Mobile Voting System Using Advanced NFC Technology

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Abstract— Electronic voting system are becoming popular with wide spread use of computer and embedded system. Security is the main important issue should be considered in such system. Mobile voting system is basically used for collecting and counting votes. In this technology include punch card, optical scan voting system. This paper proposes a new Mobile based voting system using advanced NFC technology, Voting is the process that allows the general public or the people to choose their leaders and articulate views on how they will be governed. This gives a comprehensive analysis of security with respect to NFC. This study deals with the use of information technology to handle electoral processes starting from voters and candidates registration to the actual casting and counting of ballots. Exploring mobile voting from a systems perspective can demonstrate the attributes of the current systems and the possible solutions for the voting process so any one can caste their vote from any place.

Key words: Electronic voting system, NFC technology, Radio Frequency Identification.

I. INTRODUCTION

The fundamental mechanisms for democracy are Election. Election is the one of process to collect the public opinions to form a democratic government. The traditional process of election is difficult, time consuming and has a complicated procedure in preparation and tallying phases [1]. To overcome these difficulties Mobile Voting System using advanced NFC technology (MVS) is introduced. MVS provides a lot of benefits than traditional voting systems. It tries to enable efficient and secure elections. MVS is inexpensive because its resources are reusable. Also it does not require any geographical proximity of voters, and it provides better scalability for large elections. On the other hand using MVS must satisfy some security requirements such as authentication, voter privacy, confidentiality, integrity, etc.[1]. In that we used NFC also, NFC is standard use for short range communication upto few centimeters. users can use NFC to pass data wirelessly through devices and a tag by touching them together.

The project title is "Mobile Voting System using advanced NFC technology (MVS)". It is designed to facilitate voting through mobile phones which is android based. NFC tags store voter information which is used to authenticate them before casting vote to the candidate. User places the NFC tag near mobile phone [2]. The mobile phone scans the tag and verifies the details with backend system. Once the voter is verified, candidate electoral ward will be displayed on their mobile and they can then select the desired candidate. The vote is recorded in the application. The system makes use of NFC to store all conditions that specified standards with the rule of the government to check voter eligibility.
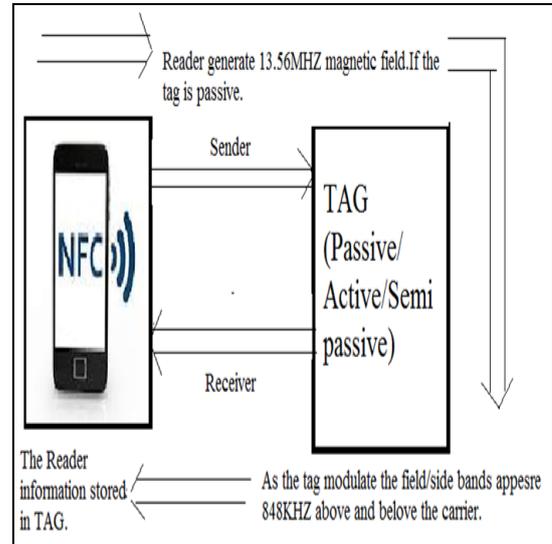

Fig. 1.1: Mobile phone acting as NFC Tag Reader

II. RELATED WORK

First of all we seeing NFC, NFC is a short range wireless technology. NFC is a subset of RFID (Radiofrequency Identification) [6]. NFC Transmission of data rate is 424Kbits/sec. NFC operates in 13.56MHZ (megahertz) high frequency with most everyone having access to the Internet, e-voting will move in the direction of online voting. However the categories based on the cryptography mechanism used to build the system. In truth, online voting is already exists. These e-voting schemes can be categorized into three main categories. The first one is e-voting system based on blind signature technique [3]. The second category is e-voting system based on Mix-Nets [4] and the last category is e-voting system based on homomorphic signature Properties [5].

They implemented personal identification numbers (PINs) and a series of personal questions to verify the identity of voters. While many citizens would probably like to vote in the comfort of their own home and office, the largest problem with online voting is verifying the identification of the citizen or voter. Identity thefts are an almost everyday occurrence, social security numbers are no longer a reliable means of identification. Though an mobile voting system may be able to prevent a voter from logging on and voting more than once with one username and password, it may prove to be difficult to ensure that the same person does not have multiple usernames and passwords. Possibly, with the use of NFC tag, voter identification could be verified.

III. PROPOSED SYSTEM

Every voter will have an NFC tags with him/her. This NFC tags will be used as a voting card for them. Details of every user will be stored in this NFC tags. When user comes near ballot box, he/she has to use their NFC tag and keep it near

NFC supported phone or device so that it retrieves the data from that tag and throw these details to server.

Server retrieves the data and initiate with validation process. If that user id matches with any of the data present in their voting server it means that user is eligible to vote this year, else a message is thrown to user that you are not authorized to vote this year.

If the user is genuine then they will receive the candidate list so that user can vote as per their choice. Once voted it automatically gets incremented with respect to that candidate voting poll. Now once he has done with this voting that user won't be allowed to vote again as if he try again then a message of dual voting will be reported to his screen and won't be able to vote again. Also there is an authentication process after you put your NFC tag above NFC supported device. So every user will have their own password after which they will be available to vote any particular candidate. Considering these points, our system has been designed so that it is capable enough to tackle all the problems and security related concern.

The android portion of coding will be done for smart phone to retrieve the data from NFC tags and to throw those data to server for validation and genuineness. Server will contain the data for all the voters to validate and there will be a backend present where at the end of voting complete poll result will be shown in a form of graph as in complete dashboard.
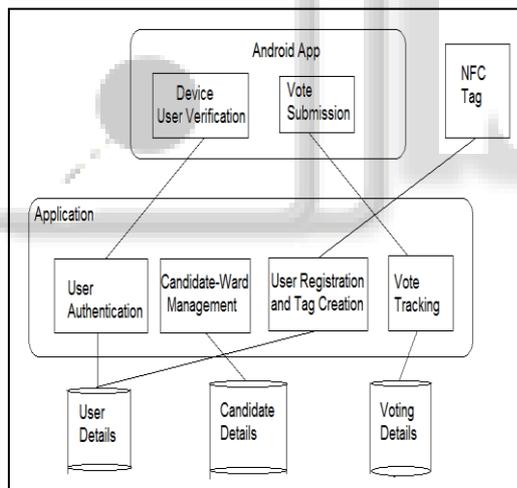
IV. SYSTEM ARCHITECTURE

Fig 4.1: System architecture

The user registration is used for creating a new user in the application. During the process of registration, the user provides certain necessary details. The admin has complete control on the application and is responsible for governing vital functionalities. The admin is responsible for creating entries for the candidates contesting in an election, the creation of different electoral wards in an application. Using candidate ward management, admin maps the electoral ward and the contesting candidates in the application. NFC tag can be used in Identification mode, where the tag identifies a person from the entire enrolled population by searching a data-base for a match based solely on the NFC. For example, an entire database can be searched to verify a person has not applied for entitlement benefits under two different names. Through the User Registration, an admin creates a new voter in the application and creates a respective tag for

him. The admin ensures that all necessary details related to the user are saved in the NFC tag. The android mobile phone acts as a ballot box in our application.

It is using this mobile through which the user wills caste the vote. At the time of user verification, the user needs to place his NFC tag near the mobile phone[7]. The application retrieves the information saved in the tag and verifies the user and his ward. Once the voting has been done, the application shows all the candidates who are contesting for election from that ward. The user can click the candidate he wants to caste his vote. His vote is then recorded in the application. After all this process results will be display in fraction of second on internet.

V. CONCLUSION

In this paper, we have been proposed Mobile Voting System using NFC which contains NFC technology to store all details of user with the rule of the government to check voter Eligibility and provides easy to use, secure & transparent voting system .

E-voting is used today. Developing a good system is critical to the success of the system to prevent system failures and to gain wide acceptance as the best method available. A good e-voting system requires some characteristics such as Accuracy, Convinience, Reliability, Mobility and Social Acceptance. The standards must be national. Mobile voting will be an low-cost, and less time consuming method once a system exhibiting national standards and the above mentioned characteristics is implemented.

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