

E-Voting System

Using Blockchain

Problem Statement

Write a blockchain and smart contract from scratch

Requirements:

- Develop a smart contract
- Synchronize all the blockchain servers
- Develop a rudimentary consensus algorithm

Agenda:

Problem Statement

Workflow

Demo

Technology Stack

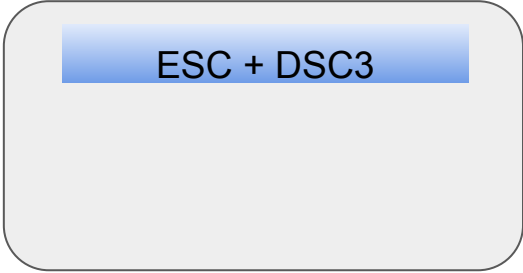
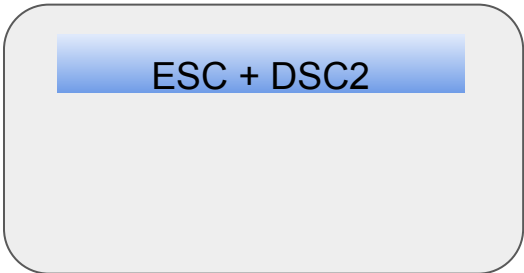
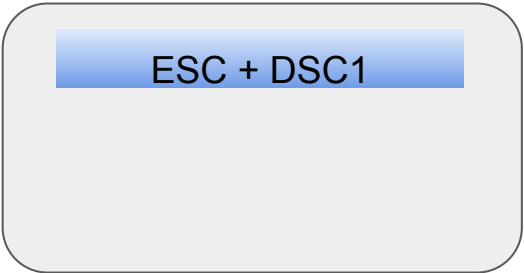
GitLab Contributions

Key Challenges

Problems Faced

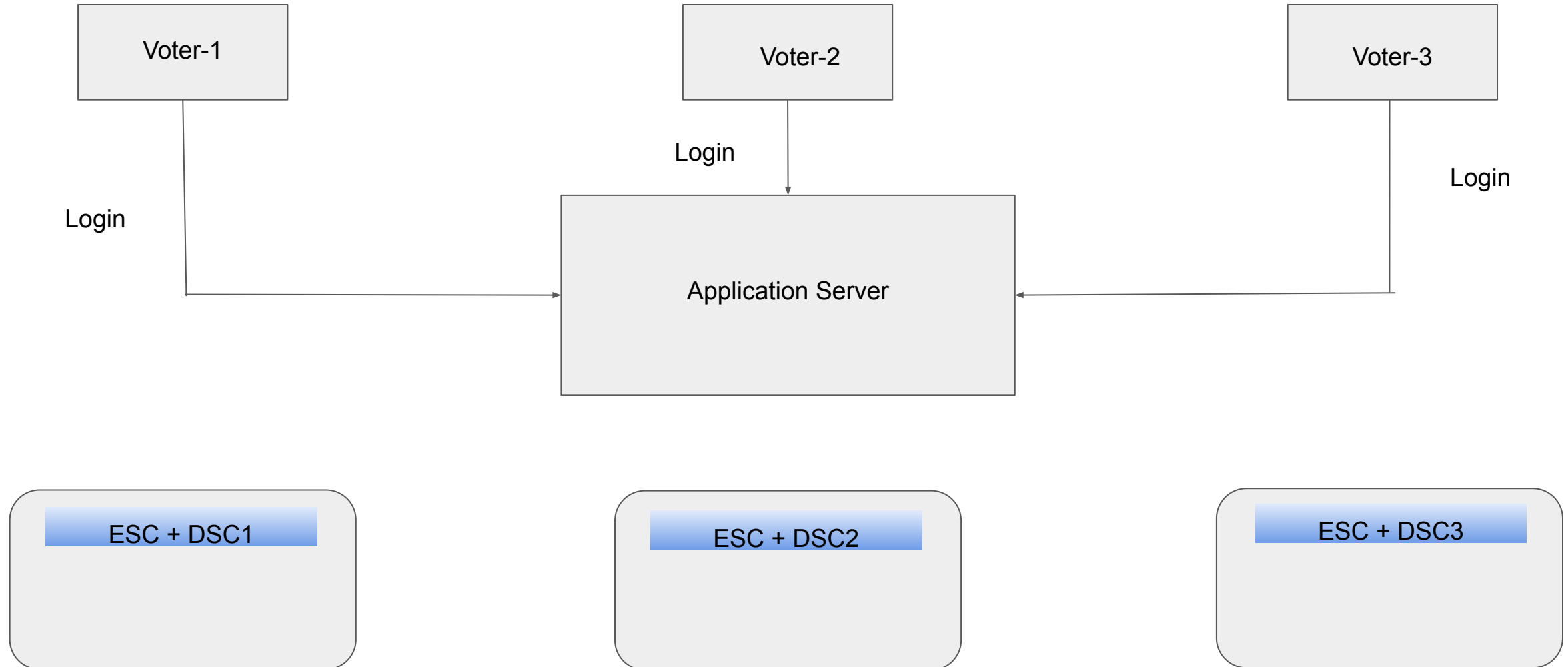
Requirements Traceability

Workflow



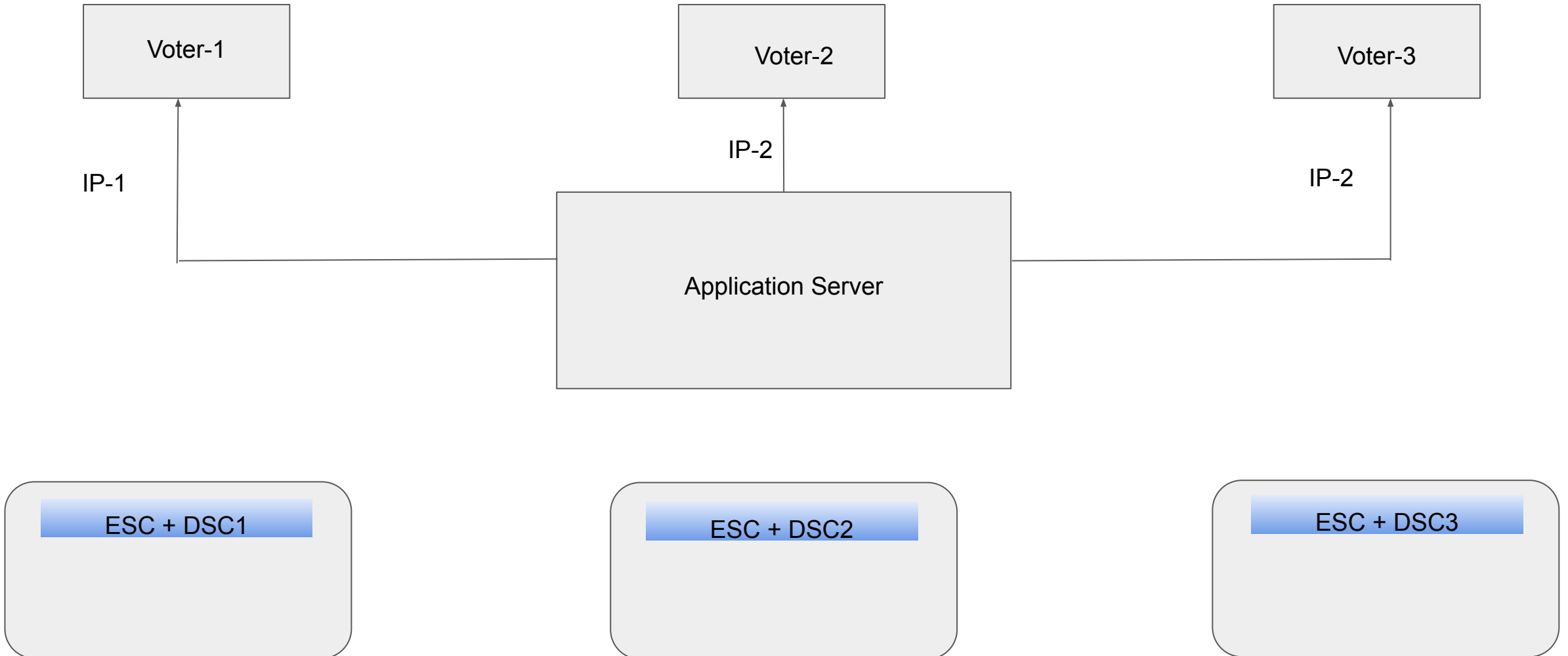
Workflow:

Voter logs into the application



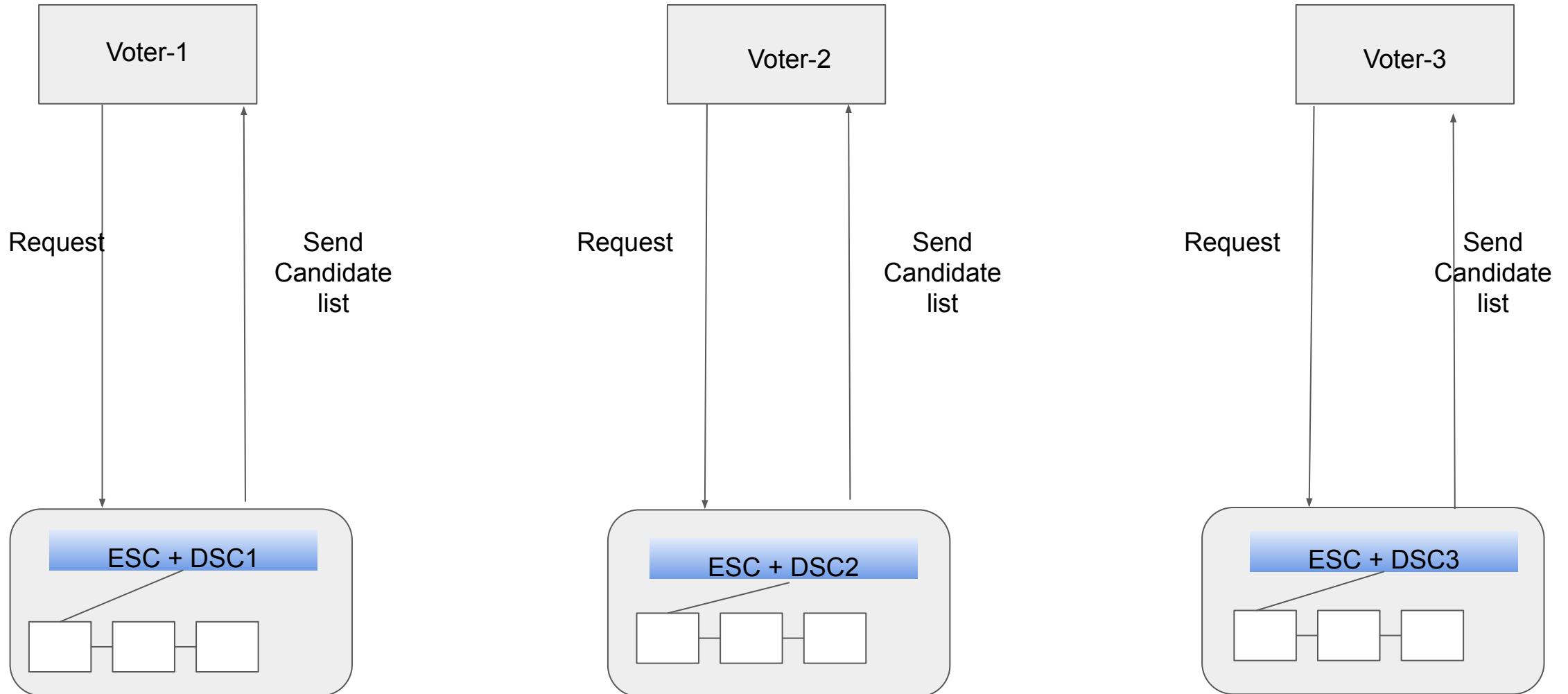
Workflow:

Application server distributes IP addresses of the district nodes



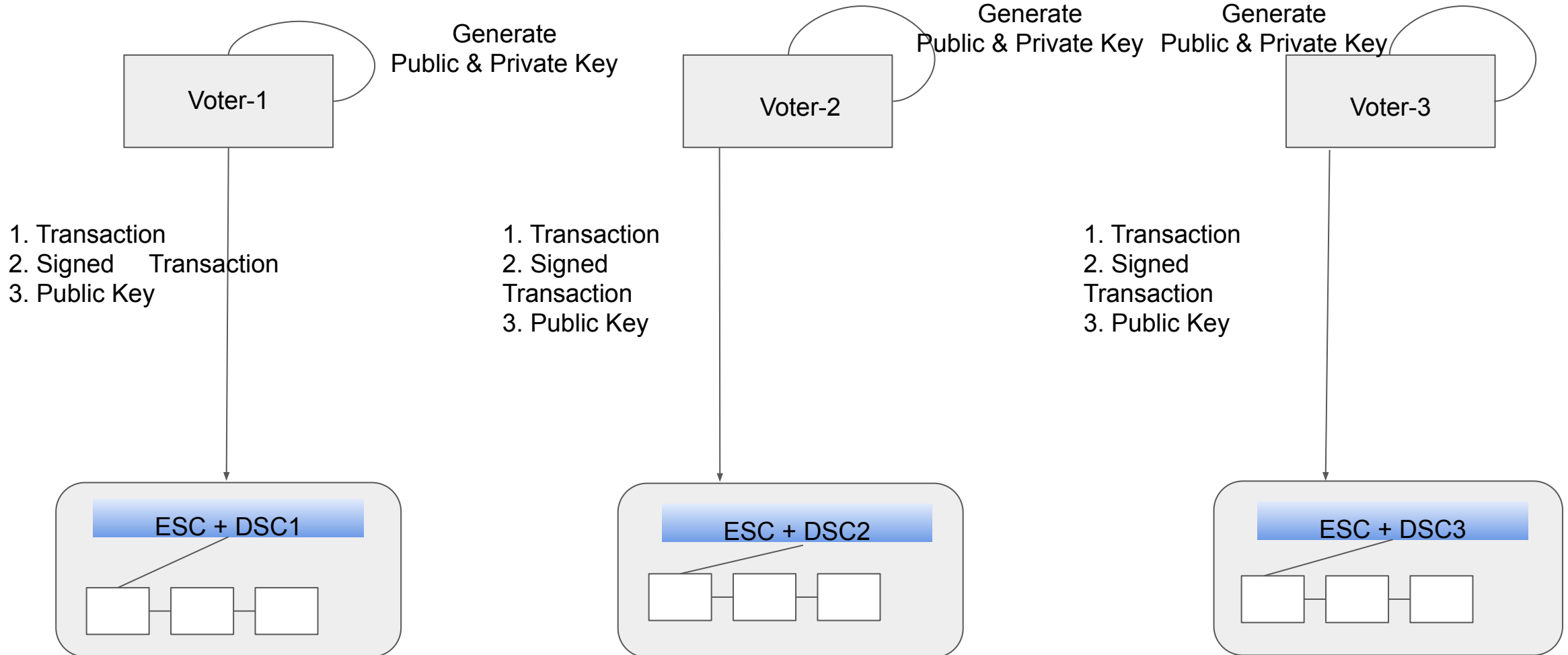
Workflow:

Each district node sends the candidate list of that district



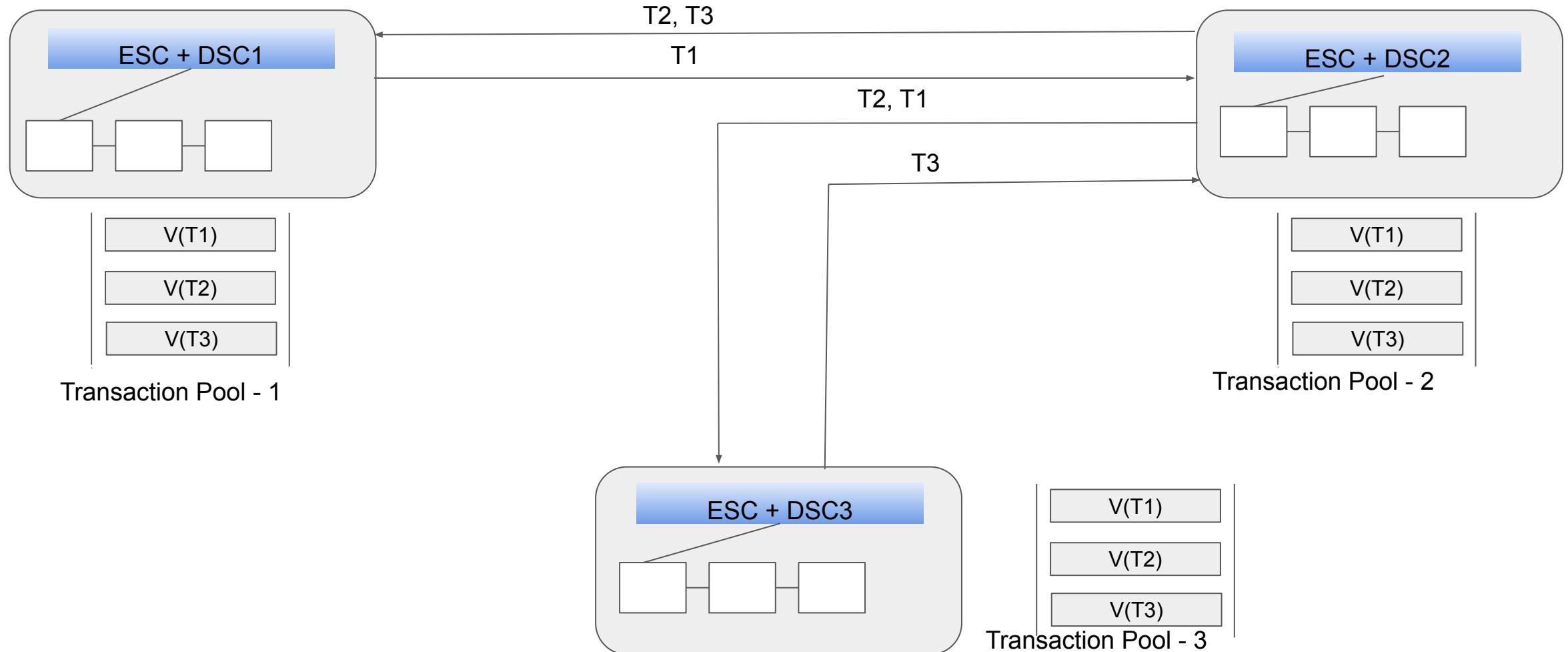
Workflow:

Voter signs his vote(transaction) using his private key



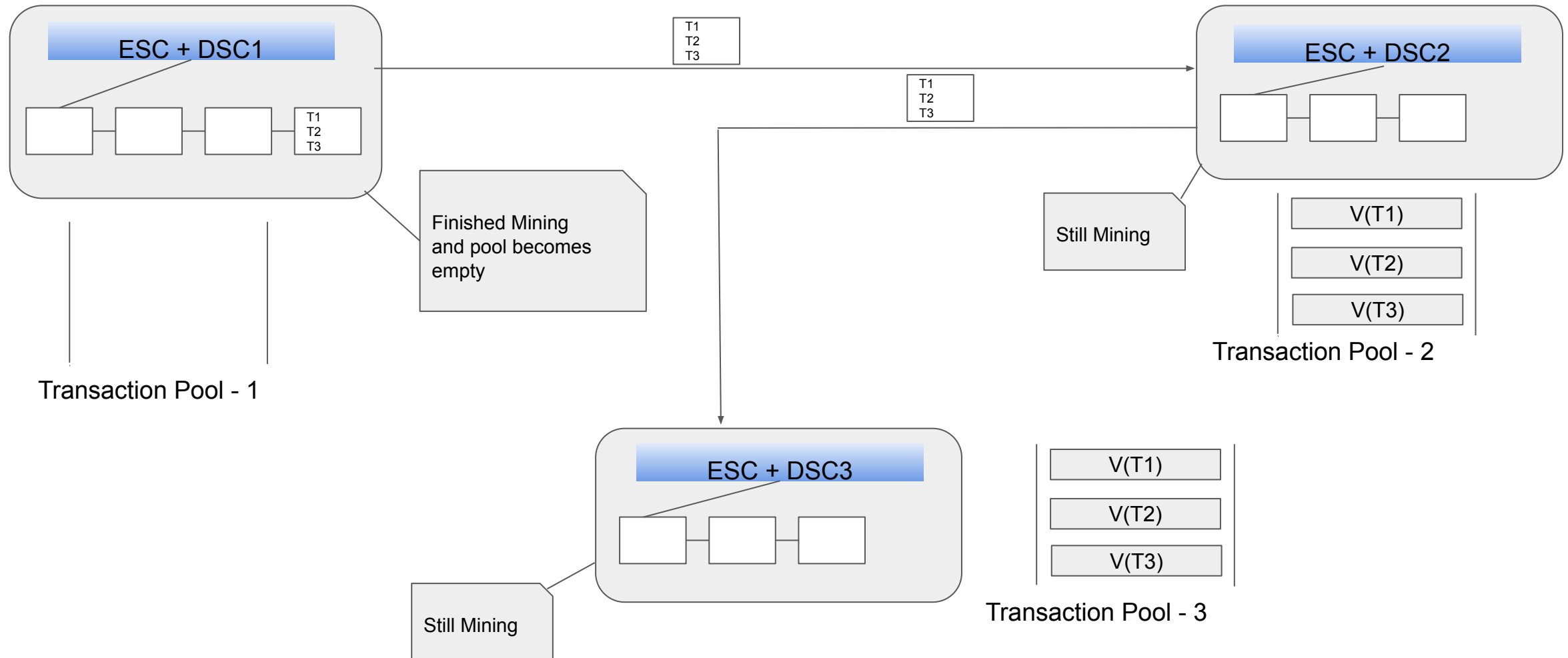
Workflow:

Each district node broadcasts their transaction to their neighbours



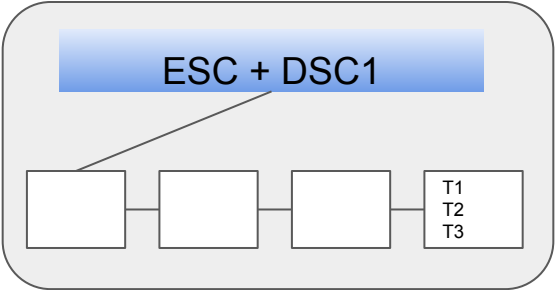
Workflow:

Once, mining is complete, the block is broadcasted in the network



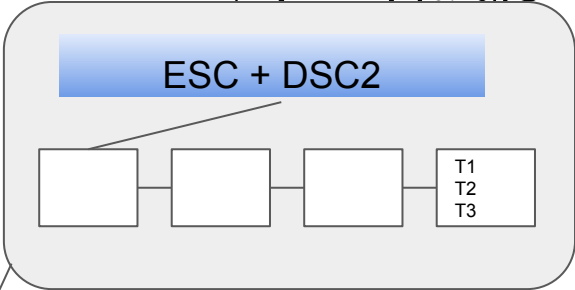
Workflow:

After verification, pool is emptied and block is appended



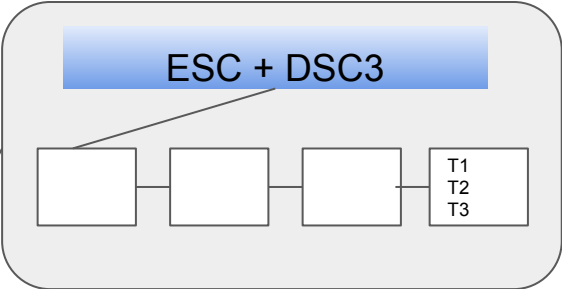
Transaction Pool - 1

After verification, block is appended



Transaction Pool - 2

After verification, block is appended

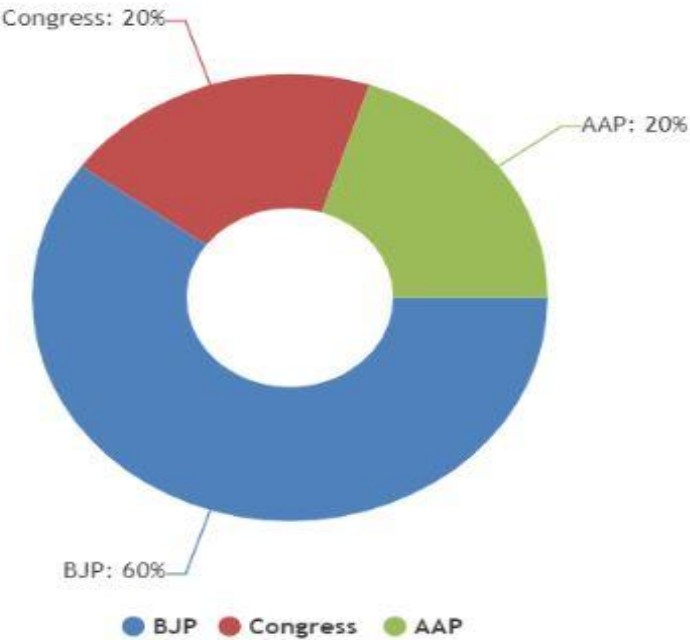


Transaction Pool - 3

Result for your district

| Candidate Name | Party |
|-----------------|-------|
| Pushpa Kanojiya | BJP |

Nation-wide election result



Mandatory Requirements

| Number | Requirement | Checklist |
|--------|---------------------------------------|-----------|
| 1. | Vote and vote count | ✓ |
| 2. | Unique identification and single vote | ✓ |
| 3. | Vote guarantee | ✓ |
| 4. | Scalability | ✓ |
| 5. | Distributed | ✓ |
| 6. | No voter info | ✓ |
| 7. | Encrypted transaction | ✓ |

Nice to have requirements

| Number | Requirement | Checklist |
|--------|---|-----------|
| 1. | Better UI | ✓ |
| 2. | Storing Blockchain in segments | ✓ |
| 3. | OTP validation | ✓ |
| 4. | Facial Features Matrix for authentication | ✗ |

Technology Stack



Programming Languages

- Python
- JavaScript
- HTML
- CSS
- mySQL

Libraries Used

- Flask
- requests
- cryptography
- hashlib

Key Challenges

Technical

- Limited blockchain experience
- Limited experience of development on Windows OS
- Selecting appropriate use case of blockchain

Non Technical

- Distribution of workload
- Planning

Problems Faced



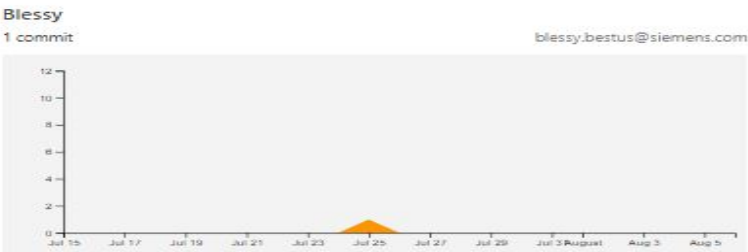
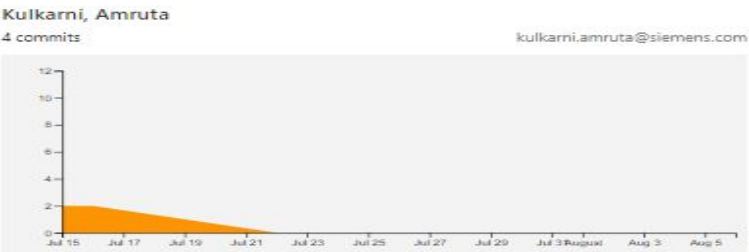
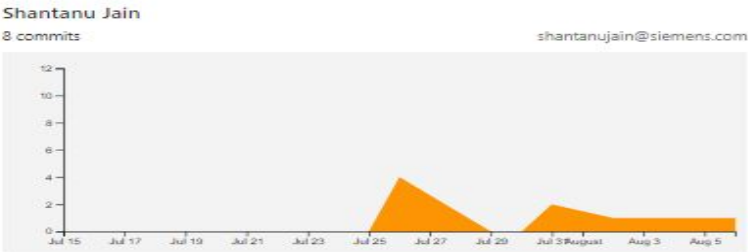
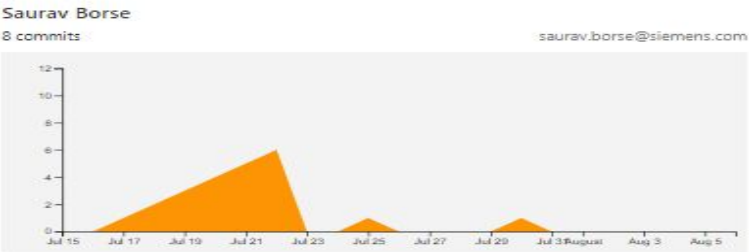
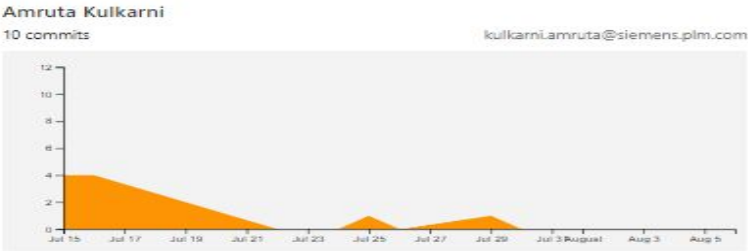
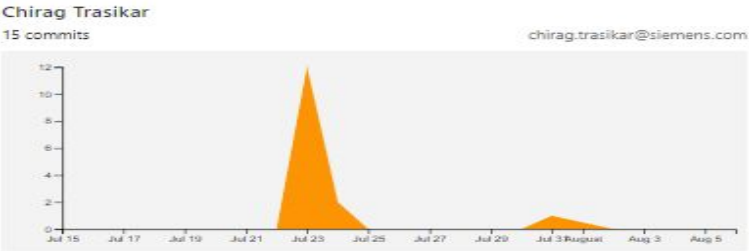
Technical

- Blockchain Broadcast
- Modules Integration

Technical

- Communication Gap

GitLab Contributions



Code Statistics



| | |
|-------------------------|------|
| Total commits | 49 |
| Average commits per day | 2 |
| Number of lines of code | 1839 |
| Code file | 6 |

‘nv’s’ble

- Shantanu Jain
- Saurav Borse
- Chirag Trasikar
- Amruta Kulkarni
- Blessy Bestus
- Shivani Sabnis



Thank you.