ANNAMALAI UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING

PROJECT PRESENTATION

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Problem Statement

India’s traditional voting system, primarily based on paper ballots and Electronic Voting Machines (EVMs), faces multiple challenges that impact the security, transparency, accessibility, and efficiency of elections. These issues raise concerns aboute electoral integrity and public trust.

Problem Statement

Key Problems:

1. Voter Fraud & Booth Capturing
2. Manual Errors & Inefficiencies
3. Limited Accessibility

This project aims to develop a blockchain-based online voting system to enhance security, transparency, and voter confidence while reducing fraud risks

Objectives

Enhancing Security and Increasing Transparency

1. Decentralization.
2. Real-time Vote Tracking

Improve Accessibility

1. Remote Voting
2. Mobile & Web Compatibility

FRAUD PREVENTION

Prevent Fraud & Manipulation

1. Voter Authentication
2. Immutable Ledger

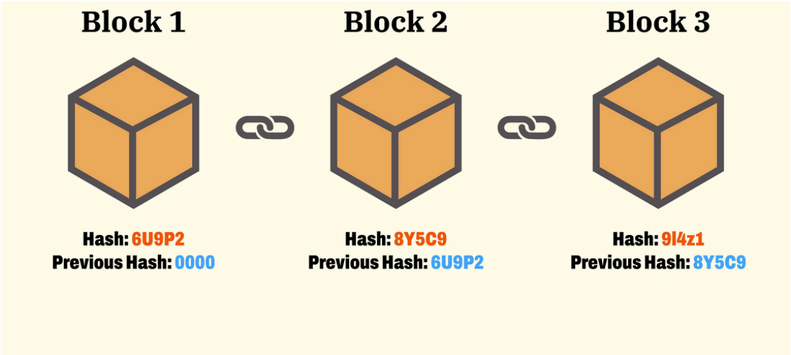
VOTE COUNTING

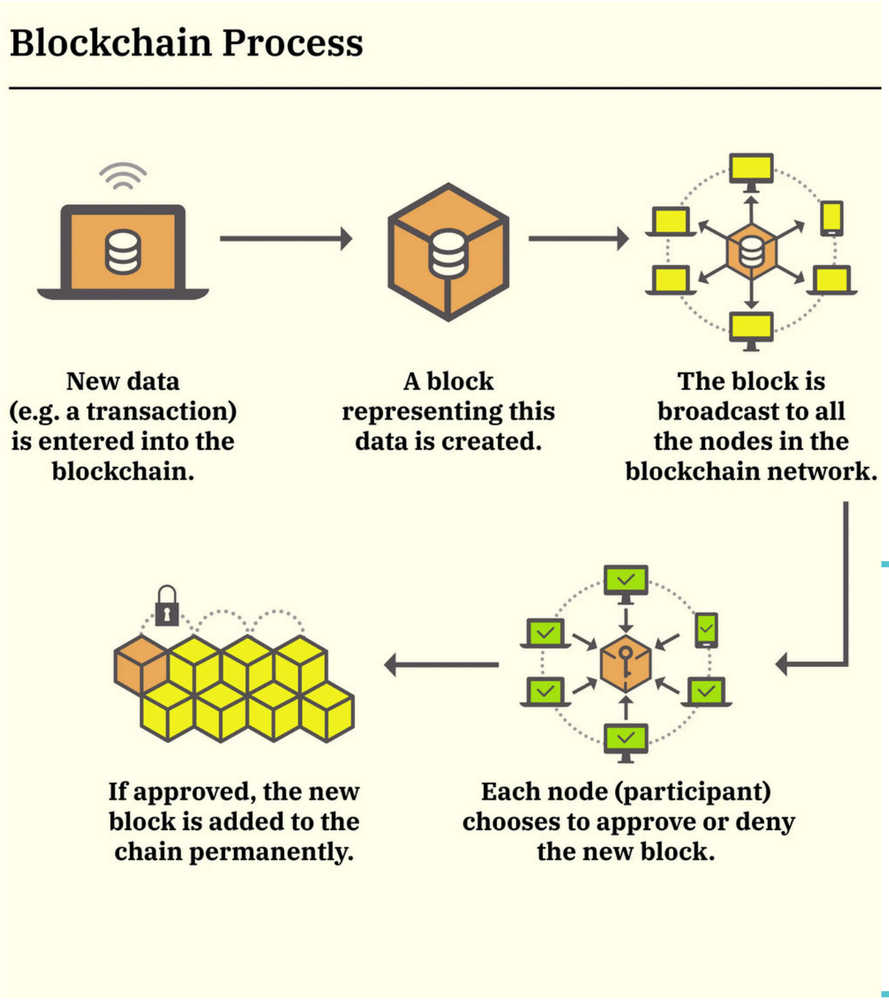
Automate Vote Counting

1. Smart Contracts
2. Tamper-Proof Results

BLOCKCHAIN TECHNOLOGY?

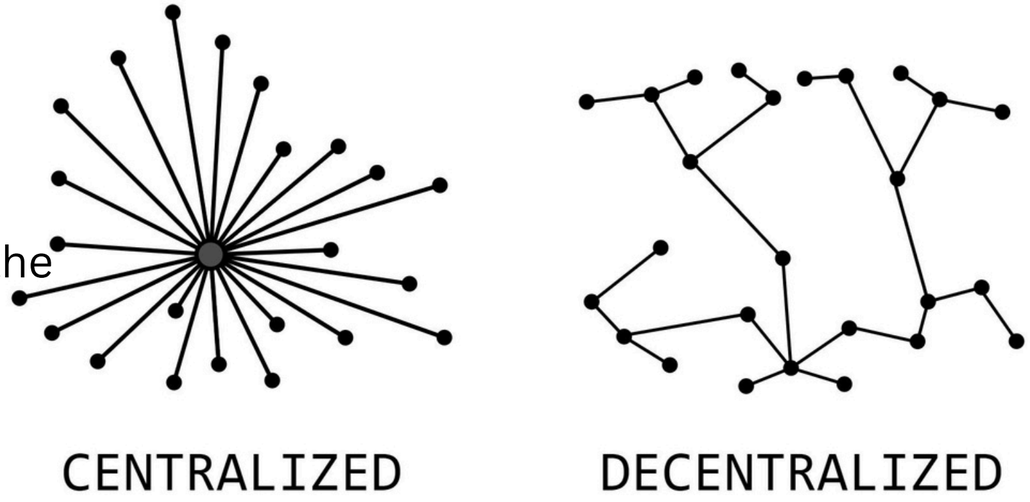
1. **Blockchain is a decentralized, distributed ledger technology that records transactions securely and immutably across multiple nodes in a network.**
2. **Each transaction is stored in a block, linked to the previous one, forming a chain of blocks—hence the name blockchain.**

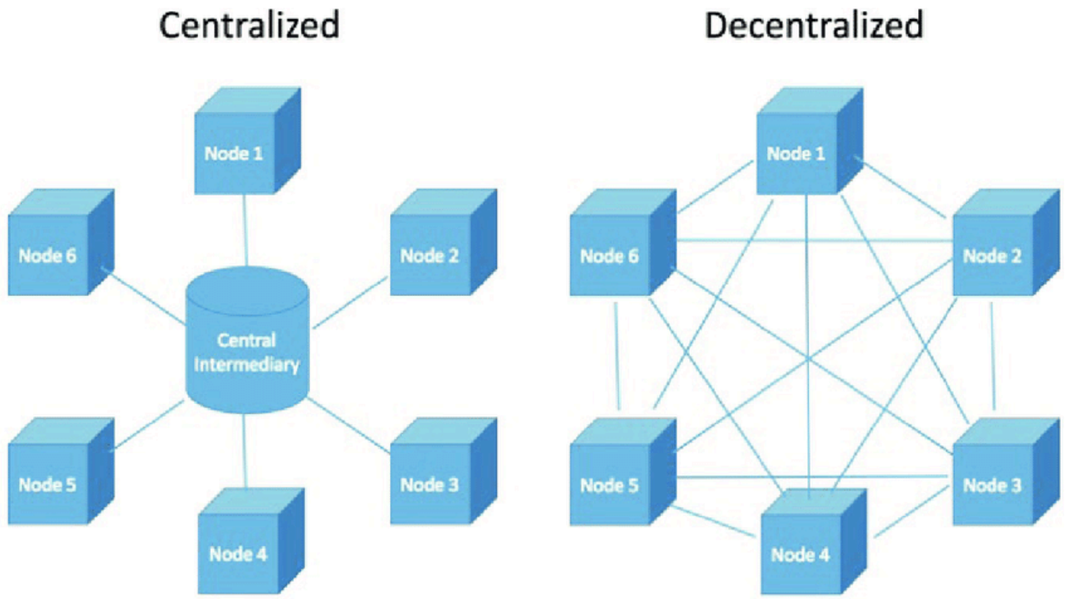




Centralized

A centralized system is a structure where a single authority or entity controls operations, decision-making, and data management. All transactions and activities go through a central server, which acts as the main point of control.



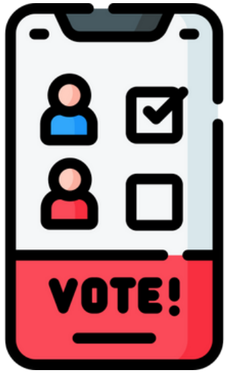


Decentralized

A decentralized system is a structure where control, decision-making, and data storage are distributed across multiple nodes instead of a single central authority. In decentralized systems, transactions and operations are validated through a consensus mechanism, making them more secure, transparent, and resistant to fraud.

INTRODUCTION

Online Voting System Using Blockchain Technology



1. A blockchain-based online voting system ensures secure, immutable, and transparent vote recording using distributed ledger technology. Encrypted votes are stored in a decentralized network, maintaining voter anonymity.
2. This system enhances electoral integrity, builds public trust, and improves voting accessibility.

System Architecture of a Blockchain-Based Online Voting System

1. A blockchain-based online voting system consists of various components working together to ensure security, transparency, and decentralization.
2. The key architectural elements include Smart Contracts, Nodes, and Security Mechanisms.

Smart Contracts 🤖

Smart contracts are self-executing code stored on the blockchain that automates and enforces the voting process.

Key Functions:

1. Voter Registration .
2. Vote Casting
3. Vote Counting & Results

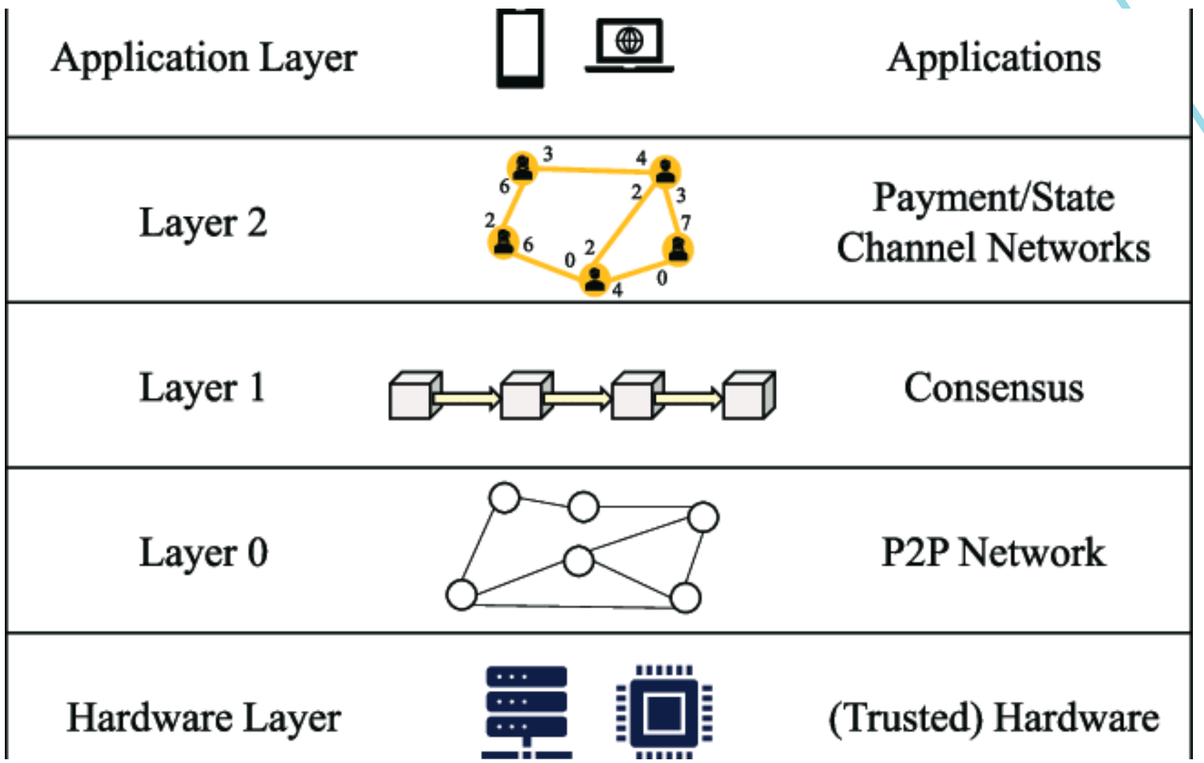
System Architecture of a Blockchain-Based Online Voting System

Nodes (Decentralized Network) 🌐

Nodes are computers in the blockchain network that store and validate voting transactions.

Types of Nodes:

1. Full Nodes
2. Validator Nodes
3. Light Nodes



Security Mechanisms

Security is a critical aspect of blockchain-based voting to prevent fraud, tampering, and cyberattacks.

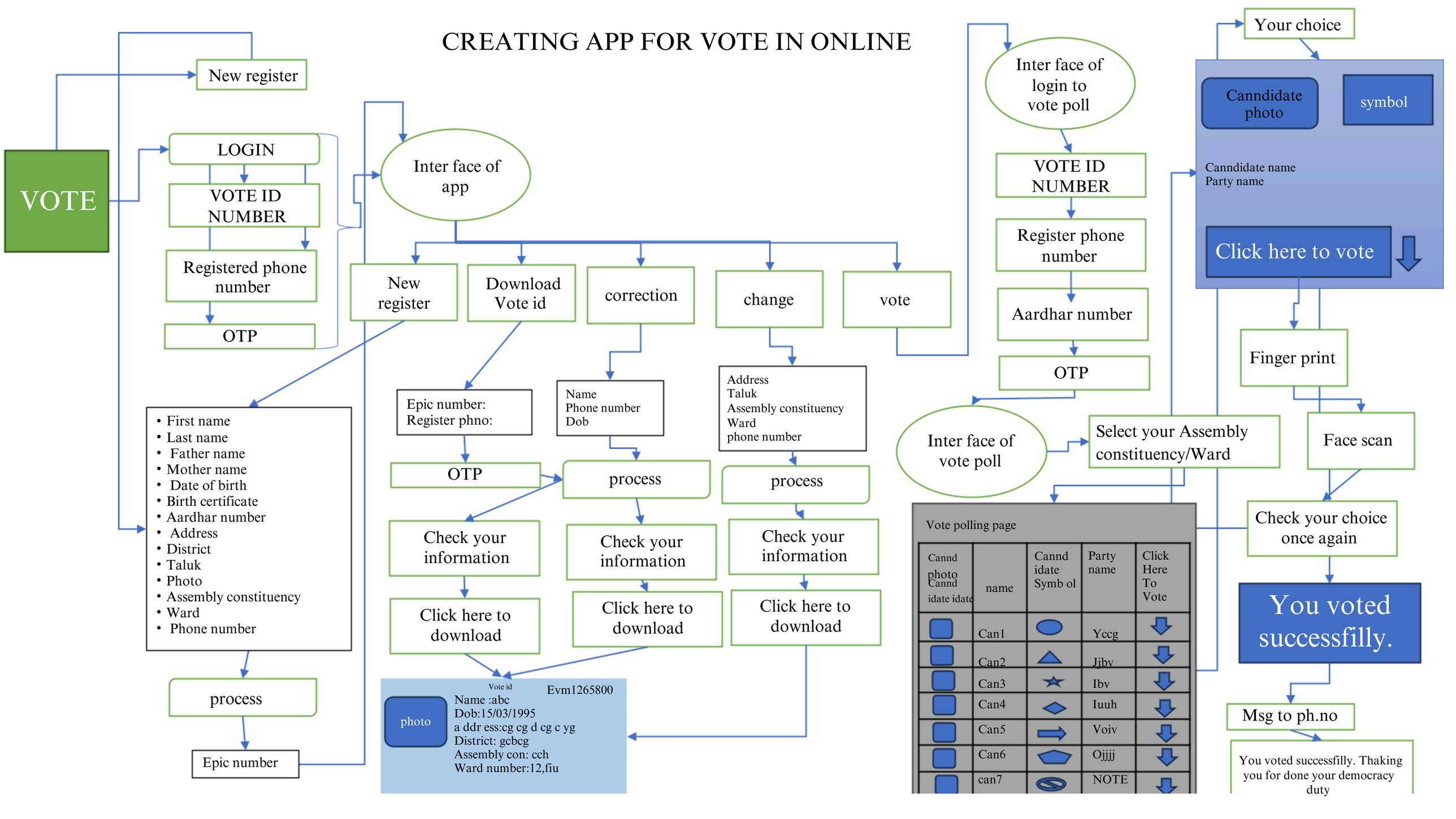
Security Features:

1. Encryption (Public & Private Keys)
2. Consensus Mechanisms
3. Immutability
4. Distributed Ledger

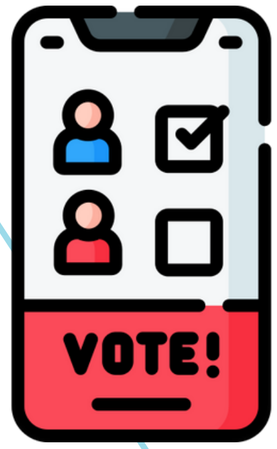
Prevention of Threats:

- DDoS Attacks
- Vote Manipulation
- Unauthorized Voting

CREATING APP FOR VOTE IN ONLINE

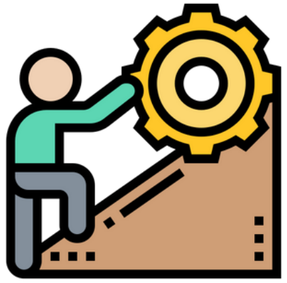


Advantages of Online Voting Using Blockchain Technology



1. Allows people from remote areas, overseas, and those with disabilities to vote easily
2. Ensures equal voting opportunities for all citizens.
3. No single authority controls the system, ensuring fair elections.
4. Uses a distributed network to prevent manipulation by any party.
5. Eliminates costs for paper ballots, EVMs, polling stations, and manual labor.
6. Reduces operational expenses for government and election commissions.

Challenges and Future Scope of Blockchain-Based Online Voting



1. 1.High Initial Implementation Cost
2. Developing a secure, large-scale blockchain voting system requires investment
3. Blockchain is secure, but user devices and networks can be compromised.
4. Phishing, malware, and hacking attempts could target voter credentials.

future scope

1. AI-powered fraud detection and anomaly detection for real-time election monitoring.
2. Secure mobile blockchain apps using fingerprint, facial recognition, and retina scan authentication.
3. Government Adoption & Legal Frameworks
4. Countries experimenting with blockchain voting pilots (e.g., Estonia, Switzerland).
5. Development of international standards and regulations for blockchain elections.

THANK YOU

BY TEAM ALPHA CENTAURI...