E-Voting System using Azure Blockchain

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Blockchain

Blockchain-the revolutionary technology was first introduced by Satoshi Nakamoto in his whitepaper 'Bitcoin: A Peer-to-Peer Electronic Cash System' introducing the first cryptocurrency. While the technology has revolutionalized the idea of digital currency, it also finds it's applications in other fields like Supply Chain Management and Asset Transfers to name a few.

Why Blockchain?

What makes blockchain unique is it's inherent architecture that supports a decentralized, distributed and immutable ledger.

The key features are:

1. Decentralization
2. Transparency
3. Immutability
4. Distributed and P2P Network
5. Security and Anonymity

E-Voting System

Democracy is the best form of government while many argue might be true in theory, it creates another set of problems in the real world like-

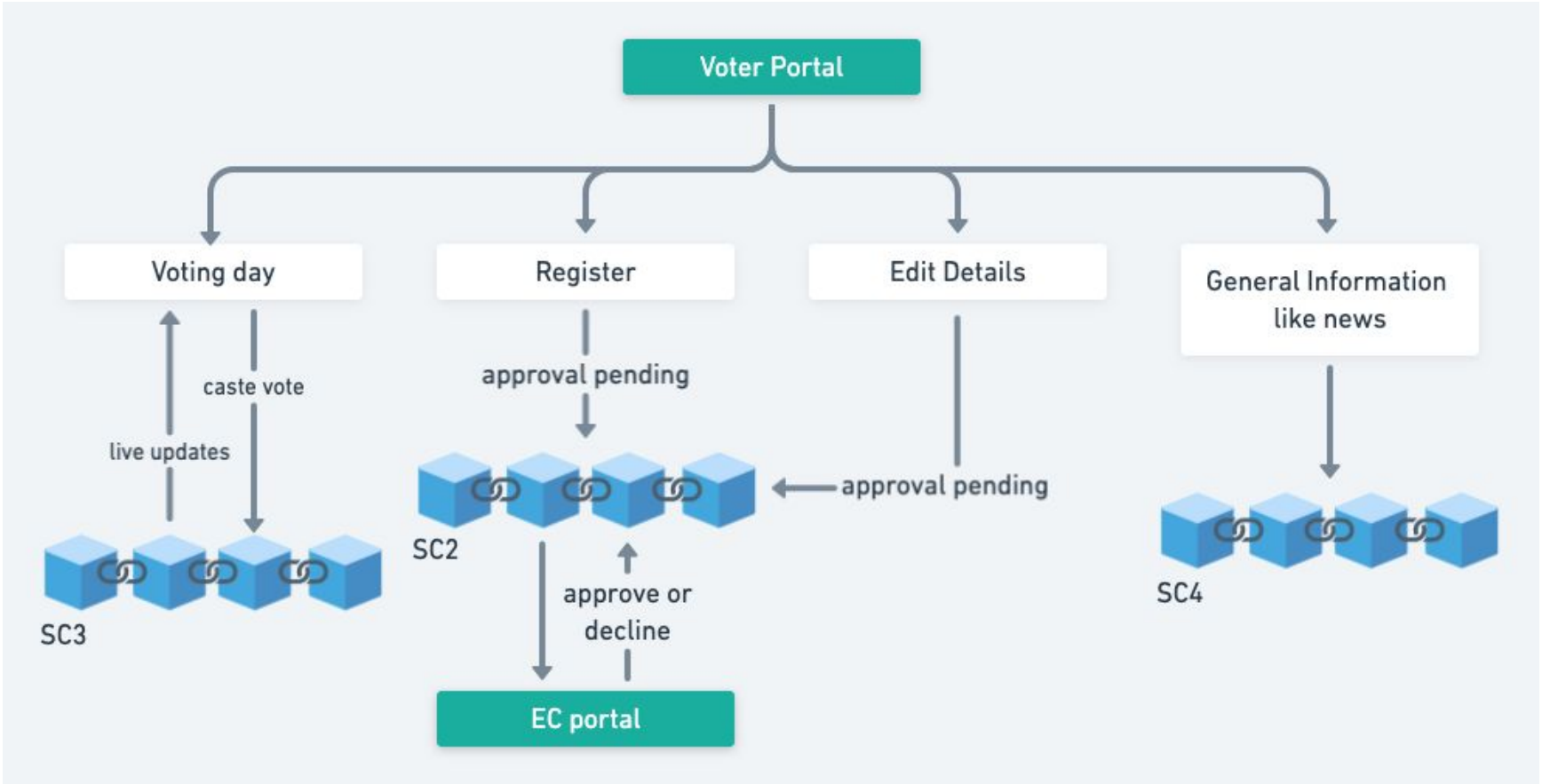
1. Delay in results
2. Vote Tampering
3. Threat to security and privacy
4. Corruption
5. Bribes for Votes

The Idea

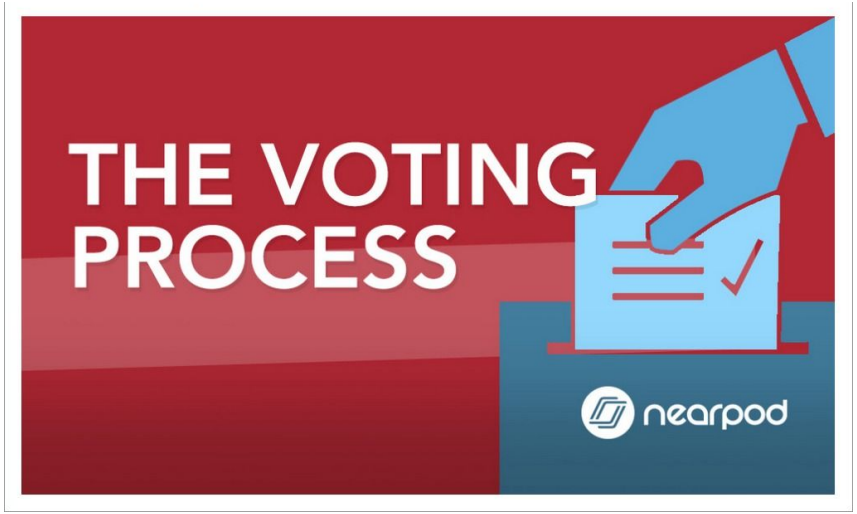
Voter's Portal

The portal will be a webapp to carry out the registration process. The functionalities include:

1. Registration of New Voter
2. Modify/change details such as name, address
3. Removal of Voter(due to death or any other reason as stated in the constitution)

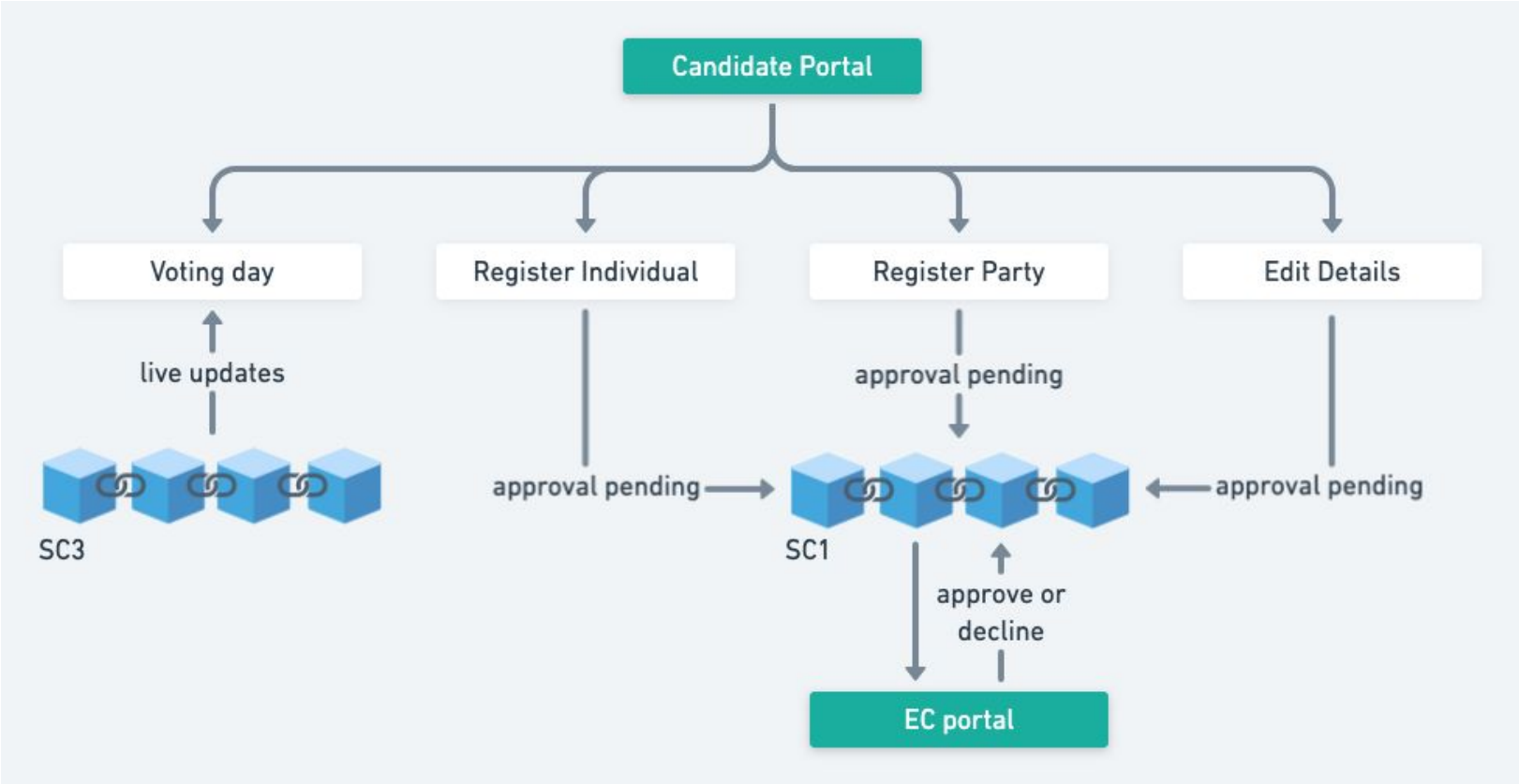

Voter Portal
Voting day
Register
Edit Details
General Information like news
caste vote
live updates
approval pending
approval pending
SC2
SC3
SC4
approve or decline
EC portal

Voters would use this portal to register or see/verify the details that the Election Commision (EC) maintains. The database could be maintained in blockchain via a smart contract so as to ensure privacy and security of personal data.

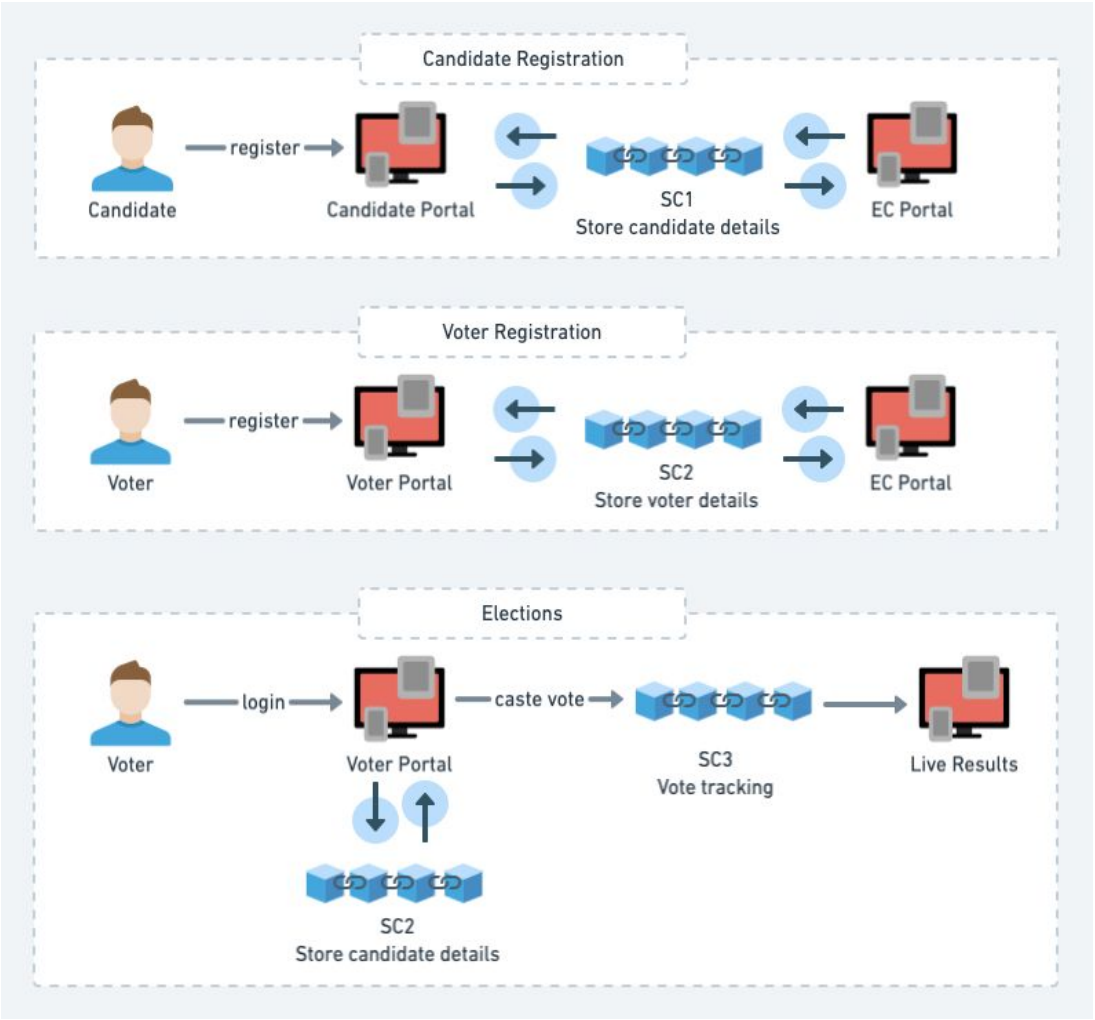


Candidate's Portal

The portal will be similar as the voter's portal but would intend to carry out the registration of the candidates. On authentication, each candidate/ party will be given a unique identification number to be used in the entire election process. The database would be maintained in another smart contract.

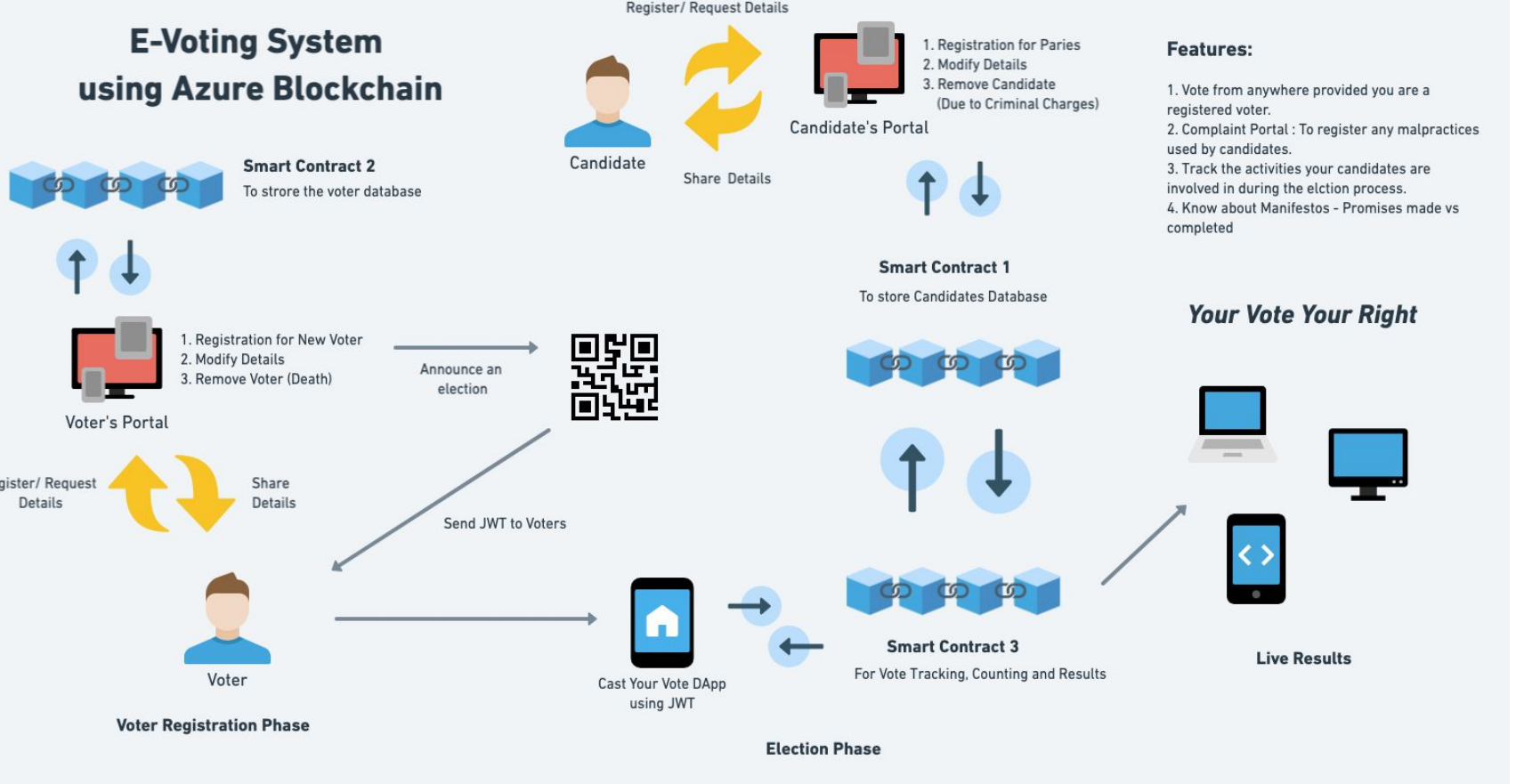

Candidate Portal
Voting day
Register Individual
Register Party
Edit Details
live updates
approval pending
approval pending
approval pending
SC3
SC1
approve or
decline
EC portal

A quick overview


Candidate Registration
register
Candidate
Candidate Portal
SC1
Store candidate details
EC Portal
Voter Registration
register
Voter
Voter Portal
SC2
Store voter details
EC Portal
Elections
login
Voter
Voter Portal
caste vote
SC3
Vote tracking
Live Results
SC2
Store candidate details

A Way Ahead

E-Voting System using Azure Blockchain



Features:

1. Vote from anywhere provided you are a registered voter.
2. Complaint Portal : To register any malpractices used by candidates.
3. Track the activities your candidates are involved in during the elction process.
4. Know about Manifestos - Promises made vs completed

Your Vote Your Right

The Election Process via CastYourVote DApp

The DApp would include following functionalities:

1. View the Candidates' details in the voter's constituency
2. Know the manifestos of a candidate
3. Track the activities that a candidate is involved in during the election process.
4. Complaint Portal: For the voters to report any malpractices being carried out in his/her area.
5. Cast his/her vote

The DApp would also host the live results of the elections during the voting process thus revealing the results immediately.

Relevance and Scalability of the Idea

1. Any person can vote from anywhere provided he/she is a registered voter without any hassle of going to the election polls.

2. The voting process could be modelled in an object oriented way modelling all levels of ministers:

   Constituency -> City -> State -> Country

   Thus, all kinds of elections: State Elections, Central Elections can be hosted via this project.

3. Since all kinds of databases have been maintained on blockchain technology, privacy and security of data has been inherently ensured.

4. Tracking of live activities of a candidate would help the voters to take an informed decision.

5. The project would help to smoothly carry out the Election Process in India however can be extended to simple votings being carried in different organizations (for example, members of an Executive Committee)

Challenges

Not everyone in India is tech literate. This poses as one of the major challenges of an E-Voting System. To extend the process to the rural parts of India, fingerprints might be used instead of JWTs to carry out the process. However, the challenge remains an area to be explored for us.