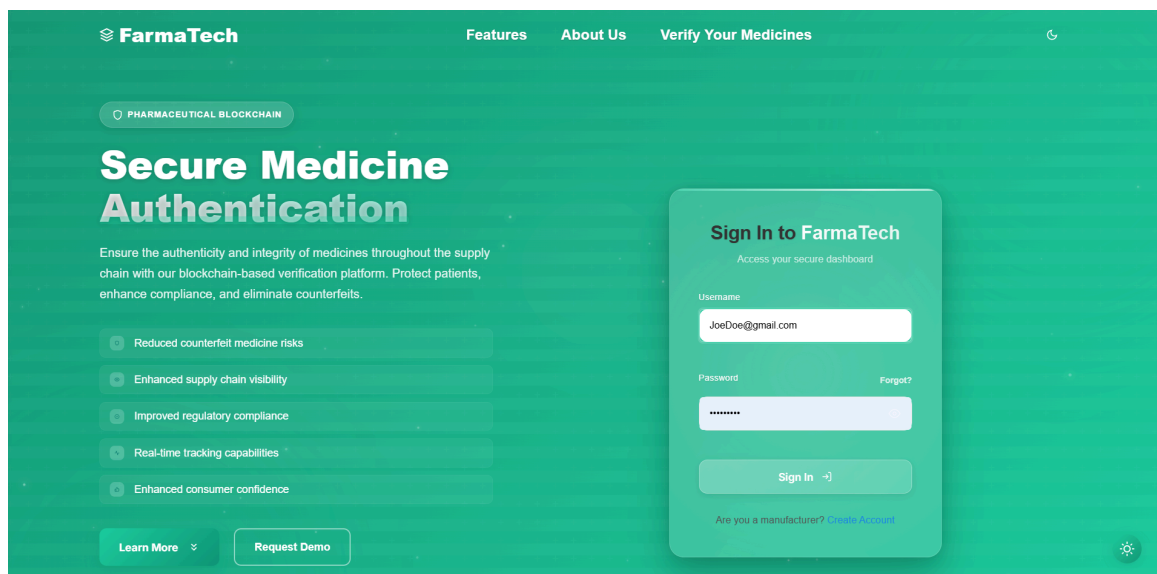
## 7. Launch the node.js backend:

```
node app.js
```

## 8. Launch the React frontend:

```
npm start
```

## 2.3 Navigating the Home Page



The FarmaTech home page provides intuitive navigation to key features:

- **Features:** This section outlines all major capabilities of FarmaTech including blockchain-powered security, end-to-end supply chain tracking, multi-stakeholder support, and counterfeit detection. Users can click "Learn More" under each listed feature to explore detailed explanations.
- **About Us:** This section explains FarmaTech's mission, vision, and the team's dedication to ensuring medicine authenticity and supply chain security. It helps users understand the core values behind the platform.
- **Verify Your Medicines:** A quick-access feature available to everyone. End users (consumers) can scan a medicine's QR code directly from this section without requiring an account, confirming the medicine's authenticity instantly.
- **Sign In/Create Account:** Manufacturers can sign in to access their dashboard. New manufacturers can create an account through the

"Create Account" link to register and begin managing their products and supply chain operations. Manufacturers can further enroll and register Distributors and Regulators.

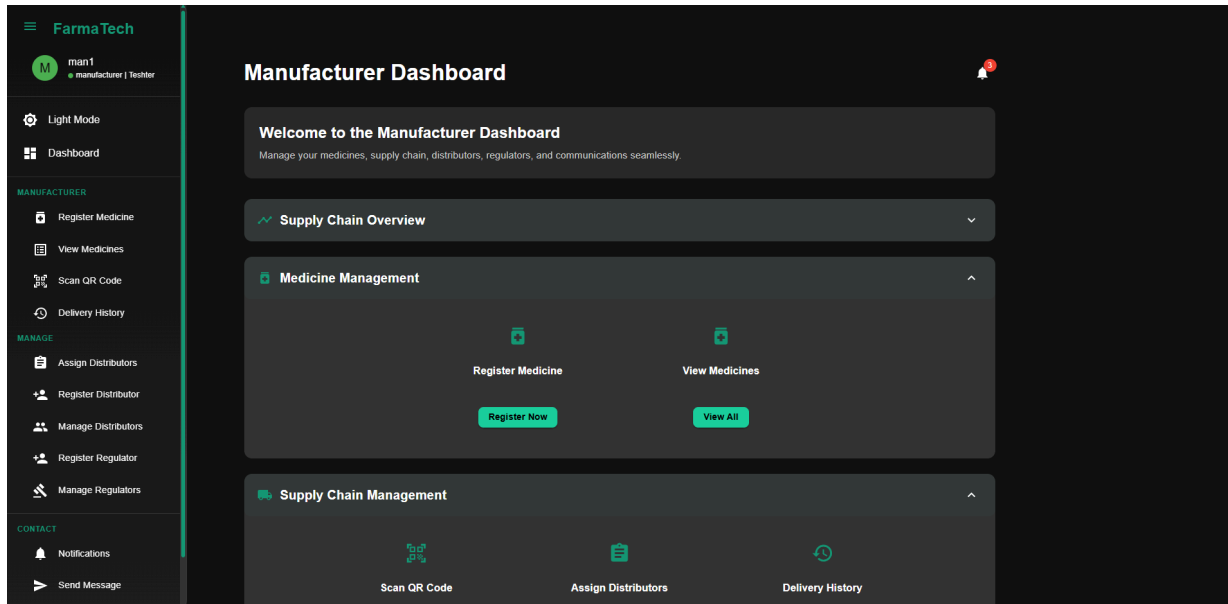
- **Dark Mode and Light Mode Toggle:** Users can switch between dark mode and light mode for a personalized viewing experience. Simply click on the moon/sun icon located in the top header to toggle between modes instantly. This improves readability and comfort based on user preference or environmental lighting.

### 3. User Roles and Access

Role	Access Privileges
Drug Manufacturers	Manage medicines, supply chain, distributors, regulators, send notifications
Distributors (HSE, HPRA)	Scan QR codes, update supply chain status
End Users (Hospitals, Pharmacies, Consumers)	Scan QR codes for verification (no account)
Regulatory Bodies	Access immutable audit trails, investigate incidents

## 4. Core Functionalities

### 4.1 Manufacturer Functionalities



Manufacturers can access all their features from the Manufacturer Dashboard after login:

#### 4.1.1 Supply Chain Overview

- Monitor real-time movement and status of medicines.
- Register new medicines.
- Update medicine status.
- Unflag medicine.
- Enroll, manage and contact distributors and regulators.

#### 4.1.2 Medicine Management

- **Register Medicine:** Add new medicines including batch number, expiry date.
- **View Medicines:** Track and manage previously registered medicines.
- **How to Access:** Click "Medicine Management" > "Register/View Medicines" on the sidebar.

#### 4.1.3 Supply Chain Management

- **Scan QR Code:** Update medicine location/status by scanning codes.
- **Delivery History:** Access logs of completed deliveries.
- **How to Access:** Click "Supply Chain Management" in the sidebar.

#### 4.1.4 Distributor Management

- **Register Distributor:** Add distributor accounts.
- **Manage Distributors:** Update or deactivate distributor details.
- **How to Access:** Under "Distributor Management" in the sidebar.

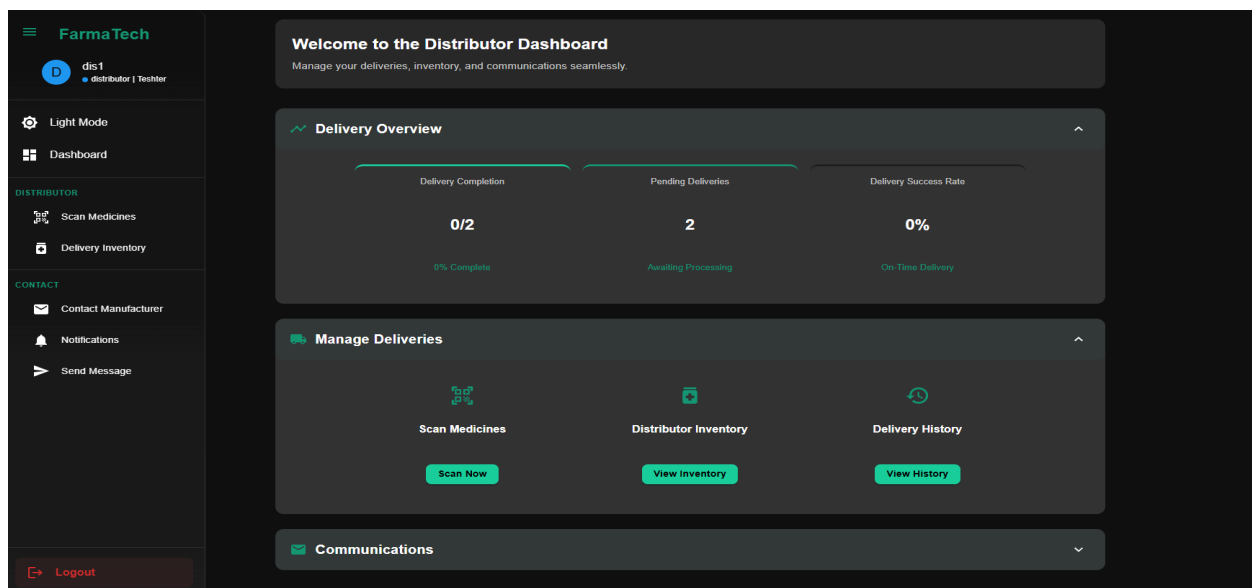
#### 4.1.5 Regulator Management

- **Register Regulator:** Create regulator accounts.
- **Manage Regulators:** Assign or modify regulator access.
- **How to Access:** Under "Regulator Management" in the sidebar.

#### 4.1.6 Communications

- **Notifications:** Receive updates and alerts.
- **Send Message:** Contact distributors or regulators directly.
- **How to Access:** Access the "Communications" section in the dashboard.

## 4.2 Distributor Functionalities



Distributors use their specific dashboard to manage deliveries:



### 4.2.1 Delivery Overview

- See number of pending deliveries and success rate.
- **How to Access:** Available immediately upon login.

### 4.2.2 Manage Deliveries

- Update progress based on the package condition.
- **How to Access:** Click "View Inventory" from the dashboard sidebar.

### 4.2.3 Scan Medicines

- Scan QR codes to verify and update status.
- **How to Access:** Navigate to "Scan Medicines" from the sidebar.

### 4.2.4 Distributor Inventory

- View current inventory of medicines.
- **How to Access:** Open "Distributor Inventory" from the sidebar.

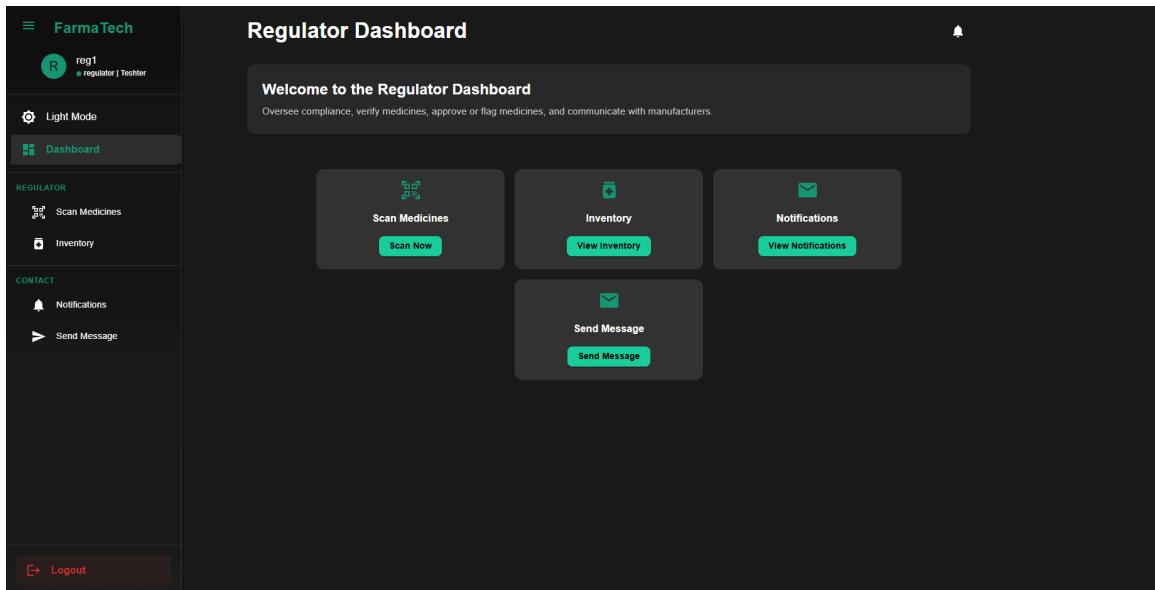
### 4.2.5 Delivery History

- Check history of completed deliveries with timestamp data.
- **How to Access:** Click "Delivery History."

### 4.2.6 Communications

- **Notifications:** View delivery alerts.
- **Send Message/Contact Manufacturer:** Communicate directly with manufacturers.
- **How to Access:** Access via "Communications" section.

## 4.3 Regulator Functionalities



Regulators use the dedicated Regulator Dashboard to oversee compliance:

#### 4.3.1 Scan Medicines

- Scan QR codes to verify authenticity.
- Update status to “Order Complete” that marks the end of the supply chain.
- **How to Access:** Open "Scan Medicines" from the sidebar.

#### 4.3.2 Inventory

- View and inspect medicine inventory assigned for regulatory checks.
- **How to Access:** Click "Inventory" from the sidebar.

#### 4.3.3 Notifications

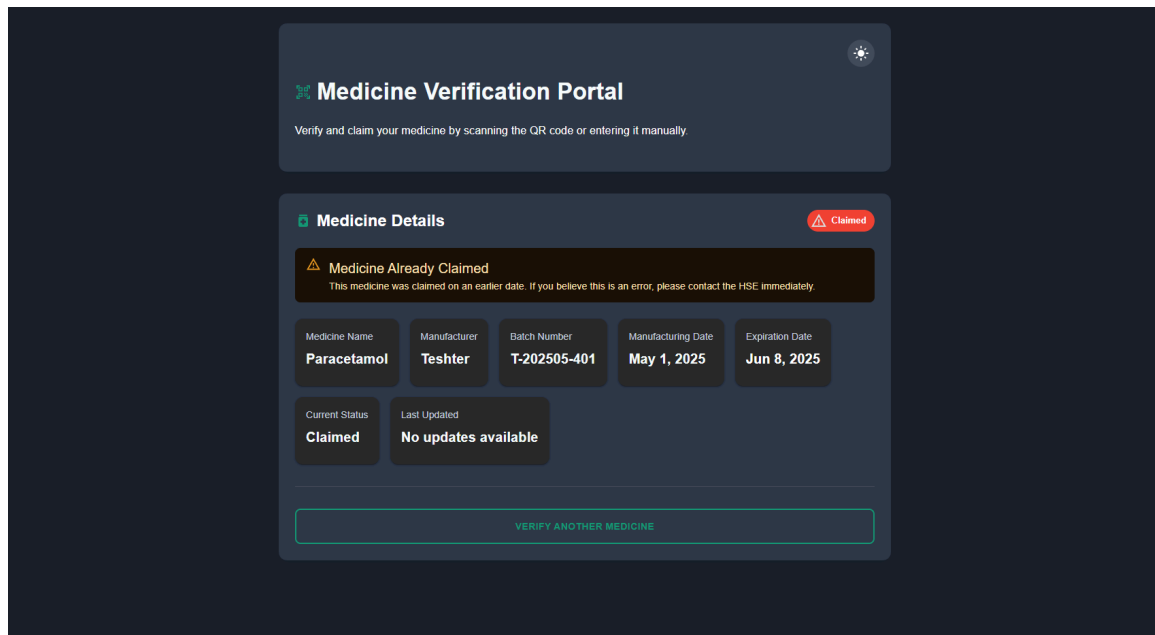
- Receive alerts about flagged medicines or compliance updates.
- **How to Access:** Access "Notifications" section.

#### 4.3.4 Communications

- **Send Message:** Communicate directly with manufacturers regarding compliance issues or flagged medicines.
- **How to Access:** Navigate to "Send Message" or "Contact Manufacturer" options in the dashboard.

All regulator functionalities are accessible through the left-hand sidebar after login into the Regulator Dashboard.

## 4.4 End User Access (Consumers)



- No account required.
- Navigate to "Verify Your Medicines" from the website header.
- Scan the QR code with your device to instantly check authenticity and claim the medicine.

## 5. Security Features

- Role-Based Access Control (RBAC)
- Immutable Blockchain Ledger
- End-to-End Data Encryption
- Authorised personals allowed to with user specific roles.
- Every transaction is recorded and stored for accountability.

## 6. Troubleshooting

Issue	Solution
Cannot Scan QR Code	Check camera permissions and lighting
Login Failure	Reset password or verify MFA
Missing Medicine Record	Contact manufacturer or rescan
Geolocation Not Captured	Enable GPS settings

## 7. Support and Contact Information

- **Technical Support Email:** [faizan.shah3@mail.dcu.ie](mailto:faizan.shah3@mail.dcu.ie) & [abhijit.mahal2@gmail.com](mailto:abhijit.mahal2@gmail.com)