



# GROUP

## 2



1. Zamshed Iqbal Farman 1997
2. MD Zuleyenine Ibne Noman 2002
3. Maruful Islam Maruf 2006
4. Md. Shakil Hossain 2023
5. Nahidul Islam 2028
6. Mahbubur Rahman 2024
7. Rahul Das 2026

How about  
start with a  
meme  
(Jokes)?

STOCK  
TRADERS  
-20%

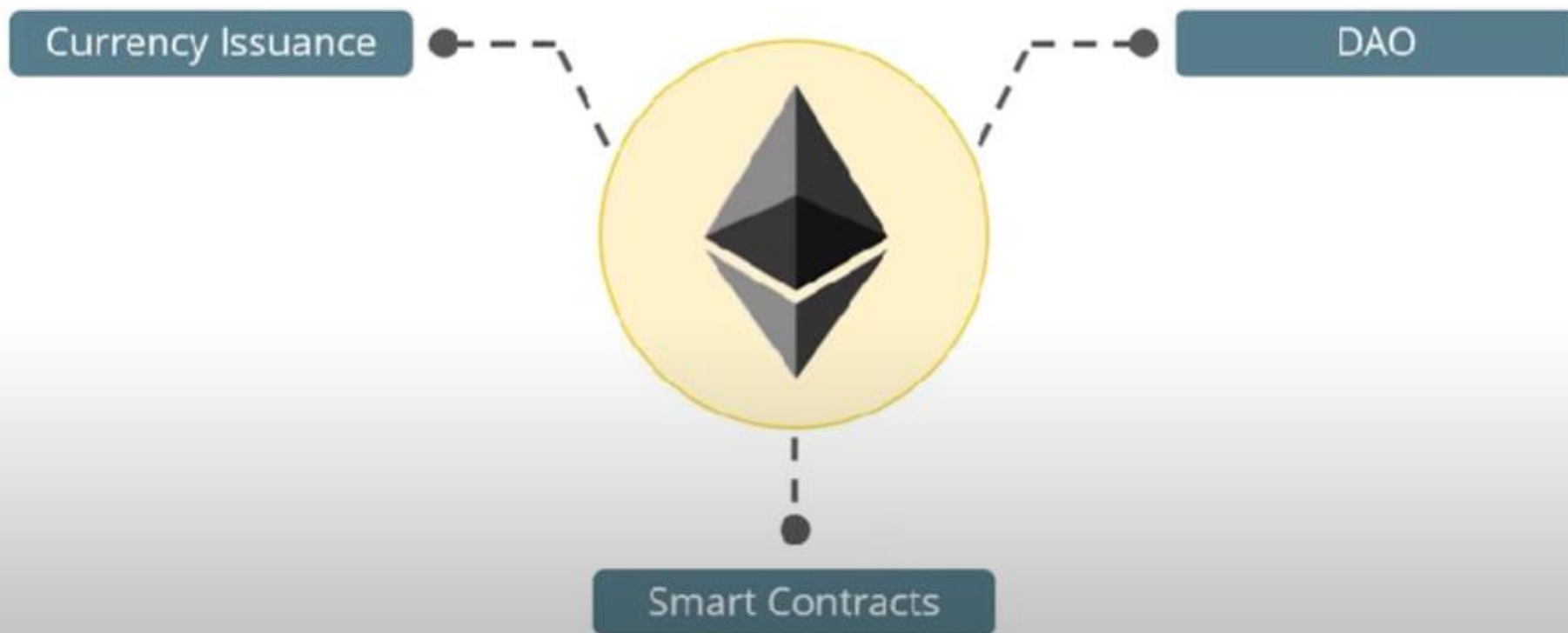


CRYPTO  
TRADERS  
-70%



# Ethereum

Ethereum is a decentralized platform that runs the smart contracts without any downtime, fraud, and third-party interference and also has its own cryptocurrency called Ether.



# Features of Ethereum

**Secured**



**Community  
Support**



**Corporate  
Friendly**



**Asset  
Issuance**



**Fast**



**Uncensored**



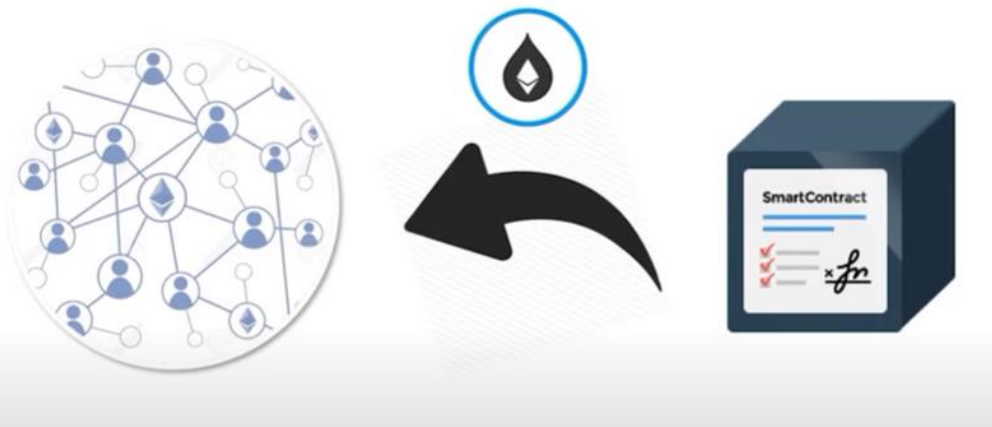


## Gas in Ethereum



Gas is the fundamental block of Ethereum ecosystem that is paid for every operation performed on Ethereum Blockchain.

It is the crypto fuel for Ethereum. It can be considered a transaction fee which has to be paid when one party sends Ethers to another party.



| Overview                |   | Comments                                   |
|-------------------------|---|--|
| Transaction Information |   |  |
| TxHash:                 | 0x70fc74551a132a301e5b4a6c1c6dbbfe23d4a6479501b60c6468cd2f6ba0cf3b  |  |
| Block Height:           | 4456379 (38398 block confirmations)   |  |
| TimeStamp:              | 6 days 4 hrs ago (Oct-30-2017 06:47:30 AM +UTC)   |  |
| From:                   | 0xd2e3c4856d25a71fa777769b5dc9596890568026  |  |
| To:                     | Contract 0x9214ec02cb71c8a0ada6896b8dc260736a57ab10<br>Warning! Error encountered during contract execution |  |
| Value:                  | 0 Ether (\$0.00)  |  |
| Gas Limit:              | 60000   |  |
| Gas Used By Txn:        | 60000   |  |
| Gas Price:              | 0.000000021 Ether (21 Gwei)   |  |
| Actual Tx Cost/Fee:     | 0.00126 Ether (\$0.38)  |  |
| Cumulative Gas Used:    | 417676  |  |
| TxReceipt Status:       | Fail  | Failed transaction due to insufficient gas |
| Nonce:                  | 176   |  |

# Ether

Ether is a necessary element needed for operating the Ethereum platform.



An incentive that the client of the platform pays to execute requested operations

It ensures that the developers write error-free codes, because unnecessary codes will increase the cost

The crypto-fuel for the Ethereum network



## Bitcoin vs. Ether

| Bitcoin  | Ether  |
|--|--|
| Uses secure hash algorithm (SHA-256)                               | Uses ethash algorithm                            |
| Used for purchasing goods and services                             | Used for making decentralized apps               |
| Is priced at \$3500 at the moment                                  | Is priced at \$100 at the moment                 |
| A currency created to compete against the gold and fiat currencies | A token created for facilitating smart contracts |
| Transaction speed is measured in minutes                           | Transaction speed is measured in seconds         |

## Ethereum Wallets

A place to securely store the ether is called wallets.

Hardware Wallet



Desktop Wallet



Mobile Wallet



Paper Wallet





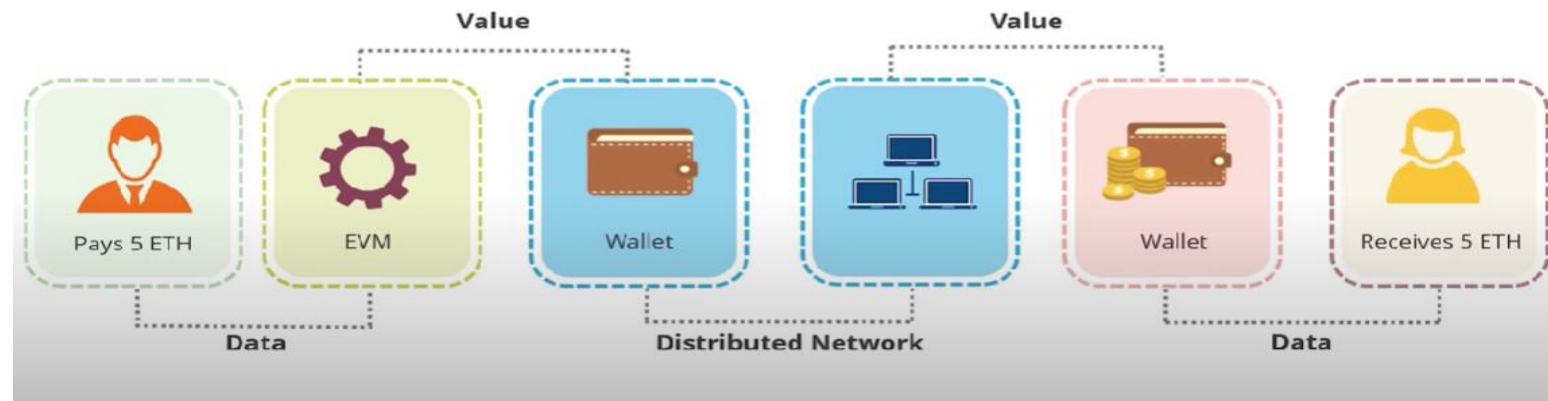
## EVM EXPLAINED What is Ethereum Virtual Machine?



Ethereum Virtual Machine (EVM) is an engine which executes translation code. Smart contracts are compiled into bytecode which an EVM can read and execute.

Ethereum possesses its own programming language known as the EVM Bytecode.

The Ethereum Virtual Machine uses a set of instructions, called opcodes, to execute specific tasks.



## Ethereum Languages



# Types of Ethereum Accounts

## Externally Owned Accounts (EOA)

EOA is an account controlled by a private key that has the ability to send Ethers and messages from the account.

- 1 It has an Ether balance
- 2 It can send transactions
- 3 It is controlled by private keys
- 4 It has no associated code

## Smart Contract

A smart contract is a code running on top of the Blockchain. It contains the set of rules for the nodes to agree upon so that they interact with each other.

- 1 It has an Ether balance
- 2 It has an associated code
- 3 It is triggered by transactions or messages
- 4 It performs operations of arbitrary complexity

## Characteristics of Smart Contract



## Process of Smart Contracts



An optional contract between the parties is written as a code in the Blockchain. The individuals involved are anonymous, but the contact is made through a public ledger.



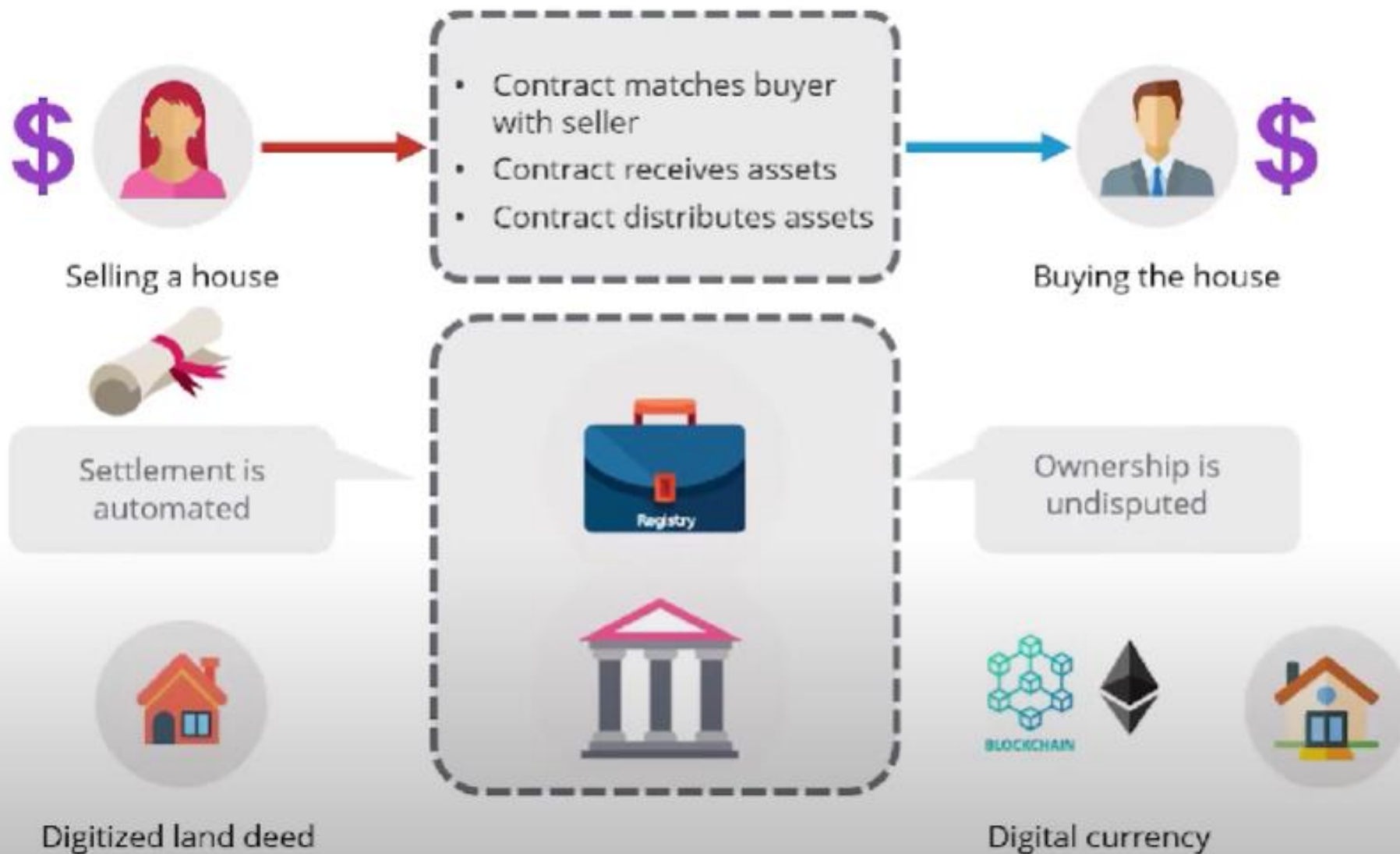
A trigger event like an expiration date or a strike price is hit, and the contract executes itself according to the coded terms.



Regulators can use the Blockchain to understand the activities in the market while maintaining the privacy of an individual's position.



# Smart Contract: Example



# EOA vs. Smart Contract



Nonce

Balance

CodeHash

StorageRoot



Nonce

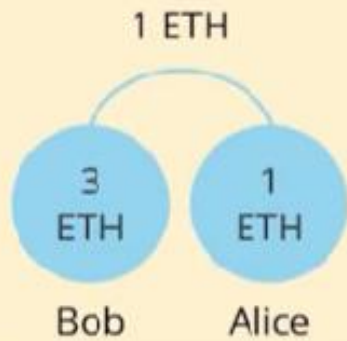
Balance

CodeHash

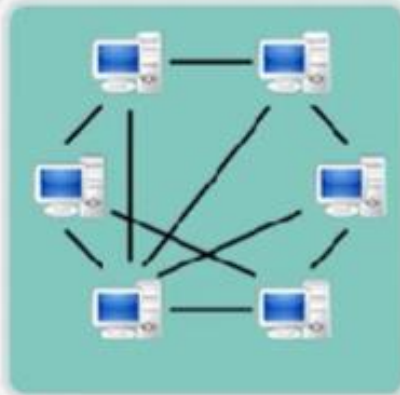
StorageRoot

# Ethereum Mining

Ethereum makes use of Proof of Work mechanism to ensure security.  
The algorithm used is Ethash.



Bob attempts to send Alice 1 ETH



Bob and Alice's transaction is combined with what occurred in the last block



Miners will validate the block with new set of instructions



The miner creates a new block and is rewarded for it

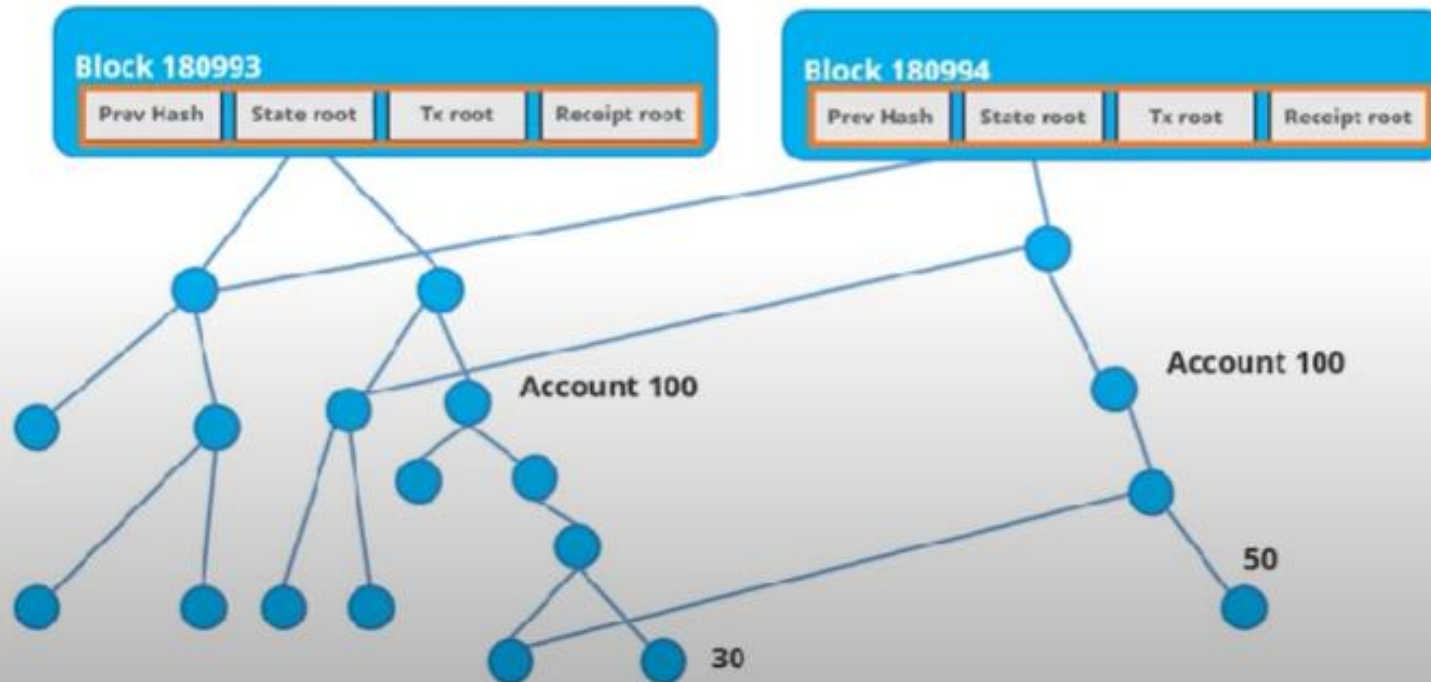


Alice receives 1 ETH after transaction is validated

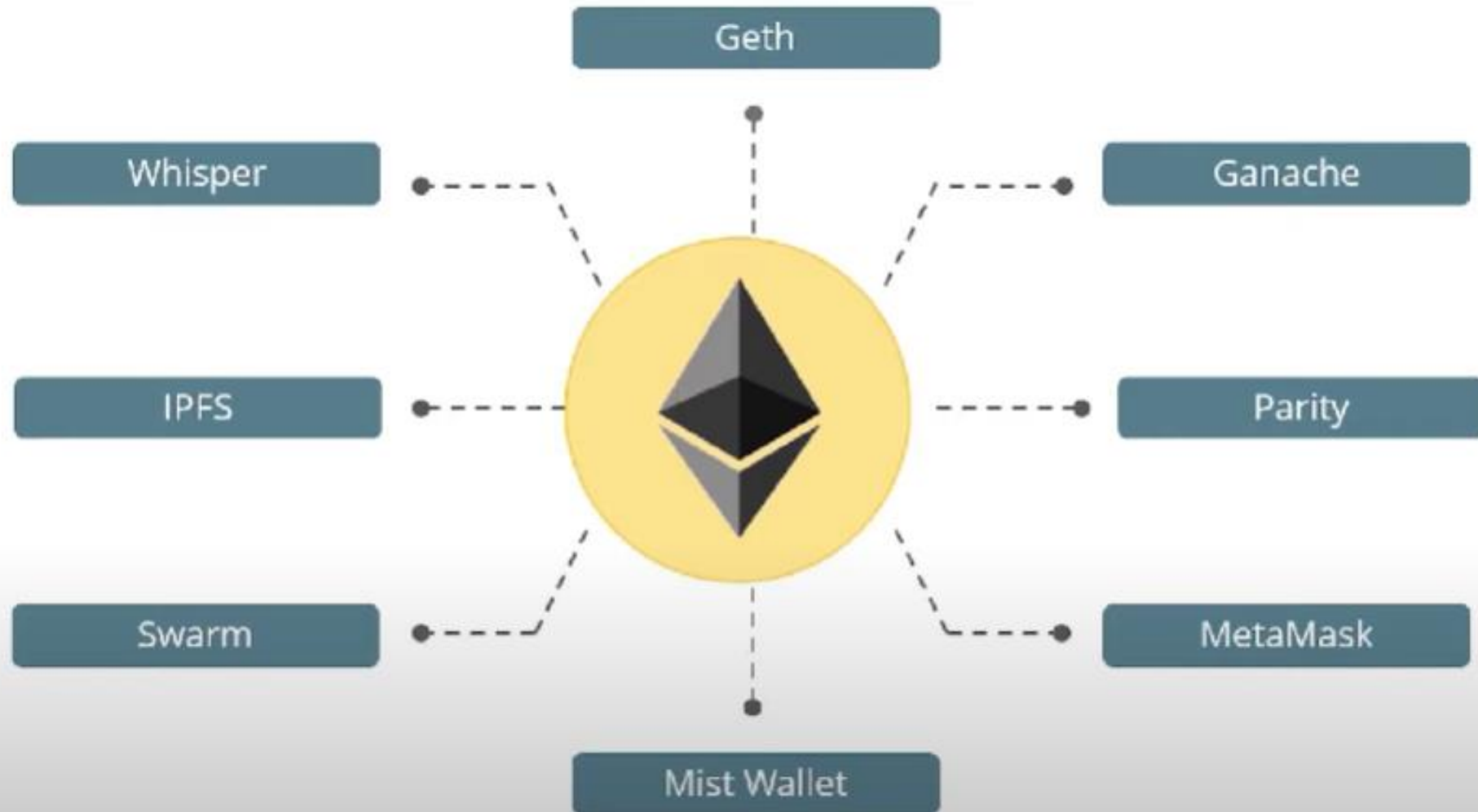
# State Storage

The states are assembled into a state tree that is linked to the account and the block.

The Ethereum includes state roots that store the root hash of the hash tree which represents the system state when the block was created.



# Types of Ethereum Tools







Multipurpose command-line tool that runs an Ethereum node implemented in Go



Ganache CLI is a fast and customizable Blockchain emulator which allows to make calls to Blockchain without running the actual Ethereum node.



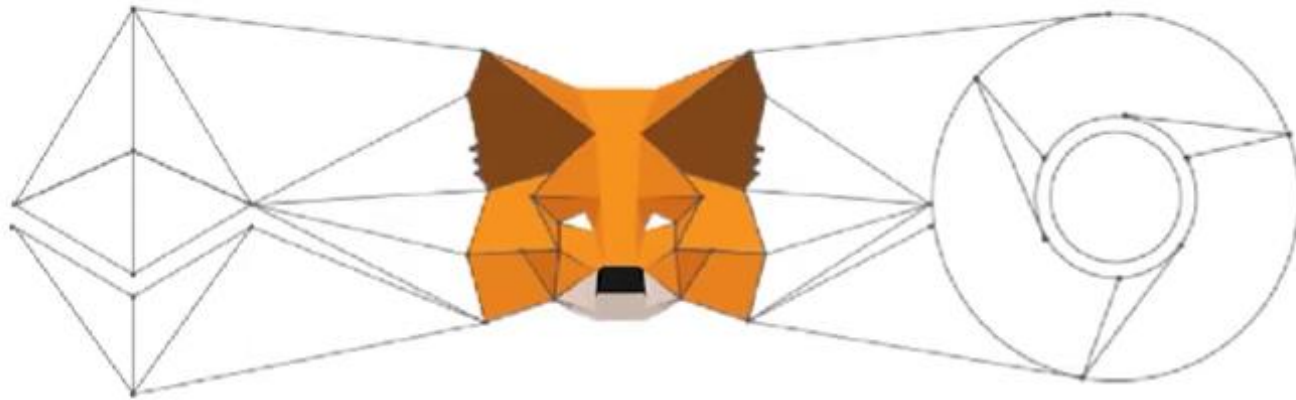
Parity is written in Rust language

It is an Ethereum client that is integrated directly into your web browser

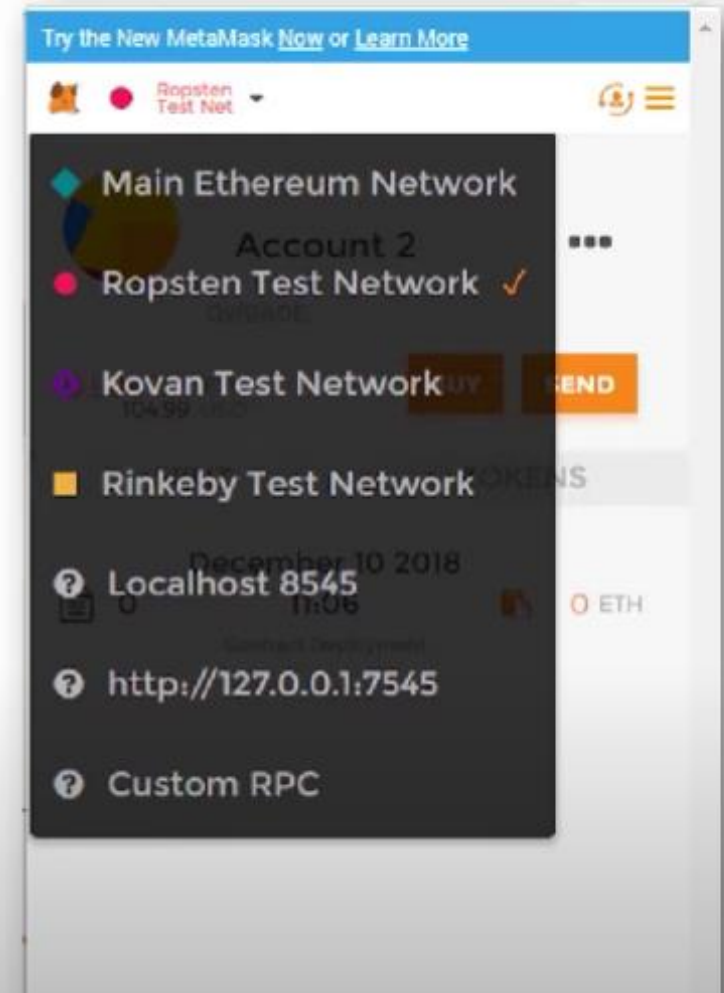
Parity serves as an Ethereum GUI browser

Parity provides access to a diverse range of Ethereum features including dApps

# MetaMask



MetaMask turns Google Chrome into a browser that allows the users to send and receive transactions and also to fetch data from the Blockchain.



## Mist Wallet



Sending and receiving transactions

Storing Ether

Creating multi-signature wallets

End-user interface for Ethereum that is developed for browsing and using Dapps

Mist is an official Ethereum wallet

It was developed and distributed by the team, which is responsible for the management of Ethereum ecosystem

It is used by developers who want to create, deploy, and use smart contracts

It is a full node wallet, which means, you'll have to download the entire Ethereum Blockchain onto your computer

# Swarm

It provides sufficient decentralization and redundant storage of Ethereum records to distribute Blockchain data as well as Dapp codes.

Leverages the underlying  
Ethereum infrastructure



Accounting protocol is used by  
the peers

Files are split into pieces and  
are stored in the nodes of the  
network

# InterPlanetary File System (IPFS)

IPFS is a decentralized storage system that is not related directly to Ethereum but can be integrated with it

IPFS stores data by use of a Distributed Hash Table

The data transfer between the nodes in the network uses a mechanism which is similar to the one used in BitTorrent

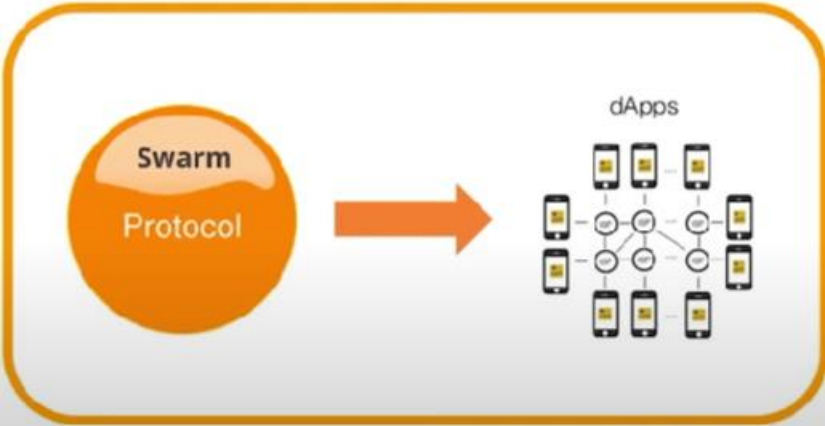
IPFS provides a versioned file system capable of storing files and tracking versions over time







Whisper is an identity-based communication protocol for Dapps to interact with each other.



**Drawbacks in Whisper:**

Unreliable for tracing packets

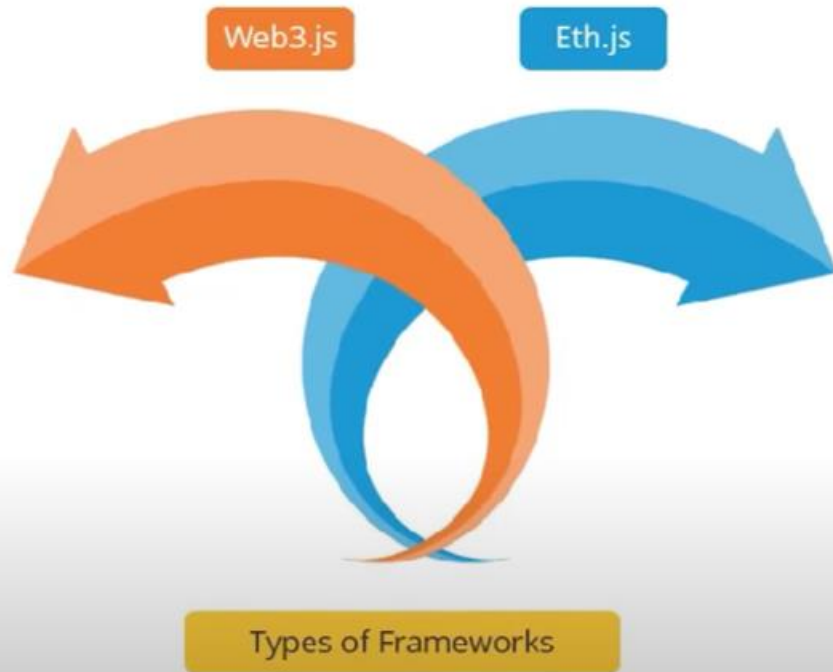
Uncertain latency

Low bandwidth

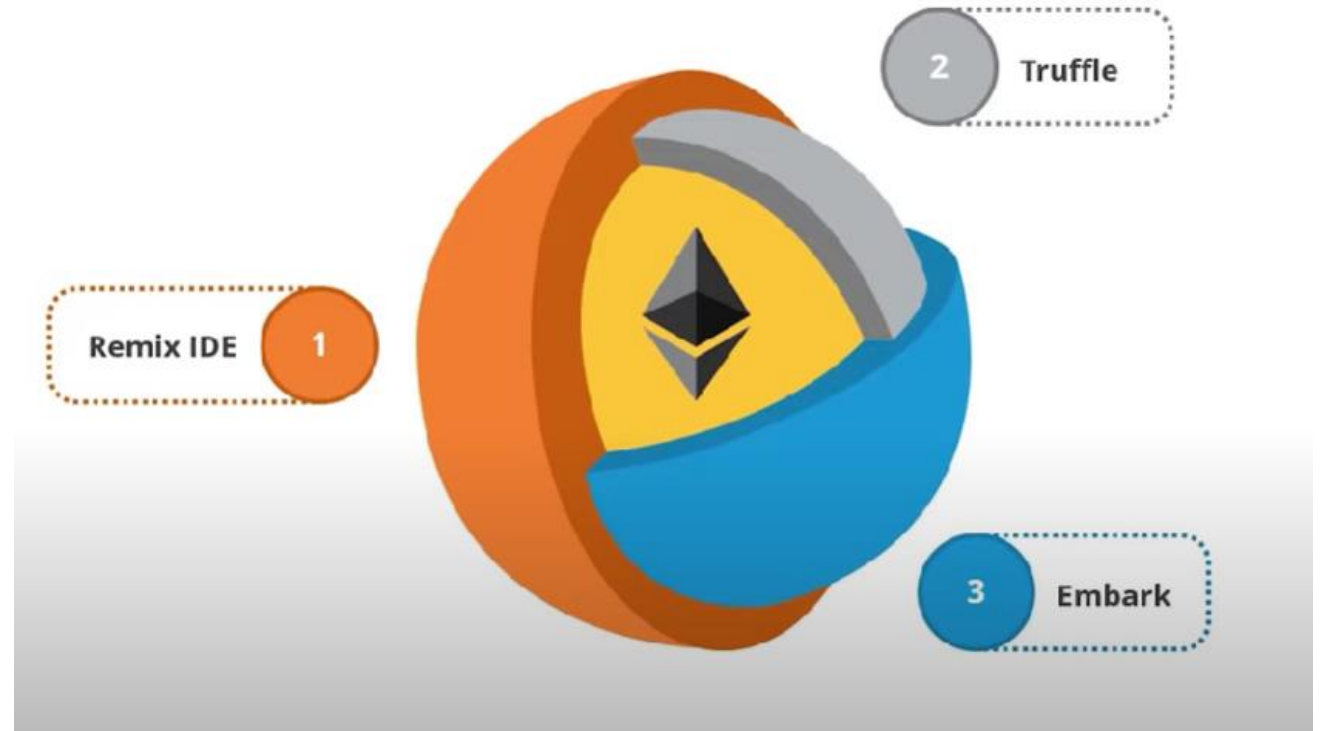


Low-level API

## Ethereum Frameworks



## Ethereum Development Environment



# Ethereum Decentralized Application (DAPP)

Decentralized application is an application that is used on networks with trustless protocols to avoid a single point of failure.



Uses Ethereum as a development platform

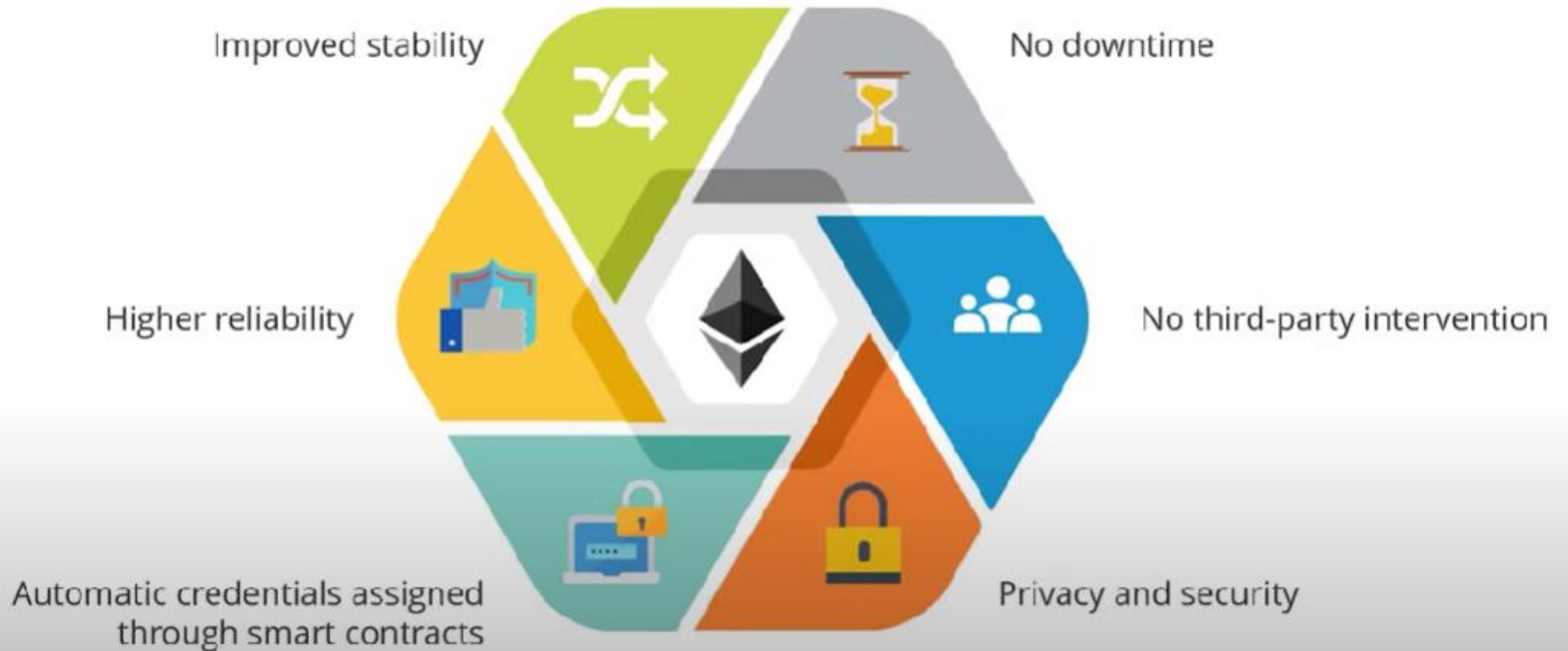
Not governed by a central server

Uses cryptographically encoded blocks

There is no master copy of Dapp

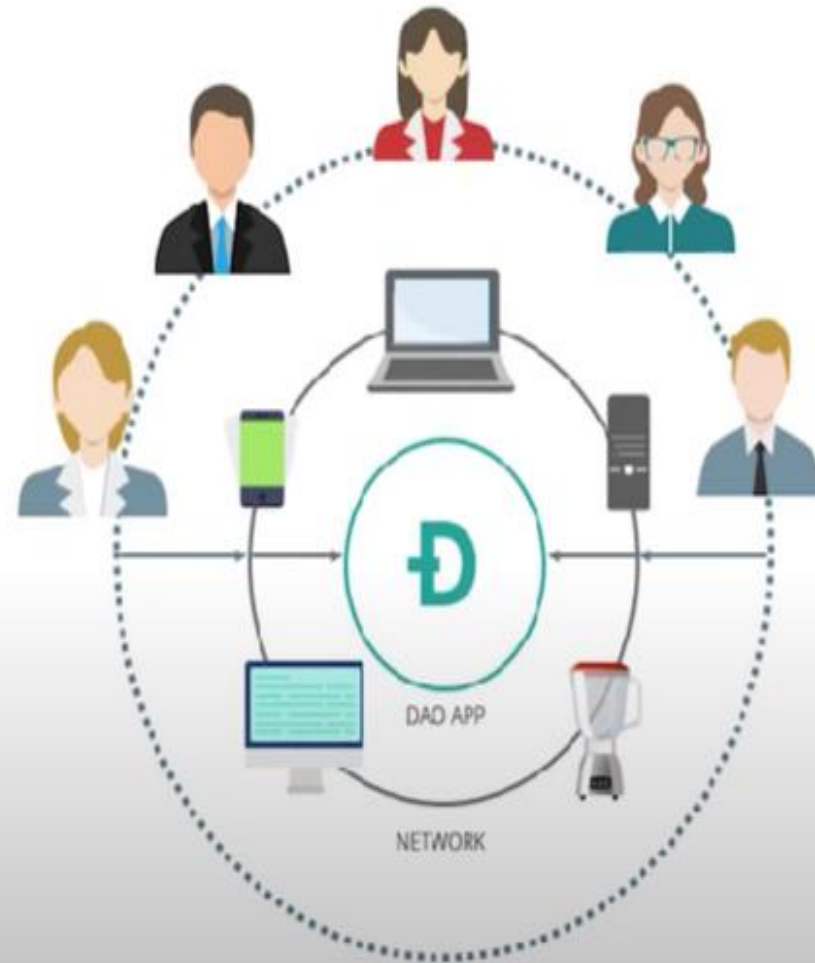


## Advantages of Ethereum DAPPs



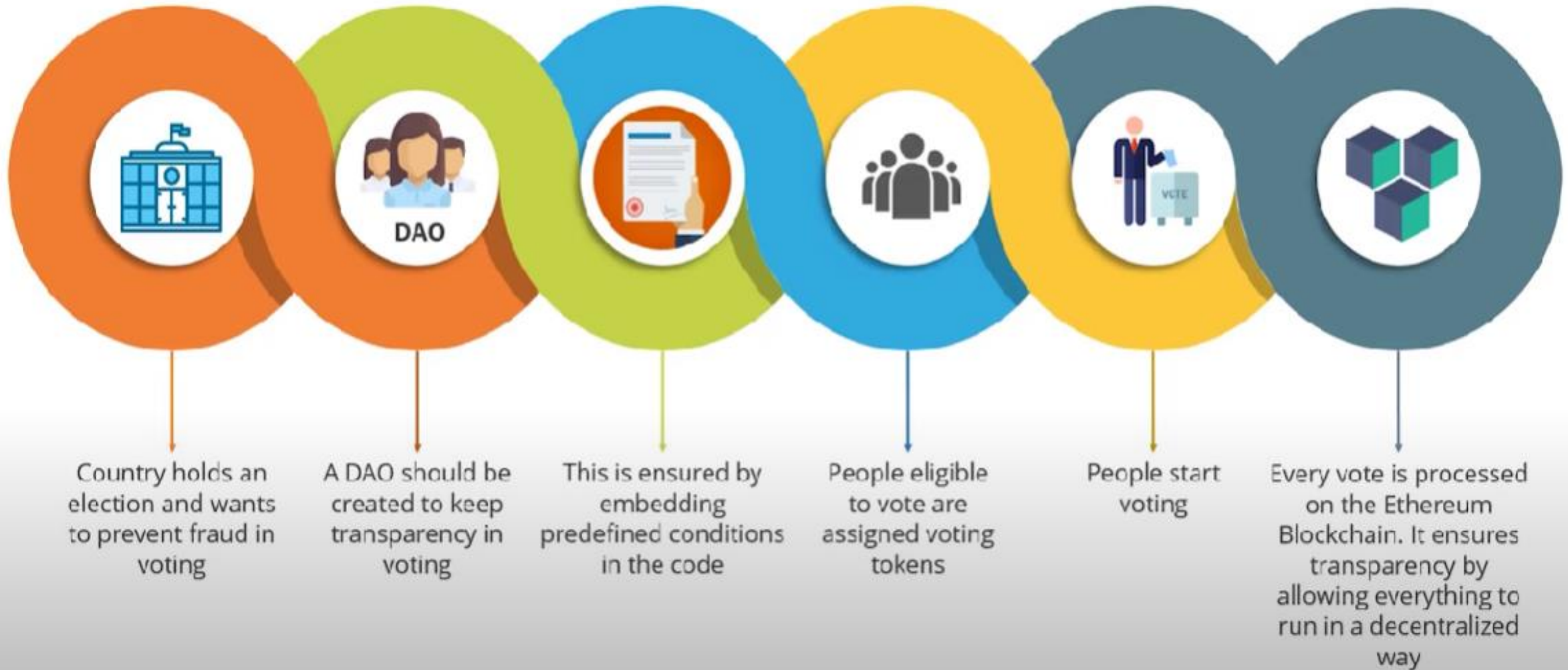
# Decentralized Autonomous Organization (DAO)

It is an open source software capable of having modifications made by its members.





# Process of DAO





<https://www.youtube.com/watch?v=04f1YsVntw8>

