



Poll Day Monitoring System

Rajesh D. Bhusari
Senior Technical Director & Scientist 'F'
NIC SDU Pune, Maharashtra, INDIA.

Abstract: The paper is based on the innovative project done during Lok Sabha (Parliament) and Vidhansabha (Assembly) Elections in the year 2014. The outcome of this system has made a great impact on the pre-poll and poll day of the elections. This was the first experiment of its kind and has been awarded as Best Electoral Practice during West Zone Symposium organized by Hon. Election Commission of India which carries a cash award of Rs. 25000/- for the District Administration.

The Election process is time bound and is heavily monitored at 3 levels i.e. District, State and at National level and is broadly categorized in three parts. They are mainly pre poll, poll and post poll processes. This case study covers the poll day activities in which the innovation was done. District Election Office (DEO) needs to report the poll percentage of all polling stations to Election Commission of India at an interval of 2 hours which is mandatory once the poll begins at polling station.

Traditionally this information is collected physically and transmitted to district office via telephonically or through facsimile or in person which is compiled at district office for further transmission. But for the first time an innovative idea was implemented with help of local software called Poll Day Monitoring System (PDMS). It was developed using pull SMS system and the poll percentage obtained was compiled automatically. The outcome of this system has made a great impact not only on the pre-poll and poll day activities of the elections but also it significantly worked to report untoward incidents at polling stations along with poll progress data.

Categories and Subject Descriptors

[2.2] Experience Paper - This paper describes a successful experiment transforming traditional processes to digital one. This experiment was carried out in successively two General elections viz. Parliamentary and Assembly. The results were scintillating and entire process worked in disciplined manner.

Abbreviations

PDMS – Poll Day Monitoring System
DEO – District Election Officer / Office
RO – Returning Officer
ARO – Assistant Returning Officer
NIC – National Informatics Centre
LAMP – Linux, Apache, MySQL, PHP
ECI – Election Commission of India
CEO – Chief Electoral Officer, Maharashtra
PS – Polling Station

1. INTRODUCTION

1.1 Background

Nanded district is located in the southeastern part of Maharashtra, India bordering with Telangana and Karnataka states. The district is one of the largest in State with 16 blocks (taluka's) which covers 2 Parliament constituencies and 9 Assembly segments. The large sized district makes monitoring and supervising an onus task. Obviously Elections are considered as most sensitive and critical for many factors and also a high degree of transparency and fair practices are required.

During the poll process Hon. Election Commission, India and subordinate offices at State level collect vital information about polling party's activities and poll percentage every two hour as well as keeps keen watch on untoward incidents at polling stations to ensure smooth and fair elections in the polling stations / assembly segment.

This was the first experiment of its kind and has been awarded as Best Electoral Practice during west zone symposium organized by Election Commission of India.

1.2 Statistical Data of Polling Stations

The project was implemented at the level of polling stations where actual poll process takes place. A team of Presiding officer and Polling officers is deployed in every polling station. Following is the statistical data of Nanded district polling stations.

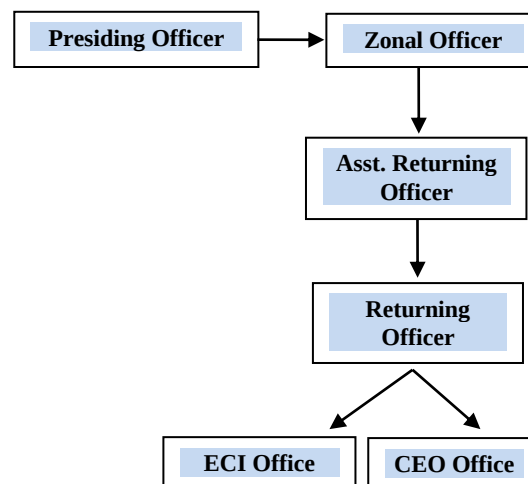
Table 1. Table captions should be placed above the table

Number of polling stations for Parliamentary Constituency in Nanded district	1859
Number of polling stations for 9 Assembly Constituencies in Nanded district	2736

1.3 Traditional Information Flow

During the poll process Election Commission and subordinate office at State level collects vital information about polling party's activities and poll percentage every two hour as well as keeps keen watch on untoward incidents at polling stations to ensure smooth and fair elections in the polling stations / assembly constituencies.

Traditionally this information is collected from zonal officers appointed and given responsibility of few polling stations (10-12) depending upon the geographical area. These officers collect the information by visiting personally to the polling station and later communicate to district level control room set for this purpose. All the information thus received is compiled at district level and disseminated to higher offices. The flow can be understood with following diagram.

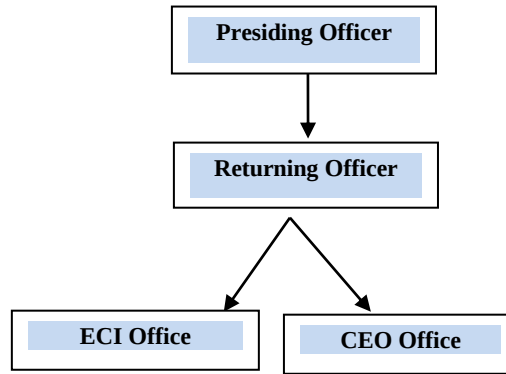


The information collection is a really cumbersome job for the zonal officers appointed for few polling stations. The exercise takes much time to report higher offices which involves lot of manual work and machinery for collection of information according to the polling station count.

1.4 Business Process Reengineering

During Parliament Election 2014 and Assembly Elections 2014 District Election Office had taken decision to collect the poll percentage with the help of mobile technology. The entire project was based on SMS system which has been meticulously used by the polling station staff to communicate various activities during poll process.

Achieving m-governance the district has successfully implemented poll day monitoring system with help of pull SMS system. The re-engineered information flow in this system is as shown in following diagram.



1.5 Preparatory Work

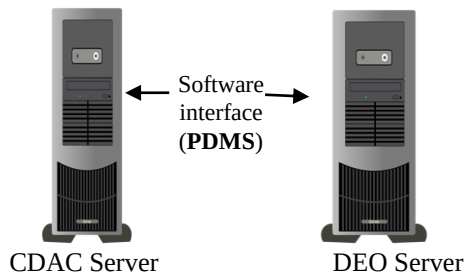
Following preparatory / home work was carried out for successful implementation.

1. Survey of mobile signal availability at each polling station
2. Documentation of PREPOLL AND POLLDAY SMS codes
3. Software development with help of local NIC Centre Nanded
4. Pull SMS gateway from CDAC, Mumbai
5. Web space for SMS operation
6. Two trainings for Presiding Officers at sponsoring ARO / RO level
7. Final training at Receiving ARO / RO for Presiding Officers

Mobile number of all presiding officers were collected during these trainings and it was ensured that the PDMS software will accept only SMS from registered numbers in the system

2. THE 'E'NITIATIVE

A software was developed by District Election Office with the help NIC Nanded to collect the vital information of polling percentage at every polling stations with auto compilation. Developed on open source system (LAMP) by NIC Nanded and the SMS gateway required for this system was provided by CDAC Mumbai. The development was in house and the codification for poll events were done as per tables given in Annexure I. The codes were prepared considering the pre-poll and poll day activities. All the codification was adhered with the guidelines given by Election Commission of India. The codes were approved by the then District Election Officer, Nanded. The schematic flow of this system is shown in following diagram.



2.1 Software Testing

Testing of the software and data flow was done prior to actual process. For this following methodology was adopted.

- Mock testing (dry run) of this software was done with the help of Zonal Officers.
- All the Zonal officers traveled as per route plan to every polling station and they have tested the system by sending SMS from the polling stations allocated to them.
- This has helped to track the signal quality and effectiveness of the system. This exercise was carried out on 12/04/2014 for Loksabha Elections and on 12/10/2014 for Assembly Elections 2014.
- The destination for SMS was marked on numbers like 166 / 51969 given by service provider (CDAC Mumbai).
- Parallely a team was deputed to monitor this exercise and hepling zonal officers for trouble shooting if any.

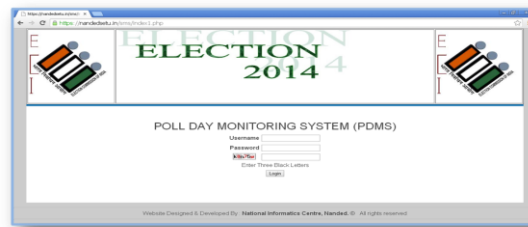
2.2 Software Training

Training to all stakeholders was an integral part of the system and accordingly three levels trainings were arranged. The main stake holder in this system was the presiding officer who leads a team of 3-4 officials at the polling station to conduct the voting / poll. The highlights are

- Training was given to all presiding officers during poll related trainings.
- In all 1866 presiding officers in Lok Sabha and 2748 Presiding officers were trained on this system.
- Trainings were arranged as per the dates decided by AROs during Lok Sabha and ROs during Assembly Elections.
- Operation manual was prepared in Marathi language for better understanding and was circulated during training.
- A manual for the usage of system prepared in local language along with a handy one page write up was provided to polling parties while collecting poll material from Assistant Returning Officer.
- A glimpse of training has been provided in Annexure III

3. SOFTWARE EXECUTION

With this preparatory work and testing reports the PDMS system was launched on 15th April 2014 for Lok Sabha and 14th October 2014 for Assembly Elections. The RO level interface was designed in a user friendly manner as shown in following screenshot.



4. COST TO GOVERNMENT

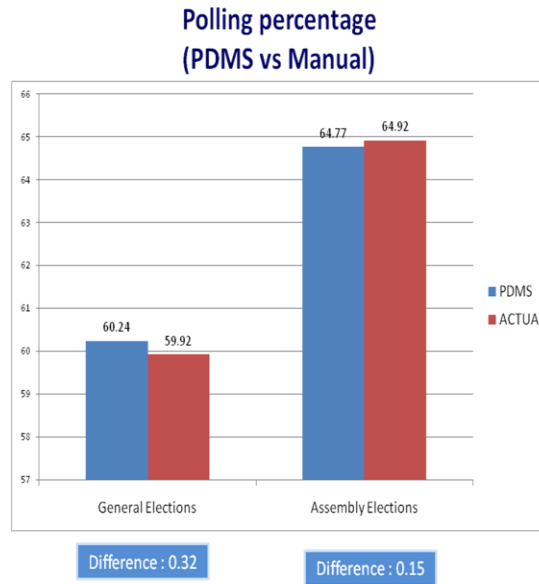
- The entire project was developed in-house at no cost by NIC Nanded.
- Trainings to polling staff was given by NIC Staff.
- District Election Office has provided the webspace and necessary bandwidth.
- A honorarium of Rs 30/- was given to presiding officers as charges for sending SMS from their cell phone.
- CDAC, Mumbai has provided pull SMS free of cost and credited required SMS pack for auto reply.

5. BOTTLENECKS

- Despite all efforts some presiding could not send SMS or sometimes signals went off on the booths.
- Still standby arrangements were made and helpline was provided to all presiding officers who couldn't send SMS, in those cases figures were collected telephonically.
- Due to network problem some SMS received late or got failed to deliver.

6. PROJECT OUTCOME

- For the first time the poll percentage and booth level incidences were monitored with help of technology.
- EVM problems were reported quickly.
- Poll percentage was reported in no time and accurately to ECI and CEO Office, Maharashtra.
- Percentage received traditionally and via PDMS was tallied with a difference of less than 1%, this has shown reliability of the system used.
- Arrival and Dispatch reports of Polling parties were available in no time.
- The entire project drawn attention of Election Commission, Election Observers, Media and other districts in Maharashtra State and the efforts



7. CONCLUSION

The entire process was multifaceted beginning from software development till implementation with a rigorous training to Presiding officers and team members of polling party. The major challenge was training to staff, availability of operation manual in local language and mobile signals at each polling stations. All the statutory processes were codified in order to receive SMS from polling stations and in accordance with that the software generated various outputs as per the requirement of election office.

The required information was disseminated within a few minutes as per the target time schedule given by Hon. Election Commission of India. A huge task was completed with the help of technology which was innovative in such type of reportings with full reliability and on a large scale. The Election Commission of India has identified this project as '*best electoral practice*'. The project has also won award in west zone symposium competition organized by Election Commission of India. The project has also exhibited potential of mobile technology to obtain data from remote location during elections and even this can be used to get critical data from the field level for effective monitoring. For academic interest SMS statistics and few pictures are given in Annexure II.

8. ACKNOWLEDGMENTS

Our thanks then District Election of Nanded and all staff members of NIC and Election Office, Nanded

REFERENCES

- [1] Website from CDAC, Mobile Seva, <https://mgov.gov.in/>

Annexure I

PREPOLL DAY ACTIVITY	CODE
POLL MATERIAL COLLECTED	MH NAND 01
POLLING PARTY DISPATCHED	MH NAND 02
POLLING PARTY ARRIVED	MH NAND 03
POLL BOOTH ESTABLISHED	MH NAND 04

POLL DAY ACTIVITY	CODE
MOCK POLL STARTED	MH NAND 11
MOCK POLL CONCLUDED	MH NAND 12
MOCK POLL CONCLUDED IN ABSENCE OF POLLING AGENT	MH NAND 13
POLL STARTED	MH NAND 14
EVM FAULTY	MH NAND 15
POLLING STATION WHERE POLL CLOSED AT SCHEDULE TIME	MH NAND 17
POLLING STATION WHERE VOTERS IN QUEUE AT THE CLOSING TIME	MH NAND 18
POLLING PARTY REACHED AT RECEIVING CENTER	MH NAND 19
POLL PERCENTAGE 9 AM	MH NAND 21<SPACE><PERCEN>
POLL PERCENTAGE 11AM	MH NAND 22<SPACE><PERCEN>
POLL PERCENTAGE 1PM	MH NAND 23<SPACE><PERCEN>
POLL PERCENTAGE 3PM	MH NAND 24<SPACE><PERCEN>
POLL PERCENTAGE 5PM	MH NAND 25<SPACE><PERCEN>
EMERGENCY CODES	
EMERGENCY - BOOTH CAPTURED	MH NAND 07
EMERGENCY - RIOTS AT POLLING STATION	MH NAND 08
EMERGENCY – MEDICAL	MH NAND 09
EMERGENCY- ANY OTHER	MH NAND 10

Annexure II

SMS Statistics

PREPOLL DAY	VIDHANSABHA (PS – 2748)	LOKSABHA (PS – 1866)
POLL MATERIAL COLLECTED - PMC	2724	554
POLLING PARTY DISPATCHED - PPD	2687	1061
POLLING PARTY ARRIVED - PPA	2626	1381
POLL BOOTH ESTABLISHED - PBE	2617	1549
TOTAL SMS ON PRE-POLL DAY	10654	4545

POLL-DAY ACTIVITY	VIDHANSABHA SMS	LOKSABHA SMS
MOCK POLL STARTED - MPS	2553	1431
MOCK POLL CONDUCTED - MPC	2253	1311
MOCK POLL CONDUCTED IN ABSENCE OF POLLING AGENT – MPCA	253	236
POLL STARTED - PSD	2604	1456
EVM FAULTY - EVM	13	17

Mobile Seva x					
https://mgov.gov.in/statePollDepartment.do?org_type=Maharashtra					
		maharashtra			
13	MH.MOL	Directorate of Information Technology, Govt. of Maharashtra	Mahaonline Limited	3	No
14	MH.MSE	Directorate of Information Technology, Govt. of Maharashtra	Maharashtra State Excise	7	No
15	MH.MSPC	Maharashtra State Pharmacy Council	Details of all pharmacist registered under Maharashtra state pharmacy council along with its registration validity, number and PPP Number and its validity	9	No
16	MH.NAND	Collector Office Nanded	Information Collection on Poll Day, We will be calling some information at certain time interval which will be monitored by District Election Officer	78027	null