

# Smart System Based Online Voting System

<sup>1</sup>Esha Bitlingu, <sup>2</sup>Swati Rathod, <sup>3</sup>Parikshit Gandhi, <sup>4</sup>Diksha Dhanokar,  
<sup>5</sup>Prof. Priyanka Kedar

<sup>1, 2, 3, 4, 5</sup> Department of Computer Engineering, DPCOE College of engineering, Pune, Maharashtra, India

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**Abstract:** There is a rapid growth of technology in today's world. Mobile technology has become an icon now-a-days. With the help of this advanced technology the old voting methods can be changed to the advanced voting methods. The advancement of this technology has given rise to a new application. Online voting is very simple, user friendly and less time consuming. It reduces the human efforts as it has no physical tampering. Online voting using smart system is nothing but using the smart device. This technology uses the fingerprint method to cast vote. The voters fingerprint is scanned and matched with the fingerprint that is already saved in the database. The database is linked with the voter's aadhar card id. After the completion of the voters fingerprint identification the voter is allowed to cast vote and then the vote is updated immediately.

**Keywords:** Smart System, technology, Online Voting System, voting methods, aadhar card id.

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## I. INTRODUCTION

The world is always in process of improving and developing the growth in technology hence we should be parallel with it. We should make the perfect use of these technologies by getting benefits from these improvements. After a period of 5 years election is held in India. The voting process is held on the booths in India. The voter's are expected to vote from the voting booths by standing in the queue. Hence to simplify this process and make it easy to vote this idea is developed of online voting so that everyone can use this flexibility of voting. Simply by using the fingerprint verification technique the voter is allowed to vote sitting at home. The main reason behind this process is to simplify the voting system.

Now-a-days everyone uses a Smartphone so this idea of online voting using android phone can be used sophisticatedly for voting system. So many cases of missing data in the voter registration files have been reported. There are also scenarios where unregistered voters flock in the polling centers as "Dead Voters" to participate in the voting process. Even after voting, malicious clerks and officers-in-charge of a polling station end up playing with the results figures. This results in the release of wrong results leading to cases of post election violence.

This voting will be developed in an Android operating system. The reason behind selecting an Android because it is an open source and mostly used in the market Android e-Voting application on smart phone user gives user to vote, an application with an interface for consultation to a dynamic web page offers the main question to be answered (voted), and together to this page are available the buttons to send the votes: Yes, No or Maybe. Admin can see the voting results according to vote options. The advantage of Android system is that it can get customized rights for developers. This paper will be describing the basic idea of mobile voting its advantages and disadvantages.

## II. SCOPE OF STUDY

It is focused on studying the existing system of voting in India and to make sure that the peoples vote is counts, for fairness in the elective positions. This is also will produce:

- Less effort and less labor intensive, as the primary cost and focus primary on creating, managing, and running a secure web voting portal.
- Increasing number of voters as individuals will find it easier and more convenient to vote, especially those abroad.

The ambit of the project is that it will use the user ID and pin generated as password to register him/her in the online voting system, from this all the details of voter and candidate will be saved in database. For the main security purpose email address of voter and candidate will be cross verified with already existing database as the registration details will be sent to that email address.

Online voting system can also send any error messages or any fraud to registered email.

### III. LITERATURE SURVEY

This software is being developed for use by everyone with a simple and self explanatory GUI. This is software that can be used by people to vote in an election. All the user must do is login and click on his favorable candidates to register his vote. The development and testing is done on Ethernet. While online voting system has been an active area of research in recent years, the use of insecure Internet, well documented cases of incorrect implementations reported recently. These challenges are to be resolved so that public should cast their vote in secure and convenient way. Proposed online voting system is a voting system by which any Voter can use his/her voting rights from anywhere in country. Online voting system contains:

- a) Voter's information in database.
- b) Voter's Names with ID and password.
- c) Voter's vote in a database.
- d) Calculation of total number of votes.

The intended online voting system can be defined using four phases:

- 1) Registration phase.
- 2) Authentication phase.
- 3) Voting phase.
- 4) Counting phase.

Various operational works proposed in the system are: Recording information of the Voter in database. Checking of information filled by voter. Discard the false information. Each information is sent to election commission.

**4.1 Product Perspective** The product is an election conducting tool with a simple GUI. The product is developed using Java. Though product is stand-alone. it requires Java Virtual Machine (JVM).

**4.2 User Characteristics** Users are considered to be technically novices but expected to be able to use a computer / hand held terminal (HHT). and to click against the favorable candidate on the GUI.

**4.3 Product Functions** The product has a server back-end which takes care of authenticating the users and maintaining necessary data structures. The GUI at the server's end enables creating the polls on behalf of the client. The users must connect to the server to authenticate their identification against the password and then vote using the GUI at their end.

**4.4 Overview of Data Requirements** The internal memory requirement will be constant or linearly dependent on the number of users depending on the provision of changing the vote at a later time. In such a case the actions will be stored in a data structure which will be referred to when needed. The external data about the candidates (with photographs) and the posts or the poll questions and the answers will be given as input only at the server end.

**4.5 Assumptions and Dependencies** The user is assumed to have JVM on his system irrespective of its hardware and software configuration. The other requirements are strongly design based and can be only made concrete in the design stage. We also assume that all the clients running this software are not blocked by firewalls, proxies, etc.

**4.6 Constraints** GUI is only in English. Login and password is used for identification of Voter.

#### IV. PROBLEMS WITH THE EXISTING VOTING SYSTEM

The problems with the existing manual system of voting include among others the following:

1. **Expensive and Time consuming:** The process of collecting data and entering this data into the database takes too much time and is expensive to conduct, for example time and money is spent in printing data capture forms, in preparing registration stations together with human resources, and there after advertising the days set for registration process including sensitizing voters on the need for registration, as well as time spent on entering this data to the database.
2. **Too much paper work:** The process involves too much paper work and paper storage which is difficult as papers become bulky with the population size.
3. **Errors during data entry:** Errors are part of all human beings; it is very unlikely for humans to be 100 percent efficient in data entry.
4. **Loss of registration forms:** Sometimes, registration forms get lost after being filled in with voters details, in most cases these are difficult to follow-up and therefore many remain unregistered even though they are voting age nationals and interested in exercising their right to vote

#### V. SYSTEM SPECIFICATIONS

##### A. Proposed System the Online Voting should:

- Be able to display all registered voters in the database to the SYSTEM ADMIN(s) as per their access rights and privileges.
- Have a user-friendly interface and user guides understandable by people of average computer skills.
- Be robust enough so that users do not corrupt it in the event of voting.
- Be able to handle multiple users at the same time and with the same efficiency, this will cater for the large and ever growing population of voters.

##### B. Requirement Specification: A system should meet the following requirements for it to run the MOBILE VOTING SYSTEM:

- Web browsers: Mozilla Firefox, Google chrome, Opera and Internet Explorer, MYSQL DBMS, Wamp Server, Macromedia Dreamweaver 8, Programming language such as JAVA and XML.
- Smart phone running on android or any third party android emulator.
- Windows OS Xp, Windows Vista or Windows 7. At least 2.0 GHz Processor speed, At least 40 GB Hard Disk Capacity and 512 RAM.

##### C. Functional Requirements:

- Secure storage and retrieval of voters' details from the database.
- Enable secure login of voters, that is to say non- legitimate voters should never be allowed to login to the tool, these include the under aged and non nationals.
- Maintaining and manipulating records in database through functions like edit, delete, and view.
- Validate and verify input and output data

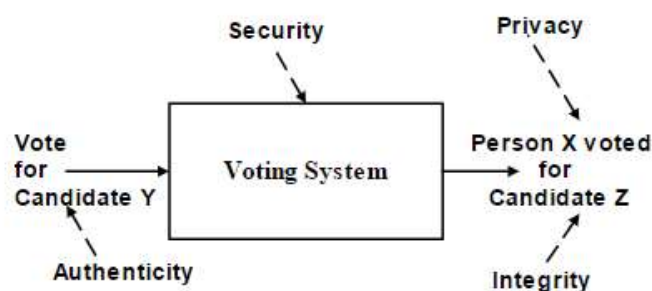


Figure 1. A generic set of requirements

- **Privacy:** after casting a vote, no one should be able to link the voter to this vote;
- **Authenticity:** only eligible voters can cast their votes;
- **Integrity/accuracy:** once a voter cast a vote, no alternation to this vote is permitted. Moreover, all valid votes must be counted, whereas all invalid votes must not be counted;
- **Security:** throughout the voting process, a vote can't be tampered with;
- **Democracy:** all eligible voters must be able to vote, one person - one vote and no one can vote more than once or vote for others. The system-specific requirements, on the other hand, are those requirements that are specific to the electronic-voting systems. The system-specific requirements include:
  - **Multi-user:** a number of voters can vote simultaneously; Multi-campaign: a number of elections can be running simultaneously;
  - **Accessibility:** the system can be accessed by voters from any location using secure Internet and/or mobile devices;
  - **Availability:** the system must have high-availability during an election campaign.

#### Hardware Requirements:

1. Fingerprint Scanner
2. Smartphone
3. RAM - 1 GB (min)

#### Software Requirements

1. Operating System : Android
2. Front End : Java
3. Back End : MySQL
4. Tomcat 7
5. JDK 1.7
6. Eclipse Indigo

## VI. SYSTEM ARCHITECTURE

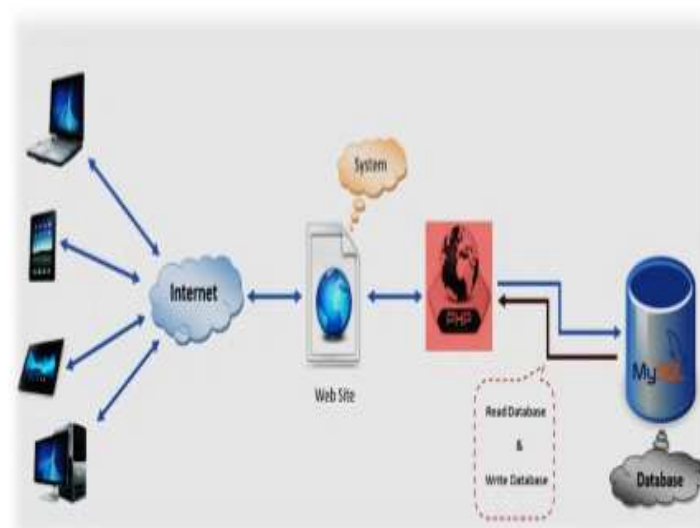


Fig (1.2) Block diagram of the Internet e-voting system

To accommodate these requirements, an architecture, presented in for the e-Voting system has been developed. The main elements of this architecture include:

The databases: two databases have been developed for the e-Voting system, namely the election and Meta databases. The election database keeps track of campaigns, candidates and voters. The Meta database, on the other hand contains information about the structure and format of the different type of election campaigns as well as the applicable voting rules;

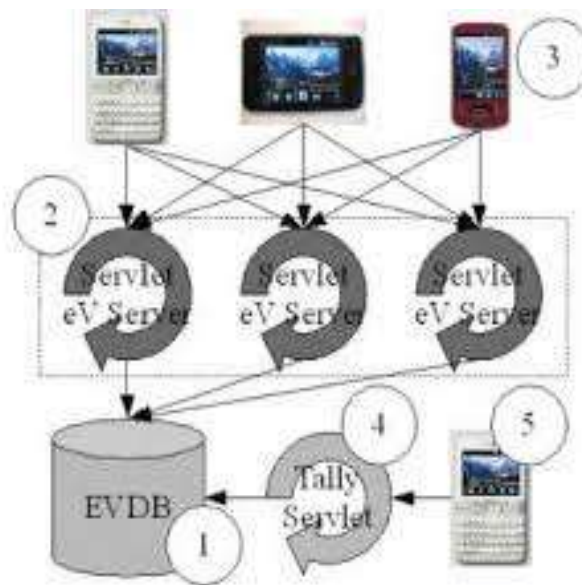
- The database management system (DBMS): the DBMS manages the election and Meta databases;
- The web server: the web server interfaces the e-Voting system to web voters. In addition, it stores the different web pages containing the code required to interact with the user as well as the database system;
- The SMS (Short Message Service) server: the SMS sever, as shown in Figure 2, interacts with voters that use their mobile telephone set and the SMS messaging service to access the e-Voting system. At the lowest level, the SMS server interfaces to a number of GSM (Global System for Mobile Communications) modems that receive voters' SMS messages through an SMS service

Android e-Voting application on smart phone user gives user to vote, an application with an interface for consultation to a dynamic web page offers the main question to be answered (voted), and together to this page are available the buttons to send the votes: Yes, No or Maybe. Admin can see the voting results according to vote options and country from which vote was done and also can se the location of particular voter using GPS. The User can submit his opinion about given topic. We collect the information about audience poll on the specific topic. System can maintain the data about the voter like Name, Country, IMEI number and opinion about given topic. Even though the system enables voters to poll their vote from anywhere, initially the voters should have to provide their voter id number to authenticate themselves and establish their user-ids. This constraint is imposed to ensure that only the genuine person is allowed to vote in the elections. The aim of this work is to design and implement an electronic voting application for the Android platform that will enable people to vote securely from anywhere. The application as a whole is aimed at being compatible with devices from many manufacturers and running different versions of the operating system. The application is also aimed at being localized.

## VII. VOTING ON ANDROID

To explain the system proposed by methodology, two types of users were defined. set of participants who tries to access the E-voting application and set of eligible voters which use the application available on smart phones. For the implementation of the application on the smart phones, it was assumed that every device is associated to its owner, through a validation database. The Flow chart of the mobile voting shows the sequential flow of how the data passes from one activity to another. It starts from Registration, Login and Forgot password .The Fig 2 shows the initial screen when the application starts. It has the login form, registration and forgot password and then continues.

- Register: - This option is used when the user is first registering through the application. It will take them to a registration screen
- Login:-This option allows us to log us in for voting.
- Forgot Password:-This allows us to change the password when we have lost or forgotten the password.
- Result Activity: - The task of voter registration is strictly preserved for the system administrator. Therefore if you are logged in as a mere user/voter, you don't have this privilege, therefore, the registration page link is disabled for you
- OTP Activity: - The task of OTP (one time password) is to send an mail on the registered mail after logging in the account, so that we can cast vote only after we are authorized to do so by the otp.otp sends us an random message on our email i.e. an random number and then we can insert the number to vote.
- Home Activity:- Each user once logged in, it means you Mobile Voting Using Finger Print Authentication are a legitimate user of the system. You are therefore given the privilege to visit the voting activity where you are introduced to the aspirants for a given post before casting your vote.
- Voting Activity: - After voting, a voter is allowed to check the results by visiting the results page



## VIII. OTHER SPECIFICATIONS

- **Advantages:**

1. **Portable:** The arrangement of this whole system can be made easily and whole system can be assembled easily. With the sufficient man power the arrangement of this system can be done easily and quickly.
2. **Less costly:** The system is very much affordable than the electronic system as the major requirements are only paper and a ballot box which are provided by the election commission. The voter doesn't have to pay a single bug form his/her pocket for voting.
3. **Simplicity:** The paper ballot system gives a simplest way to cast vote. Illiterate people can also cast their vote easily. No need to guide the individual
4. **Portable:** It is very much portable system as the system works on internet only the internet supporting device is required.
5. **Fast:** It is very fast as compare to traditional paper ballot voting system. The voter doesn't need to wait in long queue for voting. He /She can cast their vote just on a single click.
6. **Flexibility:** As this system is functional on the internet that makes this system more flexible to support variety of paper ballot question formats.
7. **Mobility:** This system gives the freedom of casting the vote from anywhere in country. This is beneficial for the voters who are regularly out of station.
8. **Reusability:** The extent to which the existing application can be reused in new application. The system can be reused a number of times without any technical difficulties.

- **Disadvantages**

1. Device dependency: The application is only for an Android smart phone. So this is device dependant.
2. Failure of device: If sometimes Android phone is get failure because of other applications of an phone, then user is not able to run the e-voting application.

- **Applications**

1. College elections.
2. Confidential recruitment.
3. Surveys.

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