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## A Framework for a Computerized Voters' Registration System for Improving the Voting Process

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### ABSTRACT

Voting being a formal expression of opinion or choice is an indispensable significant process in any political system. Apparently, Democracy mostly practiced today is considered to be the government of the people, by the people and for the people. Hence voting is one of the means and the most effective method of ensuring a justifiable government through popular participation. To enthrone sound democracy and stability in the political system of a state, a system of refigure voting has to be put in place. This system would among other functions discourage double voting, forging of electoral papers, massive transfer of ballot papers, destruction of ballot boxes, inflation of election figures and unnecessary delay in pronouncement of election results. This could be achieved by computerized voting registration system process to remove the difficult organizational tasks of the conduct of election in a state. Therefore this paper aims at alleviating the prevalence of rigging and introduction of an organized procedure of voting which is the bane of socio-economic and political progress in any given state. For the purpose of achieving the set aim and objectives of the article, the Independent National Electoral Commission (INEC), Akwa Ibom State branch was used as a benchmark.

**Keywords:** Voter, Election, Political Party, Ballot, Democracy, Polling, INEC & Poll Clerk

## 1. INTRODUCTION

Voting is a means of selecting or choosing leaders. It does not apply only to local governments, states and federal government of Nigeria but also in different institutions and social organizations. Therefore, the conduct of elections in a democratic society is very important not only because through it a change of government is effected but also because voting is the main form of political participation for most people for democracy to be sound and smooth, it should be enhanced on election free from fraud.

Many centuries ago, most societies were primitive and had not evolved a system of voting to elect the leaders that will govern them and promote societal harmony and peace. This means that people have to devise a system whereby a leader or a set of leaders have elected from the ranks of the people. At that point the idea of voting and being voted for became important and necessary. But before an individual can cast his or her vote, there are certain conditions to be met, one of which is to be registered as a voter. (Ekwueme 2000)

Since independence in 1960, the Nigeria political scene has witnessed incessant upheavals, wide scale dishonesty and societal bitterness, which in most instances, degenerated into lawlessness and destruction of lives and property. Theses unfortunate situations paved the way for and served as spring boards for the emergence and growth of unskilled democrats and military leaders in the governance of the nation. Many Nigeria's are disappointed that a post independent 46years-old Nigeria is still operating constitution which does not enjoy an overwhelming national acceptance, as evident in the persistent calls for the convocation of a sovereign's national conference on the one hand and the growing demand for ethnic nationalities on the other.

For about four and half decades since independence, the nation had shifted position between parliamentary and presidential system of government, with several military in cushions into politics over the years. Even the present presidential democratic dispensation is still undergoing experimentation with varying degrees of trial and error approach. It is in the light of the foregoing, that this paper on voter registration is written to serve as a useful tool of enlightenment in the hands of voters, the electorate and the general public.

However, voter registration is a critical aspect of the electoral process. A credible voter register is a prelude to free and fair elections. It is also important for people to know who is qualified to vote, where, when and how to vote. Also, a full knowledge of the registration procedure will encourage eligible voters to participate in the electoral process.

### 1.1 Research Aims/Objectives

The main aim of this paper is to design a fully computer based voter registration system to achieve the following objectives:

- Effectively carryout the task of voting automatically and timely.
- Put to an end the indiscriminate alteration of election results by any officer of the electoral commission. This will inculcate discipline in the commission and promote their independence.
- Secure ballot papers and elections results from any accident whatever and to quickly detect any defaced ballot paper or a ballot paper that is wrongly plumb printed.
- Stop multiply or double voting, forgery in any shape or form and smuggling of ballot papers into ballot boxes. This will restore the integrity of votes cast in any election in a given state.
- Generate accurate report and affect knowledge of election results using an on-line computer processing system.

## 1.2 Coverage

The study covers voting processes as it is done at the ward councillorship elections, local government chairmanship elections, the state house of assembly elections, the gubernatorial elections, the national house of parliamentary elections and presidential elections. It also inculcates the voters' personal records, candidates' personal records and voting procedures it covers election at polling centers.

## 2. RELATED LITERATURE

Election system is an important element of modern representative government. It is so closely tied to the growth and development of a democratic, political order, that it is now generally held to be the most important event which indicates the presence or absence of democratic government. The important attached to elections by regimes shows how far the modern state has become tied to the symbolic impact of this phenomenon. Owing to this importance election that is free and fair and rig-free should be ensured. Honest, competent and non-partisan administration should be trained to non elections. ()

**Adeoye (2001)** is of the opinion that here is a critical need for “an honest, competent and non-partisan administrator,” to run elections. This is to support four basic conditions for the conduct of free and fair elections as the report of the electoral bureau stipulates (2007).

- a) An honest, competent, non-partisan administrators to run election,
- b) A general acceptance throughout the political community of certain rather vague rule of game, which limit the struggle for power because of some unspoken sentiment that if the rules are not observed, more or less faithfully game will disappear amid the wreckage of the whole system,
- c) A developed system of political parties, traditions and teams of candidates before the electors, as alternatives between which to choose and,
- d) An independent judiciary to interpret electoral laws.

**Billy (2003)** addressed the major problems of the electoral process which include:

1. Electoral malpractice, which includes illegal possession and printing of ballot papers, manipulation of electoral laws, beating-up of opponents, imprisonment and killing of real and allege political opponents, denial of electoral laws and others. The offenders have been government officials, law enforcement and security agents, politicians and their supporters and the citizens.
2. Electoral violence, employing thuggery operation threats, victimization and intimidation in elections.
3. Inadequate security for the electorate together with inefficient law enforcement
4. Ignorance, indiscipline and gullibility of the electorate.
5. Inefficiency of the electoral referee.
6. Inefficiency of the mass media in the carrying out of electoral task.
7. Inadequate funding and disbursement of funds by the electoral commission and
8. Improper spending of funds by politicians and agents prof. Nnoil also went further to mention the specific nature of electoral malpractice under the generic term “Rigging” to include:
  - a) Those pertaining to infringement of the electoral law, impersonation of polling, improper use of voters card disorderly behaviour at campaign rallies and meetings
  - b) (b). Those pertaining to unethical infringements unlawful possession of voters card, ballot paper or ballot boxes assaulting officials campaigning on election day, voting more than once, bribery, underage voting and fixed legal judgments.

Based on personal experience from visits to polling stations on an election day as well as the reported experience of research assistants, Cleoman (2006) confirmed that the incidence of underage voting in particular was fairly quite widespread. However, one has to be careful regarding how far one can push his point. According to Jega (2011) stated that factors that affect credibility of elections was to be able to identify the factors which undermined the credibility of past elections and we tried our best to address them, while good practices were adopted/retained and improved upon. We tried to creatively and pragmatically adapt/introduce new measures and procedures drawn from comparative global experiences, to bring additional transparency and credibility to the electoral process. Specific issues and concerns addressed include:

- (i) How to prevent multiple voting, snatching and stuffing of Ballot Boxes
- (ii) How to detect and prevent the use of fake Ballot Papers
- (iii) How to detect and prevent fraudulent declaration of results
- (iv) How to ensure secure and timely distribution of election materials, and to secure the voting environment
- (v) How to bring greater transparency and accountability in voting and result collation procedures, by minimizing the role of career / permanent INEC staff in collation and announcement of results.

Wikipedia (2016) states that the rules governing registration vary between jurisdictions, and involve requirements that must be met and practices that must be followed before a citizen and resident is enrolled on an electoral roll. In some jurisdictions registration by those of voting age is compulsory, while in most it is merely voluntary. In jurisdictions where registration is voluntary, an effort may be made to encourage persons otherwise eligible to vote to register, in what is called as a voter registration drive. In some countries, people eligible to vote must "opt in" to be permitted to participate in voting, generally by filling out a specific form and submitting the form to the relevant electoral agency. They often need to re-register if they change residence across jurisdictional or divisional boundaries. In other cases, when a person registers their residence with a government agency, say, for a driver's license, there may be automatic voter registration at the same time by the government if the citizen is of voting age.

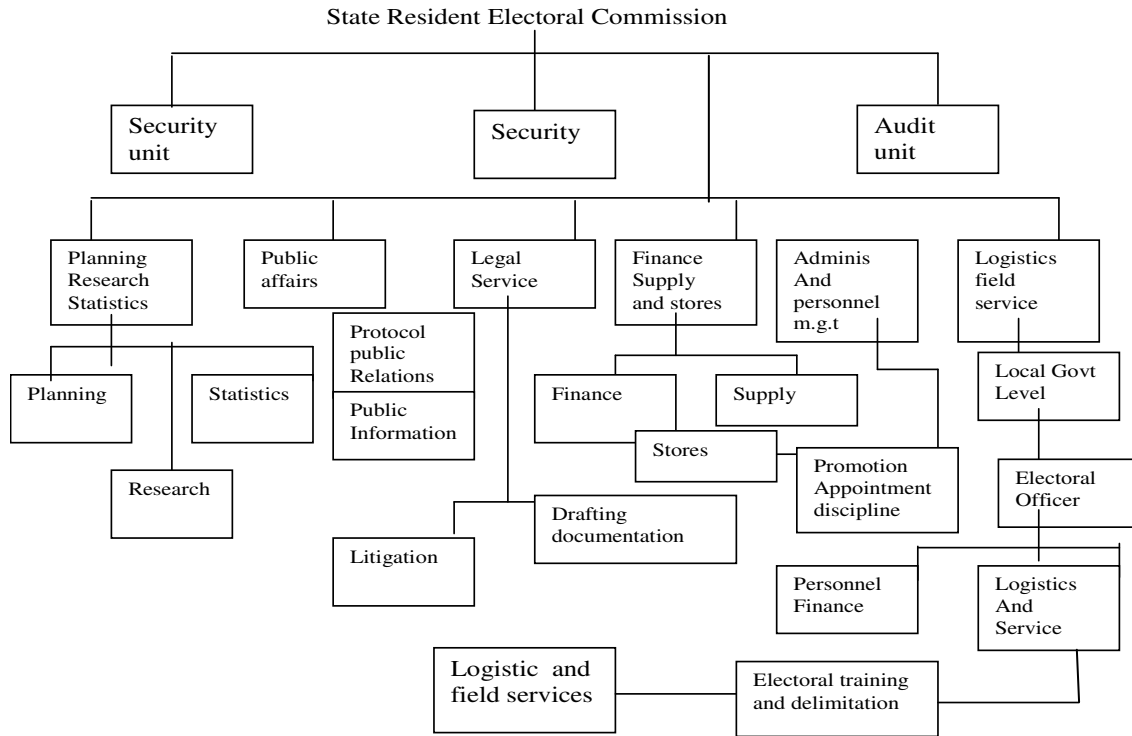
### **3. OVERVIEW OF THE EXISTING SYSTEM**

For a legitimate government to be achieved there should be a popular participation of citizens or people through voting. To enthrone sound democracy and stability in the political system of Akwa Ibom state, the voting system was designed to meet the following objectives

- To recruit and train personals of handling voting processes in order to generate reliable result,
- To obtain a reliable means of choosing their leaders (governor, chairman, councilors).
- To check to great extent, rigging during voting process which include double voting forging of electoral papers, massive transfer of ballot papers, destruction of ballot boxes, inflation of results, disqualification of eligible candidates, e.t.c.
- To avoid the use of offensive and dangerous weapons to intimidate voters and
- To promote the economic and socio-political lives of people.

#### **3.1 Organisational Structure**

The organization structure of INEC Akwa Ibom is as follows:



**Fig. 1: Organizational Structure**

### 3.2 Input Analysis

The registration officer writes down the state of origin, L.G.A, ward, Registration Area, Registration unit, polling station, voter’s Number, voter’s Name, voter’s sex and Age. This information is used to fill a voter’s Registration card which the voter will use on the election day. This card makes a voter legible to vote on the day of election. The input data item.

The sample of a voter’s Registration card.

**KD 0874302 FROM ECIG**  
**NATIONAL ELECTORAL COMMISSION OFFICIAL STAMP VOTERS**  
**REGISTRATION CARD**

STATE \_\_\_\_\_

LGA \_\_\_\_\_

REG. AREA \_\_\_\_\_

VOTER’S NAME \_\_\_\_\_

VOTER’S NAME \_\_\_\_\_

VOTER’S SEX \_\_\_\_\_ AGE \_\_\_\_\_


**Fig. 2: The Sample of a Voter’s Registration Card.**

### 3.3 Process Analysis

The process done with respect to the registration of a voter is done in two ways by the electoral officer. This officer is a personnel sent by INEC for overall co-ordination of election process.

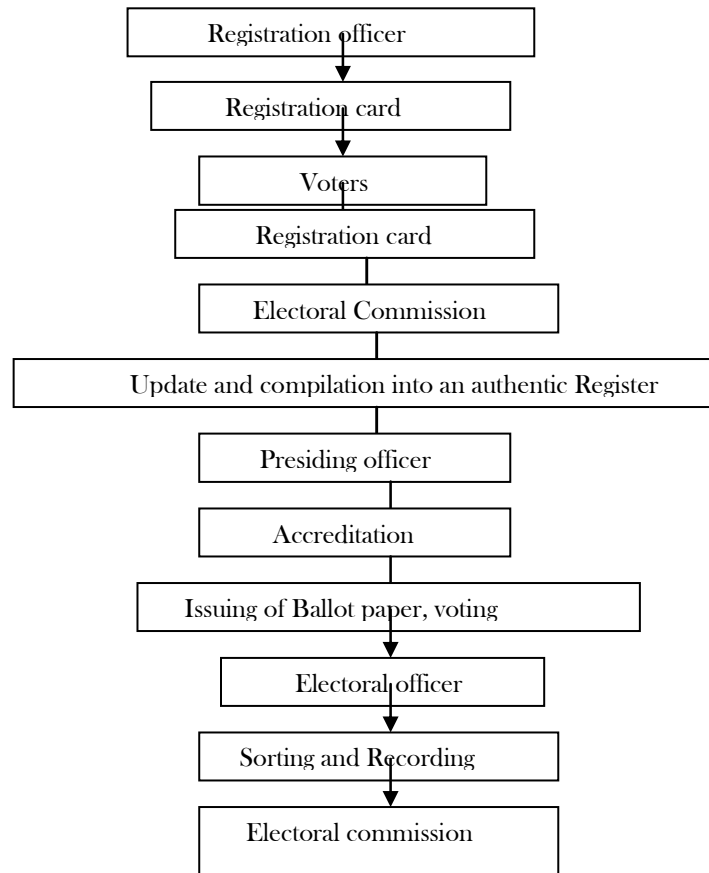
- (a). The update of the register by the electoral commission
- (b). The verification of voter card.

After registration, the registration officer hands the register to the electoral commission. With this register, they can update their record and provide an authentic register which will be used on the election day. Prior to voting each voter presents his card to the presiding officer who signs the voters' card and stamps it. This process is known as ACCREDITATION. This second cards are stamped and signed are legible to vote.

### 3.4 Output Analysis

The output is accredited card. This is a card with stamp and signature of the presiding officer. With this card, the voter is issued a ballot paper. The ballot paper contains the sign of selects and thumb print for and party of his/her choice.

### 3.5 Information Flow Diagram



**Fig. 3: the Information Flow Diagram**

### 3.6 Design of the System

The goal of the system is to solve the major problems associated with problem as have been pointed earlier include. (i. Duplicate Registration and voting (ii. Rigging and other electoral malpractices in line with the techniques of software Engineering, the design of the new system was modularized into three stages.

They are:

- i. Design of use interface.
- ii. Design of the program structure
- iii. The detailed design.

The user interface is the program as it is seen and used by the user. The program structure specifies how the various modules of the software interacts with one another for example, how the Registration module interacts with the voting module to ensure that only registered voters vote. In detailed design, the design of the system is handled at the intra-module level.

### 3.7 Output Specification And Design

The program conveys the results of program processing to user via the output interface. The program gives output in the following cases: (a) To display registered voters. (b) To display sample of a voter's card. (c) To display an instance of fraud, e.g duplicate voting

VOTER'S NO C1404032.	
NAME	= PEACE UDOSEN
SEX	= MALE
AGE	= 40
SOCIAL SEVUROTY NO	= E 00544811
ADDRESS	= 6 ITUNG LANE
DATE	= 27/12/2016
STATE OF ORIGIN	= AKWA IBOM STATE
STATE OF RESTDENCE	= AKWA IBOM STATE
LGA OF RESTDENCE	= ABAK
WARD OF RESTDENCE	= ABAK SOUTH
POLLING BOOTH	= B

**Fig. 4: Voters Personal Information**

<b>VOTER'S REGISTRATION CARD</b>	
NAME	PEACE UDOSEN
SSN	E 00544811
AGE   SEXES	40   MALE
DATE	27/12/2016;
ADDRESS:	6 ITUNG LANE
GRA WARD	ABAK SOUTH, AKWA IBOM
	D1404021

**Fig. 5: Voters Registration Card**

NAME OF ELECTION: FOR CHAIRMANSHIP								
POLLING BOOTH WARD: ABAK SOUTH WARD B.....								
NAME	SEX	AGE	SSN	ADDRESS	DATE	STATE	LGA	
PEACE UDOSEN	F	24	B63115602	6 ITUNG LANE	27/12/16	AKS	ABAK	
* * * * * D140402 * * * * *								

**Fig. 6: List of Registered Voters**

### 3.8 Input Specification and Design

The input consists of data interfaces to the program. The new system uses two principal interface styles for data input. These are:

- \_ Form filling interface
- \_ Menu selection interface.

Forms are used for input in modules such as the password-for entry of the security. The voters Registration for the entry of voters personal data, and for the entry of other setup data such as political parties, LGA, wards e.t.c

The forms were designed to make the use of keyboard for data entry easy by enabling the user to use the TAB key or the cursor government keys to navigate the cursor sequentially from one data entry or test box to another. The program has a parent window properly called MDI form or window in visual Basic. The parent window has the program main menu and or click, pulls down the respective submenus.

#### 3.8.1 File Design

To ensure efficiency in carrying out the tasks specified earlier on, various files are required some of these are.

- \_ Voters registration
- \_ Accreditation
- \_ Election parties

VOTERS REGISTRATION  
 FIELD SPECIFICATION  
 SSN- Social security Number  
 LGA- Local Government Area



**Table 1: Registration File Field Structure**

<b>VARIABLE</b>	<b>TYPE</b>	<b>WIDTH</b>
Voters Number	String	50 indexed /no
Surname	String	duplication
Other names	String	50
Age	Number	50
Sex	String	30
SSN	String	8
Date	Date	50
State of origin	String String	50
State of residence	String	50
LGA of residence	String	50
Ward of residence	String	50
Booth	String	50
Address	Numeric	2
Ward code	Numeric	50
Counter	OLE object	3
Passport		3

### 3.8.2 Accreditation

**Table 2: Accreditation File Field Structure**

<b>FIELD</b>	<b>VARIABLE</b>	<b>TYPE</b>	<b>WIDTH</b>
1	Name of Election	String	<b>50</b>
2	Election index	Numeric	3
3	Voters No	String	50
4	Date of Accreditation	Date	8
5	Accredited	String	50
6	Date of voting	Date	8

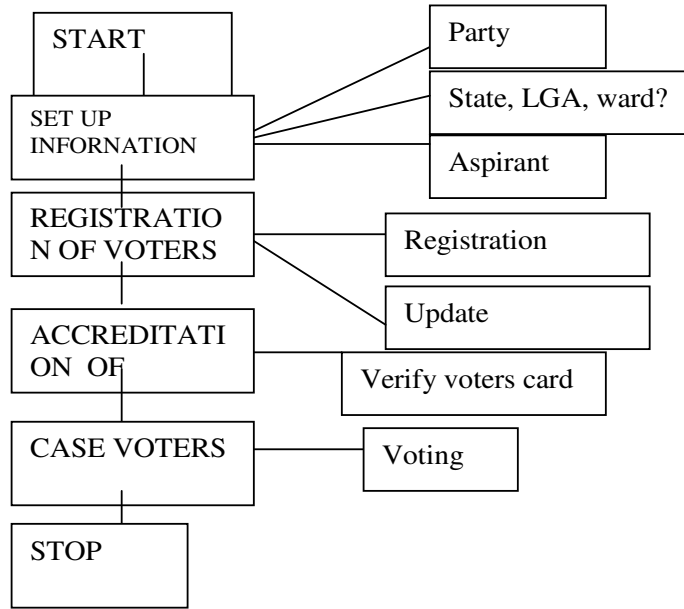
**Table 3: Parties File Field Structure**

<b>FIELD</b>	<b>VARIABLE</b>	<b>TYPE</b>	<b>WIDTH</b>
1	Party Name	String	50
2	Abbreviation	String	50
3	Aspirant	String	50
4	Officer	String	50
5	Party symbol	OLE object	

Considering the sensitive nature of the election data, the base is provided with a password. This serves to prevent unauthorized users accessing the data basic from outside the program.

### 3.8.3 Procedure Chart

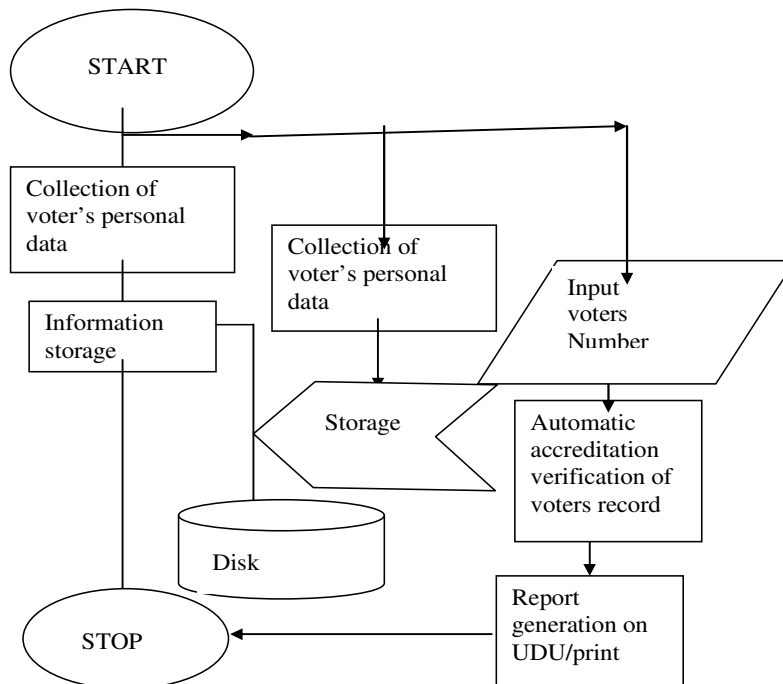
The procedure chart is depicted below



**Fig. 7: The Procedure Chart**

### 3.8.4 System Flow Chart

The System Flow chart is depicted below



**Fig. 8: System Flow Chart**

#### 4. PROGRAM DESIGN

Following the design of the interface is the design of the program. The software structure is a representation of all the modules in the system and their relationship to one another, in keeping with the principles of software Engineering, the concept of Top-down design as propounded by prof. NIK lans wirth, the inventor of Pascal programming language is used.

The internal design of the terminal modules of the top-down chart consists of the program detailed design. The detailed design was done using pseudo code with valid program statements during implementation. A breakdown of the modules are as follows:

- a) Voters Registration module: This is the first module in the method it is very responsible for collecting personal data of a voter. When this option is selected by clicking on it or pressing the underlined letter, the registration entry menu is introduced with record items prompts. The voters records are supplied and stored in a created file. This section is very interactive and flexible. Mistakes can be after data storage
- b) Accreditation module: This module verifies the voters record to ensure that the information he/she is having corresponds to the one stored in computer. If there is any contradiction information the voter is rejected and so cannot vote. On the other hand, if there is no contradiction, the voter is accredited to vote.
- c) Voting module: A computerized ballot sheet is generated in this section. This has the list of parties. Aspirants and offices from which the voter makes a choice by the symbol of the desired party and Aspirant.
- d) End Election/view Result module: This marks the end of the election/voting exercise and displays election results.
- e) View Registered voters module: This module displays a comprehensive list of registered voters. This will also help to detect an unregistered voter and he/she will be derived the right to vote. Activating menu option is achieved by either clicking on it or selecting the highlighted or underlined character. The log off hoses the option selected while exit ends the program

#### 6. CONCLUSION

Election is the only means of upholding sound democracy and ensuring stability in the political system of any country. The electoral process is so cumber some that it needs only a body of officials who are advanced in standards of honesty and routing competence for it success. Therefore in this paper, we analyzed the political nature of election process in Nigeria, appraised its short coming and proposed a design of computerized voters registration management system to prevent rigging and whims of nay electoral officer or incumbent government.

In this paper, our purpose was achieved by proposing the use of computer interfacing information or data securing in a network environment. An overview of the interface that can be used at each polling booth and also an input (voters) card used at each interface or polling booth was also designed. The input or voters card has to be recognized by the interface before it becomes valid; moreover it rejects multiple voting by any single voter irrespective of the different polling booths he might have used. It matches the individual's features stores in voters' registration card to enhance detection of multiple voting by a single voter.

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