"Blockchain in Action: Redefining Supply Chain Visibility and Accountability"

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- Implement a blockchain based supply chain management system which ensures transparency ,traceability and efficiency in supply chain process

Business goals:

- To improve visibility and tracking in supply chain.
- To enhance the security and tamper proof data management.
- To automate the business process and reduce the manual errors
- To increase the trust and collaboration among stakeholders

Use case: Farm to fork supply chain management

Farmer grows organic products and supply to distributors and it goes to retailers and at last to consumers

Problems:

- Lack of transparency.
- Food safety.
- Inefficient tracking.

Solutions:

- Green Harvest creates digital record of produce and blockchain which includes origin, quality and tracking.
- Fresh Foods updates: Receive , process and shipping.
- Healthy groceries: verify authenticity, quality and freshness.

Benefits:

- Transparency
- Food Safety
- Efficiency
- Freshness
- Trust

Architecture:

Food tracking supply chain project network :

O1 - orderer (Org 1)

P1 – peer0.manufacturer

P2 – peer0.middlemen

P3 – peer1.middlemen

P4 – peer2.middlemen

P5 – peer0.consumer

NC1 – Network Config (Org 1)

CC – Channel Config (Org1,2,3)

C1 – Channel 1

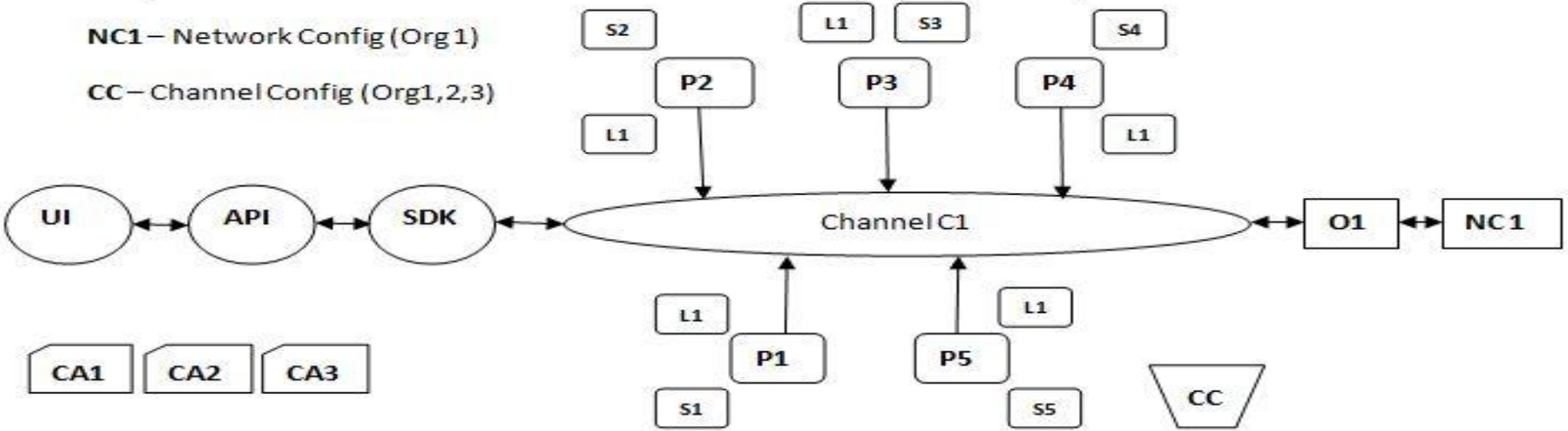
L1 – Ledger

S1 , S2 , S3 , S4 , S5 – ChainCode – Each actors

CA 1 – Certificate Authority Manufacturer

CA2 – Certificate Authority MiddleMen

CA3 – Certificate Authority Consumer



Application flow

- Users are enrolled into application by an admin
- New Products will be create by the manufacturer only
- The product will be sent to wholesaler.
- Wholesaler will send the product to the distributor.
- Distributor will send to retailer
- Consumer could place the order
- Consumer will be marked as delivered once the product is delievered

Blockchain Developer:

Chain Code functions:

- Create user (Admin)
- Sign In (User Login)
- Create Product (Manufacturer)
- Update Product (Manufacturer , wholesaler , distributor, retailer)
- sendToWholesIller
- sendToRetailer
- sellToConsumer
- QueryAsset (Query by product ID)
- OrderProduct(Consumer places order, productID
- deliveredProduct(Retailer Updates)
- Init (Initialize as nil)
- Invoke- To invoke each function in the chaincode

Network set up:

Network Architecture:

- Peers:2-3 organizations (Manufacturer, Shipper,Retailer)
- CA:certificate authority for each organization

Network Components

Peers:

- Peer0:Manufacturer
- Peer1:Shipper
- Peer2:Retailer

Orderer:

- Orderer 0:solo orderer

CA:

- CA0:manufacturer
- CA1:ShipperCA
- CA2: retailer CA

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