

E-voting on Android System

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Abstract— The advancement in the mobile devices, wireless and web technologies given rise to the new application that will make the voting process very easy and efficient. The e-voting promising the possibility of convenient, easy and safe way to capture and count the votes in an election. This paper provides the specification and requirements for E-Voting using an Android platform. The e-voting means the voting process in election by using electronic device. We also described how the android mobile phones are efficient and can be used for voting. The android platform is used to develop an application. Using the face-book API's provided by the android SDK (software development kit) the login can be done very efficiently.

Keywords— *Android, Digital Election, E-voting system, Open Source, Web Services.*

I. INTRODUCTION

Voting for any social issue is essential for modern democratic societies now a day. So it is becoming very important to make the voting process more easy and efficient. In other hand the rapid development in operating system of the mobile phones gives rise to the application development on the large scale. The main reason behind the tremendous development in android application development is that the android is an open source operating system. It means that the software developers can have customization rights. As well as the software development kit provides tools to build and run android applications. The paper will be describing the basic idea of the project E-voting system on android and its advantages, disadvantages and applications. The paper is divided in five parts. The first part describes the literature survey i.e. the previous work done on the voting process. Then the further parts will describe about the E-voting methodology, architecture, advantages, disadvantages and its applications.

II. LITERATURE SURVEY

A. Electoral system in India

The technology used in India for voting is Electronic voting machines [2]. There are 2 systems developed for conducting an electronic voting machine. These are the DRE (Direct Recording Electronic) and Identical Ballot Boxes. A DRE voting system records votes by means of an electronic display provided with mechanical or electro-optical components that can be activated by the voter, that processes voter selections by means of a computer program, and that records that processed voting data in memory components. It produces a tabulation of the voting data that is stored in a removable memory component and may also provide printed renditions of the data. The system may further provide a means for transmitting the processed vote data to a central location in individual or accumulated forms for consolidating and reporting results from precincts at a central location. DRE systems additionally can produce a paper ballot printout that can be verified by the voter before they cast their ballot.

B. Identical Ballot Boxes

The Identical Ballot Boxes hold the ciphered vote, encrypted with the PMA voting key and the ciphered Identification Card Number, encrypted with their personal 4 digit key. It is designed to accept connections from the vote distribution server, and ensures an acceptable level of security as far as remote vote manipulation is concerned. In the current version of the system, it has been implemented in SQL Server 2000. The connection the voting distributor, and the administration server is established through JDBC 3.0.

C. Integrated Election Software package

Integrated Election Software package, running on a Microsoft Windows computer, allows the election official to set up and record the details of an election.

When voting is completed, it counts the votes and displays the outcome of the count results in the format Irish voters are familiar with. The PC's used are stand alone and security hardened for the election software only. Access to the PC's is also controlled by a security key.

III. SYSTEM SPECIFICATIONS

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 see 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.

IV. E-VOTING ON ANDROID

A. Definitions about system users

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.

B. Architectural work

The architecture for an e-voting system is as below in fig. 1 from[1].

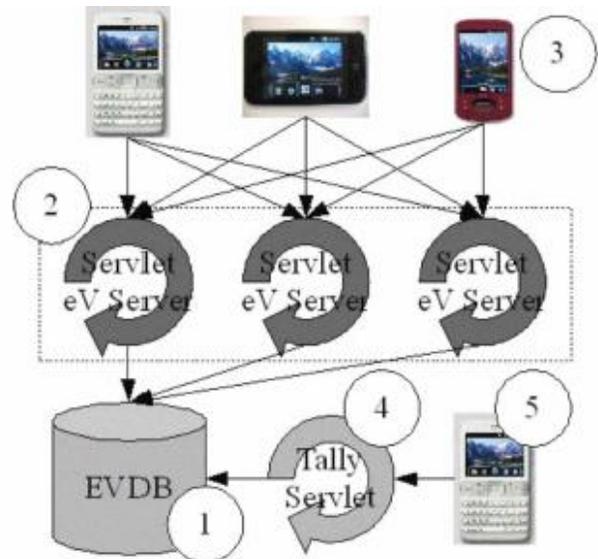


Fig. 1: Architecture of the E-voting application using android smartphones

1) e-Voting database (eVDB): It is the heart of the system, having de voting data collected during the public voting process. Initially it's composed only by a Postgres data-table keeping the following elements: a) The ID for each record; b)Two columns for date and time of each record inside the database; c) The defined language for the mobile device when the vote was done; d) The vote ID; e) Two columns for the geographic position of the smart phone GPS (latitude and longitude) when the vote was done; t) The vote answer (for this experimental case: Yes or No); g) The server address, date and time when the vote passed through; h) The client address, date and time when the vote was sent.

2) Multiple e-Vote collector web-services: These three services are dynamic pages which receives parameters via the web browser component from inside Android application. Such parameters feed the voting data base (the EVDB). Such services are implemented using Java Servlet (Servlet eV Server). The three services do exactly the same thing: collect the same vote and populates the database with the information from the address, date and time from each one of the three servers.

3) e-Voting application on Android smart phones: To be possible to an Android smart phone 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 or No, in the chosen language among Portuguese, Spanish and English.

When the vote has succeeded and is kept on the remote data base, the same application confirms the reception of this vote, presenting the data related to the vote just sent - also on the language chosen by the user inside the operational system on the Android smart phone. The vote related data are the following: Users vote; date and time of vote; and in cases where the smart phone has a GPS, the geographic position of the device when the vote was just sent.

4) e-Vote tallying web services: These services are made on and Java Servlet (Tally Servlet), which receive the parameters to present the web page with the voting tally to the interested people (election authority).

5) e-Vote tallying Android smart phone application: These are applications which access dynamic web pages, via Android smart phones, to inform to the interested people (election authority) about the situation - final, or in progress - of the voting process. This information can also be available to the consultants - initially - in three language.

V. TECHNICAL SPECIFICATIONS

A. Advantages

- 1) Unique identification of voter: As we are using unique voter id list provided by Government so each voter can be get uniquely identified.
- 2) Accurate vote counting: There is no duplication of the voters which helps in counting the accurate number of votes only.
- 3) Portable system. The system in on Android smart phone which itself is an portable device so the system is portable.
- 4) Improves participation of voters.
- 5) No fraud vote can be submitted.

B. 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.

C. Applications

- 1) College elections.
- 2) Confidential recruitment.

3) Surveys.

D. Mathematical model

As described in [6], mathematical model can be created using an set theory as follow

- 1) W – Set of eligible voters (those who are listed in the electoral register and have not yet cast a vote).
- 2) S – Set of (encrypted) votes stored in the e-ballot box.
- 3) *voter*: $S \rightarrow M$ – Mapping (encrypted) votes on their electors.

M is a superset of W_{total} , that is, $M \supseteq W_{total}$. M contains any user who tries to access the remote electronic voting system, whether or not this particular user has the right to cast a vote. The function voter assigns each (encrypted) vote to its producer (voter).

UnauthVoter:

$$\forall s \in S: voter(s) \in W_{total};$$

that is, the e voting system contains only those e-votes ($s \in S$) from which the corresponding voter

($voter(s) \in W_{total}$) is listed in the voter list. In order to ensure this, the voter needs to identified and authenticated.

OneVoterOneVote:

$$\forall s, s' \in S: voter(s) = voter(s') \Rightarrow s = s';$$

that is, whenever the set S of cast votes contains two votes from the same voter, then these two votes are identical. Thus, only one of the stored e-votes is tallied. This means that each voter can cast only one vote.

VI. CONCLUSIONS

This paper focused on the analysis of development of E-voting application on an android platform. The usability of this system is very high if it will used in real life election process. It will definitely helpful for the users who wish to vote and the voting process will be made very easy by using this application. However, after having tested the system, in future we tend to add additional functionality of image validation for the security constraint and uniqueness which will provide very strong security for the confidential information about vote.

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E-Voting system - Android client side. Contribute to BroFOSS/E-voting-portal-mobile development by creating an account on GitHub. In many institutions, we still use the manual based voting system, where a user is required to go to a place and write his/ her vote in a paper, and then submit in a box. After few weeks, the results are declared using manual counting. Our idea to create an open source, secure, e-voting system, which can be used by such different institutions to automate their processes. © 2019 GitHub, Inc. Terms. For this such type system, an android application is created in Android phone, then the system will start implementing some processes on that SMS which is sent by the voters into the server through a network. A database is installed on the server side to send a result back to the voter by the android system application. The voter can use internet connection through a website which is developed throughout this work. ISO 9001:2008 Certified Journal. Documents Similar To IRJET-E-VOTING SYSTEM USING ANDROID SMARTPHONE. bcc64e82. Uploaded by.