



MALAYSIA INSTITUTE FOR
SUPPLY CHAIN INNOVATION



MIT GLOBAL
SCALE NETWORK

Understanding Blockchain

Dr. Debabrata Ghosh



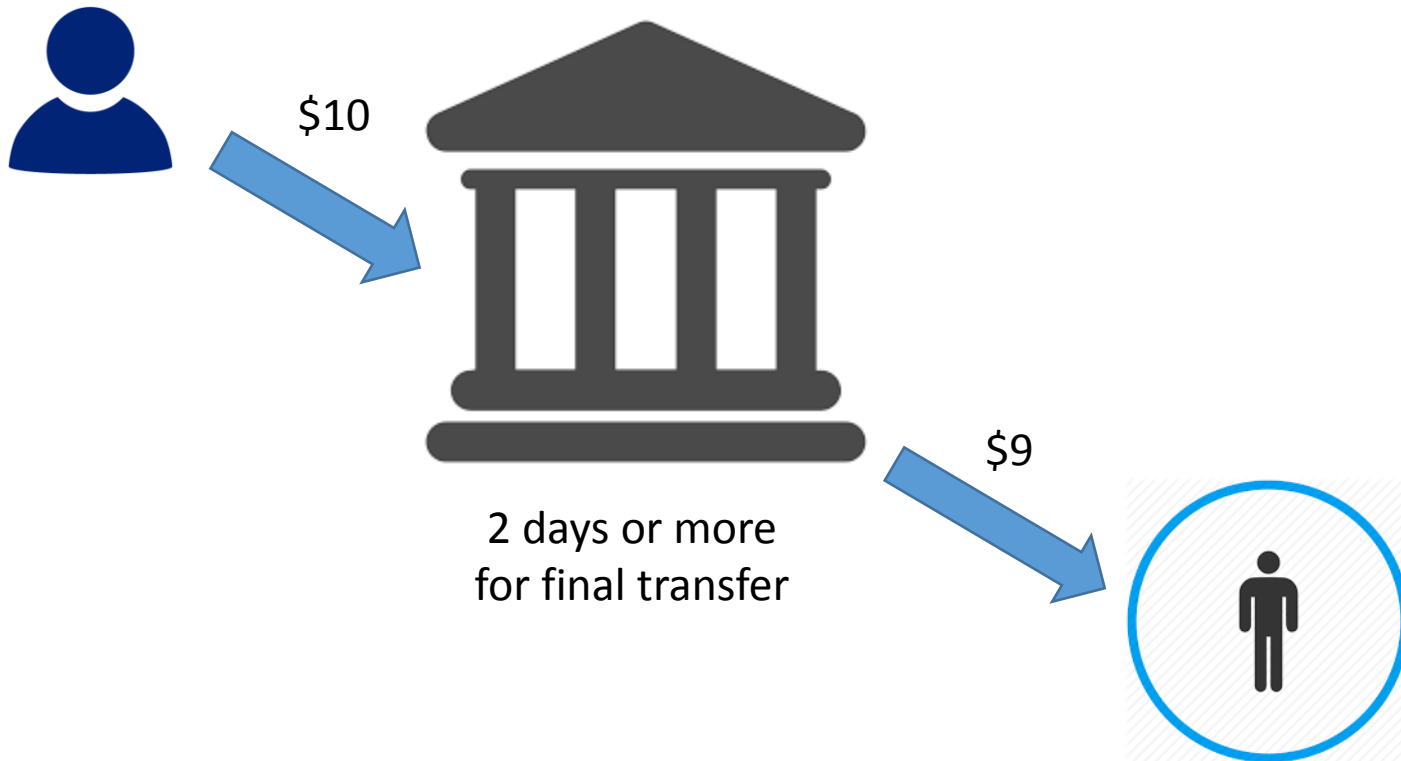
Masters in Supply Chain
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Outline

- Understanding Money Transfer
- Blockchain Concept
- Principles of Blockchain Technology
- Economics of Blockchain

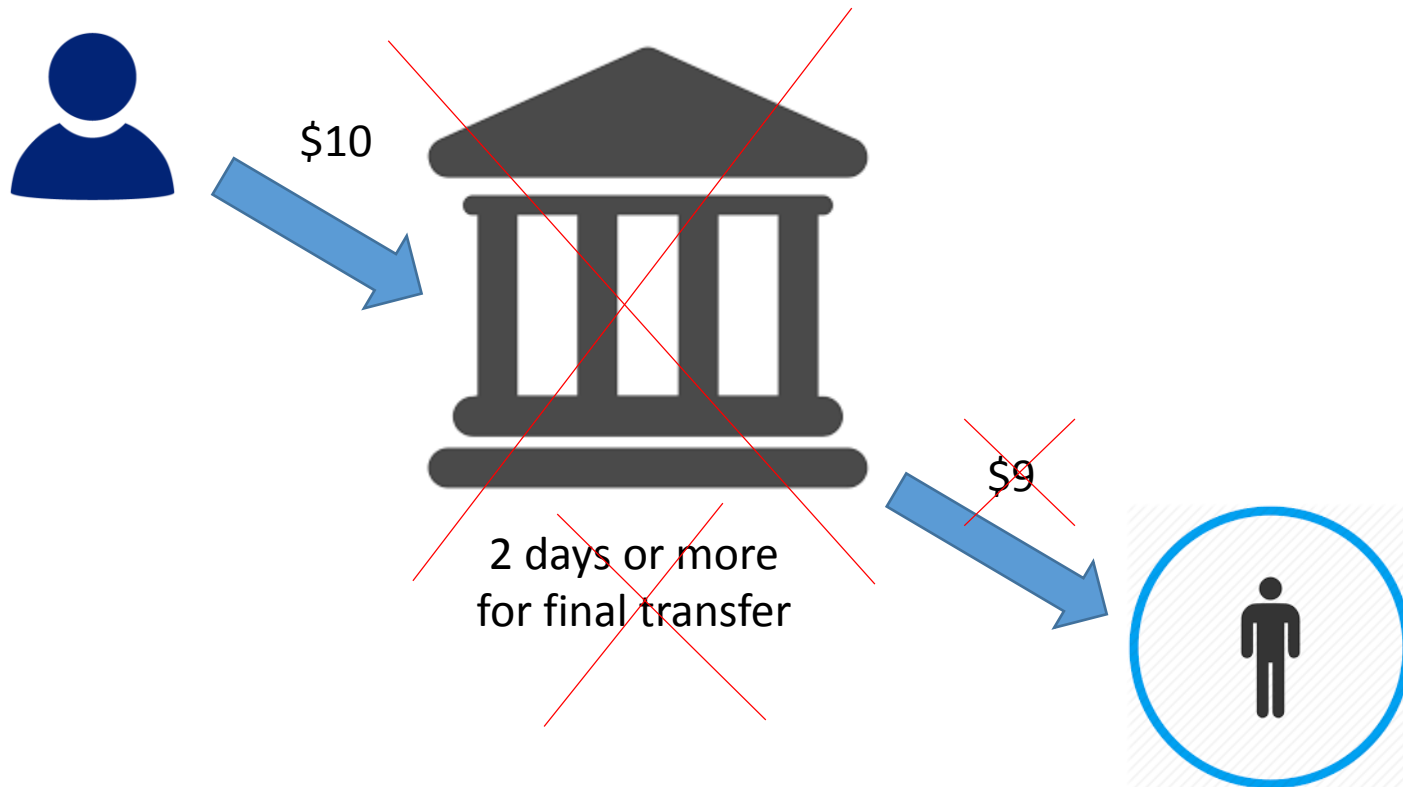
Money Transfer

Conventional Money Transfer Process Today



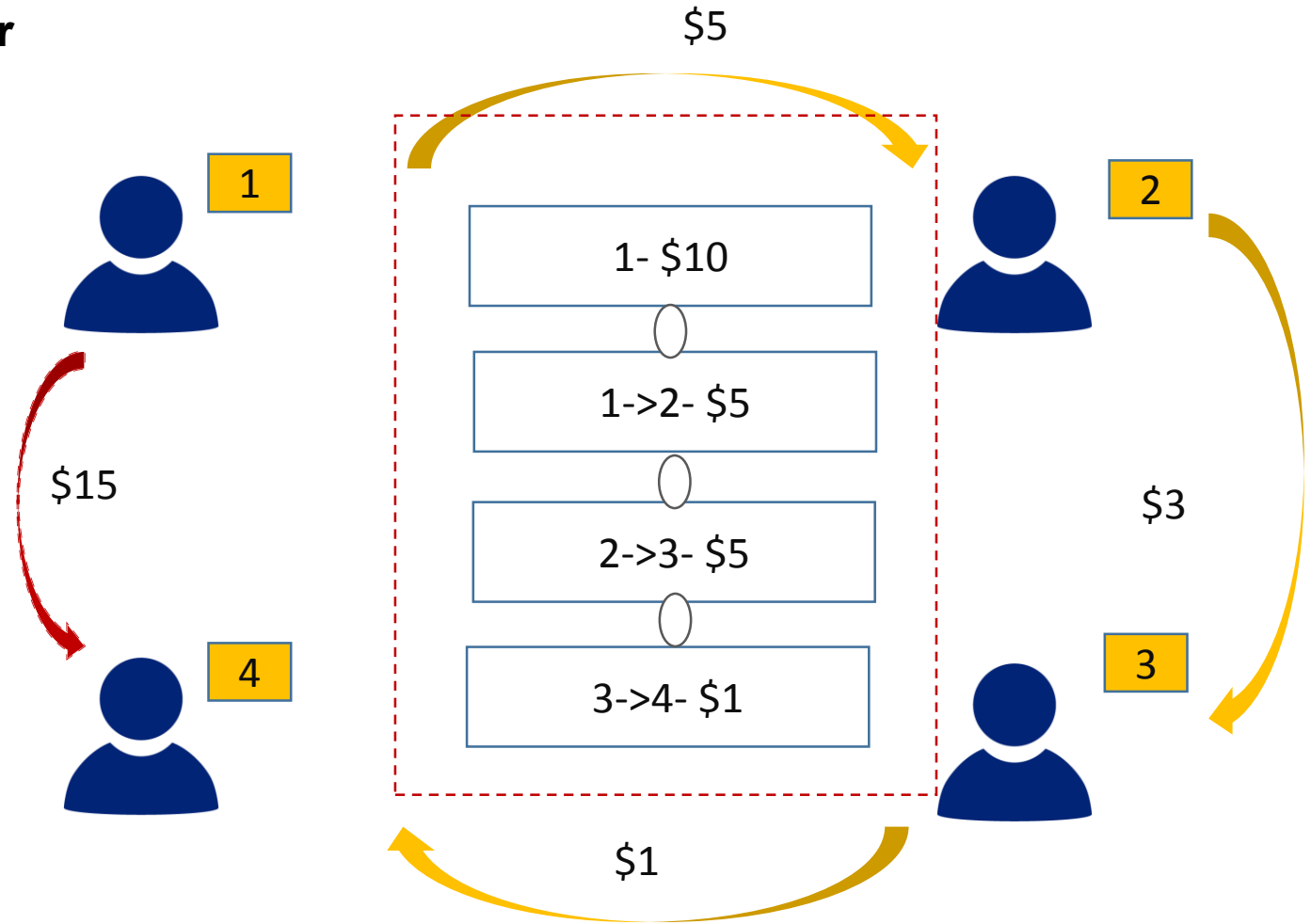
Money Transfer

Proposed Blockchain Money Transfer Process



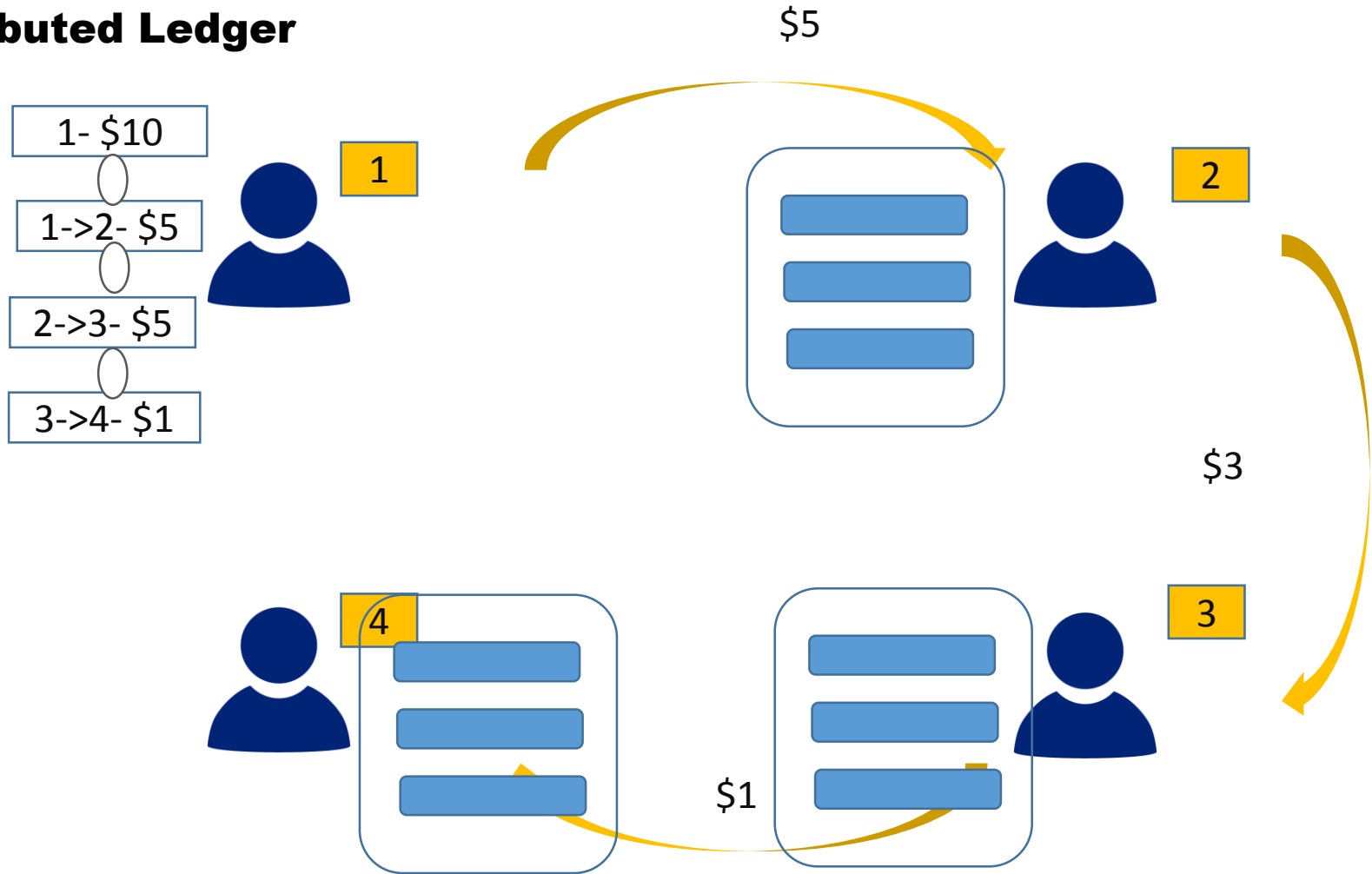
Blockchain Concept

Open Ledger



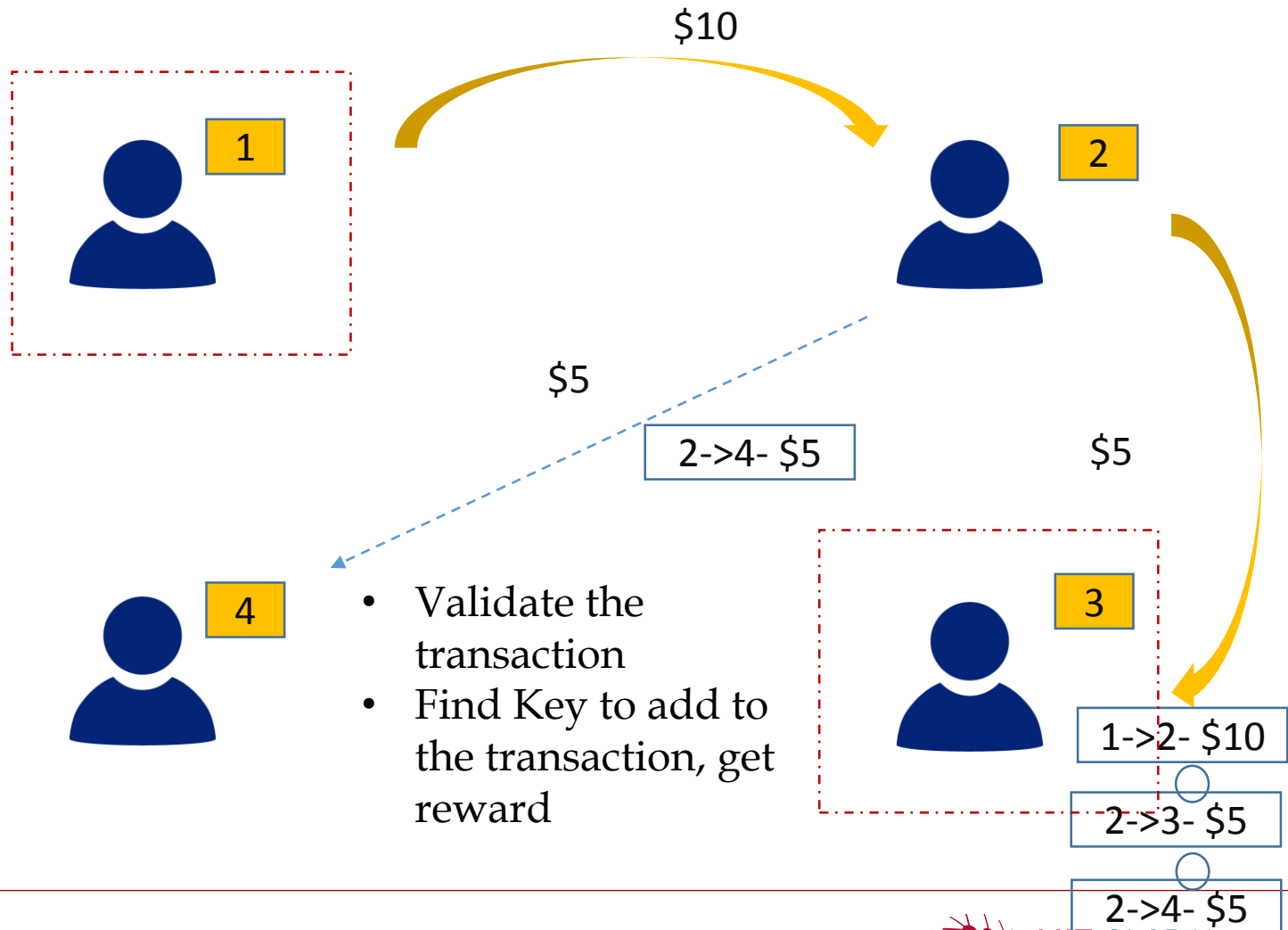
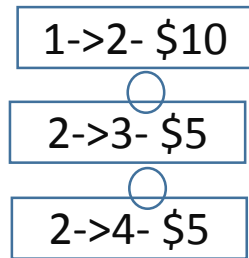
Blockchain Concept

Distributed Ledger



Blockchain Concept

Miners

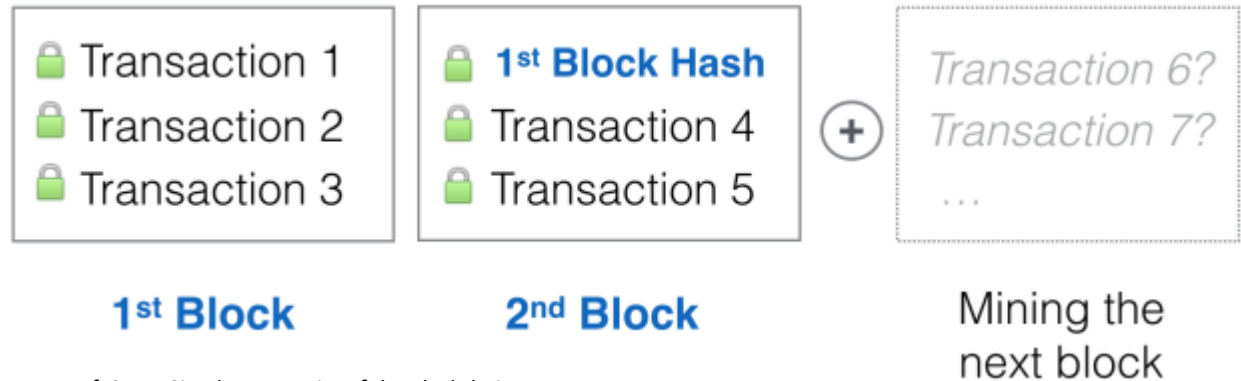


What issues does Blockchain propose to solve?

- Obtaining Consensus
- Common Knowledge

Blockchain and Consensus

“Proof-of-work” method to extract truthful information



Ref: *Some Simple Economics of the Blockchain*
Christian Catalini (MIT Sloan) and Joshua S. Gans (University of Toronto)
<http://blockchain.mit.edu/working-papers/>

What issues does Blockchain propose to solve?

Blockchain and Common Knowledge

Via the Public Ledger

Game Theory

Analogy: Unfaithful Spouse Fable

C1: H1 W1

C2: H2 W2

C3: H3 W3

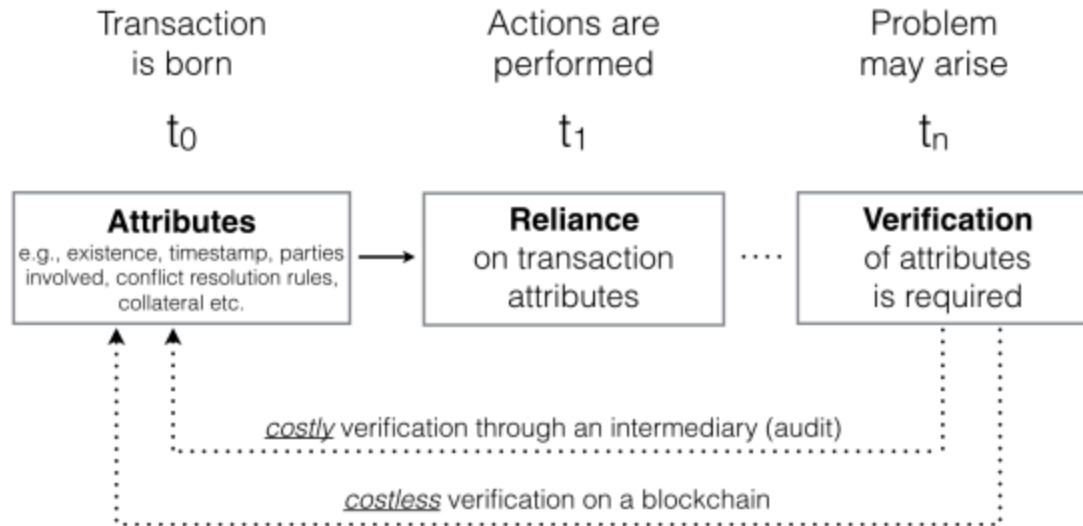
Every evening the men of the village meet around a fire and praise the virtue of their faithful wives. However, if a husband suspects that his wife has been unfaithful, he invokes a curse at the fire that immediately turns his wife into a stone statue. If a wife is ever unfaithful, through some magical telepathic device, everyone in the village gets to know about the affair, except for the husband.

Five basic principles underlying the blockchain technology

1. Distributed database that each party on a blockchain can access
2. Peer-to-peer transmission where the communication occurs directly between peers enabling data storage and forwarding to all other peers
3. Transparency where transactions are open to anyone in the network where each party has a unique alphanumeric address for identification.
4. Irreversibility of Records which means that once a transaction is confirmed, it can't be altered because each transaction is linked to every transaction records in the chain
5. Computational Logic which means that blockchain transactions are programmed in a way that users can define diverse algorithms and rules on the peer-to-peer network.

Economics of Blockchain

Cost of Verification



Cost of Networking

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Challenges in Adopting Blockchain

- Scalability of blockchain will need to be carefully planned and aligned with partners.
- Lack of standard and platform to perform transactions.
- Most of the blockchain software are highly customized and proprietary
- Regulatory Challenges

Thank you