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E-Voting using NFC chip

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ABSTRACT

E-voting is physically supervised by representatives of governmental or independent electoral authorities and voter gives vote by physically going on the central polling booth. In many cases it causes the loss of vote if not able to go to the voting booth. To make the voting easy and to avoid the wastage of votes we proposed a system which uses Near Field Communication (NFC) technology. This technology can be used on any NFC enabled smart-phones. NFC is a technology in smart-phones for providing the ease of use to the users for making transactions. NFC allows us to vote from the home polling station instead of the base station and avoid the loss of vote. The multi-factor authentication system which uses a 4-digit Personal Identification Number (PIN) as the knowledge factor, is used for verification and validation. The voter will get OTP (One Time Password) at the time of voting to keep voting confidential.

ARTICLE INFO

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I. Introduction

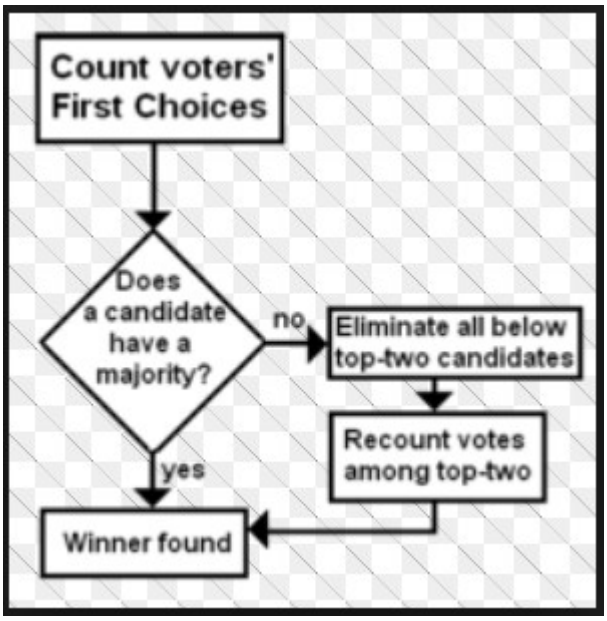
This Electronic elections, e-voting respectively, gain more and more public interest. Some countries offer theircitizens to participate in elections using electronic channels. The term e-voting stands for the possibility ofvoting electronically in general. Thus, e-voting includes voting by the use of telephones and electronicvoting machines in voting booths as well. In this report, we are talking about e-voting in the sense of voting by the use of an ordinary computer via the Internet. This branch of e-voting is sometimes denoted as i-voting.

However, in this report we _rst give a motivation and we state the basic requirements and assets worthprotecting in an election system. Thus, keeping the voter's decision represented by the voter's cast vote aninviolable secret is of paramount importance. In the next section, we give an overview over the electionphases, the pre-voting phase, the voting phase and the post-voting phase respectively. In this course, weintroduce the main actors used in e-voting scenarios. The next

chapter describes the three common waysthe technical core of e-voting can be implemented. The so called e-voting schemesrepresent a technicaland mathematical model underlaying every e-voting implementation. Most of the existing schemes can bedivided into homomorphic schemes, mixing net schemes and blind signature schemes, which make use ofcryptographic principles and mechanisms to meet the requirements of a democratic election.

II. Requirement of E-voting

In democracies, voting is the most important tool in democratic decision making. Therefore, elections and referenda should be accessible for as much people as possible. Especially when considering citizens living abroad, for these people it is sometimes difficult to participate in elections .On the other hand, elections in the democracy in a country directly. So it is highly important to ensure that elections carried out electronically are at least as secure and reliable as conventional elections are. Many countries are experimenting with e-voting pilots or are using e-voting systems in real elections already. In Europe, noteworthy e-voting systems using now a days.



. Fig.1 Traditional E-Voting system

III. Proposed work

Basically there are 3 phases of voting process.

A. Pre Voting Phase:

Depending on the local laws, voters have to register for voting explicitly. On the other hand, in many countries citizens are registered for voting automatically. However, the result of this process is an election list containing all persons allowed to vote. There are two important sub factors in pre voting

1. **Candidate Nomination Preocess**
2. **Registration Process**

1.Candidate Nomination Preocess:

There might be various ways to become nominated as a candidate to be elected depending on the national legislative. A candidate has to meet some legal restrictions, e.g. she must be old enough, etc. The candidate suggested might have to accept her nomination. She has to decide whether to accept or decline her nomination. Finally, a nomination process results in a list containing all candidates, the so called candidate list. The EML model considers referenda as well. Thus, the model includes the referendum options nomination process in parallel to the candidate nomination process. In principle, they are quite similar beside the different legislative restrictions. Even the options nomination process leads to a resulting options list. In this paper we limit our scope only to elections.

2.Registration Process:

Depending on the local laws, voters have to register for voting explicitly. On the other hand, in many countries citizens are registered for voting automatically. However, the result of this process is an election list containing all persons allowed to vote.

B. Voting Phase:

Based on the results of the pre-voting phase, the voting phase enables all eligible voters to make their decisions and cast their votes. Thus, by the use of the election list the voter has to authenticate herself as an eligible voter and she has to cast her individual vote. Figure 1 does not limit voting on electronic voting only. It is the voter's decision which channel she prefers to cast her vote. However, the main scope in this paper is the Internet as electronic voting channel. Since the voter should have an alternative to e-voting and since conventional voting with paper ballots must be provided in parallel, the model has to consider multiple possibilities. Especially the interfaces and cutting edges between electronic and conventional elections have to be considered in the conceptional design.

C. Post Voting Phase:

There are two important sub factors in post voting

1. **Counting of Votes**
2. **Results Generation**

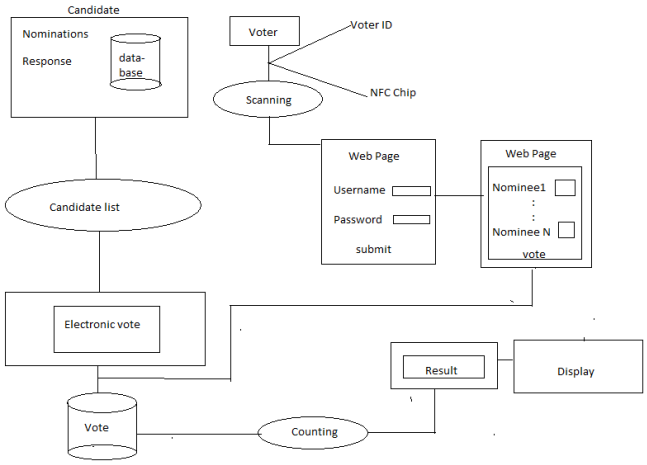
1. Counting Of votes:

Counting is one of the most critical steps. Here, the possibility of recounting must be considered as well. Therefore, counting has to be re-runnable and the input needed, such as the cast votes in particular have to be archived.

2. Result Generation:

Close to the counting mechanisms, an analysis system is needed. Such a system provides the auditing team and the election with various reports. One of the most important reports is of course the result of the counting. The form and the precise schema of such reports is out of scope of the model provided by EML.

IV. SYSTEM ARCHITECTURE



V. CONCLUSION

Through changes to the voting system developed previously in the Online Voting Project, most legal reservations against electronic voting were rebutted. The voting protocol became simpler and faster to implement, but most significantly now offers better integration of the general public through the use of a bulletin board. Previously existing technical security flaws were also eliminated. This brings us one step closer to our objective of making electronic voting feasible at networked polling stations in the short term and using any terminals without any technical, legal or organization problems in the medium to long term. We are assuming that online elections in non-parliamentary elections in Germany are now within the realms of possibility.

ACKNOWLEDGEMENT

An acknowledgement section may be presented after the conclusion, if desired

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