

# Advance SMS Based Voting System

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**Abstract:** Electronic voting systems have the potential to improve traditional voting procedures which provide additional advantage of having its flexibility and sophistication. Numerous electronic voting schemes have been proposed in the past, but this provide real authentication for the voters.. On the other hand, GSM (Global System for Mobile communications) is the most widely used mobile networking standard. There are more than one billion GSM users worldwide that represent a large user potential not for mobile telephony, but also for other mobile applications that exploit the mature GSM infrastructure. In this paper we are presenting electronic voting scheme by using GSM communication.. By integrating an electronic voting scheme with the GSM infrastructure, we are able to modify existing GSM authentication mechanisms and provide enhanced voter authentication and mobility in order to maintain voter privacy. The objective and verdict takes of this project is to avoid the queue in voting time. Voting machines provide easy access to cast the vote by using mobile phone.

**Keywords:** GSM, Mobile, LCD, Subscriber Identity Module (SIM).

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## 1. INTRODUCTION

Voting is a beautiflicated vital of the democratic process. As such, the efficiency, reliability, and security of the Technologies involved are critical. Traditional voting technologies consist of hand-counted paper ballots. These paper-based systems main leads to number of problems, including: Unacceptable percentages of lost, stolen, or miscounted ballots, Votes lost through unclear or invalid ballot marks, Limited accommodations for handicapped people.

Today, the development and widespread use of information technologies is changing the way people perception towards voting processes and, ultimately, the way they vote. At the forefront of these new technologies is poll-site direct recording electronic (DRE) voting and remote Internet-based voting. In democratic based societies, voting is an important toll to Collect and reconsider people opinion.. Traditionally, voting is done in centralized or distributed places called voting booths. Voters go to voting booths and cast their votes under the supervision of authorized parities. The votes are then counted manually once the election has finished. With the rapid development of computer technology and cryptographic methods, electronic voting systems can be employed that replace the unusual and problem oriented and most importantly error-prone human component. In order to increase efficiency and accuracy of voting procedures, computerized voting systems were developed to help colleting and counting the votes. These include lever voting machines, punched cards for voting, optical mark-sense scanners and direct recording electronic (DRE) type of voting systems in our purposed use.

For a variety of reasons voters may be unlikely to attend voting booths physically, but need to vote for the seke of country future. for example, from home or while travelling abroad. Hence, there is great demand for remote voting procedures that are easy, transparent and most importantly, secure. Today, the most common and practical way for remote voting is to use postal voting, where voters their votes by post. However, it lacks proper authentication and involves a time-lapsing procedure. To improve mobility, address security problems of remote voting procedures and systems. We present an electronic voting using GSM. With more than one billon users, the GSM authentication infrastructure is the most widely deployed authentication mechanism so far. We insist to use of well-designed GSM authentication infrastructure to improve mobility and security of mobile voting procedures.

### 1.1 Characteristics:

Voting system using sms carry multiple benefits over traditional paper-based voting systems advantages that increase citizen access to democratic processes support participation.

Reduced costs-E-voting systems takes on reduction in materials required for printing and distributing ballots. Internet based voting, in particular, offers superior economies of scale respective to the size of the electoral roll.

Increased participation and voting options - E-voting offers increased comfort to the voter, encourages more voters to cast their votes remotely, and increases the likelihood of participation for mobile voters. Additionally, it permits access to more information regarding voting options.

Greater speed and accuracy placing and tallying votes-E-voting's persistent step by step processes help minimize the number of miscast votes. The electronic gathering and counting of ballots reduces the amount of time taken for tallying votes and delivering results.

Flexibility-E-voting can support multiple languages, and the flexible design allows up-to-the minute ballot modifications.

## 2. VOTING SYSTEM USING SMS

In this section, we review the GSM security features, in particular the authentication function.

### 2.1 Security Features in GSM:

GSM is a digital wireless network standard widely used in European and Asian countries. It provides a common set of compatible services and ability to all GSM mobile users. The services and security features to subscribers are subscriber identity confidentiality, subscriber identity authentication, user data confidentiality on physical connections, connectionless user data Computer Science & Information Technology (CS & IT) 299 confidentiality and signalling information element confidentiality. They are summarized as follows: Subscriber identity confidentiality is the property that the subscriber's real identity remains secret by protecting his International Mobile Subscriber Identity(IMSI), which is an internal subscriber identity used only by the network, and using only temporary identities for visited networks. Subscriber identity authentication is the property that ensures that the mobile subscriber who is accessing the network or using the service is the one claimed. In our proposed GSM mobile voting scheme, communication between the mobile equipment and the GSM network uses standard GSM technology. Hence GSM security features apply. Among which, the subscriber identity authentication feature is particularly used in the protocol. A random challenge is issued when a mobile subscriber gets access a visited network. The Authentication Centre (AC) computes a response SRES from RAND using an algorithm A3 under the control of a subscriber authentication key Ki, where the key Ki is unique to the subscriber, and is stored in the Subscriber Identity Module (SIM) on the Mobile Equipment (ME), as well as the Home Location Register (HLR). The ME also computes a response SRES from RAND as well. Then the value SRES computed by the ME is signaled to the visited network, where it is compared with the value SRES computed by the AC. The access of the subscriber will be considered or denied depending upon the result of comparing the two values. Authenticated, and the connection is allowed to proceed. If the values are different, then access is denied.

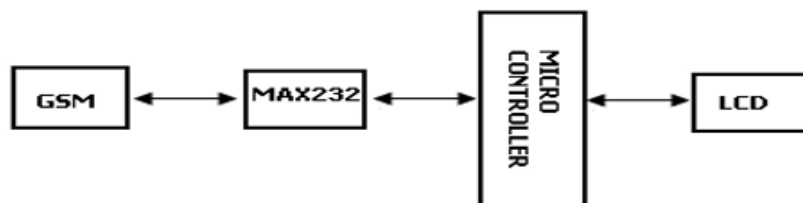


Fig.1. Block Diagram of Voting System using SMS

This paper is designed with Supporting GSM Modem LCD.

## 3. EVALUATION OF VOTING EQUIPMENT

In the recent years, voting equipments which were widely accepted may be divided into five types [10]: (1) Paper-based voting The voter gets a blank ballot and use a pen or a marker to indicate he want to vote for which candidate. Handcounted ballots is a time and labor consuming process, but it is easy to make production of paper ballots and the ballots can be retained for verifying, this type is still the most common way to vote. (2) Lever voting machine Lever machine is peculiar equipment, and each lever is assigned for a corresponding candidate. The voter pulls the lever to poll for his favorite candidate. This kind of voting machine can count up the ballots automatically. Because its interface is not

considered as user-friendly enough, giving some training to voters is necessary. (3) Direct recording electronic voting machine This type, which is abbreviated to DRE, integrates with keyboard, touchscreen, or buttons for the voter press to poll. Some of them lay in voting records and counting the votes is very quickly. But the other DRE without keep voting records are doubted about its accuracy. (4) Punch card The voter uses metallic hole-punch to punch a hole on the blank ballot. It can count votes automatically, but E-Voting System Using GSM Mobile SMS Haval Mohammed Sidqi Master in Computer Science, Sulaimani Polytechnic University Qirga St., Sulaimani, Kurdistan Region of Iraq Volume 3 Issue 4 July-August, 2014 Page 163 if the voter's perforation is incomplete, the result is probably determined unwillingly. (5) Optical voting machine After each voter fills a circle correspond to their favorite candidate on the blank ballot, this machine selects the darkest mark on each ballot for the vote then computes the total result. This kind of machine counts up ballots rapidly. However, if the voter fills over the circle, it will lead to the error result of optical scan.

1.2 Effectiveness of E-voting Among Different untries Recent years, a considerable number of countries has selected E-voting for their official elections. In this section, four empirical examples are enumerated as following. (1) **America** Government of the United States hold election collaterally in several ways, in other words, each state can choose the suitable way to hold elections independently. Because there are some debates about E-voting, such as some vote casts were not counted, or election system crashed during the Election Day. Secretary of State Kevin Shelley established an "Ad Hoc Touch Screen Task Force" to research the debates on DRE since then in February 2003 [1]. Shelly advanced that DRE should include voter verifiable paper audit trails (VVPAT) to solve electoral debates. (2) **Japan:** Japan adopted E-voting for local election in 2002, such as mayor and councilor election of Niimi city in Okayama prefecture in June 23, 2002; mayor election of Hiroshima city in February 02, 2003; and mayor election of Kyoto city in February 08, 2004. Take mayor and councilor election of Niimi city for example, electoral center surveyed the voters' reliability when the election finished. There are 83% of voters considered that E-voting system is worthy. 56% of them considered that the results of E-voting and paper-based voting are the same therefore Evoting is sufficient for reliable. The reasons why voters can't trust the E-voting system are voters worried about the abuses in E-voting system, and they can not make sure their ballot are recorded correctly. (3) **Belgium** Election for the Federal Parliament is held in May 18, 2003. In order to assist voters in being take knowledge with E-voting system, electoral center held short-term training. Counting efficiency in the election with Evoting system was faster then convention. Belgium's compulsory voting system and E-voting complement each other, voters' satisfaction and attending desireness of join voting are improved obviously. (4) **Brazil:** Brazil used E-voting in 1998. When the voter goes to the polling place, he shows his identity card for authenticating; if he is an eligible voter, he can get the ballot for E-voting. Brazil's E-voting system transmits votes to electoral center immediately, so that the count of votes can announce rapidly while the voting finished.

### 3.1 Comparison of E-voting System:

Besides many vendors to develop and sell commercial electronic election machines, there are various open source E-voting systems. We cite some examples as following [4,8]: (1) AccuVote-TS AccuVote-TS's vendor is Diebold Election Systems. This system carry touchscreen, card reader, keyboard, headphone, and paper tape printer. The voter selects his favorite candidate on touchscreen, and the vote will be printed on the paper tape. Its design balances the policy, electoral procedure and technology. But all the electoral information (including identity authentication, audit, or counting of votes) are stored in Microsoft Access database without setting password so there are high risks of attack. (2) iVotronic The vendor of iVotronic is Election Systems and Software (ES&S). iVotronic provides multi-language, and uses flash memory to save voting records. Electoral workers use PEB (Personal Electronic Ballot, a device which is similar to disk to start polling machine up. When the election is finished, the workers use PEB to access voting records in the polling machine, then delivers PEB to electoral center or transmits data from network. Because the PEB's password is only three characters, the risk of password breaking exists. This system have made mistake in the past elections, such as the number of voters is not corresponding between master server and backup server, the candidate selected on the ballot is not the voter's selection, and so forth. (3) eSlate 3000 Hart InterCivic discovered eSlate 3000. The voter gets a personal identity number (PIN) as four digits from electoral workers, then goes to the booth to input the PIN into polling machine to login. He can rotate selector wheel to select the candidate whom he want to poll for. Each terminal connects to the server named as JBC (Judges Booth Controller). Counting of votes will send to JBC from every terminal by network, then save it in MBB (Mobile Ballot Box). This system doesn't encrypt voting data, so there are some risks of data security. Furthermore, the electoral functions are not protected with password, anyone, even the voter, can finish the election. (4) AVC Edge AVC Edge is a multi-language polling machine which is manufactured from Sequoia Voting Systems. This machine includes touchscreen and flash memory for saving voting recorded, and its electoral procedure is similar to a foregoing E-voting machine, Accu VoteTS. There were some stumbles when this machine operated in the elections. As for as raxmple

E-voting system crashes when the user chose language; the counting of votes is not correct; and the ballot became blank because of the system breakdown. (5) SAVIOC SAVIOC is an open source E-voting system and all the source code and software can download from its official website [5,6]. This system is written in C language, and it may be saved in disk with FreeDOS. This system operates from disk, so hard disk is not necessary and the discarded computer is enough. This system is not connected to any networks and most of keys on the keyboard are disabled, attackers can't find the way to invade. SAVIOC's advantages are its simple disposition and low cost, but on the other hand, there are short of GUI and ease of use on SAVIOC.

#### **4. CONCLUSION**

E-Voting System Using GSM Mobile SMS is an excellent program to receive SMS messages This is the best solution and reference. The manual voting process can be very tedious, prone to electoral fraud and costly. The time that is been consumed and the resources often times runs into expensive projects. With all this, security is compromised because of the inability of all the human factors to provide efficient security needed for robust operation of the system.

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