SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

COURSE NAME: 19OE201-Blockchain Technology

IV YEAR /VII SEMESTER

Unit 4- HYPERLEDGER

Case study : Hyperledger Fabric workflow in Blockchain

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So far.....

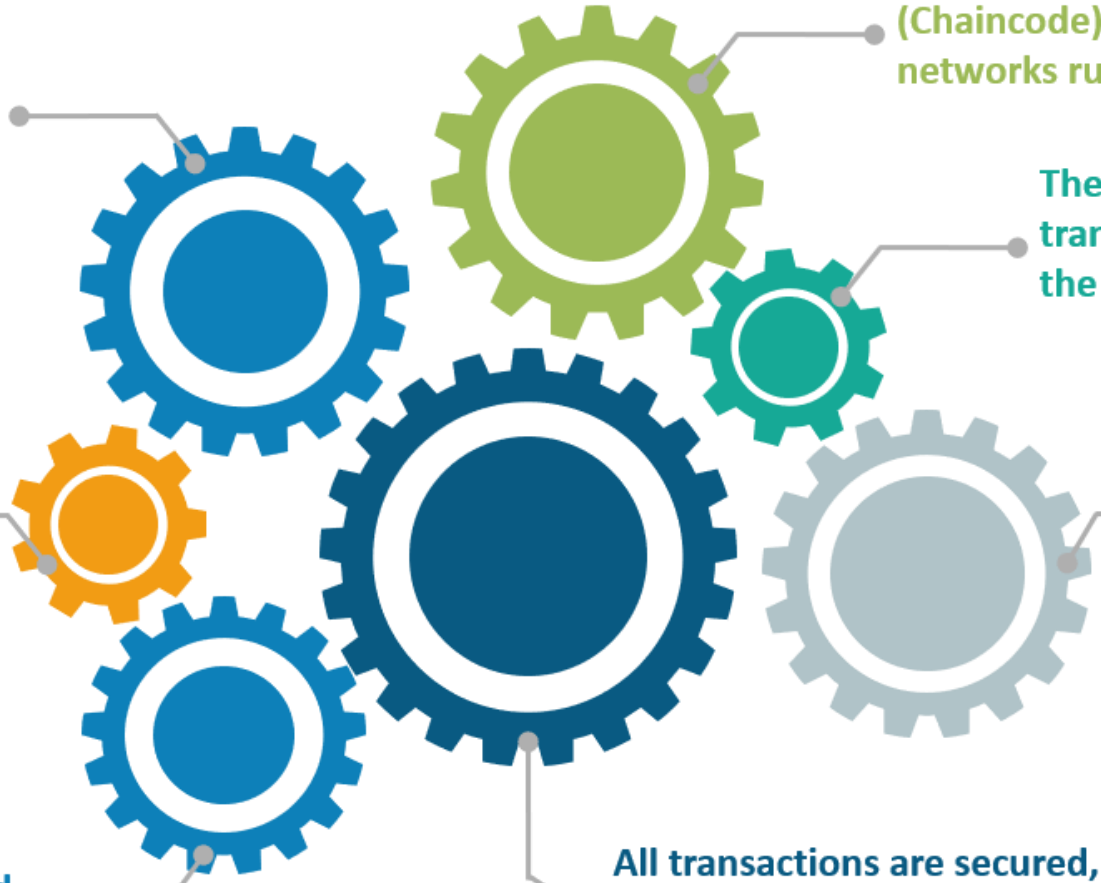
Relies on a smart contract system (Chaincode), which every peer of the networks runs in Docker containers

Fabric issues transactions with derived certificates that are unlinkable to the owning participant

The events are structured as transactions and shared among the different participants

All participants must register proof of identity to membership services in order to gain access to the system

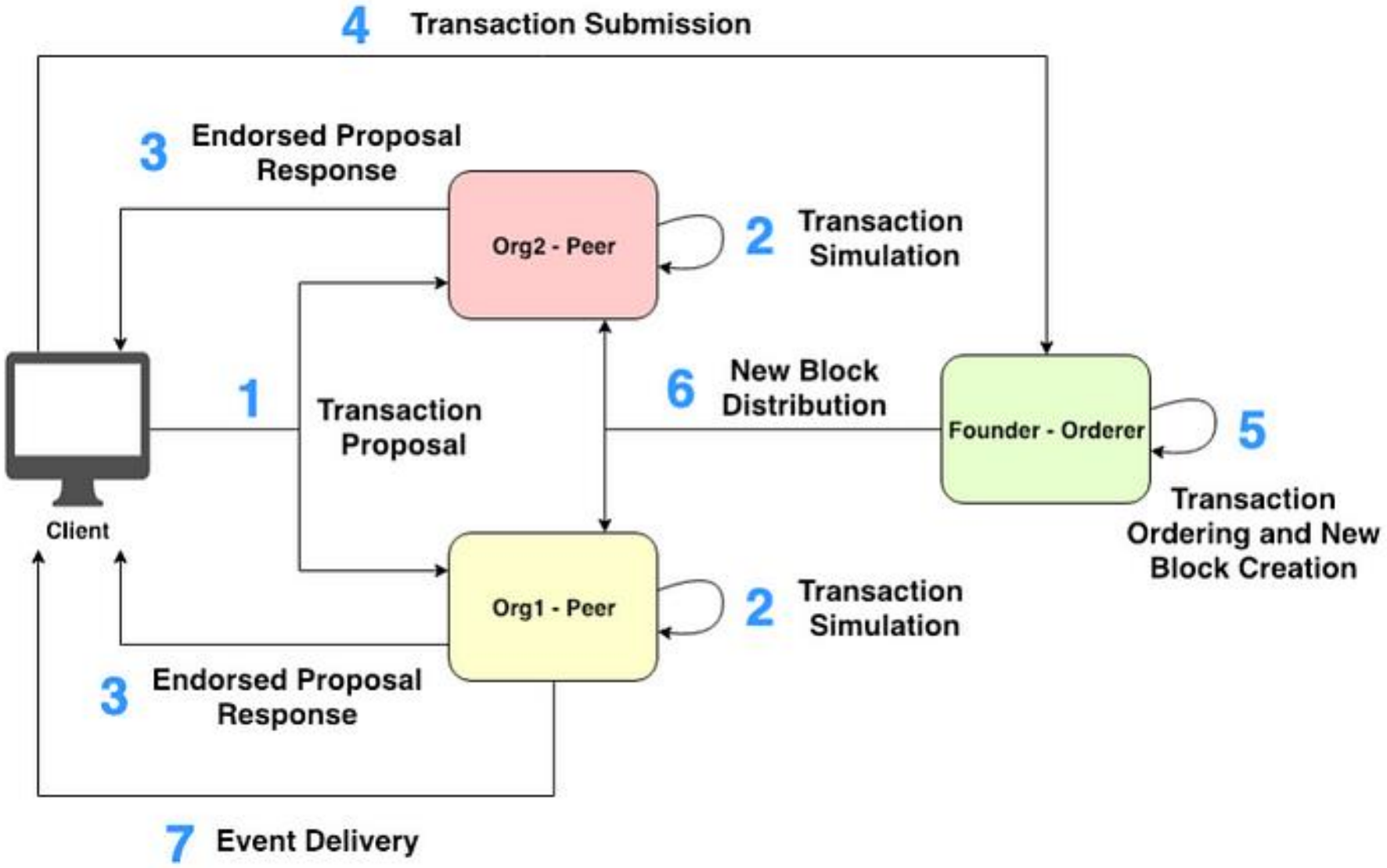
The transactions are executed without a cryptocurrency



The content of each transaction is encrypted to ensure only the intended participants can see the content

All transactions are secured, private, and confidential. Fabric can only be updated by consensus of the peers

HYPERLEDGER FABRIC TRANSACTION WORKFLOW

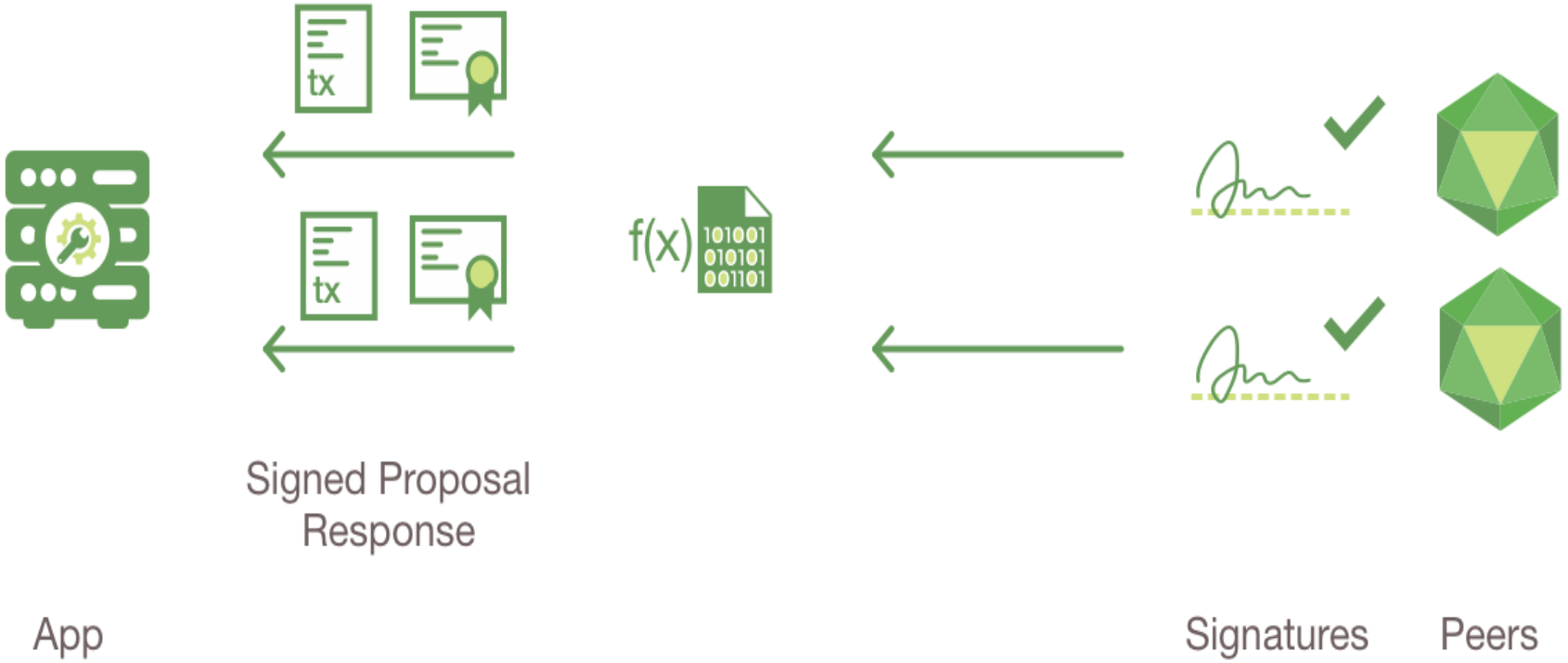


Hyperledger Fabric Workflow

1. First, *Client* broadcasts the transaction invocation request to the Endorser peer.

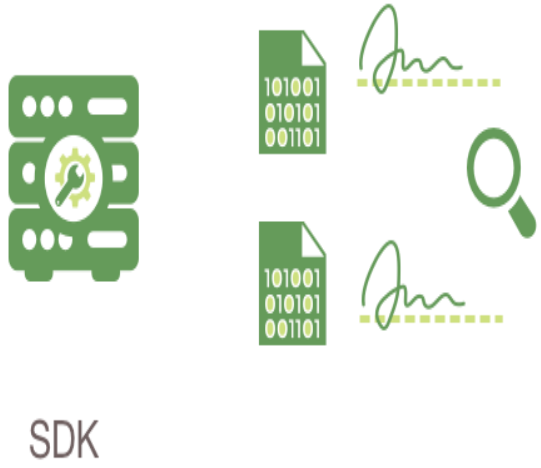
Hyperledger Fabric Workflow

2. Endorser peer checks the Certificate details and others to validate the transaction.



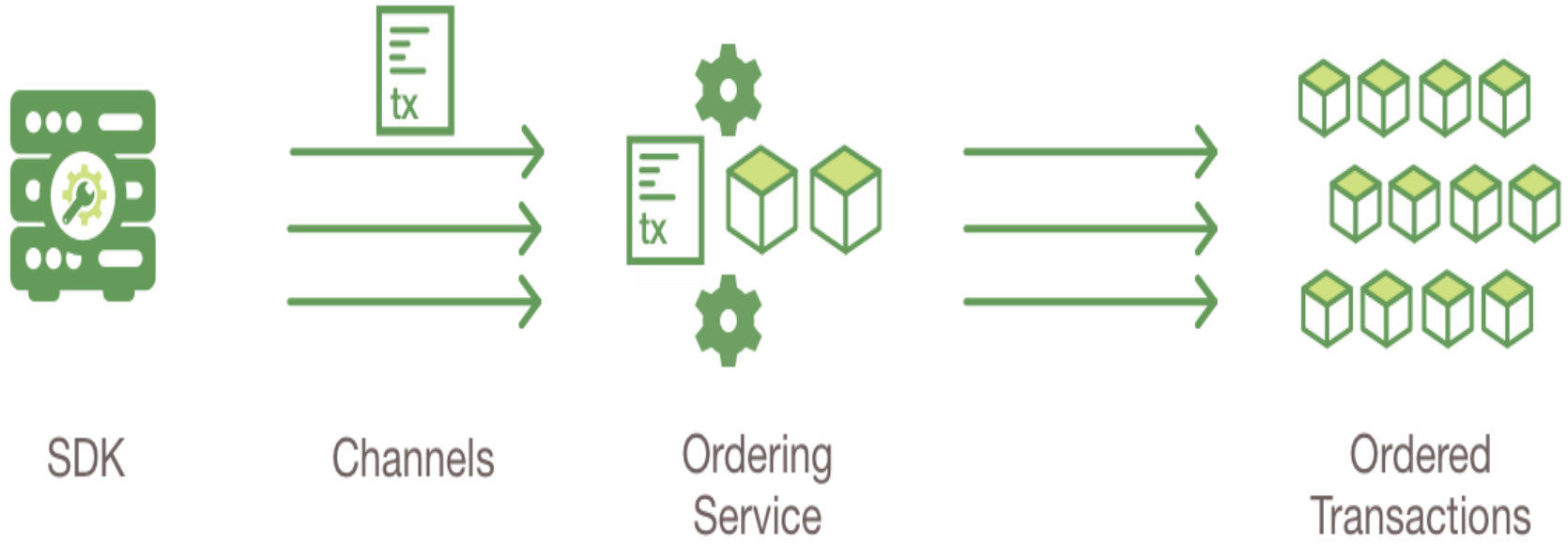
Hyperledger Fabric Workflow

- If the verification check passes, Endorsing Peer simulates the transaction, generates a response together with a read-write set, and endorses the generated response using its certificate.
- otherwise rejection as part of the endorsement response.



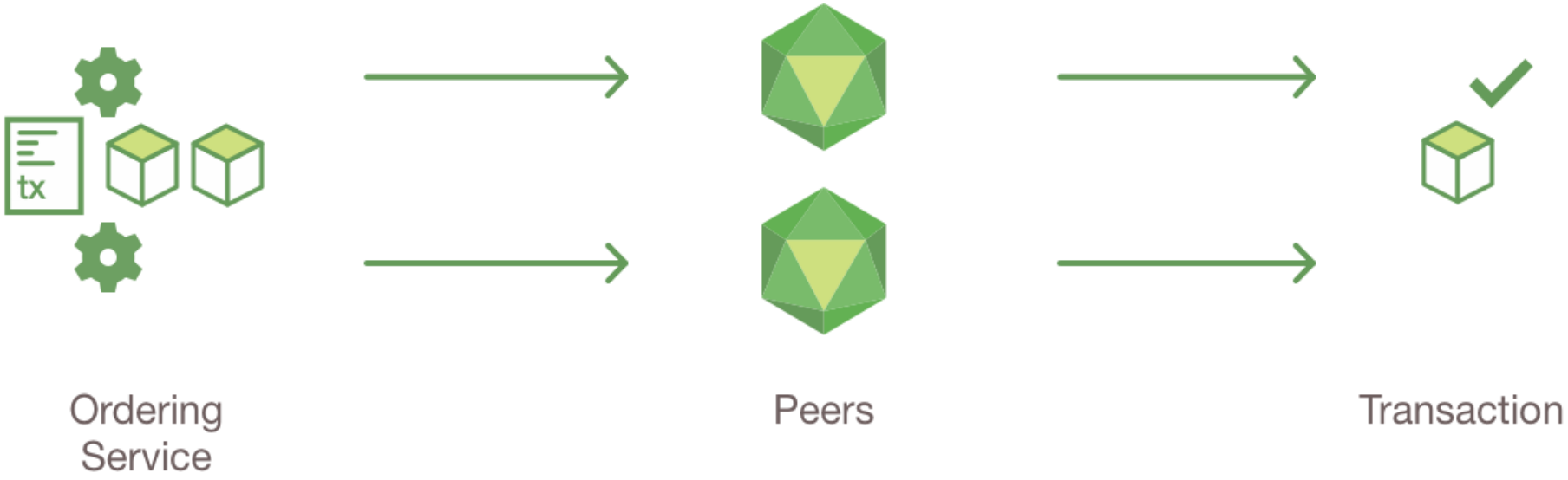
Hyperledger Fabric Workflow

3. Client receives the endorsed proposal responses from Endorsing Peers.



Hyperledger Fabric Workflow

4. Client now sends the approved transaction to the Orderer peer for this to be properly ordered and be included in a block.



Hyperledger Fabric Workflow

5. Orderer node includes the transaction into a block and forward the block to the Anchor nodes of different member Organizations of the Hyperledger Fabric network.

1. Orderer broadcasts the generated block to all Peers (to both Endorsing Peers and Committing Peers) on the relevant channel.
2. Then, each Peer ensures that each transaction in the received block was signed by the appropriate Endorsing Peers.

Hyperledger Fabric Workflow

6. These individual peers then update their local ledger with the latest block. Thus all the network gets the ledger synced.

7.Client receives any subscribed events from EventHub service.

Swim lane sequence diagram for transactional flow