

How do Blockchain and Internet Of Things Match?

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Conclusion

- Have an idea about Blockchain
- How Blockchain can be used in combination with IoT
 - (Money) Transactions
 - Smart contracts
- Challenges
- Benefits
- Discussion

Introduction

- Bob Peters
- Embedded System Enthusiast
- Master in Embedded Systems (TUE)

- Internet of Things
 - bRemote Beehive monitoring system, www.bRemote.eu

- Embedded system/software development (Consultant)

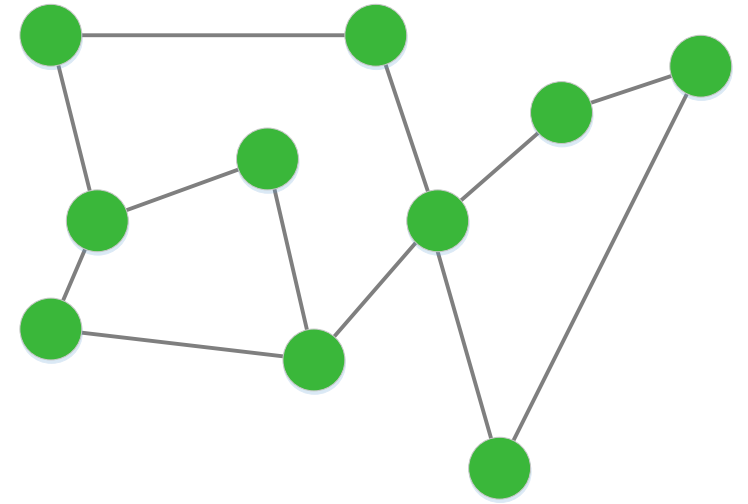
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Blockchain – A short introduction

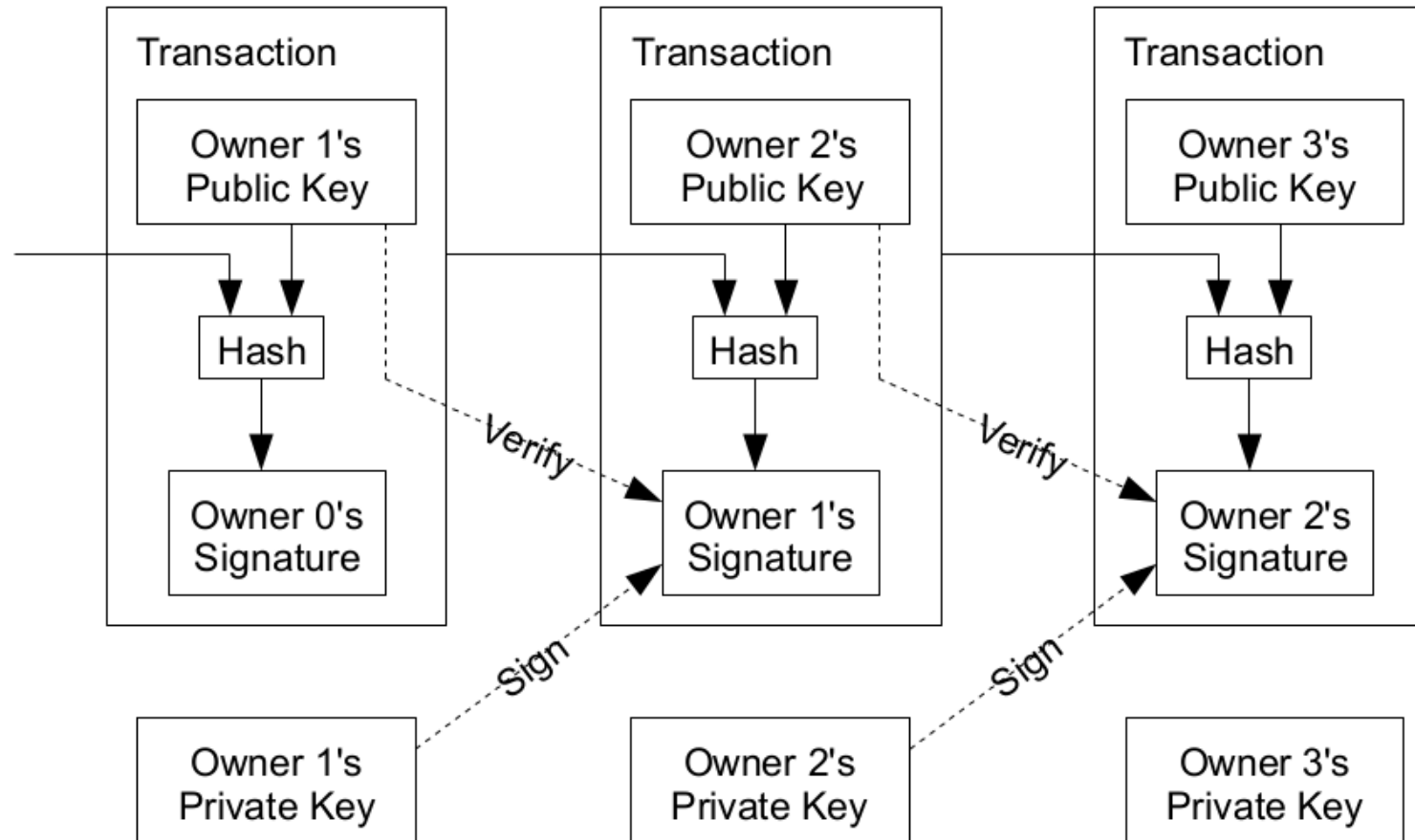
- <https://www.youtube.com/watch?v=WiRFuHXHBhk> [2:07]

What is Blockchain?

- Blockchain
 - Ledger
 - Consensus algorithm
 - Means to perform changes on the ledger



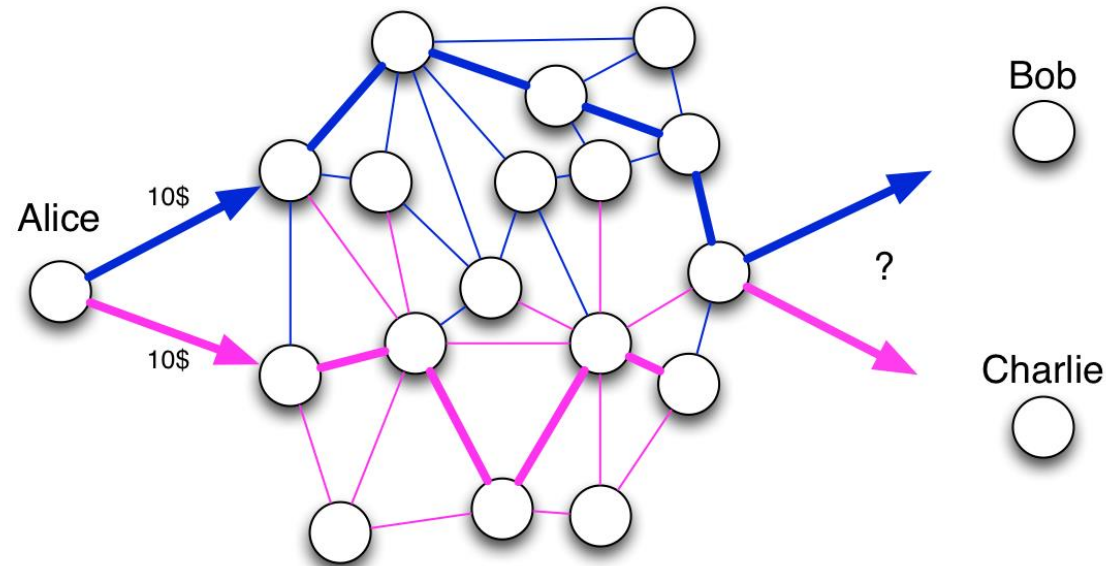
The chain of transactions



Reference: Satoshi Nakamoto (2008), Bitcoin: A Peer-to-Peer Electronic Cash System, 2008

Consensus System

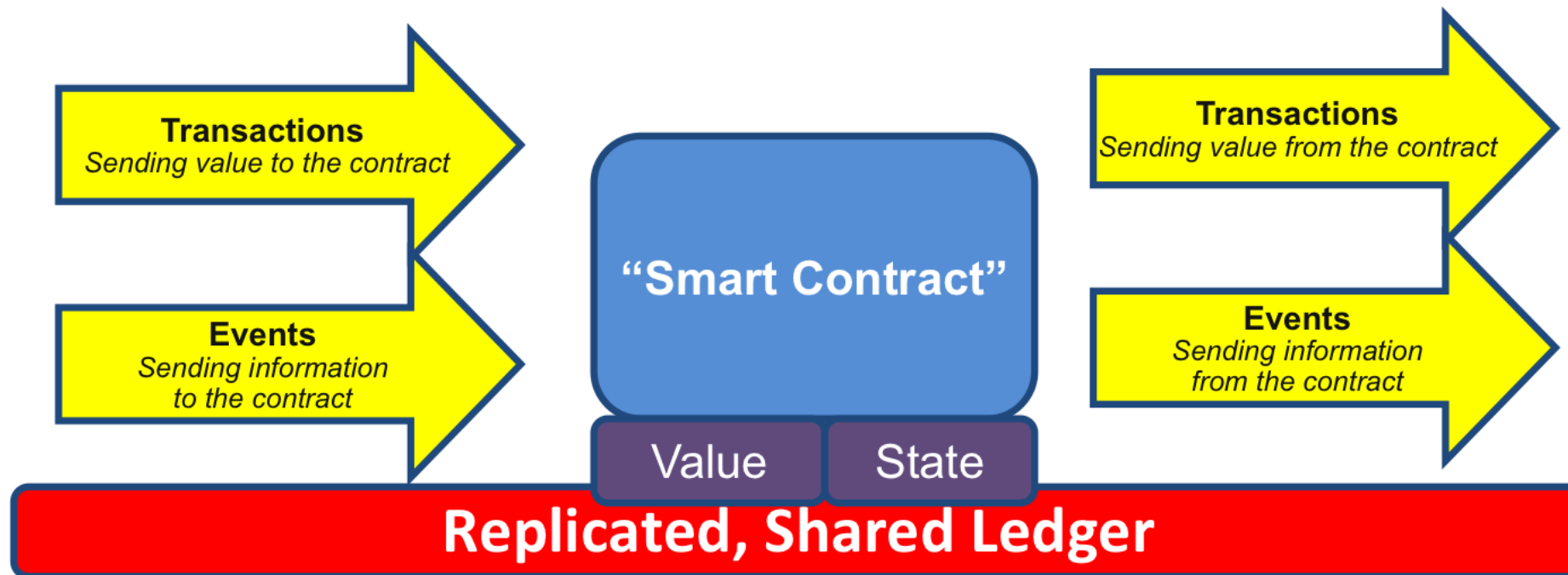
- Double spent problem



- Proof-of-work consensus

Transactions / Smart contracts

- Register transactions and contracts
- Automated contract enforcement



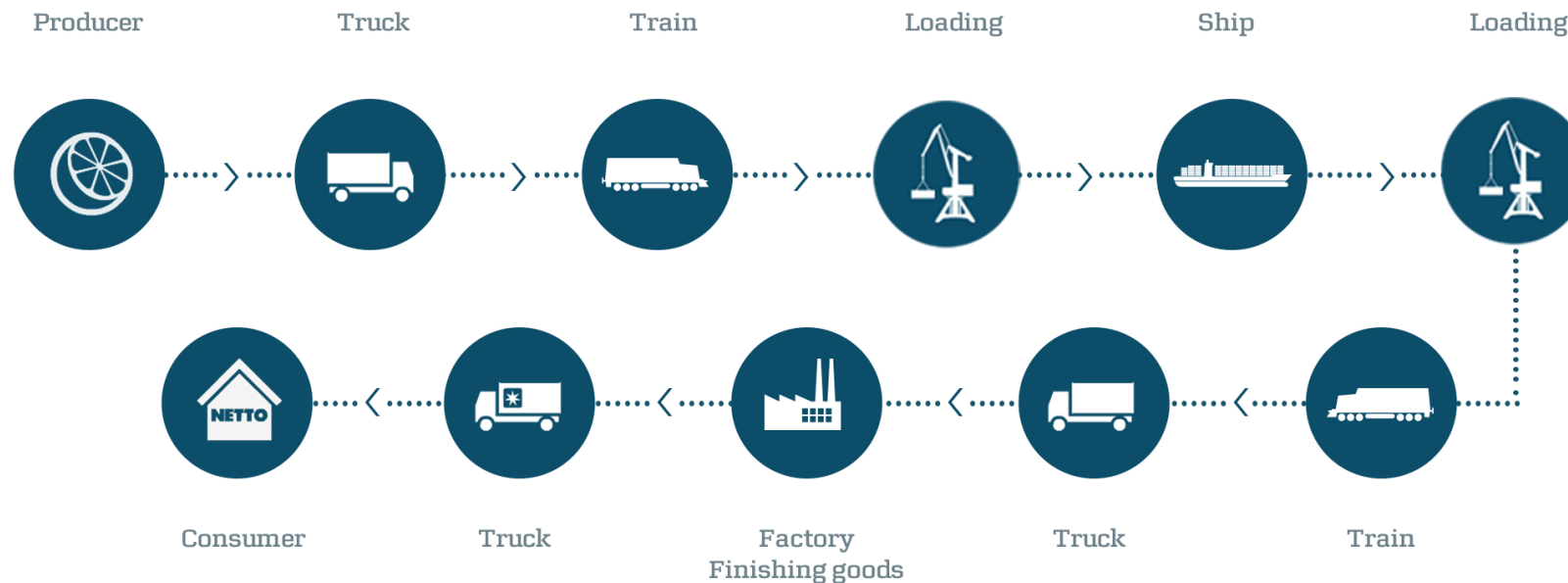
Applications blockchain

- Currency: [Bitcoin](#)
- Payment systems: [Bitpay](#)
- Digital Assets [Nasdaq](#)
- Identity: [Blockstack](#) (formerly known as [Onename](#))
- Verifiable Data: [Proof of Existence](#)
- Smart contracts: [Ethereum](#)



Blockchain and Internet of Things

- Logistic chain condition monitoring



Reference: <http://www.ibm.com/internet-of-things/iot-news/announcements/private-blockchain/>

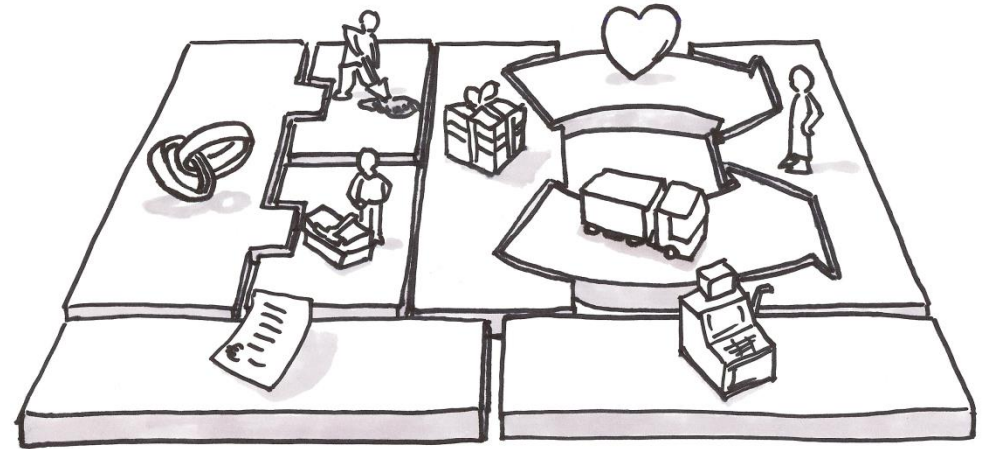
Blockchain and Internet of Things cont'd

- A car as a service
- Electricity network (Smart City)



Challenges

- Number of transactions
 - Proposed workarounds are tested
- Processing power / energy consumption
- Change in thinking about business models
- Cost development upfront



Benefits

- Remove third party
- Transparency and immutability
- Faster transactions
- Lower transaction costs



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Discussion / Questions?

- Which business cases can you think of?
- Is blockchain technology something for you?
- What positive / negative aspects do you see?

Thank you

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Sources

- <https://bitcoin.org/en/bitcoin-paper>
- developer.ibm.com/tv/convergence-iot-blockchain/
- dataconomy.com/wtf-is-the-blockchain-a-guide-for-total-beginners/
- <https://en.bitcoin.it/wiki/Weaknesses>
- <https://techcrunch.com/2016/06/28/decentralizing-iot-networks-through-blockchain>