BLOCKCHAIN SMART CONTRACT PROGRAMMING FOR TRACKING LIQUID FUEL DISTRIBUTION

GROUP MEMBERS:

1.ANISH KATKAMWAR
2.SHUBHANKAR GAIKWAD
3.ATHARVA AGADE
4.HARSHINIY U

UNDER GUIDELINES:
PROF.SOFOKLIS EFREMIDIS

AGENDA

- INTRODUCTION
- LITERATURE SURVEY
- ADVANTAGES OF BLOCKCHAIN/LEDGER
- PROBLEM STATEMENT
- PRESENT WORK
- ABSTRACT
- CONCLUSION

INTRODUCTION

What is blockchain?
is a shared database system through digital records can be stored, viewed and updated by multiple users through a decentralized network on the internet.

Hyperledger?

"Public blockchains which require each peer to execute each and every transaction and run 'consensus' at the same time" are....

Not Scalable

Do not support Private and Confidential transactions

Restriction of public blockchains – What is Hyperledger

LITERATURE SURVEY

- Blockchain is sometimes likened to the internet in terms of its potential impact on the world. The cryptocurrency bitcoin, launched publicly in 2009, is the most well-known use of blockchain, but this is just one of many potential applications.

- The potential uses for blockchain are growing, some of which could have significant implications for the oil industry. The proposed project overcomes its advantages over traditional systems, some of its potential applications, and how these can be applied to the oil and gas market, with a particular focus on taxation and compliance

- COST AND TIME SAVINGS

- INCREASED TRANSPARENCY FOR INDIVIDUALS,COMPANIES AND AUTHORITIES

- MITIGATED RISK OF FRAUD AND DISPUTES

- CROSS-BORDER PAYMENTS

- RECORD MANANGEMENT

- SUPPLY CHAIN MANAGEMENT

- SMART CONTRACTS

ADVANTAGES OF BLOCK CHAIN

Advantages of Blockchain

- Transparency
- Reduced Transaction
- Faster Transaction Settlements
- Decentralization

- PARTICIPANT IDENTIFICATION

- PERMISSIONED NETWORK

- LOW LATENCY OF TRANSACTION CONFIRMATION

- PRIVACY AND CONFIDENTIALITY

- MODULAR DESIGN – CHAINCODE FUNCTIONALITY

- EXECUTE-ORDER-VALIDATE MODEL

- PLUGGABLE CONSENSUS

- EFFICIENT PROCESSING

ADVANTAGES OF HYPERLEDGER

- Make the connection between improved asset management and execution excellence.

- Increasing visibility into complex operations to control costs and optimize the performance of employees, facilities and assets.

- Theft of refined oil products threatens global stability.

PROBLEM STATEMENT

PRESENT WORK

- BLOCKCHAIN/LEDGER PERMISSIONED.
- HYPERLEDGER FABRIC NETWORK INFRASTRUCTURE.
- HYPERLEDGER FABRIC CHAINCODE.
- USER INTERFACE

- **Script file**
  →logic.js
- **Model file**
  → model.cto
- **Access control**
  →permisssions.acl

Gasoline-Supplychain - Mozilla Firefox

Queries Tutorial | Hyperl ✕   Gasoline-Supplychain ✕   +

localhost:4200/Gasoline

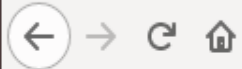gasoline-supplychain@0.0.9.bna

Gasoline-Supplychain

Assets   Participants   Transactions

Gasoline

+ | Create Asset

BatchId	timestamp	quantity	refinery	Actions
B001	2019-07-09T00:00:00.000Z	500	resource:gasolinesupplychain.Refinery#R001	✏ 🗑
B003		400	resource:gasolinesupplychain.Refinery#R003	✏ 🗑
B004	2019-07-09T00:00:00.000Z	200	resource:gasolinesupplychain.Refinery#R004	✏ 🗑
B005	2019-07-09T10:33:22.222Z	400	resource:gasolinesupplychain.Refinery#R005	✏ 🗑

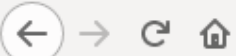gasoline-supplychain@0.0.9.bna

Gasoline-Supplychain

Assets　　**Participants**　　**Transactions**

Refinery

+ | Create Participant

refineryId	refineryName	quantity	Actions
R001	Naxos-Refinery	50	
R002	Marousi-Refinery	90	
R003	Chalandri-Refinery	75	
R004	Oia-refinery	175	
R005	Santorini-Refinery	175	
R006	Mykonos-Refinery	250	

Gasoline-Supplychain - Mozilla Firefox

Queries Tutorial | Hyperl ✕   Gasoline-Supplychain ✕   +

localhost:4200/Unload

gasoline-supplychain@0.0.9.bna

Gasoline-Supplychain

Assets   **Participants**   **Transaction**

Unload

When invoked, this transaction will have th

- **unloadtime**
- **quantity**
- **truck**
- **gasstation**

Create Transaction

Enter the required values below.

unloadtime

quantity

50

truck

T006

gasstation

GS006

Cancel   Confirm

Gasoline-Supplychain - Mozilla Firefox

Queries Tutorial | Hyperl ✕   Gasoline-Supplychain ✕   +

ⓘ localhost:4200/Truck

gasoline-supplychain@0.0.9.bna

Gasoline-Supplychain
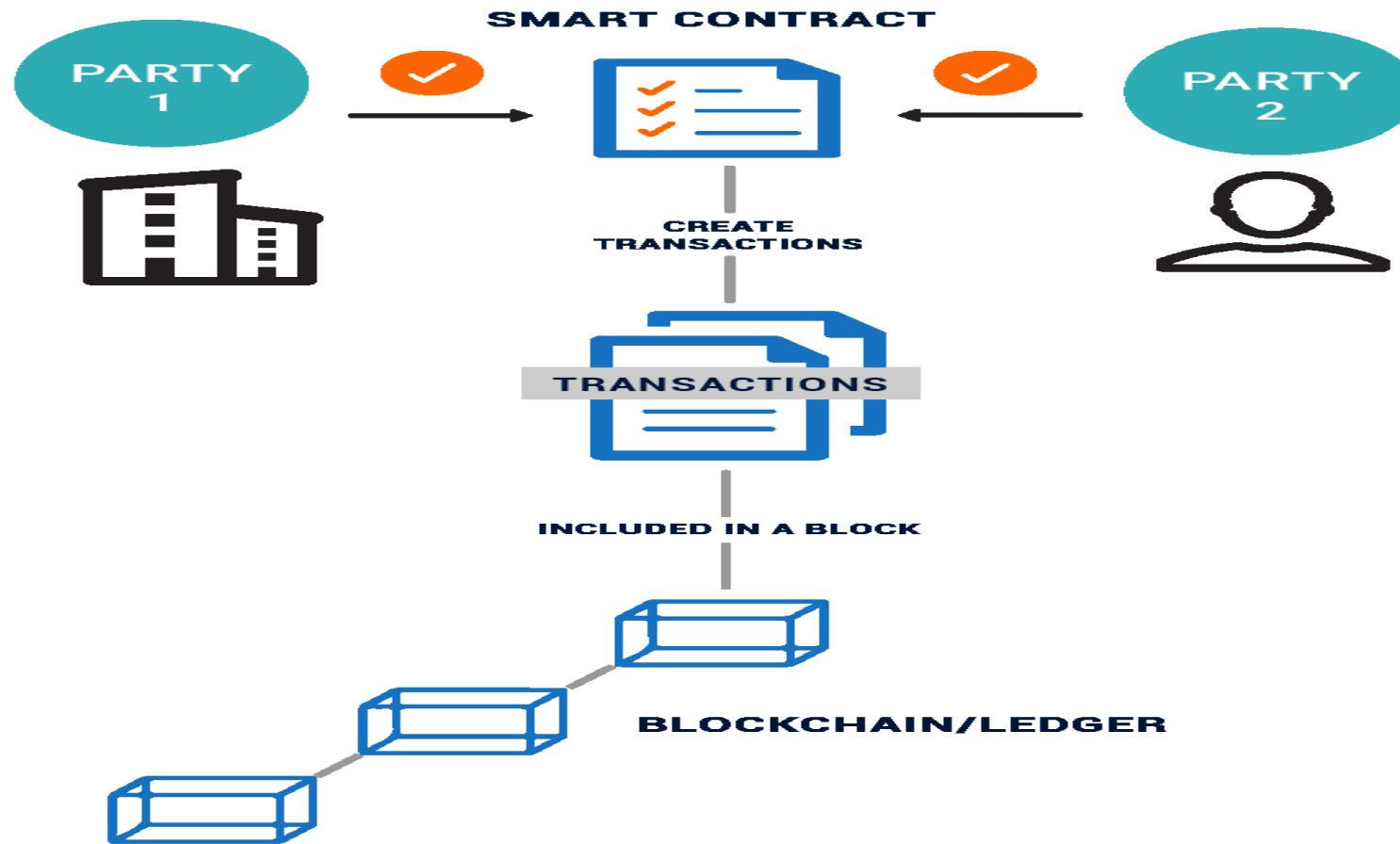
Assets   Participants   Transactions

Truck

+ | Create Participant

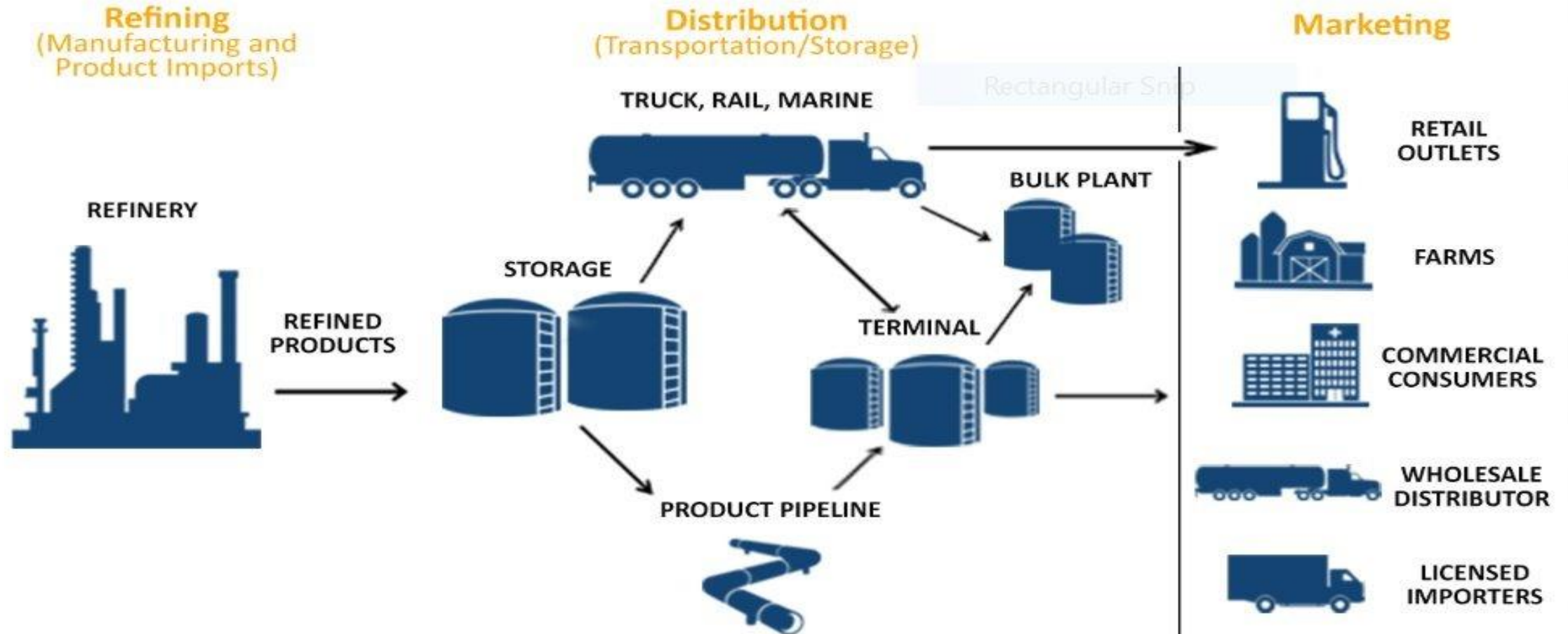| truckId	quantity	flag	loadtime	unloadtime	refinery	gasstation	Actions
T001	25	No	2019-07-09T09:45:04.160Z	2019-07-09T09:45:35.446Z	resource:gasolinesupplychain.Refi...	resource:gasolinesupplychain.Gas...	✏️ 🗑️
T004	175	No	2019-07-09T00:00:00.000Z	2019-07-09T00:00:00.000Z	resource:gasolinesupplychain.Refi...	resource:gasolinesupplychain.Gas...	✏️ 🗑️
T005	50	No	2019-07-09T10:14:10.852Z	2019-07-09T10:13:38.233Z	resource:gasolinesupplychain.Refi...	resource:gasolinesupplychain.Gas...	✏️ 🗑️
T006	25	No	2019-07-09T12:10:20.124Z	2019-07-09T12:11:06.674Z	resource:gasolinesupplychain.Refi...	resource:gasolinesupplychain.Gas...	✏️ 🗑️

FLOW CHART

BLOCKCHAIN AND SMART CONTRACTS – FLOW DIAGRAM

Downstream Sector
Refining, Distribution, Marketing

Refining
(Manufacturing and Product Imports)

Distribution
(Transportation/Storage)

Marketing

TRUCK, RAIL, MARINE

REFINERY

REFINED PRODUCTS

STORAGE

BULK PLANT

TERMINAL

PRODUCT PIPELINE

RETAIL OUTLETS

FARMS

COMMERCIAL CONSUMERS

WHOLESALE DISTRIBUTOR

LICENSED IMPORTERS

ABSTRACT

- The oil industry is involved in a global supply-chain that includes domestic and international transportation, ordering and inventory visibility and control, materials handling, import/export facilitation and information technology.

- Thus, the industry offers a classic model for implementing supply-chain management techniques. In a supply-chain, a company is linked to its upstream suppliers and downstream distributors as materials, information, and capital flow through the supply-chain.

- The purpose of this project is to investigate the role of supply-chain management in the oil industry.
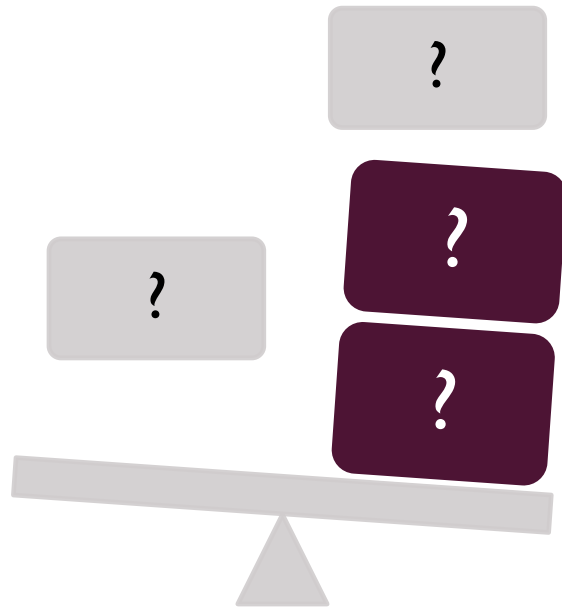
SUMMARY

- Securing and simplifying energy trading,

- Billing and payment,

- Managing unwieldy, complex supply chains,

- Responding to regulation requiring massive documentation.

Blockchain can help the oil industry with these issues and more because it allows trust to be technologically embedded into the very nature of transactions. With blockchain, all entities involved in a transaction use an established, distributed network of computers that records and stores every transaction or exchange of data that occurs in the network.

WORK TO BE DONE -

- Escrow accounts for implementing automatic payments
- Multiple nodes for decentralisation

THANK YOU

ANY QUESTIONS?