



E-voting and Votehub- The Online Voting System

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Abstract: E-voting guarantees bunches of advantages to the electing frameworks to incorporate, ideal conveyance of decisions, limit cost for running races, limit pressure and votes purchasing in races, kill various votes cast by an electorate, lessen dangers and savagery related with races, and so on It is striking that electronic democratic clear approaches to so numerous security issues like some other digital framework. This paper analyses the pros and cons of using e-voting and also discusses about Votehub- The online Voting System.

Index Terms - e-voting ,security , accuracy , integrity, ballots , end-to-end

I. INTRODUCTION

Election is a framework utilized in many democracies for the choice of officials to possess public workplaces. Election changes from one spot to another contingent upon the political design, nationality, social, monetary and technological status of individuals. Notwithstanding, election requires constituent body which pilots the undertakings of the election. [8] states the requirement for political race to incorporate;

1. It offers individuals the chance to choose their delegates.
2. Election creates political rivalry among parties and competitors.
3. It offers freedom to meriting and skilled individuals to be introduced.
4. Election is a preferable technique over selection.
5. It offers political parties the chance to frame a government.
6. It offers autonomous competitor the chance to challenge election and win.
7. Without election, a state will encounter disorder.
8. Election will assist a general public with dodging absolutism, Monarchy or dictatorship.

Election is predicted to be free and fair, barren of any sort of encumbrances. It is a civic duty for citizen to freely and willingly express their franchise. Unfortunately, for quest of power, the electoral processes has been bastardized resulting in self-imposed officers on seat of power with anti-peoples' sort of leadership . This has led to tons of crises including wars, unwanted killing, destruction of properties and tons of social vices which are inimical to human existence. To develop the framework, technology and ICT devices were brought into election. This led to the emergence of electronic electoral system , which was intended to minimized malpractices in election. [12] noted that the application of electronic in voting will yield;

1. Forestall electoral fraud
2. Stop election savagery
3. Security of right on establishment
4. Regionalization of political positions

II. EXISTING SYSTEM

At the voting place, there are committees and witnesses who make sure that the voting goes well. When the voter comes to voting place, he/she must show his/her identity card to show that he/she is a legitimate voter. The legitimate ones can then cast a vote and elect the candidate of his/her choice.

The whole election process is split into many parts. So providing security to them is also necessary. So it needs tons of man power, therefore it's quite difficult to manage it.

In the existing system of voting, Election commission provides the polls. These polls are going to be arranged in class or in halls. Existing frameworks contain certain disadvantages as odds of the brutality, harm of apparatuses, faked votes and so forth.

SWOT analysis of traditional voting and e-voting

	Traditional Voting	E-Voting
Strengths	People trust the paper based voting and Counting . Does not rely on internet and computers , good for regions with low internet existence/usage.	Cheaper in long term. Provides instant results. Enables elastic elections
Weakness	Costs are high in long term. In this Covid-19 time , in-person attendance is not possible. Unrealistic to set vote centers in small and distant settlements.	Technology is new and there are scalability issues. The performance may degrade on high usage.
Opportunities	Less prone to conspiracy theories . Easier and cheaper for smaller and non-distributed groups.	Secure storage and records. Once learned , easier for elderly and disabled people. Might bring more democracy to government units and local administrations.
Threats	Human-factor may cause errors during counting. Physical attacks may block or distort the voting process.	If the cryptographic keys are compromised , the attackers can abuse the system. People's perception of trust is significantly lower.

III. VOTEHUB – THE ONLINE VOTING SYSTEM

Our website Voteshub- the online voting system has the following modules:

1. Admin login
2. Admin dashboard has overall functioning rights
3. System generated Id and password for voters
4. Document Verification
5. Voters Login
6. Voters Can view candidate's data
7. Election Creation module
8. Voting conduction module
9. Appropriate data processing and handling
10. Result Calculation and declaration module

To become a voter, one has to register on the website. Once the registration is completed the voter is assigned with unique ID and password with which they can log in during elections and cast their valuable votes. The admin/administrator has all rights to the system. He is the one who verifies every user and creates elections. Once the election starts voters are allowed to vote and elect their desired candidate. Every voter is allowed to vote only once. The votes are stored in a secured database. When the election ends the votes are counted by the system and the results are shown.

IV. ARCHITECTURE OF VOTEHUB

The front-end system represents the user interface and allows the voter to use multiple ways for voting (e.g. laptop, phone, and/or at physical voting locations) and vote verification (e.g. by SMS and e-mail messages). The user gets a confirmation too when she votes in a physical location.

The Votehub support components include additional components that are necessary to the functionality of the system namely: collection, confirmation and filtering authorities that are added to the back-end system to form the core e-voting system.

The back-end system is a traditional voting system that Votehub interfaces with and contains administration, mixing and shuffling, and counting authorities.

V. VOTING

Once the elections start, a voter can prefer to vote electronically online from any location through the web site . To counter frauds during the elections , the voter is allowed to vote just one occasion before the election is over. The voting software or the secure voting internet site provides a friendly interface . The user uses the credentials obtained during the registration process to authenticate her to the voting authority and the other way around . Once the voter makes his/her choice, he/she submits her vote, the software sends the ballot encrypted by both her public key and therefore the back-end authority's public key to the gathering authorities. This ensures that the gathering authority doesn't know the user's ballot, because it doesn't have the back-end private key. The advantage of online voting is that the voters have the selection of voting at their own free time and there's reduced congestion. It also minimizes on errors of vote counting. The individual votes are submitted during a database which may be queried to seek out who of the aspirants for a given post has the very best number of votes.

VI. VOTE COUNTING AND RESULT ANNOUNCING

After the deadline of the ballot submission is reached, the collection authority send all votes to the filtering authority which determines the vote to be counted for each legal voter. If there exists a physical submitted ballot, it is the counted one. Otherwise, the most recent vote, according to the time-stamp, is counted. The filtering authority forwards the ballots to the back-end system where they will be mixed and shuffled to cut the link between the ballot and the voter's identity. Finally, the ballots are decrypted, votes are counted and the results are announced. Note that shuffling is not needed in the support components part of Votehub as the ballots are encrypted using the back-end key, which is not known to the support components. Results are announced right after voting process ends.

VII. LITERATURE REVIEW

Electronic Voting

[1] defined electronic voting as the use of computers or computerized machineries to cast votes in an election. Electronic voting is one among the ways of conducting credible election. It was first used in conducting local elections in Estonia [12]. Electronic voting is voting with the help of electronic devices like network , telephone, internet, mobile devices etc. [12], electronic voting gives voters the opportunity to vote from anywhere they may be. It has removed the barrier of compelling voters to maneuver from one place to the opposite so as to choose an election. Electronic voting employs information technology in voting which provides voters proper awareness where a mean person has correct and proper understanding of every event within the electronic processes, and also demands high level of transparency within the electoral process .

Electronic voting may be a electoral system where data and procedures are recorded, stored, and process basically as digital information . [10] defines electronic voting as a voter system that involves the use of computers. Electronic voting improves voters' security, increase awareness and reliability of the voting process, improve speed and reduce the value of running election significantly.

VIII. CONCLUSION

As a promising technology, E-voting still needs a lot of work to achieve all the required security properties and meets the user satisfaction demands. We presented Votehub as a ubiquitous e-voting system that increases participation rates by allowing the user to vote using his/her personal devices reducing the queuing time at the polling stations. Votehub also leverages encryption techniques and redundancy in voting devices, confirmation methods, and multiple votes to preserve the voter's privacy, enhance verifiability and democracy, and limit coercion. Evaluation of Votehub on actual phones shows that the entire voting process can end in a few minutes, as compared to possibly multiple hours in traditional voting systems. This highlights the Votehub is a truly uncourteous e-voting system.

REFERENCES

- [1] <https://www.semanticscholar.org/paper/Aadhar-Card-Verification-Base-Online-Polling-Varma-Rahul/3e597fe6f68d2fc190ac05c0aa5b180bd449d55c>
- [2] <https://twin.sci-hub.se/6030/95751d2eae26dd6fb87bfdc373bd1ea/djanali2016.pdf#view=FitH>
- [3] <https://ieeesa-events.org/online-voting-system-project-application/>
- [4] <https://transmitter.ieee.org/makerproject/view/91d35>
- [5] <https://www.iosrjournals.org/iosr-jmca/papers/Vol7-Issue2/Series-1/A07020105.pdf>
- [6] Achieng, M. and Ruhode, E. (2013). The Adoption and Challenges of Electronic Voting Technologies within the South African Context. International Journal of Managing Information Technology (IJMIT), 5(4), 1-12.
- [7] Alaguvel, R., et al (2013). Offline and Online E-Voting System with Embedded Security for Real Time Application. International Journal of Engineering Research, 2(2), 76-82
- [8] Rai, H. N., (2017). Why do we need Elections? Accessed from <https://www.quora.com/why-do-we-need-elections>, on 14/02/2020.
- [9] Alaguvel, R., et al (2013). Offline and Online E-Voting System with Embedded Security for Real Time Application. International Journal of Engineering Research, 2(2), 76-82
- [10] Ara, U. O. A. Designing Arah-You Voting Machine and Automated Accreditation System from the Nigerin Perspective. Paper presented at the 23rd Nigeria Computer Society (NCS) National conference on Realizing a Stable Democratic Political System in Nigeria: IT Tools and Strategies, Orchid Hotel, Asaba, 26th 30th July, 2010.
- [11] <https://www.iosrjournals.org/iosr-jmca/papers/Vol7-Issue2/Series-1/A07020105.pdf>

