

# PROSPECTS OF GRID IN THE CURRENT VOTER REGISTRATION SCENARIO OF BANGLADESH

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**Keywords:** Grid approach to voter registration, Distributed election process.

**Abstract:** Bangladesh is a developing country which has gained independence in 1971. In the past, voter registration was done by going from house to house and then filling up the required forms and counting them in. So any type of computerized information system was not used. Currently, the government has taken initiatives to collect voter information with photograph to effectively execute voter registration. This is definitely a positive initiative from the part of the government. In this paper, to effectively limit the time duration and complexity of the ongoing process, grid computing infrastructure implementation is proposed. Grid infrastructure will not only accelerate the voter registration process, but also speed up the election process on the whole.

## 1 INTRODUCTION

The Bangladesh Election Commission (BEC) is a constitutional body responsible primarily for the task of conducting elections for the parliament and the local bodies (<http://www.ecs.gov.bd>). A significant part of the task is the preparation, maintenance and periodic updating of an electoral roll conforming to the norms of the structure.

Recently the BEC faced significant difficulties in discharging its responsibilities due largely to the process adopted in preparing the electoral roll. The 9th Parliamentary Election was supposed to be held on 22 January 2007 following the dissolution of Parliament in October 2006. But, in the days leading to the elections, violence became widespread with deterioration in overall law and order situation of the country. Eventually, the elections could not be held. A new caretaker government assumed charge and vowed to the nation its intention of holding a free, fair and credible election.

One of the main reasons for the deferment of the January 2007 election was a faulty and grossly inaccurate electoral roll that was not acceptable to the opposition parties. To improve the situation, the newly reformed BEC took steps for preparing a credible electoral roll with photograph. The attempt has been appreciated to all parts of the people of the country. In this paper, an approach to speed up the current process further has been proposed.

## 2 VOTER REGISTRATION IN THE PAST

After the independence, Parliamentary elections were held for the first time under the new constitution on 7 March 1973. Later in the year, elections to local bodies were also held ("Banglapedia", n.d.). According to the article no. 118 of the constitution, there shall be an Election Commission for Bangladesh supervising the whole process of elections. Up until now, eight parliamentary elections were held. In all of the election processes, the voter registration process was somewhat manual in the sense that the listing was done by going from door to door and keeping track of the voters in a written list. There the enumerators designated by the Election Commission take account of all the voters under his area. He hands down the list to his supervisor, who after further scrutiny submits it to the Assistant Registration Officer (ARO). Then the list is counted and the proper list is maintained in every polling centre.

This process had several drawbacks:

- A voter can cast multiple votes in different polling centres under different names as there weren't any biometric identification.
- Fraudulent voter entry can be created due to the lack of proper identification.

As a result, outcome of the election process had become unreliable and fraudulent. General people had lost trust in the election process due to the inefficient techniques adopted for the voter registration process. This led to the unrest in January, 2007.

### **3 VOTER REGISTRATION IN THE CURRENT SCENARIO**

An improved system has been achieved by developing a system whereby the computerized database is generated and is proposed to be maintained through annual update using a process of addition, deletion and transfer. This exercise involves the capture of photographs and the integration of these photographs with data in the computers. The whole process can be summarized through the following phases (<http://www.ecs.gov.bd/English/>):

#### **3.1 “First Phase: Data Collection”**

Enumerators are provided with the appropriate forms and required items using which they collect data from the prospective voters. They have to keep records of the mentally or physically challenged people as well. The information is then handed over to the supervisors and after scrutinizing the data, it is handed over to the Assistant Registration Officer (ARO). The data is compiled according to the areas after scrutiny by the ARO.

The voter registration centres and area wise server stations are then set up with assistance from army. The registration forms are provided to the team leaders by the AROs. The team leaders then inform AROs of the data, time and numbers for photograph taking. The information is then again passed on to the enumerators from the AROs through the supervisors. The enumerators inform the prospective voters about the time and date on which they have to be available in the voter registration centre for photograph taking. The necessary preparation is taken in the voter registration centre, i.e. the laptops, webcams, fingerprint scanners, photocopy machines and generators are set up for the operations to be performed for data collection.

#### **3.2 “Second Phase: Re-scrutinizing the Forms”**

The forms maintained at the registration centres are scrutinized again and then entries are created in logbooks after serializing the forms in laptops.

#### **3.3 “Third Phase: Data Collection and Identity Scrutiny at Registration Centres”**

Voters provide their information to the data entry operators after scrutinizers have verified them. The entries are created if required and completed after taking the fingerprints, photos and signatures from the voters. Then the voters are given receipt.

The information thus procured is again handed over to the team leaders using laptops and they are transferred to the area wise server stations.

#### **3.4 “Fourth Phase: Registration of Physically Challenged, Jail Inmates, Missed-out Voters and Ailing People”**

After collecting data from the regular voters, all the other prospective voters who have missed out the registration have to be taken into account. They have to be counted for following the steps described in the earlier phases. The registration for the physically ill people and the jail inmates have to be completed as well, under the required arrangements.

#### **3.5 “Fifth Phase: Data Processing at Area Servers”**

As all data have been collected for the voters, the information has to be processed in the respective area servers. The duplicate voters have to be identified and the team leaders are informed. Then the errors are corrected as required. The national ID cards are processed for distribution after identifying and correcting the errors in the exhibited draft national ID cards.

#### **3.6 “Sixth Phase: Draft Voters List Printing and Finalizing”**

Finally, the draft voters’ list is prepared and exhibited. After hearing the objections on the list, corrections are made by revising the proper authority. Then the final voters’ list is prepared and authenticated by the registration officer.

The electoral roll with photograph thus prepared is proposed to be merged into a central database by incorporating the fields necessary for voter registration. This initiative has been laudable compared to the earlier system that had always been used for voter registration. But will it be successful or not, that is yet to be seen. A better approach to implementing this scenario will be grid computing infrastructure.

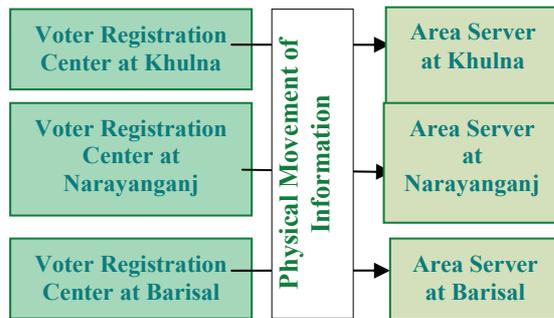


Figure 1: Physical movement of information in the fifth phase of the existing scenario.

#### 4 VOTER REGISTRATION IN THE PROPOSED SCENARIO

The ongoing voter registration can be further improved with respect to the required time. The proposed plan is to implement grid infrastructure for the voter registration process. Currently, the voters' information has to be transferred to the area servers from the voter registration centres for data processing as described in the fifth phase. Our proposed plan suggests a change of the architecture used in this phase.

The voter registration centres already have laptops, fingerprint scanners, webcams for taking information from the voters. Every voter registration center is also connected to the existing public switched telephone network (PSTN) provided by BTTB (Bangladesh Telegraph and Telephone Board) (<http://www.bttb.net.bd/>). So if there is an online interface for connection to the grid computing system (Foster, 2006), then the need for the transfer of information from the registration centres to the area wise servers will be eliminated. All the voter information taken in all the voter registration centres can be directly fed into the proposed grid infrastructure.

This approach will obviously limit the time duration required for the data transfer into the area

wise server and data processing required in those server centres.

Moreover, it will pave ways for many more opportunities for e-government related services.

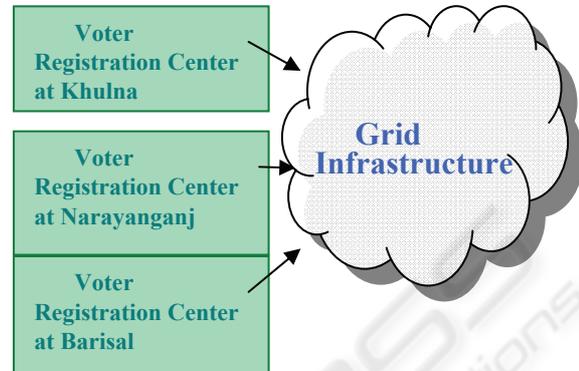


Figure 2: Proposed scenario for Voter Registration in grid implemented approach.

#### 5 ANALYSIS

According to the roadmap (<http://www.ecs.gov.bd>) provided by the Bangladesh Election commission, the process of enumeration, data entry, printing, posting and correction of the draft list will start from 7th August 2007 and finish on 16th August 2008. So this phase of the process will have an approximate time span of one year. This extended time duration is due to the lengthy process of data collection and then transferring the information to the area wise server for re-evaluation.

This time span will be substantially reduced if grid infrastructure is implemented. A simple online interface can be developed to use the distributed access points. The voter registration centres distributed all over the country can be used as the access points for the grid. The components required to maintain the grid can be distributed in any number of servers located at the different government bodies secured from outside intervention. The need for manpower in local area wise server maintenance can be removed through this approach.

#### 6 RISK ASSESSMENT

“A gap exists for all e-government projects between the design assumptions/requirements and the reality of the client public agency. The larger this gap between design and reality, the greater the risk that the project will fail (“DRG”,n.d.)”. The technique

followed in design-reality gaps model (“DRG”,n.d.) presents a set of questions which will attempt to rate the gaps.

The DRG model involves questions relating to a series of seven 'ITPOSMO' dimensions - information, technology, processes, objectives & values, staffing & skills, management systems and structures, and other resources - with attached rating numbers (“DRG”,n.d.). Using each of the seven dimensions, two things have to be observed. One is the organizational reality that exists at the time of analysis and the other one is the requirements within the design of the proposed e-government project. For each one of the dimensions, a numerical rating has to be allocated to indicate the size of the design-reality gap on that dimension. The rating for each dimension's gap can be anywhere on a scale from zero to ten.

After the rating, the rating numbers for all seven ITPOSMO dimensions are added up and can be interpreted according to the table 1 (“DRG”,n.d.).

The seven dimensions are applied to the proposed approach and the corresponding rating is discussed:

- Information: The information currently being used for voter registration is the same as required by the approach. So no change indicates 0 rating.

- Technology: The required software for the development of the grid computing environment would be slightly different than the setup currently being used. So a rating of 4 can be allocated to this dimension.

- Processes: The work processes undertaken in the current scenario need not be increased for the requirement of the proposed scenario. So a rating of 0 can be assigned to this dimension.

- Objectives & values: The objectives and values required for the key stakeholders of the proposed system have to be exactly the same as the objectives and values of the current system. So a rating of 0 should be assigned corresponding to this dimension.

- Staffing & skills: The staffing members and the skill level or type will slightly differ in maintaining the control of the grid architecture. So a rating of 3 has to be assigned for these criteria.

- Management systems & structures: Management systems and structures required for the implementation of the proposed approach will be slightly different than the exiting system. But the overall management will be the same. So a rating of 4 can be assigned for this dimension.

- Other resources: The time and money required to implement the proposed system will be higher for the initial setup. But it will definitely be lower for

maintenance compared to the existing system. So a rating of 2 can be assigned.

The total rating for the ITPOSMO dimensions is added up to 13. According to the table I, there is a high possibility of success in the proposed approach.

Table 1: Overall rating analysis.

Overall Rating	Likely Outcome
57 – 70	The e-government project will almost certainly fail unless action is taken to close design-reality gaps.
43 – 56	The e-government project may well fail unless action is taken to close design-reality gaps.
29 – 42	The e-government might fail totally, or might well be a partial failure unless action is taken to close design-reality gaps.
15 – 28	The e-government project might be a partial failure unless action is taken to close design-reality gaps.
0 – 14	The e-government project may well succeed.

## 7 CONCLUSIONS

Grid computing has become the popular solution to distributed problems. Election process is a very critical distributed problem faced in any government. In this paper, a better approach is proposed to maintain the database of the voter registration, so that the distributed election process can effectively be handled with the least possible use of centralization.

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