

BLOCKCHAIN BASED

SMART CONTRACT FOR VOTING SYSTEMS

Introduction :

- Election is a way to choose the representatives through fairness, integrity, and democratic rules.
- During the election, the voting system allows authorized voters to cast their vote for candidates
- The voting system begins evolving from paper voting, then E-voting and the latest will be I-voting
- E-voting is the most adopted worldwide and it is a tool that frequently represents democracy of the election. Therefore, most of the countries continue to research and improve the E-voting process

Key Requirements For Voting System :

- Authorized voters should be able to vote (equal opportunity about accessibility and place).
- Cost of the election should affordably.
- The voter can verify whether their vote has been counted, and the result is tally throughout the voting process.
- The vote is immutable which disallows tampering and involves the third-party.
- The result should be the same as the numbers voted by the authorized voters.
- No others can refer to their vote than themselves.
- The votes should be able to audit after the election.
- The voting procedure should be able to be verified by all participants.

Issue :

- Except for E-voting accessibility, it has been until now, not the ideal solution for democracy as it can be tempered because of physical access (evaluated by researchers and the security community)

Consider the Below News :

1. EVM found in BJP candidate's car in Assam.



Source

<https://www.indiatoday.in/elections/story/assam-karimganj-evms-bjp-leader-car-congress-bjp-suspeded-election-commission-latest-news-developments-1786332-2021-04-02>



**2. EVM, VVPATs found at TMC leader's residence in Uluberia Uttar,
3 ECI officials suspended.**



Source :

<https://www.indiatvnews.com/elections/news-evm-vvpat-found-at-tmc-leader-gautam-ghosh-residence-uluberia-uttar-695733>



Result :



Conclusion from The above Incidents :

- EVM machines can be tampered and can be manipulated
- For a healthy and alive democracy we should find better solutions, to overcome these kinds of incidents , otherwise there is no use of democracy just for the name shake .

Note : Among all the methods of voting till now which includes (paper ballot , E-Voting , I voting) all cannot meet upto the mark of expectation for a healthy and alive democracy .

Blockchain Technology :

Entering into blockchain technology Provides the best expectation for a healthy and alive democracy because it is an immutable , incontrovertible public ledger.

- (1) No single point of failure in the maintenance of the distributed ledger.

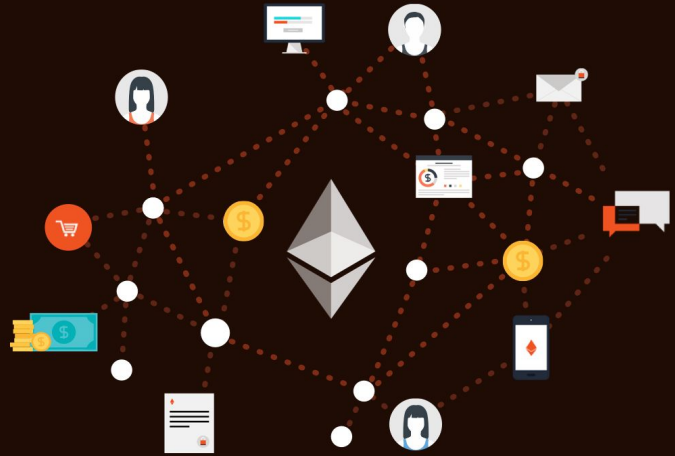
Voting As a Ethereum Smart Contract

WHAT IS ETHEREUM?

Ethereum is a decentralized platform that runs smart contracts: applications that run exactly as programmed without any possibility of downtime, censorship, fraud or third party interference.

Ethereum is how the Internet was supposed to work.

Ethereum was crowdfunded during August 2014 by fans all around the world. It is developed by ETHDEV with contributions from great minds across the globe.



Elections :

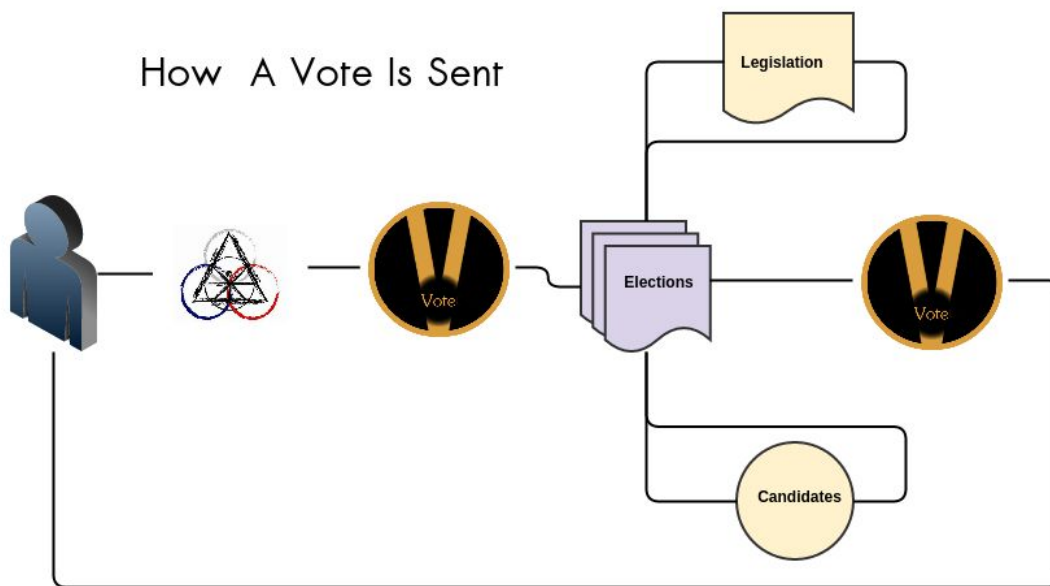
- VOTE - chain of digital signatures
- election is smart contract between voters and legislation/candidate
- Each election holds addresses, private keys & requests and sends tokens to a voter's address and a tally count that goes up on each vote completed

Components :

- election timed lifespan
- set of rules, candidates
- legislation
- budget
- accessible URL
- address: divisible

Voter :

- tally count for each vote from a voting address
- successful vote: voting address hashed with proof of tally tokens in and put it blockchain (ethereum)
- proof of tally for each vote verified by axiomatic and election
 - ❖ gives voter profile a active/inactive/fraudulent status



Abstract Architecture and System Design :

