

# E VOTING SYSTEM USING BLOCKCHAIN TECHNOLOGY

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## ABSTRACT:

This paper elicitates the requirements of building electronic voting system that includes block chain technology. Voting is a very important part of any democracy. The larger the implications for each decision the more people who can participate in the process. In the current voting system there is a lack of transparency and security. It is difficult to keep track of each voter's eligibility and validity to participate. To solve the above problems block chain technology is the one which provides high security and transparency.

**Keywords** - Remix ide, Smart contract (eth-hash algorithm), 16-digit wallet address, Private key.

## 1. INTRODUCTION:

An election is a matter of national security. Online platforms are widely used today. With the goal of minimizing the cost of having a national election while fulfilling and making comfortable voting for the candidates. To provide high security we proposed block chain based voting system.

Blockchain is a technology defined as a chain of blocks that are cryptographically secured and joined together. It is used to provide the secure transfer of items like money, property, contracts. Current voting system like ballot box voting or electronic voting suffer from lack of security like vote alteration and manipulation, malware attacks. It also requires paperwork, a lot of time consumes, human resource etc. And also current voting system is difficult for differently abled voters to reach the polling booth and to wait in a long queues during election.

## 2. LITERATURE SURVEY:

In recent surveys says that most of the voting process are done in ballot box. In order to reduce the cost of material and physical presence of human moreover, to enhance the convenience in the task of polling, E-voting has been considered as the easiest and time consumption method all over the world. There are techniques like Homomorphic Encryption Technique and to monitor the data (Centralized architecture.)

### HOMOMORPHIC ENCRYPTION TECHNIQUE:

Online voting system utilizes homomorphic encryption technique to count votes. The final outcome is taken from encrypted collection of votes without decrypting them. So, it remains unknown who voted whom. In this system integrity and anonymity of the voter remains hidden.

Example: Partially Homomorphic encryption (with regard to multiplicative operations) is the foundation of **RSA** encryption, which is commonly used in establishing secure connections through **SSL/TLS**. Some examples of **PHE** include **EIGamal** encryption (a multiplication scheme) and paillier encryption (an addition scheme).

### CENTRALIZED ARCHITECTURE:

A centralized architecture implies the availability of a single or a few entities that have control over the entire network. Note that a centralized approach typically **means one-hop connectivity** to all network members but, in the context of short-range embedded systems, is typically realized via a **multihop network**.

Example: An access panel in a locked and secure room- common practice in many typical commercial buildings. The advantage of the centralized approach includes the ability to monitor and /or control personnel who enter the room.

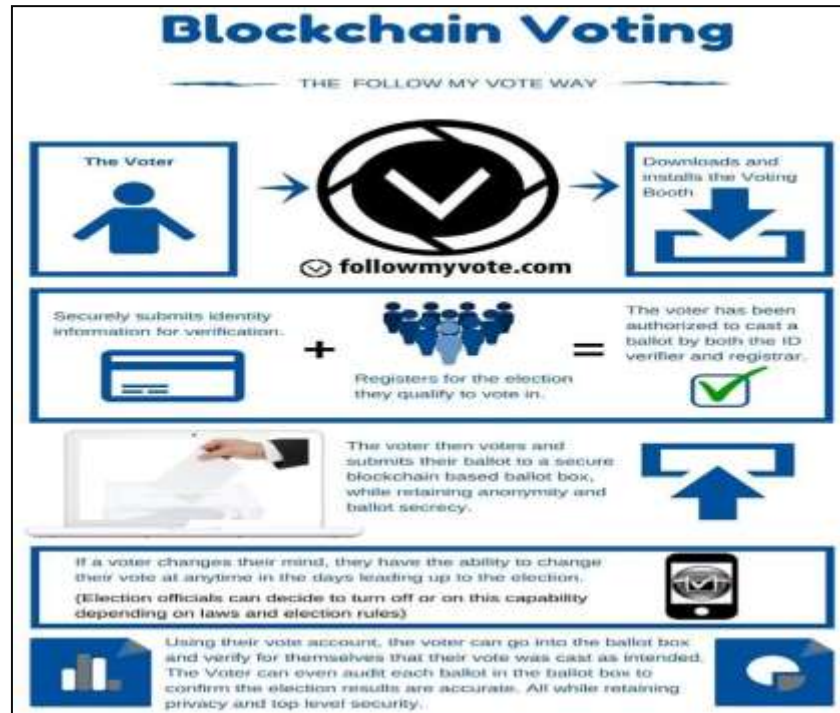


Fig.1: Process of Blockchain technology in voting system

### 3.METHODOLOGY:

1. Here the voting can be done through electronic devices like laptop or desktop using internet browser. in the frontend which is integrated with blockchain – a special property called immutability protects system. Consider sql, php or any other traditional database systems , we can insert , update or delete votes. But in blockchain based voting we can just insert data but cannot update or delete. Hence when you insert something it stays in a block and no one can manipulate it.

We are using smart contracts because it allows transactions to be carried out without the need of any central entity and it provides efficiency.

As the smart contracts are being used in order to communicate/interact with blockchain by using Ethereum platform. In the blockchain a block is nothing but it holds information about the present and past transactions.

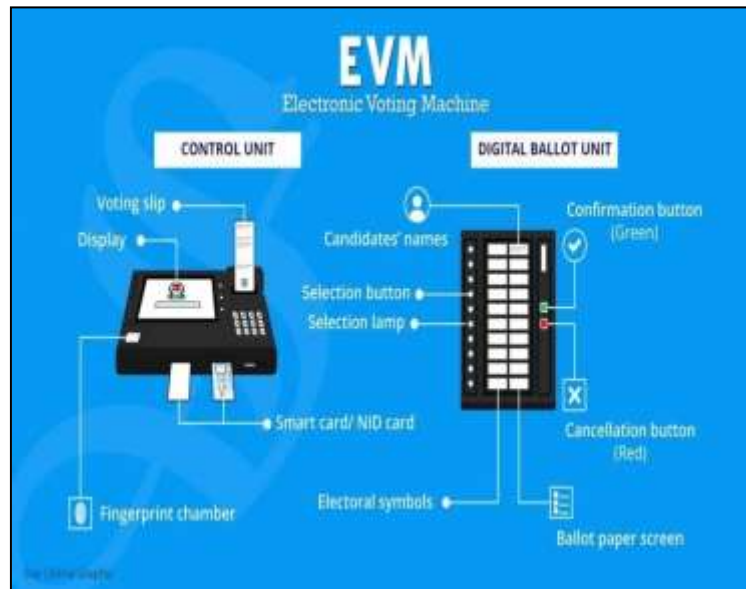
When the user make an entry a new block is created it gives the way as permanent record of transactions which is being stored. So each block contains the hash value, timestamp etc.

2. Blockchain is an open, distributed ledger that can record the transactions which was made previously between two parties efficiently and also third parties can't able to access the data.

3. The main primary use of blockchain is to provide distributed ledger for crypto currencies, mostly bitcoin.

**EXISTING SYSTEM:**

The Indian Electronic Voting Machine (EVM) were developed in 1990's by election commission of in collaboration with Bharat Electronics Limited. EVM's were introduced in Indian elections between 1998&2001. EVM's were used in all general and state assembly elections of India since 2014. It is accompanying VVPAT(Voter-Verified Paper Audit Trail) are now used in every assembly and general election in India and a small percentage of the VVPATs are verified.



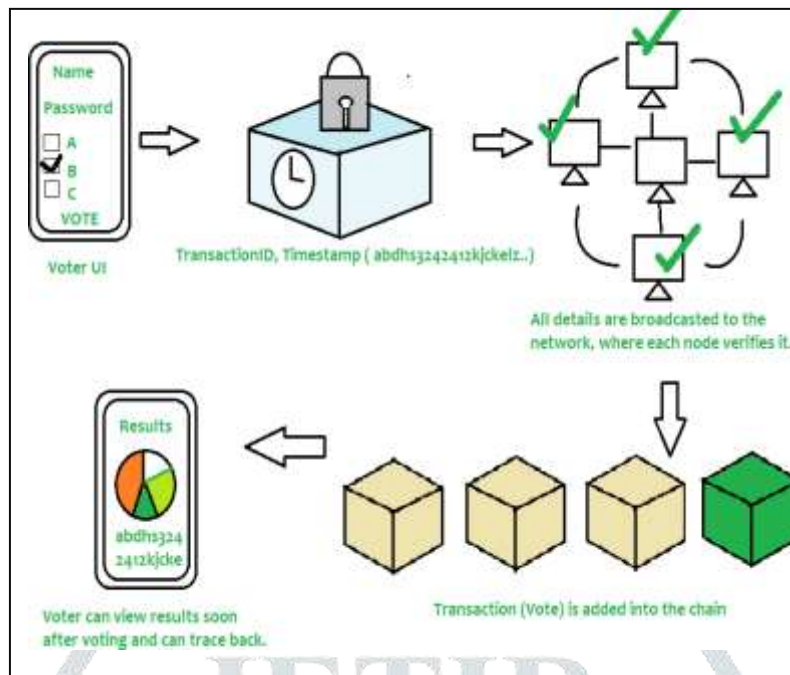
**Fig.2 EVM- Electronic Voting Machine**

**PROPOSED SYSTEM:**

Smart contracts are being executed in ethereum platform, we are going to use remix ide-ethereum platform and In this web3 provider is nothing but geth which will provide web3.js [collection of libraries] which will allow us to interact with remote ethereum node using a secured HTTP connection. Here we are using metamask plugin as the web3 provider. When we deploy the smart contracts , the metamask plugin gets automatically executed which we added as an extension to the browser and when we enter the password it gets into our account in order to transfer ether to make transactions in blockchain so, here we are going to make a transaction with a unique address in order to communicate with blockchain.

1. Firstly the user needs to enter their phone number, up next the otp will be generated and send to that phone number which the user needs to enter.
2. The private key which will be generated by the blockchain. This key which will be viewed on the display itself, the user needs to enter and its unique, so that the votes are secure and transparent.
3. That is when the user enter the key, the hash value will be created and which will be stored in a block with voter id, timestamp, all the details of the user can be viewed in this blockchain.

Next the user can cast their votes after giving their basic details like name, place DOB etc and they can view the results in a period of time.



**Fig.3 Decentralized voting system using BlockChain**

Using blockchain in order to vote all data is encrypted and stored as a transaction. this transaction is then broadcasted to every node in network, which in turn is then verified. If network approves transaction, it is stored in a block and added to chain, it cannot be manipulated. Users can now see the results and also trace back transaction if they want.

#### 4. CONCLUSION:

Through this method, we can achieve security, reliability. In the current voting system the people need to go to polling booth and then they have to cast their vote after few months the result will be published. In this blockchain based voting system provide transparency. Through this smart contract the voter can vote only once the result also displayed in a period of time.

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