

A Model IT based Information Kiosk at Counting Centers During the General Election

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Abstract

A model of Information Technology (IT) based counting results declaration methodology tested during the erstwhile Assembly by-election and expected to be adopted during the forthcoming General Elections is described. The Ethernet based Local Area Network (LAN) is used to connect the clients installed in the counting halls of each Assembly segment falling in the Parliamentary Constituency to the main server at the Central Information Kiosk. The round wise results for each table are read from the Electronic Voting Machines (EVM) and noted on the slips to be sent to concerned Returning Officer or Assistant Returning Officer for record and its copy to the computer operator for the entry of same into the client. An application software based on client server technology sits on the system and processes these to prepare relevant reports the hard copies of which are instantly made available to RO/ARO present there. These data for each Assembly segment flow simultaneously to the main server where data consolidation for Parliamentary Constituency is done. The round wise results for each Assembly or Parliamentary segment are also displayed on a screen using a multimedia projector to the media persons or representatives of the candidates. The network being hooked to the internet through National Informatics Centre (NIC) or any private service provider, has the capability of uploading the relevant data on the servers of the Election Commission of India or NIC at New Delhi for their purposes.

1. Introduction:

The National Informatics Centre has traveled a long journey from the General Elections held in 1991[1] when it first time incorporated successfully the use of computers in the election processes at district level[2] despite the skepticism expressed by some of the officers who were not aware of the potential of information technology during those days. However, even at that time, an attempt was made to provide computer support to administration in the counting exercise also but it could not be efficiently done due to long and cumbersome process involved with the paper ballots. The tabulation of votes polled by the candidates and declaration of counting results continued to be done manually despite the fact that same reports were to be sent to the Election Commission

by fax and to the NIC, New Delhi for Door Darshan through NICNET. It was in 1999 when the Election Commission of India adopted the technology first time and directed the Returning Officers (ROs) to send the counting data through file transfer protocol (ftp) from counting centers to the central server at New Delhi using dial up phone line connectivity. NIC, however, continued its time proven methodology of transmitting the trends or results using its own network with the collaboration of agency hired by Door Darshan for the analysis of election results. These technology employment still lacked its effectiveness in reducing the computational works of the local administration during counting process which is must for the acceptance of IT in their work culture. In view of this fact we decided during the Assembly by-election of Gauriganj in February-March, 2003 to estab-

lish an IT Information Kiosk at the counting center to minimize the human work in tabulations, providing the round wise results to the media persons or interested parties and the final results declaration. The idea further got strength from the advice of the Commissioner, Faizabad Division during his visit to District to observe the preparations for the counting of votes. Sultanpur being at the forefront in the election activities from the beginning[3], formulated a strategy and installed a LAN of four nodes in a very short time. Being the first attempt, the whole counting and tabulation work was also conducted manually in parallel but in the end computer based reports were found more reliable and same were used for official purposes. The infrastructure, computer personnel and other requirements for this work in coming elections are mentioned in the following paragraphs along with the graphical illustration.

2.The LAN and Infrastructure:

In the past by-election a LAN was established for data processing and display of counting results to the representatives of various political parties. Being a by-election, only one Assembly had gone to polls and it was found that one PIII system was enough for the data entry as well as processing. The other two clients were installed in the gallery fixed for candidates' representatives and the third client was kept a little away in the media center. The clients were PII systems supported by uninterruptible power supply (UPS) to avoid power failure. The server and connected LaserJet printer were kept in a temporary chamber (to avoid sun light falling directly on the monitor, preventing the dust and distraction to the staff) near RO's table from the security point of view and also being the main place of the counting hall.

It is observed that when EVM machines are used the counting results are obtained in a very fast manner. However, if two persons, one for organizing the received data systematically according to table and round wise and the other to assist the computer operator doing the data entry work are employed, the speed and efficiency of the process are maintained. The slips containing the votes polled by the candidates (table and round wise) are

simultaneously made available to RO and computer staff by the counting supervisor who prepares one additional copy of the same for this. The advisable operating systems are Windows 2000 Server and Windows 2000 Professionals for the server and clients respectively.

Thus each Assembly segment counting hall requires one client machine, a UPS and three staff for computer, one among these being expert data entry operator. A printer may also be connected with this system, as the reports so produced are needed by the officers for different purposes. The hub or switch obviously has eight ports minimum or as needed. The printer, multimedia projector and modem are to be connected to the server placed at an appropriately safer place having constant uninterrupted power supply with installed constant voltage transformer (CVT). This being the main Information Kiosk, deserves to be continuously monitored and run by an IT professional either from NIC or from any other such institution, being assisted by at least three qualified staff for operating the projector and taking the print outs. The straight Unshielded Twisted Pair (UTP) CAT-5 cables are used for connecting all the computers, the lengths of which depend upon the distances of the counting halls from main Information Kiosk and to be prepared accordingly.

In case the counting trends or final results are also to be transmitted to the Election Commission of India or NIC New Delhi, then one extra LAN card or modem is required for server.

The whole counting process generally takes around four to six hours.

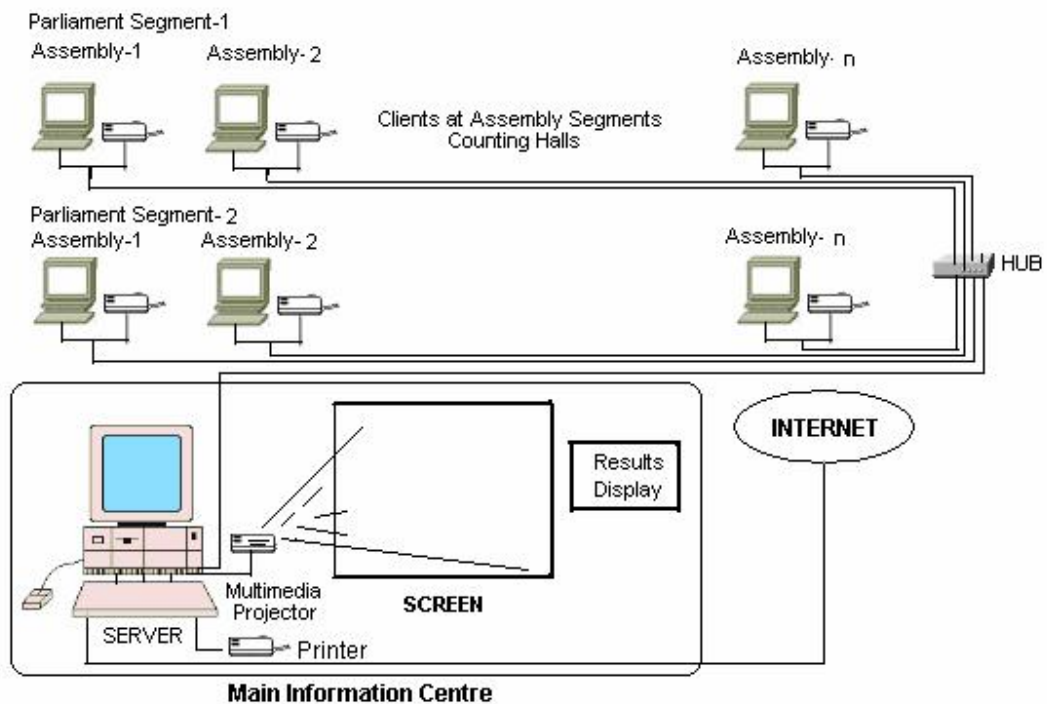
3.The Software:

The application software used for the data entry, processing and the report generation was developed locally by NIC for this by-election. However, when all the Assemblies go to polls simultaneously during the General Elections, a standard and more exhaustive software having a perfect user friendly interface and foolproof in all the respects will be required to be developed and tested to avoid any possibility of it being crashed during the implementation stage. As the same would be used for display of the results on the screen at the main centre in the formats prescribed by the Commission, the

use of hindi language and devanagari script is must. Despite these facts, the requirements of ROs and district administration are also to be incorporated in the software. The confidence of officials developed overtime that the computer can do anything by just pressing a key sometimes changes their previous decisions suddenly. This needed to be avoided by developer by prior meetings and discussions on this subject with concerned officers or staff.

depending upon the feasibility. The computers, UPSs and printers must be gathered and tested and so the functioning of ethernet card, USB and other ports to be used for connecting printers, LAN cable, multimedia projector, modem and other devices expected to be used during the process. It is better to have standby systems or other devises to be immediately swapped in case of emergency. It must be remembered that once work started and picked up, there is no way out except to finish it. We observed

Diagram illustrating an IT based Information Centre during Counting process of General Election



4.The Implementation Aspect :

The implementation of the whole project requires an advance acquisition of hardware infrastructure. The UTP cables are first items to be prepared for which the number of counting halls i.e. number of Assemblies concerned and their distances from the main center where the server or hub are to be placed are to be accurately measured. Generally the counting halls are within the reasonable distance. However, if the distance is large in particular cases then repeaters or two level star configuration or other technologies may be employed

the interested officials running crazy for the prints of round wise reports. The prompt arrival of the data obtained from EVMs at the counting tables to RO and computer also makes it difficult to arrange and manage the same in systematic manner unless planned properly. This may cause mixing up of data slips resulting into incorrect data entry and wrong output results. Avoidance of any distraction of mind of people deployed for computer job and constant guidance to them by officers having some knowledge in IT reduces their stress. The other problem faced by the data entry staff is printing of unexpected extra reports which may be

minimized by restricting the people to approach him directly or inform him in advance for this.

The main information kiosk (MIK) would become the nerve centre of the counting process as almost any relevant information related to the counting done for any Assembly segment will be fetched by the server from the concerned clients and copied here for the further processing, reporting and display of round wise latest information through multimedia projector to the correspondents and representatives of candidates and also in printed form for the other officers.

5. Discussion and Conclusion:

Use of computers in the election process started way back in 1964 in the United States of America and in 1992 about two-thirds of the Americans were using computerized systems to cast their ballots. It is, in fact, the nature of work involved in the election process which is the key driver in this computerization process. Starting from the preparation of voters list, list of polling stations and corresponding vehicles to carry polling personnel, list of candidates and votes polled by them – at every step the information is of such nature that its proper upkeep, retrieval and processing better suits to be done by computers[4]. The use of EVM in the voting where reduced the manual works during polls it also significantly helped the counting staff and shortened the time of this exercise. The present effort is first attempt in this direction where we tried to get the tabulation work, so far pursued manually, performed by computers. The announcement of round wise results earlier made on public address system was very uncomfortable for persons who wanted to note them down. The display of the same information on the large screen in future with the help of multimedia projector connected to the system may go a long way in solving that problem.

The cost involved in the whole project is also not very high due to availability of computers in different offices of the district which may be used. The printer attached with clients can be a simple eighty-column dot matrix printer (though slow in printing) if laser printers are not available in each case. The preparation and laying of cables are the main works involving

expenditure but it is a one time expenditure and same cables may be used next time or for any other purposes later. The multimedia projector, now a very necessary item for various kinds of uses like trainings to staff or presentations during meetings, may be hired in case the funds are not available. If administration is fully aware of the outcome of the plan and willing to adopt the technology, it may definitely manage the budget allocation for all these things.

Once the infrastructure is available and the places of RO tables are fixed, the laying of cables must be completed in advance. It must be kept in mind that installation of hard wares, their testing and software implementation, all are solely to be performed by IT professionals and also the time schedule is to be followed strictly. So it is mandatory to keep this preparation independent and separate from other counting preparations by administration. The staff and officers attached in the project must be thoroughly trained about the technicalities and handling of the instruments. As the machines or devices are power sensitive, it is to be ensured that no damage is done to machines due to power fluctuations or any kind of such anomaly. In addition, the data entry operators should also be properly educated in executing the software for the data entry, report generation and basic problems solving if required. An intercom or mobile telephone facility would also prove helpful in solving a technical failure.

In year 1999, NIC had installed computers at counting centre to transmit the data to the Election Commission at New Delhi. NIC, on the other hand, did almost the same for Door Darshan analysis using its own network. Now, these data transfer can be done from MIK itself using a phone line and internet connection. A dedicated system may also be connected for unhindered transmission if felt necessary.

Thus the plan if properly designed and executed it would surely prove very helpful to the officers involved in the counting of votes. The experiences gained during last Gauriganj by-election have proved its efficiency and would be useful for future strategy formulation. The model presented here will be an indispensable reality in future elections.

6.Acknowledgements:

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7.References:

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- [4]*Computerizing Election Administration*, The Federal Administration Commission of USA publication.

Note: NIC as an organization is not responsible for the views expressed or the content presented by author.