

# **GANADIPATHY TULSI'S JAIN ENGINEERING COLLEGE**



## **CRYPTOGRAPHIC LEDGER PREDICATED PERSPECTIVE CAUSE LINIMENT DETECTABLE CURRENT FETTLE ATTENTION PRODUCT DISTRIBUTION**

### **Project Guide:**

Mrs.S.I.Santhanalakshmi.M.E.,  
HOD,  
Computer Science And Engineering ,  
GTEC.

### **Team Members:**

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# OBJECTIVE

- The aim is to monitor a trace of drug and smart contracts and decentralized off-chain storage by using block chain.

# ABSTRACT

- Healthcare supply chains are complex structures spanning across multiple organizational and geographical boundaries, providing critical backbone to services vital for everyday life.
- There in a case-to-quit product monitoring gadget across the pharmaceutical supply chain is paramount to making sure product protection and removing counterfeits drugs.
- end to end track and trace system and design and test a smart contract for pharmaceutical supply chains by IPFS

# INTRODUCTION:



- Healthcare supply chain is a complex network structure which has a several entities that contains raw material suppliers, manufacturer, distributor, pharmacies, hospitals and patients.
- Tracking supplies through this network is non-trivial due to several factors has lack of information, centralized control and competing behavior among stakeholders.
- The challenge of mitigating of counterfeit drugs as these can easily spread on the healthcare supply chain.
- An API supplier is responsible for delivering the raw materials to manufacture drugs approved by a regulatory agency such US Food and Drug Administration (US FDA).

# LITERATURE SURVEY :

TITLE	AUTHOR	PROPOSED SYSTEM	LIMITATIONS
Drugledger: A Practical Blockchain System for Drug Traceability and Regulation (2018)	<u>Yan Huang, Jing Wu</u>	<ul style="list-style-type: none"> <li>we propose a scenario-oriented blockchain system for drug traceability and regulation called Drugledger, which reconstructs service architecture by separating service provider into three independent service components and ensures the authenticity and privacy of traceability data.</li> <li>Algorithm:Basic Drugledger transaction procedure for drug production, arrival, and departure along the drug supply chain-Storage pruning in Drugledger.</li> </ul>	It been far from satisfying for their bad performances in data authenticity, privacy, and it is less flexibility and data stored in the form of a ledger
Analysis of the Bitcoin UTXO Set (2019)	Sergi Delgado-Segura, Cristina Pérez-Solà	<ul style="list-style-type: none"> <li>we introduce a tool to study and analyze the UTXO set, along with a detailed description of the set format and functionality and also accurate analysis of o/p</li> <li>TECHNIQUES:PKE</li> </ul>	the analysis plots included in this section show cumulative distribution functions and implementation does not use a deterministic function - computation.

TITLE	AUTHOR	PROPOSED SYSTEM	LIMITATIONS
A Novel Medical Blockchain Model for Drug Supply Chain Integrity Management in a Smart Hospital (2019)	<u>Faisal Jamil ,Lei Hang</u>	<ul style="list-style-type: none"> <li>The proposed system solves this problem by conducting drug record transactions on a blockchain to create a smart healthcare ecosystem with a drug supply chain.</li> <li>TECHNIQUES: Hyperledger Fabric &amp; CLI tool</li> </ul>	A smart contract is launched to give time-limited access to electronic drug records and also patient electronic health records and also carried out a number of experiments.
Investigating performance constraints for blockchain based secure e-voting system (2020)	Kashif Mehboob Khan, Junaid Arshad	<ul style="list-style-type: none"> <li>The proposed conducted rigorous experimentation with permissioned and permissionless blockchain settings across different scenarios with respect to voting population, block size, block generation rate and transaction speed.</li> <li>TECHNIQUES:open source blockchain platform Multichain-stream of bits.</li> </ul>	the rate of incoming transactions to the unconfirmed pool of transactions does not match to rate of confirmation of transactions to the blocks by the miners, it can result in significant performance overhead as well as delays in transaction confirmation time.

TITLE	AUTHOR	PROPOSED SYSTEM	LIMITATIONS
Conceptual framework for general traceability solution: description and bases (2019)	<u>Abdesselam Bougdira</u> , <u>Abdelaziz Ahaitouf</u>	<ul style="list-style-type: none"> <li>The purpose of this paper is to describe a proposed framework for traceability purpose.</li> <li>TECHNIQUES:SKE</li> </ul>	The framework helps users to develop a general, interoperable and scalable traceability solution. Some studied cases could require more research angles

# EXISTING SYSTEM:



- Existing system uses Ethereum blockchain .It is one of the popular cryptocurrency.
- It has a features of ether, smart contracts, ethereum virtual machine, decentralized application and decentralized autonomous organization.
- This approaches can introduce delays and inaccurate information immutable data stored on the ledger.

# **DRAWBACKS:**



- Lack of data privacy
- Lack of transparency
- Authenticity issues.
- Inaccurate information.
- Data storage takes more space.

# **PROPOSED SYSTEM:**

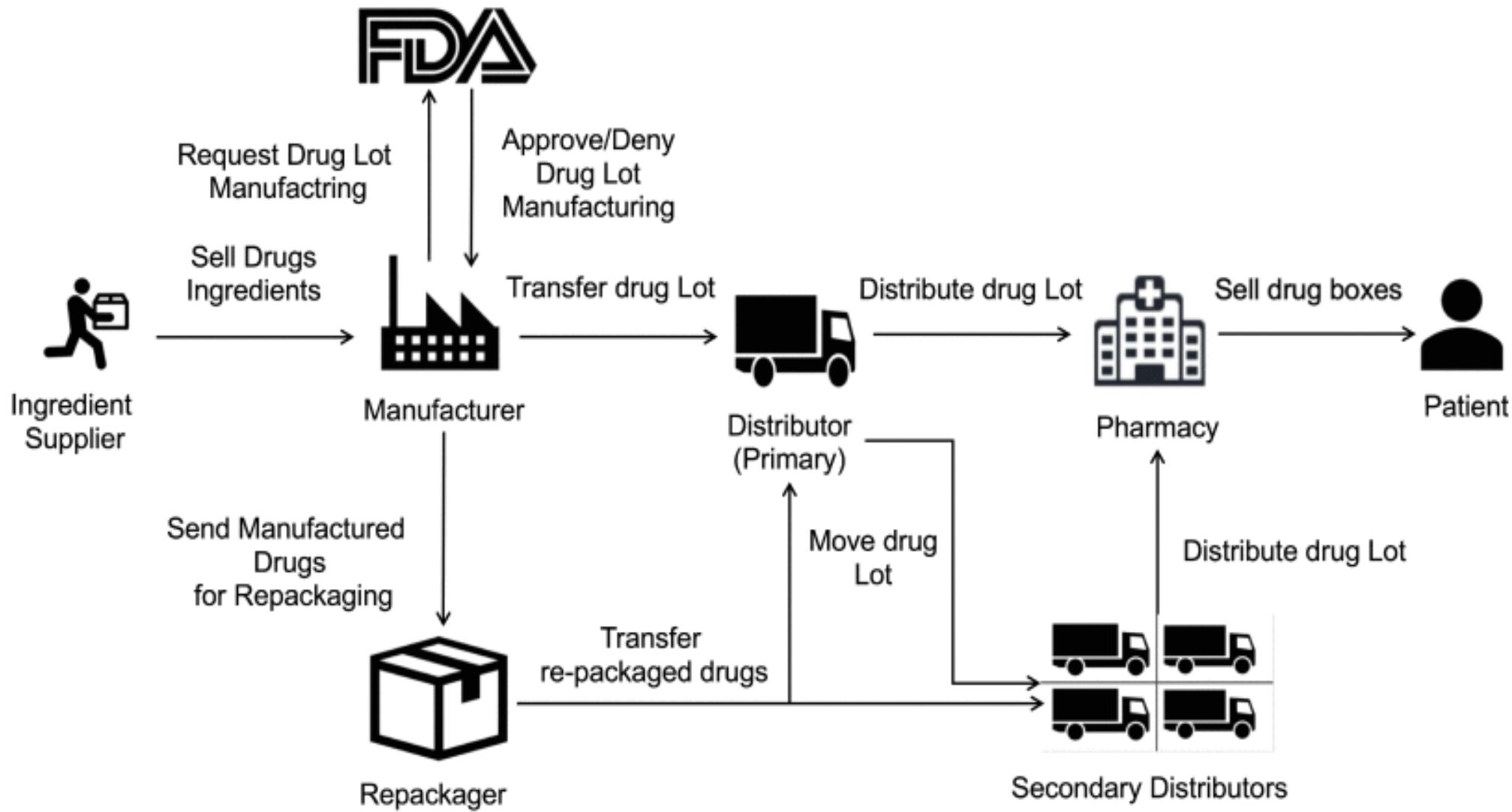
- Interplanetary file system is used in proposed system.
- We propose a block chain based soln for supply chain that provides a security, Traceability, immutability and accessibility of data provenance.
- Design ,test and implement a smart contract capable of handling various transaction among supply chains.

# ADVANTAGE:



- Track of drugs throughout the healthcare supply chains.
- Security analysis.
- Accurate information.
- Achieve a tamper proof logs of events
- Reach all the stack holders.

# ARCHITECTURE DIAGRAM:



# MODULES:

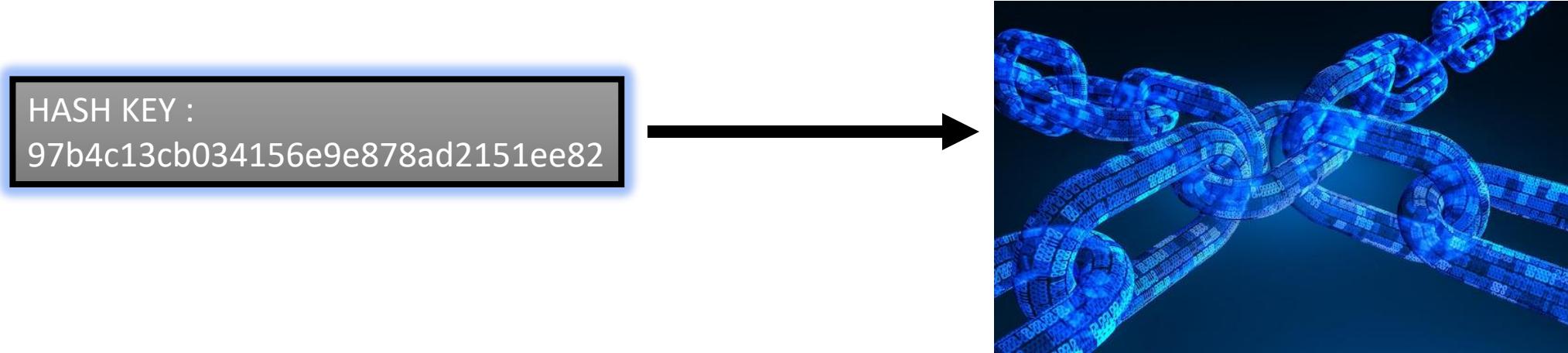


- ❖ **MODULE 1:**Decentralized Storage System
- ❖ **MODULE 2:** Ethereum Smart Contract
- ❖ **MODULE 3:** On-chain Resources
- ❖ **MODULE 4:** Stakeholders
- ❖ **MODULE 5:**Manufacturing
- ❖ **MODULE 6:**Distribution
- ❖ **MODULE 7:**sales/consumption

# DECENTRALIZED STORAGE SYSTEM:

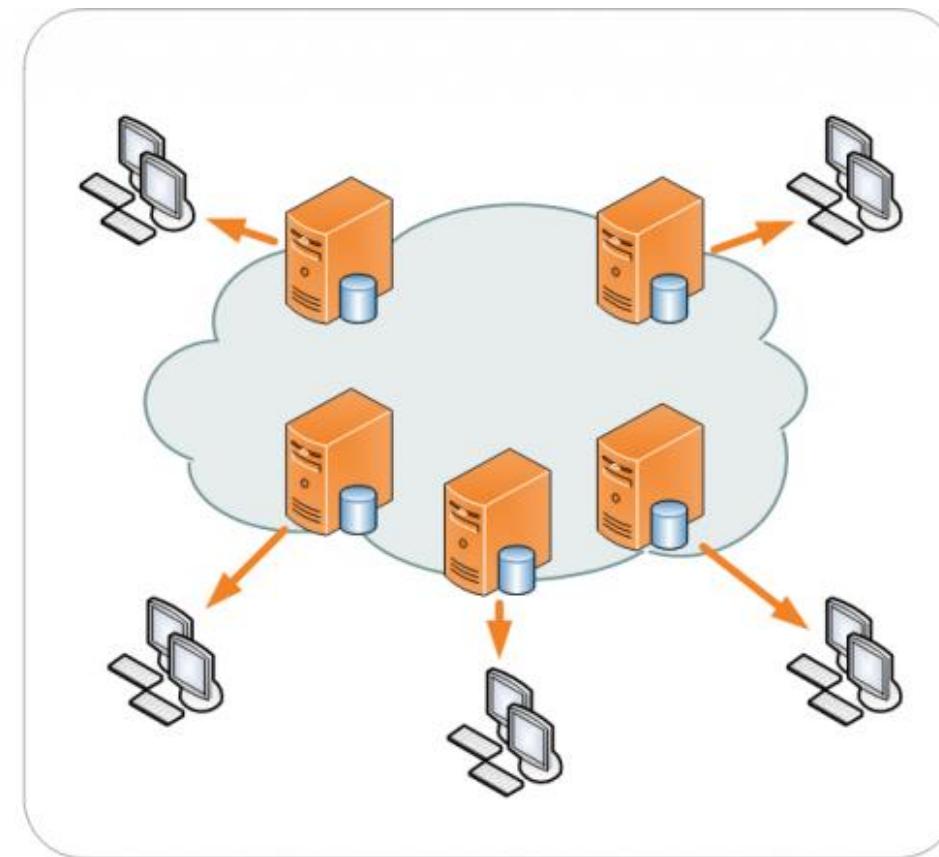
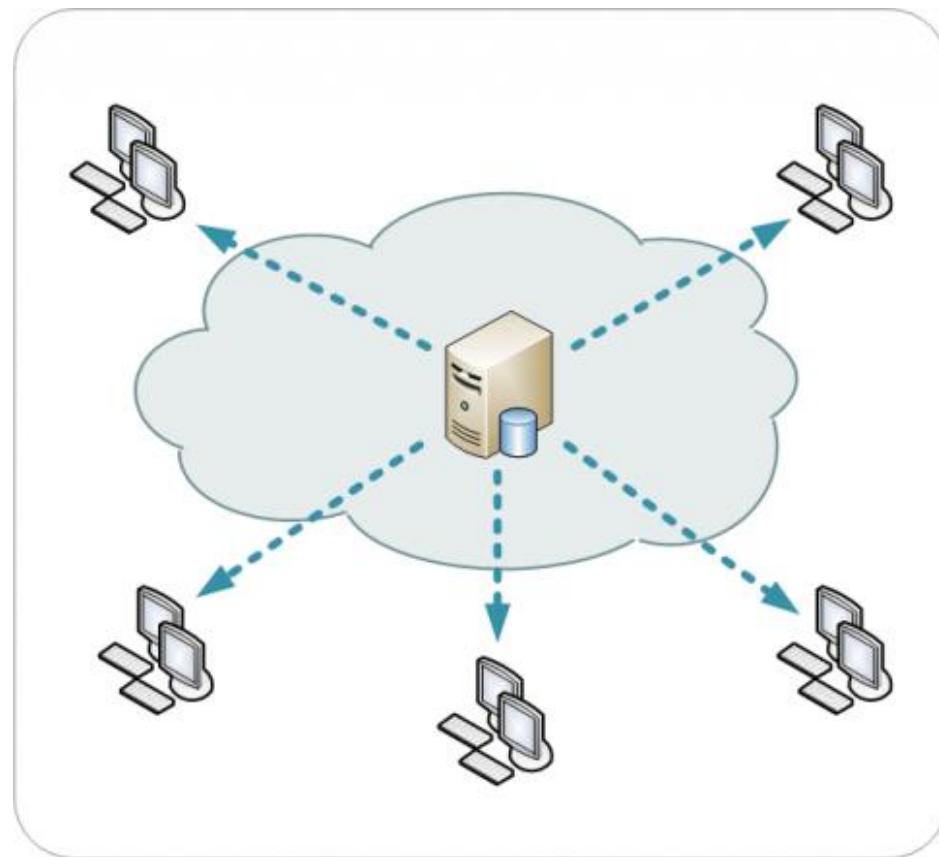


- ❖ Provides a low-cost off-chain storage to store supply chain transactions data to ensure reliability, accessibility, and integrity of the stored data.
- ❖ The integrity of data is maintained by generating a unique hash for every uploaded file on its server, and the different hashes for the different uploaded files are then stored on the block chain



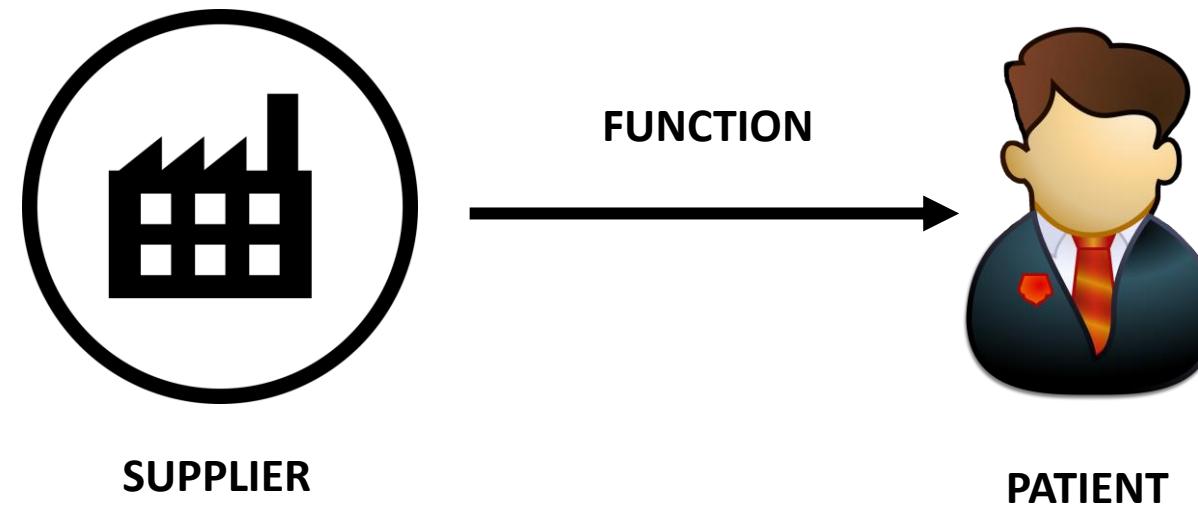
**BLOCKCHAIN**

## CENTRALIZED AND DECENTRALIZED DIAGRAM:



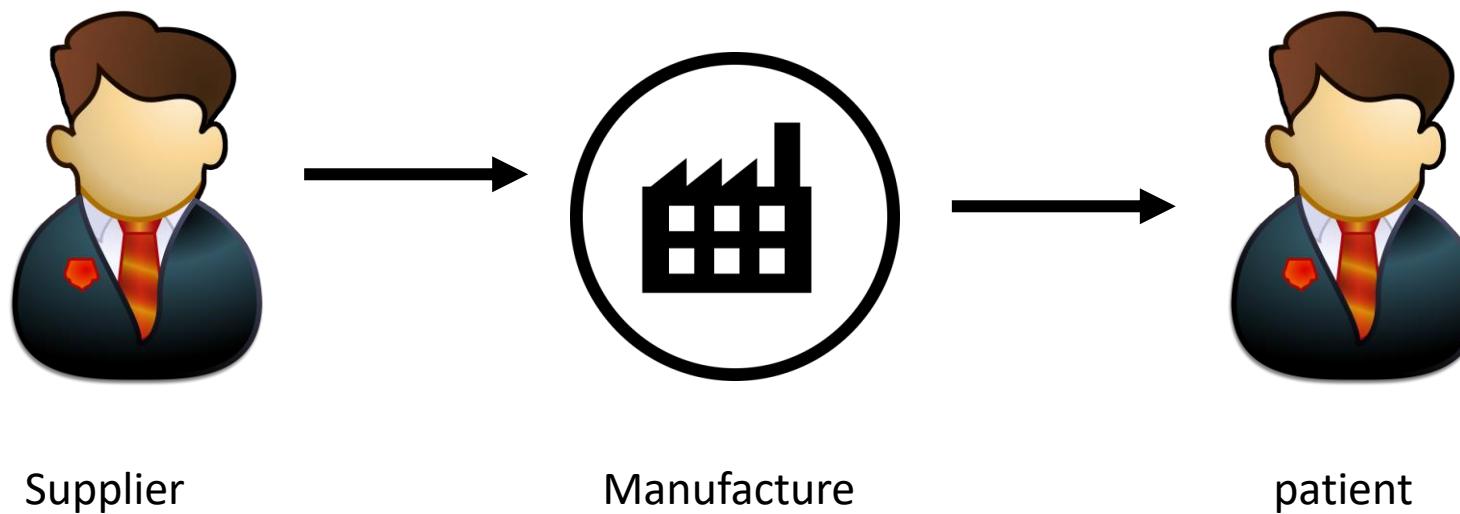
# ETHEREUM SMART CONTRACT:

- ❖ Ethereum Smart Contract is used to handle the deployment of the supply chain.
- ❖ the functions of the different stakeholders in the supply chain are defined within the smart contract and access to these functions is given to the authorized participants by using modifiers.



# STACKHOLDER:

- ❖ Drug traceability is the process of identifying the originality and legitimacy of drugs by enabling the stakeholders (sellers, manufacturers, wholesalers, pharmacies, and patients) in the drug supply chain to track and trace the flow of transactions executed amongst them.



## ON-CHAIN RESOURCES:

- ❖ On-chain Resources are used to store the logs and events that are created by the smart contract allowing track and trace.
- ❖ Moreover, a registration and identity system is used as an on-chain resource to associate the Ethereum address.

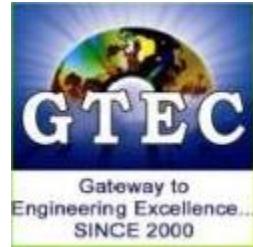


**REGISTRATION**

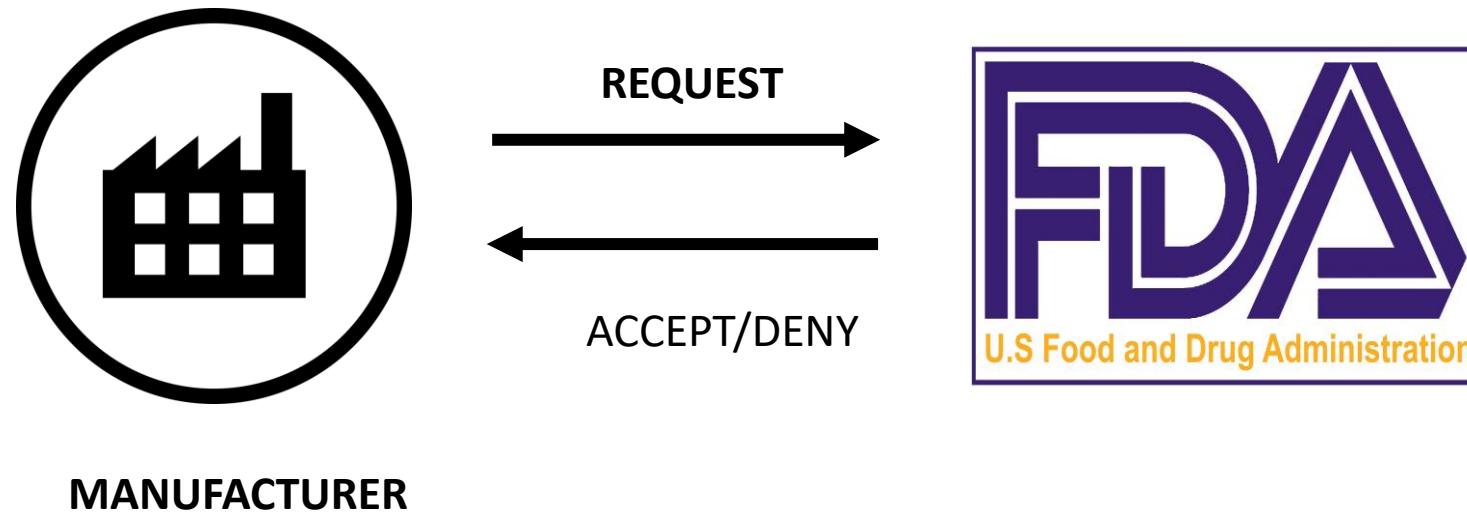


**SUPPLIER**

# MANUFACTURER:

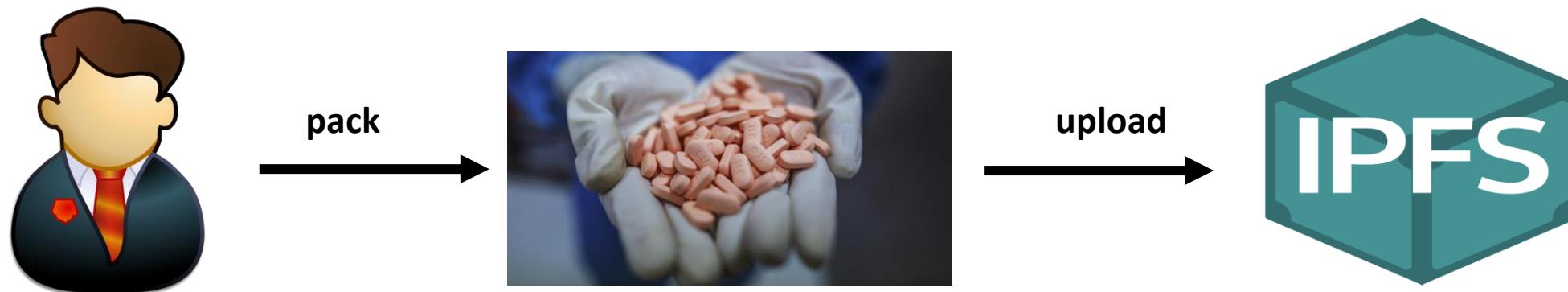


- ❖ a manufacturer will send a request for approval from the FDA to initiate the manufacturing process of a drug Lot.
- ❖ The manufacturer will upload images of the drug Lot to the IPFS, and the IPFS will send a hash to the smart contract so that the images can be accessed later by authorized participants.



# DISTRIBUTION:

- The next step is the initiation of the distribution process, the distributor will pack the drug Lot, and an image of the package will be uploaded to the IPFS which will send a hash to the smart contract.
- Once this step is completed, the drug Lot packages will be delivered to pharmacies, and this ends the distribution phase.

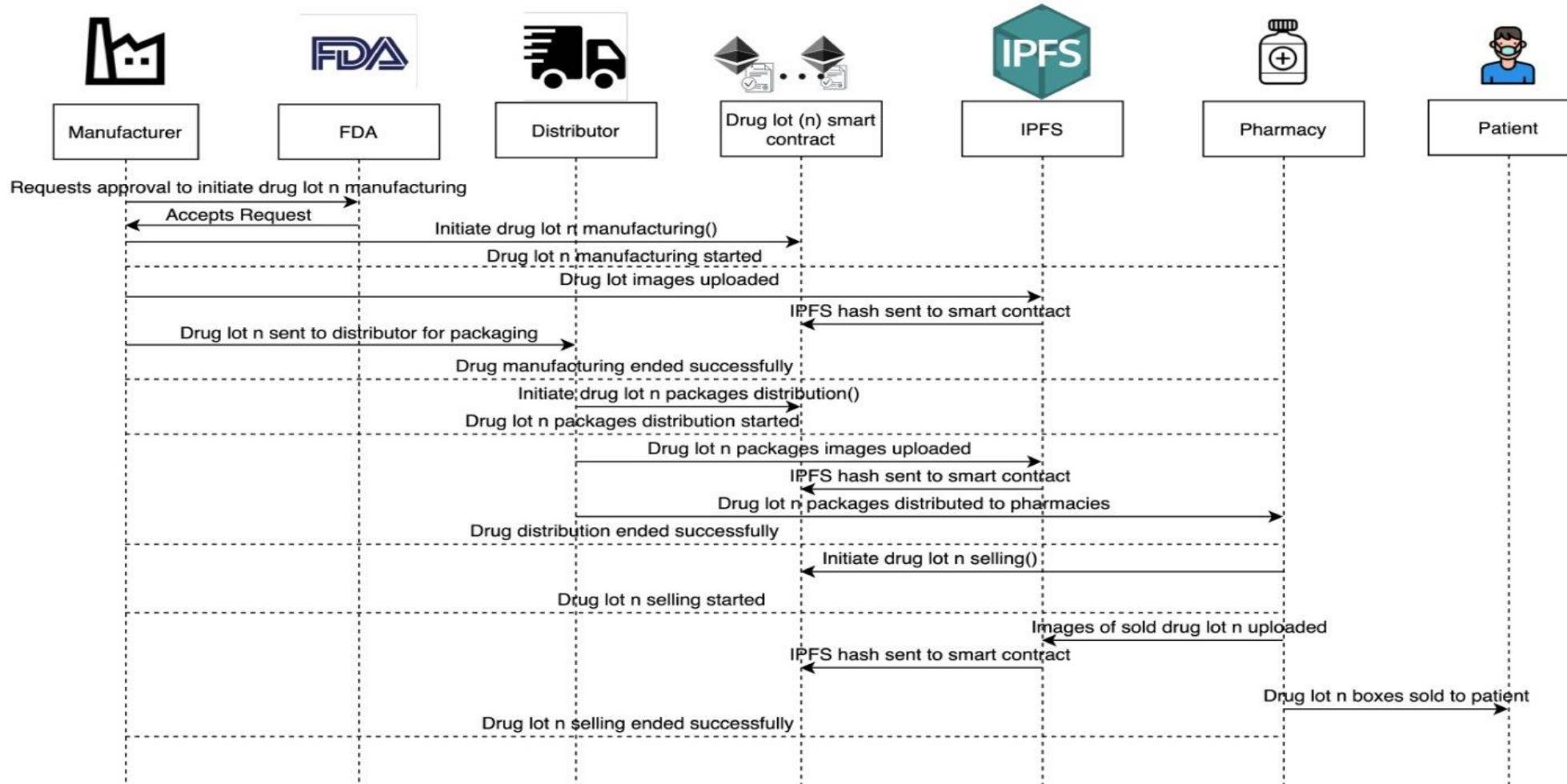


# SALES/CONSUMPTION:

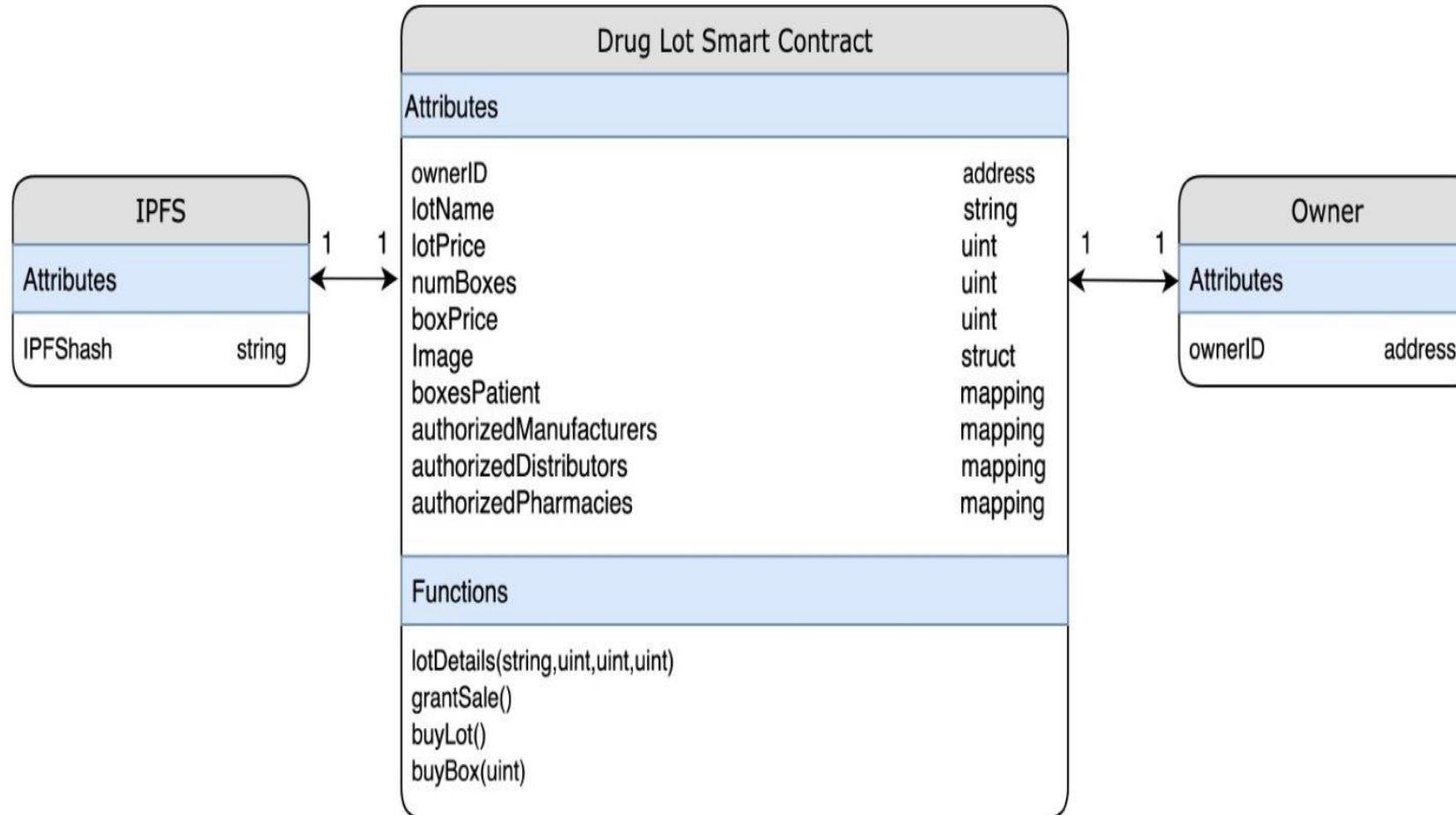
- The drug Lot box will be sold to the patient, and this concludes the drug Lot selling phase.
- This process will ensure that all the transactions are stored and can be accessed later by all the supply chain participants to check the authenticity and validity of the products in the supply chain in the form of a sequence of events.



# SEQUENCE DIAGRAM:



# ENTITY RELATIONSHIP DIAGRAM:



# **BLOCKCHAIN:**



- It's record of transactions made in bitcoin or another cryptocurrency is maintained across several computers that are linked in a peer-to-peer network.
- Blockchain technology will play a key role in supporting supply chain transformation in the healthcare sector by helping to reduce fraud and better manage quality in the manufacturing and distribution of pharmaceutical products.

# IPFS:

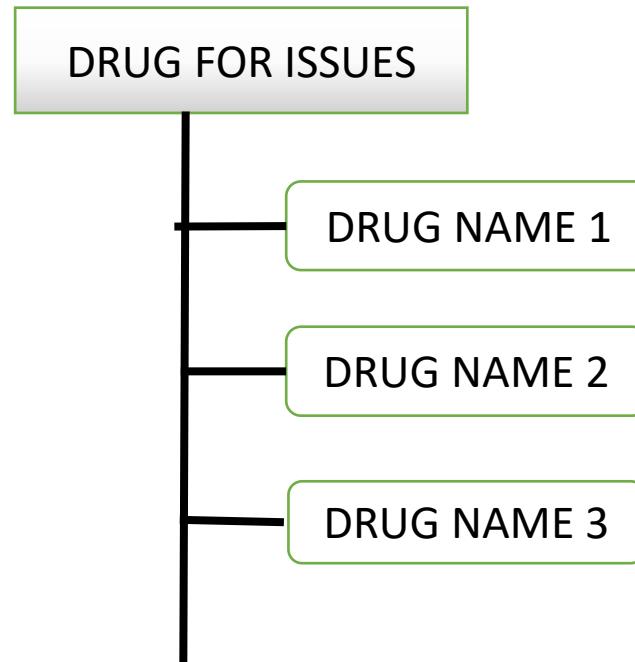
- peer to peer communication
- It makes use of Computer Science concepts like Distributed Hash Table, BitSwap ,MerkleDag .
- if one node is down, other nodes in the network can serve needed files
- eliminates content duplication by ensuring that files with the same content are stored only once



# HASH TABLE:

ID	USER NAME	USER IMAGE	EMAIL	MOBILE	LOCATION	STATUS
01	AAAAA		1111	XXXXXXX	SSSSS	A/U
02	BBBBB		2222	XXXXXXX	SSSSS	A/U
03	CCCCC		3333	XXXXXXX	SSSSS	A/U

# CHAIN TREE:



# SYSTEM CONFIGURATION:



## HARDWARE REQUIREMENTS:

- PROCESSOR : INTEL DUAL CORE,I3
- RAM : 1 GB
- HARD DISK : 80 GB

## SOFTWARE REQUIREMENTS:

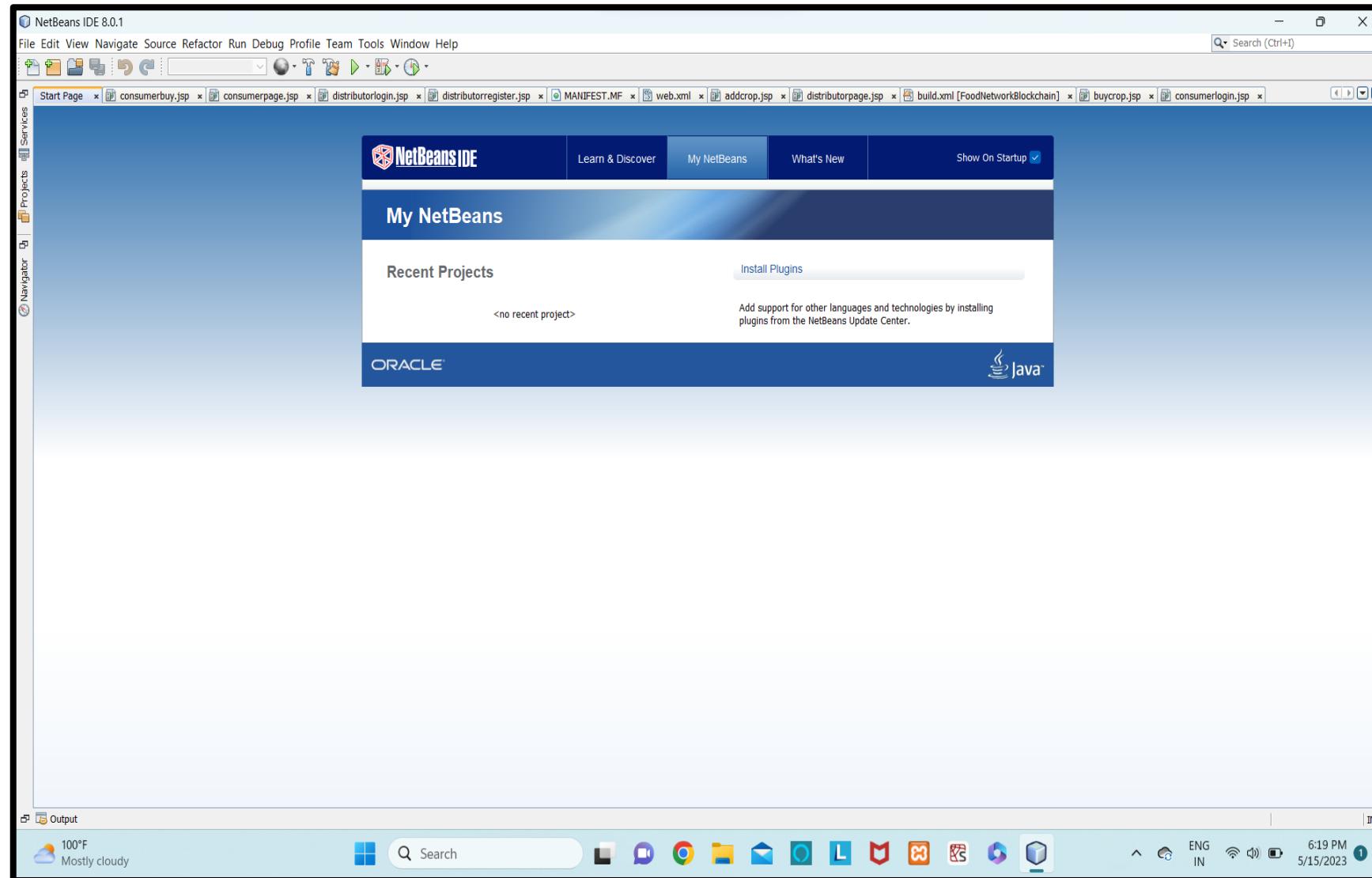
- FRONT END : HTML,CSS,JAVASCRIPT
- SERVER SIDE SCRIPT : JAVA SCRIPT
- OPERATING SYSTEM : WINDOWS
- DATABASE : MYSQL
- TOOL : NETBEAN

# SAMPLE CODE:

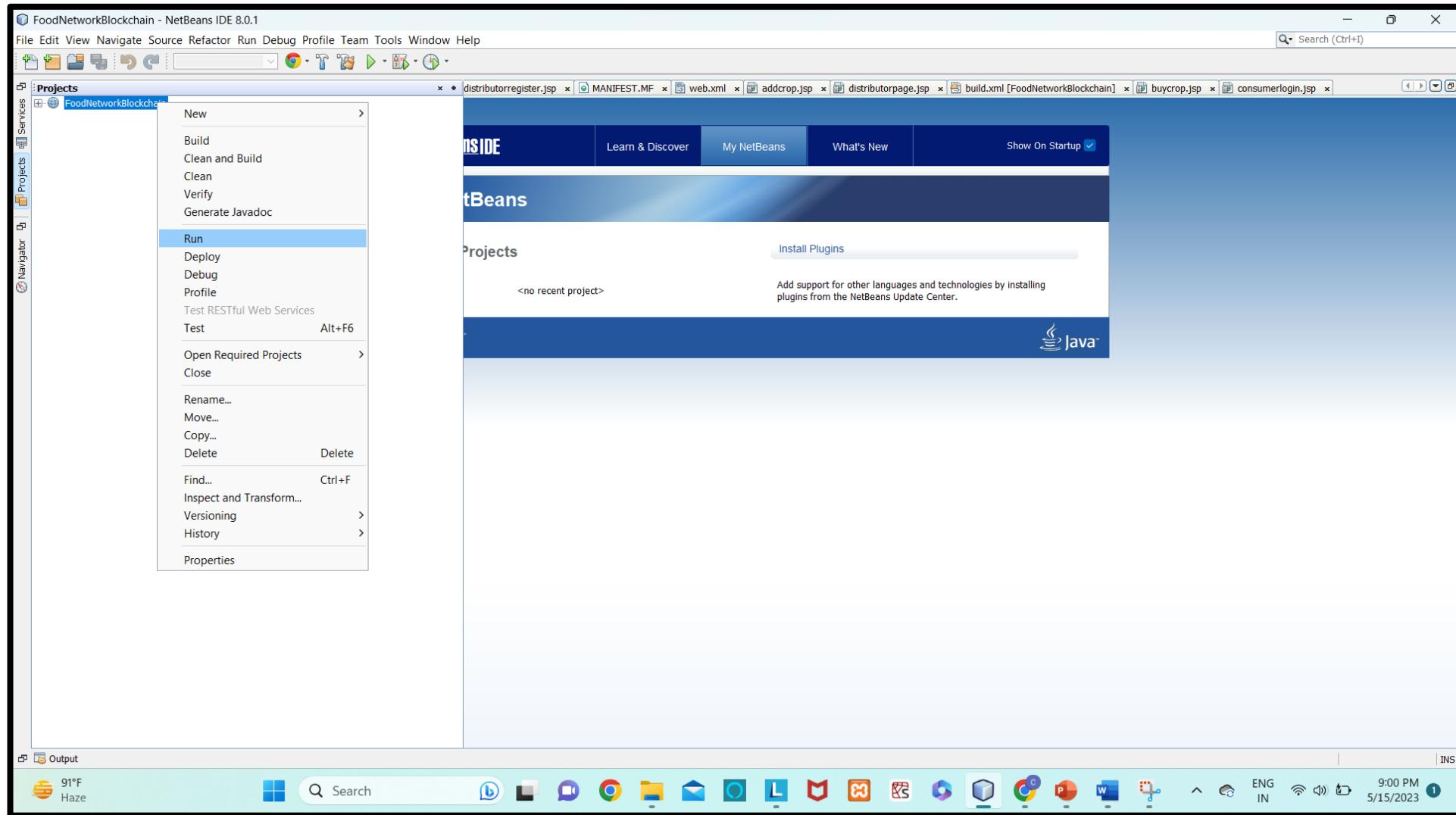
```
Source History |              
```

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>BLOCKCHAIN BASED DRUG TRACEABILITY</title>
<meta http-equiv="Content-type" content="text/html; charset=utf-8" />
<link rel="stylesheet" href="css/style.css" type="text/css" media="all" />
<script type="text/javascript" src="js/jquery-1.4.2.min.js"></script>
<script type="text/javascript" src="js/jquery-fns.js"></script>
<link rel="shortcut icon" type="image/x-icon" href="css/images/favicon.ico" />
<!--[if IE 6]><link rel="stylesheet" href="css/ie.css" type="text/css" media="all" /><![endif]-->
<style type="text/css">
<!--
.style1 {color: #1F73A5}
.style5 {font-size: 16px}
.style6 {font-size: 16px}
.style8 {font-weight: bold}
.style10 {color: #196EA0}
.style12 {color: #1F73A5; font-size: 16px; font-weight: bold; }
.style13 {color: #585F63; }
.style14 {
    font-size: large;
    color: #003300;
}
.style15 {color: #126698}
.style21 {font-size: medium; font-weight: bold; }
.style22 {color: #1B6FA1}
.style20 {color: #FFFFFF; }
-->
</style>
</head>
<body>
<!-- START PAGE SOURCE -->
<div id="shell">
<div id="header">
<h1 id="logo"><a href="#">BLOCKCHAIN BASED DRUG TRACEABILITY</a></h1>
<div id="social">
<ul>
</ul>
</div>
</div>
<div id="navigation">
<ul>
```

# TOOLS-OUTPUT:



# RUNNING OF PROJECT:



# HOME PAGE:

BLOCKCHAIN BASED DRUG TRAC

localhost:8080/DRUG%20TRACE/

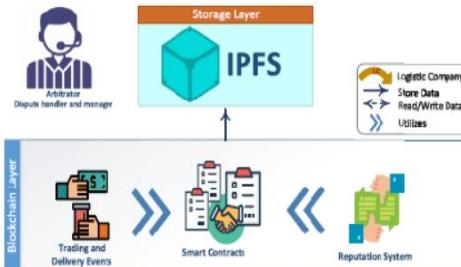
## BLOCKCHAIN BASED DRUG TRACEABILITY IN HEALTHCARE SUPPLYCHAIN

HOME | SUPPLIER | PROCESSOR | DISTRIBUTOR | PHARMACY | PATIENT



### Drug Traceability

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.



**Supplier**

**Processor**

**Distributor**

**Pharmacy**

**Patient**

100°F Mostly cloudy

Search

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# **SUPPLIER**

# REGISTERED & LOGIN:

BLOCKCHAIN BASED DRUG TRACER

localhost:8080/DRUG%20TRACE/farmerregister.jsp



dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**Supplier Registration**

Supplier	
Processor	
Distributor	
Pharmacy	
Patient	

Full Name:

User Name:

Password:

Place:

Mobile:

Sourcing Area :

91°F Air: Poor

Search, Home, Mail, File, Internet Explorer, Google, etc.

9:05 PM 5/15/2023

BLOCKCHAIN BASED DRUG TRACER

localhost:8080/DRUG%20TRACE/farmerlogin.jsp



HOME    SUPPLIER    PROCESSOR    DISTRIBUTOR    PHARMACY    PATIENT

**DRUG NETWORK**

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**Supplier Login**

Supplier	
Processor	
Distributor	
Pharmacy	
Patient	

User Name:

Password:

**Supplier Registration**

91°F Haze

Search, Home, Mail, File, Internet Explorer, Google, etc.

9:06 PM 5/15/2023

# Homepage:

BLOCKCHAIN BASED DRUG TRAC x +

localhost:8080/DRUG%20TRACE/FarmerLogin

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

Supplier Page

Add Drug

View status

Logout

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Search

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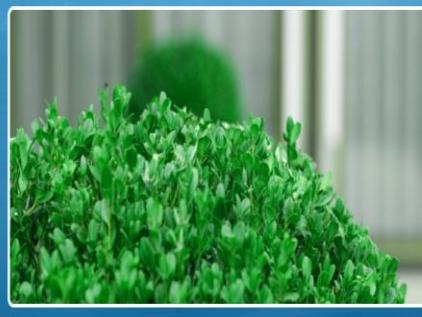


# DRUG & STATUS:

BLOCKCHAIN BASED DRUG TRA...

localhost:8080/DRUG%20TRACE/addcrop.jsp

**DRUG NETWORK**



innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**Add Drug**

Add Drug

Drug Name :

View status

Logout

Quantity :

Price :

Submit

91°F Haze

Search

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BLOCKCHAIN BASED DRUG TRA...

localhost:8080/DRUG%20TRACE/AddCrop

Add Drug ViewStatus Logout

**DRUG NETWORK**



innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**VIEW STATUS**

Add Drug

View status

Logout

Drug name	Quantity	Price	Processor	Hash Key
vitaminD	45	150	nil	nil
vitaminD	45	120	nil	nil

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Search

ENG IN 9:09 PM 5/15/2023



# PROCESSOR

# REGISTERED & LOGIN:

BLOCKCHAIN BASED DRUG TRACER

localhost:8080/DRUG%20TRACE/processregister.jsp

dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**Processor Registration**

Supplier      Processor      Distributor      Pharmacy      Patient

Full Name:

User Name:

Password:

Company Name :

Place:

Mobile :

91°F Haze

Search

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BLOCKCHAIN BASED DRUG TRACER

localhost:8080/DRUG%20TRACE/processlogin.jsp

HOME      SUPPLIER      PROCESSOR      DISTRIBUTOR      PHARMACY      PATIENT

**DRUG NETWORK**

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**Processor Login**

Supplier      Processor      Distributor      Pharmacy      Patient

User Name:

Password:

[Processor Registration](#)

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Search

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# Homepage:

BLOCKCHAIN BASED DRUG TRAC x +

localhost:8080/DRUG%20TRACE/ProcessorLogin

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

Processor Page

Buy Drug

View status

Logout

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# DRUG & STATUS:



BLOCKCHAIN BASED DRUG TRAC

localhost:8080/DRUG%20TRACE/ProcessorProcess

### BLOCKCHAIN BASED DRUG TRACEABILITY

Buy Drug   ViewStatus   Logout



#### DRUG NETWORK

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

#### VIEW STATUS

Product name	Quantity	Price	Distributor	Hash Key
vitaminD	45	150	nil	nil

Product name	Quantity	Price	Distributor	Hash Key
vitaminD	45	120	nil	nil

Buy Product   View status   Logout

91°F Haze

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# SUPPLIER STATUS:



BLOCKCHAIN BASED DRUG TRAC x +

localhost:8080/DRUG%20TRACE/viewstatus.jsp

Add Drug ViewStatus Logout

A photograph of a green leafy plant, possibly a medicinal herb like ginseng or kava, is displayed within a blue-bordered box. The box also contains the heading "DRUG NETWORK" and a descriptive paragraph about innovation management and social constructionism in drug traceability.

**DRUG NETWORK**

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**VIEW STATUS**

Drug name	Quantity	Price	Processor	Hash Key
vitaminD	45	150	senil1	323535b557f352f9e477c1d39bef429e

Add Drug

View status

Logout

Drug name	Quantity	Price	Processor	Hash Key
vitaminD	45	120	senil1	d4c5aa9acdfbc3681ed3d387fc454845

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# **DISTRIBUTOR**

# REGISTERED & LOGIN:



BLOCKCHAIN BASED DRUG TRA...

localhost:8080/DRUG%20TRACE/distributorregister.jsp

dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

Distributor Registration

Supplier

Processor

Distributor

Pharmacy

Patient

Full Name:

User Name:

Password:

Company Name :

Place:

Mobile :

Submit

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Search

ENG IN

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BLOCKCHAIN BASED DRUG TRA...

localhost:8080/DRUG%20TRACE/distributorlogin.jsp

HOME | SUPPLIER | PROCESSOR | DISTRIBUTOR | PHARMACY | PATIENT

DRUG NETWORK

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

Distributor Login

Supplier

Processor

Distributor

Pharmacy

Patient

User Name:

Password:

Login

Distributor Registration

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# Homepage:

BLOCKCHAIN BASED DRUG TRAC x +

localhost:8080/DRUG%20TRACE/DistributorLogin

Drug NETWORK

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

Distributor Page

DISTRIBUTOR

Buy Product

View status

Logout

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# DRUG & STATUS:

FOOD NETWORK BLOCKCHAIN

localhost:8080/DRUG%20TRACE/distributorbuy.jsp

BuyCrop ViewStatus Logout

**FOOD NETWORK**



innovation management and social constructionism to investigate interrelationships of food service provisions and innovations in waste management. It is based on the evaluation of food waste solutions and innovations that combine strategic dimensions of waste management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**BUY PRODUCT**

Options	Processor	Product	Quantity	Price	BUY
<input type="radio"/>	saranya1	Metacine	80	17.25	<a href="#">BUY</a>
<input type="radio"/>	anuratha1	sugar	30	460.0	<a href="#">BUY</a>
<input type="radio"/>	keerthraj1	smile	23	345.0	<a href="#">BUY</a>
<input type="radio"/>	surya2	sup	20	166.75	<a href="#">BUY</a>
<input type="radio"/>	bharathi1	moon	30	141.45	<a href="#">BUY</a>
<input type="radio"/>	senil1	vitaminD	45	172.5	<a href="#">BUY</a>
<input checked="" type="radio"/>	senil1	vitaminD	45	138.0	<a href="#">BUY</a>

View status Logout

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BLOCKCHAIN BASED DRUG TRACABILITY

localhost:8080/DRUG%20TRACE/DistributorProcess

BuyDrug ViewStatus Logout

**DRUG NETWORK**



innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**VIEW STATUS**

Product name	Quantity	Price	Pharmacy	Hash Key	Logout
vitaminD	45	138.0	nil	nil	<a href="#">Logout</a>

Buy Product

View status

91°F Haze Search ENG IN 9:18 PM 5/15/2023

# PROCESSOR STATUS:



BLOCKCHAIN BASED DRUG TRACEABILITY

Buy Drug   ViewStatus   Logout



**DRUG NETWORK**

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**VIEW STATUS**

Product name	Quantity	Price	Distributor	Hash Key
vitaminD	45	150	nil	nil

Product name	Quantity	Price	Distributor	Hash Key
vitaminD	45	120	senil2	43b21c76374a03e2b647ed09182d5a52

Buy Product   View status   Logout

91°F Haze   Search  

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# PHARMACY

# REGISTERED & LOGIN:

BLOCKCHAIN BASED DRUG TRA...

localhost:8080/DRUG%20TRACE/retailerregister.jsp

dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**Pharmacy Registration**

Supplier      Processor      Distributor      Pharmacy      Patient

Full Name:

User Name:

Password:

Shop Name :

Place:

Mobile :

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BLOCKCHAIN BASED DRUG TRA...

localhost:8080/DRUG%20TRACE/retailerlogin.jsp

HOME    SUPPLIER    PROCESSOR    DISTRIBUTOR    PHARMACY    PATIENT

**DRUG NETWORK**

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**Pharmacy Login**

Supplier      Processor      Distributor      Pharmacy      Patient

User Name:

Password:

**Pharmacy Registration**

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# Homepage:

BLOCKCHAIN BASED DRUG TRAC x +

localhost:8080/DRUG%20TRACE/RetailerLogin

BuyDrug ViewStatus Logout



**DRUG NETWORK**

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

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Pharmacy Page



Buy Product

View status

Logout

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Search

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# DRUG & STATUS:

BLOCKCHAIN BASED DRUG TRAC x +

localhost:8080/DRUG%20TRACE/retailerbuy.jsp

### BLOCKCHAIN BASED DRUG TRACEABILITY

BuyDrug ViewStatus Logout



#### DRUG NETWORK

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

### BUY PRODUCT

Options	Distributor	Product	Quantity	Price	
<input type="radio"/>	keerthiraj2	smile	30	156.0	<b>BUY</b>
<input checked="" type="radio"/>	senil2	vitaminD	45	156.0	<b>BUY</b>

Buy Product  
View status  
Logout

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# DISTRIBUTOR STATUS:



BLOCKCHAIN BASED DRUG TRAC

localhost:8080/DRUG%20TRACE/distributorstatus.jsp

## BLOCKCHAIN BASED DRUG TRACEABILITY

BuyDrug ViewStatus Logout



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**VIEW STATUS**

Product name   Quantity   Price   Pharmacy   Hash Key

vitaminD   45   138.0   senil3   63615e65af3a6ad421d8c84cc5ae7af3

Buy Product   View status   Logout

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# PATIENT

# REGISTERED & LOGIN:



BLOCKCHAIN BASED DRUG TRA...

localhost:8080/DRUG%20TRACE/consumerregister.jsp

dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**Consumer Registration**

Supplier      Processor      Distributor      Pharmacy      Patient

Full Name:

User Name:

Password:

Profession :

Place:

Mobile :

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BLOCKCHAIN BASED DRUG TRA...

localhost:8080/DRUG%20TRACE/consumerlogin.jsp

HOME    SUPPLIER    PROCESSOR    DISTRIBUTOR    PHARMACY    PATIENT

**DRUG NETWORK**

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**Consumer Login**

Supplier      Processor      Distributor      Pharmacy      Patient

User Name:

Password:

**Patient Registration**

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# Homepage:

BLOCKCHAIN BASED DRUG TRAC X

localhost:8080/DRUG%20TRACE/ConsumerLogin

to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

Patient Page

Buy Product

View status

Logout

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Search

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## **DRUG & STATUS:**



BLOCKCHAIN BASED DRUG TRA...

localhost:8080/DRUG%20TRACE/consumerbuy.jsp

## BLOCKCHAIN BASED DRUG TRACEABILITY

BuyProduct ViewStatus Logout



**DRUG NETWORK**

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

### BUY PRODUCT

Options	Pharmacy	Product	Price	
<input type="radio"/>	senitha3	Aminosyn	210.0	<b>BUY</b>
<input type="radio"/>	tanuja3	amino	196.0	<b>BUY</b>
<input checked="" type="radio"/>	seni3	vitaminD	168.0	<b>BUY</b>

Buy Product

View status

Logout

91°F Air Poor

Search

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BLOCKCHAIN BASED DRUG TRA

localhost:8080/DRUG%20TRACE/retailerstatus.jsp

## BLOCKCHAIN BASED DRUG TRACEABILITY

Buy Drug   ViewStatus   Logout



**DRUG NETWORK**

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

**VIEW STATUS**

Product name	Quantity	Price	Patient	Hash Key
vitaminD	45	156.0	senil4	81ba1cbe5c8416d0d6270c54662c6441

Buy Product   View status   Logout

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Search

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# PHARMACY STATUS:



BLOCKCHAIN BASED DRUG TRAC

localhost:8080/DRUG%20TRACE/retailerstatus.jsp

### BLOCKCHAIN BASED DRUG TRACEABILITY

Buy Drug   ViewStatus   Logout

#### DRUG NETWORK

innovation management and social constructionism to investigate interrelationships of Drug Services provisions and innovations in Medicine management. It is based on the evaluation of Drug Traceability solutions and innovations that combine strategic dimensions of drug management with practice-driven initiatives, including incremental (processes and technologies) and radical innovations.

VIEW STATUS

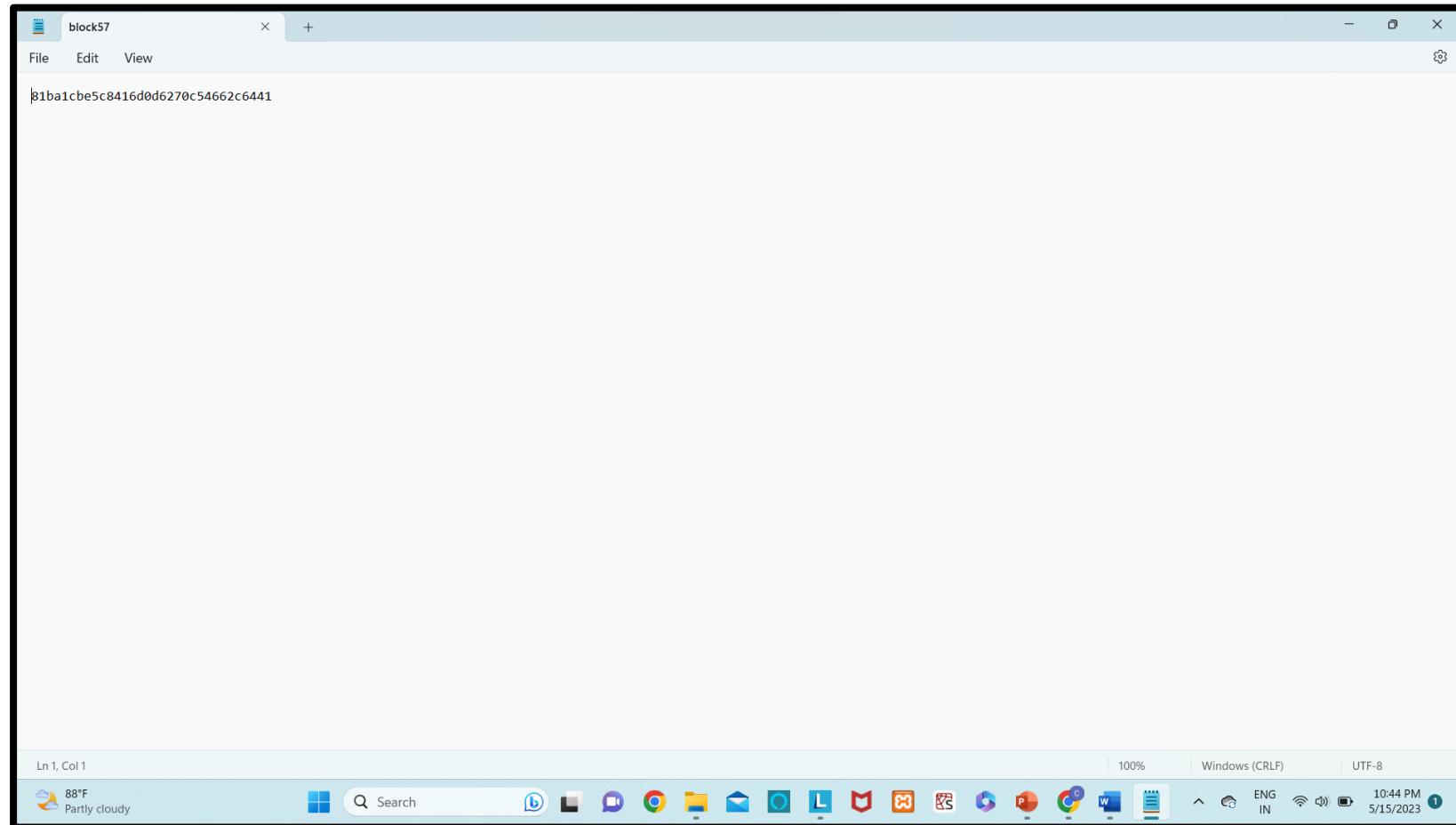
Product name   Quantity   Price   Patient   Hash Key

vitaminD   45   156.0   senil4   81ba1cbe5c8416d0d6270c54662c6441

Buy Product   View status   Logout

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# BLOCKCHAIN-KEY:



# CONCLUSION:



- ❖ We have investigated the challenge of drug traceability within pharmaceutical supply chains highlighting its significance especially to protect against counterfeit drugs.
- ❖ We have developed and evaluated a blockchain-based solution for the pharmaceutical supply chain to track and trace drugs in a decentralized manner.
- ❖ Specifically, our proposed solution leverages cryptographic fundamentals underlying blockchain technology to achieve tamper-proof logs of events within the supply chain and utilizes smart contracts within Ethereum blockchain to achieve automated recording of events that are accessible to all participating stakeholders.
- ❖ We have demonstrated that our proposed solution is cost efficient in terms of the amount of gas spent in executing the different functions that are triggered within the smart contract.

## **FUTURE SCOPE:**



- ❖ We continue our efforts to enhance the efficiency of pharmaceutical supply chains and envision to focus on extending the proposed system to achieve end to end transparency and verifiability of drugs use as future work.

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# THANK YOU