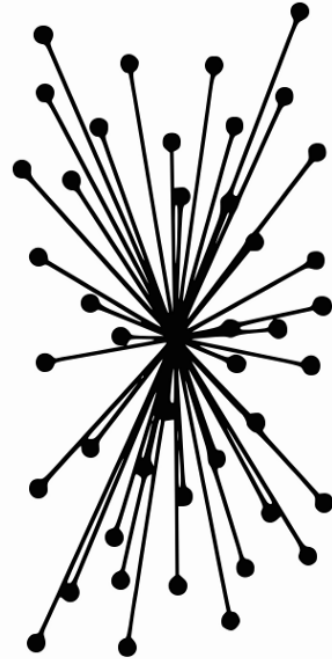
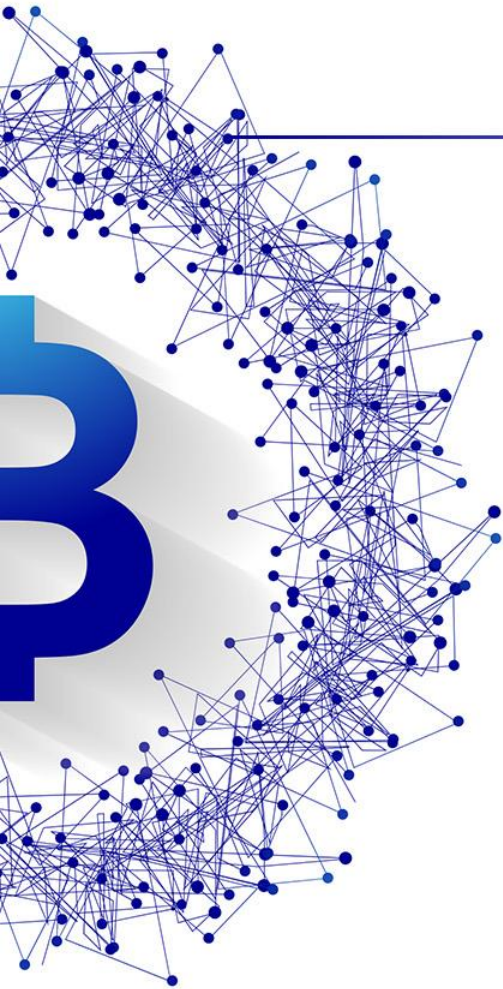


FMI BLOCKCHAIN

ФМИ, СУ
Александър Панайотов

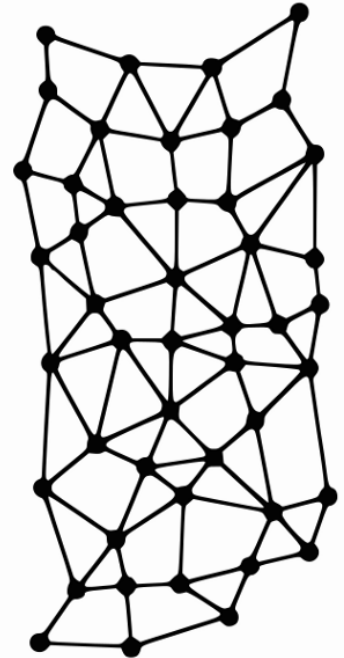
Types of networks



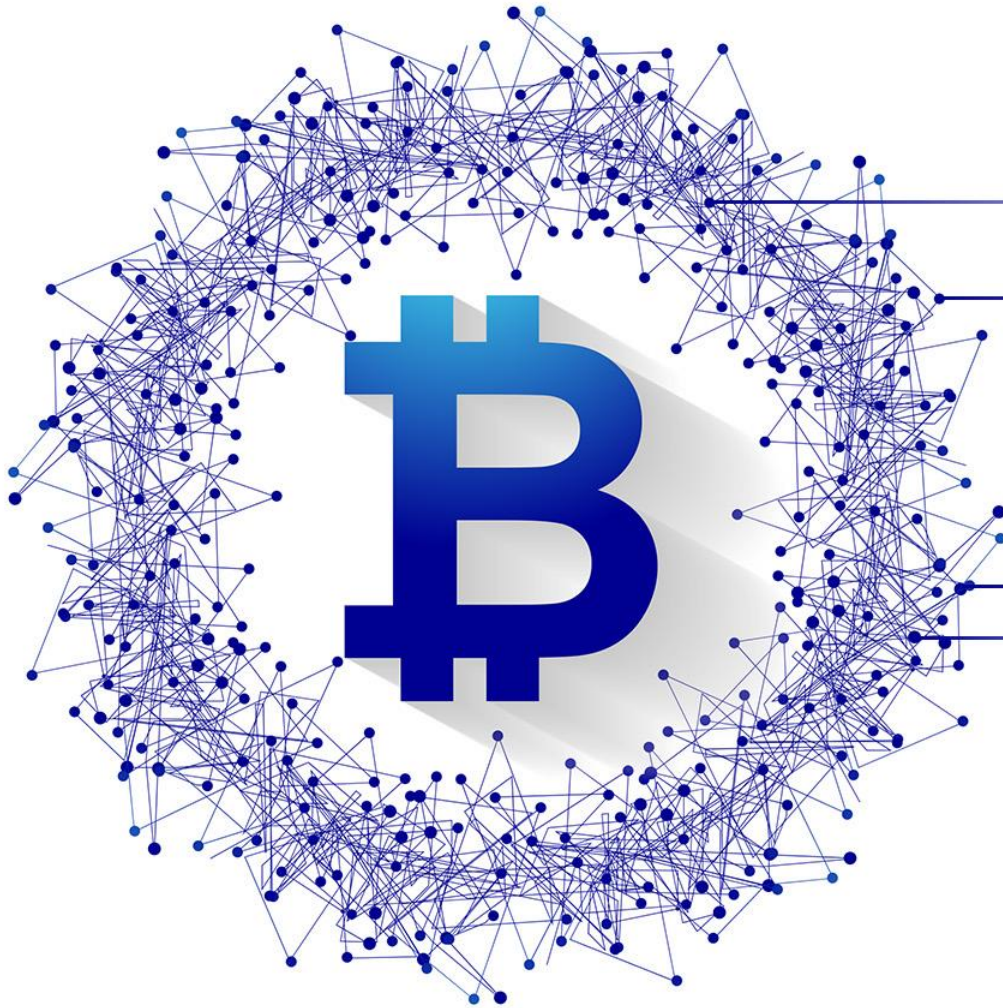
Centralized



Decentralized



Distributed



Blockchain Taxonomy



Decentralised Ledger Technology (DLT)

- The purpose of a ledger
- Yapese island
- DLT vs Centralized
- Possession vs ownership

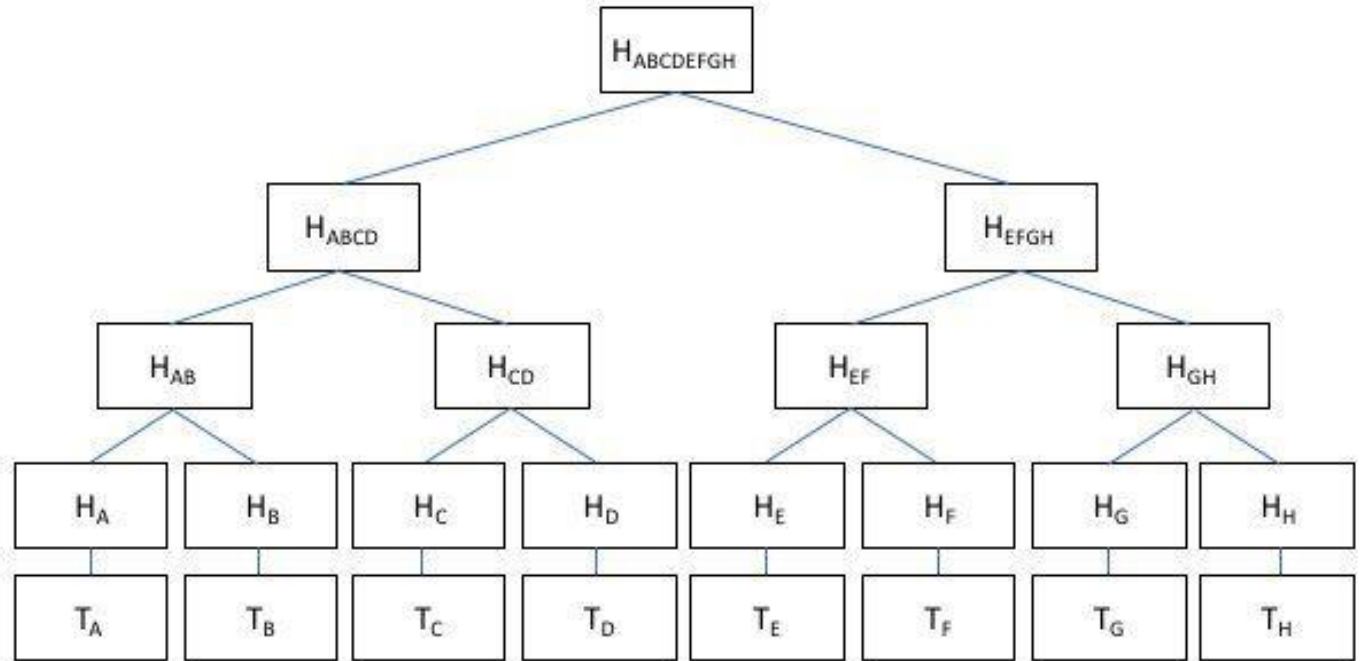


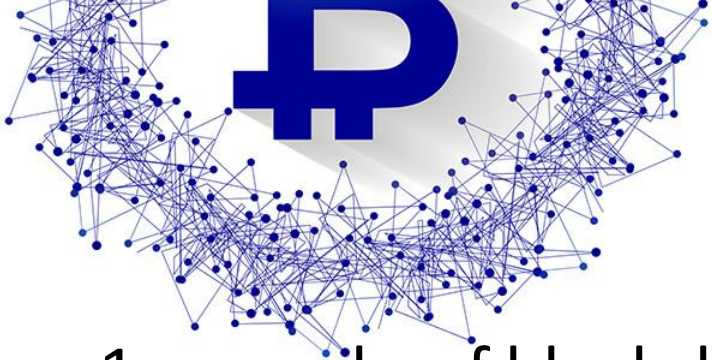


A blockchain

- Blockchain vs DLT
 - Append only ; entire history
- 3 components:
 - Blockchain, consensus, network
- 3 transactions types
- Architectural overview + terms
 - Merkle tree, blocks, hashing, transacting etc...

Merkle tree

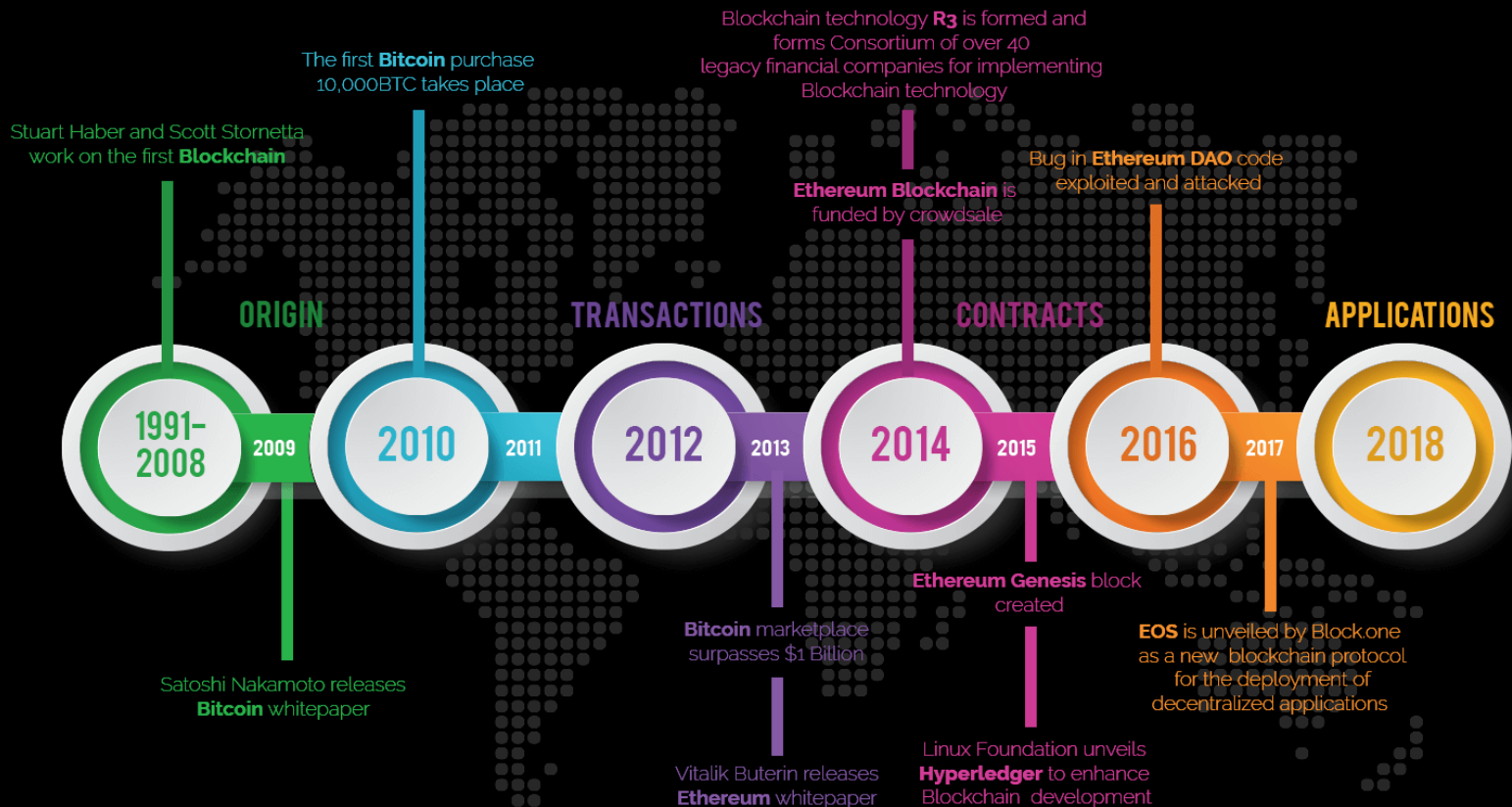


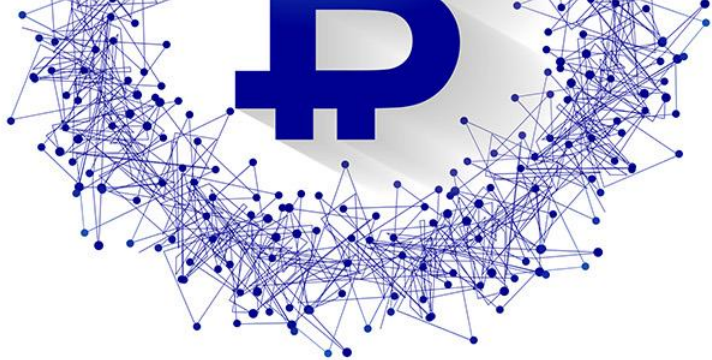


Assignment

- 1 example of blockchain app (dApp)
 - Biz case (problem, how it works)
 - Biz model (monetization)
 - Architecture (technology, platform, etc.)

THE HISTORY OF BLOCKCHAIN TECHNOLOGY







Public Blockchain

- Bitcoin, 2009
- Characteristics





Blockchain

Benefits

- Trustless environment
- Immutability
- Provenance
- Finality
- Disintermediation
- Infinitely scalable (horizontal)

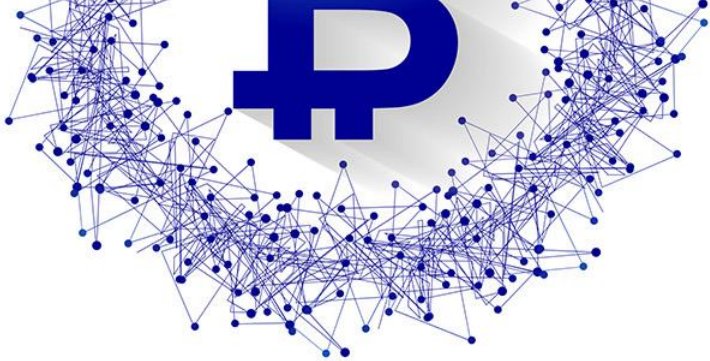
Drawbacks

- Not understood
- Used for unethical purposes
- Mistaken with cryptocurrency
- Throughput Scalability



Private blockchain

- Performance > security & transparency
- No anonymity
- Smaller
- Different roles and levels of access
- Different consensus (BFT)



Comparison

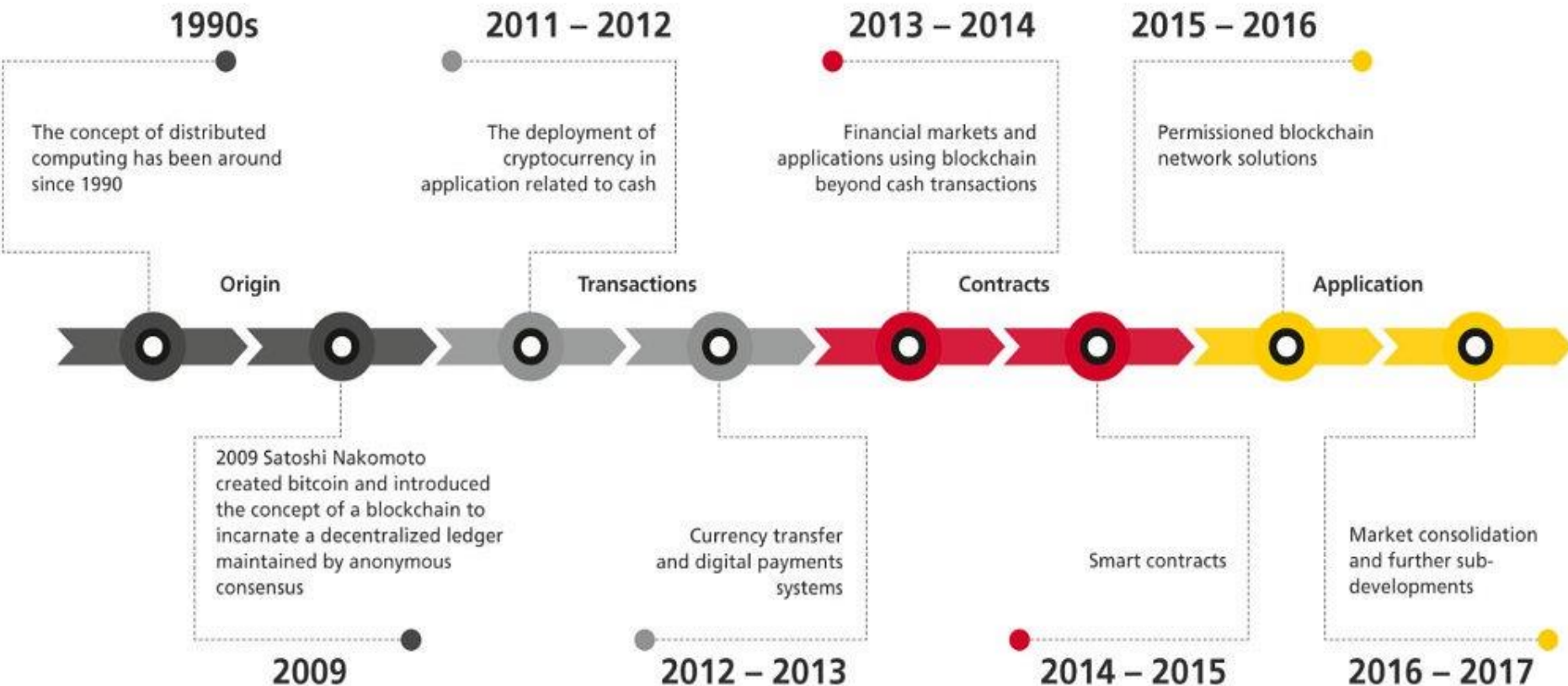
Public

- Anonymous
- Secure
- Total transparency
- PoW

Private

- More efficient in cost
- Scalable
- High transaction throughput
- PBFT

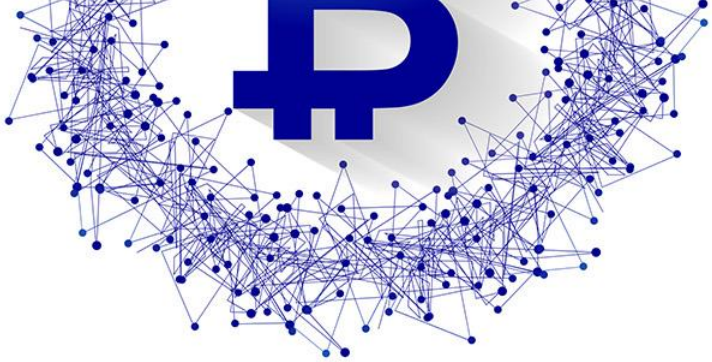
BLOCKCHAIN HISTORY





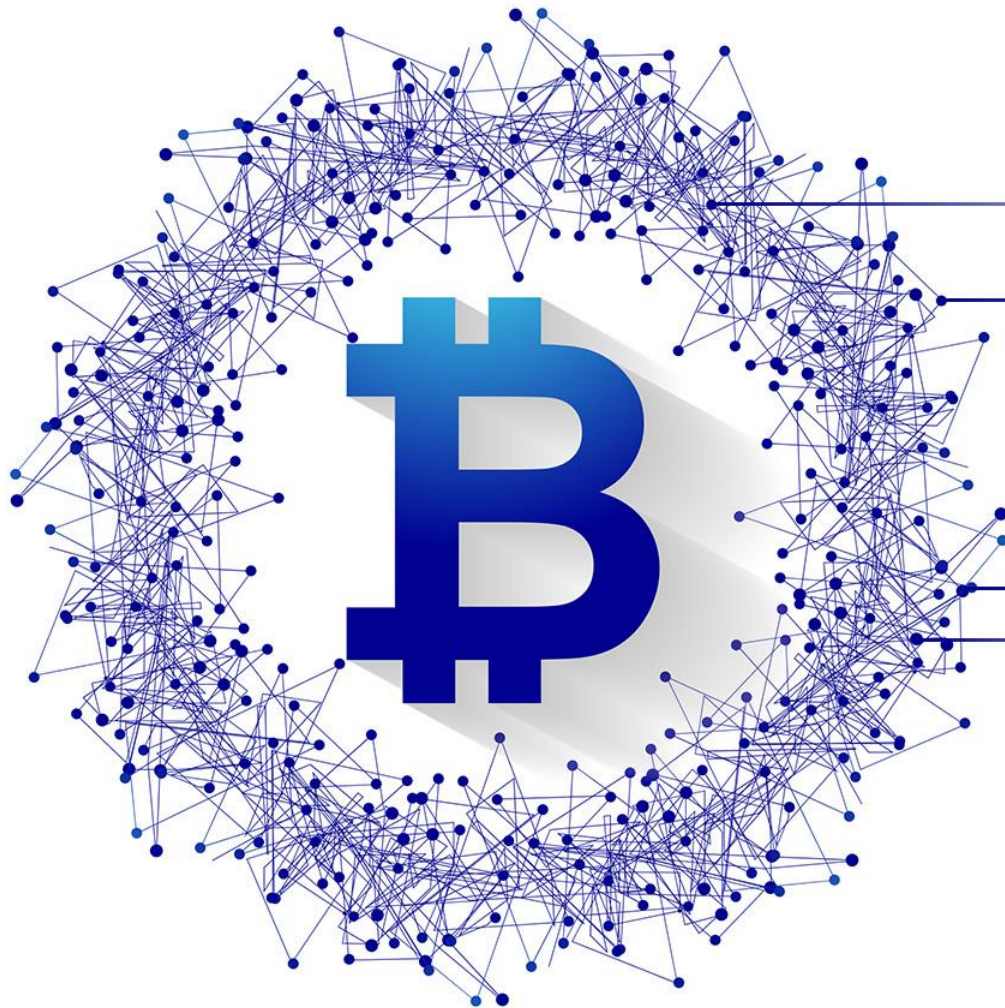
Public key cryptography

- Cryptographic function
 - Secret, key, function, cipher
- Public/Private key
- Cryptographic hashing



Public and Private Keys

- $\text{Public} = H(\text{Private}) == \text{Wallet address}$
- Public key encrypts or confirms
- Private key signs or decrypts

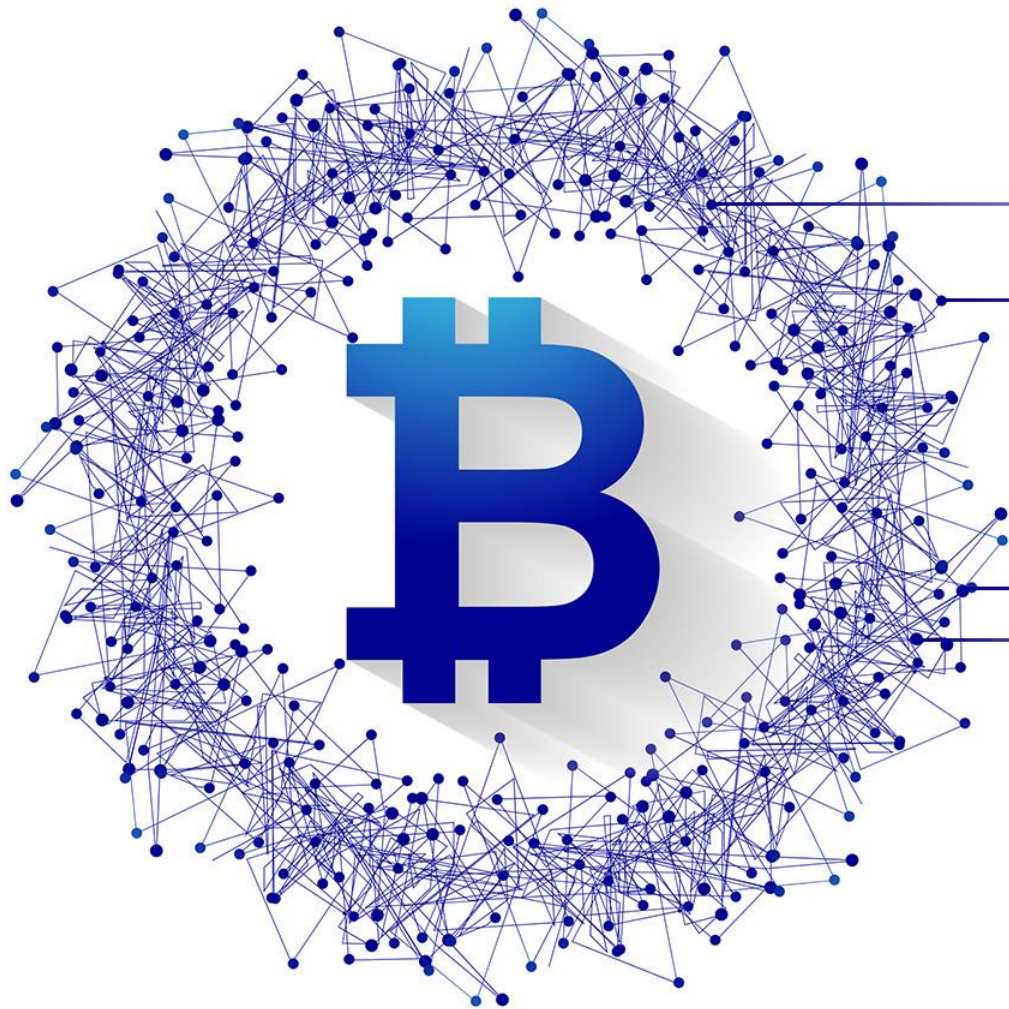


DEMO



Where Can Blockchain Be Used

- Banking
- Business
- Healthcare
- Retail
- Public sector
- Cyber security
- Games
- IoT
- Big data



Thank you!