

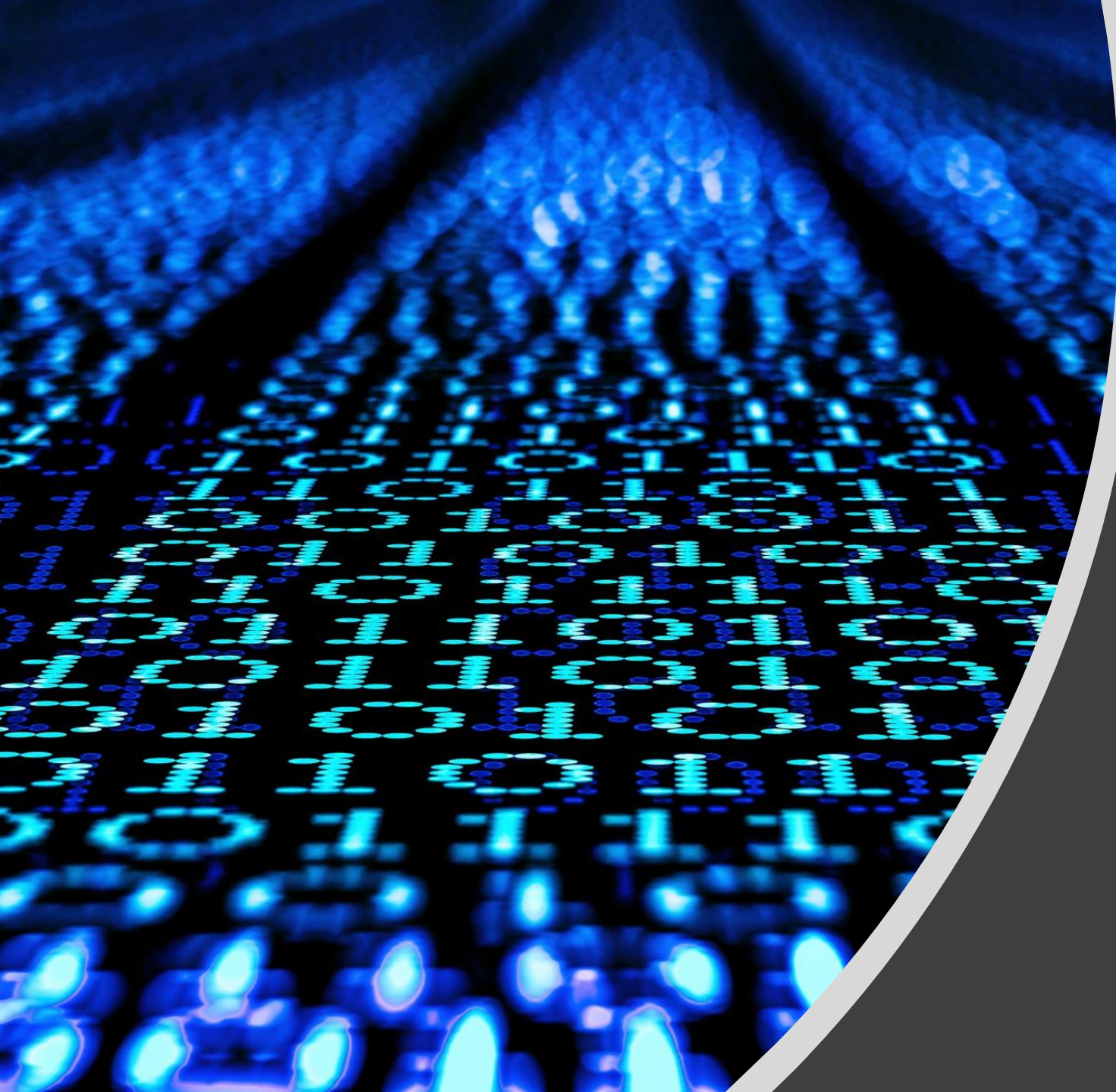


Blockchain and Cryptocurrency

By: Syeda Tayyaba Bukhari



What is
Bitcoin?



3 important
layers in
Crypto World

TECHNOLOGY

PROTOCOL
/ COIN /

TOKEN

TECHNOLOGY

Blockchain

PROTOCOL
/ COIN /

TOKEN

TECHNOLOGY

Blockchain

PROTOCOL
/ COIN /

Bitcoin

TOKEN

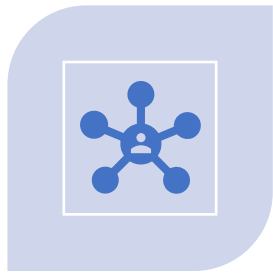


Protocol:

Set of rules that guide how participants of network communicate with each other

e.g: IP (Internet Protocol), HTTP protocols

Bitcoin Protocol:



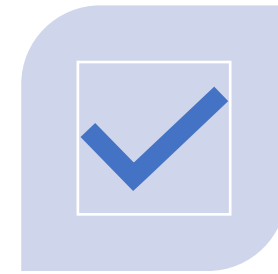
SET OF RULES HOW PARTICIPANTS
OF BITCOIN NETWORK WILL
COMMUNICATE TO EACH OTHER
AND AGREE ON THINGS



FOR EXAMPLE, PROTOCOL
DICTATES HOW THEY COME TO
CONSENSUS OVER THINGS



HOW PUBLIC KEYS AND
SIGNATURES CAN BE USED FOR
AUTHENTICATION



ALSO DICTATES ON HOW AGREE ON
UPDATES TO THE PROTOCOL ITSELF
ETC.

TECHNOLOGY

Blockchain

PROTOCOL
/ COIN /

Waves

Ethereum

Bitcoin

Neo

Ripple

TOKEN

TECHNOLOGY

Blockchain

PROTOCOL
/ COIN /

Waves



Ethereum



Bitcoin



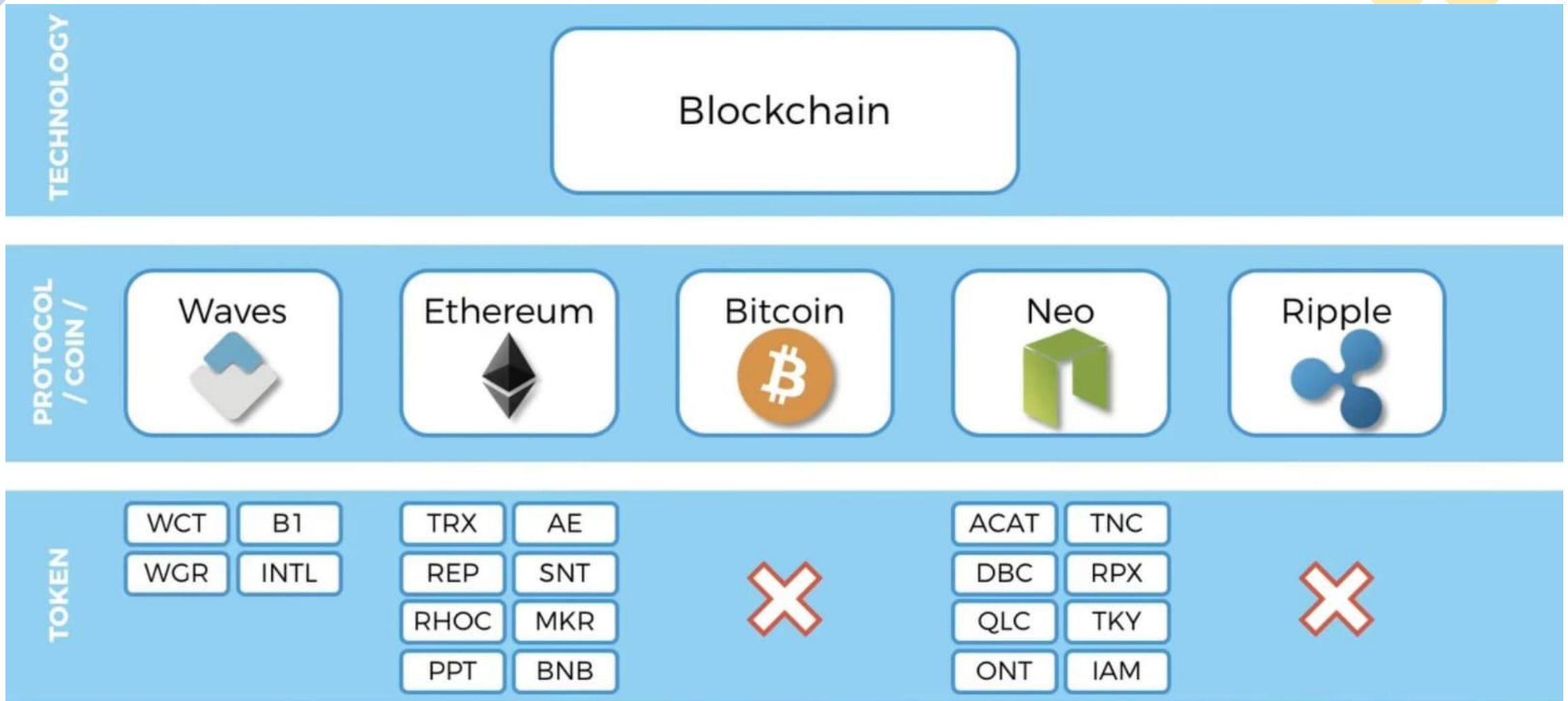
Neo



Ripple



TOKEN



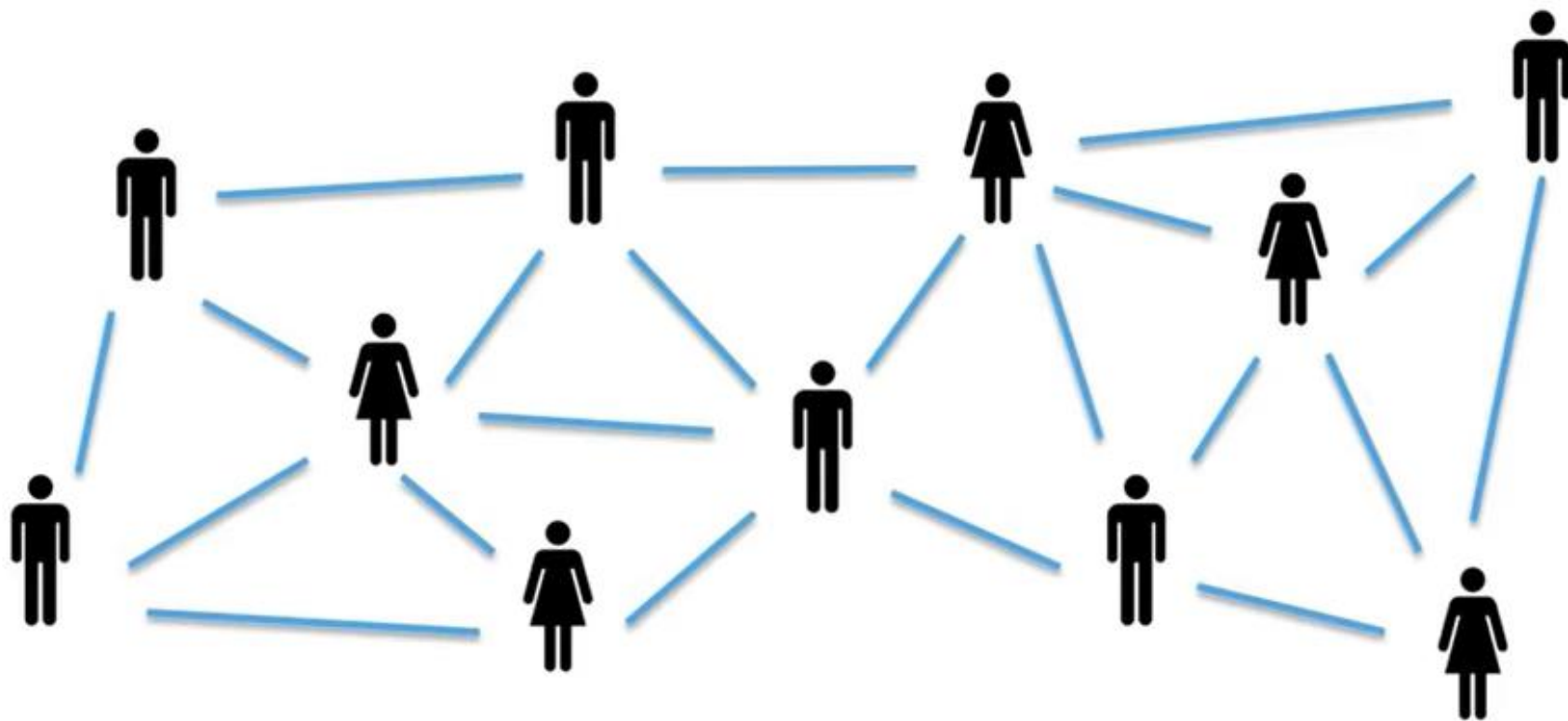
::: ICO: Initial Coin Offering ---term related to tokens



<https://coinmarketcap.com>



Satoshi Nakamoto

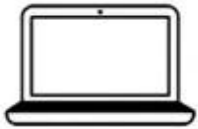


The Bitcoin Ecosystem:

- Nodes



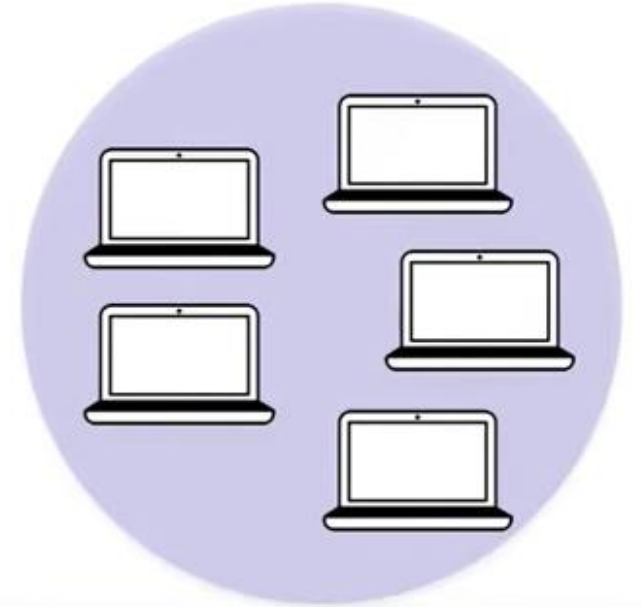
- Miners



- Large Mines

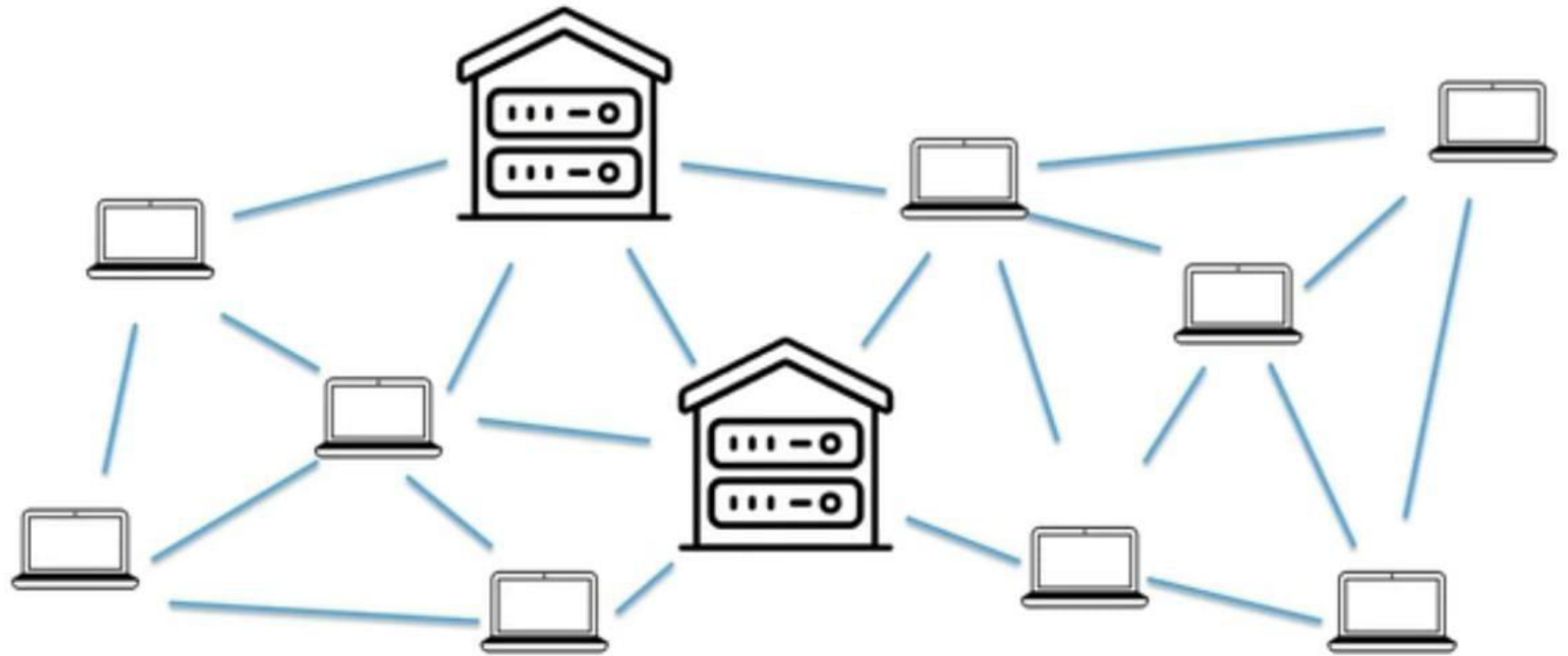


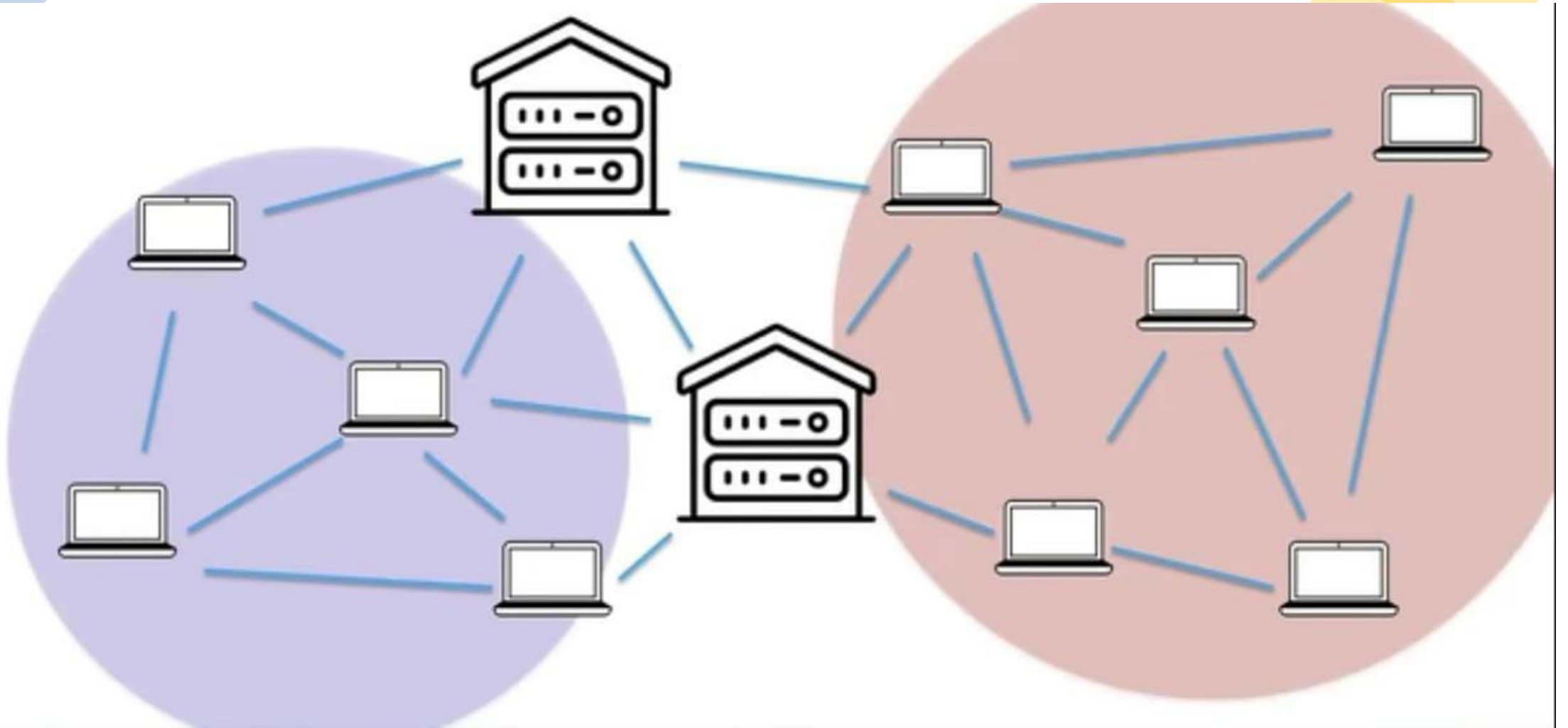
- Mining Pools





Mining Pools







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Bitcoin Monetary Policy

Bitcoin's Monetary Policy

```
graph TD; A[Bitcoin's Monetary Policy] --> B[The Halving]; A --> C[Block Frequency]
```

The Halving

Block Frequency

The Halving

~2020: 6.25

~2024: 3.125

Date reached	Block	Reward Era	BTC/block
2009-01-03	0	1	50.00
2010-04-22	52500	1	50.00
2011-01-28	105000	1	50.00
2011-12-14	157500	1	50.00
2012-11-28	210000	2	25.00
2013-10-09	262500	2	25.00
2014-08-11	315000	2	25.00
2015-07-29	367500	2	25.00
2016-07-09	420000	3	12.50
2017-06-23	472500	3	12.50

The Halving

**TRANSACTION FEES ARE MEANT TO
REPLACE BLOCK REWARDS**







Source: <https://bitsonblocks.net>



<https://chart-studio.plotly.com/~BashCo/5.embed>

Block Frequency

Cryptocurrency	Average block time
 bitcoin	10 min
 ethereum	15 sec
 ripple	3.5 sec
 litecoin	2.5 min



<https://www.blockchain.com>



Incentive for miners


Incentive 1: block reward

Creator of block gets to

- include special coin-creation transaction in the block
- choose recipient address of this transaction

Value is fixed: currently 12.5 BTC, halves every 4 years

Block creator gets to “collect” the reward only if the block ends up on long-term consensus branch!




Incentive 2: transaction fees

Creator of transaction can choose to make output value less than input value

Remainder is a transaction fee and goes to block creator

Purely voluntary, like a tip



Mining economics

If mining reward (block reward + Tx fees)	>	hardware + electricity cost	→	Profit
----------------------------------------------	---	--------------------------------	---	--------

Complications:

- fixed vs. variable costs
- reward depends on global hash rate

Acknowledgement and Source:

- <https://www.udemy.com/course/build-your-blockchain-az/>